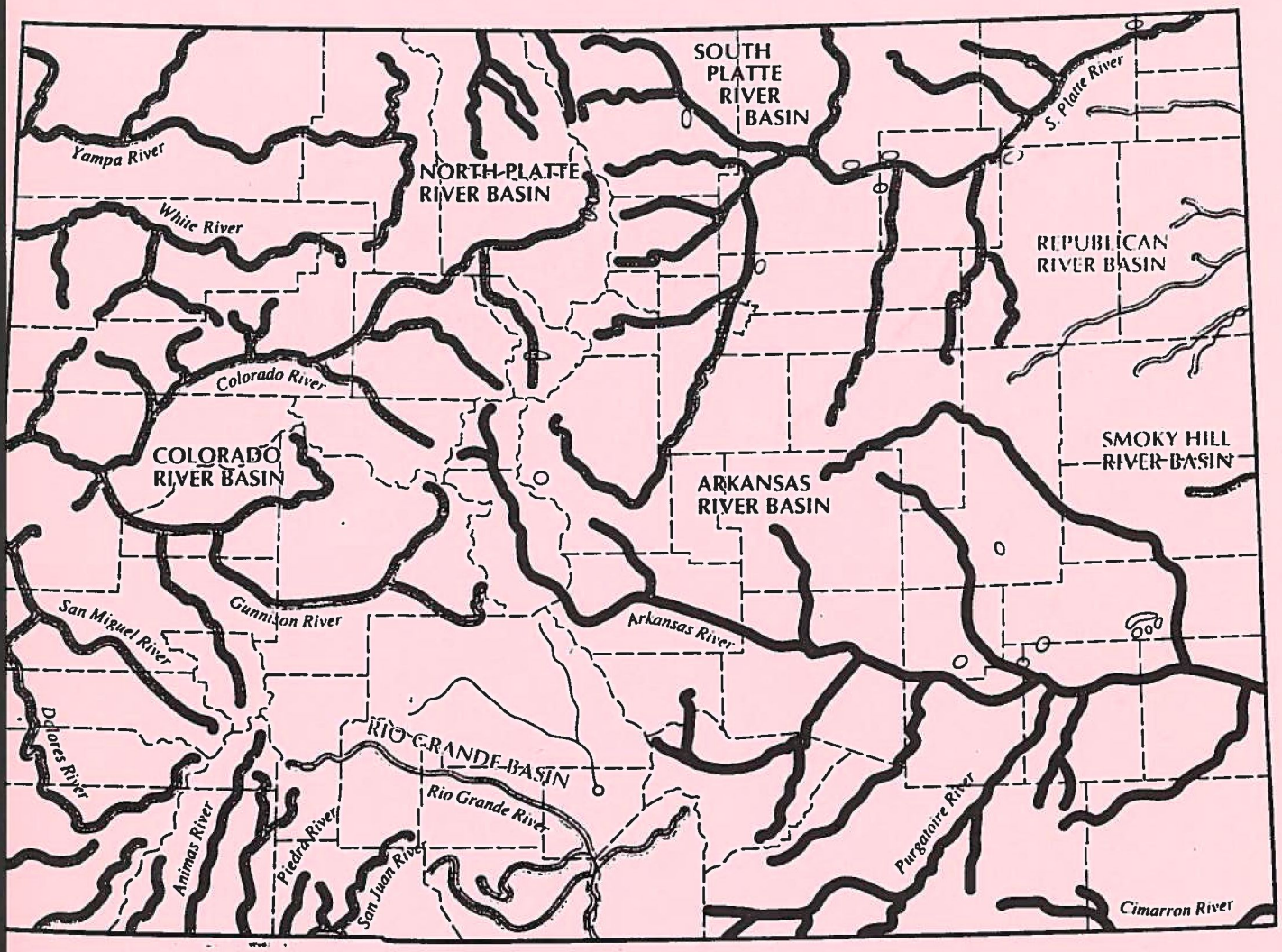
RIVERS OF COLORADO
WATER WATCH NETWORK



Dolores Watershed Report

May 1997

Colorado Division of Wildlife

RIVERS OF COLORADO WATER WATCH NETWORK

Watershed Reports

by Kathleen C. Stewart and Barbara J. Horn

TABLE OF CONTENTS

INTRODUCTION

Welcome to the Rivers of Colorado Water Watch Network or River Watch. Our Watershed Reports will allow you to read about the health of your rivers. They will introduce you to the efforts that schools in your community are making to observe and protect your rivers. The Reports contain general information on the program and portions specific to the water quality of your individual streams. These portions will display and discuss chemical data that relate to the health of your watershed and will be updated on an annual basis for each watershed in the state.

In 1990, the Colorado Division of Wildlife (CDOW) implemented an educational program for high schools and middle schools in the state called Rivers of Colorado Water Watch Network. The program set three primary goals:

1. To provide an educational opportunity for middle schools and high schools to understand and value river ecosystems. Students, with teacher supervision and community support, learn to monitor a stretch of river near their school. By collection of chemical, biological and physical data they learn to observe how changes in one component can lead to changes in another.

2. To obtain accurate and consistent baseline water quality data on the rivers in Colorado.

3. To establish a communications network that provides agencies and citizens with information about Colorado's rivers. The information will allow federal, state, and local agencies to make better decisions regarding water management issues on their streams.

