APPENDIX G

BASELINE SURFACE WATER QUALITY DATA
CORDILLERAN COMPLIANCE SERVICES, INC.
AND SURFACE WATER FEATURES MAPS

Table G-1
Leon Lake #4 Site
Baseline Surface Water Quality Data

Location	Section		13	13	13
	Township		12S	12S	12S
	Range		94W	94W	94W
	Qtr./Qtr.		SE/SW	SW/SW	SE/SW
	Latitude		39°0' 10.7"	39°0' 10.1"	39°00' 11.6"
	Longitude		107°50' 45.4"	107°51' 6.9"	107°50' 50.6"
Sample	Sample ID #		060602-SP-2B	060502-SP-3B	050802-SPS-2
	Well ID		SP-CK5	SP-PD4	SP-SG1
	Sample Date		6/6/2002	6/5/2002	5/8/2002
	Sample Source		creek	pond	spring
	Source Name	Standards	Unnamed Tributary		
Water Sample Analytical Results	Benzene (µg/l)	500 A	<1	<1	<1
	Toluene (µg/l)	1,000 A	<2	<2	<2
	Ethylbenzene (µg/l)	680 A	<2	<2	<2
	m,p-Xylene (µg/l)	10,000 A	<2	<2	<2
	o-Xylene (µg/l)	10,000 A	<2	<2	<2
	MTBE (µg/l)	NA	<8	<8	<8
	Methane (mg/l)	NA	<0.0008	<0.0008	<0.0008
	TDS (mg/l)	400 B	168	84	97
	Nitrate + Nitrite (mg/l)	10.0 C	*	1.77	0.14
	Nitrate (mg/l)	10.0 C	0.21	*	*
	Nitrite (mg/l)	1.0 C	0.04	*	*
	Ammonia-N (mg/l)	NA	<0.80	<0.80	0.61
	Sulphate Reducing Bacteria (approx. CFU/ml)	NA	100,000	1,000	10,000
	Iron Bacteria (approx. CFU/ml)	NA	5,000	100	100
	Hydrogen Sulfide (mg/l)	NA	<0.50	<0.50	<0.50
Cations	Aluminun (mg/l)	NA			
	Arsenic (mg/l)	0.05 C			
	Boron (mg.l)	NA			
	Barium (mg.l)	2.0 C			
	Calcium (mg/l)	NA	22	15	19
	Copper (mg/l)	1 D			
	Iron (mg/l)	0.3 D	0.46 B	1.6 B	0.37
	Potassium (mg/l)	NA	2.5	6.5	2.5
	Magnesium (mg/l)	NA	6.9	4.5	7
	Manganese (mg/l)	0.05 D	0.029	0.13	<0.01
	Sodium (mg/l)	NA	6.8	2.6	29.0
	Nickel (mg/l)	0.1 C			
	Lead (mg/l)	0.05 C			
	Selenium (mg/l)	0.05 C	<0.005	<0.005	<0.005
	Strontium (mg/l)	NA			
	Zinc (mg/l)	5 D			
Anions	Bromide (mg/l)				
	Chloride (mg/l)	250 D	0.99	1.2	<0.5
	Fluoride (mg/l)	4.0 D	<0.40	<0.40	<0.40
	Sulfate (mg/l)	250 D	1.7	0.53	3.2
	Bicarbonate (mg/l CaCO3)	NA	88.9	55.3	73.8
	Carbonate (mg/l CaCO3)	NA	**	**	**
	Alkalinity (mg/l $CaCO_3$)	NA	88.9	55.3	73.8
WQ Parameters	pH	6.5-8.5 D	8.2	8.09f	6.94f
	Specific Conductance (µmho's/cm @ 25 °C)	NA	158	96	113
	Conductivity (field) (mS/cm)	NA	165.4	128.7	NT (2)
	Turbidity (NTU)	NA	39.7	60.6	2.64
	Dissolved Oxygen (mg/l)	NA	NT (7)	NT (7)	9.46
	Temperature (°C)	NA	19.0	21.9	10.2
	Salinity (%)	NA	NT (5)	NT (5)	0.00
Soil Samples	pH	6 - 9 E			
	Specific Conductance (mS/cm @ 25 °C)	NA			
	Silver (mg/kg)	100 E			
	Arsenic (mg/kg)	41 E			
	Barium (mg/kg)	180,000 E			
	Cadmium (mg/kg)	26 E			
	Chromium (mg/kg)	1,500 E			
	Lead (mg/kg)	300 E			
	Mercury (mg/kg)	17 E			
	Calcium (mg/l)	NA			
	Magnesium (mg/l)	NA			
	Sodium (mg/l)	NA			
	Sodium Adsorption Ratio	<12 F			
	Selenium (mg/kg)	NA			

Notes

General Notes

mg/l = milligrams per liter = ppm

mg/kg = milligrams per kiligrams

µg/l = micrograms per liter

CFU/ml = bacterial colonies per milliliters
mS/cm = milliSiemens per centimeter
NTU = nephelolometric turbidity units
°C = degrees centigrade
* = result reported by alternate lab, see adjacent row
** = pH too low for Carbonate to be present
B = analyte detected in associated method blank

"f" next to pH value = field tested value
GMNF= Grand Mesa National Forest
NA = no applicable standard
gpm = gallons per minute
µmho's/cm = micromho's per centimeters

Water Quality Standard/Allowable Soil Contaminant Concentration Notes

A - from Colorado Oil & Gas Conservation Commission, Rules and Regulations, Table 910-1, Allowable Concentrations and Levels: Organics in Groundwater

B - from Colorado Department of Public Health and Environment, Water Quality Control Commission, Regulation No. 41, Table 4: TDS Water Quality Standards

C - from Colorado Department of Public Health and Environment, Water Quality Control Commission, Regulation No. 41, Table 1: Human Health Standards

D - from Colorado Department of Public Health and Environment, Water Quality Control Commission, Regulation No. 41, Table 2: Secondary Drinking Water Standards

An expanded list of cation analyses was requested for selected samples in the Spaulding Peak

Numbered Footnotes

(2) - NT (not tested) - conductivity not measured in the field due to malfunctioning water quality meter; specific conductance measured by the lab.

(3) - NT (not tested) - analysis not marked on chain-of-custody.

(4) - NT (not tested) - turbidity meter portion of water quality meter not working at time of this

(5) - NT (not tested) - salinity parameter not measurable with new model of water quality meter.

(6) - NT (not tested) - field parameter recorded only once between duplicate sample collections

(7) - NT (not tested) - meter used by other sampling team did not measure dissolved oxygen.

(8) - NT (not tested) - lab had limited BART test kits and this sample was selected as the most easily accessible location for re-collection.

(9) - Nitrate/nitrite re-sampled due to exceedance of nitrate/nitrite holding time.

(11) - NT (not tested) - due to lab miscommunication.

(13) - turbidity measured by lab within 24 hours

(14) - NT (not tested) - meter used by other sampling team did not measure salinity

(15) - dual nitrate/nitrite analyses to evaluate quality control; numbers on left from Grand Junciton Labs, numbers on right from Evergreen Analytical.

