To Wayne

UNITED STATES FUEL COMPANY

HIAWATHA, UTAH 84527

December 15, 1983

RECEIVED
DEC 20 1983
DIVISION OF
OIL, GAS & MINING

Mr. James W. Smith, Jr. Coordinator
of Mined Land Development
State of Utah, Division of Oil, Gas and Mining
4241 State Office Building
Salt Lake City, Utah 84114

RE: Request for approval on sediment pond inspection schedule.

JIM
DEC 20 1983

Dear Mr. Smith:

Pursuant to a quarterly complete inspection conducted by inspector Dave Lof on December 7 and 8, 1983, United States Fuel Company is seeking an approval for the modification of a sediment pond inspection schedule.

During his inspection, Dave reviewed reports on our slurry ponds. He requested that we begin inspection of impounding structures which do not meet the requirements of 30 CFR 77.216(a), as is the case of all of our sediment ponds based on 817.46(t).

The following is a list of our sediment ponds and their respective storage volumes. None of these ponds will impound water, sediment or slurry to an elevation of twenty feet or more above the upstream toe of the structure.

	Storage (acre-feet)
1. Sediment pond below slurry pond #1	1.02
2. Sediment pond below slunry pond #4	1.74
3. Sediment pond below slurry pond #5 - south	1.42
4. Sediment pond below slurry pond #5 - north	2.53
5. Sediment pond below upper coal storage yard	1.36
6. Sediment pond below Middle Fork mine yard	1.40
7. Sediment pond below South Fork loadout	.60
8. Sediment pond below South Fork mine yard	3.75

UTAH KING COAL

Quotations subject to immediate acceptance. Coal will be sold and invoiced at price in effect on date of shipment, at mine weights f.o.b. cars at place of shipment, unless otherwise specifically agreed in writing. Agreements are contingent upon causes of delay beyond our control, including strikes, accidents, riots, acts of God, lockouts, fire, flood, inability to secure cars or transportation.

The sediment ponds below the slurry ponds are typically dry, with the exception of the period during spring runoff. Observations of these four ponds are made during inspections of the slurry ponds.

Sediment ponds below the two mine yards and the South Fork coal loadout are usually dry but are found to impound some water following precipitation events and spring runoff. These ponds are quite observable when driving to or from the mine portals.

Since these ponds are relatively small in size (do not meet the size criteria of 30 CFR 77.215(a)), impound water infrequently and are observable when conducting routine inspections or travelling to the mine pads, we request that the Division approval of a quarterly monitoring schedule for the sediment ponds. The ponds however may be inspected more frequently than this or will be inspected more frequently if problems requiring closer observation are noted.

During the quarterly monitoring inspections the ponds will be examined for signs of structural weakness, erosion and other hazardous conditions. Any observations will be recorded. Hazardous conditions will be reported.

Sincerely,

Jean Semborski

Jean Semborski
Engineer

Wayne

SURFACE AND GROUNDWATER MONITORING PLAN

4th Quarter 1983

United States Fuel Company

Hiawatha, Utah 84527

SPRING MONITORING REPORT

DATE: 4TH QUARTER-1983

EFFLUENT CHARACTERISTIC		SP-1	SP-2	SP-3	SP-4	SP-5	SP-6
		OCT.	OCT.	OCT.	OCT.	OCT	OCT.
Flow Rate	G.P.M.	2.3	5.9	5.9	9.2	5.9	5.9
PH	Units	7.05	7.9	7.8	7.95	7.2	8.0
Air Temp.	°F	51	55	52	51	53	47
Water Temp.	°F	46	49	47	43	45	39
Conductivity	umhos/cm	335	400	460	500	600	450
Acidity	Mg/L						
Total Suspended Solids	Mg/L						
Total Dissolved Solids	Mg/L	196	208	237	261	307	229
Total Organic Carbon	Mg/L						
Total Manganese	Mg/L						
Total Iron	Mg/L	0.16	0.11	0.15	<0.05	<0.05	0.07
Dissolved Iron	Mg/L	0.07	0.05	<0.05	<0.05	<0.05	<0.05
Calcium	Mg/L						
Magnesium	Mg/L						
Sodium	Mg/L						
Potassium	Mg/L						
Carbonate	Mg/L						
Fluoride	Mg/L						
Bicarbonate	Mg/L						
Chloride	Mg/L	4	2	3	2	4	2
Sulfate	Mg/L	33	24	25	25	51	5
Nitrate NO_3-N	Mg/L	1.25	0.88	0.77	0.30	0.02	0.02
Nitrate NO_2-N	Mg/L						
Kjeldahl N	Mg/L						
Dissolved Phosphorus	Mg/L						
Silica	Mg/L						
Trace Elements:							
Arsenic	Mg/L						
Cadmium	Mg/L						
Zinc	Mg/L						
Selenium	Mg/L		—				
Radioactivity:							
Gross Alpha	Pci/L						
Gross Beta	Pci/L						
Oil and Grease	Mg/L						
ALKALINITY	Mg/L						

SPRING MONITORING REPORT

DATE: 4th QUARTER-1983

EFFLUENT CHARACTERISTIC		SP-7	SP-8			SP-9	SP-10
		OCT.	OCT.	NOV.	DEC.	OCT.	OCT.
Flow Rate	G.P.M.	19.4	13.0	9.4		7.9	3.3
PH	Units	7.65	7.55	7.75		8.2	8.1
Air Temp.	°F	41	40	35		51	49
Water Temp.	°F	39	43	40		42	42
Conductivity	umhos/cm	450	775	800		385	575
Acidity	Mg/L						
Total Suspended Solids	Mg/L						
Total Dissolved Solids	Mg/L	219	418	443		200	287
Total Organic Carbon	Mg/L						
Total Manganese	Mg/L						
Total Iron	Mg/L	<0.05	<0.05	<0.05		0.12	0.15
Dissolved Iron	Mg/L	<0.05	<0.05	<0.05		<0.05	<0.05
Calcium	Mg/L						
Magnesium	Mg/L						
Sodium	Mg/L						
Potassium	Mg/L						
Carbonate	Mg/L						
Fluoride	Mg/L						
Bicarbonate	Mg/L						
Chloride	Mg/L	2	4	5		3	5
Sulfate	Mg/L	4	81	65		26	38
Nitrate NO_3-N	Mg/L	0.02	0.02	0.13		0.01	0.05
Nitrate NO_2-N	Mg/L						
Kjeldahl N	Mg/L						
Dissolved Phosphorus	Mg/L						
Silica	Mg/L						
Trace Elements:							
Arsenic	Mg/L						
Cadmium	Mg/L						
Zinc	Mg/L						
Selenium	Mg/L		—				
Radioactivity:							
Gross Alpha	Pci/L						
Gross Beta	Pci/L						
Oil and Grease	Mg/L						
ALKALINITY	Mg/L						

inaccessible

Date: 4th QUARTER -1983

STREAM MONITORING REPORT

EFFLUENT CHARACTERISTIC		ST -1			ST - 2		
		OCT.	NOV.	DEC.	OCT.	NOV.	DEC.
Flow Rate	G.P.M.	72	103				
PH	Units	8.2	8.05		8.3	8.05	
Air Temp.	°F	49	31				
Water Temp.	°F	49	39				
Conductivity	umhos/cm	1800	1750		550	500	
Acidity	Mg/L	<1.0	<1.0		<1.0	<1.0	
Total Suspended Solids	Mg/L	12	10		0.5	<0.5	
Total Dissolved Solids	Mg/L	1296	1231		247	298	
Total Organic Carbon	Mg/L						
Total Manganese	Mg/L	0.01	0.04		<0.01	<0.01	
Total Iron	Mg/L	0.16	0.15		<0.05	0.06	
Dissolved Iron	Mg/L	<0.05	<0.05		<0.05	<0.05	
Calcium	Mg/L						
Magnesium	Mg/L						
Sodium	Mg/L						
Potassium	Mg/L						
Carbonate	Mg/L						
Fluoride	Mg/L						
Bicarbonate	Mg/L						
Chloride	Mg/L	12	12		4	4	
Sulfate	Mg/L	700	720		110	32	
Nitrate NO_3-N	Mg/L	0.58	0.36		0.03	0.06	
Nitrate NO_2-N	Mg/L						
Kjeldahl N	Mg/L						
Dissolved Phosphorus	Mg/L						
Silica	Mg/L						
Trace Elements:							
Arsenic	Mg/L						
Cadmium	Mg/L						
Zinc	Mg/L						
Selenium	Mg/L						
Radioactivity:							
Gross Alpha	Pci/L						
Gross Beta	Pci/L						
Oil and Grease	Mg/L	<0.5	1.6		0.5	2.9	
ALKALINITY	Mg/L	312	314		228	228	

Inaccessible

Inaccessible

Date: 4th QUARTER-198[illegible] STREAM MONITORING REPORT

EFFLUENT CHARACTERISTIC		ST-2A			ST-2B		
		OCT.	NOV.	DEC.	OCT.	NOV.	DEC.
Flow Rate	G.P.M.	44	74		104	89	
PH	Units	8.3	8.1		8.2	8.0	
Air Temp.	°F	39	27		35	29	
Water Temp.	°F	35	32		33	33	
Conductivity	umhos/cm	550	580		700	750	
Acidity	Mg/L	<1.0	<1.0		<1.0	<1.0	
Total Suspended Solids	Mg/L	2	0.5		9	2	
Total Dissolved Solids	Mg/L	288	328		369	418	
Total Organic Carbon	Mg/L						
Total Manganese	Mg/L	<0.01	<0.01		<0.01	0.01	
Total Iron	Mg/L	<0.05	<0.05		<0.05	0.09	
Dissolved Iron	Mg/L	<0.05	<0.05		<0.05	<0.05	
Calcium	Mg/L						
Magnesium	Mg/L						
Sodium	Mg/L						
Potassium	Mg/L						
Carbonate	Mg/L						
Fluoride	Mg/L						
Bicarbonate	Mg/L						
Chloride	Mg/L	4	4	inaccessible	7	7	inaccessible
Sulfate	Mg/L	130	36		140	83	
Nitrate NO_3-N	Mg/L	0.03	0.03		0.03	0.04	
Nitrate NO_2-N	Mg/L						
Kjeldahl N	Mg/L						
Dissolved Phosphorus	Mg/L						
Silica	Mg/L						
Trace Elements:							
Arsenic	Mg/L						
Cadmium	Mg/L						
Zinc	Mg/L						
Selenium	Mg/L						
Radioactivity:							
Gross Alpha	Pci/L						
Gross Beta	Pci/L						
Oil and Grease	Mg/L	<0.5	2.8		<0.5	2.6	
ALKALINITY	Mg/L	260	253		282	275	

Date: 4th QUARTER-198[illegible] STREAM MONITORING REPORT

EFFLUENT CHARACTERISTIC		ST-3			ST-3A		
		OCT.	NOV.	DEC.	OCT.	NOV.	DEC.
Flow Rate	G.P.M.	36	41				
PH	Units	8.15	8.0		8.0	7.9	
Air Temp.	°F	49	37				
Water Temp.	°F	39	34				
Conductivity	umhos/cm	2400	2850		1100	1100	
Acidity	Mg/L	<1.0	<1.0		<1.0	<1.0	
Total Suspended Solids	Mg/L	3	2		19	39	
Total Dissolved Solids	Mg/L	1437	1560		671	643	
Total Organic Carbon	Mg/L						
Total Manganese	Mg/L	0.03	0.03		0.02	<0.01	
Total Iron	Mg/L	0.10	0.14		0.20	0.08	
Dissolved Iron	Mg/L	0.06	<0.05		<0.05	<0.05	
Calcium	Mg/L						
Magnesium	Mg/L						
Sodium	Mg/L						
Potassium	Mg/L						
Carbonate	Mg/L						
Fluoride	Mg/L						
Bicarbonate	Mg/L						
Chloride	Mg/L	226	240	inaccessible	8	8	inaccessible
Sulfate	Mg/L	590	690		300	235	
Nitrate NO_3-N	Mg/L	0.29	0.22		0.02	0.06	
Nitrate NO_2-N	Mg/L						
Kjeldahl N	Mg/L						
Dissolved Phosphorus	Mg/L						
Silica	Mg/L						
Trace Elements:							
Arsenic	Mg/L						
Cadmium	Mg/L						
Zinc	Mg/L						
Selenium	Mg/L						
Radioactivity:							
Gross Alpha	Pci/L						
Gross Beta	Pci/L						
Oil and Grease	Mg/L	0.7	3.1		<0.5	2.0	
ALKALINITY	MG/L	338	368		382	371	

Date: 4th QUARTER-198[redacted] STREAM MONITORING REPORT [redacted]

EFFLUENT CHARACTERISTIC		ST-3B			ST-4		
		OCT.	NOV.	DEC.	OCT.	NOV.	DEC.
Flow Rate	G.P.M.				51	144	
PH	Units	8.2	8.05		8.2	8.05	
Air Temp.	°F	—			59	37	
Water Temp.	°F				39	33	
Conductivity	umhos/cm	1000	1000		1400	1850	
Acidity	Mg/L	<1.0	<1.0		<1.0	<1.0	
Total Suspended Solids	Mg/L	2	<0.5		0.5	3	
Total Dissolved Solids	Mg/L	570	607		910	894	
Total Organic Carbon	Mg/L						
Total Manganese	Mg/L	<0.01	<0.01		<0.01	<0.01	
Total Iron	Mg/L	<0.05	<0.05		<0.05	0.05	
Dissolved Iron	Mg/L	<0.05	<0.05		<0.05	<0.05	
Calcium	Mg/L			inaccessible			inaccessible
Magnesium	Mg/L						
Sodium	Mg/L						
Potassium	Mg/L						
Carbonate	Mg/L						
Fluoride	Mg/L						
Bicarbonate	Mg/L						
Chloride	Mg/L	9	8		33	35	
Sulfate	Mg/L	290	240		445	440	
Nitrate NO_3-N	Mg/L	0.01	0.05		0.25	0.28	
Nitrate NO_2-N	Mg/L						
Kjeldahl N	Mg/L						
Dissolved Phosphorus	Mg/L						
Silica	Mg/L						
Trace Elements:							
Arsenic	Mg/L						
Cadmium	Mg/L						
Zinc	Mg/L						
Selenium	Mg/L						
Radioactivity:							
Gross Alpha	Pci/L						
Gross Beta	Pci/L						
Oil and Grease	Mg/L	0.8	<0.5		<0.5	<0.5	
ALKALINITY	Mg/L	288	301		315	298	

Date: 4th QUARTER-198[illegible] STREAM MONITORING REPORT

EFFLUENT CHARACTERISTIC		ST-4A			ST-4B		
		OCT.	NOV.	DEC.	OCT.	NOV.	DEC.
Flow Rate	G.P.M.						
PH	Units	8.3	8.15		8.5	8.3	
Air Temp.	°F	—					
Water Temp.	°F						
Conductivity	umhos/cm	900	900		900	900	
Acidity	Mg/L	<1.0	<1.0		<1.0	<1.0	
Total Suspended Solids	Mg/L	<0.5	3		0.5	13	
Total Dissolved Solids	Mg/L	529	529		524	521	
Total Organic Carbon	Mg/L						
Total Manganese	Mg/L	<0.01	<0.01		<0.01	<0.01	
Total Iron	Mg/L	<0.05	<0.05		<0.05	0.08	
Dissolved Iron	Mg/L	<0.05	<0.05		<0.05	<0.05	
Calcium	Mg/L						
Magnesium	Mg/L						
Sodium	Mg/L						
Potassium	Mg/L						
Carbonate	Mg/L						
Fluoride	Mg/L						
Bicarbonate	Mg/L						
Chloride	Mg/L	6	6		6	6	
Sulfate	Mg/L	230	200		230	195	
Nitrate NO_3-N	Mg/L	0.03	0.03		0.03	0.05	
Nitrate NO_2-N	Mg/L						
Kjeldahl N	Mg/L						
Dissolved Phosphorus	Mg/L						
Silica	Mg/L						
Trace Elements:							
Arsenic	Mg/L						
Cadmium	Mg/L						
Zinc	Mg/L						
Selenium	Mg/L						
Radioactivity:							
Gross Alpha	Pci/L						
Gross Beta	Pci/L						
Oil and Grease	Mg/L	<0.5	<0.5		<0.5	<0.5	
ALKALINITY	Mg/L	313	325		307	323	

inaccessible

inaccessible

Date: 4th QUARTER-198[illegible] STREAM MONITORING REPORT

EFFLUENT CHARACTERISTIC		ST-5			ST-6		
		OCT.	NOV.	DEC.	OCT.	NOV.	DEC.
Flow Rate	G.P.M.	561	435		467	435	
PH	Units	8.2	8.3		8.15	8.05	
Air Temp.	°F	53	39		61	40	
Water Temp.	°F	43	37		45	37	
Conductivity	umhos/cm	1300	1300		1000	1000	
Acidity	Mg/L	<1.0	<1.0		<1.0	<1.0	
Total Suspended Solids	Mg/L	35	21		232	50	
Total Dissolved Solids	Mg/L	856	930		581	584	
Total Organic Carbon	Mg/L						
Total Manganese	Mg/L	0.02	0.01		0.03	0.02	
Total Iron	Mg/L	0.45	0.28		0.75	0.19	
Dissolved Iron	Mg/L	0.06	<0.05		<0.05	<0.05	
Calcium	Mg/L			inaccessible			inaccessible
Magnesium	Mg/L						
Sodium	Mg/L						
Potassium	Mg/L						
Carbonate	Mg/L						
Fluoride	Mg/L						
Bicarbonate	Mg/L						
Chloride	Mg/L	21	24		7	7	
Sulfate	Mg/L	395	410		310	250	
Nitrate NO_3-N	Mg/L	0.58	0.14		0.03	0.06	
Nitrate NO_2-N	Mg/L						
Kjeldahl N	Mg/L						
Dissolved Phosphorus	Mg/L						
Silica	Mg/L						
Trace Elements:							
Arsenic	Mg/L						
Cadmium	Mg/L						
Zinc	Mg/L						
Selenium	Mg/L						
Radioactivity:							
Gross Alpha	Pci/L						
Gross Beta	Pci/L						
Oil and Grease	Mg/L	<0.5	<0.5		<0.5	<0.5	
ALKALINITY	MG/L	311	302		266	260	

Date: 4th QUARTER -1 STREAM MONITORING REPORT

EFFLUENT CHARACTERISTIC		ST-6A			ST-7		
		OCT.	NOV.	DEC.	OCT.	NOV.	DEC.
Flow Rate	G.P.M.					118.4	
PH	Units	8.15	8.1			8.1	
Air Temp.	°F	—				47	
Water Temp.	°F					38	
Conductivity	umhos/cm	875	900			550	
Acidity	Mg/L	<1.0	<1.0			<1.0	
Total Suspended Solids	Mg/L	51	99			7	
Total Dissolved Solids	Mg/L	488	479			266	
Total Organic Carbon	Mg/L						
Total Manganese	Mg/L	0.02	0.01			0.01	
Total Iron	Mg/L	0.15	0.24			0.20	
Dissolved Iron	Mg/L	<0.05	<0.05			0.07	
Calcium	Mg/L						
Magnesium	Mg/L						
Sodium	Mg/L						
Potassium	Mg/L						
Carbonate	Mg/L						
Fluoride	Mg/L						
Bicarbonate	Mg/L						
Chloride	Mg/L	7	7			6	
Sulfate	Mg/L	240	190			130	
Nitrate NO_3-N	Mg/L	0.02	0.08			0.03	
Nitrate NO_2-N	Mg/L						
Kjeldahl N	Mg/L						
Dissolved Phosphorus	Mg/L						
Silica	Mg/L						
Trace Elements:							
Arsenic	Mg/L						
Cadmium	Mg/L						
Zinc	Mg/L						
Selenium	Mg/L		—				
Radioactivity:							
Gross Alpha	Pci/L						
Gross Beta	Pci/L						
Oil and Grease	Mg/L	<0.5	0.8			2.9	
ALKALINITY	MG/L	278	284			263	

inaccessible

inaccessible

D - 001

MOHRLAND WATER DISCHARGE

MINE WATER DISCHARGE MONITORING REPORT

DATE 4th QUARTER - 1983

Effluent Characteristic	Flow Rate G.P.M.	Total Suspended Solids Mg/L	Total Dissolved Solids Mg/L	Total Manganese Mg/L	Total Iron Mg/L	Dissolved Iron Mg/L	Alkalinity Mg/L	Acidity Mg/L	PH Units	Oil & Grease Mg/L	BOD5 Mg/L	Total Coloforms MPN/100ML	Fecal Coloforms MPN/100ML	CONDUCTIVITY umhos/cm
January														
February														
March														
April														
May														
June														
July														
August														
September														
October	907	<0.5	714	0.04	0.32	0.10	361	<1.0	7.55	<0.5				1100
November	82	3	634	0.03	0.07	<0.05	351	<1.0	7.3	1.3	0.09	<2	<2	1100
December														

inaccessible

D002
TOWN TANK OVERFLOW

MINE WATER DISCHARGE MONITORING REPORT

DATE 4th QUARTER - 1983

Effluent Characteristic	Flow Rate G.P.M.	Total Suspended Solids Mg/L	Total Dissolved Solids Mg/L	Total Manganese Mg/L	Total Iron Mg/L	Dissolved Iron Mg/L	Alkalinity Mg/L	Acidity Mg/L	PH Units	Oil & Grease Mg/L	BOD_5 Mg/L	Total Coloforms MPN/100ML	Fecal Coloforms MPN/100ML	CONDUCTIVITY umhos/cm
January														
February														
March														
April														
May														
June														
July														
August														
September														
October	109	<0.5	602	<0.01	<0.05	<0.05	308	<1.0	7.9	<0.5				1000
November	121	<0.5	539	<0.01	<0.05	<0.05	310	<1.0	7.8	0.5	0.2	<2	<2	1000
December														

inaccessible

D-010

KING #4 VENT TUNNEL

MINE WATER DISCHARGE MONITORING REPORT

DATE 4th QUARTER -1984

Effluent Characteristic	Flow Rate G.P.M.	Total Suspended Solids Mg/L	Total Dissolved Solids Mg/L	Total Manganese Mg/L	Total Iron Mg/L	Dissolved Iron Mg/L	Alkalinity Mg/L	Acidity Mg/L	PH Units	Oil & Grease Mg/L	BOD5 Mg/L	Total Coloforms MPN/100ML	Fecal Coloforms MPN/100ML	CONDUCTIVITY umhos/cm
January														
February														
March														
April														
May														
June														
July														
August														
September														
October	5.3	<0.5	309	<0.01	<0.05	<0.05	562	<1.0	8.25	<0.5				600
November	4.0	0.5	203	0.01	<0.05	<0.05	260	<1.0	8.1	0.08	0.25	<2	<2	650
December														

inaccessible

PM/001/011
#9

SURFACE AND GROUNDWATER MONITORING PLAN

2nd Quarter 1983

United States Fuel Company

Hiawatha, Utah 84527

SPRING MONITORING REPORT
DATE: 2nd QUARTER-19

EFFLUENT CHARACTERISTIC		SP-8					
		APRIL	MAY	JUNE			
Flow Rate	G.P.M.	20	75	45			
PH	Units	7.8	7.4	7.5			
Air Temp.	°F						
Water Temp.	°F						
Conductivity	umhos/cm	740	700	700			
Acidity	Mg/L						
Total Suspended Solids	Mg/L						
Total Dissolved Solids	Mg/L	449	354	365			
Total Organic Carbon	Mg/L						
Total Manganese	Mg/L						
Total Iron	Mg/L	0.03	<0.05	0.05			
Dissolved Iron	Mg/L		<0.05	0.05			
Calcium	Mg/L						
Magnesium	Mg/L						
Sodium	Mg/L						
Potassium	Mg/L						
Carbonate	Mg/L						
Fluoride	Mg/L						
Bicarbonate	Mg/L						
Chloride	Mg/L	5.0	3.22	4.10			
Sulfate	Mg/L	60	70	65			
Nitrate NO_3-N	Mg/L	0.06	2.64	1.20			
Nitrate NO_2-N	Mg/L						
Kjeldahl N	Mg/L						
Dissolved Phosphorus	Mg/L						
Silica	Mg/L						
Trace Elements:							
Arsenic	Mg/L						
Cadmium	Mg/L						
Zinc	Mg/L						
Selenium	Mg/L						
Radioactivity:							
Gross Alpha	Pci/L						
Gross Beta	Pci/L						
Oil and Grease	Mg/L						
ALKALINITY	Mg/L						

Date: 2nd QUARTER- [illegible]3 STREAM MONITORING REPORT

EFFLUENT CHARACTERISTIC		ST-1		
		APRIL	MAY	JUN
Flow Rate	G.P.M.	299	269	67
PH	Units	8.1	8.2	8.
Air Temp.	°F	50	40	6
Water Temp.	°F	38	45	4
Conductivity	umhos/cm	1450	1450	80
Acidity	Mg/L	<1.0	<1.0	<1.
Total Suspended Solids	Mg/L	26.5	213	31
Total Dissolved Solids	Mg/L	1040	1004	51
Total Organic Carbon	Mg/L			
Total Manganese	Mg/L	<0.01	0.01	0.
Total Iron	Mg/L	0.29	0.19	0.
Dissolved Iron	Mg/L	0.02	<0.05	0.
Calcium	Mg/L			
Magnesium	Mg/L			
Sodium	Mg/L			
Potassium	Mg/L			
Carbonate	Mg/L			
Fluoride	Mg/L			
Bicarbonate	Mg/L			
Chloride	Mg/L	18.0	17.5	8.
Sulfate	Mg/L	600	590	2
Nitrate NO_3-N	Mg/L	0.32	0.05	<0.
Nitrate NO_2-N	Mg/L			
Kjeldahl N	Mg/L			
Dissolved Phosphorus	Mg/L			
Silica	Mg/L			
Trace Elements:				
Arsenic	Mg/L			
Cadmium	Mg/L			
Zinc	Mg/L			
Selenium	Mg/L			
Radioactivity:				
Gross Alpha	Pci/L			
Gross Beta	Pci/L			
Oil and Grease	Mg/L	<0.5	<0.5	1.
ALKALINITY	Mg/L	343	329	2

Date: 2nd QUARTER-1983 STREAM MONITORING REPORT

EFFLUENT CHARACTERISTIC		ST-2A			ST-2B		
		APRIL	MAY	JUNE	APRIL	MAY	JUNE
Flow Rate	G.P.M.			1784	322	546	1673
PH	Units			8.2	8.1	7.9	8.2
Air Temp.	°F			60	47	42	63
Water Temp.	°F			46	39	45	43
Conductivity	umhos/cm			490	800	750	525
Acidity	Mg/L			<1.0	<1.0	<1.0	<1.0
Total Suspended Solids	Mg/L			97.2	31.5	493	72.0
Total Dissolved Solids	Mg/L			262	468	442	296
Total Organic Carbon	Mg/L						
Total Manganese	Mg/L			0.01	< 0.01	0.01	0.03
Total Iron	Mg/L			0.37	0.32	0.25	0.39
Dissolved Iron	Mg/L			0.12	0.02	<0.05	0.12
Calcium	Mg/L						
Magnesium	Mg/L						
Sodium	Mg/L						
Potassium	Mg/L						
Carbonate	Mg/L						
Fluoride	Mg/L						
Bicarbonate	Mg/L						
Chloride	Mg/L			3.0	9.0	8.23	4.0
Sulfate	Mg/L			17.0	140	130	29
Nitrate NO_3-N	Mg/L			0.055	0.34	0.26	0.14
Nitrate NO_2-N	Mg/L						
Kjeldahl N	Mg/L						
Dissolved Phosphorus	Mg/L						
Silica	Mg/L						
Trace Elements:							
Arsenic	Mg/L						
Cadmium	Mg/L						
Zinc	Mg/L						
Selenium	Mg/L						
Radioactivity:							
Gross Alpha	Pci/L						
Gross Beta	Pci/L						
Oil and Grease	Mg/L			2.58	1.4	<0.5	2.05
ALKALINITY	Mg/L			244	308	260	249

INACCESSIBLE

Date: 2nd QUARTER-1983 STREAM MONITORING REPORT

EFFLUENT CHARACTERISTIC		ST-3			ST-3A		
		APRIL	MAY	JUNE	APRIL	MAY	JUNE
Flow Rate	G.P.M.	77.3	77.3	444			
PH	Units	7.9	8.0	8.2	7.8	7.9	8.2
Air Temp.	°F	51	43	67			
Water Temp.	°F	40	43	49			
Conductivity	umhos/cm	2320	2350	1100	890	850	550
Acidity	Mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Suspended Solids	Mg/L	5.5	193	359	72.0	537	154
Total Dissolved Solids	Mg/L	1491	1518	671	574	482	298
Total Organic Carbon	Mg/L						
Total Manganese	Mg/L	0.08	0.04	1.10	0.05	0.24	0.06
Total Iron	Mg/L	0.17	0.24	2.00		2.04	0.47
Dissolved Iron	Mg/L	0.04	0.10	0.08	0.14	<0.5	0.14
Calcium	Mg/L						
Magnesium	Mg/L						
Sodium	Mg/L						
Potassium	Mg/L						
Carbonate	Mg/L						
Fluoride	Mg/L						
Bicarbonate	Mg/L						
Chloride	Mg/L	310	301	72.1	6.0	5.85	4.0
Sulfate	Mg/L	1000	580	180	190	200	23
Nitrate NO_3-N	Mg/L	0.10	0.12	<0.001	0.045	0.45	<0.001
Nitrate NO_2-N	Mg/L						
Kjeldahl N	Mg/L						
Dissolved Phosphorus	Mg/L						
Silica	Mg/L						
Trace Elements:							
Arsenic	Mg/L						
Cadmium	Mg/L						
Zinc	Mg/L						
Selenium	Mg/L						
Radioactivity:							
Gross Alpha	Pci/L						
Gross Beta	Pci/L						
Oil and Grease	Mg/L	1.1	<0.5	1.94	<0.5	1.52	4.41
ALKALINITY	Mg/L	348	333	305	322	315	267

Date: 2nd QUARTER-1983 STREAM MONITORING REPORT

EFFLUENT CHARACTERISTIC		ST-3B			ST-4		
		APRIL	MAY	JUNE	APRIL	MAY	JUNE
Flow Rate	G.P.M.				278	344	399
PH	Units	8.0	8.0	8.2	7.8	7.65	8.0
Air Temp.	°F				61	63	65
Water Temp.	°F				53	49	48
Conductivity	umhos/cm	810	675	590	1310	1400	980
Acidity	Mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Suspended Solids	Mg/L	37.5	73.5	165.0	77.0	243	94
Total Dissolved Solids	Mg/L	529	291	318	907	890	505
Total Organic Carbon	Mg/L						
Total Manganese	Mg/L	0.02	<0.01	0.06	0.06	0.08	0.02
Total Iron	Mg/L		0.29	0.48	0.59	1.04	0.40
Dissolved Iron	Mg/L	0.01	<0.05	0.13	0.03	<0.05	<0.05
Calcium	Mg/L						
Magnesium	Mg/L						
Sodium	Mg/L						
Potassium	Mg/L						
Carbonate	Mg/L						
Fluoride	Mg/L						
Bicarbonate	Mg/L						
Chloride	Mg/L	7.0	4.20	5.0	47.0	39.2	16
Sulfate	Mg/L	180	50	39.0	700	464	140
Nitrate NO_3-N	Mg/L	0.05	0.165	<0.001	0.69	0.75	0.515
Nitrate NO_2-N	Mg/L						
Kjeldahl N	Mg/L						
Dissolved Phosphorus	Mg/L						
Silica	Mg/L						
Trace Elements:							
Arsenic	Mg/L						
Cadmium	Mg/L						
Zinc	Mg/L						
Selenium	Mg/L						
Radioactivity:							
Gross Alpha	Pci/L						
Gross Beta	Pci/L						
Oil and Grease	Mg/L	<0.05	<0.5	4.15	<0.5	<0.5	<0.5
ALKALINITY	Mg/L	289	296	270	296	320	272

Date: 2nd QUARTER - 1983 STREAM MONITORING REPORT

EFFLUENT CHARACTERISTIC		ST-4A			ST-4B		
		APRIL	MAY	JUNE	APRIL	MAY	JUNE
Flow Rate	G.P.M.						
PH	Units	8.0	8.1	8.05	8.0	8.0	8.05
Air Temp.	°F						
Water Temp.	°F						
Conductivity	umhos/cm	1010	850	625	990	950	625
Acidity	Mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Suspended Solids	Mg/L	28	460	38	17.5	578	48
Total Dissolved Solids	Mg/L	643	484	269	614	558	270
Total Organic Carbon	Mg/L						
Total Manganese	Mg/L	0.06	0.02	<0.01	0.05	0.02	<0.01
Total Iron	Mg/L	0.33	0.20	0.09	0.28	0.24	0.10
Dissolved Iron	Mg/L	0.03	<0.05	<0.05	0.03	0.07	<0.05
Calcium	Mg/L						
Magnesium	Mg/L						
Sodium	Mg/L						
Potassium	Mg/L						
Carbonate	Mg/L						
Fluoride	Mg/L						
Bicarbonate	Mg/L						
Chloride	Mg/L	9.0	5.98	5.00	18	14.6	4
Sulfate	Mg/L	400	170	50	200	180	58
Nitrate NO_3-N	Mg/L	0.22	0.03	0.97	0.71	0.09	0.505
Nitrate NO_2-N	Mg/L						
Kjeldahl N	Mg/L						
Dissolved Phosphorus	Mg/L						
Silica	Mg/L						
Trace Elements:							
Arsenic	Mg/L						
Cadmium	Mg/L						
Zinc	Mg/L						
Selenium	Mg/L						
Radioactivity:							
Gross Alpha	Pci/L						
Gross Beta	Pci/L						
Oil and Grease	Mg/L	4.6	<0.5	<0.5	1.5	<0.5	<0.5
ALKALINITY	Mg/L	319	302	264	319	296	233