ADMINISTRATION

The U.S. Fish and Wildlife Service supports the program through Wallop-Breaux funds. The CDOW administers the program as a 5-year Aquatic Education Plan and provides technical and material support. Barb Horn designed and directs the program for the CDOW. Her address is:

Barb Horn
Colorado Division of Wildlife
6060 Broadway
Denver, CO 80216-1000
phone: (303) 291-7388
FAX: (303) 291-7456
Email: barb.horn@state.co.us

STATEWIDE SCOPE

Participant schools are grouped into 8 major watersheds: Arkansas, Colorado, Dolores (which includes the San Miguel), Green (which includes the Yampa, White and rivers draining into the North Platte), Gunnison, Rio Grande, San Juan, and South Platte (which includes the Republican). At the present time, 233 schools have been trained and are monitoring water quality at more than 550 sites on Colorado's rivers. Schools that were active in the program at the end of 1996 are listed in appendix A.

RIVER WATCH BACKGROUND

There are five stages to implementation of the River Watch Program: 1) training of teachers and students; 2) sampling and analysis of stream water; 3) data storage by a computerized system (database) and validation ; 4) data display and evaluation; and 5) data discussion and feedback.

TRAINING

In order for a school to participate in the River Watch Program, at least one teacher and two students must attend a 4-day training session. Qualified personnel from the CDOW, Water Quality Control Commission, EPA, and high schools instruct students and teachers on water as a resource, physical and biological habitat evaluation, standardized techniques for water sampling and analysis, proper record keeping, and quality control and assurance measures. Schools that complete the training receive water sampling and analysis equipment. After schools begin sampling and have demonstrated their commitment to the program, they receive a computer, computer software, and training.

WATER SAMPLING AND ANALYSIS

The second stage of the program is the actual water sampling and analysis by the schools. Schools agree to take and analyze water samples according to the following schedule:

Month	J	F	M	S	M	J	J	A	S	O	N	D
Sample	1	1	2	3	4	4	3	2	1	1	1	1

Schools perform 6 tasks for the program. They take a stream water sample and, at their school or river, determine the following: 1) hardness; 2) alkalinity; 3) dissolved oxygen; 4) pH; and 5) stream water temperature. Almost all schools 6) collect an "unfiltered" water sample for metals analysis. Many schools also collect a 2nd water sample that is filtered to remove material not truly dissolved in the water. The filters remove particles less than

0.45 micrometers (μ), which includes suspended mineral material and most organisms. This sample is called a "filtered" sample.

Samples collected for metals analysis are shipped to the CDOW lab in Ft. Collins. In Ft. Collins, samples are analyzed by flame and graphite furnace atomic absorption spectroscopy for the following metals: cadmium (Cd), copper (Cu), iron (Fe), manganese (Mn), lead (Pb), and zinc (Zn).

Students may also take other measurements related to stream flow, collect samples of aquatic invertebrates, and/or assess physical habitat.

DATA STORAGE AND VALIDATION

All analyses that are done by the schools and the Ft. Collins lab are entered into an electronic database that uses dBASE software. Each school is assigned its own file name for storage of their data in the CDOW central database. Schools also store their data on their own computers. A computer program merges the databases from individual schools with the metals database from Ft. Collins into one final database.

Any water quality sampling program must have a plan in place to assure that participants are providing accurate and reproducible data. The "baggage", or written plan, that goes with a piece of information (value) to determine its "validity" (accuracy and reproducibility) is called a "quality assurance/quality control" or QAQC plan. The process by which the CDOW applies this QAQC plan is called "validation". Appendix B explains the River Watch QAQC plan in detail. Students accept tasks in the QAQC plan that include cleaning their equipment, checking data as it is recorded, keeping accurate records of dates, times and sample numbers, utilizing standard procedures and reagents, and completing tests with integrity. Although not part of actual validation, students also accept the charge that their individual efforts contribute to the larger goal of caring for our planet.

The CDOW validates student data three times. First, upon receipt of samples and data from participants, the CDOW follows written procedures to check calculations, samples, and sample numbers, to file datasheets, and to ship samples for metals analysis to Ft. Collins with chain of custody. Data are checked again for accuracy when they are entered into the database. Finally, when the metals database is merged with the student database, data are checked when all values can be viewed simultaneously. After these stages are complete, data is validated against quality assurance and control data and information. If, at any stage of validation, a value does not pass a test, it will be removed from the final database.

The CDOW follows specific QAQC procedures in two more areas. First, trained CDOW personnel visit schools once a year to review and correct collection and analytical procedures, and to implement any changes. At each visit, the students are tested for the parameters they analyze with unknown samples prepared by the CDOW. In addition, the CDOW sends them another set of unknown samples during the year. Students do not actually analyze for metals, but collect blank and duplicate samples every 5th

sampling trip to monitor their collection technique and problems with equipment (about 20 percent of all metal samples are blanks or duplicates). Each year schools receive an activity report that summarizes all their results for unknowns, blanks and duplicates.

The CDOW laboratories in Ft. Collins follow the second specific procedure for QAQC evaluation during the metals analysis. Instruments are calibrated with National Bureau of Standards (NBS) solutions, and method blanks of deionized water are carried through the entire procedure. The laboratory writes a yearly report that outlines their results for laboratory duplicates and recoveries.