Table G-2
Leon Lake #5 Site
Baseline Surface Water Quality Data

Location	Section		24	13	24	14	14	24
	Township		12S	12S	12S	12S	12S	12S
	Range		94W	94W	94W	94W	94W	94W
	Qtr./Qtr.		SW/NW	SE/SW	SW/NE	NE/SE	SW/SE	NW/SW
	Latitude		38°59' 50.5"	39°0' 10.7"	38°59' 46.1"	39°0' 18.6"	39°0' 9.9"	38°59' 41.6"
	Longitude		107°51' 13.5"	107°50' 45.4"	107°50' 37.9"	107°51' 30.4	107°51' 43.7"	107°51' 14.9"
Sample	Sample ID #		050802-SPS-1	060602-SP-2B	060502-SP-SC-1B	061202-SPC-1	061902-UMC	050802-SPP-1
	Well ID		SP-CK1	SP-CK5	SP-CK3	SP-CK6	SP-CK8	SP-PD1
	Sample Date		5/8/2002	6/6/2002	6/5/2002	6/12/2002	6/19/2002	5/8/2002
	Sample Source		creek	creek	creek	creek	creek	pond
	Source Name	Standards	Unnamed Tributary	Unnamed Tributary	Surface Creek	Unnamed Tributary	Milk Creek	
Water Sample Analytical Results	Benzene (µg/l)	500 [A]	<1	<1	<1	<1	<1	<1
	Toluene (µg/l)	1.000 [A]	<2	<2	<2	<2	<2	<2
	Ethylbenzene (µg/l)	680 [A]	<2	<2	<2	<2	<2	<2
	m,p-Xylene (µg/l)	10.000 [A]	<2	<2	<2	<2	<2	<2
	o-Xylene (µg/l)	10.000 [A]	<2	<2	<2	<2	<2	<2
	MTBE (µg/l)	NA	<8	<8	<8	<8	<8	<8
	Methane (mg/l)	NA	0.0025	<0.0008	<0.0008	<0.0008	<0.0008	0.072
	TDS (mg/l)	400[B]	104	168	45	105	96	187
	Nitrate + Nitrite (mg/l)	10.0[C]	<0.076	•	0.24	0.42	•	<0.076
	Nitrate (mg/l)	10.0[C]	•	0.21	•	•	<0.25	•
	Nitrite (mg/l)	1.0[C]	•	0.04	•	•	<0.25	•
	Ammonia-N (mg/l)	NA	2.30	<0.80	<0.80	<0.80	<0.80	1.67
	Sulphate Reducing Bacteria (approx. CFU/ml)	NA	100,000	100,000	10,000	100,000	100,000	100,000
	Iron Bacteria (approx. CFU/ml)	NA	100	5,000	100	100	100	100
	Hydrogen Sulfide (mg/l)	NA	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Cations	Aluminun (mg/l)	NA					0.24	
	Arsenic (mg/l)	0.05[C]					<0.01	
	Boron (mg.l)	NA					<0.3	
	Barium (mg.l)	2.0[C]					0.032	
	Calcium (mg/l)	NA	20	22	9.1	17	14	36
	Copper (mg/l)	1[D]					<0.025	
	Iron (mg/l)	0.3[D]	1.4	0.46 B	0.41B	0.93 B	0.93 B	0.84
	Potassium (mg/l)	NA	4.5	2.5	1.3	2.2	1.7	6.2
	Magnesium (mg/l)	NA	5.9	6.9	2.6	4.7	5.2	11
	Manganese (mg/l)	0.05[D]	0.15	0.029	0.016	0.046	0.033	0.039
	Sodium (mg/l)	NA	5.6	6.8	1.9	4	3.6	12
	Nickel (mg/l)	0.1[C]					<0.06	
	Lead (mg/l)	0.05[C]					<0.01	
	Selenium (mg/l)	0.05[C]	<0.005	<0.005	<0.004	<0.005	<0.005	<0.005
	Strontium (mg/l)	NA					0.099	
	Zinc (mg/l)	5[D]					<0.01	
Anions	Bromide (mg/l)						<0.05	
	Chloride (mg/l)	250[D]	<0.5	0.99	<0.5	0.56	<0.5	<0.5
	Fluoride (mg/l)	4.0[D]	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40
	Sulfate (mg/l)	250[D]		1.7	1.7	0.58	2	1.6
	Bicarbonate (mg/l CaCO3)	NA		88.9	31.8	66.2	62.8	155
	Carbonate (mg/l CaCO3)	NA		••	••	••	••	••
	Alkalinity (mg/l $CaCO_3$)	NA	83.2	88.9	31.8	66.2	62.8	155
WQ Parameters	pH	6.5-8.5[D]	6.56f	8.2	7.9	6.1f	8.03f	8.86f
	Specific Conductance (µmho's/cm @ 25 °C)	NA	131	158	56	112	88.3	232
	Conductivity (field) (mS/cm)	NA	NT (2)	165.4	65.9	NT (2)	128	223
	Turbidity (NTU)	NA	6.95	39.7	2.05	4.92	25.7	28.5
	Dissolved Oxygen (mg/l)	NA	6.92	NT (7)	NT (7)	1.8	9.49	6.24
	Temperature (°C)	NA	15.6	19.0	13.5	15	18.75	16.4
	Salinity (%)	NA	0.00	NT (5)	NT (5)	NT (5)	NT (5)	0.00
Soil Samples	pH	6 - 9[E]						
	Specific Conductance (mS/cm @ 25 °C)	NA						
	Silver (mg/kg)	100[E]						
	Arsenic (mg/kg)	41[E]						
	Barium (mg/kg)	180,000[E]						
	Cadmium (mg/kg)	26[E]						
	Chromium (mg/kg)	1,500[E]						
	Lead (mg/kg)	300[E]						
	Mercury (mg/kg)	17[E]						
	Calcium (mg/l)	NA						
	Magnesium (mg/l)	NA						
	Sodium (mg/l)	NA						
	Sodium Adsorption Ratio	<12[F]						
	Selenium (mg/kg)	NA						
Notes								

Table G-2 (Continued)

Location	Section		24	24	13	24	13
	Township		12S	12S	12S	12S	12S
	Range		94W	94W	94W	94W	94W
	Qtr./Qtr.		NW/	SW/NE	SW/SW	SE/NW	SE/SW
	Latitude		38° 59' 84.0"	38°59' 46.8"	39°0' 10.1"	38°59' 47.6"	39°00' 11.6"
	Longitude		107° 51' 53.4"	107°50' 37.6"	107°51' 6.9"	107°50' 53.7"	107°50' 50.6"
Sample	Sample ID #		060402-SP-1B	060402-SP-2B	060502-SP-3B	061202-SPP-2	050802-SPS-2
	Well ID		SP-PD5	SP-PD2	SP-PD4	SP-PD8	SP-SG1
	Sample Date		6/4/2002	6/4/2002	6/5/2002	6/12/2002	5/8/2002
	Sample Source		pond	pond	pond	pond	spring
	Source Name	Standards					
Water Sample Analytical Results	Benzene (µg/l)	500 [A]	<1	<1	<1	<1	<1
	Toluene (µg/l)	1,000 [A]	<2	<2	<2	<2	<2
	Ethylbenzene (µg/l)	680 [A]	<2	<2	<2	<2	<2
	m,p-Xylene (µg/l)	10,000 [A]	<2	<2	<2	<2	<2
	o-Xylene (µg/l)	10,000 [A]	<2	<2	<2	<2	<2
	MTBE (µg/l)	NA	<8	<8	<8	<8	<8
	Methane (mg/l)	NA	0.0080	0.0080	<0.0008	0.016	<0.0008
	TDS (mg/l)	400[B]	152	212	84	172	97
	Nitrate + Nitrite (mg/l)	10.0[C]	*	*	1.77	2.37	0.14
	Nitrate (mg/l)	10.0[C]	2.21	3.18	*	*	*
	Nitrite (mg/l)	1.0[C]	0	0.04	*	*	*
	Ammonia-N (mg/l)	NA	<0.80	<0.80	<0.80	<0.80	0.61
	Sulphate Reducing Bacteria (approx. CFU/ml)	NA	10,000	100,000	1,000	100,000	10,000
	Iron Bacteria (approx. CFU/ml)	NA	5,000	5,000	100	10,000	100
	Hydrogen Sulfide (mg/l)	NA	<0.50	<0.50	<0.50	<0.50	<0.50
Cations	Aluminun (mg/l)	NA					
	Arsenic (mg/l)	0.05[C]					
	Boron (mg.l)	NA					
	Barium (mg.l)	2.0[C]					
	Calcium (mg/l)	NA	30	31	15	25	19
	Copper (mg/l)	1[D]					
	Iron (mg/l)	0.3[D]	1.6	2	1.6 B	1.5 B	0.37
	Potassium (mg/l)	NA	9.7	22	6.5	9.9	2.5
	Magnesium (mg/l)	NA	7.4	9.4	4.5	8.1	7
	Manganese (mg/l)	0.05[D]	0.033	0.032	0.13	0.035	<0.01
	Sodium (mg/l)	NA	3.3	4.1	2.6	3.6	29.0
	Nickel (mg/l)	0.1[C]					
	Lead (mg/l)	0.05[C]					
	Selenium (mg/l)	0.05[C]	<0.005	<0.005	<0.005	<0.005	<0.005
	Strontium (mg/l)	NA					
	Zinc (mg/l)	5[D]					
Anions	Bromide (mg/l)						
	Chloride (mg/l)	250[D]	2.7	4.6	1.2	2.8	<0.5
	Fluoride (mg/l)	4.0[D]	<0.40	<0.40	<0.40	<0.40	<0.40
	Sulfate (mg/l)	250[D]	0.95	6.7	0.53	<0.5	3.2
	Bicarbonate (mg/l CaCO3)	NA	83.9	110	55.3	97.8	73.8
	Carbonate (mg/l CaCO3)	NA	**	**	**	**	**
	Alkalinity (mg/l $CaCO_3$)	NA	83.9	110	55.3	97.8	73.8
WQ Parameters	pH	6.5-8.5[D]	7.56f	7.27f	8.09f	7.8f	6.94f
	Specific Conductance (µmho's/cm @ 25 °C)	NA	147	219	96	188	113
	Conductivity (field) (mS/cm)	NA	167.1	298	128.7	160	NT (2)
	Turbidity (NTU)	NA	NT (4)	16.3	60.6	5	2.64
	Dissolved Oxygen (mg/l)	NA	NT (7)	NT (7)	NT (7)	0.2	9.46
	Temperature (°C)	NA	19.1	21.2	21.9	21	10.2
	Salinity (%)	NA	NT (5)	NT (5)	NT (5)	NT (5)	0.00
Soil Samples	pH	6 - 9[E]					
	Specific Conductance (mS/cm @ 25 °C)	NA					
	Silver (mg/kg)	100[E]					
	Arsenic (mg/kg)	41[E]					
	Barium (mg/kg)	180,000[E]					
	Cadmium (mg/kg)	26[E]					
	Chromium (mg/kg)	1,500[E]					
	Lead (mg/kg)	300[E]					
	Mercury (mg/kg)	17[E]					
	Calcium (mg/l)	NA					
	Magnesium (mg/l)	NA					
	Sodium (mg/l)	NA					
	Sodium Adsorption Ratio	<12[F]					
	Selenium (mg/kg)	NA					