Date: 2nd QUARTER-1983 STREAM MONITORING REPORT

EFFLUENT CHARACTERISTIC		ST-5			ST-6		
		APRIL	MAY	JUNE	APRIL	MAY	JUNE
Flow Rate	G.P.M.	664	1418.5	1261	404	1071	1135
PH	Units	8.1	8.1	8.1	7.9	8.0	8.1
Air Temp.	°F	63	69	63	51	47	71
Water Temp.	°F	51	47	49	47	43	53
Conductivity	umhos/cm	1400	1150	925	1180	1000	900
Acidity	Mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Suspended Solids	Mg/L	15.5	76.5	61	115	2599	6
Total Dissolved Solids	Mg/L	1019	698	487	805	608	441
Total Organic Carbon	Mg/L						
Total Manganese	Mg/L	0.09	0.04	0.03	0.08	0.03	0.02
Total Iron	Mg/L	0.37	0.70	0.40	0.45	0.52	0.10
Dissolved Iron	Mg/L	0.03	0.13	<0.05	<0.01	<0.05	<0.05
Calcium	Mg/L						
Magnesium	Mg/L						
Sodium	Mg/L						
Potassium	Mg/L						
Carbonate	Mg/L						
Fluoride	Mg/L						
Bicarbonate	Mg/L						
Chloride	Mg/L	38.0	20.1	19.0	14.0	8.02	8.0
Sulfate	Mg/L	500	316	150	700	270	150
Nitrate NO_3-N	Mg/L	0.24	0.49	0.825	0.09	0.15	0.715
Nitrate NO_2-N	Mg/L						
Kjeldahl N	Mg/L						
Dissolved Phosphorus	Mg/L						
Silica	Mg/L						
Trace Elements:							
Arsenic	Mg/L						
Cadmium	Mg/L						
Zinc	Mg/L						
Selenium	Mg/L						
Radioactivity:							
Gross Alpha	Pci/L						
Gross Beta	Pci/L						
Oil and Grease	Mg/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
ALKALINITY	Mg/L	316	308	261	295	270	245

Date: 2nd QUARTER-1982 STREAM MONITORING REPORT

EFFLUENT CHARACTERISTIC		ST-6A					
		APRIL	MAY	JUNE			
Flow Rate	G.P.M.						
PH	Units	8.0	7.9	8.05			
Air Temp.	°F						
Water Temp.	°F						
Conductivity	umhos/cm	810	700	700			
Acidity	Mg/L	<1.0	<1.0	<1.0			
Total Suspended Solids	Mg/L	155	2120	7			
Total Dissolved Solids	Mg/L	508	379	309			
Total Organic Carbon	Mg/L						
Total Manganese	Mg/L	0.08	0.03	0.01			
Total Iron	Mg/L	0.61	0.39	0.11			
Dissolved Iron	Mg/L	<0.01	0.22	<0.05			
Calcium	Mg/L						
Magnesium	Mg/L						
Sodium	Mg/L						
Potassium	Mg/L						
Carbonate	Mg/L						
Fluoride	Mg/L						
Bicarbonate	Mg/L						
Chloride	Mg/L	7.0	4.50	5.0			
Sulfate	Mg/L	160	120	70			
Nitrate NO_3-N	Mg/L	0.02	0.07	0.635			
Nitrate NO_2-N	Mg/L						
Kjeldahl N	Mg/L						
Dissolved Phosphorus	Mg/L						
Silica	Mg/L						
Trace Elements:							
Arsenic	Mg/L						
Cadmium	Mg/L						
Zinc	Mg/L						
Selenium	Mg/L						
Radioactivity:							
Gross Alpha	Pci/L						
Gross Beta	Pci/L						
Oil and Grease	Mg/L	<0.5	<0.5	<0.5			
ALKALINITY	Mg/L	326	270	250			

D-001

MOHRLAND WATER DISCHARGE

MINE WATER DISCHARGE MONITORING REPORT

DATE 2nd QUARTER - 1983

Effluent Characteristic	Flow Rate G.P.M.	Total Suspended Solids Mg/L	Total Dissolved Solids Mg/L	Total Manganese Mg/L	Total Iron Mg/L	Dissolved Iron Mg/L	Alkalinity Mg/L	Acidity Mg/L	PH Units	Oil & Grease Mg/L	BOD5 Mg/L	Total Coloforms MPN/100ML	Fecal Coloforms MPN/100ML	CONDUCTIVITY µmhos/cm
January														
February														
March														
April	130	4.5	768	0.11	0.16	0.01	363	<1.0	7.4	2.1	3.4	<2.0	<2.0	1100
May	5	<0.5	681	0.06	0.20	0.05	356	<1.0	6.9	<0.5				1150
June	422	<0.5	718	0.04	0.27	0.06	395	<1.0	7.35	2.18				1150
July														
August														
September														
October														
November														
December														

D-002

TOWN TANK OVER FLOW

MINE WATER DISCHARGE MONITORING REPORT

DATE 2nd QUARTER - 1983

Effluent Characteristic	Flow Rate G.P.M.	Total Suspended Solids Mg/L	Total Dissolved Solids Mg/L	Total Manganese Mg/L	Total Iron Mg/L	Dissolved Iron Mg/L	Alkalinity Mg/L	Acidity Mg/L	PH Units	Oil & Grease Mg/L	BOD_5 Mg/L	Total Coloforms MPN/100ML	Fecal Coloforms MPN/100ML	CONDUCTIVITY umhos/cm
January														
February														
March														
April	163.8	<0.5	690	0.06	0.06	<0.01	291	<1.0	7.5	<0.5	2.0	<2.0	<2.0	990
May	299.8	<0.5	602	0.03	<0.05	<0.05	315	<1.0	7.4	<0.5				1050
June	96.8	5.0	624	0.01	0.15	0.07	306	<1.0	8.05	5.0				1000
July														
August														
September														
October														
November														
December														

D010

KING #4 VENT TUNNEL

MINE WATER DISCHARGE MONITORING REPORT

DATE 2nd QUARTER - 1983

Effluent Characteristic	Flow Rate G.P.M.	Total Suspended Solids Mg/L	Total Dissolved Solids Mg/L	Total Manganese Mg/L	Total Iron Mg/L	Dissolved Iron Mg/L	Alkalinity Mg/L	Acidity Mg/L	PH Units	Oil & Grease Mg/L	BOD5 Mg/L	Total Coloforms MPN/100ML	Fecal Coloforms MPN/100ML	CONDUCTIVITY umhos/cm
January														
February														
March														
April						IN ACCESSIBLE								
May						IN ACCESSIBLE								
June	12.1	3.0	364	0.01	0.17	0.10	286	<1.0	8.2	2.33				650
July														
August														
September														
October														
November														
December														

RUSH

Rev. 7/80

Field No. 1

☐ TC ☐ TM ☐ Nut ☐ Pest.
☒ PC ☐ PM ☐ BOD ☐ Rad. ☐ Bact. ☐ Spec.

Date Recd.: _____

Received By: _____

UTAH STATE DEPARTMENT OF HEALTH

ENVIRONMENTAL HEALTH

WATER ANALYSES

Sample No. 035651 (701)

Storet No. (702)

Water Syst. No. (703) Source No. (704)

Date Collected 830302 (714) yr. mo. dy.

Time Collected 1155 (610) 24-hour clock

Water Rights No. (707)

Exact Description of sampling Point (646)
HIAWATHA BELOW STRAW BALES FOR BORROW FLOW TO S. MILLER CK

Supply Owned by (712)

Sample Type (710)

Sample Collected by (713) SANDY PRUITT

SEND REPORT TO: Phone 533 5771

(715) DIV OIL GAS MINING
(648) 4241 STATE OFFICE
(717) SALT LAKE CITY 84114
zip code

Sample Source (719)
01 Spring, 02 Well, 03 Stream, 04 Lake, 06 Dist. syst., 07 Effluent, 08 Storm sewer, 14 Other, 15 Tunnel, 18 Artesian well, 19 Swimming pool

County (611)
01 Beaver, 02 Box Elder, 03 Cache, 04 Carbon, 05 Daggett, 06 Davis, 07 Duchesne, 08 Emery, 09 Garfield, 10 Grand, 11 Iron, 12 Juab, 13 Kane, 14 Millard, 15 Morgan, 16 Piute, 17 Rich, 18 Salt Lake, 19 San Juan, 20 Sanpete, 21 Sevier, 22 Summit, 23 Tooele, 24 Uintah, 25 Utah, 26 Wasatch, 27 Washington, 28 Wayne, 29 Weber

Current use (708)

Proposed use (709)

1. Culinary
2. Agriculture
3. Industrial
4. Other

900 B

1 FIELD TESTS

Temperature (°C)	792	CO_2, mg/l	572
D.O., mg/l	793	Depth, m	609
Sp. Cond. µ mhos	653	Cl Resid., mg/l	753
pH	651	Flow, MGD	652
Sp. Gravity	608	Flow, GPM	604
Transparency, m	649	Flow, cfs	659

2 WASTEWATER ANALYSIS

Temperature (°C) 650 | pH 782 | BACT. LAB. No.

	mg/l		mg/l		
B.O.D.$_5$	794	T.O.C.	671	M.P.N. Total Coliforms/100ml	658
✓ Tot. Sus. Solids	5190 787	C.O.D.	777	M.P.N. Fecal Coliforms/100ml	657
NO_2+NO_3,N	602	Cyanide	775	Fecal Strep C/100ml.	656
T.K.N.	778	Phenolics	783	M.F. Total Coliforms/100ml.	654
Oil & Grease	780	Sulfide	672	M.F. Fecal Coliforms/100ml.	655
				Plate Count-Org./ml.	599

3 Filtered ☐ Unfiltered ☐

me/l	CATIONS	mg/l	ug/l (ppb)	
	Ammonia as N			722
	Arsenic			723
	Barium			724
	Boron			725
	Cadmium			727
	Calcium			728
	Chromium			729
	Chromium, Hex. as Cr			730
	Copper			732
	Iron, dissolved			733
	Lead			734
	Magnesium			737
	Manganese			738
	Nickel			740
	Potassium			742
	Selenium			743
	Silver			744
	Sodium			745
	Zinc			749
	TOTAL CATIONS			

4 CHEMICAL ANALYSIS

pH, units 7.9

me/l	ANIONS	mg/l	
	Bicarbonate		758
	Carbon Dioxide		759
	Carbonate		760
	Chloride		763
	CO_3 Solids		
	Fluoride		765
	Hydroxide		767
	Nitrate as N		605
	Nitrite as N		606
	Phosphorus, Ortho as P		607
	Silica, dissolved as SiO_2		750
	Sulfate		772
	TOTAL ANIONS		
	GRAND TOTAL		

Tot. Phosphorus		785
Total Alk. as $CaCO_3$		752
T. Hdns. as $CaCO_3$		754
Surfactant as MBAS		773
✓ Turbidity, as NTU	10.0	757
Sp. Gravity		608

TOTAL METALS ANALYSIS

5 CATIONS	mg/l	ug/l (ppb)	
Aluminum			800
Arsenic			660
Barium			661
Beryllium			801
Cadmium			662
Chromium			663
Cobalt			804
Copper			664
Gold			700
Iron			755
Lead			665
Manganese			666
Mercury			739
Molybdenum			802
Nickel			667
Selenium			668
Silver			669
Uranium,			601
Vanadium			803
Zinc			670

6

✓ Sp. Cond. µmhos/cm.	1045	762
✓ TDS @ 180°C	778	786

7 RADIOLOGICS

	pc/l-g		pc/l-g	
Alpha, gross		621	^{89}Sr	633
Beta, gross		623	^{131}I	635
Tritium, ^3H		625	^{134}Cs	637
^{226}Radium		627	^{137}Cs	639
^{228}Radium		629		
^{90}Sr		631		

INTERPRETATION OF ANALYSES:

Remarks:

NOV 83-2-1-1

Based on State Standards, this sample was:

	Satisfactory	Conditional	Unsatisfactory
B.O.D.$_5$			
Tot. Sus. Solids			
M.P.N. Total Coliform.			
M.P.N. Fecal Coliform.			

Analyses Approved By: REL Date: 830315

By _____ ENVIRONMENTAL HEALTH

Rev. 3/82
Field No. 2

[ ] TC [X] PC [ ] TM [ ] PM [ ] Nut [ ] BOD [ ] Pest. [ ] Rad. [ ] Bact. [ ] Spec.

Date Recd.: _____
Received By: _____

UTAH STATE DEPARTMENT OF HEALTH
ENVIRONMENTAL HEALTH
WATER ANALYSES

0508
Sample No. 701

Storet No. 702
Water Syst. No. Source No. 703 704
Date Collected 714: 83 02 16 (yr. mo. dy.)
Time Collected 610: 1516 (24-hour clock)
Water Rights No. 707

Exact Description of sampling Point 646:
Before drop drain from
borrow area by NCCC
to drains into MILLER

Supply Owned by 712
Sample Type 710

Sample Collected by 713: SANDY PRUITT

SEND REPORT TO: Phone
715: DIV OIL GAS MINING
648: 4241 STATE OFFICE BO
717: SLC UT 84114
zip code

Sample Source 719: 01 Spring, 02 Well, 03 Stream, 04 Lake, 06 Dist. syst., 07 Effluent, 08 Storm sewer, 14 Other, 15 Tunnel, 18 Artesian well, 19 Swimming pool

County 611: 04
01 Beaver, 02 Box Elder, 03 Cache, 04 Carbon, 05 Daggett, 06 Davis, 07 Duchesne, 08 Emery, 09 Garfield, 10 Grand, 11 Iron, 12 Juab, 13 Kane, 14 Millard, 15 Morgan, 16 Piute, 17 Rich, 18 Salt Lake, 19 San Juan, 20 Sanpete, 21 Sevier, 22 Summit, 23 Tooele, 24 Uintah, 25 Utah, 26 Wasatch, 27 Washington, 28 Wayne, 29 Weber

Current use 708: [ ]
Proposed use 709: 4
1. Culinary
2. Agriculture
3. Industrial
4. Other

Cost Code 770: 906

1 FIELD TESTS

Temperature (°C)	792	CO_2, mg/l	572
D.O., mg/l	793	Depth, m	609
Sp. Cond. µ mhos	653	Cl Resid., mg/l	753
pH	651	Flow, MGD	652
Sp. Gravity	608	Flow, GPM	604
Transparency, m	649	Flow, cfs	659

2 WASTEWATER ANALYSIS

Temperature (°C) 650 | pH 782: 8.1 | BACT. LAB. No.

	mg/l		mg/l		
[ ] B.O.D.$_5$	794	[ ] T.O.C.	671	[ ] M.P.N. Total Coliforms/100ml	658
[X] Tot. Sus. Solids	787: 428	[ ] C.O.D.	777	[ ] M.P.N. Fecal Coliforms/100ml	657
NO_2+NO_3,N	602	[ ] Cyanide	775	[ ] Fecal Strep C/100ml.	656
[ ] T.K.N.	778	[ ] Phenolics	783	[ ] M.F. Total Coliforms/100ml.	654
[ ] Oil & Grease	780	[ ] Sulfide	672	[ ] M.F. Fecal Coliforms/100ml.	655
				[ ] Plate Count-Org./ml.	599

3 [ ] Filtered [ ] Unfiltered

me/l	CATIONS	mg/l	ug/l (ppb)
	Ammonia as N	722	
	Arsenic		723
	Barium		724
	Boron		725
	Cadmium		727
	Calcium	728	
	Chromium		729
	Chromium, Hex. as Cr		730
	Copper		732
	Iron, dissolved		733
	Lead		734
	Magnesium	737	
	Manganese		738
	Nickel		740
	Potassium	742	
	Selenium		743
	Silver		744
	Sodium	745	
	Zinc		749
	TOTAL CATIONS		

[X] Sp. Cond. µmhos/cm. 762: 565
[X] TDS @ 180°C 786: 314

4 CHEMICAL ANALYSIS

pH, units

me/l	ANIONS	mg/l
	Bicarbonate	758
	Carbon Dioxide	759
	Carbonate	760
	Chloride	763
	CO_3 Solids	
	Fluoride	765
	Hydroxide	767
	Nitrate as N	605
	Nitrite as N	606
	Phosphorus, Ortho as P	607
	Silica, dissolved as SiO_2	750
	Sulfate	772
	TOTAL ANIONS	
	GRAND TOTAL	

Tot. Phosphorus	785
Total Alk. as $CaCO_3$	752
T. Hdns. as $CaCO_3$	754
Surfactant as MBAS	773
Turbidity, as NTU	757
Sp. Gravity	608

TOTAL METALS ANALYSIS

5 CATIONS	mg/l	ug/l (ppb)
Aluminum		800
Arsenic		660
Barium	661	
Beryllium		801
Cadmium		662
Chromium		663
Cobalt		804
Copper		664
Gold		700
Iron	755	
Lead		665
Manganese		666
Mercury		739
Molybdenum		802
Nickel		667
Selenium		668
Silver		669
Uranium		601
Vanadium		803
Zinc		670

6 RADIOLOGICS

	pc/l-g		pc/l-g
[ ] Alpha, gross	621	[ ] ^{89}Sr	633
Beta, gross	623	^{131}I	635
Tritium, ^3H	625	^{134}Cs	637
^{226}Radium	627	^{137}Cs	639
^{228}Radium	629		
^{90}Sr	631		

Analyses Approved By: REL
Date: 830302

INTERPRETATION OF ANALYSES:
Remarks:
NOV 83-2-1-1

Based on State Standards, this sample was:

	Satisfactory	Conditional	Unsatisfactory
B.O.D.$_5$			
Tot. Sus. Solids			
M.P.N. Total Coliform.			
M.P.N. Fecal Coliform.			

By _____ ENVIRONMENTAL HEALTH

Wayne

SURFACE AND GROUNDWATER MONITORING PLAN

1st Quarter 1983

United States Fuel Company

Hiawatha, Utah 84527

SPRING MONITORING REPORT

DATE: 1st QUARTER - 1983

EFFLUENT CHARACTERISTIC		SP - 8					
			JAN.	FEB.	MARCH		
Flow Rate	G.P.M.						
PH	Units						
Air Temp.	°F						
Water Temp.	°F						
Conductivity	umhos/cm						
Acidity	Mg/L						
Total Suspended Solids	Mg/L						
Total Dissolved Solids	Mg/L						
Total Organic Carbon	Mg/L						
Total Manganese	Mg/L						
Total Iron	Mg/L						
Dissolved Iron	Mg/L						
Calcium	Mg/L						
Magnesium	Mg/L						
Sodium	Mg/L						
Potassium	Mg/L						
Carbonate	Mg/L						
Fluoride	Mg/L						
Bicarbonate	Mg/L						
Chloride	Mg/L						
Sulfate	Mg/L						
Nitrate NO_3-N	Mg/L						
Nitrate NO_2-N	Mg/L						
Kjeldahl N	Mg/L						
Dissolved Phosphorus	Mg/L						
Silica	Mg/L						
Trace Elements:							
Arsenic	Mg/L						
Cadmium	Mg/L						
Zinc	Mg/L						
Selenium	Mg/L						
Radioactivity:							
Gross Alpha	Pci/L						
Gross Beta	Pci/L						
Oil and Grease	Mg/L						
ALKALINITY	Mg/L						

INACCESSIBLE

Date: 1 QUARTER - 1983 STREAM MONITORING REPORT

EFFLUENT CHARACTERISTIC		ST-1			ST-2		
		JAN.	FEB.	MAR.	JAN.	FEB.	MAR.
Flow Rate	G.P.M.						
PH	Units						
Air Temp.	°F						
Water Temp.	°F						
Conductivity	umhos/cm						
Acidity	Mg/L						
Total Suspended Solids	Mg/L						
Total Dissolved Solids	Mg/L						
Total Organic Carbon	Mg/L						
Total Manganese	Mg/L						
Total Iron	Mg/L						
Dissolved Iron	Mg/L						
Calcium	Mg/L						
Magnesium	Mg/L						
Sodium	Mg/L						
Potassium	Mg/L						
Carbonate	Mg/L						
Fluoride	Mg/L						
Bicarbonate	Mg/L						
Chloride	Mg/L						
Sulfate	Mg/L						
Nitrate NO_3-N	Mg/L						
Nitrate NO_2-N	Mg/L						
Kjeldahl N	Mg/L						
Dissolved Phosphorus	Mg/L						
Silica	Mg/L						
Trace Elements:							
Arsenic	Mg/L						
Cadmium	Mg/L						
Zinc	Mg/L						
Selenium	Mg/L						
Radioactivity:							
Gross Alpha	Pci/L						
Gross Beta	Pci/L						
Oil and Grease	Mg/L						
ALKALINITY	Mg/L						

INACCESSIBLE

INACCESSIBLE

EFFLUENT CHARACTERISTIC		ST-2A			ST-2B		
		JAN.	FEB.	MAR.	JAN.	FEB.	MAR.
Flow Rate	G.P.M.						
PH	Units						
Air Temp.	°F						
Water Temp.	°F						
Conductivity	umhos/cm						
Acidity	Mg/L						
Total Suspended Solids	Mg/L						
Total Dissolved Solids	Mg/L						
Total Organic Carbon	Mg/L						
Total Manganese	Mg/L						
Total Iron	Mg/L						
Dissolved Iron	Mg/L						
Calcium	Mg/L						
Magnesium	Mg/L						
Sodium	Mg/L						
Potassium	Mg/L						
Carbonate	Mg/L						
Fluoride	Mg/L						
Bicarbonate	Mg/L						
Chloride	Mg/L						
Sulfate	Mg/L						
Nitrate NO_3-N	Mg/L						
Nitrate NO_2-N	Mg/L						
Kjeldahl N	Mg/L						
Dissolved Phosphorus	Mg/L						
Silica	Mg/L						
Trace Elements:							
Arsenic	Mg/L						
Cadmium	Mg/L						
Zinc	Mg/L						
Selenium	Mg/L						
Radioactivity:							
Gross Alpha	Pci/L						
Gross Beta	Pci/L						
Oil and Grease	Mg/L						
ALKALINITY	Mg/L						

INACCESSIBLE

INACCESSIBLE

Date: 1-QUARTER-1983 STREAM MONITORING REPORT

EFFLUENT CHARACTERISTIC		ST-3			ST-3A		
		JAN.	FEB.	MAR.	JAN.	FEB.	MAR.
Flow Rate	G.P.M.	—	—	93			
PH	Units	7.0	7.4	8.2			
Air Temp.	°F	39	49	41			
Water Temp.	°F	35	35	37			
Conductivity	umhos/cm	2350	2200	1220			
Acidity	Mg/L	<1.0	<1.0	<1.0			
Total Suspended Solids	Mg/L	10.0	10.0	7.5			
Total Dissolved Solids	Mg/L	1399	1539	730			
Total Organic Carbon	Mg/L						
Total Manganese	Mg/L	0.18	0.18	0.04			
Total Iron	Mg/L	0.56	0.57	0.33			
Dissolved Iron	Mg/L	0.50	0.49	0.24			
Calcium	Mg/L						
Magnesium	Mg/L						
Sodium	Mg/L						
Potassium	Mg/L						
Carbonate	Mg/L						
Fluoride	Mg/L						
Bicarbonate	Mg/L						
Chloride	Mg/L	288	209	200			
Sulfate	Mg/L	610	530	410			
Nitrate NO_3-N	Mg/L	0.14	<.01	<.01			
Nitrate NO_2-N	Mg/L						
Kjeldahl N	Mg/L						
Dissolved Phosphorus	Mg/L						
Silica	Mg/L						
Trace Elements:							
Arsenic	Mg/L						
Cadmium	Mg/L						
Zinc	Mg/L						
Selenium	Mg/L						
Radioactivity:							
Gross Alpha	Pci/L						
Gross Beta	Pci/L						
Oil and Grease	Mg/L	1.5	0.7	1.3			
ALKALINITY	Mg/L	379	380	392			

INACCESSIBLE

NO WATER

Date: 1 QUARTER-1985 STREAM MONITORING REPORT

EFFLUENT CHARACTERISTIC		ST-3B			ST-4		
		JAN.	FEB.	MAR.	JAN.	FEB.	MAR.
Flow Rate	G.P.M.						175
PH	Units			7.7		7.4	8.3
Air Temp.	°F					47	41
Water Temp.	°F					32	35
Conductivity	umhos/cm			390		910	1150
Acidity	Mg/L			<1.0		<1.0	<1.0
Total Suspended Solids	Mg/L			19.5		199	30
Total Dissolved Solids	Mg/L			220		611	828
Total Organic Carbon	Mg/L						
Total Manganese	Mg/L			0.05		0.22	0.04
Total Iron	Mg/L			0.93		3.39	0.26
Dissolved Iron	Mg/L			0.70		3.06	0.20
Calcium	Mg/L						
Magnesium	Mg/L						
Sodium	Mg/L						
Potassium	Mg/L						
Carbonate	Mg/L						
Fluoride	Mg/L						
Bicarbonate	Mg/L						
Chloride	Mg/L			27.5		28.8	31.2
Sulfate	Mg/L			120		200	250
Nitrate NO_3-N	Mg/L			0.09		0.12	0.1
Nitrate NO_2-N	Mg/L						
Kjeldahl N	Mg/L						
Dissolved Phosphorus	Mg/L						
Silica	Mg/L						
Trace Elements:							
Arsenic	Mg/L						
Cadmium	Mg/L						
Zinc	Mg/L						
Selenium	Mg/L						
Radioactivity:							
Gross Alpha	Pci/L						
Gross Beta	Pci/L						
Oil and Grease	Mg/L			<0.5		1.2	<0.5
ALKALINITY	Mg/L			220		225	240

INACCESSIBLE

NO WATER

EFFLUENT CHARACTERISTIC		ST-4A			ST-4B		
		JAN.	FEB.	MAR.	JAN.	FEB.	MAR.
Flow Rate	G.P.M.						
PH	Units						
Air Temp.	°F						
Water Temp.	°F						
Conductivity	umhos/cm						
Acidity	Mg/L						
Total Suspended Solids	Mg/L						
Total Dissolved Solids	Mg/L						
Total Organic Carbon	Mg/L						
Total Manganese	Mg/L						
Total Iron	Mg/L						
Dissolved Iron	Mg/L						
Calcium	Mg/L						
Magnesium	Mg/L						
Sodium	Mg/L						
Potassium	Mg/L						
Carbonate	Mg/L						
Fluoride	Mg/L						
Bicarbonate	Mg/L						
Chloride	Mg/L						
Sulfate	Mg/L						
Nitrate NO_3-N	Mg/L						
Nitrate NO_2-N	Mg/L						
Kjeldahl N	Mg/L						
Dissolved Phosphorus	Mg/L						
Silica	Mg/L						
Trace Elements:							
Arsenic	Mg/L						
Cadmium	Mg/L						
Zinc	Mg/L						
Selenium	Mg/L						
Radioactivity:							
Gross Alpha	Pci/L						
Gross Beta	Pci/L						
Oil and Grease	Mg/L						
ALKALINITY	MG/L						

INACCESSIBLE NO WATER

INACCESSIBLE

Date: 1 QUARTER - 1983 STREAM MONITORING REPORT

EFFLUENT CHARACTERISTIC		ST-5			ST-6		
		JAN.	FEB.	MAR.	JAN.	FEB.	MAR.
Flow Rate	G.P.M.			530			404
PH	Units	7.2	7.3	8.0	7.2	7.5	7.8
Air Temp.	°F	40	44	31			35
Water Temp.	°F	39	39	39			33
Conductivity	umhos/cm	1590	1300	1450	1120	1100	1070
Acidity	Mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Suspended Solids	Mg/L	10	13	53.6	25	34	268
Total Dissolved Solids	Mg/L	1050	938	936	630	790	591
Total Organic Carbon	Mg/L						
Total Manganese	Mg/L	0.12	0.12	0.09	0.12	0.13	0.17
Total Iron	Mg/L	0.47	0.43	0.77	0.44	0.43	0.87
Dissolved Iron	Mg/L	0.41	0.37	0.18	0.41	0.40	0.10
Calcium	Mg/L						
Magnesium	Mg/L						
Sodium	Mg/L						
Potassium	Mg/L						
Carbonate	Mg/L						
Fluoride	Mg/L						
Bicarbonate	Mg/L						
Chloride	Mg/L	38.3	36.1	56	9.95	7.53	8.0
Sulfate	Mg/L	410	360	600	280	340	300
Nitrate NO_3-N	Mg/L	0.27	0.262	0.21	<0.01	<0.01	0.01
Nitrate NO_2-N	Mg/L						
Kjeldahl N	Mg/L						
Dissolved Phosphorus	Mg/L						
Silica	Mg/L						
Trace Elements:							
Arsenic	Mg/L						
Cadmium	Mg/L						
Zinc	Mg/L						
Selenium	Mg/L						
Radioactivity:							
Gross Alpha	Pci/L						
Gross Beta	Pci/L						
Oil and Grease	Mg/L	5.6	1.2	0.9	2.0	1.1	<0.5
ALKALINITY	Mg/L	331	299	349	272	293	292

Date: [illegible] STREAM MONITORING REPORT

EFFLUENT CHARACTERISTIC		ST-6A					
		JAN.	FEB.	MAR.			
Flow Rate	G.P.M.						
PH	Units		7.4	7.8			
Air Temp.	°F						
Water Temp.	°F						
Conductivity	umhos/cm		1050	950			
Acidity	Mg/L		<1.0	<1.0			
Total Suspended Solids	Mg/L		48.5	235			
Total Dissolved Solids	Mg/L		730	578			
Total Organic Carbon	Mg/L						
Total Manganese	Mg/L		0.12	0.10			
Total Iron	Mg/L		0.49	0.29			
Dissolved Iron	Mg/L		0.41	0.09			
Calcium	Mg/L						
Magnesium	Mg/L						
Sodium	Mg/L						
Potassium	Mg/L						
Carbonate	Mg/L						
Fluoride	Mg/L						
Bicarbonate	Mg/L						
Chloride	Mg/L		6.92	7.0			
Sulfate	Mg/L		390	320			
Nitrate NO_3-N	Mg/L		<0.01	<0.01			
Nitrate NO_2-N	Mg/L						
Kjeldahl N	Mg/L						
Dissolved Phosphorus	Mg/L						
Silica	Mg/L						
Trace Elements:							
Arsenic	Mg/L						
Cadmium	Mg/L						
Zinc	Mg/L						
Selenium	Mg/L						
Radioactivity:							
Gross Alpha	Pci/L						
Gross Beta	Pci/L						
Oil and Grease	Mg/L		<0.5	1.5			
ALKALINITY	MG/L		309	294			

INACCESSIBLE

D-001

MOHRLAND WATER DISCHARGE

MINE WATER DISCHARGE MONITORING REPORT

DATE 1st QUARTER - 1983

Effluent Characteristic	Flow Rate G.P.M.	Total Suspended Solids Mg/L	Total Dissolved Solids Mg/L	Total Manganese Mg/L	Total Iron Mg/L	Dissolved Iron Mg/L	Alkalinity Mg/L	Acidity Mg/L	PH Units	Oil & Grease Mg/L	BOD5 Mg/L	Total Coloforms MPN/100ML	Fecal Coloforms MPN/100ML	CONDUCTIVITY umhos/cm
January					INACCESSIBLE									
February					INACCESSIBLE									
March	10	2.0	585	0.10	0.22	0.05	369	<1.0	7.3	1.3	1.3	<2	<2	1020
April														
May														
June														
July														
August														
September														
October														
November														
December														

D-002

TOWN TANK OVERFLOW

MINE WATER DISCHARGE MONITORING REPORT

DATE 1st QUARTER -1983

Effluent Characteristic	Flow Rate G.P.M.	Total Suspended Solids Mg/L	Total Dissolved Solids Mg/L	Total Manganese Mg/L	Total Iron Mg/L	Dissolved Iron Mg/L	Alkalinity Mg/L	Acidity Mg/L	PH Units	Oil & Grease Mg/L	BOD5 Mg/L	Total Coloforms MPN/100ML	Fecal Coloforms MPN/100ML	CONDUCTIVITY umhos/cm
January		3.0	720	0.12	0.1	0.06	250	<1.0	6.6	0.5				1100
February		2.0	682	0.12	0.09	0.06	349	<1.0	7.4	1.3				1000
March		1.5	595	0.16	0.10	0.09	306	<1.0	7.5	1.0	1.2	<2	<2	930
April														
May														
June														
July														
August														
September														
October														
November														
December														

SURFACE AND GROUNDWATER MONITORING PLAN

4th Quarter 1982

United States Fuel Company

Hiawatha, Utah 84527

RECEIVED
JAN 12 1983
DIVISION OF
OIL, GAS & MINING

SPRING MONITORING REPORT

DATE: 4th QUARTER - 1982

EFFLUENT CHARACTERISTIC		SP-1	SP-2	SP-3	SP-4	SP-5	SP-6
		OCT.	OCT.	OCT.	OCT.	OCT.	OCT.
Flow Rate	G.P.M.				4.0	2.1	6.6
PH	Units						↑8.1
Air Temp.	°F				25	33	43
Water Temp.	°F				33	42	39
Conductivity	umhos/cm				530	580	430
Acidity	Mg/L						
Total Suspended Solids	Mg/L						
Total Dissolved Solids	Mg/L				345	375	285
Total Organic Carbon	Mg/L						
Total Manganese	Mg/L						
Total Iron	Mg/L				0.110	0.06	0.045
Dissolved Iron	Mg/L				0.06	0.01	0.025
Calcium	Mg/L						
Magnesium	Mg/L						
Sodium	Mg/L						
Potassium	Mg/L	INACCESSIBLE	INACCESSIBLE	INACCESSIBLE			
Carbonate	Mg/L						
Fluoride	Mg/L						
Bicarbonate	Mg/L						
Chloride	Mg/L				↑7.3	2.9	1.3
Sulfate	Mg/L				↑<.10	↑<.10	↑12.0
Nitrate NO_3-N	Mg/L				<.01	0.08	0.34
Nitrate NO_2-N	Mg/L						
Kjeldahl N	Mg/L						
Dissolved Phosphorus	Mg/L						
Silica	Mg/L						
Trace Elements:							
Arsenic	Mg/L						
Cadmium	Mg/L						
Zinc	Mg/L						
Selenium	Mg/L						
Radioactivity:							
Gross Alpha	Pci/L						
Gross Beta	Pci/L						
Oil and Grease	Mg/L						
ALKALINITY	Mg/L						