DATA EVALUATION AND DISPLAY

Once the CDOW has determined that the data stored in dBASE is accurate and reproducible, the next step is to evaluate and display the data. Data can be evaluated in many ways—there is no right or wrong. The key is to play with the data and let it tell a story. Playing may entail tables and charts. It may entail simple statistics such as calculation of averages, geometric means, high and low values, or variance around a mean. It may also entail graphing a parameter alone or with another parameter through time. Perhaps the perspective is not time, but space. A parameter can be graphed alone or with another parameter geographically from upstream to downstream. Another perspective might be to compare the data to some threshold or standard, if available. That threshold or standard may be the limit for the life cycle stage of a species present in your river , or it may be the legal standard placed on discharge permits.

All those perspectives are presented in this report. Parameters are graphed through time, then through space. Your data is compared to biological threshold values for common species in Colorado rivers. Finally, we compare the data to the unique stream standards designated for your river segment.

In order to start the process of graphing, we obtain data from all stations (sites) in the desired area. We have grouped streams and rivers in the State into the 8 major watersheds listed under STATEWIDE SCOPE. With commands in dBASE, we isolate all data from a watershed and save it as a separate file.

We then determine which data we want to examine. One can sort/order the data in any desired manner. We can query and sort the watershed files to place tributaries from a larger watershed in their own files. We can sort the data from oldest to most recent samples. We can also sort the file so that stations (or sample numbers) appear in upstream to downstream order. Then we pull that database file into Quattro Pro to make graphs.

Lastly, we decide how to display the data so that we can observe and/or discuss trends and relationships among parameters in time and space. We make graphic displays in Quattro Pro and we highlight observations about the data.

DATA DISCUSSION AND FEEDBACK

Once the data is displayed in some manner, we write down our observations. What does the data tell us? What were the high and low values for a particular year? What were the high and low values since samples have been taken at this station? Do any trends emerge from upstream to downstream? What might cause these trends? What might we predict? Do any parameters seem to be related? How are they related? Why? These are some questions you can also ask when looking at your river data.

The CDOW provides feedback to the individuals, schools and communities that gathered this information. We *cannot* tell you what the data mean to you—that is for you to decide. We *can* provide opinions on what the data meant to us and how we utilized the information. We provide that feedback in several manners. First, at Watershed Gatherings all participants within a watershed gather for a day to review the data. CDOW personnel discuss how they have interpreted the same data and how the data compare to stream standards. The CDOW also teaches schools how to do the same in their own communities. Second, reports targeted to the schools discuss how data from participants were used by other agencies of State, Federal, or local governments.

Finally, the CDOW gives feedback by the Watershed Reports. With them, we hope to make the data available to the public and interested people. The reports are intended to be information. The reader decides how to convert this information to knowledge.

WHY DO WE CARE

Why do we as a state, community, or school care about any of the things that schools measure in the streams?

Colorado is known as the "Mother of Rivers" because all the rivers which begin as trickles of snowmelt in the Rocky Mountains of our state form the beginning of at least 10 major river basins. These rivers flow into the states of Nebraska, Kansas, Arkansas, Wyoming, Utah, Arizona, Nevada, California, New Mexico, Oklahoma and Texas enroute to both the Pacific or the Atlantic Oceans. The water in this state is a relatively scarce and highly demanded commodity. It is these waters that support and sustain diverse aquatic life, as well as populations of people, uses and cultures.

As the demand on limited water resources increases, the need to protect and/or enhance this resource will become more and more critical and difficult. The demand comes in many different forms, recreation like fishing and boating, or agriculture like farming and ranching, or growth. Colorado's growth rate is above 4 percent and anything greater than 2 percent is considered rapid growth. Loss and/or degradation of habitat is the most serious threat to wildlife today. One to three quarters of aquatic species nationwide are rare to extinct. Every use impacts the waterways to some degree.

We have to live somewhere and use water to survive. Perhaps with better data and understanding of how the river functions and our connection to those functions the best possible decisions can be made. Better for us, the aquatic life dependent upon the water and the river system itself. The data generated by River Watch students is available to everyone, public, private, no matter what the interest or purpose. This information has been used by the Water Quality Control Commission, CDOW biologists, cities, consultants, individuals, students, laboratories, planning districts and individuals. The following describes the parameters measured by River Watch students, who everyday make a difference and give their river a voice.

pH

WHAT IS IT

One of the most basic concepts that is associated with water and life on earth is pH. Four billion years ago, the surface of the earth was covered entirely with water, and today 71% (almost 3/4) of its surface is still under water. Life evolved in water, and living cells require a water medium in which to carry out the reactions that sustain life. Even the president is 65% water. Whether on the earth's surface or in living cells, water contains 2 ions: hydrogen (H^+) and hydroxyl (OH^-) that strongly associate with each other in equal proportions. But water has a very slight tendency to break up or "dissociate" into its two ions. The concentration of H^+ ions in pure water is very, very small= 0.0000001 molar (M). In order to work with such small concentrations more easily, chemists convert the concentration to a logarithmic or "log" scale. On a log scale, the concentration of H^+ becomes 10^{-7}. The "log" or "exponent" is -7. The log tells the direction and number of places to move the decimal in order to make the number "1" equal to .0000001. A negative log moves the decimal to the left, a positive log moves the decimal to the right (try it). To further simplify things, chemists defined a letter "p" to mean the "negative log" or "- log". The "p" of the hydrogen ion concentration (H^+) of pure water therefore becomes positive 7. (The negative of -7 is 7). This is also neutral "pH". In pure water, H^+ and OH^- ions are present in equal concentrations. If H^+ ions (acid) are added to the water, their concentration increases, but the "p" value goes down—like a teeter-totter. If OH^- ions (base) are added, the concentration of H^+ goes down because they associate with the OH^- ions. The "p" value therefore goes up. A "p" scale, or pH scale, was established to define the concentration of H^+ ions in water. If the "p" is less than 7, the water is acidic and contains more H^+ ions than OH^- ions. If the "p" value is higher than 7, the water contains more OH^- ions than H^+ and is basic. The pH is measured in standard units.