Notes

General Notes

mg/l = milligrams per liter = ppm

mg/kg = milligrams per kiligrams

µg/l = micrograms per liter

CFU/ml = bacterial colonies per milliliters
mS/cm = milliSiemens per centimeter
NTU = nephelolometric turbidity units
°C = degrees centigrade
* = result reported by alternate lab, see adjacent row
** = pH too low for Carbonate to be present
B = analyte detected in associated method blank

"f" next to pH value = field tested value
GMNF= Grand Mesa National Forest

NA = no applicable standard

gpm = gallons per minute

µmho's/cm = micromho's per centimeters

Water Quality Standard/Allowable Soil Contaminant Concentration Notes
A - from Colorado Oil & Gas Conservation Commission, Rules and Regulations Table 910-1, Allowable Concentrations and Levels: Organics in Groundwater
B - from Colorado Department of Public Health and Environment, Water Quality Control Commission, Regulation No. 41, Table 4: TDS Water Quality Standards
C - from Colorado Department of Public Health and Environment, Water Quality Control Commission, Regulation No. 41, Table 1: Human Health Standards
D - from Colorado Department of Public Health and Environment, Water Quality Control Commission, Regulation No. 41, Table 2: Secondary Drinking Water

An expanded list of cation analyses was requested for selected samples in the

Numbered Footnotes
(2) - NT (not tested) - conductivity not measured in the field due to malfunctioning water quality meter; specific conductance measured by the lab
(3) - NT (not tested) - analysis not marked on chain-of-custody.
(4) - NT (not tested) - turbidity meter portion of water quality meter not working at time of this sample collection.
(5) - NT (not tested) - salinity parameter not measurable with new model of water quality meter.
(6) - NT (not tested) - field parameter recorded only once between duplicate sample collections within 30 minutes.
(7) - NT (not tested) - meter used by other sampling team did not measure dissolved oxygen.
(8) - NT (not tested) - lab had limited BART test kits and this sample was selected as the most easily accessible location for re-collection.

(9) - Nitrate/nitrite re-sampled due to exceedance of nitrate/nitrite holding time

(11) - NT (not tested) - due to lab miscommunication.
(13) - turbidity measured by lab within 24 hours
(14) - NT (not tested) - meter used by other sampling team did not measure salinity
(15) - dual nitrate/nitrite analyses to evaluate quality control; numbers on left from Grand Junciton Labs, numbers on right from Evergreen Analytical.

Table G-3
Cedaredge Area Springs and Creeks
Baseline Surface Water Quality Data

Location	Section		11	11	12	13	13	15	17
	Township		13S	13S	13S	13S	13S	13S	13S
	Range		95W	95W	95W	95W	95W	95W	93W
	Qtr./Qtr.		SE/NW	SW/NE	SE/NE	NE/NE	NE/NE	NW/NW	NE/SW
	Latitude		N 38° 56' 16.6"	N 38° 56' 16.7"	N 38° 56' 25.3"	N 38° 55' 45.9"	N 38° 55' 44.6"	N 38° 55' 38.3"	N 38° 55' 16.7"
	Longitude		W 107° 58' 57.5"	W 107° 58' 39.4"	W 107° 57' 16.2"	W 107° 57' 09.1"	W 107° 57' 10.9"	W 108° 00' 20.7"	W 107° 48' 39.5"
	Distance to Sample Location from Spaulding Peak #1 in miles		8.2	8	6.8	7.2	7.26	9.7	4.15
Sample	Sample ID #		121202-WC-1	121202-WC-2	122002-BSpr	122002-KCrSpr	122002-ConSpr	122002-TM	122102-BgSpr
	Well ID		SP-CK10	SP-CK11	SP-SG32	SP-SG33	SP-SG34	DC-SG5	DC-SG7
	Sample Date		12/12/2002	12/12/2002	12/20/2002	12/20/2002	12/20/2002	12/20/2002	12/21/2002
	Sample Source		creek	creek	spring	spring	spring	spring	spring
	Water Well Flow Rate (gpm)	**Standards**							
Water Sample Analytical Results	Benzene (µg/l)	500 [A]	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	Toluene (µg/l)	1,000 [A]	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
	Ethylbenzene (µg/l)	680 [A]	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
	m,p-Xylene (µg/l)	10,000 [A]	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
	o-Xylene (µg/l)	10,000 [A]	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
	MTBE (µg/l)	NA	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
	Methane (mg/l)	NA	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0009
	TDS (mg/l)	400[B]	116	351	756	585	595	915	1580
	Nitrate + Nitrite (mg/l)	10.0[C]	*	*	*	*	*	*	*
	Nitrate (mg/l)	10.0[C]	<0.25	<0.25	0.20	1.10	1.17	0.31	0.23
	Nitrite (mg/l)	1.0[C]	<0.25	<0.25	0.00	0.01	0.00	0.00	0.00
	Ammonia-N (mg/l)	NA	<0.80	<0.80	<0.80	<0.80	<0.80	<0.80	<0.80
	Sulphate Reducing Bacteria (approx. CFU/ml)	NA	100,000	100,000	NT(3)	NT(3)	NT(3)	NT(3)	NT(3)
	Iron Bacteria (approx. CFU/ml)	NA	100	100	NT(3)	NT(3)	NT(3)	NT(3)	NT(3)
	Hydrogen Sulfide (mg/l)	NA	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Cations	Aluminun (mg/l)	NA	NT (3)	NT (3)	1.2	0.48	0.037	<0.025	0.35
	Arsenic (mg/l)	0.05[C]	NT (3)	NT (3)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Barium (mg.l)	NA	NT (3)	NT (3)	<0.025	0.12	0.10	0.12	<0.025
	Boron (mg.l)	2.0[C]	NT (3)	NT (3)	<0.20	0.25	0.26	0.57	<0.20
	Calcium (mg/l)	NA	18	67	14	75	76	48	200
	Copper (mg/l)	1[D]	NT (3)	NT (3)	<0.025	<0.025	<0.025	<0.025	<0.025
	Iron (mg/l)	0.3[D]	0.58 B	0.36 B	0.99	0.85	<0.20	<0.20	2.3
	Potassium (mg/l)	NA	1.5	3.1	1.4	6.9	6.9	3.9	5.5
	Magnesium (mg/l)	NA	5.9	18.0	6.0	54	57	30	81
	Manganese (mg/l)	0.05[D]	0.011	<0.010	0.011	0.022	<0.010	0.010	0.061
	Sodium (mg/l)	NA	5.6	17	280 B	45 B	49 B	310 B	180 B
	Nickel (mg/l)	0.1[C]	NT (3)	NT (3)	<0.060	<0.060	<0.060	<0.060	<0.060
	Lead (mg/l)	0.05[C]	NT (3)	NT (3)	<0.010	<0.010	<0.010	<0.010	<0.010
	Selenium (mg/l)	0.05[C]	<0.0050	<0.0050	<0.0050	<0.0050	0.0053	<0.0050	<0.0050
	Silicon (mg/l)	NA	NT (3)	NT (3)	4.0	15	16	11	5.1
	Strontium (mg/l)	NA	NT (3)	NT (3)	0.26	0.67	0.67	0.92	1.8
	Zinc (mg/l)	5[D]	NT (3)	NT (3)	0.050	0.0078	<0.0050	0.0056	0.0088
Anions	Bromide (mg/l)		NT (3)	NT (3)	0.060	0.060	0.060	0.190	<0.10
	Chloride (mg/l)	250[D]	0.50	2.63	5.8	4.1	4.3	18.1	2.3
	Fluoride (mg/l)	4.0[D]	<0.40	<0.40	2.6	0.56	0.89	0.53	0.44
	Sulfate (mg/l)	250[D]	4.0	31.3	62.1	87.6	93.4	67.6	796
	Bicarbonate (mg/l CaCO3)	NA	77.9	236.5	570	430	434	723	381
	Carbonate (mg/l CaCO3)	NA	**	11.2	**	**	**	**	**
	Alkalinity (mg/l $CaCO_3$)	NA	77.9	247.5	570	430	434	723	381
WQ Parameters	pH	6.5-8.5[D]	7.63	8.63	8.72	7.62	7.69	8.51	7.21
	Specific Conductance (µmho's/cm @ 25 °C)	NA	150	503	1160	868	905	1360	1820
	Conductivity (field) (mS/cm)	NA	0.163	0.535	1.297	1.003	1.034	1.54	2.06
	Turbidity (NTU)	NA	4.9	0.0	55.2	0.6	18.8	0.0	16.5
	Dissolved Oxygen (mg/l)	NA	24.24	21.32	47.13	35.50	12.36	18.31	31.44
	Temperature (°C)	NA	0.09	0.37	1.89	9.77	9.63	1.46	9.44
	Salinity (%)	NA	NT (5)	NT (5)	NT (5)	NT (5)	NT (5)	NT (5)	NT (5)
Notes									