SPRING MONITORING REPORT

DATE: 4th QUARTER-1982

EFFLUENT CHARACTERISTIC		SP-7	SP-8			SP-9	SP-10
		OCT.	OCT.	NOV.	DEC.	OCT.	OCT.
Flow Rate	G.P.M.	9.6	10	8.8		↓3.3	2.6
PH	Units	7.7	7.6	7.8		7.9	7.7
Air Temp.	°F	47	21	28		53	47
Water Temp.	°F	41	39	39		43	37
Conductivity	umhos/cm	430	590	650		400	590
Acidity	Mg/L						
Total Suspended Solids	Mg/L						
Total Dissolved Solids	Mg/L	285	418	425		260	385
Total Organic Carbon	Mg/L						
Total Manganese	Mg/L						
Total Iron	Mg/L	0.226	0.350	0.340		0.015	0.410
Dissolved Iron	Mg/L	0.110	0.340	0.330		0.010	0.095
Calcium	Mg/L						
Magnesium	Mg/L						
Sodium	Mg/L						
Potassium	Mg/L						
Carbonate	Mg/L						
Fluoride	Mg/L						
Bicarbonate	Mg/L						
Chloride	Mg/L	1.3	1.0	1.7		1.0	3.4
Sulfate	Mg/L	9.0	↓21.0	39.0		9.0	↓<1.0
Nitrate NO_3-N	Mg/L	0.49	0.52	0.27		0.13	0.14
Nitrate NO_2-N	Mg/L						
Kjeldahl N	Mg/L						
Dissolved Phosphorus	Mg/L						
Silica	Mg/L						
Trace Elements:							
Arsenic	Mg/L						
Cadmium	Mg/L						
Zinc	Mg/L						
Selenium	Mg/L						
Radioactivity:							
Gross Alpha	Pci/L						
Gross Beta	Pci/L						
Oil and Grease	Mg/L						
ALKALINITY	Mg/L						

INACCESSIBLE

Date: 4th QUARTER-1982 STREAM MONITORING REPORT

EFFLUENT CHARACTERISTIC		ST-1			ST-2		
		OCT.	NOV.	DEC.	OCT.	NOV.	DEC.
Flow Rate	G.P.M.	72					
PH	Units	8.0			8.2		
Air Temp.	°F	27					
Water Temp.	°F	36					
Conductivity	umhos/cm	1,350			450		
Acidity	Mg/L	<1.0			<.01		
Total Suspended Solids	Mg/L	10			3		
Total Dissolved Solids	Mg/L	880			315		
Total Organic Carbon	Mg/L						
Total Manganese	Mg/L	0.017			0.007		
Total Iron	Mg/L	0.520			0.158		
Dissolved Iron	Mg/L	0.480			0.115		
Calcium	Mg/L						
Magnesium	Mg/L						
Sodium	Mg/L						
Potassium	Mg/L						
Carbonate	Mg/L						
Fluoride	Mg/L						
Bicarbonate	Mg/L						
Chloride	Mg/L	9.4	INACCESSIBLE	INACCESSIBLE	1.5	INACCESSIBLE	INACCESSIBLE
Sulfate	Mg/L	360			15		
Nitrate NO_3-N	Mg/L	0.34			0.13		
Nitrate NO_2-N	Mg/L						
Kjeldahl N	Mg/L						
Dissolved Phosphorus	Mg/L						
Silica	Mg/L						
Trace Elements:							
Arsenic	Mg/L						
Cadmium	Mg/L						
Zinc	Mg/L						
Selenium	Mg/L						
Radioactivity:							
Gross Alpha	Pci/L						
Gross Beta	Pci/L						
Oil and Grease	Mg/L	<.1			0.6		
ALKALINITY	Mg/L	331.7			235.2		

Date: 4th QUARTER-1982 STREAM MONITORING REPORT

EFFLUENT CHARACTERISTIC		ST-2A			ST-2B		
		OCT.	NOV.	DEC.	OCT.	NOV.	DEC.
Flow Rate	G.P.M.				↑193		
PH	Units				8.1		
Air Temp.	°F				23		
Water Temp.	°F				32		
Conductivity	umhos/cm				710		
Acidity	Mg/L				<1.0		
Total Suspended Solids	Mg/L				16		
Total Dissolved Solids	Mg/L				458		
Total Organic Carbon	Mg/L						
Total Manganese	Mg/L				0.010		
Total Iron	Mg/L				0.360		
Dissolved Iron	Mg/L				0.310		
Calcium	Mg/L						
Magnesium	Mg/L						
Sodium	Mg/L						
Potassium	Mg/L						
Carbonate	Mg/L						
Fluoride	Mg/L						
Bicarbonate	Mg/L						
Chloride	Mg/L				1.1		
Sulfate	Mg/L				66		
Nitrate NO_3-N	Mg/L				0.5		
Nitrate NO_2-N	Mg/L						
Kjeldahl N	Mg/L						
Dissolved Phosphorus	Mg/L						
Silica	Mg/L						
Trace Elements:							
Arsenic	Mg/L						
Cadmium	Mg/L						
Zinc	Mg/L						
Selenium	Mg/L						
Radioactivity:							
Gross Alpha	Pci/L						
Gross Beta	Pci/L						
Oil and Grease	Mg/L				<.1		
ALKALINITY	MG/L				310.7		

NO SAMPLE — INACCESSIBLE — INACCESSIBLE — INACCESSIBLE — INACCESSIBLE

Date: 4th QUARTER-1982 STREAM MONITORING REPORT

EFFLUENT CHARACTERISTIC		ST-3			ST-3A		
		OCT.	NOV.	DEC.	OCT.	NOV.	DEC.
Flow Rate	G.P.M.	46					
PH	Units	7.8					
Air Temp.	°F	40					
Water Temp.	°F	41					
Conductivity	umhos/cm	2,300					
Acidity	Mg/L	2					
Total Suspended Solids	Mg/L	24					
Total Dissolved Solids	Mg/L	1,505					
Total Organic Carbon	Mg/L						
Total Manganese	Mg/L	0.075					
Total Iron	Mg/L	0.680					
Dissolved Iron	Mg/L	0.630					
Calcium	Mg/L		INACCESSIBLE	INACCESSIBLE	NO WATER	INACCESSIBLE	INACCESSIBLE
Magnesium	Mg/L						
Sodium	Mg/L						
Potassium	Mg/L						
Carbonate	Mg/L						
Fluoride	Mg/L						
Bicarbonate	Mg/L						
Chloride	Mg/L	189					
Sulfate	Mg/L	435					
Nitrate NO_3-N	Mg/L	0.14					
Nitrate NO_2-N	Mg/L						
Kjeldahl N	Mg/L						
Dissolved Phosphorus	Mg/L						
Silica	Mg/L						
Trace Elements:							
Arsenic	Mg/L						
Cadmium	Mg/L						
Zinc	Mg/L						
Selenium	Mg/L						
Radioactivity:							
Gross Alpha	Pci/L						
Gross Beta	Pci/L						
Oil and Grease	Mg/L	<.1					
ALKALINITY	MG/L	329					

Date: 4th QUARTER-1982 STREAM MONITORING REPORT

EFFLUENT CHARACTERISTIC		ST-3B			ST-4		
		OCT.	NOV.	DEC.	OCT.	NOV.	DEC.
Flow Rate	G.P.M.						
PH	Units						
Air Temp.	°F						
Water Temp.	°F						
Conductivity	umhos/cm						
Acidity	Mg/L						
Total Suspended Solids	Mg/L						
Total Dissolved Solids	Mg/L						
Total Organic Carbon	Mg/L						
Total Manganese	Mg/L						
Total Iron	Mg/L						
Dissolved Iron	Mg/L						
Calcium	Mg/L						
Magnesium	Mg/L	NO WATER	INACCESSIBLE	INACCESSIBLE	NO WATER	INACCESSIBLE	INACCESSIBLE
Sodium	Mg/L						
Potassium	Mg/L						
Carbonate	Mg/L						
Fluoride	Mg/L						
Bicarbonate	Mg/L						
Chloride	Mg/L						
Sulfate	Mg/L						
Nitrate NO_3-N	Mg/L						
Nitrate NO_2-N	Mg/L						
Kjeldahl N	Mg/L						
Dissolved Phosphorus	Mg/L						
Silica	Mg/L						
Trace Elements:							
Arsenic	Mg/L						
Cadmium	Mg/L						
Zinc	Mg/L						
Selenium	Mg/L						
Radioactivity:							
Gross Alpha	Pci/L						
Gross Beta	Pci/L						
Oil and Grease	Mg/L						
ALKALINITY	MG/L						

Date: 4TH QUARTER-1982 STREAM MONITORING REPORT

EFFLUENT CHARACTERISTIC		ST-4A			ST-4B		
		OCT.	NOV.	DEC.	OCT.	NOV.	DEC.
Flow Rate	G.P.M.						
PH	Units						
Air Temp.	°F						
Water Temp.	°F						
Conductivity	umhos/cm						
Acidity	Mg/L						
Total Suspended Solids	Mg/L						
Total Dissolved Solids	Mg/L						
Total Organic Carbon	Mg/L						
Total Manganese	Mg/L						
Total Iron	Mg/L						
Dissolved Iron	Mg/L	NO WATER	INACCESSIBLE	INACCESSIBLE	NO WATER	INACCESSIBLE	INACCESSIBLE
Calcium	Mg/L						
Magnesium	Mg/L						
Sodium	Mg/L						
Potassium	Mg/L						
Carbonate	Mg/L						
Fluoride	Mg/L						
Bicarbonate	Mg/L						
Chloride	Mg/L						
Sulfate	Mg/L						
Nitrate NO_3-N	Mg/L						
Nitrate NO_2-N	Mg/L						
Kjeldahl N	Mg/L						
Dissolved Phosphorus	Mg/L						
Silica	Mg/L						
Trace Elements:							
Arsenic	Mg/L						
Cadmium	Mg/L						
Zinc	Mg/L						
Selenium	Mg/L						
Radioactivity:							
Gross Alpha	Pci/L						
Gross Beta	Pci/L						
Oil and Grease	Mg/L						
ALKALINITY	Mg/L						

Date: 4th QUARTER-1982 STREAM MONITORING REPORT

EFFLUENT CHARACTERISTIC		ST-5			ST-6		
		OCT.	NOV.	DEC.	OCT.	NOV.	DEC.
Flow Rate	G.P.M.	204	292		↑265	193	118
PH	Units	8.0			8.2		7.3
Air Temp.	°F	51	31		39	41	42
Water Temp.	°F	38	38		31	31	32
Conductivity	umhos/cm	↑1,500	1,370		990	990	1,000
Acidity	Mg/L	<1.0	<.01		<1.0	4	14
Total Suspended Solids	Mg/L	16	1.0		44	16	9
Total Dissolved Solids	Mg/L	975	895		660	650	660
Total Organic Carbon	Mg/L						
Total Manganese	Mg/L	0.060	0.055		0.030	0.025	0.007
Total Iron	Mg/L	0.620	0.530		0.900	0.690	0.016
Dissolved Iron	Mg/L	0.550	0.480		0.610	0.485	0.010
Calcium	Mg/L						
Magnesium	Mg/L						
Sodium	Mg/L						
Potassium	Mg/L						
Carbonate	Mg/L						
Fluoride	Mg/L						
Bicarbonate	Mg/L						
Chloride	Mg/L	21.9	29.7		4.1	6.8	25
Sulfate	Mg/L	↑345	315			294	63
Nitrate NO_3-N	Mg/L	0.50	0.56		0.09	0.23	<.01
Nitrate NO_2-N	Mg/L						
Kjeldahl N	Mg/L						
Dissolved Phosphorus	Mg/L						
Silica	Mg/L						
Trace Elements:							
Arsenic	Mg/L						
Cadmium	Mg/L						
Zinc	Mg/L						
Selenium	Mg/L						
Radioactivity:							
Gross Alpha	Pci/L						
Gross Beta	Pci/L						
Oil and Grease	Mg/L	0.6	<.1		<.1	<.1	<.1
ALKALINITY	Mg/L	340.9	357.3		317.7	317.1	348

INACCESSIBLE

Date: 4th QUARTER-1982 STREAM MONITORING REPORT

EFFLUENT CHARACTERISTIC		ST-6A					
		OCT.	NOV.	DEC.			
Flow Rate	G.P.M.						
PH	Units	8.0					
Air Temp.	°F						
Water Temp.	°F						
Conductivity	umhos/cm	820	820				
Acidity	Mg/L	<1.0	4	INACCESSIBLE			
Total Suspended Solids	Mg/L	230	25				
Total Dissolved Solids	Mg/L	535	535				
Total Organic Carbon	Mg/L						
Total Manganese	Mg/L	0.070	0.020				
Total Iron	Mg/L	3.100	0.740				
Dissolved Iron	Mg/L	0.720	0.410				
Calcium	Mg/L						
Magnesium	Mg/L						
Sodium	Mg/L						
Potassium	Mg/L						
Carbonate	Mg/L						
Fluoride	Mg/L						
Bicarbonate	Mg/L						
Chloride	Mg/L	0.3	5.8				
Sulfate	Mg/L		177				
Nitrate NO_3-N	Mg/L	0.08	0.27				
Nitrate NO_2-N	Mg/L						
Kjeldahl N	Mg/L						
Dissolved Phosphorus	Mg/L						
Silica	Mg/L						
Trace Elements:							
Arsenic	Mg/L						
Cadmium	Mg/L						
Zinc	Mg/L						
Selenium	Mg/L						
Radioactivity:							
Gross Alpha	Pci/L						
Gross Beta	Pci/L						
Oil and Grease	Mg/L	<.1	0.6				
ALKALINITY	MG/L	294.2	322.4				

D.001

MOHRLAND WATER DISCHARGE

MINE WATER DISCHARGE MONITORING REPORT

DATE 4th QUARTER - 1982

Effluent Characteristic	Flow Rate G.P.M.	Total Suspended Solids Mg/L	Total Dissolved Solids Mg/L	Total Manganese Mg/L	Total Iron Mg/L	Dissolved Iron Mg/L	Alkalinity Mg/L	Acidity Mg/L	PH Units	Oil & Grease Mg/L	BOD_5 Mg/L	Total Coloforms MPN/100ML	Fecal Coloforms MPN/100ML	CONDUCTIVITY umhos/cm
January														
February														
March														
April														
May														
June														
July														
August														
September														
October														
November	103	2.0	612	0.025	0.120	0.110	343.5	17	7.8 7.7 7.9	<.1	<1.0	<2.0	<2.0	940
December	103	<1.0	0.336	6850	0.460	0.336	365.7	26	7.3	0.4				1050.0

INACCESSIBLE

D-002

TOWN TANK OVER FLOW

MINE WATER DISCHARGE MONITORING REPORT

DATE 4th QUARTER-1982

Effluent Characteristic	Flow Rate G.P.M.	Total Suspended Solids Mg/L	Total Dissolved Solids Mg/L	Total Manganese Mg/L	Total Iron Mg/L	Dissolved Iron Mg/L	Alkalinity Mg/L	Acidity Mg/L	PH Units	Oil & Grease Mg/L	BOD5 Mg/L	Total Coloforms MPN/100ML	Fecal Coloforms MPN/100ML	CONDUCTIVITY umhos/cm
January														
February														
March														
April														
May														
June														
July														
August														
September														
October														
5	265	2.2	570	0.005	0.010	0.100	309	7	7.7					
November									7.9	<.1	<1.0	490	<2.0	870
52	84.7	1.0	650	0.012	0.360	0.350	335.4	12	7.8					
December 53	3728	10	685	0.010	0.075	0.070	324.0	4.0	7.5	0.2				995
									7.6	<.1				1,050
									7.9					

D-010

KING #4 VENT TUNNEL DISCHARGE

MINE WATER DISCHARGE MONITORING REPORT

DATE_____

Effluent Characteristic	Flow Rate G.P.M.	Total Suspended Solids Mg/L	Total Dissolved Solids Mg/L	Total Manganese Mg/L	Total Iron Mg/L	Dissolved Iron Mg/L	Alkalinity Mg/L	Acidity Mg/L	PH Units	Oil & Grease Mg/L	BOD_5 Mg/L	Total Coloforms MPN/100ML	Fecal Coloforms MPN/100ML	CONDUCTIVITY umhos/cm
January														
February														
March														
April														
May														
June														
July														
August														
September														
October														
	7.2	2.4	345	0.008	0.020	0.018	239.80	<.01	8.9					
November									8.0	<.1	<1.0	470	2.0	530
					INACCESSIBLE									
December					INACCESSIBLE									

Rev. 7/80

Field No. 2

☐ TC ☐ TM ☐ Nut
☐ PC ☐ PM ☐ BOD

☐ Pest.
☐ Rad.
☐ Bact.
☐ Spec.

Date Recd.: _____

Received By: _____

UTAH STATE DEPARTMENT OF HEALTH
ENVIRONMENTAL HEALTH
WATER ANALYSES

Sample No. 701

Storet No. 702

Water Syst. No. 703 Source No. 704

Date Collected 714: 82 09 29 (yr. mo. dy.)

Time Collected 610: 1120 (24-hour clock)

Water Rights No. 707

Exact Description of sampling Point 646:
HIAWATHA KING 6 SED POND DISCHARGE THRU EMERGENCY SPILLWAY

Supply Owned by 712: US FUEL CO

Sample Type 710

Sample Collected by 713: SANDY PRUITT

SEND REPORT TO: Phone 572-5791

715: DIV OF GAS & MINING
648: 4241 STATE OFFICE BL
717: SLC UTAH 84114
zip code

Sample Source 719: 07
01 Spring, 02 Well, 03 Stream, 04 Lake, 06 Dist. syst., 07 Effluent, 08 Storm sewer, 14 Other, 15 Tunnel, 18 Artesian well, 19 Swimming pool

County 611: 04
01 Beaver, 02 Box Elder, 03 Cache, 04 Carbon, 05 Daggett, 06 Davis, 07 Duchesne, 08 Emery, 09 Garfield, 10 Grand, 11 Iron, 12 Juab, 13 Kane, 14 Millard, 15 Morgan, 16 Piute, 17 Rich, 18 Salt Lake, 19 San Juan, 20 Sanpete, 21 Sevier, 22 Summit, 23 Tooele, 24 Uintah, 25 Utah, 26 Wasatch, 27 Washington, 28 Wayne, 29 Weber

Current use 708
Proposed use 709

1. Culinary
2. Agriculture
3. Industrial
4. Other 3500

1 FIELD TESTS

Temperature (°C)	792	CO_2, mg/l	572
D.O., mg/l	793	Depth, m	609
Sp. Cond. µ mhos	653	Cl Resid., mg/l	753
pH	651	Flow, MGD	652
Sp. Gravity	608	Flow, GPM	604
Transparency, m	649	Flow, cfs	659

2 WASTEWATER ANALYSIS

Temperature (°C) 650 | pH 782 | BACT. LAB. No.

	mg/l		mg/l		
☐ B.O.D.$_5$	794	☐ T.O.C.	671	☐ M.P.N. Total Coliforms/100ml	658
☒ Tot. Sus. Solids	930 787	☐ C.O.D.	777	☐ M.P.N. Fecal Coliforms/100ml	657
NO_2+NO_3,N	602	☐ Cyanide	775	☐ Fecal Strep C/100ml.	656
☐ T.K.N.	778	☐ Phenolics	783	☐ M.F. Total Coliforms/100ml.	654
☐ Oil & Grease	780	☐ Sulfide	672	☐ M.F. Fecal Coliforms/100ml.	655
				☐ Plate Count-Org./ml.	599

3 ☐ Filtered ☐ Unfiltered

me/l	CATIONS	mg/l	ug/l (ppb)	
	Ammonia as N			722
	Arsenic			723
	Barium			724
	Boron			725
	Cadmium			727
	Calcium			728
	Chromium			729
	Chromium, Hex. as Cr			730
	Copper			732
	Iron, dissolved			733
	Lead			734
	Magnesium			737
	Manganese			738
	Nickel			740
	Potassium			742
	Selenium			743
	Silver			744
	Sodium			745
	Zinc			749
	TOTAL CATIONS			

4 CHEMICAL ANALYSIS

pH, units 7.9

me/l	ANIONS	mg/l	
	Bicarbonate		758
	Carbon Dioxide		759
	Carbonate		760
	Chloride		763
	CO_3 Solids		
	Fluoride		765
	Hydroxide		767
	Nitrate as N		605
	Nitrite as N		606
	Phosphorus, Ortho as P		607
	Silica, dissolved as SiO_2		750
	Sulfate		772
	TOTAL ANIONS		
	GRAND TOTAL		

☐ Tot. Phosphorus		785
Total Alk. as $CaCO_3$		752
T. Hdns. as $CaCO_3$		754
Surfactant as MBAS		773
☒ Turbidity, as NTU	437	757
Sp. Gravity		608

TOTAL METALS ANALYSIS

5

CATIONS	mg/l	ug/l (ppb)	
Aluminum			800
Arsenic			660
Barium			661
Beryllium			801
Cadmium			662
Chromium			663
Cobalt			804
Copper			664
Gold			700
Iron			755
Lead			665
Manganese			666
Mercury			739
Molybdenum			802
Nickel			667
Selenium			668
Silver			669
Uranium,			601
Vanadium			803
Zinc			670

6

☐ Sp. Cond. µmhos/cm.		762
☒ TDS @ 180°C	340	786

7 RADIOLOGICS

	pc/l-g		pc/l-g	
☐ Alpha, gross		621		633
Beta, gross		623		635
Tritium, ^3H		625		637
^{226}Radium		627		639
^{228}Radium		629		
^{90}Sr		631		

Analyses Approved By: _____ Date: _____

INTERPRETATION OF ANALYSES:
Remarks:

Based on State Standards, this sample was:

	Satisfactory	Conditional	Unsatisfactory
B.O.D.$_5$			
Tot. Sus. Solids			
M.P.N. Total Coliform.			
M.P.N. Fecal Coliform.			

By _____
ENVIRONMENTAL HEALTH

Rev. 7/80 3

Field No. _____

[ ] TC [ ] TM [ ] Nut [ ] Pest.
[X] PC [ ] PM [ ] BOD [ ] Rad. [ ] Bact. [ ] Spec.

Date Recd.: _____

Received By: _____

UTAH STATE DEPARTMENT OF HEALTH
ENVIRONMENTAL HEALTH
WATER ANALYSES

Sample No. 701

Storet No. 702

Water Syst. No. 703 Source No. 704

Date Collected 820930 (yr. mo. dy.) 714 Time Collected 1150 (24-hour clock) 610

Water Rights No. 707

Exact Description of sampling Point 646
HIAWATHA KINGS 6 SED
POND DISCHARGE TO RIV
EASEMENT SPILLWAY

Supply Owned by US FUEL CO 712

Sample Type 710

Sample Collected by SANDY PRUITT 713

SEND REPORT TO: Phone 533-5775
ATT OIL GAS & MINING 715
4241 STATE OFFICE BLD 648
SLC UTAH 84114 717
zip code

Sample Source 719: 07
01 Spring, 02 Well, 03 Stream, 04 Lake, 06 Dist. syst., 07 Effluent, 08 Storm sewer, 14 Other, 15 Tunnel, 18 Artesian well, 19 Swimming pool

County 611: 04
01 Beaver, 02 Box Elder, 03 Cache, 04 Carbon, 05 Daggett, 06 Davis, 07 Duchesne, 08 Emery, 09 Garfield, 10 Grand, 11 Iron, 12 Juab, 13 Kane, 14 Millard, 15 Morgan, 16 Piute, 17 Rich, 18 Salt Lake, 19 San Juan, 20 Sanpete, 21 Sevier, 22 Summit, 23 Tooele, 24 Uintah, 25 Utah, 26 Wasatch, 27 Washington, 28 Wayne, 29 Weber

Current use ____ 708
Proposed use ____ 709

1. Culinary
2. Agriculture
3. Industrial
4. Other

SEP

1 FIELD TESTS

Temperature (°C)	792	CO_2, mg/l	572
D.O., mg/l	793	Depth, m	609
Sp. Cond. µ mhos	653	Cl Resid., mg/l	753
pH	651	Flow, MGD	652
Sp. Gravity	608	Flow, GPM	604
Transparency, m	649	Flow, cfs	659

2 WASTEWATER ANALYSIS

Temperature (°C) 650 pH 782 BACT. LAB. No.

	mg/l		mg/l		
B.O.D.$_5$	794	T.O.C.	671	M.P.N. Total Coliforms/100ml	658
[X] Tot. Sus. Solids	600 787	C.O.D.	777	M.P.N. Fecal Coliforms/100ml	657
NO_2+NO_3,N	602	Cyanide	775	Fecal Strep C/100ml.	656
T.K.N.	778	Phenolics	783	M.F. Total Coliforms/100ml.	654
Oil & Grease	780	Sulfide	672	M.F. Fecal Coliforms/100ml.	655
				Plate Count-Org./ml.	599

3 Filtered [ ] Unfiltered

me/l	CATIONS	mg/l	ug/l (ppb)	
	Ammonia as N			722
	Arsenic			723
	Barium			724
	Boron			725
	Cadmium			727
	Calcium			728
	Chromium			729
	Chromium, Hex. as Cr			730
	Copper			732
	Iron, dissolved			733
	Lead			734
	Magnesium			737
	Manganese			738
	Nickel			740
	Potassium			742
	Selenium			743
	Silver			744
	Sodium			745
	Zinc			749
	TOTAL CATIONS			

4 CHEMICAL ANALYSIS

pH, units 8.2

me/l	ANIONS	mg/l	
	Bicarbonate		758
	Carbon Dioxide		759
	Carbonate		760
	Chloride		763
	CO_3 Solids		
	Fluoride		765
	Hydroxide		767
	Nitrate as N		605
	Nitrite as N		606
	Phosphorus, Ortho as P		607
	Silica, dissolved as SiO_2		750
	Sulfate		772
	TOTAL ANIONS		
	GRAND TOTAL		

Tot. Phosphorus		785
Total Alk. as $CaCO_3$		752
T. Hdns. as $CaCO_3$		754
Surfactant as MBAS		773
[X] Turbidity, as NTU	1.000	757
Sp. Gravity		608

TOTAL METALS ANALYSIS

5 CATIONS	mg/l	ug/l (ppb)	
Aluminum			800
Arsenic			660
Barium			661
Beryllium			801
Cadmium			662
Chromium			663
Cobalt			804
Copper			664
Gold			700
Iron			755
Lead			665
Manganese			666
Mercury			739
Molybdenum			802
Nickel			667
Selenium			668
Silver			669
Uranium,			601
Vanadium			803
Zinc			670

6

Sp. Cond. µmhos/cm.		762
[X] TDS @ 180°C	572	786

7 RADIOLOGICS

	pc/l-g		pc/l-g	
Alpha, gross		621	^{89}Sr	633
Beta, gross		623	^{131}I	635
Tritium, ^3H		625	^{134}Cs	637
^{226}Radium		627	^{137}Cs	639
^{228}Radium		629		
^{90}Sr		631		

INTERPRETATION OF ANALYSES:
Remarks:
Pumping pond level down to prevent more discharge.

Based on State Standards, this sample was:

	Satisfactory	Conditional	Unsatisfactory
B.O.D.$_5$			
Tot. Sus. Solids			
M.P.N. Total Coliform.			
M.P.N. Fecal Coliform.			

Analyses Approved By: KSU Date: 821012

By _____
ENVIRONMENTAL HEALTH

ACT/007/011

SURFACE AND GROUNDWATER MONITORING PLAN

3rd Quarter 1982

United States Fuel Company

Hiawatha, Utah 84527

RECEIVED
NOV 18 1982
DIVISION OF
OIL, GAS & MINING

SPRING MONITORING REPORT

DATE: 3rd QUARTER - 1982

EFFLUENT CHARACTERISTIC		SP-1	SP-2	SP-3	SP-4	SP-5	SP-6
		JULY	JULY	JULY	JULY	JULY	JULY
Flow Rate	G.P.M.	4.00	8.20	4.90	26.00	2.96	16.60
PH	Units	7.20	7.70	7.80	8.00	7.40	8.00
Air Temp.	°F	44.00	58.00	36.00	35.00	41.00	39.00
Water Temp.	°F	31.00	37.00	32.00	29.00	29.00	31.00
Conductivity	umhos/cm	280.00	380.00	450.00	480.00	560.00	460.00
Acidity	Mg/L						
Total Suspended Solids	Mg/L						
Total Dissolved Solids	Mg/L	190.00	258.00	306.00	326.00	367.00	300.00
Total Organic Carbon	Mg/L						
Total Manganese	Mg/L						
Total Iron	Mg/L	0.140	0.140	0.46	0.05	0.01	0.04
Dissolved Iron	Mg/L					0.01	0.02
Calcium	Mg/L						
Magnesium	Mg/L						
Sodium	Mg/L						
Potassium	Mg/L						
Carbonate	Mg/L						
Fluoride	Mg/L						
Bicarbonate	Mg/L						
Chloride	Mg/L	28.80	45.60	2.40	0.70	5.50	4.30
Sulfate	Mg/L	6.00	12.00	6.00	3.00	12.00	6.00
Nitrate NO_3-N	Mg/L	0.27	0.84	0.97	0.58	<0.01	0.34
Nitrate NO_2-N	Mg/L						
Kjeldahl N	Mg/L						
Dissolved Phosphorus	Mg/L						
Silica	Mg/L						
Trace Elements:							
Arsenic	Mg/L						
Cadmium	Mg/L						
Zinc	Mg/L						
Selenium	Mg/L						
Radioactivity:							
Gross Alpha	Pci/L						
Gross Beta	Pci/L						
Oil and Grease	Mg/L						

SPRING MONITORING REPORT

DATE: 3rd QUARTER - 1982

EFFLUENT CHARACTERISTIC		SP-7	SP-8			SP-9	SP-10
		JULY	JULY	AUG.	SEP.	JULY	JULY
Flow Rate	G.P.M.	↓ 43.10	29.10	13.00	10.00	7.60	↓ 11.20
PH	Units	8.20	7.60	7.80	7.20	↑ 8.20	↑ 8.20
Air Temp.	°F	47.00	47.00	61.00	49.00	44.00	45.00
Water Temp.	°F	26.00	30.00	45.00	40.00	39.00	34.00
Conductivity	umhos/cm	410.00	580.00	610.00	700.00	390.00	460.00
Acidity	Mg/L						
Total Suspended Solids	Mg/L						
Total Dissolved Solids	Mg/L	272.00	380.00	398.00		258.00	300.00
Total Organic Carbon	Mg/L						
Total Manganese	Mg/L						
Total Iron	Mg/L	0.28	0.01	0.02	0.03	0.01	0.40
Dissolved Iron	Mg/L	0.08	< .001	0.01	0.015	< .001	0.08
Calcium	Mg/L						
Magnesium	Mg/L						
Sodium	Mg/L						
Potassium	Mg/L						
Carbonate	Mg/L						
Fluoride	Mg/L						
Bicarbonate	Mg/L						
Chloride	Mg/L	9.90	4.70	1.20	2.80	11.20	6.70
Sulfate	Mg/L	< 1.00	↓ 6.00	4.50	3.90	8.00	↓ 6.00
Nitrate NO_3-N	Mg/L	0.14	< 0.01	< 0.01	< 0.01	0.17	< 0.01
Nitrate NO_2-N	Mg/L						
Kjeldahl N	Mg/L						
Dissolved Phosphorus	Mg/L						
Silica	Mg/L						
Trace Elements:							
Arsenic	Mg/L						
Cadmium	Mg/L						
Zinc	Mg/L						
Selenium	Mg/L						
Radioactivity:							
Gross Alpha	Pci/L						
Gross Beta	Pci/L						
Oil and Grease	Mg/L						

Date: 3rd QUARTER - 1982 STREAM MONITORING REPORT

EFFLUENT CHARACTERISTIC		ST - 1			ST - 2		
		JULY	AUG.	SEP.	JULY	AUG.	SEP.
Flow Rate	G.P.M.	103.00	73.00	73.00			
PH	Units	7.90	8.00	7.80	8.00	8.30	8.10
Air Temp.	°F	60.00	57.00	53.00			
Water Temp.	°F	39.00	55.00	42.00			
Conductivity	umhos/cm	1,150.00	1,470.00	1,150.00	370.00	380.00	550.00
Acidity	Mg/L	4.00	3.00	< .01	<.01	<.01	<.01
Total Suspended Solids	Mg/L	13.00	27.00	1.00	2.00	4.00	1.00
Total Dissolved Solids	Mg/L	782.00	960.00	748.00	251.00	251.00	360.00
Total Organic Carbon	Mg/L						
Total Manganese	Mg/L	0.025	0.025	0.021	0.005	0.025	0.022
Total Iron	Mg/L	0.28	0.45	0.29	0.05	0.14	0.15
Dissolved Iron	Mg/L	0.02	0.28	0.045	0.01	0.13	0.12
Calcium	Mg/L						
Magnesium	Mg/L						
Sodium	Mg/L						
Potassium	Mg/L						
Carbonate	Mg/L						
Fluoride	Mg/L						
Bicarbonate	Mg/L						
Chloride	Mg/L	12.70	13.00	12.00	2.60	1.90	2.20
Sulfate	Mg/L	360.00	147.00	360.00	15.00	6.00	30.00
Nitrate NO_3-N	Mg/L	0.16	0.24	0.15	0.05	<.01	<0.01
Nitrate NO_2-N	Mg/L						
Kjeldahl N	Mg/L						
Dissolved Phosphorus	Mg/L						
Silica	Mg/L						
Trace Elements:							
Arsenic	Mg/L						
Cadmium	Mg/L						
Zinc	Mg/L						
Selenium	Mg/L						
Radioactivity:							
Gross Alpha	Pci/L						
Gross Beta	Pci/L						
Oil and Grease	Mg/L	1.60	0.60	0.40	0.6	<.1	0.40
ALKALINITY			335.72	398.10		202.50	230.90

Date: 3rd QUARTER - 1982 STREAM MONITORING REPORT

EFFLUENT CHARACTERISTIC		ST-2A			ST-2B		
		JULY	AUG.	SEP.	JULY	AUG.	SEP.
Flow Rate	G.P.M.	215.00	59.20	51.80	561.00	148.00	37.00
PH	Units	8.10	8.30	8.10	8.10	8.20	8.00
Air Temp.	°F	59.00	58.00	45.00	60.00	56.00	51.00
Water Temp.	°F	39.00	54.00	35.00	42.00	55.00	37.00
Conductivity	umhos/cm	390.00	430.00	510.00	440.00	530.00	730.00
Acidity	Mg/L	<.01	<.01	<.01	<.01	<.01	1.00
Total Suspended Solids	Mg/L	<1.00	12.00	1.00	11.00	22.00	2.00
Total Dissolved Solids	Mg/L	265.00	282.00	336.00	299.00	350.00	476.00
Total Organic Carbon	Mg/L						
Total Manganese	Mg/L	0.005	0.008	0.010	0.01	0.008	0.020
Total Iron	Mg/L	0.04	0.09	0.095	0.22	0.17	0.165
Dissolved Iron	Mg/L	0.01	0.04	0.05	0.01	0.08	0.078
Calcium	Mg/L						
Magnesium	Mg/L						
Sodium	Mg/L						
Potassium	Mg/L						
Carbonate	Mg/L						
Fluoride	Mg/L						
Bicarbonate	Mg/L						
Chloride	Mg/L	2.40	4.20	3.90	2.40	3.30	5.60
Sulfate	Mg/L	18.00	<.10	27.00	21.00	690	90.00
Nitrate NO_3-N	Mg/L	0.06	0.05	<.01	0.05	<.01	<.01
Nitrate NO_2-N	Mg/L						
Kjeldahl N	Mg/L						
Dissolved Phosphorus	Mg/L						
Silica	Mg/L						
Trace Elements:							
Arsenic	Mg/L						
Cadmium	Mg/L						
Zinc	Mg/L						
Selenium	Mg/L						
Radioactivity:							
Gross Alpha	Pci/L						
Gross Beta	Pci/L						
Oil and Grease	Mg/L	3.8	<.10	<.10	2.00	1.00	<.10
ALKALINITY			245.60	256.80		240.40	397.20