WHY DO WE CARE

Normal cellular functions take place in pH range of 7.2-7.5. Organisms living in water can tolerate a wider range of pH than the inside of cells because membranes maintain the internal pH at a constant value. Brown trout adults can tolerate pH values from 5.0 to 9.5, but still prefer the narrower range of 6.8-7.0. Aquatic insects thrive better in the narrower range of 6.0 to 7.5.

WHAT AFFECTS IT

Sources of acid input into stream such as mine drainage or acid rain produced by fuel combustion can lower the pH (increase the H^+ ion concentrations) so much that aquatic life can no longer thrive.

HARDNESS

WHAT IS IT

Hardness measures the ability of water to precipitate soap. River Watch defines it chemically, based on a standard analytical procedure, as the sum of calcium and magnesium ions present in the water converted to milligrams per liter (mg/L) of calcium carbonate (CaCO3). A mg/L is about the equivalent of ¼ teaspoon of baking soda mixed into the gasoline tanks of two cars..

WHY DO WE CARE

On the positive side, running water with high relative hardness (500 mg/L) is most often associated with high primary productivity—that is plants that convert light energy into sugar. Plant material then becomes food for bugs and the bugs become food for fish. More species of fresh water insects and fish are therefore associated with hard water streams than with soft-water streams. Dissolved calcium and magnesium can also protect fish in streams that contain high concentrations of metals. The calcium and magnesium ions out-compete the metal ions for uptake sites on fish gills. On the negative side, hard water may cause a coating to precipitate in your hot water pipes, or tea kettle. Hard water also makes bad-tasting coffee and tea.

WHAT INFLUENCES IT

Hardness usually increases from upstream to downstream because of increased exposure of water to minerals in rocks and soils. The hardness of running water usually measures from 1-500 mg/L, that of lakes from 500-1000 mg/L, and groundwater usually measures from thousands to tens of thousands of mg/L.

ALKALINITY

WHAT IS IT

Alkalinity measures the ability of water to resist changes in the H^+ ion concentration (or pH) when either acid (H^+) or base (OH^-) is added to the water. The ability to resist changes in pH depends mostly on the amount of dissolved carbon dioxide (CO_2) in the water. Carbon dioxide from the earth's atmosphere dissolves in water to form carbonic acid (H_2CO_3). Carbonic acid rapidly "dissociates" into H^+ ions (see acid above) and bicarbonate ions (HCO_3^-). The bicarbonate ion can further dissociate into another H^+ ion and a carbonate ion (CO_3^{2-}). These reactions are summarized in the following equations:

1. CO_2 (atmosphere) + H_2O_H_2CO_3 (carbonic acid)

2. $H_2CO_3\_H^+ + HCO_3^-$ (bicarbonate ion)

3. $HCO_3\_H^+ + CO_3^{2-}$ (carbonate ion)

Alkalinity is the total amount of bicarbonate and carbonate in your river. Like hardness, River Watch also measures alkalinity by a standard method in mg $CaCO_3$/L.

WHY DO WE CARE

If H^+ ions (acid) are added to a system, CO_3^{2-} ions or HCO_3^- ions will "associate" with them so they are not left free in solution. If OH^- ions (base) are added to the system, H^+ ions dissociate from the HCO_3^- ion and combine with the OH^- ions to form water. By this constant adjustment in the concentrations of carbonate and bicarbonate ions, the concentration of free H^+ ions is kept relatively constant—that is the pH will change very little. A system that can resist changes in pH is a "buffered" system. It has high alkalinity or "buffering capacity". Remember, pH can only change if *free* H+ are added or removed from the system.

Living cells use this carbon dioxide buffering system to maintain a uniform internal environment where the biochemical reactions necessary to sustain life can proceed. Water on the surface of the earth also uses this buffering system to resist changes in pH. High alkalinities can also protect fish in streams that contain high concentrations of dissolved metals. The carbonate associates very strongly (remember H^+ and OH^- in water) with metal ions in solution. The metal carbonates precipitate out of solution because they are very insoluble in water.

WHAT AFFECTS IT

The same minerals in soils and rocks that influence hardness also affect alkalinity. Surface water or groundwater that has contact with limestone ($CaCO_3$) or dolomite [$CaMg(CO_3)$] will have high values for alkalinity. Large amounts of acid from mine drainage will lower the alkalinity because carbonate and bicarbonate ions will be removed from solution as they associate with the H^+ ions.

TEMPERATURE

WHAT IS IT

Temperature measures the warmness of coldness of the water. Temperatures are recorded in degrees Celsius (°C). Water freezes at 0°C (32°F) and normal oral temperature of humans is 37°C (98.6°F).