Table G-3 (Continued)

Location	Section		5	19	13	12	18	18
	Township		13S	13S	13S	13S	13S	13S
	Range		93W	93W	95W	95W	94W	94W
	Qtr./Qtr.		SW/SE	SW/SE	SE/NE	NE/SE	SW/NW	SE/NW
	Latitude		N 38° 56' 54.6"	N 38° 54' 10.7"	N 38° 55'27.8"	N 38° 56'3.8"	N 38° 55'29.6"	N 38° 55'32.0"
	Longitude		W 107° 48' 30.7"	W 107° 49' 25.4"	W 107° 57'12.2"	W 107° 57'21.4"	W 107° 57'0.36"	W 107° 56'32.9"
	Distance to Sample Location from Spaulding Peak #1 in miles		3.9	5.3	7.5	7.15	7.3	7
Sample	Sample ID #		122102-DFSpr	122102-HSpr	122202-LSpr	122202-BSpr	122202-B1Spr	122202-B2Spr
	Well ID		DC-SG8	DC-SG6	SP-SG38	SP-SG37	SP-CD2	SP-CD3
	Sample Date		12/21/2002	12/21/2002	12/22/2002	12/22/2002	12/22/2002	12/22/2002
	Samole Source		spring	spring	spring	spring	mine drainage	mine drainage
	Water Well Flow Rate (gpm)	**Standards**			3.6			
Water Sample Analytical Results	Benzene (µg/l)	500 [A]	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	Toluene (µg/l)	1,000 [A]	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
	Ethylbenzene (µg/l)	680 [A]	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
	m,p-Xylene (µg/l)	10,000 [A]	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
	o-Xylene (µg/l)	10,000 [A]	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
	MTBE (µg/l)	NA	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
	Methane (mg/l)	NA	<0.0009	<0.0009	<0.0008	0.010	<0.0008	<0.0008
	TDS (mg/l)	400[B]	6920	7510	490	602	422	483
	Nitrate + Nitrite (mg/l)	10.0[C]	*	*	*	*	*	*
	Nitrate (mg/l)	10.0[C]	1.74	39.3	3.07	<0.25	4.33	2.94
	Nitrite (mg/l)	1.0[C]	0.00	0.06	<0.25	<0.25	<0.25	<0.25
	Ammonia-N (mg/l)	NA	<0.80	<0.80	<0.80	<0.80	<0.80	<0.80
	Sulphate Reducing Bacteria (approx. CFU/ml)	NA	NT(3)	NT(3)	NT(3)	NT(3)	NT(3)	NT(3)
	Iron Bacteria (approx. CFU/ml)	NA	NT(3)	NT(3)	NT(3)	NT(3)	NT(3)	NT(3)
	Hydrogen Sulfide (mg/l)	NA	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Cations	Aluminun (mg/l)	NA	<0.025	<0.025	6.6	0.49	<0.025	<0.025
	Arsenic (mg/l)	0.05[C]	<0.0020	<0.0020	0.0054	<0.0020	<0.0020	<0.0020
	Barium (mg.l)	NA	0.033	<0.025	0.46	0.077	0.13	0.15
	Boron (mg.l)	2.0[C]	<0.20	0.73	<0.20	0.30	<0.20	<0.20
	Calcium (mg/l)	NA	230	380	110	62	49	57
	Copper (mg/l)	1[D]	<0.025	<0.025	0.047	<0.025	<0.025	<0.025
	Iron (mg/l)	0.3[D]	0.29	0.28	14	1.1	<0.20	<0.20
	Potassium (mg/l)	NA	9.1	13	5.9	6.1	5.2	6.3
	Magnesium (mg/l)	NA	300	610	46	44	48	57
	Manganese (mg/l)	0.05[D]	0.62	0.46	1.5	0.17	<0.010	<0.010
	Sodium (mg/l)	NA	1700 B	780 B	31 B	94 B	38 B	43 B
	Nickel (mg/l)	0.1[C]	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060
	Lead (mg/l)	0.05[C]	<0.010	<0.010	0.015	<0.010	<0.010	<0.010
	Selenium (mg/l)	0.05[C]	0.0066	0.11	0.010	<0.0050	<0.0050	<0.0050
	Silicon (mg/l)	NA	4.3	4.0	18.0	7.1	21	18
	Strontium (mg/l)	NA	8.7	6.0	0.95	1.7	0.77	1.1
	Zinc (mg/l)	5[D]	0.016	0.025	0.050	0.0086	<0.0050	0.0073
Anions	Bromide (mg/l)		<0.25	0.350	0.080	0.1	0.05	0.05
	Chloride (mg/l)	250[D]	71.6	34.8	5.38	6.4	3.38	3.41
	Fluoride (mg/l)	4.0[D]	0.57	<0.40	0.58	1.2	0.85	0.85
	Sulfate (mg/l)	250[D]	4290	4340	36.9	69.5	26.4	44.6
	Bicarbonate (mg/l CaCO3)	NA	863	494	401	466	356	403
	Carbonate (mg/l CaCO3)	NA	**	**	**	**	**	**
	Alkalinity (mg/l $CaCO_3$)	NA	863	494	401	466	356	403
WQ Parameters	pH	6.5-8.5[D]	8.44	7.61	8.09	7.49	8.32	7.56
	Specific Conductance (µmho's/cm @ 25 °C)	NA	7470	6390	718	906	643	747
	Conductivity (field) (mS/cm)	NA	8.45	7.69	0.843	1.031	0.736	0.864
	Turbidity (NTU)	NA	0.0	0.0	0.0	0.0	0.5	0.0
	Dissolved Oxygen (mg/l)	NA	49.30	34.32	38.73	13.30	17.11	10.58
	Temperature (°C)	NA	-0.46	6.69	8.80	9.38	9.98	9.58
	Salinity (%)	NA	NT (5)	NT (5)	NT (5)	NT (5)	NT (5)	NT (5)

Notes

General Notes

mg/l = milligrams per liter = ppm

mg/kg = milligrams per kiligrams

µg/l = micrograms per liter

CFU/ml = bacterial colonies per milliliters
mS/cm = milliSiemens per centimeter

NTU = nephelolometric turbidity units
°C = degrees centigrade
* = result reported by alternate lab, see adjacent row
** = pH too low for Carbonate to be present

B = analyte detected in associated method blank
"f" next to pH value = field tested value
GMNF= Grand Mesa National Forest
NA = no applicable standard
gpm = gallons per minute
µmho's/cm = micromho's per centimeters

Water Quality Standard/Allowable Soil Contaminant Concentration Notes
A - from Colorado Oil & Gas Conservation Commission, Rules and Regulations, Table 910-1, Allowable Concentrations and Levels: Organics in Groundwater
B - from Colorado Department of Public Health and Environment, Water Quality Control Commission, Regulation No. 41, Table 4: TDS Water Quality Standards
C - from Colorado Department of Public Health and Environment, Water Quality Control Commission, Regulation No. 41, Table 1: Human Health Standards
D - from Colorado Department of Public Health and Environment, Water Quality Control Commission, Regulation No. 41, Table 2: Secondary Drinking Water Standards

An expanded list of cation analyses was requested for selected samples in the Cedaredge Area.

Numbered Footnotes
(3) - NT (not tested) - analysis not marked on chain-of-custody/or not required by client

(5) - NT (not tested) - salinity parameter not measurable with new model of water quality meter.