Date: 3rd QUARTER-1982 STREAM MONITORING REPORT

EFFLUENT CHARACTERISTIC		ST-3			ST-3A		
		JULY	AUG.	SEP.	JULY	AUG.	SEP.
Flow Rate	G.P.M.	26.00	41.00	46.00			
PH	Units.	7.90	8.00	8.10	8.10	8.00	
Air Temp.	°F	78.00	57.00	40.00			
Water Temp.	°F	57.00	56.00	41.00			
Conductivity	umhos/cm	2,000	1,990	1,980	420.00	990.00	
Acidity	Mg/L	1.00	<.01	<.01	<.01	1.00	
Total Suspended Solids	Mg/L	57.00	11.00	17.00	7.00	18.00	
Total Dissolved Solids	Mg/L	1,375.00	1,310.00	1,292.00	254.00	646.00	
Total Organic Carbon	Mg/L						
Total Manganese	Mg/L	0.090	0.020	0.070	0.001	0.003	
Total Iron	Mg/L	0.840	0.150		0.010	0.015	
Dissolved Iron	Mg/L	0.550	0.110	0.230		0.010	
Calcium	Mg/L						
Magnesium	Mg/L						
Sodium	Mg/L						
Potassium	Mg/L						
Carbonate	Mg/L						
Fluoride	Mg/L						
Bicarbonate	Mg/L						
Chloride	Mg/L	185.00	174.70	174.00	2.00	12.40	
Sulfate	Mg/L	210.00	63.00	285.00	15.00	156.00	
Nitrate NO_3-N	Mg/L	0.28	0.20	0.16	0.05	0.16	
Nitrate NO_2-N	Mg/L						
Kjeldahl N	Mg/L						
Dissolved Phosphorus	Mg/L						
Silica	Mg/L						
Trace Elements:							
Arsenic	Mg/L						
Cadmium	Mg/L						
Zinc	Mg/L						
Selenium	Mg/L						
Radioactivity:							
Gross Alpha	Pci/L						
Gross Beta	Pci/L						
Oil and Grease	Mg/L	0.20	1.20	1.00	1.60	0.60	
ALKALINITY			313.40	598.00		6.70	

NO WATER

Date: 3rd QUARTER-1982 STREAM MONITORING REPORT

EFFLUENT CHARACTERISTIC		ST-3B			ST-4		
		JULY	AUG.	SEP.	JULY	AUG.	SEP.
Flow Rate	G.P.M.				↑ 355.00	77.00	229.00
PH	Units.	7.70	8.40		8.00	8.00	8.3
Air Temp.	°F				69.00	69.00	41.00
Water Temp.	°F				59.00	57.00	41.00
Conductivity	umhos/cm	2,200	790.00		970.00	1,100	1,180
Acidity	Mg/L	8.00	<.01		6.00	<.01	<.01
Total Suspended Solids	Mg/L	12.00	8.00		247.00	6.00	13
Total Dissolved Solids	Mg/L	1,756	518.00		632.00	759.00	772
Total Organic Carbon	Mg/L						
Total Manganese	Mg/L	0.120	0.085		0.120	0.01	0.008
Total Iron	Mg/L	0.330	0.35		4.60	0.14	0.13
Dissolved Iron	Mg/L		0.21		0.850	0.05	
Calcium	Mg/L						
Magnesium	Mg/L						
Sodium	Mg/L						
Potassium	Mg/L						
Carbonate	Mg/L						
Fluoride	Mg/L						
Bicarbonate	Mg/L						
Chloride	Mg/L	1,323	11.20		37.30	9.70	2.1
Sulfate	Mg/L	309.00	177.00		63.00	450.00	267
Nitrate NO_3-N	Mg/L	0.10	0.36		0.33	0.25	0.32
Nitrate NO_2-N	Mg/L						
Kjeldahl N	Mg/L						
Dissolved Phosphorus	Mg/L						
Silica	Mg/L						
Trace Elements:							
Arsenic	Mg/L						
Cadmium	Mg/L						
Zinc	Mg/L						
Selenium	Mg/L						
Radioactivity:							
Gross Alpha	Pci/L						
Gross Beta	Pci/L						
Oil and Grease	Mg/L	1.60	1.00		<.10	<.10	<.10
ALKALINITY			272.60			245.10	404

NO WATER

Date: 3rd QUARTER - 1982 STREAM MONITORING REPORT

EFFLUENT CHARACTERISTIC		ST-4A			ST-4B		
		JULY	AUG.	SEP.	JULY	AUG	SEP
Flow Rate	G.P.M.						
PH	Units	8	8.3	8.4	8.2	8.5	8.4
Air Temp.	°F						
Water Temp.	°F						
Conductivity	umhos/cm	700	805	800	640	690	770
Acidity	Mg/L	3	<.01	<.01	<.01	<.01	<.01
Total Suspended Solids	Mg/L	10	7	2	1	15	19
Total Dissolved Solids	Mg/L	411	563	520	376	485	503
Total Organic Carbon	Mg/L						
Total Manganese	Mg/L	0.002	0.01	0.05	0.001	0.012	0.008
Total Iron	Mg/L	0.01	0.08	0.21	0.03	0.21	0.16
Dissolved Iron	Mg/L		0.01			0.07	
Calcium	Mg/L						
Magnesium	Mg/L						
Sodium	Mg/L						
Potassium	Mg/L						
Carbonate	Mg/L						
Fluoride	Mg/L						
Bicarbonate	Mg/L						
Chloride	Mg/L	1.6	4.2	14.1	3.2	4.7	19
Sulfate	Mg/L	105	171	78.0	93	153	126
Nitrate NO_3-N	Mg/L	0.06	0.07	<.01	0.07	<.01	0.05
Nitrate NO_2-N	Mg/L						
Kjeldahl N	Mg/L						
Dissolved Phosphorus	Mg/L						
Silica	Mg/L						
Trace Elements:							
Arsenic	Mg/L						
Cadmium	Mg/L						
Zinc	Mg/L						
Selenium	Mg/L						
Radioactivity:							
Gross Alpha	Pci/L						
Gross Beta	Pci/L						
Oil and Grease	Mg/L	0.4	0.4	<.1	2.2	<.1	<.1
ALKALINITY			301.4	411.8		259.2	404

Date: 3rd QUARTER-1982 STREAM MONITORING REPORT

EFFLUENT CHARACTERISTIC		ST-5			ST-6		
		JULY	AUG.	SEP.	JULY	AUG.	SEP.
Flow Rate	G.P.M.	561	52	160	292	104	279
PH	Units.	7.9	8.2	8.0	7.9	8.2	7.8
Air Temp.	°F	66	74	45	62	65	46
Water Temp.	°F	58	60	39	58	60	39
Conductivity	umhos/cm	1,050	1,220	1,400	530	750	900
Acidity	Mg/L	5	<.01	<.01	3	<.01	<.01
Total Suspended Solids	Mg/L	443	12	1	312	42	27
Total Dissolved Solids	Mg/L	695	829	952	347	490	635
Total Organic Carbon	Mg/L						
Total Manganese	Mg/L	0.29	0.055	0.055	0.835	0.835	0.02
Total Iron	Mg/L	8.78	0.43	0.465	36.5	30.44	28.75
Dissolved Iron	Mg/L	2.26	0.28	0.26	2.13	2.54	2.85
Calcium	Mg/L						
Magnesium	Mg/L						
Sodium	Mg/L						
Potassium	Mg/L						
Carbonate	Mg/L						
Fluoride	Mg/L						
Bicarbonate	Mg/L						
Chloride	Mg/L	31.9	30	44.3	10	8.1	2.0
Sulfate	Mg/L	75	510	90	69	90	159
Nitrate NO_3-N	Mg/L	0.6	0.75	0.95	0.19	0.32	0.14
Nitrate NO_2-N	Mg/L						
Kjeldahl N	Mg/L						
Dissolved Phosphorus	Mg/L						
Silica	Mg/L						
Trace Elements:							
Arsenic	Mg/L						
Cadmium	Mg/L						
Zinc	Mg/L						
Selenium	Mg/L						
Radioactivity:							
Gross Alpha	Pci/L						
Gross Beta	Pci/L						
Oil and Grease	Mg/L	<.1	0.4	0.6	3.2	5.8	<.1
ALKALINITY			290.9	285		241.5	271

Date: 3rd QUARTER - 1982 STREAM MONITORING REPORT

EFFLUENT CHARACTERISTIC		ST-6A					
		JULY	AUG.	SEP.			
Flow Rate	G.P.M.						
PH	Units.	8.1	8.2	8.1			
Air Temp.	°F						
Water Temp.	°F						
Conductivity	umhos/cm	550	570	75			
Acidity	Mg/L	<.01	<.01	<.01			
Total Suspended Solids	Mg/L	324	82	20			
Total Dissolved Solids	Mg/L	360	375	525			
Total Organic Carbon	Mg/L						
Total Manganese	Mg/L	0.155	0.008	0.015			
Total Iron	Mg/L	6.18	0.133	0.165			
Dissolved Iron	Mg/L	0.73	0.1	0.06			
Calcium	Mg/L						
Magnesium	Mg/L						
Sodium	Mg/L						
Potassium	Mg/L						
Carbonate	Mg/L						
Fluoride	Mg/L						
Bicarbonate	Mg/L						
Chloride	Mg/L	6.5	7.9	2.3			
Sulfate	Mg/L	39	15	114			
Nitrate NO_3-N	Mg/L	0.08	0.31	0.07			
Nitrate NO_2-N	Mg/L						
Kjeldahl N	Mg/L						
Dissolved Phosphorus	Mg/L						
Silica	Mg/L						
Trace Elements:							
Arsenic	Mg/L						
Cadmium	Mg/L						
Zinc	Mg/L						
Selenium	Mg/L						
Radioactivity:							
Gross Alpha	Pci/L						
Gross Beta	Pci/L						
Oil and Grease	Mg/L	4.8	<.1	0.4			
ALKALINITY			248	284.9			

MOHRLAND WATER DISCHARGE

MINE WATER DISCHARGE MONITORING REPORT

DATE 3rd QUARTER - 1982

Effluent Characteristic	Flow Rate G.P.M.	Total Suspended Solids Mg/L	Total Dissolved Solids Mg/L	Total Manganese Mg/L	Total Iron Mg/L	Dissolved Iron Mg/L	Alkalinity Mg/L	Acidity Mg/L	PH Units	Oil & Grease Mg/L	BOD5 Mg/L	Total Coliforms MPN/100ML	Fecal Coliforms MPN/100ML	CONDUCTIVITY umhos
January														
February														
March														
April														
May														
June														
July														
August	103	6.0	720	0.025	0.06	0.06	339.2	21	7.3	0.4			1,100	
September														
October														
November														
December														

NO DISCHARGE

NO DISCHARGE

TOWN TANK OVER FLOW

MINE WATER DISCHARGE MONITORING REPORT

DATE 3rd QUARTER - 1982

Effluent Characteristic	Flow Rate G.P.M.	Total Suspended Solids Mg/L	Total Dissolved Solids Mg/L	Total Manganese Mg/L	Total Iron Mg/L	Dissolved Iron Mg/L	Alkalinity Mg/L	Acidity Mg/L	PH Units	Oil & Grease Mg/L	BOD5 Mg/L	Total Coliforms MPN/100ML	Fecal Coliforms MPN/100ML	CONDUCTIVITY umhos/c
January														
February														
March														
April														
May														
June														
July														
	275.8	1.0	700	0.007	0.01	0.01	368		7.5					
August									7.6	1.8				1,050
	109	2.0	650	0.01	0.05	0.05	307	10	7.8					
September									7.7	<.1				990
	103	3	585	0.011	0.047	0.04	398.5	7	7.7					
October									7.6	<.1	4.1	220	<2.0	860
November														
December														

KING #4 VENT TUNNEL DISCHARGE

MINE WATER DISCHARGE MONITORING REPORT

DATE 3rd QUARTER - 1982

Effluent Characteristic	Flow Rate G.P.M.	Total Suspended Solids Mg/L	Total Dissolved Solids Mg/L	Total Manganese Mg/L	Total Iron Mg/L	Dissolved Iron Mg/L	Alkalinity Mg/L	Acidity Mg/L	PH Units	Oil & Grease Mg/L	BOD5 Mg/L	Total Coloforms MPN/100ML	Fecal Coloforms MPN/100ML	CONDUCTIVITY umhos/cm
January														
February														
March														
April														
May														
June														
July									8.0					
	8.25	1.0	387	0.007	0.05	0.03	340.4		8.1	5.6				550
August									7.9					
	7.55	12.0	331	0.005	0.07	0.04	231.9	<.01	8.1	0.8				500
September									7.9					
	6.25	2.0	448	0.01	0.04	0.04	290.6	<.01	7.7	<.1	<1.0	30	2.0	640
October														
November														
December														

SOUTH FORK LOAD OUT
SEDIMENTATION POND DISCHARGE

MINE WATER DISCHARGE MONITORING REPORT

DATE 3rd QUARTER - 1982

Effluent Characteristic	Flow Rate G.P.M.	Total Suspended Solids Mg/L	Total Dissolved Solids Mg/L	Total Manganese Mg/L	Total Iron Mg/L	Dissolved Iron Mg/L	Alkalinity Mg/L	Acidity Mg/L	PH Units	Oil & Grease Mg/L	BOD_5 Mg/L	Total Coloforms MPN/100ML	Fecal Coloforms MPN/100ML	CONDUCTIVITY umhos/cm
January														
February														
March														
April														
May														
June														
July														
August														
September	9.9	1,828	346	0.75	30	0.71	25	2.0	7.5	1.4	81	170	<2.0	510
October														
November														
December														

We pumped the water out with in 24 hours.

SURFACE AND GROUNDWATER MONITORING PLAN

2nd Quarter 1982

United States Fuel Company

Hiawatha, Utah 84527

RECEIVED
JUL 30 1982
DIVISION OF
OIL, GAS & MINING

SPRING MONITORING REPORT
DATE: 2nd QUARTER-1982

EFFLUENT CHARACTERISTIC		SP-1	SP-2	SP-3	SP-4	SP-5	SP-6
Flow Rate	G.P.M.						
PH	Units						
Air Temp.	°F						
Water Temp.	°F						
Conductivity	umho/cm						
Acidity	Mg/L						
Total Suspended Solids	Mg/L						
Total Dissolved Solids	Mg/L						
Total Organic Carbon	Mg/L						
Total Manganese	Mg/L						
Total Iron	Mg/L						
Dissolved Iron	Mg/L						
Calcium	Mg/L						
Magnesium	Mg/L						
Sodium	Mg/L						
Potassium	Mg/L						
Carbonate	Mg/L						
Fluoride	Mg/L						
Bicarbonate	Mg/L						
Chloride	Mg/L						
Sulfate	Mg/L						
Nitrate NO_3-N	Mg/L						
Nitrate NO_2-N	Mg/L						
Kjeldahl N	Mg/L						
Dissolved Phosphorus	Mg/L						
Silica	Mg/L						
Trace Elements:							
Arsenic	Mg/L						
Cadmium	Mg/L						
Zinc	Mg/L						
Selenium	Mg/L						
Radioactivity:							
Gross Alpha	Pci/L						
Gross Beta	Pci/L						
Oil and Grease	Mg/L						

INACCESSIBLE

SPRING MONITORING REPORT
DATE: 2nd QUARTER - 1982

EFFLUENT CHARACTERISTIC		SP-7	SP-8			SP-9	SP-10
Flow Rate	G.P.M.						
PH	Unit						
Air Temp.	°F						
Water Temp.	°F						
Conductivity	µmho/cm						
Acidity	Mg/L						
Total Suspended Solids	Mg/L						
Total Dissolved Solids	Mg/L						
Total Organic Carbon	Mg/L						
Total Manganese	Mg/L						
Total Iron	Mg/L						
Dissolved Iron	Mg/L						
Calcium	Mg/L						
Magnesium	Mg/L						
Sodium	Mg/L						
Potassium	Mg/L						
Carbonate	Mg/L						
Fluoride	Mg/L						
Bicarbonate	Mg/L						
Chloride	Mg/L						
Sulfate	Mg/L						
Nitrate NO_3-N	Mg/L						
Nitrate NO_2-N	Mg/L						
Kjeldahl N	Mg/L						
Dissolved Phosphorus	Mg/L						
Silica	Mg/L						
Trace Elements:							
Arsenic	Mg/L						
Cadmium	Mg/L						
Zinc	Mg/L						
Selenium	Mg/L						
Radioactivity:							
Gross Alpha	Pci/L						
Gross Beta	Pci/L						
Oil and Grease	Mg/L						

INACCESSIBLE

Date: 2nd QUARTER-1982 STREAM MONITORING REPORT

EFFLUENT CHARACTERISTIC		ST-1			ST-2		
		APRIL	MAY	JUNE	APRIL	MAY	JUNE
Flow Rate	G.P.M.		673	269			
PH	Units		8.30	7.90		8.20	8.20
Air Temp.	°F		47	43			
Water Temp.	°F		39	27			
Conductivity	umhos/cm		740	780		400	280
Acidity	Mg/L		<.01	<.01		<.01	<.01
Total Suspended Solids	Mg/L		22.0	7.0		583	44.0
Total Dissolved Solids	Mg/L		484	510		264	178
Total Organic Carbon	Mg/L						
Total Manganese	Mg/L		0.075	0.025		0.240	0.030
Total Iron	Mg/L		2.250	0.270		8.050	0.650
Dissolved Iron	Mg/L		0.040	0.130		0.020	0.220
Calcium	Mg/L						
Magnesium	Mg/L						
Sodium	Mg/L						
Potassium	Mg/L						
Carbonate	Mg/L						
Fluoride	Mg/L						
Bicarbonate	Mg/L						
Chloride	Mg/L		22.60	26.10		9.80	8.20
Sulfate	Mg/L		115	138		36.0	12.0
Nitrate NO_3-N	Mg/L		1.05	0.26		0.83	0.21
Nitrate NO_3-N	Mg/L						
Kjeldahl N	Mg/L						
Dissolved Phosphorus	Mg/L						
Silica	Mg/L						
Trace Elements:							
Arsenic	Mg/L						
Cadmium	Mg/L						
Zinc	Mg/L						
Selenium	Mg/L						
Radioactivity:							
Gross Alpha	Pci/L						
Gross Beta	Pci/L						
Oil and Grease	Mg/L		2.0	0.4		12.0	0.6

INACCESSIBLE

INACCESSIBLE

Date: 2nd QUARTER - 198_ STREAM MONITORING REPORT

EFFLUENT CHARACTERISTIC		ST-2A			ST-2B		
		APRIL	MAY	JUNE	APRIL	MAY	JUNE
Flow Rate	G.P.M.		1261	1135		310	907
PH	Units		8.10	8.00		8.00	8.0
Air Temp.	°F		47	42		49	45
Water Temp.	°F		33	27		43	28
Conductivity	umhos/cm		420	400		600	450
Acidity	Mg/L		<.01	<.01		<.01	<.01
Total Suspended Solids	Mg/L		63.3	46.0		45.0	52.0
Total Dissolved Solids	Mg/L		272	262		396	296
Total Organic Carbon	Mg/L						
Total Manganese	Mg/L		0.145	0.030		0.125	0.030
Total Iron	Mg/L		0.920	0.610		4.20	0.690
Dissolved Iron	Mg/L		0.040	0.210		0.020	0.250
Calcium	Mg/L						
Magnesium	Mg/L						
Sodium	Mg/L						
Potassium	Mg/L						
Carbonate	Mg/L						
Fluoride	Mg/L						
Bicarbonate	Mg/L						
Chloride	Mg/L		1.00	7.90		19.60	48.70
Sulfate	Mg/L		30.0	12.0		48.0	15.0
Nitrate NO_3-N	Mg/L		1.02	0.25		0.49	0.22
Nitrate NO_2-N	Mg/L						
Kjeldahl N	Mg/L						
Dissolved Phosphorus	Mg/L						
Silica	Mg/L						
Trace Elements:							
Arsenic	Mg/L						
Cadmium	Mg/L						
Zinc	Mg/L						
Selenium	Mg/L						
Radioactivity:							
Gross Alpha	Pci/L						
Gross Beta	Pci/L						
Oil and Grease	Mg/L		2.8	0.4		3.2	<.1

INACCESSIBLE

INACCESSIBLE

Date: 2nd QUARTER - [redacted] STREAM MONITORING REPORT

EFFLUENT CHARACTERISTIC		ST-3A			ST-3		
		APRIL	MAY	JUNE	APRIL	MAY	JUNE
Flow Rate	G.P.M.				117	93	52
PH	Units		8.10	8.10	7.80	7.80	8.0
Air Temp.	°F				47	53	53
Water Temp.	°F				31	33	43
Conductivity	umhos/cm		520	480	1,875	2,100	2,380
Acidity	Mg/L		<.01	<.01	4.0	<.01	3.0
Total Suspended Solids	Mg/L		58.0	2.0	132	56.0	5.0
Total Dissolved Solids	Mg/L		340	312	1,275	1,375	1,550
Total Organic Carbon	Mg/L						
Total Manganese	Mg/L		0.040	0.007	0.150	0.055	0.030
Total Iron	Mg/L		0.780	0.130	3.400	0.410	0.260
Dissolved Iron	Mg/L		0.270	0.060	2.030	0.280	0.115
Calcium	Mg/L						
Magnesium	Mg/L						
Sodium	Mg/L						
Potassium	Mg/L						
Carbonate	Mg/L						
Fluoride	Mg/L						
Bicarbonate	Mg/L						
Chloride	Mg/L		10.60	17.90	182.90	199.20	185.50
Sulfate	Mg/L		48.0	21.0	330	420	270
Nitrate NO_3-N	Mg/L		0.30	<.01	0.11	0.11	0.08
Nitrate NO_3-N	Mg/L						
Kjeldahl N	Mg/L						
Dissolved Phosphorus	Mg/L						
Silica	Mg/L						
Trace Elements:							
Arsenic	Mg/L						
Cadmium	Mg/L						
Zinc	Mg/L						
Selenium	Mg/L						
Radioactivity:							
Gross Alpha	Pci/L						
Gross Beta	Pci/L						
Oil and Grease	Mg/L		4.4	0.6	2.8	0.8	<.1

INACCESSIBLE

Date: 2nd QUARTER-198[illegible] STREAM MONITORING REPORT

EFFLUENT CHARACTERISTIC		ST-3B			ST-4A		
		APRIL	MAY	JUNE	APRIL	MAY	JUNE
Flow Rate	G.P.M.						
PH	Units		7.90	8.00		8.00	8.00
Air Temp.	°F						
Water Temp.	°F						
Conductivity	umhos/cm		1,190	620		570	550
Acidity	Mg/L		<.01	<.01		<.01	<.01
Total Suspended Solids	Mg/L		355	26		405	21.0
Total Dissolved Solids	Mg/L		775	404		375	360
Total Organic Carbon	Mg/L						
Total Manganese	Mg/L		0.215	0.015		0.170	0.015
Total Iron	Mg/L		10.000	0.290		4.100	0.230
Dissolved Iron	Mg/L		1.350	0.130		1.460	0.120
Calcium	Mg/L						
Magnesium	Mg/L						
Sodium	Mg/L						
Potassium	Mg/L						
Carbonate	Mg/L						
Fluoride	Mg/L						
Bicarbonate	Mg/L						
Chloride	Mg/L		19.60	10.10		5.10	29.10
Sulfate	Mg/L		96.0	54.0		840	36.0
Nitrate NO_3-N	Mg/L		0.37	0.04		0.35	0.18
Nitrate NO_2-N	Mg/L						
Kjeldahl N	Mg/L						
Dissolved Phosphorus	Mg/L						
Silica	Mg/L						
Trace Elements:							
Arsenic	Mg/L						
Cadmium	Mg/L						
Zinc	Mg/L						
Selenium	Mg/L						
Radioactivity:							
Gross Alpha	Pci/L						
Gross Beta	Pci/L						
Oil and Grease	Mg/L		0.2	<.1		1.4	<.1

INACCESSIBLE

INACCESSIBLE

Date: 2nd QUARTER - 19[illegible] STREAM MONITORING REPORT

EFFLUENT CHARACTERISTIC		ST-4			ST-4B		
		APRIL	MAY	JUNE	APRIL	MAY	JUNE
Flow Rate	G.P.M.		705	211			
PH	Units		8.00	7.80		8.00	8.00
Air Temp.	°F		61	63			
Water Temp.	°F		40	39			
Conductivity	umhos/cm		800	880		1,150	570
Acidity	Mg/L		<.01	7.0		<.01	<.01
Total Suspended Solids	Mg/L		598	81		749	70
Total Dissolved Solids	Mg/L		525	575		385	374
Total Organic Carbon	Mg/L						
Total Manganese	Mg/L		0.255	0.007		0.255	0.025
Total Iron	Mg/L		5.650	0.880		8.530	0.680
Dissolved Iron	Mg/L		2.070	0.280		1.560	0.230
Calcium	Mg/L						
Magnesium	Mg/L						
Sodium	Mg/L						
Potassium	Mg/L						
Carbonate	Mg/L						
Fluoride	Mg/L						
Bicarbonate	Mg/L						
Chloride	Mg/L		2.60	12.60		0.80	31.90
Sulfate	Mg/L		132	156		69.0	72.0
Nitrate NO_3-N	Mg/L		0.45	0.06		0.53	0.29
Nitrate NO_2-N	Mg/L						
Kjeldahl N	Mg/L						
Dissolved Phosphorus	Mg/L						
Silica	Mg/L						
Trace Elements:							
Arsenic	Mg/L						
Cadmium	Mg/L						
Zinc	Mg/L						
Selenium	Mg/L						
Radioactivity:							
Gross Alpha	Pci/L						
Gross Beta	Pci/L						
Oil and Grease	Mg/L		2.2	1.0		9.2	0.8

INACCESSIBLE

INACCESSIBLE

Date: 2nd QUARTER - 19[illegible] STREAM MONITORING REPORT

EFFLUENT CHARACTERISTIC		ST-5			ST-6A		
		APRIL	MAY	JUNE	APRIL	MAY	JUNE
Flow Rate	G.P.M.	613	1,827	1,441			
PH	Units	8.00	8.10	7.90	7.80	8.00	7.80
Air Temp.	°F	40	67	57			
Water Temp.	°F	31	43	39			
Conductivity	umhos/cm	1,325	840	900	1,000	460	540
Acidity	Mg/L	<.10	<.01	2.00	2.00	<.01	2.50
Total Suspended Solids	Mg/L	38.0	591	60	86.0	162	16.0
Total Dissolved Solids	Mg/L	900	550	585	650	305	355
Total Organic Carbon	Mg/L						
Total Manganese	Mg/L	0.060	0.215	0.100	0.040	0.090	0.005
Total Iron	Mg/L	0.690	9.330	0.790	0.860	2.250	0.130
Dissolved Iron	Mg/L	0.360	2.310	0.360	0.210	0.450	0.090
Calcium	Mg/L						
Magnesium	Mg/L						
Sodium	Mg/L						
Potassium	Mg/L						
Carbonate	Mg/L						
Fluoride	Mg/L						
Bicarbonate	Mg/L						
Chloride	Mg/L	26.60	7.40	13.00	4.70	5.20	1.90
Sulfate	Mg/L	330	219	192	225	60.0	42.0
Nitrate NO_3-N	Mg/L	0.43	0.55	0.14	0.08	0.12	0.05
Nitrate NO_3-N	Mg/L						
Kjeldahl N	Mg/L						
Dissolved Phosphorus	Mg/L						
Silica	Mg/L						
Trace Elements:							
Arsenic	Mg/L						
Cadmium	Mg/L						
Zinc	Mg/L						
Selenium	Mg/L						
Radioactivity:							
Gross Alpha	Pci/L						
Gross Beta	Pci/L						
Oil and Grease	Mg/L	<1.0	2.6	<.2	<1.0	3.6	0.4

Date: 2nd QUARTER - 1[illegible]2 STREAM MONITORING REPORT

EFFLUENT CHARACTERISTIC		ST - 6			ST - 7		
		APRIL	MAY	JUNE	APRIL	MAY	JUNE
Flow Rate	G.P.M.	133.2	1979.2	736			
PH	Units	7.70	8.00	7.90			
Air Temp.	°F	43	64	59			
Water Temp.	°F	33	45	43			
Conductivity	umhos/cm	1,050	490	640			
Acidity	Mg/L	8.00	<.01	2.00			
Total Suspended Solids	Mg/L	28.0	209	21.0			
Total Dissolved Solids	Mg/L	725	320	415			
Total Organic Carbon	Mg/L						
Total Manganese	Mg/L	0.020	0.100	0.085			
Total Iron	Mg/L	0.320	2.600	0.070			
Dissolved Iron	Mg/L	0.130	0.610	0.030			
Calcium	Mg/L						
Magnesium	Mg/L						
Sodium	Mg/L						
Potassium	Mg/L						
Carbonate	Mg/L						
Fluoride	Mg/L						
Bicarbonate	Mg/L						
Chloride	Mg/L	8.20	5.60	1.70			
Sulfate	Mg/L	150	60.0	90.0			
Nitrate NO_3-N	Mg/L	0.14	0.10	0.06			
Nitrate NO_2-N	Mg/L						
Kjeldahl N	Mg/L						
Dissolved Phosphorus	Mg/L						
Silica	Mg/L						
Trace Elements:							
Arsenic	Mg/L						
Cadmium	Mg/L						
Zinc	Mg/L						
Selenium	Mg/L						
Radioactivity:							
Gross Alpha	Pci/L						
Gross Beta	Pci/L						
Oil and Grease	Mg/L	<1.0	0.6	0.2			

INACCESSIBLE

NOT REQUIRED THIS QUARTER

MOHRLAND WATER OVER FLOW

MINE WATER DISCHARGE MONITORING REPORT

DATE 2nd QUARTER - 1982

Effluent Characteristic	Flow Rate G.P.M.	Total Suspended Solids Mg/L	Total Dissolved Solids Mg/L	Total Manganese Mg/L	Total Iron Mg/L	Dissolved Iron Mg/L	Alkalinity Mg/L	Acidity Mg/L	pH Units	Oil & Grease Mg/L	BOD5 Mg/L	Total Coloforms MPN/100ML	Fecal Coloforms MPN/100ML
January													
February													
March													
April													
May													
June			NO			OVER			FLOW				
July													
August													
September													
October													
November													
December													

Field # 1

Rev. 7/80

Field No. _____

☐ TC ☐ TM ☐ Nut ☐ Pest.
☐ PC ☐ PM ☐ BOD ☐ Rad. ☐ Bact. ☐ Spec.

Date Recd.: _____

Received By: _____

UTAH STATE DEPARTMENT OF HEALTH
ENVIRONMENTAL HEALTH
WATER ANALYSES

Sample No. 701

Storet No. 702

Water Syst. No. 703 Source No. 704

Date Collected 714: 82 05 13 (yr. mo. dy.)

Time Collected 610: 0905 (24-hour clock)

Water Rights No. 707

Exact Description of sampling Point 646:
HIAWATHA KING III
MILLER CREEK 200 FT
ABOVE SEDIMENT POND

Supply Owned by 712: US FUEL CO

Sample Type 710

Sample Collected by 713: KEN WRATT

SEND REPORT TO: Phone

715
648
717
zip code

Sample Source 719:
01 Spring, 02 Well, 03 Stream, 04 Lake, 06 Dist. syst., 07 Effluent, 08 Storm sewer, 14 Other, 15 Tunnel, 18 Artesian well, 19 Swimming pool

County 611:
01 Beaver, 02 Box Elder, 03 Cache, 04 Carbon, 05 Daggett, 06 Davis, 07 Duchesne, 08 Emery, 09 Garfield, 10 Grand, 11 Iron, 12 Juab, 13 Kane, 14 Millard, 15 Morgan, 16 Piute, 17 Rich, 18 Salt Lake, 19 San Juan, 20 Sanpete, 21 Sevier, 22 Summit, 23 Tooele, 24 Uintah, 25 Utah, 26 Wasatch, 27 Washington, 28 Wayne, 29 Weber

Current use 708
Proposed use 709

1. Culinary
2. Agriculture
3. Industrial
4. Other

1 FIELD TESTS

Temperature (°C)	792	CO_2, mg/l	572
D.O., mg/l	793	Depth, m	609
Sp. Cond. µ mhos	653	Cl Resid., mg/l	753
pH	651	Flow, MGD	652
Sp. Gravity	608	Flow, GPM	604
Transparency, m	649	Flow, cfs	659

2 WASTEWATER ANALYSIS

Temperature (°C) 650 | pH 782 | BACT. LAB. No.

	mg/l		mg/l		
B.O.D.$_5$	794	T.O.C.	671	M.P.N. Total Coliforms/100ml	658
☒ Tot. Sus. Solids	787 (40)	C.O.D.	777	M.P.N. Fecal Coliforms/100ml	657
NO_2+NO_3,N	602	Cyanide	775	Fecal Strep C/100ml.	656
T.K.N.	778	Phenolics	783	M.F. Total Coliforms/100ml.	654
Oil & Grease	780	Sulfide	672	M.F. Fecal Coliforms/100ml.	655
				Plate Count-Org./ml.	599

3 ☐ Filtered ☐ Unfiltered

me/l	CATIONS	mg/l	ug/l (ppb)
	Ammonia as N	722	
	Arsenic		723
	Barium		724
	Boron		725
	Cadmium		727
	Calcium	728	
	Chromium		729
	Chromium, Hex. as Cr		730
	Copper		732
	Iron, dissolved		733
	Lead		734
	Magnesium	737	
	Manganese		738
	Nickel		740
	Potassium	742	
	Selenium		743
	Silver		744
	Sodium	745	
	Zinc		749

TOTAL CATIONS _____

4 CHEMICAL ANALYSIS

pH, units 8.1

me/l	ANIONS	mg/l
	Bicarbonate	758
	Carbon Dioxide	759
	Carbonate	760
	Chloride	763
	CO_3 Solids	
	Fluoride	765
	Hydroxide	767
	Nitrate as N	605
	Nitrite as N	606
	Phosphorus, Ortho as P	607
	Silica, dissolved as SiO_2	750
	Sulfate	772

TOTAL ANIONS _____
GRAND TOTAL _____

Tot. Phosphorus	785
Total Alk. as $CaCO_3$	752
T. Hdns. as $CaCO_3$	754
Surfactant as MBAS	773
Turbidity, as NTU	757
Sp. Gravity	608
☒ Volatile Susp. Solids	10

TOTAL METALS ANALYSIS

5 CATIONS	mg/l	ug/l (ppb)
Aluminum		800
Arsenic		660
Barium		661
Beryllium		801
Cadmium		662
Chromium		663
Cobalt		804
Copper		664
Gold		700
Iron	755	
Lead		665
Manganese		666
Mercury		739
Molybdenum		802
Nickel		667
Selenium		668
Silver		669
Uranium,		601
Vanadium		803
Zinc		670

6

Sp. Cond. µmhos/cm.	762
TDS @ 180°C	786

7 RADIOLOGICS

	pc/l-g		pc/l-g
Alpha, gross	621	^{89}Sr	633
Beta, gross	623	^{131}I	635
Tritium, ^3H	625	^{134}Cs	637
^{226}Radium	627	^{137}Cs	639
^{228}Radium	629		
^{90}Sr	631		

Analyses Approved By: Date:

INTERPRETATION OF ANALYSES:
Remarks:

Based on State Standards, this sample was:

	Satisfactory	Conditional	Unsatisfactory
B.O.D.$_5$			
Tot. Sus. Solids			
M.P.N. Total Coliform.			
M.P.N. Fecal Coliform.			