WHY DO WE CARE

Warmness or coldness determines which kind of organisms can survive in water. Some bacteria can live in water that is almost boiling, at 98°C (208°F). Most plants, insects and fish, however, require temperatures below 20°C (68°F). Temperature affects the amount of oxygen that can dissolve in the water and is therefore available to organisms for respiration. Fish and insects prefer lower temperatures (in addition to not being cooked) because cold

water can hold more dissolved oxygen than warm water. Brown trout adults thrive at water temperatures between 12-19°C.

WHAT AFFECTS IT

Seasons show the biggest effect on water temperature in pristine environments. Water is warmer in the summer than in the winter. Altitude also affects temperature. Water is usually warmer at lower altitudes. Water use can affect temperature. Water warms up as it is used to cool power plants or in the manufacture of computer chips. Logging, skiing, and agricultural practices can also raise water temperatures because water is exposed to the sun for longer periods of time on land with little vegetative cover.

DISSOLVED OXYGEN

WHAT IS IT

Oxygen is the final molecular resting place for electrons after they are transported down the cellular energy stairway. This is cellular respiration. Similar to carbon dioxide, atmospheric pressure causes molecular oxygen to dissolve in water. The oxygen is quantitatively converted to iodine and its concentration is measured in mg/L.

WHY DO WE CARE

Transport of electrons down an energy staircase allows cells to store energy in steps as adenosine triphosphate (ATP) rather than burning up in a fire. These smaller packets of energy enable cells to carry out functions like growth and repair. Many organisms use other molecules such as sulfate (SO_4^{2-}) or nitrate (NO_3^-) to accept the electrons in this energy-storing staircase.

The amount of dissolved oxygen in water determines which organisms can survive in a particular environment. The foul-smelling bacteria that use nitrate or sulfate to accept electrons can survive in environments with very little oxygen, but we don't want to be around. The higher the content of dissolved oxygen in water, the purer the water is and the more life forms that we like can survive. Brown trout adults thrive in water that contains 9-12 milligrams per liter (mg/L) of dissolved oxygen.

WHAT INFLUENCES IT

Water temperature, velocity, altitude, and organic matter content all affect the amount of dissolved oxygen that water can hold. As mentioned above, cold water contains more dissolved oxygen than warm water. Standing water often contains less dissolved oxygen than rapidly-flowing water, and water at high elevations contains less dissolved oxygen than at low elevations because of decreased air pressure. Organic matter consumes dissolved oxygen during decomposition and therefore lowers the oxygen content of water.

METALS

WHAT ARE METALS

The metals are most commonly considered to be those elements in the middle of the periodic table that can exit in several charge states. Surface water normally contains trace amounts of metals that are either dissolved in the water or associated with minute solid mineral material that is suspended. Metal concentrations in solution are expressed in micrograms per liter (μ/L). These are very small concentrations. A μ/L is roughly equal to ¼ teaspoon of baking soda evenly distributed between two tanker trucks of gasoline.

WHY DO WE CARE

Life as we know it requires trace amounts of metals to carry out normal cell function. Iron carries oxygen from air to the cells in our bodies. Copper performs the same function for invertebrates such as shrimp and snails. Zinc is essential for cell differentiation and growth. Excess amounts of some dissolved or suspended metals can impair the ability of aquatic life to live and reproduce by interfering with oxygen uptake. Other metals like lead and cadmium are toxic.

WHAT AFFECTS METALS CONCENTRATIONS

Similar to alkalinity, hardness, and pH, exposure to minerals in soils and rocks increases the concentration of dissolved metals in water. High concentrations of dissolved metals are often found in low pH () waters that drain certain types of rocks, mine workings, and urban areas. Rapid runoff raises the concentration of suspended mineral material in water.

Watershed Report for the Dolores Watershed

Participant Schools and Teachers

The following list names the schools, teachers, and other interested parties from your watershed that participate in the Rivers of Colorado Water Watch Network. The list is sorted in alphabetical order by school or organization name. See Appendix A for a printout of all schools and teachers in River Watch.

it #	Watershed	Teacher School	Mailing address	Phone Fax
	Dolores	Dave Hopshia DOLORES HS	PO BOX 757 DOLORES, CO 81323-0757	970/677-2237
42	Dolores	Charles Powell DOLORES HS	PO BOX 757 DOLORES, CO 81323-0757	970/677-2237 FAX: 970/677-2712
48	Dolores	Mark Garske GATEWAY SCHOOL	#1 SCHOOL RD GATEWAY, CO 81522	970/931-2276
154	Dolores	Rodney Sandefur NATURITA MS	200 MAIN ST NATURITA, CO 81422	970/865-2204
160	Dolores	Nancy Wells NORWOOD HS	PO BOX 448 NORWOOD, CO 81423-0448	970/327-4336
160	Dolores	Donald Wilson NORWOOD HS	1225 N SUMMIT AVE NORWOOD, CO 81423	970/327-4336
055	Dolores	Denice Sandefur NUCLA HS	PO BOX 570 NUCLA, CO 81424-0570	970/864-7350
052	Dolores	Ann Larivee TELLURIDE HS	PO BOX 187 TELLURIDE, CO 81435-0187	970/728-4377 FAX: 970/728-0257
052	Dolores	Gerald Martin TELLURIDE HS	PO BOX 187 TELLURIDE, CO 81435-0187	970/728-4377 FAX: 970/728-0257
053	Dolores	Don Mitchell TELLURIDE MS	PO BOX 187 TELLURIDE, CO 81435-0187	970/728-4377

Sample Station Locations and Descriptions

This printout of sample station locations and descriptions is our first attempt to list all sample station information. The printout is sorted in ascending numerical order by station number. Recently-returned station information may not yet be in the database and the printout will most likely contain errors that we will correct at a later date. Please check you station numbers and station names. Notify us with errors or omissions. In its final form, this database will be used to generate the maps and station locations for each watershed.