Table G-4
Powerline Site
Baseline Surface Water Quality Data

Location	Section					
	Section		17	17	20	20
	Township		12S	12S	12S	12S
	Range		91W	91W	91W	91W
	Qtr./Qtr.		NE/SW	SE/SW	NE/NW	SE/NW
	Latitude		N 39° 00.687'	N 39° 0.542'	N 39° 0.295'	N 39° 00.087'
	Longitude		W 107° 34.876'	W 107° 34.825'	W 107° 34.816'	W 107° 34.780
Sample	Sample ID #		110502-PL-NWP	110502-PL-CC	110502-PL-CC2	110702-PL-CC-1
	Well ID		PL-PD1	PL-CK1	PL-CK2	PL-CK3
	Sample Date		11/5/2002	11/5/2002	11/5/2002	11/7/2002
	Sample Source		pond	creek	creek	creek
	Water Source Name	**Standards**		Unnamed Tributary	Unnamed Tributary	Unnamed Tributary
Water Sample Analytical Results	Benzene (µg/l)	500 [A]	<1.0	<1.0	<1.0	<1.0
	Toluene (µg/l)	1,000 [A]	<2.0	<2.0	<2.0	<2.0
	Ethylbenzene (µg/l)	680 [A]	<2.0	<2.0	<2.0	<2.0
	m,p-Xylene (µg/l)	10,000 [A]	<2.0	<2.0	<2.0	<2.0
	o-Xylene (µg/l)	10,000 [A]	<2.0	<2.0	<2.0	<2.0
	MTBE (µg/l)	NA	<5.0	<5.0	<5.0	<5.0
	Methane (mg/l)	NA	0.95	<0.008	<0.008	<0.0008
	TDS (mg/l)	400[B]	161	79.0	87.0	79.0
	Nitrates + Nitrites (mg/l)	10.0[C]	*	*	*	*
	Nitrate (mg/l)	10.0[C]	<0.25	0.71	<0.25	0.33
	Nitrite (mg/l)	1.0[C]	<0.25	<0.25	<0.25	0.00
	Ammonia-N (mg/l)	NA	<0.80	<0.80	<0.80	<0.80
	Sulphate Reducing Bacteria (approx. CFU/ml)	NA	100,000	10,000	100,000	100,000
	Iron Bacteria (approx. CFU/ml)	NA	5,000	5,000	100	100
	Hydrogen Sulfide (mg/l)	NA	<0.50	<0.50	<0.50	<0.50
Cations	Calcium (mg/l)	NA	29	11	14	14
	Iron (mg/l)	0.3[D]	6.0 B	0.40 B	1.8 B	0.27
	Potassium (mg/l)	NA	5.0	1.4	1.5	1.6
	Magnesium (mg/l)	NA	9.7	3.7	4.6	4.7
	Manganese (mg/l)	0.05[D]	0.38	<0.010	0.096	<0.010
	Sodium (mg/l)	NA	5.7	3.6	4.1	4
	Selenium (mg/l)	0.05[C]	<0.0050	<0.0050	<0.0050	<0.005
Anions	Chloride (mg/l)	250[D]	5.3	1.0	0.63	0.51
	Fluoride (mg/l)	4.0[D]	<0.40	<0.40	<0.40	<0.40
	Sulfate (mg/l)	250[D]	4.8	5.8	4.5	4.4
	Bicarbonate (mg/l CaCO3)	NA	112	47	58.1	55.6
	Carbonate (mg/l CaCO3)	NA	*	*	*	<5.0
	Alkalinity (mg/l CaCO3)	NA	112	47	58.1	55.6
WQ Parameters	pH	6.5-8.5 [D]	7.2	8.05	8.74	8.21
	Specific Conductance (µmho's/cm @ 25 °C)	NA	220	88.4	104	105
	Conductivity (field) (mS/cm)	NA	0.240	0.105	0.129	0.126
	Turbidity (NTU)	NA	254	6.9	0.0	0.0
	Dissolved Oxygen (mg/l)	NA	35.03	41.63	38.96	40.44
	Temperature (°C)	NA	2.04	0.88	-0.11	-0.18
	Salinity (%)	NA	NT (5)	NT (5)	NT (5)	NT (5)

Notes

General Notes

mg/l = milligrams per liter = ppm

mg/kg = milligrams per kiligrams

µg/l = micrograms per liter

CFU/ml = bacterial colonies per milliliters
mS/cm = milliSiemens per centimeter
NTU = nephelolometric turbidity units
°C = degrees centigrade
* = result reported by alternate lab, see adjacent row
** = pH too low for Carbonate to be present
B = analyte detected in associated method blank

"f" next to pH value = field tested value
GMNF= Grand Mesa National Forest

NA = no applicable standard
gpm = gallons per minute

µmho's/cm = micromho's per centimeters

Water Quality Standard/Allowable Soil Contaminant Concentration Notes

A - from Colorado Oil & Gas Conservation Commission, Rules and Regulations, Table 910-1, Allowable Concentrations and Levels: Organics in Groundwater

B - from Colorado Department of Public Health and Environment, Water Quality Control Commission, Regulation No. 41, Table 4: TDS Water Quality Standards

C - from Colorado Department of Public Health and Environment, Water Quality Control Commission, Regulation No. 41, Table 1: Human Health Standards

D - from Colorado Department of Public Health and Environment, Water Quality Control Commission, Regulation No. 41, Table 2: Secondary Drinking Water Standards

An expanded list of cation analyses was requested for selected samples in the Spaulding Peak vicinity.

Numbered Footnotes

(2) - NT (not tested) - conductivity not measured in the field due to malfunctioning water quality meter; specific conductance measured by the lab.

(3) - NT (not tested) - analysis not marked on chain-of-custody.

(4) - NT (not tested) - turbidity meter portion of water quality meter not working at time of this sample collection.

(5) - NT (not tested) - salinity parameter not measurable with new model of water quality meter.

(6) - NT (not tested) - field parameter recorded only once between duplicate sample collections within 30 minutes.

(7) - NT (not tested) - meter used by other sampling team did not measure dissolved oxygen.

(8) - NT (not tested) - lab had limited BART test kits and this sample was selected as the most easily accessible location for re collection.

(9) - Nitrate/nitrite re-sampled due to exceedance of nitrate/nitrite holding time.

(11) - NT (not tested) - due to lab miscommunication.

(13) - turbidity measured by lab within 24 hours

(14) - NT (not tested) - meter used by other sampling team did not measure salinity

(15) - dual nitrate/nitrite analyses to evaluate quality control; numbers on left from Grand Junciton Labs, numbers on right from Evergreen Analytical.

Table G-5
Bull Park Site
Baseline Surface Water Quality Data

Location	Section		30	31	31
	Township		12S	12S	12S
	Range		91W	91W	91W
	Qtr./Qtr.		SW/SE	SW/NW	NE/NE
	Latitude		N 38° 58.879'	N 38° 59.280'	N 38° 58.625'
	Longitude		W 107° 35.622'	W 107° 35.093'	W 107° 35.308'
Sample	Sample ID #		102502-BP-CC-1	102502BP-CC-2	102502-BP-DG
	Well ID		BP-CK1 (CC1)	BP-CK2 (CC2)	BP-CK3 (DG)
	Sample Date		10/25/2002	10/25/2002	10/25/2002
	Sample Source		creek	creek	creek (spring fed)
	Water Source Name	**Standards**	Unnamed Tributary	Unnamed Tributary	Unnamed Tributary
Water Sample Analytical Results	Benzene (µg/l)	500 [A]	<1.0	<1.0	<1.0
	Toluene (µg/l)	1,000 [A]	<2.0	<2.0	<2.0
	Ethylbenzene (µg/l)	680 [A]	<2.0	<2.0	<2.0
	m,p-Xylene (µg/l)	10,000 [A]	<2.0	<2.0	<2.0
	o-Xylene (µg/l)	10,000 [A]	<2.0	<2.0	<2.0
	MTBE (µg/l)	NA	<8.0	<8.0	<8.0
	Methane (mg/l)	NA	<0.008	<0.008	<0.008
	TDS (mg/l)	400[B]	118	93	402
	Nitrates + Nitrites (mg/l)	10.0[C]	*	*	*
	Nitrate (mg/l)	10.0[C]	0.50	0.40	0.53
	Nitrite (mg/l)	1.0[C]	0.03	0.02	0.08
	Ammonia-N (mg/l)	NA	<0.80	<0.80	<0.80
	Sulphate Reducing Bacteria (approx. CFU/ml)	NA	100,000	100,000	100,000
	Iron Bacteria (approx. CFU/ml)	NA	5,000	5,000	5,000
	Hydrogen Sulfide (mg/l)	NA	<0.50	<0.50	<0.50
Cations	Calcium (mg/l)	NA	21	12	26
	Iron (mg/l)	0.3[D]	0.38	<0.20	14
	Potassium (mg/l)	NA	2	1.6	4
	Magnesium (mg/l)	NA	5.6	5.2	8.6
	Manganese (mg/l)	0.05[D]	0.044	0.016	0.23
	Sodium (mg/l)	NA	6.2B	4.1B	6.4B
	Selenium (mg/l)	0.05[C]	<0.0050	<0.0050	<0.0050
Anions	Chloride (mg/l)	250[D]	1.1	2.1	1.6
	Fluoride (mg/l)	4.0[D]	<0.40	<0.40	<0.40
	Sulfate (mg/l)	250[D]	4.2	2.6	4.3
	Bicarbonate (mg/l CaCO3)	NA	72.8	51.8	73.5
	Carbonate (mg/l CaCO3)	NA	*	*	*
	Alkalinity (mg/l CaCO3)	NA	72.8	51.8	73.5
WQ Parameters	pH	6.5-8.5 [D]	8.08	7.76	7.91
	Specific Conductance (µmho's/cm @ 25 °C)	NA	153	107	149
	Conductivity (field) (mS/cm)	NA	0.156	0.119	0.165
	Turbidity (NTU)	NA	66.2	0.0	2000
	Dissolved Oxygen (mg/l)	NA	20.8	23.2	34.3
	Temperature (°C)	NA	3.45	4.82	3.73
	Salinity (%)	NA	NT (5)	NT (5)	NT (5)

Notes

General Notes

mg/l = milligrams per liter = ppm

mg/kg = milligrams per kiligrams

µg/l = micrograms per liter

CFU/ml = bacterial colonies per milliliters
mS/cm = milliSiemens per centimeter
NTU = nephelolometric turbidity units
°C = degrees centigrade
* = result reported by alternate lab, see adjacent row
** = pH too low for Carbonate to be present
B = analyte detected in associated method blank

"f" next to pH value = field tested value
GMNF= Grand Mesa National Forest

NA = no applicable standard
gpm = gallons per minute

µmho's/cm = micromho's per centimeters

Water Quality Standard/Allowable Soil Contaminant Concentration Notes

A - from Colorado Oil & Gas Conservation Commission, Rules and Regulations, Table 910-1, Allowable Concentrations and Levels: Organics in Groundwater

B - from Colorado Department of Public Health and Environment, Water Quality Control Commission, Regulation No. 41, Table 4: TDS Water Quality Standards

C - from Colorado Department of Public Health and Environment, Water Quality Control Commission, Regulation No. 41, Table 1: Human Health Standards

D - from Colorado Department of Public Health and Environment, Water Quality Control Commission, Regulation No. 41, Table 2: Secondary Drinking Water Standards

An expanded list of cation analyses was requested for selected samples in the Spaulding Peak vicinity.