By _____
ENVIRONMENTAL HEALTH

Field # 2

Rev. 7/80

Field No. _____

☐ TC ☐ TM ☐ Nut
☐ PC ☐ PM ☐ BOD

☐ Pest.
☐ Rad.
☐ Bact.
☐ Spec.

Date Recd.: _____

Received By: _____

UTAH STATE DEPARTMENT OF HEALTH
ENVIRONMENTAL HEALTH
WATER ANALYSES

Sample No. 701

Storet No. 702

Water Syst. No. 703 Source No. 704

Date Collected (yr. mo. dy.) 714: 82 05 13

Time Collected (24-hour clock) 610: 0913

Water Rights No. 707

Exact Description of sampling Point 646:
SOUTH FORK MILLER CREEK ABOVE SED POND AT POOL HIAWATHA UT

Supply Owned by 712: US FUEL CO

Sample Type 710

Sample Collected by 713: KEN WYATT

SEND REPORT TO: 715 / 648 / 717

Phone

zip code

Sample Source 719
01 Spring
02 Well
03 Stream
04 Lake
06 Dist. syst.
07 Effluent
08 Storm sewer
14 Other
15 Tunnel
18 Artesian well
19 Swimming pool

County 611
01 Beaver, 02 Box Elder, 03 Cache, 04 Carbon, 05 Daggett, 06 Davis, 07 Duchesne, 08 Emery, 09 Garfield, 10 Grand, 11 Iron, 12 Juab, 13 Kane, 14 Millard, 15 Morgan, 16 Piute, 17 Rich, 18 Salt Lake, 19 San Juan, 20 Sanpete, 21 Sevier, 22 Summit, 23 Tooele, 24 Uintah, 25 Utah, 26 Wasatch, 27 Washington, 28 Wayne, 29 Weber

Current use 708

Proposed use 709

1. Culinary
2. Agriculture
3. Industrial
4. Other

1 FIELD TESTS

Temperature (°C)	792	CO_2, mg/l	572
D.O., mg/l	793	Depth, m	609
Sp. Cond. µ mhos	653	Cl Resid., mg/l	753
pH	651	Flow, MGD	652
Sp. Gravity	608	Flow, GPM	604
Transparency, m	649	Flow, cfs	659

2 WASTEWATER ANALYSIS

Temperature (°C) 650 | pH 782 | BACT. LAB. No.

	mg/l		mg/l		
☐ B.O.D.$_5$	794	☐ T.O.C.	671	☐ M.P.N. Total Coliforms/100ml	658
☒ Tot. Sus. Solids	787 (41)	☐ C.O.D.	777	☐ M.P.N. Fecal Coliforms/100ml	657
NO_2+NO_3,N	602	☐ Cyanide	775	☐ Fecal Strep C/100ml.	656
☐ T.K.N.	778	☐ Phenolics	783	☐ M.F. Total Coliforms/100ml.	654
☐ Oil & Grease	780	☐ Sulfide	672	☐ M.F. Fecal Coliforms/100ml.	655
				☐ Plate Count-Org./ml.	599

3 ☐ Filtered ☐ Unfiltered

me/l	CATIONS	mg/l	ug/l (ppb)
	☐ Ammonia as N	722	
	☐ Arsenic		723
	☐ Barium		724
	☐ Boron		725
	☐ Cadmium		727
	☐ Calcium	728	
	☐ Chromium		729
	☐ Chromium, Hex. as Cr		730
	☐ Copper		732
	☐ Iron, dissolved		733
	☐ Lead		734
	☐ Magnesium	737	
	☐ Manganese		738
	☐ Nickel		740
	☐ Potassium	742	
	☐ Selenium		743
	☐ Silver		744
	☐ Sodium	745	
	☐ Zinc		749
	TOTAL CATIONS		

4 CHEMICAL ANALYSIS

pH, units 8.1

me/l	ANIONS	mg/l
	☐ Bicarbonate	758
	☐ Carbon Dioxide	759
	☐ Carbonate	760
	☐ Chloride	763
	☐ CO_3 Solids	
	☐ Fluoride	765
	☐ Hydroxide	767
	☐ Nitrate as N	605
	☐ Nitrite as N	606
	☐ Phosphorus, Ortho as P	607
	☐ Silica, dissolved as SiO_2	750
	☐ Sulfate	772
	TOTAL ANIONS	
	GRAND TOTAL	

☐ Tot. Phosphorus	785	
☐ Total Alk. as $CaCO_3$	752	
☐ T. Hdns. as $CaCO_3$	754	
☐ Surfactant as MBAS	773	
☐ Turbidity, as NTU	757	
☐ Sp. Gravity	608	
☒ Volatile Susp Solids	9	

TOTAL METALS ANALYSIS

5

CATIONS	mg/l	ug/l (ppb)
Aluminum		800
Arsenic		660
Barium		661
Beryllium		801
Cadmium		662
Chromium		663
Cobalt		804
Copper		664
Gold		700
Iron	755	
Lead		665
Manganese		666
Mercury		739
Molybdenum		802
Nickel		667
Selenium		668
Silver		669
Uranium,		601
Vanadium		803
Zinc		670

6

☐ Sp. Cond. µmhos/cm.	762
☐ TDS @ 180°C	786

7 RADIOLOGICS

	pc/l-g		pc/l-g	
☐ Alpha, gross	621	☐ ^{89}Sr	633	
☐ Beta, gross	623	☐ ^{131}I	635	
☐ Tritium, ^3H	625	☐ ^{134}Cs	637	
☐ ^{226}Radium	627	☐ ^{137}Cs	639	
☐ ^{228}Radium	629	☐		
☐ ^{90}Sr	631	☐		

Analyses Approved By: _____ Date: _____

INTERPRETATION OF ANALYSES:
Remarks:

Based on State Standards, this sample was:

	Satisfactory	Conditional	Unsatisfactory
B.O.D.$_5$			
Tot. Sus. Solids			
M.P.N. Total Coliform.			
M.P.N. Fecal Coliform.			

By _____
ENVIRONMENTAL HEALTH

Rev. 7/80

Field No. _____

☐ TC ☐ TM ☐ Nut
☐ PC ☐ PM ☐ BOD

☐ Pest.
☐ Rad.
☐ Bact.
☐ Spec.

Date Recd.: _____

Received By: _____

UTAH STATE DEPARTMENT OF HEALTH
ENVIRONMENTAL HEALTH
WATER ANALYSES

Sample No. 701

Storet No. 702 | Water Syst. No. 703 | Source No. 704

Date Collected (yr. mo. dy.) 82 05 18 714 | Time Collected (24-hour clock) 09 17 618 | Water Rights No. 707

Exact Description of sampling Point: FIAMATHA KING 3 MILE CREEK 30 FT BELOW SEDIMENT POND 646

Supply Owned by: US FUEL CO 712 | Sample Type 710

Sample Collected by: KEN WYATT 713

SEND REPORT TO: Phone 583 5777
DIV. OF GAS & MINING 715
WILL STOTLER 648
SALT LAKE CITY, UTAH 717
zip code

Sample Source 719: 01 Spring, 02 Well, 03 Stream, 04 Lake, 06 Dist. syst., 07 Effluent, 08 Storm sewer, 14 Other, 15 Tunnel, 18 Artesian well, 19 Swimming pool

County 611: 01 Beaver, 02 Box Elder, 03 Cache, 04 Carbon, 05 Daggett, 06 Davis, 07 Duchesne, 08 Emery, 09 Garfield, 10 Grand, 11 Iron, 12 Juab, 13 Kane, 14 Millard, 15 Morgan, 16 Piute, 17 Rich, 18 Salt Lake, 19 San Juan, 20 Sanpete, 21 Sevier, 22 Summit, 23 Tooele, 24 Uintah, 25 Utah, 26 Wasatch, 27 Washington, 28 Wayne, 29 Weber

Current use ☐ 708
Proposed use ☐ 709
1. Culinary
2. Agriculture
3. Industrial
4. Other

1 FIELD TESTS

Temperature (°C)	792	CO_2, mg/l	572
D.O., mg/l	793	Depth, m	609
Sp. Cond. µ mhos	653	Cl Resid., mg/l	753
pH	651	Flow, MGD	652
Sp. Gravity	608	Flow, GPM	604
Transparency, m	649	Flow, cfs	659

2 WASTEWATER ANALYSIS

Temperature (°C) 650 | pH 782 | BACT. LAB. No.

	mg/l		mg/l		
☐ B.O.D.$_5$	794	☐ T.O.C.	671	☐ M.P.N. Total Coliforms/100ml	658
☒ Tot. Sus. Solids	787 (222)	☐ C.O.D.	777	☐ M.P.N. Fecal Coliforms/100ml	657
NO_2+NO_3,N	602	☐ Cyanide	775	☐ Fecal Strep C/100ml.	656
☐ T.K.N.	778	☐ Phenolics	783	☐ M.F. Total Coliforms/100ml.	654
☐ Oil & Grease	780	☐ Sulfide	672	☐ M.F. Fecal Coliforms/100ml.	655
				☐ Plate Count-Org./ml.	599

3 Filtered ☐ Unfiltered ☐

me/l	CATIONS	mg/l	ug/l (ppb)	
	Ammonia as N			722
	Arsenic			723
	Barium			724
	Boron			725
	Cadmium			727
	Calcium			728
	Chromium			729
	Chromium, Hex. as Cr			730
	Copper			732
	Iron, dissolved			733
	Lead			734
	Magnesium			737
	Manganese			738
	Nickel			740
	Potassium			742
	Selenium			743
	Silver			744
	Sodium			745
	Zinc			749

TOTAL CATIONS _____

4 CHEMICAL ANALYSIS

pH, units 783

me/l	ANIONS	mg/l	
	Bicarbonate		758
	Carbon Dioxide		759
	Carbonate		760
	Chloride		763
	CO_3 Solids		
	Fluoride		765
	Hydroxide		767
	Nitrate as N		605
	Nitrite as N		606
	Phosphorus, Ortho as P		607
	Silica, dissolved as SiO_2		750
	Sulfate		772

TOTAL ANIONS _____
GRAND TOTAL _____

Tot. Phosphorus		785
Total Alk. as $CaCO_3$		752
T. Hdns. as $CaCO_3$		754
Surfactant as MBAS		773
Turbidity, as NTU		757
Sp. Gravity		608

TOTAL METALS ANALYSIS

5

CATIONS	mg/l	ug/l (ppb)	
Aluminum			800
Arsenic			660
Barium			661
Beryllium			801
Cadmium			662
Chromium			663
Cobalt			804
Copper			664
Gold			700
Iron			755
Lead			665
Manganese			666
Mercury			739
Molybdenum			802
Nickel			667
Selenium			668
Silver			669
Uranium			601
Vanadium			803
Zinc			670

6

☐ Sp. Cond. µmhos/cm.		762
☒ TDS @ 180°C		786

7 RADIOLOGICS

	pc/l-g		pc/l-g	
☐ Alpha, gross		621	^{89}Sr	633
Beta, gross		623	^{131}I	635
Tritium, ^3H		625	^{134}Cs	637
^{226}Radium		627	^{137}Cs	639
^{228}Radium		629		
^{90}Sr		631		

Analyses Approved By: RE Lovett Date: 820518

INTERPRETATION OF ANALYSES:
Remarks: Required to reconstruct pond. NOV 82-2-5-1

Based on State Standards, this sample was:

	Satisfactory	Conditional	Unsatisfactory
B.O.D.$_5$			
Tot. Sus. Solids			
M.P.N. Total Coliform.			
M.P.N. Fecal Coliform.			

By _____
ENVIRONMENTAL HEALTH

Field # 3

Rev. 7/80

Field No. _____

☐ TC ☐ TM ☐ Nut
☐ PC ☐ PM ☐ BOD

☐ Pest.
☐ Rad.
☐ Bact.
☐ Spec.

Date Recd.: _____

Received By: _____

UTAH STATE DEPARTMENT OF HEALTH
ENVIRONMENTAL HEALTH

WATER ANALYSES

Sample No. 701

Storet No. 702

Water Syst. No. 703 Source No. 704

Date Collected (yr. mo. dy.): 82 05 13 714

Time Collected (24-hour clock): 0917 810

Water Rights No. 707

Exact Description of sampling Point 646
HIAWATHA KING VI
MILLER CREEK 30 FT
BELOW SEDIMENT POND

Supply Owned by 712
US FUEL CO

Sample Type 710

Sample Collected by 713
KEN WYATT

SEND REPORT TO: Phone 715
648
717
zip code

Sample Source 719
01 Spring
02 Well
03 Stream
04 Lake
06 Dist. syst.
07 Effluent
08 Storm sewer
14 Other
15 Tunnel
18 Artesian well
19 Swimming pool

County 611
01 Beaver
02 Box Elder
03 Cache
04 Carbon
05 Daggett
06 Davis
07 Duchesne
08 Emery
09 Garfield
10 Grand
11 Iron
12 Juab
13 Kane
14 Millard
15 Morgan
16 Piute
17 Rich
18 Salt Lake
19 San Juan
20 Sanpete
21 Sevier
22 Summit
23 Tooele
24 Uintah
25 Utah
26 Wasatch
27 Washington
28 Wayne
29 Weber

Current use 708
Proposed use 709

1. Culinary
2. Agriculture
3. Industrial
4. Other

1 FIELD TESTS

Temperature (°C)	792	CO_2, mg/l	572
D.O., mg/l	793	Depth, m	609
Sp. Cond. µ mhos	653	Cl Resid., mg/l	753
pH	651	Flow, MGD	652
Sp. Gravity	608	Flow, GPM	604
Transparency, m	649	Flow, cfs	659

2 WASTEWATER ANALYSIS

Temperature (°C) 650 pH 782 BACT. LAB. No.

	mg/l		mg/l		
B.O.D.$_5$	794	T.O.C.	671	M.P.N. Total Coliforms/100ml	658
☒ Tot. Sus. Solids 222	787	C.O.D.	777	M.P.N. Fecal Coliforms/100ml	657
NO_2+NO_3,N	602	Cyanide	775	Fecal Strep C/100ml.	656
T.K.N.	778	Phenolics	783	M.F. Total Coliforms/100ml.	654
Oil & Grease	780	Sulfide	672	M.F. Fecal Coliforms/100ml.	655
				Plate Count-Org./ml.	599

3 Filtered / Unfiltered

me/l	CATIONS	mg/l	ug/l (ppb)	
	Ammonia as N			722
	Arsenic			723
	Barium			724
	Boron			725
	Cadmium			727
	Calcium			728
	Chromium			729
	Chromium, Hex. as Cr			730
	Copper			732
	Iron, dissolved			733
	Lead			734
	Magnesium			737
	Manganese			738
	Nickel			740
	Potassium			742
	Selenium			743
	Silver			744
	Sodium			745
	Zinc			749
	TOTAL CATIONS			

4 CHEMICAL ANALYSIS

pH, units 8.3

me/l	ANIONS	mg/l	
	Bicarbonate		758
	Carbon Dioxide		759
	Carbonate		760
	Chloride		763
	CO_3 Solids		
	Fluoride		765
	Hydroxide		767
	Nitrate as N		605
	Nitrite as N		606
	Phosphorus, Ortho as P		607
	Silica, dissolved as SiO_2		750
	Sulfate		772
	TOTAL ANIONS		
	GRAND TOTAL		

	Tot. Phosphorus	785
	Total Alk. as $CaCO_3$	752
	T. Hdns. as $CaCO_3$	754
	Surfactant as MBAS	773
	Turbidity, as NTU	757
	Sp. Gravity	608
X	Vol. Susp. Solids 37	

TOTAL METALS ANALYSIS

5 CATIONS	mg/l	ug/l (ppb)	
Aluminum			800
Arsenic			660
Barium			661
Beryllium			801
Cadmium			662
Chromium			663
Cobalt			804
Copper			664
Gold			700
Iron			755
Lead			665
Manganese			666
Mercury			739
Molybdenum			802
Nickel			667
Selenium			668
Silver			669
Uranium,			601
Vanadium			803
Zinc			670

6

	Sp. Cond. µmhos/cm.	762
	TDS @ 180°C	786

7 RADIOLOGICS

	pc/l-g		pc/l-g	
Alpha, gross		621	^{89}Sr	633
Beta, gross		623	^{131}I	635
Tritium, ^3H		625	^{134}Cs	637
^{226}Radium		627	^{137}Cs	639
^{228}Radium		629		
^{90}Sr		631		

Analyses Approved By: Date:

INTERPRETATION OF ANALYSES:
Remarks:

Based on State Standards, this sample was:

	Satisfactory	Conditional	Unsatisfactory
B.O.D.$_5$			
Tot. Sus. Solids			
M.P.N. Total Coliform.			
M.P.N. Fecal Coliform.			

By _____
ENVIRONMENTAL HEALTH

Field # 5

Rev. 7/80

Field No. _____

☐ TC ☐ TM ☐ Nut
☐ PC ☐ PM ☐ BOD

☐ Pest.
☐ Rad.
☐ Bact.
☐ Spec.

Date Recd.: _____

Received By: _____

UTAH STATE DEPARTMENT OF HEALTH
ENVIRONMENTAL HEALTH
WATER ANALYSES

Sample No. 701

Storet No. 702

Water Syst. No. 703 Source No. 704

Date Collected 714: 82 05 13 (yr. mo. dy.)

Time Collected 610: 1012 (24-hour clock)

Water Rights No. 707

Exact Description of sampling Point 646:
HIAWATHA KING VI PAD
@ 300' BELOW CULVERT
ON MILLER CREEK

Supply Owned by 712: US FUEL CO

Sample Type 710

Sample Collected by 713: KEN WYATT

SEND REPORT TO: Phone 715 648 717

Zip code

Sample Source 719:
01 Spring, 02 Well, 03 Stream, 04 Lake, 06 Dist. syst., 07 Effluent, 08 Storm sewer, 14 Other, 15 Tunnel, 18 Artesian well, 19 Swimming pool

County 611:
01 Beaver, 02 Box Elder, 03 Cache, 04 Carbon, 05 Daggett, 06 Davis, 07 Duchesne, 08 Emery, 09 Garfield, 10 Grand, 11 Iron, 12 Juab, 13 Kane, 14 Millard, 15 Morgan, 16 Piute, 17 Rich, 18 Salt Lake, 19 San Juan, 20 Sanpete, 21 Sevier, 22 Summit, 23 Tooele, 24 Uintah, 25 Utah, 26 Wasatch, 27 Washington, 28 Wayne, 29 Weber

Current use 708
Proposed use 709

1. Culinary
2. Agriculture
3. Industrial
4. Other

1 FIELD TESTS

Temperature (°C)	792	CO_2, mg/l	572
D.O., mg/l	793	Depth, m	609
Sp. Cond. µ mhos	653	Cl Resid., mg/l	753
pH	651	Flow, MGD	652
Sp. Gravity	608	Flow, GPM	604
Transparency, m	649	Flow, cfs	659

2 WASTEWATER ANALYSIS

Temperature (°C) 650 | pH 782 | BACT. LAB. No.

	mg/l		mg/l		
B.O.D.$_5$	794	T.O.C.	671	M.P.N. Total Coliforms/100ml	658
X Tot. Sus. Solids	787 125	C.O.D.	777	M.P.N. Fecal Coliforms/100ml	657
NO_2+NO_3,N	602	Cyanide	775	Fecal Strep C/100ml.	656
T.K.N.	778	Phenolics	783	M.F. Total Coliforms/100ml.	654
Oil & Grease	780	Sulfide	672	M.F. Fecal Coliforms/100ml.	655
				Plate Count-Org./ml.	599

3 Filtered / Unfiltered

me/l	CATIONS	mg/l	ug/l (ppb)	
	Ammonia as N			722
	Arsenic			723
	Barium			724
	Boron			725
	Cadmium			727
	Calcium			728
	Chromium			729
	Chromium, Hex. as Cr			730
	Copper			732
	Iron, dissolved			733
	Lead			734
	Magnesium			737
	Manganese			738
	Nickel			740
	Potassium			742
	Selenium			743
	Silver			744
	Sodium			745
	Zinc			749
	TOTAL CATIONS			

4 CHEMICAL ANALYSIS

pH, units 8.1

me/l	ANIONS	mg/l	
	Bicarbonate		758
	Carbon Dioxide		759
	Carbonate		760
	Chloride		763
	CO_3 Solids		
	Fluoride		765
	Hydroxide		767
	Nitrate as N		605
	Nitrite as N		606
	Phosphorus, Ortho as P		607
	Silica, dissolved as SiO_2		750
	Sulfate		772
	TOTAL ANIONS		
	GRAND TOTAL		

	Tot. Phosphorus	785
	Total Alk. as $CaCO_3$	752
	T. Hdns. as $CaCO_3$	754
	Surfactant as MBAS	773
	Turbidity, as NTU	757
	Sp. Gravity	608
X	Volatile Susp. Solids 50	

TOTAL METALS ANALYSIS

5 CATIONS	mg/l	ug/l (ppb)	
Aluminum			800
Arsenic			660
Barium			661
Beryllium			801
Cadmium			662
Chromium			663
Cobalt			804
Copper			664
Gold			700
Iron			755
Lead			665
Manganese			666
Mercury			739
Molybdenum			802
Nickel			667
Selenium			668
Silver			669
Uranium,			601
Vanadium			803
Zinc			670

6

	Sp. Cond. µmhos/cm.	762
	TDS @ 180°C	786

7 RADIOLOGICS

	pc/l-g		pc/l-g	
Alpha, gross		621	^{89}Sr	633
Beta, gross		623	^{131}I	635
Tritium, ^3H		625	^{134}Cs	637
^{226}Radium		627	^{137}Cs	639
^{228}Radium		629		
^{90}Sr		631		

Analyses Approved By: _____ Date: _____

INTERPRETATION OF ANALYSES:
Remarks:

NAOC 82-2-5-1

By _____
ENVIRONMENTAL HEALTH

Based on State Standards, this sample was:

	Satisfactory	Conditional	Unsatisfactory
B.O.D.$_5$			
Tot. Sus. Solids			
M.P.N. Total Coliform.			
M.P.N. Fecal Coliform.			

Field # 4

Rev. 7/80

Field No. _____

☐ TC ☐ TM ☐ Nut ☐ Pest.
☐ PC ☐ PM ☐ BOD ☐ Rad. ☐ Bact. ☐ Spec.

Date Recd.: _____

Received By: _____

UTAH STATE DEPARTMENT OF HEALTH
ENVIRONMENTAL HEALTH
WATER ANALYSES

Sample No. 701

Storet No. 702

Water Syst. No. 703 Source No. 704

Date Collected (yr. mo. dy.): 82 05 13 714

Time Collected (24-hour clock): 0958 610

Water Rights No. 707

Exact Description of sampling Point 646:
HIAWATHA KING II PAD
SOUTH FORK MILLER
CREEK ABOVE MINE

Supply Owned by: US FUEL CO 712

Sample Type 710

Sample Collected by: KEN WYATT 713

SEND REPORT TO: Phone 715
648
717
zip code

Sample Source 719: 04
01 Spring, 02 Well, 03 Stream, 04 Lake, 06 Dist. syst., 07 Effluent, 08 Storm sewer, 14 Other, 15 Tunnel, 18 Artesian well, 19 Swimming pool

County 611: 04
01 Beaver, 02 Box Elder, 03 Cache, 04 Carbon, 05 Daggett, 06 Davis, 07 Duchesne, 08 Emery, 09 Garfield, 10 Grand, 11 Iron, 12 Juab, 13 Kane, 14 Millard, 15 Morgan, 16 Piute, 17 Rich, 18 Salt Lake, 19 San Juan, 20 Sanpete, 21 Sevier, 22 Summit, 23 Tooele, 24 Uintah, 25 Utah, 26 Wasatch, 27 Washington, 28 Wayne, 29 Weber

Current use: 4 708
Proposed use: 709

1. Culinary
2. Agriculture
3. Industrial
4. Other

1 FIELD TESTS

Temperature (°C)	792	CO_2, mg/l	572
D.O., mg/l	793	Depth, m	609
Sp. Cond. µ mhos.	653	Cl Resid., mg/l	753
pH	651	Flow, MGD	652
Sp. Gravity	608	Flow, GPM	604
Transparency, m	649	Flow, cfs	659

2 WASTEWATER ANALYSIS

Temperature (°C) 650 pH 782 BACT. LAB. No.

	mg/l		mg/l		
B.O.D.$_5$	794	T.O.C.	671	M.P.N. Total Coliforms/100ml	658
X Tot. Sus. Solids	37 787	C.O.D.	777	M.P.N. Fecal Coliforms/100ml	657
NO_2+NO_3,N	602	Cyanide	775	Fecal Strep C/100ml.	656
T.K.N.	778	Phenolics	783	M.F. Total Coliforms/100ml.	654
Oil & Grease	780	Sulfide	672	M.F. Fecal Coliforms/100ml.	655
				Plate Count-Org./ml.	599

3 Filtered ☐ Unfiltered ☐

me/l	CATIONS	mg/l	ug/l (ppb)
	Ammonia as N	722	
	Arsenic		723
	Barium		724
	Boron		725
	Cadmium		727
	Calcium	728	
	Chromium		729
	Chromium, Hex. as Cr		730
	Copper		732
	Iron, dissolved		733
	Lead		734
	Magnesium	737	
	Manganese		738
	Nickel		740
	Potassium	742	
	Selenium		743
	Silver		744
	Sodium	745	
	Zinc		749
	TOTAL CATIONS		

4 CHEMICAL ANALYSIS

pH, units 7.9

me/l	ANIONS	mg/l
	Bicarbonate	758
	Carbon Dioxide	759
	Carbonate	760
	Chloride	763
	CO_3 Solids	
	Fluoride	765
	Hydroxide	767
	Nitrate as N	605
	Nitrite as N	606
	Phosphorus, Ortho as P	607
	Silica, dissolved as SiO_2	750
	Sulfate	772
	TOTAL ANIONS	
	GRAND TOTAL	

Tot. Phosphorus	785
Total Alk. as $CaCO_3$	752
T. Hdns. as $CaCO_3$	754
Surfactant as MBAS	773
Turbidity, as NTU	757
Sp. Gravity	608
X Volatile Susp Solids	6.0

TOTAL METALS ANALYSIS

5

CATIONS	mg/l	ug/l (ppb)
Aluminum		800
Arsenic		660
Barium		661
Beryllium		801
Cadmium		662
Chromium		663
Cobalt		804
Copper		664
Gold		700
Iron	755	
Lead		665
Manganese		666
Mercury		739
Molybdenum		802
Nickel		667
Selenium		668
Silver		669
Uranium,		601
Vanadium		803
Zinc		670

6

Sp. Cond. µmhos/cm.	762
TDS @ 180°C	786

7 RADIOLOGICS

	pc/l-g		pc/l-g
Alpha, gross	621	^{89}Sr	633
Beta, gross	623	^{131}I	635
Tritium, ^3H	625	^{134}Cs	637
^{226}Radium	627	^{137}Cs	639
^{228}Radium	629		
^{90}Sr	631		

Analyses Approved By: _____ Date: _____

INTERPRETATION OF ANALYSES:
Remarks:

Based on State Standards, this sample was:

	Satisfactory	Conditional	Unsatisfactory
B.O.D.$_5$			
Tot. Sus. Solids			
M.P.N. Total Coliform.			
M.P.N. Fecal Coliform.			

By _____
ENVIRONMENTAL HEALTH

Field # 6

Rev. 7/80

Field No. _____

☐ TC ☐ TM ☐ Nut ☐ Pest. ☐ Rad. ☐ Bact. ☐ Spec.

☐ PC ☐ PM ☐ BOD

Date Recd.: _____

Received By: _____

UTAH STATE DEPARTMENT OF HEALTH

ENVIRONMENTAL HEALTH

WATER ANALYSES

Sample No. 701

Storet No. 702

Water Syst. No. 703 Source No. 704

Date Collected 714 (yr. mo. dy.) 8 2 0 5 1 3

Time Collected 810 (24-hour clock) 1 0 4 2

Water Rights No. 707

Exact Description of sampling Point 646

HIAWATHA KING VI
MILLER CREEK @100 ft
ABOVE CULVERT AT ROAD VI

Supply Owned by 712: US FUEL CO

Sample Type 710

Sample Collected by 713: KEN WYATT

SEND REPORT TO: Phone 715 648 717 zip code

Sample Source 719: 04
01 Spring, 02 Well, 03 Stream, 04 Lake, 06 Dist. syst., 07 Effluent, 08 Storm sewer, 14 Other, 15 Tunnel, 18 Artesian well, 19 Swimming pool

County 611: 04
01 Beaver, 02 Box Elder, 03 Cache, 04 Carbon, 05 Daggett, 06 Davis, 07 Duchesne, 08 Emery, 09 Garfield, 10 Grand, 11 Iron, 12 Juab, 13 Kane, 14 Millard, 15 Morgan, 16 Piute, 17 Rich, 18 Salt Lake, 19 San Juan, 20 Sanpete, 21 Sevier, 22 Summit, 23 Tooele, 24 Uintah, 25 Utah, 26 Wasatch, 27 Washington, 28 Wayne, 29 Weber

Current use 708

Proposed use 709

1. Culinary
2. Agriculture
3. Industrial
4. Other

1 FIELD TESTS

Temperature (°C)	792	CO_2, mg/l	572
D.O., mg/l	793	Depth, m	609
Sp. Cond. µ mhos	653	Cl Resid., mg/l	753
pH	651	Flow, MGD	652
Sp. Gravity	608	Flow, GPM	604
Transparency, m	649	Flow, cfs	659

2 WASTEWATER ANALYSIS

Temperature (°C) 650 pH 782 BACT. LAB. No.

	mg/l		mg/l		
B.O.D.$_5$	794	T.O.C.	671	M.P.N. Total Coliforms/100ml	658
☒ Tot. Sus. Solids	787 (5)	C.O.D.	777	M.P.N. Fecal Coliforms/100ml	657
NO_2+NO_3,N	602	Cyanide	775	Fecal Strep C/100ml.	656
T.K.N.	778	Phenolics	783	M.F. Total Coliforms/100ml.	654
Oil & Grease	780	Sulfide	672	M.F. Fecal Coliforms/100ml.	655
				Plate Count-Org./ml.	599

3 Filtered ☐ Unfiltered

me/l	CATIONS	mg/l	ug/l (ppb)
	Ammonia as N	722	
	Arsenic		723
	Barium		724
	Boron		725
	Cadmium		727
	Calcium	728	
	Chromium		729
	Chromium, Hex. as Cr		730
	Copper		732
	Iron, dissolved		733
	Lead		734
	Magnesium	737	
	Manganese		738
	Nickel		740
	Potassium	742	
	Selenium		743
	Silver		744
	Sodium	745	
	Zinc		749
	TOTAL CATIONS		

4 CHEMICAL ANALYSIS

pH, units 8.0

me/l	ANIONS	mg/l
	Bicarbonate	758
	Carbon Dioxide	759
	Carbonate	760
	Chloride	763
	CO_3 Solids	
	Fluoride	765
	Hydroxide	767
	Nitrate as N	605
	Nitrite as N	606
	Phosphorus, Ortho as P	607
	Silica, dissolved as SiO_2	750
	Sulfate	772
	TOTAL ANIONS	
	GRAND TOTAL	

Tot. Phosphorus	785
Total Alk. as $CaCO_3$	752
T. Hdns. as $CaCO_3$	754
Surfactant as MBAS	773
Turbidity, as NTU	757
Sp. Gravity	608
☒ Volatile Sus Solids	< 3.0

TOTAL METALS ANALYSIS

5

CATIONS	mg/l	ug/l (ppb)
Aluminum		800
Arsenic		660
Barium	661	
Beryllium		801
Cadmium		662
Chromium		663
Cobalt		804
Copper		664
Gold		700
Iron	755	
Lead		665
Manganese		666
Mercury		739
Molybdenum		802
Nickel		667
Selenium		668
Silver		669
Uranium,		601
Vanadium		803
Zinc		670

6

Sp. Cond. µmhos/cm.	762
TDS @ 180°C	786

7 RADIOLOGICS

	pc/l-g		pc/l-g	
Alpha, gross	621	^{89}Sr		633
Beta, gross	623	^{131}I		635
Tritium, ^3H	625	^{134}Cs		637
^{226}Radium	627	^{137}Cs		639
^{228}Radium	629			
^{90}Sr	631			

Analyses Approved By: Date:

INTERPRETATION OF ANALYSES:

Remarks:

Based on State Standards, this sample was:

	Satisfactory	Conditional	Unsatisfactory
B.O.D.$_5$			
Tot. Sus. Solids			
M.P.N. Total Coliform.			
M.P.N. Fecal Coliform.			