34	Above BC	Telluride HS	San Miguel
85	Bear Creek	Telluride HS	Bear Cr
86	Coonskin	Telluride MS	San Miguel
87	Society Turn	Telluride MS	San Miguel
99	Pinyon Bridge	Nucla HS	San Miguel
100	Power Plant Bridge	Nucla HS	San Miguel
101	Naturita Bridge	Naturita MS	San Miguel
102	W Uravan Bridge	Naturita MS	San Miguel
290	Hwy 141 Bridge	Dolores HS	Dolores
403		Gateway School	Dolores
433	Norwood Hill	Norwood HS	San Miguel

Watershed map showing sample stations

Picture your watershed here. Please check the location of your sampling station in the previous list. Once these stations are correct, we'll be able to print a map. See the watershed map in the Dolores Watershed example section.

Printout of Chemical Data

The following is a printout of all chemical data from this watershed that has gone through the validation process. The information is sorted in numerical order by sample number. Again, if you detect errors, please let us know. Some blanks appear that do not have a "-9" entered. This may result because of mistranslating from the data file to the printing file.

kit #	river cd	river	school	station #	station name	date	flow	pH	temp	alk	hard	DO	cd dis	cd tot	cu dis	cu tot	fe dis	fe tot	mn dis	mn tot	pb dis	pb tot	zn dis	zn tot
52	42983	San Miguel	Telluride HS	84.001	Above BC	16/12/91	-9.00	-9.00	1.0	52.0	0.0	10.0	-9.00	2.60	6.20	4.2		0.0	1,891.00	1876.0		0.0	1,290.00	1282.0
52	42983	San Miguel	Telluride HS	84.002	Above BC	20/01/92	-9.00	6.79	12.0	40.0	-9.0	6.0	10.50	10.46	25.40	28.4		0.0	8,635.00	8690.0	10.70	21.7	-9.00	3400.0
52	42983	San Miguel	Telluride HS	84.003	Above BC	27/02/92	-9.00	6.92	4.0	44.0	-9.0	5.0	8.20	8.78	11.70	13.3		0.0	9,933.00	9955.0		0.0	3,740.00	3663.0
52	42983	San Miguel	Telluride HS	84.004	Above BC	24/03/92	-9.00	7.49	8.0	66.0	184.0	10.0	2.00	1.79	5.00	5.0		0.0	880.00	871.0		0.0	678.00	671.0
52	42983	San Miguel	Telluride HS	84.005	Above BC	30/03/92	-9.00	7.56	8.0	70.0	152.0	9.0	2.09	2.12	6.50	6.0		0.0	1,414.00	1317.0		0.0	787.00	748.0
52	42983	San Miguel	Telluride HS	84.006	Above BC	06/04/92	-9.00	7.42	11.0	50.0	150.0	9.0	1.49	1.49	3.60	4.1		0.0	323.00	340.0		0.0	557.00	564.0
52	42983	San Miguel	Telluride HS	84.007	Above BC	27/04/92	-9.00	7.40	10.0	30.0	104.0	7.0	2.64	2.77	11.80	14.1		0.0	164.00	172.0		0.0	708.00	732.0
52	42983	San Miguel	Telluride HS	84.008	Above BC	30/04/92	-9.00	7.18	8.0	22.0	116.0	11.0	2.80	3.23	14.10	28.9		387.0	124.00	190.0		25.1	806.00	887.0
52	42983	San Miguel	Telluride HS	84.009	Above BC	07/05/92	-9.00	7.32	8.0	18.0	100.0	8.0	3.14	3.25	17.70	22.5		309.0	113.00	136.0		11.0	849.00	925.0
52	42983	San Miguel	Telluride HS	84.010	Above BC	12/05/92	-9.00	7.37	9.0	28.0	122.0	9.0	2.48	2.82	9.40	11.3		0.0	93.00	93.0		0.0	738.00	743.0
52	42983	San Miguel	Telluride HS	84.011	Above BC	20/05/92	-9.00	7.14	5.0	18.0	68.0	8.0	2.45	2.40	8.80	10.8	118.00	286.0	97.00	134.0		0.0	754.00	812.
52	42983	San Miguel	Telluride HS	84.012	Above BC	26/05/92	-9.00	7.39	7.0	36.0	80.0	11.0	2.70	2.97	14.80	22.7	103.00	398.0	92.00	120.0		16.3	676.00	723.