Numbered Footnotes

(2) - NT (not tested) - conductivity not measured in the field due to malfunctioning water quality meter; specific conductance measured by the lab.

(3) - NT (not tested) - analysis not marked on chain-of-custody.

(4) - NT (not tested) - turbidity meter portion of water quality meter not working at time of this sample collection.

(5) - NT (not tested) - salinity parameter not measurable with new model of water quality meter.

(6) - NT (not tested) - field parameter recorded only once between duplicate sample collections within 30 minutes.

(7) - NT (not tested) - meter used by other sampling team did not measure dissolved oxygen.

(8) - NT (not tested) - lab had limited BART test kits and this sample was selected as the most easily accessible location for re-collection.

(9) - Nitrate/nitrite re-sampled due to exceedance of nitrate/nitrite holding time.

(11) - NT (not tested) - due to lab miscommunication.

(13) - turbidity measured by lab within 24 hours

(14) - NT (not tested) - meter used by other sampling team did not measure salinity

(15) - dual nitrate/nitrite analyses to evaluate quality control; numbers on left from Grand Junciton Labs, numbers on right from Evergreen Analytical.

Table G-6
Oakbrush Site
Baseline Surface Water Quality Data

Location	Section		25	25	25
	Township		12S	12S	12S
	Range		91W	91W	91W
	Qtr./Qtr.		NE/SE	NW/SW	SE/SW
	Latitude		38°59' 2.9"	38°59'2.8"	38°58' 54.6"
	Longitude		107°29' 52.4	107°30'21.8	107°30' 25.2
Sample	Sample ID #		052902-BC-1A	052902-LPP-1A	052902-LPP-2A
	Well ID		LP-CK3	LP-PD1	LP-PD2
	Sample Date		5/29/2002	5/29/2002	5/29/2002
	Sample Source		creek	pond	pond
	Water Source Name	**Standards**	Bear Creek		
Water Sample Analytical Results	Benzene (µg/l)	500 [A]	<1	<1	<1
	Toluene (µg/l)	1,000 [A]	<2	<2	<2
	Ethylbenzene (µg/l)	680 [A]	<2	<2	<2
	m,p-Xylene (µg/l)	10,000 [A]	<2	<2	<2
	o-Xylene (µg/l)	10,000 [A]	<2	<2	<2
	MTBE (µg/l)	NA	<8	<8	<8
	Methane (mg/l)	NA	<0.0008	<0.0008	<0.0008
	TDS (mg/l)	400[B]	189	138	83
	Nitrates + Nitrites (mg/l)	10.0[C]	*	*	*
	Nitrate (mg/l)	10.0[C]	0.41, <0.25 (15)	1.26, <0.25 (15)	0.91, <0.25 (15)
	Nitrite (mg/l)	1.0[C]	0.00, <0.25 (15)	0.00, <0.25 (15)	0.00, <0.25 (15)
	Ammonia-N (mg/l)	NA	<0.80	<0.80	<0.80
	Sulphate Reducing Bacteria (approx. CFU/ml)	NA	100,000	100,000	1,000
	Iron Bacteria (approx. CFU/ml)	NA	100	5,000	100
	Hydrogen Sulfide (mg/l)	NA	<0.50	<0.50	<0.50
Cations	Calcium (mg/l)	NA	41	28	15
	Iron (mg/l)	0.3[D]	0.4	1	0.52
	Potassium (mg/l)	NA	2.5	5.9	3.8
	Magnesium (mg/l)	NA	7.3B	4B	2.1B
	Manganese (mg/l)	0.05[D]	0.046	0.53	0.077
	Sodium (mg/l)	NA	20	13	5.9
	Selenium (mg/l)	0.05[C]	<0.005	<0.005	<0.005
Anions	Chloride (mg/l)	250[D]	2.4	4.1	2.8
	Fluoride (mg/l)	4.0[D]	<0.40	<0.40	<0.40
	Sulfate (mg/l)	250[D]	11.2	3.9	3.6
	Bicarbonate (mg/l CaCO3)	NA	111	91.8	47.6
	Carbonate (mg/l CaCO3)	NA	**	**	**
	Alkalinity (mg/l CaCO3)	NA	111	91.8	47.6
WQ Parameters	pH	6.5-8.5 [D]	7.5f	7.1f	6.2f
	Specific Conductance (µmho's/cm @ 25 °C)	NA	284	194	100
	Conductivity (field) (mS/cm)	NA	NT (2)	(6)	(6)
	Turbidity (NTU)	NA	5.0 (13)	6.7 (13)	5.5 (13)
	Dissolved Oxygen (mg/l)	NA	2.7	2.6	2.7
	Temperature (°C)	NA	16.0	17.0	16.0
	Salinity (%)	NA	0.0	0.0	0.0

Notes

General Notes

mg/l = milligrams per liter = ppm

mg/kg = milligrams per kiligrams

µg/l = micrograms per liter

CFU/ml = bacterial colonies per milliliters
mS/cm = milliSiemens per centimeter
NTU = nephelolometric turbidity units
°C = degrees centigrade
* = result reported by alternate lab, see adjacent row
** = pH too low for Carbonate to be present
B = analyte detected in associated method blank

"f" next to pH value = field tested value
GMNF= Grand Mesa National Forest

NA = no applicable standard
gpm = gallons per minute

µmho's/cm = micromho's per centimeters

Water Quality Standard/Allowable Soil Contaminant Concentration Notes

A - from Colorado Oil & Gas Conservation Commission, Rules and Regulations, Table 910-1, Allowable Concentrations and Levels: Organics in Groundwater

B - from Colorado Department of Public Health and Environment, Water Quality Control Commission, Regulation No. 41, Table 4: TDS Water Quality Standards

C - from Colorado Department of Public Health and Environment, Water Quality Control Commission, Regulation No. 41, Table 1: Human Health Standards

D - from Colorado Department of Public Health and Environment, Water Quality Control Commission, Regulation No. 41, Table 2: Secondary Drinking Water Standards

An expanded list of cation analyses was requested for selected samples in the Spaulding Peak vicinity.

Numbered Footnotes

(2) - NT (not tested) - conductivity not measured in the field due to malfunctioning water quality meter; specific conductance measured by the lab.

(3) - NT (not tested) - analysis not marked on chain-of-custody.

(4) - NT (not tested) - turbidity meter portion of water quality meter not working at time of this sample collection.

(5) - NT (not tested) - salinity parameter not measurable with new model of water quality meter.

(6) - NT (not tested) - field parameter recorded only once between duplicate sample collections within 30 minutes.

(7) - NT (not tested) - meter used by other sampling team did not measure dissolved oxygen.

(8) - NT (not tested) - lab had limited BART test kits and this sample was selected as the most easily accessible location for re-collection.

(9) - Nitrate/nitrite re-sampled due to exceedance of nitrate/nitrite holding time.

(11) - NT (not tested) - due to lab miscommunication.

(13) - turbidity measured by lab within 24 hours

(14) - NT (not tested) - meter used by other sampling team did not measure salinity

(15) - dual nitrate/nitrite analyses to evaluate quality control; numbers on left from Grand Junciton Labs, numbers on right from Evergreen Analytical.