By _____

ENVIRONMENTAL HEALTH

File
ACT/007/011
Copy to
~~Wayne~~
JIM

RECEIVED
APR 19 1982
DIVISION OF
OIL, GAS & MINING
APR 23 1982

SURFACE AND GROUNDWATER MONITORING PLAN

1st Quarter 1982

United States Fuel Company

Hiawatha, Utah 84527

SPRING MONITORING REPORT

DATE: 1ST QUARTER -1982

EFFLUENT CHARACTERISTIC		SP-1	SP-2	SP-3	SP-4	SP-5	SP-6
Flow Rate	G.P.M.						
PH	Units						
Air Temp.	°F						
Water Temp.	°F						
Conductivity	umhos/cm						
Acidity	Mg/L						
Total Suspended Solids	Mg/L						
Total Dissolved Solids	Mg/L						
Total Organic Carbon	Mg/L						
Total Manganese	Mg/L						
Total Iron	Mg/L						
Dissolved Iron	Mg/L						
Calcium	Mg/L						
Magnesium	Mg/L						
Sodium	Mg/L						
Potassium	Mg/L						
Carbonate	Mg/L						
Fluoride	Mg/L						
Bicarbonate	Mg/L						
Chloride	Mg/L						
Sulfate	Mg/L						
Nitrate NO_3-N	Mg/L						
Nitrate NO_2-N	Mg/L						
Kjeldahl N	Mg/L						
Dissolved Phosphorus	Mg/L						
Silica	Mg/L						
Trace Elements:							
Arsenic	Mg/L						
Cadmium	Mg/L						
Zinc	Mg/L						
Selenium	Mg/L						
Radioactivity:							
Gross Alpha	Pci/L						
Gross Beta	Pci/L						
Oil and Grease	Mg/L						

INACCESSIBLE

SPRING MONITORING REPORT

DATE: 1st QUARTER - 1982

EFFLUENT CHARACTERISTIC		SP-7	SP-8			SP-9	SP-10
Flow Rate	G.P.M.						
PH	Units						
Air Temp.	°F						
Water Temp.	°F						
Conductivity	umhos/cm						
Acidity	Mg/L						
Total Suspended Solids	Mg/L						
Total Dissolved Solids	Mg/L						
Total Organic Carbon	Mg/L						
Total Manganese	Mg/L						
Total Iron	Mg/L						
Dissolved Iron	Mg/L						
Calcium	Mg/L						
Magnesium	Mg/L						
Sodium	Mg/L						
Potassium	Mg/L						
Carbonate	Mg/L						
Fluoride	Mg/L						
Bicarbonate	Mg/L						
Chloride	Mg/L						
Sulfate	Mg/L						
Nitrate NO_3-N	Mg/L						
Nitrate NO_2-N	Mg/L						
Kjeldahl N	Mg/L						
Dissolved Phosphorus	Mg/L						
Silica	Mg/L						
Trace Elements:							
Arsenic	Mg/L						
Cadmium	Mg/L						
Zinc	Mg/L						
Selenium	Mg/L						
Radioactivity:							
Gross Alpha	Pci/L						
Gross Beta	Pci/L						
Oil and Grease	Mg/L						

INACCESSIBLE

Date: 1st QUARTER - 1982 STREAM MONITORING REPORT

EFFLUENT CHARACTERISTIC		ST-1	ST-2	ST-2A	ST-2B	ST-3	ST-3A
Flow Rate	G.P.M.						
PH	Units						
Air Temp.	°F						
Water Temp.	°F						
Conductivity	umhos/cm						
Acidity	Mg/L						
Total Suspended Solids	Mg/L						
Total Dissolved Solids	Mg/L						
Total Organic Carbon	Mg/L						
Total Manganese	Mg/L						
Total Iron	Mg/L						
Dissolved Iron	Mg/L						
Calcium	Mg/L						
Magnesium	Mg/L						
Sodium	Mg/L						
Potassium	Mg/L						
Carbonate	Mg/L						
Fluoride	Mg/L						
Bicarbonate	Mg/L						
Chloride	Mg/L						
Sulfate	Mg/L						
Nitrate NO_3-N	Mg/L						
Nitrate NO_2-N	Mg/L						
Kjeldahl N	Mg/L						
Dissolved Phosphorus	Mg/L						
Silica	Mg/L						
Trace Elements:							
Arsenic	Mg/L						
Cadmium	Mg/L						
Zinc	Mg/L						
Selenium	Mg/L						
Radioactivity:							
Gross Alpha	Pci/L						
Gross Beta	Pci/L						
Oil and Grease	Mg/L						

INACCESSIBLE

Date: 1st QUARTER - 1982 STREAM MONITORING REPORT

EFFLUENT CHARACTERISTIC		ST-3B	ST-4	ST-4A	ST-4B	ST-5	ST-6A
Flow Rate	G.P.M.						
PH	Units						
Air Temp.	°F						
Water Temp.	°F						
Conductivity	umhos/cm						
Acidity	Mg/L						
Total Suspended Solids	Mg/L						
Total Dissolved Solids	Mg/L						
Total Organic Carbon	Mg/L						
Total Manganese	Mg/L						
Total Iron	Mg/L						
Dissolved Iron	Mg/L						
Calcium	Mg/L						
Magnesium	Mg/L						
Sodium	Mg/L						
Potassium	Mg/L						
Carbonate	Mg/L						
Fluoride	Mg/L						
Bicarbonate	Mg/L	INACCESSIBLE					
Chloride	Mg/L						
Sulfate	Mg/L						
Nitrate NO_3-N	Mg/L						
Nitrate NO_2-N	Mg/L						
Kjeldahl N	Mg/L						
Dissolved Phosphorus	Mg/L						
Silica	Mg/L						
Trace Elements:							
Arsenic	Mg/L						
Cadmium	Mg/L						
Zinc	Mg/L						
Selenium	Mg/L						
Radioactivity:							
Gross Alpha	Pci/L						
Gross Beta	Pci/L						
Oil and Grease	Mg/L						

Date: 1st QUARTER-1982

STREAM MONITORING REPORT

EFFLUENT CHARACTERISTIC		ST-6					
Flow Rate	G.P.M.						
PH	Units						
Air Temp.	°F						
Water Temp.	°F						
Conductivity	umhos/cm						
Acidity	Mg/L						
Total Suspended Solids	Mg/L						
Total Dissolved Solids	Mg/L						
Total Organic Carbon	Mg/L						
Total Manganese	Mg/L						
Total Iron	Mg/L						
Dissolved Iron	Mg/L						
Calcium	Mg/L						
Magnesium	Mg/L						
Sodium	Mg/L						
Potassium	Mg/L						
Carbonate	Mg/L						
Fluoride	Mg/L						
Bicarbonate	Mg/L						
Chloride	Mg/L						
Sulfate	Mg/L						
Nitrate NO_3-N	Mg/L						
Nitrate NO_2-N	Mg/L						
Kjeldahl N	Mg/L						
Dissolved Phosphorus	Mg/L						
Silica	Mg/L						
Trace Elements:							
Arsenic	Mg/L						
Cadmium	Mg/L						
Zinc	Mg/L						
Selenium	Mg/L						
Radioactivity:							
Gross Alpha	Pci/L						
Gross Beta	Pci/L						
Oil and Grease	Mg/L						

INACCESSIBLE

MOHRLAND PORTAL

MINE WATER DISCHARGE MONITORING REPORT

DATE 1st QUARTER - 1982

Effluent Characteristic	Flow Rate G.P.M.	Total Suspended Solids Mg/L	Total Dissolved Solids Mg/L	Total Manganese Mg/L	Total Iron Mg/L	Dissolved Iron Mg/L	Alkalinity Mg/L	Acidity Mg/L	PH Units	Oil & Grease Mg/L	BOD_5 Mg/L	Total Coloforms MPN/100ML	Fecal Coloforms MPN/100ML
January													
February	INACCESSIBLE												
March	232.6	12.0	628	0.010	0.080	0.080	323.6	36.0	7.50	<1.0	3.4	110	<2.0
April													
May													
June													
July													
August													
September													
October													
November													
December													

Water Quality File

WAYNE

June 8, 1982

Inspection Memo
to Coal File:

RE: U. S. Fuel Company
Hiawatha Complex
ACT/007/011
Carbon County, Utah

Jodie Merriman and Frank Atencio, OSM, and Ken Wyatt and Sandy Pruitt of the Division, conducted a partial inspection of the King VI Mine area on May 11, 1982 with Jean Semborski and on May 13, 1982 (unaccompanied with permission) in follow-up to NOV #1 (N82-7-2-1). The NOV was abated with the establishment of a water bar across the road below the shop/warehouse pad that diverted disturbed area runoff along the conveyor and then into the mine yard sediment pond. The ditch and culvert along the truck turnaround/loadout was cleared of obstruction and would divert runoff to the loadout sediment pond. NOV #1 was terminated effectively April 30, 1982 on May 11, 1982.

Additional compliance work was required as a result of this inspection. The South Fork of Miller Creek (an intermittent stream) was flowing at about 50 gpm on May 13, 1982, but flow was obstructed along the King VI loadout pond by embankment material sidecast into the channel during pond reconstruction in December 1981 and winter sloughage off the uncompacted embankment outslopes. The results of samples taken in South Fork Miller Creek indicate additional contributions of sediment from 41 ppm TSS above the pond to 222 ppm TSS 30 feet below the pond. Extensive tension cracks on the southern embankment of the sediment pond indicate that more material will probably slough into the creek channel and requires determination of the embankment's stability particularly of the extended section east of the decant pipe where most of the water is impounded. The emergency spillway is lower than the principal decant pipe but fortunately the impounded water level, although about one foot below the spillway, had not risen to the decant pipe where it may circuit through loose material around the pipe and create a breach in the pond. In addition, the pond may leak by infiltration due to inadequate compaction. (It wasn't definite at the time of the inspection whether wet spots on the pond outslope resulted from pond seepage or recent snowmelt. No seepage flow was observed.)

To address these concerns NAOC #1 of 2 (82-2-5-2) was issued on May 14, 1982 for the inappropriate design and construction of the sediment pond (UMC 817.46[e][g]). The compliance action and deadlines agreed to by Chuck Jahne of Sharon Steel require:

1. Removal of all embankment material that is obstructing flow in the Left Fork of Miller Creek drainage channel by May 19, 1982.

2. Submit supportive evidence proving that the pond is, in fact, constructed as required and in accordance with the approved design plans submitted May 29, 1981, that the embankments are stable, that the water in the pond will not short-circuit through the emergency spillway or by infiltration or submit plans for reconstruction of the sediment pond that are complete and adequately address all design requirements of 817.46. Reconstruct the sediment pond only in accordance with those plans once approved by DOGM. The submittals must be received by DOGM no later than May 31, 1982.

An expeditious review of the submittal will allow for timely reconstruction improvements. This inspector persistently recommended that the pond be dewatered on May 18, 1982 to allow the embankment material time to dry. Mr. Jahne, not having seen the pond recently, vehemently disagreed with this recommendation and has recently (during a meeting May 24, 1982) proposed elongating the pond while it still impounded water. This proposal will be closely scrutinized by the DOGM technical staff and, if inadequate, immediate pond dewatering will be required.

Excessive ponding in front of the sealed King #2 portal in the King VI Mine yard was somewhat diminished by unlawful discharge through a berm breach into the South Fork of Miller Creek. The untreated pad drainage deposited an average of four to six inch layer of material (up to one foot deep in places) on top of the snow in the creek channel and on the downslope below the pad. Water samples from the South Fork in Miller Creek contained 37 ppm TSS and 6 ppm VSS (volatile suspended solids) above the mine yard which increased to 125 ppm TSS and 50 ppm VSS approximately 300 feet downstream from the discharge point and directly downstream from the deposition. Most of the stream degradation had already occurred at the time of the inspection, although the breach had not yet been repaired, no discharge was occurring. NAOC #2 of 2 (82-2-5-2) was issued on May 14, 1981 for failure to design and maintain sediment control measures to prevent additonal contributions of sediment to streamflow (UMC 817.45) which requires:

1. Repair the berm by May 17, 1982.

2. Retrieve the material deposited from the pad drainage in the stream channel by May 21, 1982.

3. Elevate the pad surface, heighten the berm and enlarge the drainage ditch to adequately drain the pad area retaining all disturbed area runoff from the creek by May 28, 1982.

The results of additional water samples taken along the South Fork in Miller Creek indicate fluctuations in water quality from above the King VI Mine yard to the base of the South Fork where TSS was only 5 ppm and VSS less than 3 ppm. This indicates significant sedimentation of the stream channel resulting from the disturbances upstream. Ken Wyatt compiled a graph of the water quality relative to stream distance (see attachment).

SANDY PRUITT SP
RECLAMATION OFFICER

cc: Tom Ehmett, OSM
Jean Semborski, U. S. Fuel
Wayne Hedberg, DOGM
Inspection Staff

SP/btb

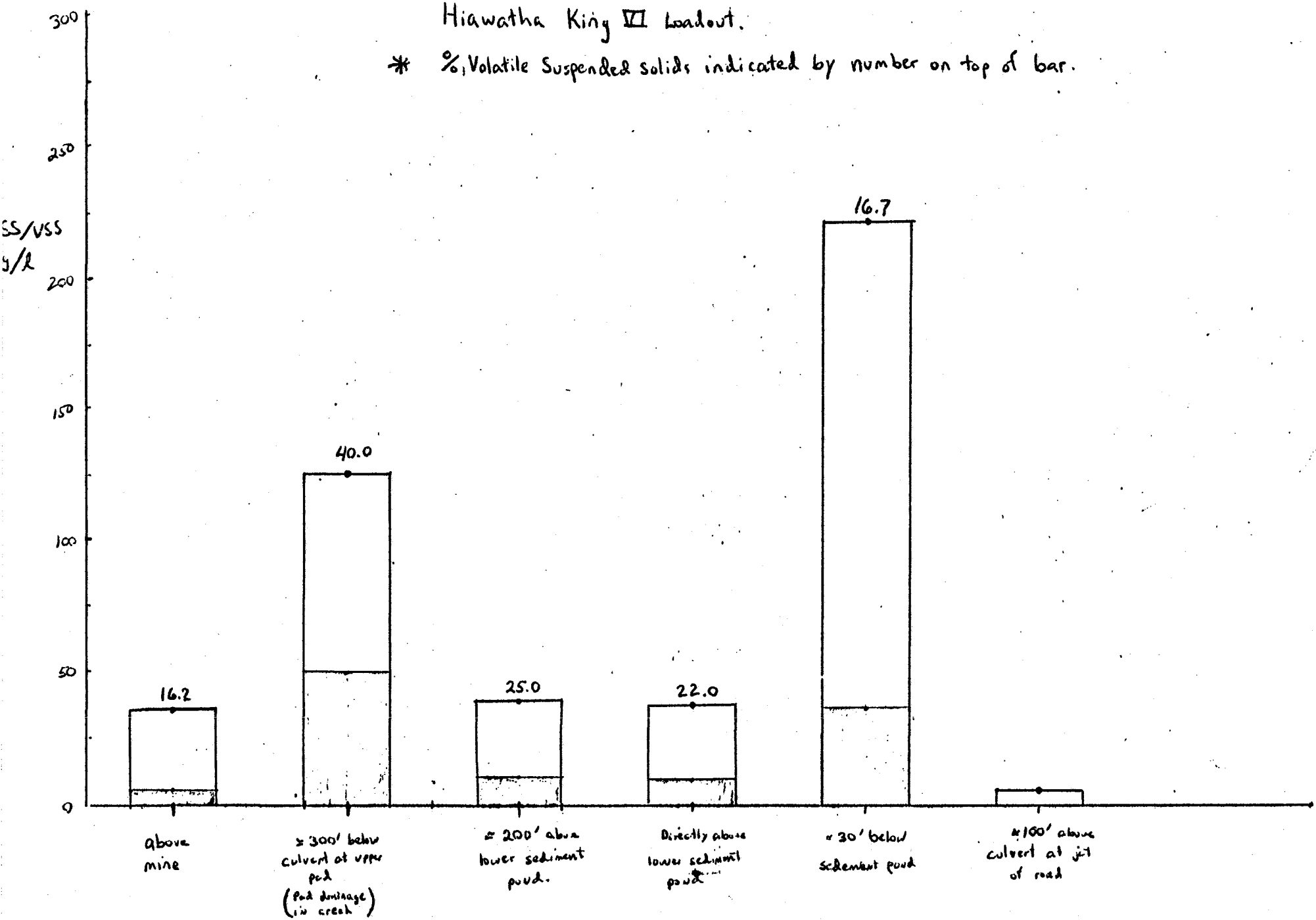
Statistics:

See Trail Mountain memo dated June 8, 1982
Grant: A & E

Suspended Solids / Volatile Suspended Solids vs. Stream distance.

Hiawatha King VI Loadout.

* %, Volatile Suspended solids indicated by number on top of bar.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION VIII
1860 LINCOLN STREET
DENVER, COLORADO 80295-0699

August 11, 1982

U.S. ENVIRONMENTAL PROTECTION AGENCY/STATE OF UTAH

PUBLIC NOTICE

PURPOSE OF PUBLIC NOTICE

THE PURPOSE OF THIS NOTICE IS TO STATE EPA'S INTENTION TO ISSUE WASTE WATER DISCHARGE PERMITS UNDER THE AUTHORITY OF THE CLEAN WATER ACT OF 1977, AND THE INTENTION OF THE STATE OF UTAH TO CERTIFY COMPLIANCE OF THE APPLICANTS WITH APPLICABLE PROVISIONS OF THE AFORESAID ACT.

IT IS EPA'S INTENTION TO ISSUE PERMITS TO FOUR (4) INDUSTRIAL FACILITIES AND TO RENEW FIVE (5) INDUSTRIAL FACILITIES LOCATED IN THE STATE OF UTAH.

PERMIT INFORMATION

(1) APPLICANT NAME: ATLAS MINERALS DIVISION
RIM MINE

MAILING ADDRESS: P.O. BOX 1207
MOAB, UTAH 84532

TELEPHONE NUMBER: 801+259-5131

FACILITY LOCATION: SAN JUAN COUNTY, UTAH

APPLICATION NUMBER: UT-0023922

The application is for the Atlas Minerals' Rim Mine which is an underground uranium mine. The 1981 system was designed to treat the mine water by barium chloride, coagulant and settling. In the event of a discharge, it will flow to an unnamed tributary to Kane Canyon Creek (classified 3C and 4).

(2) APPLICANT NAME: ATLAS MINERALS DIVISION
SNOW-PROBE MINES

MAILING ADDRESS: P.O. BOX 1207
MOAB, UTAH 84532

TELEPHONE NUMBER: 801+259-5131

FACILITY LOCATION: EMERY COUNTY, UTAH

APPLICATION NUMBER: UT-0023906

(8) PERMITTEE NAME: BEAVER CREEK COAL COMPANY
GORDON CREEK NO. 3 AND NO. 6 MINES

MAILING ADDRESS: 555 SEVENTEENTH STREET
DENVER, COLORADO 80217

TELEPHONE NUMBER: 303+575-4000

FACILITY LOCATION: PRICE, UTAH

TELEPHONE NUMBER: 801+637-5050

NPDES PERMIT NUMBER: UT-0023060

These were recently active underground coal mines with a coal loading surface facility. Approximately 0.24 million tons of coal was mined in 1981 from the No. 3 mine. No. 6 mine is closed and No. 3 mine will close in 1982. There is currently no discharge from these mines; however, in the event of a discharge, it will flow to Coal Canyon, a tributary to the North Fork of Gordon Creek (classified 3C and 4).

(9) PERMITTEE NAME: UNITED STATES FUEL COMPANY
KING MINES

MAILING ADDRESS: P.O. BOX A
HIAWATHA, UTAH 84527

TELEPHONE NUMBER: 801+343-2471

NPDES PERMIT NUMBER: UT-0023094

This facility, operated by the U.S. Fuel Company, consists of an underground coal mining operation with two active surface facilities, ventilation portal, coal preparation plant and water supply. Approximately one million ton of coal is produced yearly. Discharge 001 is from the inactive Mohrland Portal when the water is not being fully diverted to Hiawatha for culinary and industrial purposes. Discharge 002 is overflow of this water supply at Hiawatha. Discharge 010 consists of 3 gpm from the ventilation shaft in the right fork of Miller Creek Canyon. Discharge 003-009 and 011 are from sedimentation ponds at the mine surface facilities and coal preparation plant. The sediment ponds have never discharged; however, in the event that a discharge should occur, it will flow to Cedar Creek, a tributary of Huntington Creek and Miller Creek, a tributary to the Price River (classified 3C and 4).

EPA/STATE TENTATIVE DETERMINATIONS

Tentative determinations have been made by the EPA staff in cooperation with the State of Utah relative to effluent limitations and other conditions to be imposed on the permits. These limitations and conditions will assure that State Water Quality Standards and applicable provisions of the Clean Water Act will be protected. The recommended expiration date for all of the permits is June 30, 1987.

Copy - To Wayne

File ACT/007/011

JIM

JAN 26 1982

SURFACE AND GROUNDWATER MONITORING PLAN

4th Quarter 1981

RECEIVED
JAN 26 1982
DIVISION OF
OIL, GAS & MINING

United States Fuel Company

Hiawatha, Utah 84527

SPRING MONITORING REPORT

DATE: 4th QUARTER - 1981

EFFLUENT CHARACTERISTIC		SP-1	SP-2	SP-3	SP-4	SP-5	SP-6
		NOV.	OCT.	NOV.	OCT.	OCT.	OCT.
Flow Rate	G.P.M.		4.9	4.6	5.3	0.44	6.6
PH	Units		7.7	7.0	7.8	7.6	7.6
Air Temp.	°F		29	27	27	31	29
Water Temp.	°F		29	20	22	31	32
Conductivity	umhos/cm		340	460	550	730	430
Acidity	Mg/L						
Total Suspended Solids	Mg/L						
Total Dissolved Solids	Mg/L		230	300	370	475	285
Total Organic Carbon	Mg/L						
Total Manganese	Mg/L						
Total Iron	Mg/L		0.065	0.640	0.460	0.088	0.075
Dissolved Iron	Mg/L		0.02	0.250	0.035	0.030	0.030
Calcium	Mg/L						
Magnesium	Mg/L						
Sodium	Mg/L						
Potassium	Mg/L						
Carbonate	Mg/L						
Fluoride	Mg/L						
Bicarbonate	Mg/L						
Chloride	Mg/L		3.1	3.6	3.5	3.9	3.1
Sulfate	Mg/L		6.0	12.0	9.0	21.0	6.0
Nitrate NO_3-N	Mg/L		0.68	0.85	0.16	0.20	0.28
Nitrate NO_2-N	Mg/L						
Kjeldahl N	Mg/L						
Dissolved Phosphorus	Mg/L						
Silica	Mg/L						
Trace Elements:							
Arsenic	Mg/L						
Cadmium	Mg/L						
Zinc	Mg/L						
Selenium	Mg/L						
Radioactivity:							
Gross Alpha	Pci/L						
Gross Beta	Pci/L						
Oil and Grease	Mg/L						

INACCESSIBLE

SPRING MONITORING REPORT

DATE: 4th QUARTER - 1981

EFFLUENT CHARACTERISTIC		SP-7	SP-8			SP-9	SP-10
		OCT.	OCT.	NOV.	DEC.	OCT.	OCT.
Flow Rate	G.P.M.	6.3	7.5	10		9.3	
PH	Units	7.7	6.8	7.5		7.9	
Air Temp.	°F	34	35	23		33	
Water Temp.	°F	28	27	27		28	
Conductivity	umhos/cm	450	780	620		390	
Acidity	Mg/L						
Total Suspended Solids	Mg/L						
Total Dissolved Solids	Mg/L	290	500	425		255	
Total Organic Carbon	Mg/L						
Total Manganese	Mg/L						
Total Iron	Mg/L	0.11	0.116	0.145		0.058	
Dissolved Iron	Mg/L	0.03	0.035	0.035		0.031	
Calcium	Mg/L						
Magnesium	Mg/L						
Sodium	Mg/L						
Potassium	Mg/L						
Carbonate	Mg/L						
Fluoride	Mg/L						
Bicarbonate	Mg/L						
Chloride	Mg/L	3.3	3.8	2.52		3.1	
Sulfate	Mg/L	6.0	57	51		6.0	
Nitrate NO_3-N	Mg/L	0.39	0.53	0.01		0.36	
Nitrate NO_2-N	Mg/L						
Kjeldahl N	Mg/L						
Dissolved Phosphorus	Mg/L						
Silica	Mg/L						
Trace Elements:							
Arsenic	Mg/L						
Cadmium	Mg/L						
Zinc	Mg/L						
Selenium	Mg/L						
Radioactivity:							
Gross Alpha	Pci/L						
Gross Beta	Pci/L						
Oil and Grease	Mg/L						

INACCESSIBLE

NO WATER

Date: 4th QUARTER-1981 STREAM MONITORING REPORT

EFFLUENT CHARACTERISTIC		ST - 1			ST - 2		
		OCT.	NOV.	DEC.	OCT.	NOV.	DEC.
Flow Rate	G.P.M.		70	51			
PH	Units		7.8	7.7		8.1	8.1
Air Temp.	°F		35	23			
Water Temp.	°F		29	25			
Conductivity	umhos/cm		1,100	1,400		620	500
Acidity	Mg/L		14	12		<.01	<.01
Total Suspended Solids	Mg/L		12.0	16		11	11
Total Dissolved Solids	Mg/L		750	950		425	350
Total Organic Carbon	Mg/L						
Total Manganese	Mg/L		0.018	0.022		0.020	0.018
Total Iron	Mg/L		0.158	0.165		0.131	0.130
Dissolved Iron	Mg/L		0.03	0.033		0.055	0.055
Calcium	Mg/L						
Magnesium	Mg/L						
Sodium	Mg/L						
Potassium	Mg/L						
Carbonate	Mg/L						
Fluoride	Mg/L						
Bicarbonate	Mg/L						
Chloride	Mg/L		9.47	11.42		2.26	3.45
Sulfate	Mg/L		273	300		24	36
Nitrate NO_3-N	Mg/L		0.17	0.3		<.01	0.21
Nitrate NO_2-N	Mg/L						
Kjeldahl N	Mg/L						
Dissolved Phosphorus	Mg/L						
Silica	Mg/L						
Trace Elements:							
Arsenic	Mg/L						
Cadmium	Mg/L						
Zinc	Mg/L						
Selenium	Mg/L						
Radioactivity:							
Gross Alpha	Pci/L						
Gross Beta	Pci/L						
Oil and Grease	Mg/L		<.01	<.01		0.2	0.2

INACCESSIBLE

INACCESSIBLE

Date: 4TH QUARTER-1981 STREAM MONITORING REPORT

EFFLUENT CHARACTERISTIC		ST-2A			ST-2B		
		OCT.	NOV.	DEC.	OCT.	NOV.	DEC.
Flow Rate	G.P.M.		96			114	31
PH	Units		8.2	8.0		7.9	7.9
Air Temp.	°F		22	20		29	17
Water Temp.	°F		22	20		23	20
Conductivity	umhos/cm		480	485		600	650
Acidity	Mg/L		<.01	<.01		8.0	8.0
Total Suspended Solids	Mg/L		15	5		17	12
Total Dissolved Solids	Mg/L		325	335		400	440
Total Organic Carbon	Mg/L						
Total Manganese	Mg/L		0.015	0.010		0.019	0.025
Total Iron	Mg/L		0.176	0.175		0.321	0.420
Dissolved Iron	Mg/L	INACCESSIBLE	0.051	0.043	INACCESSIBLE	0.095	0.095
Calcium	Mg/L						
Magnesium	Mg/L						
Sodium	Mg/L						
Potassium	Mg/L						
Carbonate	Mg/L						
Fluoride	Mg/L						
Bicarbonate	Mg/L						
Chloride	Mg/L		2.52	3.54		4.3	5.46
Sulfate	Mg/L		21	33		60	51
Nitrate NO_3-N	Mg/L		0.01	0.18		0.65	0.20
Nitrate NO_2-N	Mg/L						
Kjeldahl N	Mg/L						
Dissolved Phosphorus	Mg/L						
Silica	Mg/L						
Trace Elements:							
Arsenic	Mg/L						
Cadmium	Mg/L						
Zinc	Mg/L						
Selenium	Mg/L						
Radioactivity:							
Gross Alpha	Pci/L						
Gross Beta	Pci/L						
Oil and Grease	Mg/L		0.2	0.2		0.2	<.01

Date: 4th QUARTER 1981 STREAM MONITORING REPORT

EFFLUENT CHARACTERISTIC		ST-3			ST-3A		
		OCT.	NOV.	DEC.	OCT.	NOV.	DEC.
Flow Rate	G.P.M.		36	41			
PH	Units		7.6	7.7			
Air Temp.	°F		39	27			
Water Temp.	°F		25	21			
Conductivity	umhos/cm		1,800	2,050			
Acidity	Mg/L		18	10			
Total Suspended Solids	Mg/L		12	25			
Total Dissolved Solids	Mg/L		1,225	1,400			
Total Organic Carbon	Mg/L						
Total Manganese	Mg/L		0.040	0.045			
Total Iron	Mg/L		0.520	0.750			
Dissolved Iron	Mg/L		0.150	0.200			
Calcium	Mg/L						
Magnesium	Mg/L						
Sodium	Mg/L						
Potassium	Mg/L						
Carbonate	Mg/L						
Fluoride	Mg/L						
Bicarbonate	Mg/L						
Chloride	Mg/L		176.83	163.5			
Sulfate	Mg/L		282	420			
Nitrate NO_3-N	Mg/L		0.05	0.06			
Nitrate NO_2-N	Mg/L						
Kjeldahl N	Mg/L						
Dissolved Phosphorus	Mg/L						
Silica	Mg/L						
Trace Elements:							
Arsenic	Mg/L						
Cadmium	Mg/L						
Zinc	Mg/L						
Selenium	Mg/L						
Radioactivity:							
Gross Alpha	Pci/L						
Gross Beta	Pci/L						
Oil and Grease	Mg/L		0.2	<1.0			

INACCESSIBLE

NO WATER

Date: 4TH QUARTER-1981 STREAM MONITORING REPORT

EFFLUENT CHARACTERISTIC		ST-3B			ST-4		
		OCT.	NOV.	DEC.	OCT.	NOV.	DEC.
Flow Rate	G.P.M.						
PH	Units						
Air Temp.	°F						
Water Temp.	°F						
Conductivity	umhos/cm						
Acidity	Mg/L						
Total Suspended Solids	Mg/L						
Total Dissolved Solids	Mg/L						
Total Organic Carbon	Mg/L						
Total Manganese	Mg/L						
Total Iron	Mg/L						
Dissolved Iron	Mg/L						
Calcium	Mg/L						
Magnesium	Mg/L						
Sodium	Mg/L						
Potassium	Mg/L						
Carbonate	Mg/L						
Fluoride	Mg/L						
Bicarbonate	Mg/L						
Chloride	Mg/L						
Sulfate	Mg/L						
Nitrate NO_3-N	Mg/L						
Nitrate NO_2-N	Mg/L						
Kjeldahl N	Mg/L						
Dissolved Phosphorus	Mg/L						
Silica	Mg/L						
Trace Elements:							
Arsenic	Mg/L						
Cadmium	Mg/L						
Zinc	Mg/L						
Selenium	Mg/L						
Radioactivity:							
Gross Alpha	Pci/L						
Gross Beta	Pci/L						
Oil and Grease	Mg/L						

NO WATER

NO WATER

Date: 4th QUARTER-19[illegible] STREAM MONITORING REPORT

EFFLUENT CHARACTERISTIC		ST-4A			ST-4B		
		OCT.	NOV.	DEC.	OCT.	NOV.	DEC.
Flow Rate	G.P.M.						
PH	Units	8.1	7.5	7.7			
Air Temp.	°F						
Water Temp.	°F						
Conductivity	umhos/cm	1,050	1,000	1,100			
Acidity	Mg/L	<.01	22	10			
Total Suspended Solids	Mg/L	31	28	1			
Total Dissolved Solids	Mg/L	695	680	750			
Total Organic Carbon	Mg/L						
Total Manganese	Mg/L	0.010	0.015	0.012			
Total Iron	Mg/L	0.210	0.225	0.220			
Dissolved Iron	Mg/L	0.065	0.069	0.060			
Calcium	Mg/L						
Magnesium	Mg/L						
Sodium	Mg/L						
Potassium	Mg/L						
Carbonate	Mg/L						
Fluoride	Mg/L						
Bicarbonate	Mg/L						
Chloride	Mg/L	4.8	4.69	5.0			
Sulfate	Mg/L	228	202	255			
Nitrate NO_3-N	Mg/L	0.33	0.04	0.28			
Nitrate NO_2-N	Mg/L						
Kjeldahl N	Mg/L						
Dissolved Phosphorus	Mg/L						
Silica	Mg/L						
Trace Elements:							
Arsenic	Mg/L						
Cadmium	Mg/L						
Zinc	Mg/L						
Selenium	Mg/L						
Radioactivity:							
Gross Alpha	Pci/L						
Gross Beta	Pci/L						
Oil and Grease	Mg/L	4.2	0.2	< 1.0			

NO WATER

Date: 4th QUARTER-1981 STREAM MONITORING REPORT

EFFLUENT CHARACTERISTIC		ST-5					
		OCT.	NOV.	DEC.			
Flow Rate	G.P.M.	140	242	344			
PH	Units	8.0	8.0	8.2			
Air Temp.	°F	41	51	33			
Water Temp.	°F	31	33	30			
Conductivity	umhos/cm	1,680	1,400	1,150			
Acidity	Mg/L	<.01	<.01	<.01			
Total Suspended Solids	Mg/L	43	14	8			
Total Dissolved Solids	Mg/L	1,120	950	800			
Total Organic Carbon	Mg/L						
Total Manganese	Mg/L	0.034	0.029	0.030			
Total Iron	Mg/L	0.135	0.150	0.130			
Dissolved Iron	Mg/L	0.090	0.080	0.083			
Calcium	Mg/L						
Magnesium	Mg/L						
Sodium	Mg/L						
Potassium	Mg/L						
Carbonate	Mg/L						
Fluoride	Mg/L						
Bicarbonate	Mg/L						
Chloride	Mg/L	37.7	34.89	17.80			
Sulfate	Mg/L	90	276	240			
Nitrate NO_3-N	Mg/L	0.49	0.37	0.41			
Nitrate NO_2-N	Mg/L						
Kjeldahl N	Mg/L						
Dissolved Phosphorus	Mg/L						
Silica	Mg/L						
Trace Elements:							
Arsenic	Mg/L						
Cadmium	Mg/L						
Zinc	Mg/L						
Selenium	Mg/L						
Radioactivity:							
Gross Alpha	Pci/L						
Gross Beta	Pci/L						
Oil and Grease	Mg/L	3.4	1.0	<1.0			