52	42983	San Miguel	Telluride HS	84.013	Above BC	02/06/92	-9.00	7.33	8.0	32.0	102.0	9.0	2.35	2.39	10.20	11.9	103.00	0.0	109.00	114.0		0.0	703.00	707.
52	42983	San Miguel	Telluride HS	84.014	Above BC	23/06/92	-9.00	7.27	6.0	16.0	60.0	8.0	2.18	2.14	9.50	11.7		300.0	96.00	113.0		0.0	584.00	604
52	42983	San Miguel	Telluride HS	84.015	Above BC	30/06/92	-9.00	7.27	8.0	18.0	64.0	9.0	1.63	1.65	5.40	8.7	106.00	271.0	57.00	67.0		0.0	464.00	477
52	42983	San Miguel	Telluride HS	84.016	Above BC	13/07/92	-9.00	7.19	8.0	18.0	64.0	9.0	1.66	1.79	6.00	9.8	116.00	217.0	50.00	60.0		0.0	463.00	494
52	42983	San Miguel	Telluride HS	84.017	Above BC	16/07/92	-9.00	7.27	8.0	24.0	76.0	9.0	1.49	1.52	3.60	4.7		153.0	49.00	49.0		0.0	467.00	476
52	42983	San Miguel	Telluride HS	84.018	Above BC	04/08/92	-9.00	7.43	9.0	24.0	104.0	8.0	1.21	1.24	1.80	2.2	105.00	0.0	48.00	49.0		0.0	406.00	403
52	42983	San Miguel	Telluride HS	84.019	Above BC	31/08/92	-9.00	7.37	11.0	24.0	112.0	9.0	1.21	1.20	1.90	2.3		0.0	64.00	65.0		0.0	393.00	399
52	42983	San Miguel	Telluride HS	84.020	Above BC	17/09/92	-9.00	7.61	12.0	42.0	152.0	7.0	1.71	1.55	2.80	3.2		0.0	230.00	200.0		0.0	590.00	530
52	42983	San Miguel	Telluride HS	84.021	Above BC	01/10/92	-9.00	7.70	16.0	38.0	162.0	9.0	1.65	2.21	1.90	14.5		763.0	173.00	478.0		28.8	516.00	705
52	42983	San Miguel	Telluride HS	84.022	Above BC	21/10/92	-9.00	7.47	11.0	32.0	150.0	10.0	1.42	1.35	1.50	1.5		0.0	292.00	296.0		0.0	507.00	507
52	42983	San Miguel	Telluride HS	84.023	Above BC	15/11/92	-9.00	7.78	8.0	36.0	148.0	-9.0	1.21	1.27	4.80	7.2		0.0	363.00	372.0		0.0	620.00	57
52	42983	San Miguel	Telluride HS	84.024	Above BC	15/11/92	-9.00	7.61	7.0	38.0	146.0	-9.0	1.21	1.24	4.40	5.0		0.0	352.00	366.0		0.0	549.00	58
52	42983	San Miguel	Telluride HS	84.025	Above BC	15/11/92	-9.00	7.84	2.0	38.0	148.0	-9.0	1.30	1.32	3.80	5.1		0.0	341.00	402.0		0.0	618.00	62
52	42983	San Miguel	Telluride HS	84.026	Above BC	15/11/92	-9.00	7.75	1.0	48.0	152.0	-9.0	1.48	1.43	4.20	4.2		0.0	385.00	398.0		0.0	-9.00	63
52	42983	San Miguel	Telluride HS	84.027	Above BC	16/11/92	-9.00	7.44	-1.0	46.0	150.0	-9.0	1.40	1.40	4.50	5.8		0.0	409.00	424.0		0.0	659.00	64
52	42983	San Miguel	Telluride HS	84.028	Above BC	16/11/92	-9.00	7.78	1.0	36.0	152.0	-9.0	1.34	1.41	3.40	4.1		0.0	396.00	430.0		0.0	608.00	63
52	42983	San Miguel	Telluride HS	84.029	Above BC	28/01/93	-9.00	7.64	1.0	42.0	-9.0	10.0	2.39	2.38	5.60	8.4		0.0	2,170.00	2350.0		0.0	1,273.00	131
52	42983	San Miguel	Telluride HS	84.030	Above BC	15/02/93	-9.00	7.51	3.0	50.0	212.0	9.0	2.88	2.74	8.10	9.3		0.0	2,605.00	2520.0		0.0	1,384.00	137
52	42983	San Miguel	Telluride HS	84.031	Above BC	04/03/93	-9.00	7.15	5.0	42.0	-9.0	9.0	3.00	3.33	8.30	11.0		0.0	3,350.00	3655.0		0.0	1,498.00	150
52	42983	San Miguel	Telluride HS	84.032	Above BC	17/03/93	-9.00	7.83	5.0	82.0	-9.0	8.0	2.61	2.79	8.20	6.6		0.0	1,720.00	1734.0		0.0	1,087.00	11