Table G-7
Hubbard Creek Site
Baseline Surface Water Quality Data

Location	Section		27	23	25
	Township		12S	12S	12S
	Range		91W	91W	91W
	Qtr./Qtr.		NE/NE	SE/NW	NW/SW
	Latitude		38°59' 22.9"	39°0' 1.7"	38°59'2.8"
	Longitude		107°31' 52.5"	107°31' 30.3	107°30'21.8
Sample	Sample ID #		052202-AC-1	052202-LPC-1	052902-LPP-1A
	Well ID		LP-CK1	LP-CK2	LP-PD1
	Sample Date		5/22/2002	5/22/2002	5/29/2002
	Sample Source		creek	creek	pond
	Water Source Name	**Standards**	Hubbard Creek	Lone Pine Creek	
Water Sample Analytical Results	Benzene (µg/l)	500 [A]	<1	<1	<1
	Toluene (µg/l)	1,000 [A]	<2	<2	<2
	Ethylbenzene (µg/l)	680 [A]	<2	<2	<2
	m,p-Xylene (µg/l)	10,000 [A]	<2	<2	<2
	o-Xylene (µg/l)	10,000 [A]	<2	<2	<2
	MTBE (µg/l)	NA	<8	<8	<8
	Methane (mg/l)	NA	<0.0008	0.0016	<0.0008
	TDS (mg/l)	400[B]	142	146	138
	Nitrates + Nitrites (mg/l)	10.0[C]	*	*	*
	Nitrate (mg/l)	10.0[C]	<0.25	<0.25	1.26, <0.25 (15)
	Nitrite (mg/l)	1.0[C]	<0.25	<0.25	0.00, <0.25 (15)
	Ammonia-N (mg/l)	NA	<0.80	<0.80	<0.80
	Sulphate Reducing Bacteria (approx. CFU/ml)	NA	100,000	100,000	100,000
	Iron Bacteria (approx. CFU/ml)	NA	100	100	5,000
	Hydrogen Sulfide (mg/l)	NA	<0.50	<0.50	<0.50
Cations	Calcium (mg/l)	NA	26	27	28
	Iron (mg/l)	0.3[D]	<0.2	0.23 B	1
	Potassium (mg/l)	NA	2.2	2.1	5.9
	Magnesium (mg/l)	NA	7.7	6.1	4B
	Manganese (mg/l)	0.05[D]	<0.01	<0.01	0.53
	Sodium (mg/l)	NA		17	13
	Selenium (mg/l)	0.05[C]	<0.005	<0.005	<0.005
Anions	Chloride (mg/l)	250[D]	1.8	3.6	4.1
	Fluoride (mg/l)	4.0[D]	<0.40	<0.40	<0.40
	Sulfate (mg/l)	250[D]	11.1	21.5	3.9
	Bicarbonate (mg/l CaCO3)	NA	113	95.1	91.8
	Carbonate (mg/l CaCO3)	NA	**	**	**
	Alkalinity (mg/l CaCO3)	NA	113	95.1	91.8
WQ Parameters	pH	6.5-8.5 [D]	6.9f	7.3f	7.1f
	Specific Conductance (µmho's/cm @ 25 °C)	NA	223	220	194
	Conductivity (field) (mS/cm)	NA	260	NT (2)	(6)
	Turbidity (NTU)	NA	0.54 (13)	0.71 (13)	6.7 (13)
	Dissolved Oxygen (mg/l)	NA	4.7	4.5	2.6
	Temperature (°C)	NA	15.0	12.0	17.0
	Salinity (%)	NA	0.0	0.0	0.0

Notes

General Notes

mg/l = milligrams per liter = ppm

mg/kg = milligrams per kiligrams

µg/l = micrograms per liter

CFU/ml = bacterial colonies per milliliters
mS/cm = milliSiemens per centimeter
NTU = nephelolometric turbidity units
°C = degrees centigrade
* = result reported by alternate lab, see adjacent row

** = pH too low for Carbonate to be present

B = analyte detected in associated method blank

"f" next to pH value = field tested value
GMNF= Grand Mesa National Forest

NA = no applicable standard
gpm = gallons per minute

µmho's/cm = micromho's per centimeters

Water Quality Standard/Allowable Soil Contaminant Concentration Notes

A - from Colorado Oil & Gas Conservation Commission, Rules and Regulations, Table 910-1, Allowable Concentrations and Levels: Organics in Groundwater

B - from Colorado Department of Public Health and Environment, Water Quality Control Commission, Regulation No. 41 Table 4: TDS Water Quality Standards

C - from Colorado Department of Public Health and Environment, Water Quality Control Commission, Regulation No. 41 Table 1: Human Health Standards

D - from Colorado Department of Public Health and Environment, Water Quality Control Commission, Regulation No. 41 Table 2: Secondary Drinking Water Standards

An expanded list of cation analyses was requested for selected samples in the Spaulding Peak vicinity.

Numbered Footnotes

(2) - NT (not tested) - conductivity not measured in the field due to malfunctioning water quality meter; specific conductance measured by the lab.

(3) - NT (not tested) - analysis not marked on chain-of-custody.

(4) - NT (not tested) - turbidity meter portion of water quality meter not working at time of this sample collection.

(5) - NT (not tested) - salinity parameter not measurable with new model of water quality meter.

(6) - NT (not tested) - field parameter recorded only once between duplicate sample collections within 30 minutes.

(7) - NT (not tested) - meter used by other sampling team did not measure dissolved oxygen.

(8) - NT (not tested) - lab had limited BART test kits and this sample was selected as the most easily accessible location for re collection.

(9) - Nitrate/nitrite re-sampled due to exceedance of nitrate/nitrite holding time.

(11) - NT (not tested) - due to lab miscommunication.

(13) - turbidity measured by lab within 24 hours

(14) - NT (not tested) - meter used by other sampling team did not measure salinity

(15) - dual nitrate/nitrite analyses to evaluate quality control; numbers on left from Grand Junciton Labs, numbers on right from Evergreen Analytical.

Table G-8
Hawksnest Site
Baseline Surface Water Quality Data

Location	Section		2	2	2
	Township		13S	13S	13S
	Range		90W	90W	90W
	Qtr./Qtr.		NW/NE	NW/NE	SE/NW
	Latitude		N 38°57'11.41"	N 38°57'7.38"	N 38° 57.009'
	Longitude		W 107°24'54.11"	W 107°24'49.68"	W 107° 25.214'
Sample	Sample ID #		110602-TC-Cr	110602-TC-P	110602-HN-P
	Well ID		TC-CK1	TC-PD1	HN-PD1
	Sample Date		11/6/2002	11/6/2002	11/6/2002
	Sample Source		creek	pond	pond
	Water Source Name	**Standards**	Hawksnest Creek		
Water Sample Analytical Results	Benzene (µg/l)	500 [A]	<1.0	<1.0	<1.0
	Toluene (µg/l)	1,000 [A]	<2.0	<2.0	<2.0
	Ethylbenzene (µg/l)	680 [A]	<2.0	<2.0	<2.0
	m,p-Xylene (µg/l)	10,000 [A]	<2.0	<2.0	<2.0
	o-Xylene (µg/l)	10,000 [A]	<2.0	<2.0	<2.0
	MTBE (µg/l)	NA	<5.0	<5.0	<5.0
	Methane (mg/l)	NA	0.012	0.27	0.0014
	TDS (mg/l)	400[B]	565	170	225
	Nitrates + Nitrites (mg/l)	10.0[C]	*	*	*
	Nitrate (mg/l)	10.0[C]	<0.25	2.2	18.3
	Nitrite (mg/l)	1.0[C]	<0.25	<0.25	0.81
	Ammonia-N (mg/l)	NA	<0.80	<0.80	3.3
	Sulphate Reducing Bacteria (approx. CFU/ml)	NA	10,000	10,000	10,000
	Iron Bacteria (approx. CFU/ml)	NA	100	100	100
	Hydrogen Sulfide (mg/l)	NA	<0.50	<0.50	<0.50
Cations	Calcium (mg/l)	NA	52	13	23
	Iron (mg/l)	0.3[D]	4.3B	4.0B	2.9 B
	Potassium (mg/l)	NA	6.5	5.9	12
	Magnesium (mg/l)	NA	20	5.7	8.5
	Manganese (mg/l)	0.05[D]	1.8	0.065	0.47
	Sodium (mg/l)	NA	4.9	8.1	7.2
	Selenium (mg/l)	0.05[C]	<0.005	<0.005	<0.005
Anions	Chloride (mg/l)	250[D]	8.3	5.8	21.3
	Fluoride (mg/l)	4.0[D]	<0.40	<0.40	0.40
	Sulfate (mg/l)	250[D]	6.9	4.2	11.7
	Bicarbonate (mg/l CaCO3)	NA	163	57.6	NT
	Carbonate (mg/l CaCO3)	NA	**	**	**
	Alkalinity (mg/l CaCO3)	NA	163	57.6	NT
WQ Parameters	pH	6.5-8.5 [D]	6.79	7.28	7.38
	Specific Conductance (µmho's/cm @ 25 °C)	NA	420	130	245
	Conductivity (field) (mS/cm)	NA	0.511	0.158	0.225
	Turbidity (NTU)	NA	184	114	105
	Dissolved Oxygen (mg/l)	NA	30.16	27.14	19.34
	Temperature (°C)	NA	2.4	5.68	14.91
	Salinity (%)	NA	NT (5)	NT (5)	NT (5)

Notes

General Notes

mg/l = milligrams per liter = ppm

mg/kg = milligrams per kiligrams

µg/l = micrograms per liter

CFU/ml = bacterial colonies per milliliters
mS/cm = milliSiemens per centimeter
NTU = nephelolometric turbidity units
°C = degrees centigrade
* = result reported by alternate lab, see adjacent row
** = pH too low for Carbonate to be present
B = analyte detected in associated method blank

"f" next to pH value = field tested value
GMNF= Grand Mesa National Forest

NA = no applicable standard
gpm = gallons per minute

µmho's/cm = micromho's per centimeters

Water Quality Standard/Allowable Soil Contaminant Concentration Notes

A - from Colorado Oil & Gas Conservation Commission, Rules and Regulations, Table 910-1, Allowable Concentrations and Levels: Organics in Groundwater

B - from Colorado Department of Public Health and Environment, Water Quality Control Commission, Regulation No. 41, Table 4: TDS Water Quality Standards

C - from Colorado Department of Public Health and Environment, Water Quality Control Commission, Regulation No. 41, Table 1: Human Health Standards

D - from Colorado Department of Public Health and Environment, Water Quality Control Commission, Regulation No. 41, Table 2: Secondary Drinking Water Standards

An expanded list of cation analyses was requested for selected samples in the Spaulding Peak vicinity.