Date: 4th QUARTER - 19[illegible] STREAM MONITORING REPORT

EFFLUENT CHARACTERISTIC		100' Before Mokrland TUNNEL ST-6A			ST-6		
		OCT.	NOV.	DEC.	OCT.	NOV.	DEC.
Flow Rate	G.P.M.				126	118	59
PH	Units	7.4	7.6		7.6	7.7	8.1
Air Temp.	°F				49	47	23
Water Temp.	°F				33	33	19
Conductivity	umhos/cm	840	740		990	950	1,000
Acidity	Mg/L	2.0	8.0		8.0	8.0	4.0
Total Suspended Solids	Mg/L	200	78		30.0	58	17
Total Dissolved Solids	Mg/L	550	500		650	650	700
Total Organic Carbon	Mg/L						
Total Manganese	Mg/L	0.020	0.022		0.017	0.025	0.013
Total Iron	Mg/L	0.225	0.220		0.250	0.285	0.258
Dissolved Iron	Mg/L	0.095	0.096		0.115	0.130	0.110
Calcium	Mg/L						
Magnesium	Mg/L						
Sodium	Mg/L						
Potassium	Mg/L						
Carbonate	Mg/L						
Fluoride	Mg/L						
Bicarbonate	Mg/L						
Chloride	Mg/L	4.5	4.1		4.9	5.16	7.5
Sulfate	Mg/L	168	174		270	249	180
Nitrate NO_3-N	Mg/L	1.9	0.08		1.48	<.01	0.28
Nitrate NO_2-N	Mg/L						
Kjeldahl N	Mg/L						
Dissolved Phosphorus	Mg/L						
Silica	Mg/L						
Trace Elements:							
Arsenic	Mg/L						
Cadmium	Mg/L						
Zinc	Mg/L						
Selenium	Mg/L						
Radioactivity:							
Gross Alpha	Pci/L						
Gross Beta	Pci/L						
Oil and Grease	Mg/L	3.6	1.6		4.0	1.0	<1.0

INACCESSIBLE

Date: 4th QUARTER - 198[illegible] STREAM MONITORING REPORT

EFFLUENT CHARACTERISTIC		ST-7					
		OCT.	NOV.	DEC.			
Flow Rate	G.P.M.	157	265				
PH	Units	8.1					
Air Temp.	°F	19	35				
Water Temp.	°F	28	29				
Conductivity	umhos/cm	550					
Acidity	Mg/L	<.01					
Total Suspended Solids	Mg/L	32					
Total Dissolved Solids	Mg/L	350					
Total Organic Carbon	Mg/L						
Total Manganese	Mg/L	0.015					
Total Iron	Mg/L	0.136					
Dissolved Iron	Mg/L	0.025					
Calcium	Mg/L						
Magnesium	Mg/L						
Sodium	Mg/L						
Potassium	Mg/L						
Carbonate	Mg/L						
Fluoride	Mg/L						
Bicarbonate	Mg/L						
Chloride	Mg/L	3.7					
Sulfate	Mg/L	36					
Nitrate NO_3-N	Mg/L	0.25					
Nitrate NO_2-N	Mg/L						
Kjeldahl N	Mg/L						
Dissolved Phosphorus	Mg/L						
Silica	Mg/L						
Trace Elements:							
Arsenic	Mg/L						
Cadmium	Mg/L						
Zinc	Mg/L						
Selenium	Mg/L						
Radioactivity:							
Gross Alpha	Pci/L						
Gross Beta	Pci/L						
Oil and Grease	Mg/L	11.5	0.2				

CHECK SAMPLE FOR OIL & GREASE INACCESSIBLE

MOHRLAND PORTAL

MINE WATER DISCHARGE MONITORING REPORT

DATE 4th QUARTER - 1981

Effluent Characteristic	Flow Rate G.P.M.	Total Suspended Solids Mg/L	Total Dissolved Solids Mg/L	Total Manganese Mg/L	Total Iron Mg/L	Dissolved Iron Mg/L	Alkalinity Mg/L	Acidity Mg/L	PH Units	Oil & Grease Mg/L	BOD5 Mg/L	Total Coloforms MPN/100ML	Fecal Coloforms MPN/100ML
January													
February													
March													
April													
May													
June													
July													
August													
September													
October	86	3.5	725	0.030	0.185	0.075	348	28	7.6	22			
CHECK									7.7	<1.0			
November	82	6.0	600	0.026	0.177	0.080	293	22	7.2	0.4			
December									7.5				

NO OVER FLOW TO CEDAR CREEK

A0-/007/011

WAYNE

OCT 29 1981

DIVISION OF
OIL, GAS & MINING

SURFACE AND GROUNDWATER MONITORING PLAN

3rd Quarter 1981

Total Manganese	Mg/L				
Total Iron	Mg/L	0.045	0.050	0.054	0.[illegible]
Dissolved Iron	Mg/L	0.025	0.026	0.224	0.[illegible]
Calcium	Mg/L				
Magnesium	Mg/L				
Sodium	Mg/L				

United States Fuel Company

Hiawatha, Utah 84527

[illegible]	Mg/L				
Silica	Mg/L				
Trace Elements:					
Arsenic	Mg/L				
Cadmium	Mg/L				
Zinc	Mg/L				

[illegible]					
Gross Alpha	Pci/L				
Gross Beta	Pci/L				
Oil and Grease	Mg/L				

SPRING MONITORING REPORT

DATE: 3rd Quarter - 1981

EFFLUENT CHARACTERISTIC		SP-1	SP-2	SP-3	SP-4	SP-5	SP-6
		AUG.	AUG.	AUG.	AUG.	AUG.	JULY
Flow Rate	G.P.M.	0.6	4.9	6.6	4.3	0.8	10.5
PH	Units	6.5	7.1	7.2	7.3	7.3	7.9
Air Temp.	°F	50	63	50	49	58	51
Water Temp.	°F	40	47	33	35	33	34
Conductivity	umhos/cm	400	385	450	520	550	450
Acidity	Mg/L						
Total Suspended Solids	Mg/L						
Total Dissolved Solids	Mg/L	285	265	310	350	380	305
Total Organic Carbon	Mg/L						
Total Manganese	Mg/L		Total Manganese		Mg/L		
Total Iron	Mg/L	0.045	0.050	0.654	0.465	0.075	0.070
Dissolved Iron	Mg/L	0.025	0.026	0.226	0.030	0.020	0.035
Calcium	Mg/L		Calcium		Mg/L		
Magnesium	Mg/L		Magnesium		Mg/L		
Sodium	Mg/L		Sodium				
Potassium	Mg/L						
Carbonate	Mg/L						
Fluoride	Mg/L						
Bicarbonate	Mg/L						
Chloride	Mg/L	4.85	2.87	3.47	3.08	4.4	4.6
Sulfate	Mg/L	19.50	7.50	10.50	10.5	30.0	9.0
Nitrate NO_3-N	Mg/L	1.30	0.86	0.70	0.06	0.04	0.14
Nitrate NO_2-N	Mg/L						
Kjeldahl N	Mg/L						
Dissolved Phosphorus	Mg/L						
Silica	Mg/L		Silica		Mg/L		
Trace Elements:			Trace Elements:				
Arsenic	Mg/L		Arsenic		Mg/L		
Cadmium	Mg/L		Cadmium		Mg/L		
Zinc	Mg/L		Zinc		Mg/L		
Selenium	Mg/L						
Radioactivity:							
Gross Alpha	Pci/L		Gross Alpha		Pci/L		
Gross Beta	Pci/L		Gross Beta		Pci/L		
Oil and Grease	Mg/L		Oil and Grease		Mg/L		

SPRING MONITORING REPORT

DATE: 3rd quarter 198

EFFLUENT CHARACTERISTIC		SP-7	SP-8			SP-9	SP-10
		JULY	JULY	AUG.	SEP.	JULY.	JULY
Flow Rate	G.P.M.	10.5	2.5	3.4	5.0	8.3	3.6
PH	Units	7.9	8.0	7.4	7.45	8.4	8.4
Air Temp.	°F	53	59	53	51	57	54
Water Temp.	°F	29	35	33	39	39	40
Conductivity	umhos/cm	420	610	675	690	350	490
Acidity	Mg/L						
Total Suspended Solids	Mg/L						
Total Dissolved Solids	Mg/L	290	425	465	460	240	335
Total Organic Carbon	Mg/L						
Total Manganese	Mg/L						
Total Iron	Mg/L	0.080	0.075	0.085	0.114	0.060	0.140
Dissolved Iron	Mg/L	0.030	0.320	0.020	0.035	0.029	0.080
Calcium	Mg/L						
Magnesium	Mg/L						
Sodium	Mg/L						
Potassium	Mg/L						
Carbonate	Mg/L						
Fluoride	Mg/L						
Bicarbonate	Mg/L						
Chloride	Mg/L	4.04	5.55	4.12	4.17	3.32	8.51
Sulfate	Mg/L	9.0	55.5	66.0	33.0	9.0	16.5
Nitrate NO_3-N	Mg/L	0.28	<.01	0.02	0.24	0.20	0.02
Nitrate NO_2-N	Mg/L						
Kjeldahl N	Mg/L						
Dissolved Phosphorus	Mg/L						
Silica	Mg/L						
Trace Elements:							
Arsenic	Mg/L						
Cadmium	Mg/L						
Zinc	Mg/L						
Selenium	Mg/L						
Radioactivity:							
Gross Alpha	Pci/L						
Gross Beta	Pci/L						
Oil and Grease	Mg/L				0.60	3.60	

Date: 3rd quarter-19[illegible] STREAM MONITORING REPORT

EFFLUENT CHARACTERISTIC		ST-1			ST-2 UPPER NORTH FORK AIR WAY TUNNEL		
		JULY	AUG.	SEP.	JULY	AUG.	SEP.
Flow Rate	G.P.M.	57	62	46			
PH	Units	7.9	7.8		8.4	8.0	8.0
Air Temp.	°F	61	49	57			
Water Temp.	°F	48	37	37			
Conductivity	umhos/cm	1,690	1,150	1,500	415	450	470
Acidity	Mg/L	5.7	3.6	12.0	<.01	<.01	2.0
Total Suspended Solids	Mg/L	14.0	2.0	7.0	1.0	<.1	3.0
Total Dissolved Solids	Mg/L	1,100	1,500	995	270	300	310
Total Organic Carbon	Mg/L						
Total Manganese	Mg/L	0.017		0.02	0.028		0.022
Total Iron	Mg/L	0.158	0.144	0.153	0.095	0.109	0.110
Dissolved Iron	Mg/L	0.026	0.030	0.035	0.002	0.005	0.050
Calcium	Mg/L						
Magnesium	Mg/L					25.44	
Sodium	Mg/L						
Potassium	Mg/L						
Carbonate	Mg/L						
Fluoride	Mg/L						
Bicarbonate	Mg/L						
Chloride	Mg/L	14.5	13.9	16.0	3.88	10.0	8.0
Sulfate	Mg/L	720	735	390	30	28.5	25.5
Nitrate NO_3-N	Mg/L	0.12	0.69	0.46	0.03	<.01	1.10
Nitrate NO_2-N	Mg/L						
Kjeldahl N	Mg/L						
Dissolved Phosphorus	Mg/L						
Silica	Mg/L						
Trace Elements:							
Arsenic	Mg/L						
Cadmium	Mg/L						
Zinc	Mg/L						
Selenium	Mg/L						
Radioactivity:							
Gross Alpha	Pci/L						
Gross Beta	Pci/L						
Oil and Grease	Mg/L	0.60	3.60	<.01	0.2	0.2	<.01

Date: 3rd Quarter - 1981 STREAM MONITORING REPORT

EFFLUENT CHARACTERISTIC		ST-2A			ST-2B		
		JULY	AUG.	SEP.	JULY	AUG.	SEP.
Flow Rate	G.P.M.		37	22	16	10	15
PH	Units	8.3	8.2	7.9	8.4	7.8	7.6
Air Temp.	°F		43	51	60	47	53
Water Temp.	°F		39	37	48	39	35
Conductivity	umhos/cm	430	470	490	650	720	760
Acidity	Mg/L	<.01	<.01	4.0	<.01	3.6	14.0
Total Suspended Solids	Mg/L	4.0	19.0	2.0	4.0	1.0	2.0
Total Dissolved Solids	Mg/L	280	330	320	420	500	500
Total Organic Carbon	Mg/L						
Total Manganese	Mg/L	0.015		0.014	0.015		0.018
Total Iron	Mg/L	0.180	0.169	0.185	0.360	0.350	0.350
Dissolved Iron	Mg/L	0.065	80	0.056	0.100	0.110	0.110
Calcium	Mg/L						
Magnesium	Mg/L		28.8			52.8	
Sodium	Mg/L						
Potassium	Mg/L						
Carbonate	Mg/L						
Fluoride	Mg/L						
Bicarbonate	Mg/L						
Chloride	Mg/L	4.36	4.4	8.0	8.49	8.28	14.0
Sulfate	Mg/L	31.5	30.5	31.5	135	144	114
Nitrate NO_3-N	Mg/L	0.2	0.08	<.01	1.40	<.01	<.01
Nitrate NO_2-N	Mg/L						
Kjeldahl N	Mg/L						
Dissolved Phosphorus	Mg/L						
Silica	Mg/L						
Trace Elements:							
Arsenic	Mg/L						
Cadmium	Mg/L						
Zinc	Mg/L						
Selenium	Mg/L						
Radioactivity:							
Gross Alpha	Pci/L						
Gross Beta	Pci/L						
Oil and Grease	Mg/L	0.2	4.6	<.01	2.60	1.80	<.01

Date: 3rd Quarter-1981 STREAM MONITORING REPORT

EFFLUENT CHARACTERISTIC		ST-3			ST-3A UPPE MIDDLE FORK TUNNEL		
		JULY	AUG.	SEP.	JULY	AUG.	SEP.
Flow Rate	G.P.H.	52		54			
PH	Units		7.9	7.8			
Air Temp.	°F	72		67			
Water Temp.	°F	50		45			
Conductivity	umhos/cm		1,800	1,990			
Acidity	Mg/L		3.60	10			
Total Suspended Solids	Mg/L		10.0	7.0			
Total Dissolved Solids	Mg/L		1,350	1,300			
Total Organic Carbon	Mg/L						
Total Manganese	Mg/L	Total Manganese		0.045			
Total Iron	Mg/L	Total Iron	0.720	0.449			
Dissolved Iron	Mg/L	Dissolved Iron	0.250	0.120			
Calcium	Mg/L	Calcium		Mg/L			
Magnesium	Mg/L	Magnesium	148.8	Mg/L			
Sodium	Mg/L	Sodium		Mg/L			
Potassium	Mg/L						
Carbonate	Mg/L						
Fluoride	Mg/L						
Bicarbonate	Mg/L						
Chloride	Mg/L		145	176			
Sulfate	Mg/L		650	405			
Nitrate NO_3-N	Mg/L		0.10	0.20			
Nitrate NO_2-N	Mg/L						
Kjeldahl N	Mg/L						
Dissolved Phosphorus	Mg/L						
Silica	Mg/L	Silica		Mg/L			
Trace Elements:		Trace Elements					
Arsenic	Mg/L	Arsenic		Mg/L			
Cadmium	Mg/L	Cadmium		Mg/L			
Zinc	Mg/L	Zinc		Mg/L			
Selenium	Mg/L						
Radioactivity:							
Gross Alpha	Pci/L	Gross Alpha		Pci/L			
Gross Beta	Pci/L	Gross Beta		Pci/L			
Oil and Grease	Mg/L	Oil and Grease	3.6	0.40			

NR

Date: 3rd Quarter -198[illegible] STREAM MONITORING REPORT

EFFLUENT CHARACTERISTIC		ST-3B LOWER MIDDLE FORK TUNNEL			ST-4		
		JULY	AUG.	SEP.	JULY	AUG.	SEP.
Flow Rate	G.P.M.						
PH	Units						
Air Temp.	°F						
Water Temp.	°F						
Conductivity	umhos/cm						
Acidity	Mg/L						
Total Suspended Solids	Mg/L						
Total Dissolved Solids	Mg/L						
Total Organic Carbon	Mg/L						
Total Manganese	Mg/L	Total Manganese		Mg/L			
Total Iron	Mg/L	Total Iron		Mg/L			
Dissolved Iron	Mg/L	Dissolved Iron		Mg/L			
Calcium	Mg/L	Calcium		Mg/L			
Magnesium	Mg/L	Magnesium		Mg/L			
Sodium	Mg/L	Sodium		Mg/L			
Potassium	Mg/L						
Carbonate	Mg/L						
Fluoride	Mg/L						
Bicarbonate	Mg/L						
Chloride	Mg/L						
Sulfate	Mg/L						
Nitrate NO_3-N	Mg/L						
Nitrate NO_2-N	Mg/L						
Kjeldahl N	Mg/L						
Dissolved Phosphorus	Mg/L						
Silica	Mg/L	Silica		Mg/L			
Trace Elements:		Trace Elements					
Arsenic	Mg/L	Arsenic		Mg/L			
Cadmium	Mg/L	Cadmium		Mg/L			
Zinc	Mg/L	Zinc		Mg/L			
Selenium	Mg/L						
Radioactivity:							
Gross Alpha	Pci/L	Gross Alpha		Pci/L			
Gross Beta	Pci/L	Gross Beta		Pci/L			
Oil and Grease	Mg/L	Oil and Grease		Mg/L			

DRY DRY

Date: 3rd Quarter - 198[illegible] STREAM MONITORING REPORT

EFFLUENT CHARACTERISTIC		ST-4A			ST-4B		
		JULY	AUG.	SEP.	JULY	AUG.	SEP.
Flow Rate	G.P.M.						
PH	Units						
Air Temp.	°F						
Water Temp.	°F						
Conductivity	umhos/cm						
Acidity	Mg/L						
Total Suspended Solids	Mg/L						
Total Dissolved Solids	Mg/L						
Total Organic Carbon	Mg/L						
Total Manganese	Mg/L						
Total Iron	Mg/L						
Dissolved Iron	Mg/L						
Calcium	Mg/L						
Magnesium	Mg/L						
Sodium	Mg/L						
Potassium	Mg/L						
Carbonate	Mg/L						
Fluoride	Mg/L						
Bicarbonate	Mg/L						
Chloride	Mg/L						
Sulfate	Mg/L						
Nitrate NO_3-N	Mg/L						
Nitrate NO_2-N	Mg/L						
Kjeldahl N	Mg/L						
Dissolved Phosphorus	Mg/L						
Silica	Mg/L						
Trace Elements:							
Arsenic	Mg/L						
Cadmium	Mg/L						
Zinc	Mg/L						
Selenium	Mg/L						
Radioactivity:							
Gross. Alpha	Pci/L						
Gross Beta	Pci/L						
Oil and Grease	Mg/L			[illegible]	27.4	[illegible]	[illegible]

DRY DRY

Date: 3rd Quarter-1981 STREAM MONITORING REPORT

EFFLUENT CHARACTERISTIC		ST-5			ST-6		
		JULY	AUG.	SEP.	JULY	AUG.	SEP.
Flow Rate	G.P.M.	30	59	100	126	111	90
PH	Units	8.3	8.2	8.2	8.1	8.3	8.14
Air Temp.	°F	79	68	57	65	57	50
Water Temp.	°F	57	51	43	58	51	42
Conductivity	umhos/cm	1,540	1,500	1,480	800	840	850
Acidity	Mg/L	<.01	20.90	<.01	<.01	1.9	<.01
Total Suspended Solids	Mg/L	4.0	28.0	33	2.0	53	11
Total Dissolved Solids	Mg/L	1,000	1,100	1,120	525	575	595
Total Organic Carbon	Mg/L						
Total Manganese	Mg/L	0.045	0.090	0.110	0.013	0.010	0.015
Total Iron	Mg/L	0.750	0.120	0.135	0.250	0.230	0.265
Dissolved Iron	Mg/L	0.350	0.110	0.114	0.065	0.100	0.125
Calcium	Mg/L						
Magnesium	Mg/L						
Sodium	Mg/L						
Potassium	Mg/L						
Carbonate	Mg/L						
Fluoride	Mg/L						
Bicarbonate	Mg/L						
Chloride	Mg/L	33.40	38.90	28.37	6.89	7.42	0.99
Sulfate	Mg/L	510	450	240	270	210	264
Nitrate NO_3-N	Mg/L	0.04	0.49	1.03	<.01	<.01	0.30
Nitrate NO_2-N	Mg/L						
Kjeldahl N	Mg/L						
Dissolved Phosphorus	Mg/L						
Silica	Mg/L						
Trace Elements:							
Arsenic	Mg/L						
Cadmium	Mg/L						
Zinc	Mg/L						
Selenium	Mg/L						
Radioactivity:							
Gross Alpha	Pci/L						
Gross Beta	Pci/L						
Oil and Grease	Mg/L	1.40	27.4	1.40	1.4	1.40	1.60

MOHRLAND PORTAL

MINE WATER DISCHARGE MONITORING REPORT

DATE 3rd Quarter - 1981

Effluent Characteristic	Flow Rate G.P.M.	Total Sus-pended Solids Mg/L	Total Diss-olved Solids Mg/L	Total Manganese Mg/L	Total Iron Mg/L	Dissolved Iron Mg/L	Alkalinity Mg/L	Acidity Mg/L	PH Units	Oil & Grease Mg/L	BOD_5 Mg/L	Total Coloforms MPN/100ML	Fecal Coloforms MPN/100ML	
January														
February														
March														
April														
May														
June														
July						NO	OVER	FLOW						
August	137	5.0	700	0.03	0.079	0.050	356	3.8	7.8	70				
September	291.7	122	695	0.033	0.120	0.065	352	4.0	7.6	4.0	3.1	330	<2.0	
October														
November														
December														

file : CT/007/011
+ copy to

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AUG 07 1981
DIVISION OF
OIL, GAS & MINING

SURFACE AND GROUNDWATER MONITORING PLAN

2nd Quarter 1981

United States Fuel Company
Hiawatha, Utah 84527

DATE: 2nd Quarter

EFFLUENT CHARACTERISTIC		ST-1					
		APRIL	MAY	JUNE			
Flow Rate	G.P.M.	184	82	88			
PH	Units	8.1	8	8			
Air Temp.	°F	41	33	61			
Water Temp.	°F	28	32	39			
Conductivity	umhos/cm	1,100	1,530	1,230			
Acidity	Mg/L	15.2	4	7.6			
Total Suspended Solids	Mg/L	50	2	27			
Total Dissolved Solids	Mg/L	720	996	800			
Total Organic Carbon	Mg/L						
Total Manganese	Mg/L	0.01	0.01	0.02			
Total Iron	Mg/L	0.15	0.10	0.15			
Dissolved Iron	Mg/L	0.01	0.01	0.03			
Calcium	Mg/L						
Magnesium	Mg/L						
Sodium	Mg/L						
Potassium	Mg/L						
Carbonate	Mg/L						
Fluoride	Mg/L						
Bicarbonate	Mg/L						
Chloride	Mg/L	16	18	16			
Sulfate	Mg/L	255	585	345			
Nitrate NO_3-N	Mg/L	0.18	0.17	0.17			
Nitrate NO_2-N	Mg/L						
Kjeldahl N	Mg/L						
Dissolved Phosphorus	Mg/L						
Silica	Mg/L						
Trace Elements:							
Arsenic	Mg/L						
Cadmium	Mg/L						
Zinc	Mg/L						
Selenium	Mg/L						
Radioactivity:							
Gross Alpha	Pci/L						
Gross Beta	Pci/L						
Oil and Grease	Mg/L	1.8	<.01	0.6			

DATE: 2nd Quarter-198

EFFLUENT CHARACTERISTIC		ST-2B					
		APRIL	MAY	JUNE			
Flow Rate	G.P.M.	332	169	193			
PH	Units	8.1	8.2	8.1			
Air Temp.	°F	39	34	59			
Water Temp.	°F	27	28	41			
Conductivity	umhos/cm	520	570	450			
Acidity	Mg/L	7.6	<.01	3.8			
Total Suspended Solids	Mg/L	146	6	47			
Total Dissolved Solids	Mg/L	340	370	290			
Total Organic Carbon	Mg/L						
Total Manganese	Mg/L	<.001	<.001	0.010			
Total Iron	Mg/L	1.75	0.090	0.380			
Dissolved Iron	Mg/L	<.001	<.001	0.090			
Calcium	Mg/L						
Magnesium	Mg/L						
Sodium	Mg/L						
Potassium	Mg/L						
Carbonate	Mg/L						
Fluoride	Mg/L						
Bicarbonate	Mg/L						
Chloride	Mg/L	4.0	28	8			
Sulfate	Mg/L	42	55.5	34.5			
Nitrate NO_3-N	Mg/L	<.01	<.01	0.08			
Nitrate NO_2-N	Mg/L						
Kjeldahl N	Mg/L						
Dissolved Phosphorus	Mg/L						
Silica	Mg/L						
Trace Elements:							
Arsenic	Mg/L						
Cadmium	Mg/L						
Zinc	Mg/L						
Selenium	Mg/L						
Radioactivity:							
Gross Alpha	Pci/L						
Gross Beta	Pci/L						
Oil and Grease	Mg/L	1.2	0.2	0.6			

DATE: 2nd Quarter-198

EFFLUENT CHARACTERISTIC		ST - 3					
		APRIL	MAY	JUNE			
Flow Rate	G.P.M.	46		46			
PH	Units			7.8			
Air Temp.	°F	45		65			
Water Temp.	°F	33		41			
Conductivity	umhos/cm			2,000			
Acidity	Mg/L			9.5			
Total Suspended Solids	Mg/L			61			
Total Dissolved Solids	Mg/L			1,300			
Total Organic Carbon	Mg/L						
Total Manganese	Mg/L			0.04			
Total Iron	Mg/L			0.64			
Dissolved Iron	Mg/L			0.37			
Calcium	Mg/L						
Magnesium	Mg/L						
Sodium	Mg/L						
Potassium	Mg/L						
Carbonate	Mg/L						
Fluoride	Mg/L						
Bicarbonate	Mg/L						
Chloride	Mg/L			172			
Sulfate	Mg/L			645			
Nitrate NO_3-N	Mg/L			0.06			
Nitrate NO_2-N	Mg/L						
Kjeldahl N	Mg/L						
Dissolved Phosphorus	Mg/L						
Silica	Mg/L						
Trace Elements:							
Arsenic	Mg/L						
Cadmium	Mg/L						
Zinc	Mg/L						
Selenium	Mg/L						
Radioactivity:							
Gross Alpha	Pci/L						
Gross Beta	Pci/L						
Oil and Grease	Mg/L			0.2			

DATE: 2nd Quarter - 198

EFFLUENT CHARACTERISTIC		ST-4					
		APRIL	MAY	JUNE			
Flow Rate	G.P.M.						
PH	Units						
Air Temp.	°F						
Water Temp.	°F						
Conductivity	umhos/cm						
Acidity	Mg/L						
Total Suspended Solids	Mg/L						
Total Dissolved Solids	Mg/L						
Total Organic Carbon	Mg/L						
Total Manganese	Mg/L						
Total Iron	Mg/L						
Dissolved Iron	Mg/L						
Calcium	Mg/L						
Magnesium	Mg/L						
Sodium	Mg/L						
Potassium	Mg/L						
Carbonate	Mg/L						
Fluoride	Mg/L						
Bicarbonate	Mg/L						
Chloride	Mg/L						
Sulfate	Mg/L						
Nitrate NO_3-N	Mg/L						
Nitrate NO_2-N	Mg/L						
Kjeldahl N	Mg/L						
Dissolved Phosphorus	Mg/L						
Silica	Mg/L						
Trace Elements:							
Arsenic	Mg/L						
Cadmium	Mg/L						
Zinc	Mg/L						
Selenium	Mg/L						
Radioactivity:							
Gross Alpha	Pci/L						
Gross Beta	Pci/L						
Oil and Grease	Mg/L						

NO FLOW

DATE: 2nd Quarter-198

EFFLUENT CHARACTERISTIC		ST-5					
		APRIL	MAY	JUNE			
Flow Rate	G.P.M.	498	242	193			
PH	Units	8	8.2	8.2			
Air Temp.	°F	52	47	63			
Water Temp.	°F	37	35	55			
Conductivity	umhos/cm	1,050	1,380	1,100			
Acidity	Mg/L	7.6	8	3.8			
Total Suspended Solids	Mg/L	39	49	33			
Total Dissolved Solids	Mg/L	690	900	700			
Total Organic Carbon	Mg/L						
Total Manganese	Mg/L	0.01	0.01	0.04			
Total Iron	Mg/L	0.65	0.16	0.73			
Dissolved Iron	Mg/L	0.01	0.01	0.33			
Calcium	Mg/L						
Magnesium	Mg/L						
Sodium	Mg/L						
Potassium	Mg/L						
Carbonate	Mg/L						
Fluoride	Mg/L						
Bicarbonate	Mg/L						
Chloride	Mg/L	24	34	28			
Sulfate	Mg/L	225	465	450			
Nitrate NO_3-N	Mg/L	0.22	0.25	0.21			
Nitrate NO_2-N	Mg/L						
Kjeldahl N	Mg/L						
Dissolved Phosphorus	Mg/L						
Silica	Mg/L						
Trace Elements:							
Arsenic	Mg/L						
Cadmium	Mg/L						
Zinc	Mg/L						
Selenium	Mg/L						
Radioactivity:							
Gross Alpha	Pci/L						
Gross Beta	Pci/L						
Oil and Grease	Mg/L	1.4	0.2	0.2			

DATE: 2nd Quarter-1981

EFFLUENT CHARACTERISTIC		ST-6					
		APRIL	MAY	JUNE			
Flow Rate	G.P.M.	265	229	242			
PH	Units	7.9	8.1	8.0			
Air Temp.	°F	49	41	69			
Water Temp.	°F	35	42	59			
Conductivity	umhos/cm	780	920	710			
Acidity	Mg/L	7.6	<.01	1.9			
Total Suspended Solids	Mg/L	44	10	33			
Total Dissolved Solids	Mg/L	510	600	460			
Total Organic Carbon	Mg/L						
Total Manganese	Mg/L	<.001	0.01	0.01			
Total Iron	Mg/L	0.22	0.04	0.26			
Dissolved Iron	Mg/L	<.001	<.001	0.06			
Calcium	Mg/L						
Magnesium	Mg/L						
Sodium	Mg/L						
Potassium	Mg/L						
Carbonate	Mg/L						
Fluoride	Mg/L						
Bicarbonate	Mg/L						
Chloride	Mg/L	4	8	10			
Sulfate	Mg/L	247	285	232			
Nitrate NO_3-N	Mg/L	<.01	<.01	<.01			
Nitrate NO_2-N	Mg/L						
Kjeldahl N	Mg/L						
Dissolved Phosphorus	Mg/L						
Silica	Mg/L						
Trace Elements:							
Arsenic	Mg/L						
Cadmium	Mg/L						
Zinc	Mg/L						
Selenium	Mg/L						
Radioactivity:							
Gross Alpha	Pci/L						
Gross Beta	Pci/L						
Oil and Grease	Mg/L	4.2	0.2	0.8			

DATE: 2nd Quarter - 192

EFFLUENT CHARACTERISTIC		ST - 7					
		APRIL	MAY	JUNE			
Flow Rate	G.P.M.			1490			
PH	Units			8.2			
Air Temp.	°F			51			
Water Temp.	°F			44			
Conductivity	umhos/cm			430			
Acidity	Mg/L			<.01			
Total Suspended Solids	Mg/L			17			
Total Dissolved Solids	Mg/L			330			
Total Organic Carbon	Mg/L						
Total Manganese	Mg/L			0.01			
Total Iron	Mg/L			0.14			
Dissolved Iron	Mg/L			0.01			
Calcium	Mg/L						
Magnesium	Mg/L						
Sodium	Mg/L						
Potassium	Mg/L						
Carbonate	Mg/L						
Fluoride	Mg/L						
Bicarbonate	Mg/L						
Chloride	Mg/L			6			
Sulfate	Mg/L			33			
Nitrate NO_3-N	Mg/L			0.12			
Nitrate NO_2-N	Mg/L						
Kjeldahl N	Mg/L						
Dissolved Phosphorus	Mg/L						
Silica	Mg/L						
Trace Elements:							
Arsenic	Mg/L						
Cadmium	Mg/L						
Zinc	Mg/L						
Selenium	Mg/L						
Radioactivity:							
Gross Alpha	Pci/L						
Gross Beta	Pci/L						
Oil and Grease	Mg/L			1.2			

To Wayne
File ACT/007/011
Jim

SURFACE AND GROUNDWATER MONITORING PLAN

1st Quarter 1981

RECEIVED
APR 15 1981
DIVISION OF
OIL, GAS & MINING

United States Fuel Company

Hiawatha, Utah 84527

DATE: 1st Quarter - 198

EFFLUENT CHARACTERISTIC		ST-1					
		JAN.	FEB.	MAR.			
Flow Rate	G.P.M.	88	22				
PH	Units	7.6	7.7				
Air Temp.	°F	17	33				
Water Temp.	°F	27	29				
Conductivity	umhos/cm	1,550	1,500				
Acidity	Mg/L	6	12				
Total Suspended Solids	Mg/L	3	2				
Total Dissolved Solids	Mg/L	1,054	1,020				
Total Organic Carbon	Mg/L						
Total Manganese	Mg/L	0.012	0.030				
Total Iron	Mg/L	0.240	0.250				
Dissolved Iron	Mg/L	0.110	0.100				
Calcium	Mg/L			INACCESSIBLE			
Magnesium	Mg/L						
Sodium	Mg/L						
Potassium	Mg/L						
Carbonate	Mg/L						
Fluoride	Mg/L						
Bicarbonate	Mg/L						
Chloride	Mg/L	14.6	25.7				
Sulfate	Mg/L	690	54				
Nitrate NO_3-N	Mg/L	0.56	0.58				
Nitrate NO_2-N	Mg/L						
Kjeldahl N	Mg/L						
Dissolved Phosphorus	Mg/L						
Silica	Mg/L						
Trace Elements:							
Arsenic	Mg/L						
Cadmium	Mg/L						
Zinc	Mg/L						
Selenium	Mg/L						
Radioactivity:							
Gross Alpha	Pci/L						
Gross Beta	Pci/L						
Oil and Grease	Mg/L	1.80	0.60				

DATE: 1st Quarter - 1981

EFFLUENT CHARACTERISTIC		ST-2B					
		JAN.	FEB.	MAR.			
Flow Rate	G.P.M.	31					
PH	Units	8					
Air Temp.	°F	21					
Water Temp.	°F	21					
Conductivity	umhos/cm	740					
Acidity	Mg/L	6					
Total Suspended Solids	Mg/L	1					
Total Dissolved Solids	Mg/L	503					
Total Organic Carbon	Mg/L						
Total Manganese	Mg/L	0.015					
Total Iron	Mg/L	0.249					
Dissolved Iron	Mg/L	0.113					
Calcium	Mg/L						
Magnesium	Mg/L						
Sodium	Mg/L						
Potassium	Mg/L						
Carbonate	Mg/L						
Fluoride	Mg/L						
Bicarbonate	Mg/L						
Chloride	Mg/L	8.34					
Sulfate	Mg/L	96					
Nitrate NO_3-N	Mg/L	<.01					
Nitrate NO_2-N	Mg/L						
Kjeldahl N	Mg/L						
Dissolved Phosphorus	Mg/L						
Silica	Mg/L						
Trace Elements:							
Arsenic	Mg/L						
Cadmium	Mg/L						
Zinc	Mg/L						
Selenium	Mg/L						
Radioactivity:							
Gross Alpha	Pci/L						
Gross Beta	Pci/L						
Oil and Grease	Mg/L	<.01					

INACCESSIBLE

INACCESSIBLE

DATE: 1st Quarter - 198

EFFLUENT CHARACTERISTIC		ST - 5					
		JAN.	FEB.	MAR.			
Flow Rate	G.P.M.	193	204				
PH	Units	7.9	7.9				
Air Temp.	°F	22	47				
Water Temp.	°F	25	31				
Conductivity	umhos/cm	1,400	1,400.				
Acidity	Mg/L	14	10				
Total Suspended Solids	Mg/L	4	7				
Total Dissolved Solids	Mg/L	952	950				
Total Organic Carbon	Mg/L						
Total Manganese	Mg/L	0.050	0.060				
Total Iron	Mg/L	0.550	0.220				
Dissolved Iron	Mg/L	0.180	0.130				
Calcium	Mg/L						
Magnesium	Mg/L						
Sodium	Mg/L						
Potassium	Mg/L						
Carbonate	Mg/L						
Fluoride	Mg/L						
Bicarbonate	Mg/L						
Chloride	Mg/L	33.70	40.70				
Sulfate	Mg/L	420	345				
Nitrate NO_3-N	Mg/L	0.50	0.64				
Nitrate NO_2-N	Mg/L						
Kjeldahl N	Mg/L						
Dissolved Phosphorus	Mg/L						
Silica	Mg/L						
Trace Elements:							
Arsenic	Mg/L						
Cadmium	Mg/L						
Zinc	Mg/L						
Selenium	Mg/L						
Radioactivity:							
Gross Alpha	Pci/L						
Gross Beta	Pci/L						
Oil and Grease	Mg/L	3.00	5.60				

INACCESSIBLE

DATE: 1st Quarter - 198

EFFLUENT CHARACTERISTIC		ST - 6					
		JAN.	FEB.	MAR.			
Flow Rate	G.P.M.	37	52				
PH	Units	7.7	7.9				
Air Temp.	°F	17	35				
Water Temp.	°F	19	20				
Conductivity	umhos/cm	1,200	1,050				
Acidity	Mg/L	16	8				
Total Suspended Solids	Mg/L	4	60				
Total Dissolved Solids	Mg/L	816	715				
Total Organic Carbon	Mg/L						
Total Manganese	Mg/L	0.530	0.020				
Total Iron	Mg/L	8.950	0.480				
Dissolved Iron	Mg/L	1.580	0.220				
Calcium	Mg/L						
Magnesium	Mg/L						
Sodium	Mg/L						
Potassium	Mg/L						
Carbonate	Mg/L						
Fluoride	Mg/L						
Bicarbonate	Mg/L						
Chloride	Mg/L	18.4	21.4				
Sulfate	Mg/L	360	292				
Nitrate NO_3-N	Mg/L	0.08	<.01				
Nitrate NO_2-N	Mg/L						
Kjeldahl N	Mg/L						
Dissolved Phosphorus	Mg/L						
Silica	Mg/L						
Trace Elements:							
Arsenic	Mg/L						
Cadmium	Mg/L						
Zinc	Mg/L						
Selenium	Mg/L						
Radioactivity:							
Gross Alpha	Pci/L						
Gross Beta	Pci/L						
Oil and Grease	Mg/L	0.40	2.6				

INACCESSIBLE

WAYNE

SCOTT M. MATHESON
Governor

GORDON E. HARMSTON
Executive Director,
NATURAL RESOURCES

CLEON B. FEIGHT
Director

STATE OF UTAH
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS, AND MINING
1588 West North Temple
Salt Lake City, Utah 84116
(801) 533-5771

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E. STEELE McINTYRE

January 16, 1981

Mr. Robert Eccli
Senior Mining Engineer
United States Fuel Company
Hiawatha Complex
Hiawatha, Utah 84527

RE: Request for Additional Copies of Surface and Groundwater Monitoring Plan
Hiawatha Complex
ACT/007/011
Carbon County, Utah

Dear Mr. Eccli:

Thank you for your most recent submittal of three copies of the "revised" Surface and Groundwater Monitoring Plan for the Hiawatha Complex. In your cover letter you requested that our Division forward this plan and your Company's comments to the Regional Office of Surface Mining.

In order to comply with OSM requirements for proper distribution and review procedures, that agency requires at a minimum seven (7) copies of all plans or modifications. This Division usually requires five (5) copies; three (3) for distribution to appropriate State agencies and two (2) for our review and filing purposes.

I have sent two (2) of the copies your Company has submitted to OSM and kept one (1) for our review. The Division would appreciate that an additional five (5) copies be mailed directly to OSM and two (2) copies to this office at your earliest convenience. This will aid in helping alleviate any additional delays in the review of this plan.

Thank you for your continued cooperation and coordination. If I can answer any questions, please feel free to contact me.

Sincerely,

D. Wayne Hedberg

D. WAYNE HEDBERG
RECLAMATION HYDROLOGIST

cc: Don Crane, OSM

DWH/btm

File ACT/007/011
Copy to Wayne
and Joe.
Jim

APR 2 9 1981

MAY 1 1981

DIVISION OF
OIL, GAS & MINING

MEMORANDUM

TO: Gary Fritz

FROM: John Hardaway

SUBJECT: U.S. Fuels Company - Revised Surface and Ground-Water Monitoring Plan

Review of the subject plan shows the following major elements:

. Ten springs will be sampled in the Fall and Spring; one of these (SP-8) will be monitored on a monthly basis since it contributes to a stream (Cedar Creek) which passes near a coal loadout. The initial round of sampling will be comprehensive (Table 3). Subsequent sampling will be limited (Table 4) to representative parameters. The springs were chosen because they had flow in 1977 (a "drought year"). They surround the mine area and a few overlie the mine.

Seven additional springs are listed as monitored Plateau and four additional springs are listed as monitored by the USGS. No particulars on the monitoring of these eleven additional springs are provided.

The ground water monitoring does not include any wells.

. Eight surface water monitoring stations are proposed. Six of these are concentrated in the North Fork of Miller Creek. One is located downstream of the loadout on Cedar Creek. One is located in Gentry Hollow Creek which is the only westward-flowing stream so monitored. The North Fork is perennial.

Seven discharging sedimentation ponds are monitored under a NPDES permit.

All surface water monitoring stations except one will be initially monitored monthly and then reduced to quarterly. The exception is the one station in Gentry Hollow Creek which is to be monitored semi-annually. A full analysis will be conducted the first time (Table 3) after which the limited, but representative, analyses will be conducted (Table 4).

The NPDES monitoring stations are to have monthly analyses (Table 1).

All flow measurements are either wier or time-quantity measurements. No continuous records are proposed.

MAY 1 1981

DIVISION OF
OIL, GAS & MINING

U.S. Fuel's entire Hiawatha Mine Complex is integrated in with the aerial imagery monitoring program that the Manti LaSal National Forest has required. This imagery (both IR and color IR) may provide some subsidence and vegetation information which may translate to hydrology effects.

This plan is relatively general in that it does not appear to have been developed to monitor any particular effect of surface activities or underground mining. The geology of the area is presented, but the geologic structure is not (e.g. the Bear Canyon Fault). The initial sampling for numerous constituents (Table 3) is good; however, the reduced sampling (Table 4) may have to be modified based on the information gained from the initial samples. Therefore we suggest the water quality analyses not be changed until the results of the initial sampling are submitted and reviewed, and the changes found acceptable by the regulatory authority.

It is not possible to analyze the adequacy of the entire monitoring plan without complete analysis of the proposed and past mining and surface operations. The completeness review for the U.S. Fuels plan is scheduled for June. We may, in the process of that and subsequent reviews, find that changes in the monitoring are necessary. Based on the review of UT-0006-22 (December 22, 1980) "Surface and Ground Water Monitoring Plan") we can recommend only a provisional approval. We would appreciate U.S. Fuel's assistance in better describing the variations in flow normally experienced with the springs located over and adjacent to the proposed minor workings. It may be appropriate to install a continuous flow monitoring system for one or more of the monitoring locations. However, it is premature for us to require such monitoring without further analysis.

I hope this helps.

cc: Jim Smith, Jr., Utah DOGM

bcc: John Nadolski
Chron
OFC
John Hardaway
Dan Kimball

J.Hardaway:blu:04/27/81

SCOTT M. MATHESON
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Executive Director,
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CLEON B. FEIGHT
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STATE OF UTAH
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EDWARD T. BECK
E. STEELE McINTYRE

October 15, 1980

Mr. Robert Eccli
Chief Engineer
U.S. Fuel Company
Hiawatha, Utah 84527

RE: Water Monitoring Plan
U.S. Fuel Company
King Mines
ACT/007/011

Dear Bob:

Enclosed is a copy of the Office of Surface Mining's comments on U.S. Fuel's water monitoring plans for the King Mines. If you have any questions, please call me.

Sincerely,

D. Wayne Hedberg

D. WAYNE HEDBERG
RECLAMATION HYDROLOGIST

DWH/te

cc: Don Crane, O.S.M.

SURFACE AND GROUNDWATER MONITORING PLAN

4th Quarter 1980

United States Fuel Company

Hiawatha, Utah 84527

DIVISION OF
OIL, GAS & MINING

STREAM MONITORING REPORT

DATE: 4th Quarter - 1980

EFFLUENT CHARACTERISTIC		ST-1					
		OCT.	NOV.	DEC.			
Flow Rate	G.P.M.	72	88	93			
PH	Units	7.1	7.2	7.2			
Air Temp.	°F	57	19	24			
Water Temp.	°F	39	28	29			
Conductivity	umhos/cm	1,800	1,700	1,700			
Acidity	Mg/L	12	29.9	30			
Total Suspended Solids	Mg/L	22	7	8			
Total Dissolved Solids	Mg/L	1,300	1,105	1,105			
Total Organic Carbon	Mg/L						
Total Manganese	Mg/L	0.012	0.020	0.014			
Total Iron	Mg/L	0.230	0.220	0.244			
Dissolved Iron	Mg/L	0.110	0.150	0.118			
Calcium	Mg/L						
Magnesium	Mg/L						
Sodium	Mg/L						
Potassium	Mg/L						
Carbonate	Mg/L						
Fluoride	Mg/L						
Bicarbonate	Mg/L						
Chloride	Mg/L	20	5.89	14.5			
Sulfate	Mg/L	850	675	690			
Nitrate NO_3-N	Mg/L	0.87	0.80	0.81			
Nitrate NO_2-N	Mg/L						
Kjeldahl N	Mg/L						
Dissolved Phosphorus	Mg/L						
Silica	Mg/L						
Trace Elements:							
Arsenic	Mg/L						
Cadmium	Mg/L						
Zinc	Mg/L						
Selenium	Mg/L						
Radioactivity:							
Gross Alpha	Pci/L						
Gross Beta	Pci/L						
Oil and Grease	Mg/L	0.80	<1.0	1.8			

STREAM MONITORING REPORT

DATE: 4th Quarter - 1980

EFFLUENT CHARACTERISTIC		ST - 2B					
		OCT.	NOV.	DEC.			
Flow Rate	G.P.M.	26	31	36			
PH	Units	7.2	7.5	7.3			
Air Temp.	°F	51	11	25			
Water Temp.	°F	33	20	23			
Conductivity	umhos/cm	800	750	750			
Acidity	Mg/L	<.1	16.6	28			
Total Suspended Solids	Mg/L	12	1	1			
Total Dissolved Solids	Mg/L	560	488	488			
Total Organic Carbon	Mg/L						
Total Manganese	Mg/L	0.010	0.017	0.016			
Total Iron	Mg/L	0.244	0.270	0.255			
Dissolved Iron	Mg/L	0.020	0.100	0.100			
Calcium	Mg/L						
Magnesium	Mg/L						
Sodium	Mg/L						
Potassium	Mg/L						
Carbonate	Mg/L						
Fluoride	Mg/L						
Bicarbonate	Mg/L						
Chloride	Mg/L	8	3.32	8.94			
Sulfate	Mg/L	135	114	102			
Nitrate NO_3-N	Mg/L	0.02	0.02	<.01			
Nitrate NO_2-N	Mg/L						
Kjeldahl N	Mg/L						
Dissolved Phosphorus	Mg/L						
Silica	Mg/L						
Trace Elements:							
Arsenic	Mg/L						
Cadmium	Mg/L						
Zinc	Mg/L						
Selenium	Mg/L						
Radioactivity:							
Gross Alpha	Pci/L						
Gross Beta	Pci/L						
Oil and Grease	Mg/L	1	18.2	1.7			

STREAM MONITORING REPORT

DATE: 4th Quarter - 1980

EFFLUENT CHARACTERISTIC		ST - 5					
		OCT.	NOV.	DEC.			
Flow Rate	G.P.M.	148	164	229			
PH	Units	7.4	7.4	7.1			
Air Temp.	°F	55	26	29			
Water Temp.	°F	37	19	27			
Conductivity	umhos/cm	1,700	1,500	1,500			
Acidity	Mg/L	16	20	28			
Total Suspended Solids	Mg/L	20	4	17			
Total Dissolved Solids	Mg/L	1,100	975	975			
Total Organic Carbon	Mg/L						
Total Manganese	Mg/L	0.100	0.039	0.046			
Total Iron	Mg/L	0.450	0.516	0.531			
Dissolved Iron	Mg/L	0.120	0.140	0.165			
Calcium	Mg/L						
Magnesium	Mg/L						
Sodium	Mg/L						
Potassium	Mg/L						
Carbonate	Mg/L						
Fluoride	Mg/L						
Bicarbonate	Mg/L						
Chloride	Mg/L	38	24	41.8			
Sulfate	Mg/L	576	480	540			
Nitrate NO_3-N	Mg/L	0.75	0.74	0.74			
Nitrate NO_2-N	Mg/L						
Kjeldahl N	Mg/L						
Dissolved Phosphorus	Mg/L						
Silica	Mg/L						
Trace Elements:							
Arsenic	Mg/L						
Cadmium	Mg/L						
Zinc	Mg/L						
Selenium	Mg/L						
Radioactivity:							
Gross Alpha	Pci/L						
Gross Beta	Pci/L						
Oil and Grease	Mg/L	0.2	<1.0	2.4			

OPERATION: GRING REPORT

DATE: 4th Quarter - 1980

EFFLUENT CHARACTERISTIC		ST - 6					
		OCT.	NOV.	DEC.			
Flow Rate	G.P.M.	74					
PH	Units	7.6					
Air Temp.	°F	47					
Water Temp.	°F	33					
Conductivity	umhos/cm	900					
Acidity	Mg/L	4					
Total Suspended Solids	Mg/L	16					
Total Dissolved Solids	Mg/L	630					
Total Organic Carbon	Mg/L						
Total Manganese	Mg/L	0.040					
Total Iron	Mg/L	0.200					
Dissolved Iron	Mg/L	0.095					
Calcium	Mg/L						
Magnesium	Mg/L						
Sodium	Mg/L						
Potassium	Mg/L						
Carbonate	Mg/L						
Fluoride	Mg/L						
Bicarbonate	Mg/L						
Chloride	Mg/L	30					
Sulfate	Mg/L	255					
Nitrate NO_3-N	Mg/L	0.05					
Nitrate NO_2-N	Mg/L						
Kjeldahl N	Mg/L						
Dissolved Phosphorus	Mg/L						
Silica	Mg/L						
Trace Elements:							
Arsenic	Mg/L						
Cadmium	Mg/L						
Zinc	Mg/L						
Selenium	Mg/L						
Radioactivity:							
Gross Alpha	Pci/L						
Gross Beta	Pci/L						
Oil and Grease	Mg/L	<.01					

INACCESSIBLE

INACCESSIBLE

File A7/0-7/011
Copy to Wayne w/plans
Jim

UNITED STATES FUEL COMPANY

HIAWATHA, UTAH 84527

December 23, 1980

RECEIVED
DEC 29 1980
DIVISION OF
OIL, GAS & MINING

Mr. James Smith
Coordinator of Mined Land Development
Utah Department of Natural Resources
Division of Oil, Gas, and Mining
1588 West North Temple
Salt Lake City, Utah 84116

Dear Mr. Smith:

Enclosed are three copies of our revised Surface and Groundwater Monitoring plan. This plan has been revised to address comments and recommendations outlined in a review by the Federal Office of Surface Mining on July 18, 1980. Stipulations set forth by your agency on June 15, 1979 and August 21, 1979 were addressed in an earlier plan and carried forward in this revision. We assume you will forward this response to the Office of Surface Mining.

Following is a summary of OSM's comments and recommendations and U. S. Fuel Company's response as incorporated in the plan.

1. Comment: Within the Gentry Mountain area, there are many springs in in addition to those on U. S. Fuel Company's map. Many of these springs are critical to the maintenance of the existing population of livestock and wildlife. The Office of Surface Mining (OSM) the Division of Oil, Gas, and Mining (DOGM), the Forest Service (FS), and the Company need to meet to identify critical springs for monitoring.

   Response: While it is true that there are many springs within the Gentry Mountain area in addition to those shown on our map, many of these springs to the north and west of our property are being monitored by a neighboring mining company (Plateau Mining Company). We feel that the 10 springs selected by us for monitoring are significant and will be useful in determining the effects of mining. They are significant due to their location with respect to existing and projected underground mine workings. Also, they are significant in that they all had some flow during the fall of the drought year of 1977 when many springs had dried up.

   According to 30 CFR 817.52, it is our understanding that the purpose of a hydrologic monitoring plan is to "determine the effects of underground mining activities on the recharge capacity of reclaimed lands and on the quantity and quality of water in the ground water systems in the mine plan and adjacent areas". Monitoring these 10 springs along with the

UTAH KING COAL

Quotations subject to immediate acceptance. Coal will be sold and invoiced at price in effect on date of shipment, at mine weights f. o. b. cars at place of shipment, unless otherwise specifically agreed in writing. Agreements are contingent upon causes of delay beyond our control, including strikes, accidents, riots, acts of God, lockouts, fire, flood, inability to secure cars or transportation.

Mohrland portal mine water discharge and stream drainages, should meet these requirements. If it is deemed necessary to monitor springs because they are critical to livestock and wildlife populations, the company would be willing to consider this in connection with a wildlife plan; however, we feel that this should not be a limiting factor in approving a hydrologic monitoring plan. As a point of interest, 4 of the 10 springs selected (SP-1, SP-4, SP-5 and SP-7), are developed with watering troughs or ponds.

NOU. FRANCS'77 MINE IS IN

2. Comment: Those springs that contribute to streams flowing through disturbed areas should be monitored monthly.

   Response: Springs SP-3, SP-7, SP-9 and SP-10 do not contribute to streams that flow through disturbed areas. Springs SP-1, SP-2, SP-4, SP-5 and SP-6 are located considerable distances from flowing streams and their flow rates (5 to 50 G.P.M.) are so small that any contribution to stream flow would most likely not justify monthly monitoring. Spring SP-8 discharges from a steel pipe directly into Cedar Creek. This spring will be monitored monthly, as recommended.

3. Comment: Final locations and procedures for sampling must be approved by the regulatory agencies.

   Response: The accompanying plan describes locations and sampling procedures. U. S. Fuel Company requests approval of this plan.

4. Comment: Basic geologic data, including a map, should be part of this monitoring program.

   Response: Geologic data, including a map, have been included as requested.

5. Comment: The Bear Canyon Fault is apparently a major groundwater channel. The effects of mining on flow rates needs to be addressed.

   Response: The effects of past mining on flow rates from the Bear Canyon fault is addressed in the accompanying plan. Future plans are to stop all mining within at least 100 feet of the fault. Water derived from the fault is presently being monitored at the old Mohrland portal discharge point.

6. Comment: A ground water inventory should be included in the plan.

   Response: A question is raised as to the intended extent of a ground water inventory. If one were to inventory every ground water seep in the Gentry Mountain area, probably over a hundred could be identified. If one were to inventory only those sites which have significant flow rates and are strategically located to reflect the effects of mining,

then the 10 springs selected should constitute a good inventory. The hydrology map (M-2) included with the revised plan shows the location of 7 additional springs selected for monitoring by a neighboring mine. Also shown are 4 springs which are periodically monitored by the U.S. Geological survey. Would the 21 above mentioned springs constitute a good inventory?

7. Comment: Exploratory drill holes and an old gas well that is still cased could possibly be used to develop a water level map.

   Response: Eleven exploritory drill holes were drilled for U. S. Fuel Company from the surface of Gentry Mountain to coal seam horizons during 1976 and 1977. All of these holes have been plugged with concrete as required by our U.S.G.S. drilling permit. The old gas well appears to be sealed at the collar. Also, it is located on Federal Lease SL-031286 which is held by a neighboring mine. Drill hole No. 13 (SE¼NW¼, Sec. 30, T.15S., R.8E.) was drilled from the surface in 1923 and not plugged; however, its lower extension was intersected by mine workings (no longer accessible) thus precluding its use as a water level indicator.

8. Comment: The plan states that water diverted into the underground storage reservoir will be monitored, but the location and procedure has not been identified.

   Response: This water will be monitored at site ST-2A as clarified in the revised plan.

9. Comment: U. S. Fuel Company's program calls for samples of intermittent streams to be analyzed biannually. Samples should be analyzed on a monthly basis, when water is present, so that water quality data is representative of runoff, high and low flows, rainfall and baseflow.

   Response: Intermittent streams will be monitored monthly as recommended.

10. Comment: Perennial streams in areas of disturbance should be monitored monthly during baseline collection and after mining begins. If effluent limitations are being exceeded, a higher frequency is required.

    Response: Perennial streams will be monitored monthly or more frequently if effluent limitations are exceeded.

11. Comment: We are concerned about how data will be displayed. Appropriate data displays, such as maps, charts, tables, overlays, and narrative descriptions are essential to the success of the program.

    Response: Maps, tables and drawings are provided in our plan. Monitoring data will be systematically recorded by qualified personnel. Water samples will be collected in specially treated bottles in accordance

with sampling and transporting recommendations of a certified analyst (Ford Chemical Laboratory, Inc.). Field data and analysis results will be organized and clearly tabulated for submittal to the regulatory authority.

12. Comment: U. S. Fuel Company must make a commitment to maintain the sampling sites and to have qualified persons taking samples.

    Response: This commitment is made in the monitoring plan.

13. Comment: We would like to commit the operator to at least annual summaries to the regulatory authority.

    Response: An earlier commitment was made with the Division of Oil, Gas, and Mining to submit summaries on a quarterly basis. This has been carried forward in the revised plan.

Yours truly,

Bob Eccli

Bob Eccli,
Mining Engineer

BE/ds

Enclosure(s)

SCOTT M. MATHESON
Governor

GORDON E. HARMSTON
Executive Director,
NATURAL RESOURCES

CLEON B. FEIGHT
Director

STATE OF UTAH
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS, AND MINING
1588 West North Temple
Salt Lake City, Utah 84116
(801) 533-5771

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EDWARD T. BECK
E. STEELE McINTYRE

January 16, 1981

Mr. John Nadolski, Hydrologist
Office of Surface Mining
Reclamation and Enforcement
Brooks Towers
1020 Fifteenth Street
Denver, Colorado 80202

RE: Surface and Groundwater
Monitoring Plan (Revision)
U. S. Fuel Company
Hiawatha Complex
ACT/007/011
Carbon County, Utah

Dear John:

Enclosed please find two (2) copies of United States Fuel Company's Surface and Groundwater Monitoring Plan in its revised form incorporating OSM comments on their previous plan. The Division has kept one (1) copy for a work copy and will request that additional copies be sent to your agency and ours to make up for copy deficiencies.

A reminder to the Company by your agency for additional copies may aid in speeding up the process.

The Division would appreciate an expeditious review and would like to return our comment by January 30, 1981, if possible.

Sincerely,

D. Wayne Hedberg

D. WAYNE HEDBERG
RECLAMATION HYDROLOGIST

Enclosures

DWH/btm

NO RESPONSE PRIOR TO MRP REVIEW HAS BEEN RECEIVED ??
DWH
7-7-81

SCOTT M. MATHESON
Governor

GORDON E. HARMSTON
Executive Director,
NATURAL RESOURCES

CLEON B. FEIGHT
Director

STATE OF UTAH
DEPARTMENT OF NATURAL RESOURCES
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September 24, 1979

Mr. James R. Pennington
President
19th Floor, University Club Bldg.
136 East South Temple
Salt Lake City, Utah 84111

RE: Hiawatha Complex
ACT/007/011

Dear Mr. Pennington:

For those mines which have not upgraded their monitoring plans to comply with the permanent program, modification of the federal rules for the Interim Program have caused a change in the reporting schedule for water quality results. Those mines which have upgraded their monitoring programs should maintain the same schedules.

On June 22, 1979, the Office of Surface Mining (O.S.M.) modified its regulations requiring reporting of water quality information by surface and underground coal mines during the Initial Regulatory Program (Federal Register, Volume 22, No. 122, pages 36886-87). These modifications have been made to the rules (30 CFR 715.17 and 717.17) to make reporting time period requirements more consistent with similar requirements of the Environmental Protection Agency and to eliminate the filing of duplicate reports.

More specifically, the modified rules allow for two alternative reporting periods for sample measurements of discharges to surface waters. As one alternative, reports are to be made to the regulatory authority by the discharger within 60 days of the end of each 60-day sample collection period. (If the mining activity involves Federal coal, the regulatory authority includes the State and O.S.M.).

A second acceptable method is reporting through compliance with equivalent time period reporting requirements under the NPDES permit system of the Clean Water Act. Use of the second alternative is conditioned upon the discharges being subject to NPDES requirements. It should be noted that compliance with the second alternative may be achieved by either filing the NPDES reporting form with the regulatory authority, or by identifying the State or Federal government official with whom the NPDES reporting form was filed.

I should emphasize that the regulations require that in all cases in which analytical results of samples indicate a violation of a permit condition or applicable standard, the operator shall notify the regulatory authority immediately. I should also note that when the Permanent Regulatory Program becomes effective, the reporting requirements of 30 CFR 816.52 and 817.52 will apply.

If questions should arise with respect to these reporting requirements, please contact Thomas Suchoski on my staff. Thank you for your cooperation.

Sincerely,

Ronald W. Daniels

RONALD W. DANIELS
COORDINATOR OF MINED LAND DEVELOPMENT

RWD/te

April 1 to June 30 - '80

RECEIVED
SEP 4 1980

HYDROLIC MONITORING PLAN

Quarterly Report

United States Fuel Company

Hiawatha, Utah 84527

STREAM MONITORING REPORT

DATE: July 30 - 1986

EFFLUENT CHARACTERISTIC		ST - 1					
		APRIL	MAY	JUNE			
Flow Rate	G.P.M.	422	732	278			
PH	Units	7.8	8.0	6.5			
Air Temp.	°F	46	65	67			
Water Temp.	°F	33	49	43			
Conductivity	umhos/cm	1380	1000	1000			
Acidity	Mg/L	4.0	<.1	34			
Total Suspended Solids	Mg/L	25.5	42.5	47			
Total Dissolved Solids	Mg/L	900	700	800			
Total Organic Carbon	Mg/L						
Total Manganese	Mg/L	0.01	0.03	0.014			
Total Iron	Mg/L	0.27	0.630	0.196			
Dissolved Iron	Mg/L	0.11	0.260	0.106			
Calcium	Mg/L						
Magnesium	Mg/L						
Sodium	Mg/L						
Potassium	Mg/L						
Carbonate	Mg/L						
Fluoride	Mg/L						
Bicarbonate	Mg/L						
Chloride	Mg/L	22.0	14.0	12.0			
Sulfate	Mg/L	300	270	33			
Nitrate NO_3-N	Mg/L	0.12	<.01	<.01			
Nitrate NO_2-N	Mg/L						
Kjeldahl N	Mg/L						
Dissolved Phosphorus	Mg/L						
Silica	Mg/L						
Trace Elements:							
Arsenic	Mg/L						
Cadmium	Mg/L						
Zinc	Mg/L						
Selenium	Mg/L						
Radioactivity:							
Gross Alpha	Pci/L						
Gross Beta	Pci/L						
Oil and Grease	Mg/L	5.8	0.4	3.4			

DATE: July 30 - 1980

EFFLUENT CHARACTERISTIC		ST-2B					
		APRIL	MAY	JUNE			
Flow Rate	G.P.M.	193	366	938			
PH	Units	7.8	7.8	8.0			
Air Temp.	°F	45	63	65			
Water Temp.	°F	32	51	45			
Conductivity	umhos/cm	770	700	500			
Acidity	Mg/L	12	<.1	<.1			
Total Suspended Solids	Mg/L	18	219	181			
Total Dissolved Solids	Mg/L	500	490	280			
Total Organic Carbon	Mg/L						
Total Manganese	Mg/L	0.01	0.12	0.011			
Total Iron	Mg/L	0.22	3.77	0.230			
Dissolved Iron	Mg/L	0.05	0.96	0.095			
Calcium	Mg/L						
Magnesium	Mg/L						
Sodium	Mg/L						
Potassium	Mg/L						
Carbonate	Mg/L						
Fluoride	Mg/L						
Bicarbonate	Mg/L						
Chloride	Mg/L	10.0	8.0	2.0			
Sulfate	Mg/L	148	93	57			
Nitrate NO_3-N	Mg/L	0.05	0.41	<.01			
Nitrate NO_2-N	Mg/L						
Kjeldahl N	Mg/L						
Dissolved Phosphorus	Mg/L						
Silica	Mg/L						
Trace Elements:							
Arsenic	Mg/L						
Cadmium	Mg/L						
Zinc	Mg/L						
Selenium	Mg/L						
Radioactivity:							
Gross Alpha	Pci/L						
Gross Beta	Pci/L						
Oil and Grease	Mg/L	4.6	1.8	3.0			

STREAM MONITORING REPORT

DATE: July 30 - 1980

EFFLUENT CHARACTERISTIC		ST - 5					
		APRIL	MAY	JUNE			
Flow Rate	G.P.M.	597	829	1590			
PH	Units	7.8	8.0	7.8			
Air Temp.	°F	54	75	74			
Water Temp.	°F	38	55	49			
Conductivity	umhos/cm	1300	1320	750			
Acidity	Mg/L	10.0	<.1	<.1			
Total Suspended Solids	Mg/L	175	197	52			
Total Dissolved Solids	Mg/L	850	930	512			
Total Organic Carbon	Mg/L						
Total Manganese	Mg/L	0.05	0.08	0.04			
Total Iron	Mg/L	1.15	2.16	0.64			
Dissolved Iron	Mg/L	0.43	0.76	0.135			
Calcium	Mg/L						
Magnesium	Mg/L						
Sodium	Mg/L						
Potassium	Mg/L						
Carbonate	Mg/L						
Fluoride	Mg/L						
Bicarbonate	Mg/L						
Chloride	Mg/L	40	36	22			
Sulfate	Mg/L	420	315	90			
Nitrate NO_3-N	Mg/L	0.62	0.92	0.65			
Nitrate NO_2-N	Mg/L						
Kjeldahl N	Mg/L						
Dissolved Phosphorus	Mg/L						
Silica	Mg/L						
Trace Elements:							
Arsenic	Mg/L						
Cadmium	Mg/L						
Zinc	Mg/L						
Selenium	Mg/L						
Radioactivity:							
Gross Alpha	Pci/L						
Gross Beta	Pci/L						
Oil and Grease	Mg/L	6	0.2	5.4			

DATE: July 30 - 1980

EFFLUENT CHARACTERISTIC		ST - 6					
		APRIL	MAY	JUNE			
Flow Rate	G.P.M.	133	2190	889			
PH	Units	7.9	7.8	7.8			
Air Temp.	°F	45	69	65			
Water Temp.	°F	32	49	45			
Conductivity	umhos/cm	1150	700	670			
Acidity	Mg/L	10	<.1	<.1			
Total Suspended Solids	Mg/L	137	1460	28			
Total Dissolved Solids	Mg/L	750	490	460			
Total Organic Carbon	Mg/L						
Total Manganese	Mg/L						
Total Iron	Mg/L	1.32	14	1.23			
Dissolved Iron	Mg/L	0.28	2.98	0.46			
Calcium	Mg/L						
Magnesium	Mg/L	0.04	0.39	<.01			
Sodium	Mg/L						
Potassium	Mg/L						
Carbonate	Mg/L						
Fluoride	Mg/L						
Bicarbonate	Mg/L						
Chloride	Mg/L	14	6	10			
Sulfate	Mg/L	315	216	78			
Nitrate NO_3-N	Mg/L	0.09	0.02	1.08			
Nitrate NO_2-N	Mg/L						
Kjeldahl N	Mg/L						
Dissolved Phosphorus	Mg/L						
Silica	Mg/L						
Trace Elements:							
Arsenic	Mg/L						
Cadmium	Mg/L						
Zinc	Mg/L						
Selenium	Mg/L						
Radioactivity:							
Gross Alpha	Pci/L						
Gross Beta	Pci/L						
Oil and Grease	Mg/L	1.4	0.8	1.4			