Numbered Footnotes

(2) - NT (not tested) - conductivity not measured in the field due to malfunctioning water quality meter; specific conductance measured by the lab.

(3) - NT (not tested) - analysis not marked on chain-of-custody.

(4) - NT (not tested) - turbidity meter portion of water quality meter not working at time of this sample collection.

(5) - NT (not tested) - salinity parameter not measurable with new model of water quality meter.

(6) - NT (not tested) - field parameter recorded only once between duplicate sample collections within 30 minutes.

(7) - NT (not tested) - meter used by other sampling team did not measure dissolved oxygen.

(8) - NT (not tested) - lab had limited BART test kits and this sample was selected as the most easily accessible location for re-collection.

(9) - Nitrate/nitrite re-sampled due to exceedance of nitrate/nitrite holding time.

(11) - NT (not tested) - due to lab miscommunication.

(13) - turbidity measured by lab within 24 hours

(14) - NT (not tested) - meter used by other sampling team did not measure salinity

(15) - dual nitrate/nitrite analyses to evaluate quality control; numbers on left from Grand Junciton Labs, numbers on right from Evergreen Analytical.

Table G-9
Thompson Creek Site
Baseline Surface Water Quality Data

Location	Section		2	2	2
	Township		13S	13S	13S
	Range		90W	90W	90W
	Qtr./Qtr.		NW/NE	NW/NE	SE/NW
	Latitude		N 38°57'11.41"	N 38°57'7.38"	N 38° 57.009'
	Longitude		W 107°24'54.11"	W 107°24'49.68"	W 107° 25.214'
Sample	Sample ID #		110602-TC-Cr	110602-TC-P	110602-HN-P
	Well ID		TC-CK1	TC-PD1	HN-PD1
	Sample Date		11/6/2002	11/6/2002	11/6/2002
	Sample Source		creek	pond	pond
	Water Source Name	**Standards**	Hawksnest Creek		
Water Sample Analytical Results	Benzene (µg/l)	500 [A]	<1.0	<1.0	<1.0
	Toluene (µg/l)	1,000 [A]	<2.0	<2.0	<2.0
	Ethylbenzene (µg/l)	680 [A]	<2.0	<2.0	<2.0
	m,p-Xylene (µg/l)	10,000 [A]	<2.0	<2.0	<2.0
	o-Xylene (µg/l)	10,000 [A]	<2.0	<2.0	<2.0
	MTBE (µg/l)	NA	<5.0	<5.0	<5.0
	Methane (mg/l)	NA	0.012	0.27	0.0014
	TDS (mg/l)	400[B]	565	170	225
	Nitrates + Nitrites (mg/l)	10.0[C]	*	*	*
	Nitrate (mg/l)	10.0[C]	<0.25	2.2	18.3
	Nitrite (mg/l)	1.0[C]	<0.25	<0.25	0.81
	Ammonia-N (mg/l)	NA	<0.80	<0.80	3.3
	Sulphate Reducing Bacteria (approx. CFU/ml)	NA	10,000	10,000	10,000
	Iron Bacteria (approx. CFU/ml)	NA	100	100	100
	Hydrogen Sulfide (mg/l)	NA	<0.50	<0.50	<0.50
Cations	Calcium (mg/l)	NA	52	13	23
	Iron (mg/l)	0.3[D]	4.3B	4.0B	2.9 B
	Potassium (mg/l)	NA	6.5	5.9	12
	Magnesium (mg/l)	NA	20	5.7	8.5
	Manganese (mg/l)	0.05[D]	1.8	0.065	0.47
	Sodium (mg/l)	NA	4.9	8.1	7.2
	Selenium (mg/l)	0.05[C]	<0.005	<0.005	<0.005
Anions	Chloride (mg/l)	250[D]	8.3	5.8	21.3
	Fluoride (mg/l)	4.0[D]	<0.40	<0.40	0.40
	Sulfate (mg/l)	250[D]	6.9	4.2	11.7
	Bicarbonate (mg/l CaCO3)	NA	163	57.6	NT
	Carbonate (mg/l CaCO3)	NA	**	**	**
	Alkalinity (mg/l CaCO3)	NA	163	57.6	NT
WQ Parameters	pH	6.5-8.5 [D]	6.79	7.28	7.38
	Specific Conductance (µmho's/cm @ 25 °C)	NA	420	130	245
	Conductivity (field) (mS/cm)	NA	0.511	0.158	0.225
	Turbidity (NTU)	NA	184	114	105
	Dissolved Oxygen (mg/l)	NA	30.16	27.14	19.34
	Temperature (°C)	NA	2.4	5.68	14.91
	Salinity (%)	NA	NT (5)	NT (5)	NT (5)

Notes

General Notes

mg/l = milligrams per liter = ppm

mg/kg = milligrams per kiligrams

µg/l = micrograms per liter

CFU/ml = bacterial colonies per milliliters
mS/cm = milliSiemens per centimeter
NTU = nephelolometric turbidity units
°C = degrees centigrade
* = result reported by alternate lab, see adjacent row
** = pH too low for Carbonate to be present
B = analyte detected in associated method blank

"f" next to pH value = field tested value
GMNF= Grand Mesa National Forest

NA = no applicable standard
gpm = gallons per minute

µmho's/cm = micromho's per centimeters

Water Quality Standard/Allowable Soil Contaminant Concentration Notes

A - from Colorado Oil & Gas Conservation Commission, Rules and Regulations, Table 910-1, Allowable Concentrations and Levels: Organics in Groundwater

B - from Colorado Department of Public Health and Environment, Water Quality Control Commission, Regulation No. 41, Table 4: TDS Water Quality Standards

C - from Colorado Department of Public Health and Environment, Water Quality Control Commission, Regulation No. 41, Table 1: Human Health Standards

D - from Colorado Department of Public Health and Environment, Water Quality Control Commission, Regulation No. 41, Table 2: Secondary Drinking Water Standards

An expanded list of cation analyses was requested for selected samples in the Spaulding Peak vicinity.

Numbered Footnotes

(2) - NT (not tested) - conductivity not measured in the field due to malfunctioning water quality meter; specific conductance measured by the lab.

(3) - NT (not tested) - analysis not marked on chain-of-custody.

(4) - NT (not tested) - turbidity meter portion of water quality meter not working at time of this sample collection.

(5) - NT (not tested) - salinity parameter not measurable with new model of water quality meter.

(6) - NT (not tested) - field parameter recorded only once between duplicate sample collections within 30 minutes.

(7) - NT (not tested) - meter used by other sampling team did not measure dissolved oxygen.

(8) - NT (not tested) - lab had limited BART test kits and this sample was selected as the most easily accessible location for re-collection.

(9) - Nitrate/nitrite re-sampled due to exceedance of nitrate/nitrite holding time.

(11) - NT (not tested) - due to lab miscommunication.

(13) - turbidity measured by lab within 24 hours

(14) - NT (not tested) - meter used by other sampling team did not measure salinity

(15) - dual nitrate/nitrite analyses to evaluate quality control; numbers on left from Grand Junciton Labs, numbers on right from Evergreen Analytical.

LEGEND FOR SURFACE AND GROUNDWATER FEATURES MAPS
(G-1, G-2, and G-3)

The symbols for water sample locations and types are designed as follows:

SP-PD # : The first symbol (SP) is the sample location designator, the second symbol (PD) is the sample type. The second symbol is followed by the sample number. This example would be Spaulding Peak – Pond #.

The letters used for Sample Location are as follows:

SP = Spaulding Peak

SG = Stevens Gulch

BP = Bull Park

LP = Lone Pine

The letters for the Sample Type are as follows:

CK = Creek

SG = Spring

PD = Pond

DW = Domestic Well

All others symbols used on the maps are already on the legend found on each map.