kit #	river cd	river	school	station #	station name	date	flow	pH	temp	alk	hard	DO	cd dis	cd tot	cu dis	cu tot	fe dis	fe tot	mn dis	mn tot	pb dis	pb tot	zn dis	zn tot
52	42983	San Miguel	Telluride HS	84.033	Above BC	29/03/93	-9.00	7.81	7.0	58.0	174.0	10.0	1.65	1.65	4.00	4.3		0.0	603.00	601.0		0.0	655.00	656.0
52	42983	San Miguel	Telluride HS	84.034	Above BC	08/04/93	-9.00	7.68	10.0	74.0	186.0	8.0	-9.00	-9.00	-9.00	-9.0	-9.00	-9.0	-9.00	-9.0	-9.00	-9.0	-9.00	-9.0
52	42983	San Miguel	Telluride HS	84.035	Above BC	15/04/93	-9.00	7.78	11.0	68.0	112.0	10.0	1.54	1.64	4.80	4.8		0.0	745.00	744.0		0.0	677.00	671.0
52	42983	San Miguel	Telluride HS	84.036	Above BC	04/05/93	-9.00	7.59	9.0	36.0	156.0	2.0	3.19	3.36	7.90	12.0		132.0	261.00	288.0		11.8	820.00	881.0
52	42983	San Miguel	Telluride HS	84.037	Above BC	18/05/93	-9.00	7.71	10.0	34.0	118.0	10.0	3.84	4.71	11.80	18.5		264.0	198.00	221.0		11.2	843.00	880.0
52	42983	San Miguel	Telluride HS	84.038	Above BC	25/05/93	-9.00	7.39	7.0	26.0	82.0	12.0	2.64	2.54	13.30	18.2		348.0	141.00	181.0		20.4	704.00	743.0
52	42983	San Miguel	Telluride HS	84.039	Above BC	27/05/93	-9.00	7.57	6.0	24.0	66.0	12.0	-9.00	-9.00	-9.00	-9.0	-9.00	-9.0	-9.00	-9.0	-9.00	-9.0	-9.00	-9.0
52	42983	San Miguel	Telluride HS	84.040	Above BC	01/06/93	-9.00	7.48	8.0	28.0	66.0	5.0	2.35	3.50	10.60	22.7		693.0	99.00	253.0		53.0	710.00	844.0
52	42983	San Miguel	Telluride HS	84.041	Above BC	24/07/93	-9.00	7.82	12.0	28.0	114.0	9.0	1.48	1.49	2.80	3.7		0.0	63.00	69.0		0.0	420.00	424.0
52	42983	San Miguel	Telluride HS	84.042	Above BC	22/08/93	-9.00	7.61	10.0	18.0	118.0	9.0	1.50	1.52	3.10	3.7		0.0	79.00	76.0		0.0	428.00	428.0
52	42983	San Miguel	Telluride HS	84.043	Above BC	29/08/93	-9.00	7.87	10.0	22.0	80.0	10.0	1.75	1.83	5.80	7.0		0.0	26.00	39.0		0.0	455.00	474.0
52	42983	San Miguel	Telluride HS	84.044	Above BC	26/01/94	-9.00	7.66	2.0	46.0	-9.0	9.0	2.51	2.64	3.60	6.3		254.0	2,005.00	2047.0		0.0	1,344.00	1389.0
52	42983	San Miguel	Telluride HS	84.045	Above BC	09/02/94	-9.00	7.70	5.0	44.0	202.0	10.0	3.04	3.11	3.00	2.9		0.0	2,650.00	2720.0		0.0	1,656.00	1622.0
52	42983	San Miguel	Telluride HS	84.047	Above BC	03/03/94	-9.00	7.89	11.0	42.0	208.0	10.0	2.33	2.32	2.30	2.7		0.0	1,402.00	1431.0		0.0	885.00	893.0
52	42983	San Miguel	Telluride HS	84.048	Above BC	28/03/94	-9.00	7.83	10.0	52.0	-9.0	8.0	1.34	1.46	1.90	3.4		0.0	686.00	879.0		0.0	-9.00	517.0
52	42983	San Miguel	Telluride HS	84.049	Above BC	08/04/94	-9.00	7.78	9.0	88.0	-9.0	9.0	2.11	2.35	2.10	3.2	101.00	103.0	1,094.00	1231.0		0.0	790.00	856.0
52	42983	San Miguel	Telluride HS	84.050	Above BC	14/04/94	-9.00	7.01	7.0	52.0	160.0	9.0	1.73	1.80	1.70	4.4		0.0	950.00	961.0		0.0	706.00	708.0
52	42983	San Miguel	Telluride HS	84.051	Above BC	03/05/94	-9.00	8.18	8.0	52.0	184.0	10.0	2.74	2.60	2.70	5.0		0.0	326.00	328.0		0.0	729.00	740.0
52	42983	San Miguel	Telluride HS	84.053	Above BC	16/05/94	-9.00	7.84	9.0	46.0	84.0	10.0	2.13	2.55	6.20	16.7		333.0	107.00	184.0	1.70	19.1	646.00	713.0
52	42983	San Miguel	Telluride HS	84.065	Above BC	02/11/94	-9.00	7.91	10.0	68.0	420.0	10.0	1.22	1.31	1.20	5.4		184.0	488.00	522.0		2.9	650.00	680.0
52	42983	San Miguel	Telluride HS	84.066	Above BC	02/12/94	-9.00	7.47	5.0	34.0	360.0	9.0	1.84	1.99	1.80	4.4		0.0	1,831.00	186.0		0.0	-9.00	116.0
52	42983	San Miguel	Telluride HS	84.068	Above BC	21/02/95	-9.00	7.59	8.0	44.0	210.0	10.0	1.21	1.25	2.50	4.5		0.0	1,049.00	1096.0		0.0	751.00	775.0
52	42983	San Miguel	Telluride HS	84.069	Above BC	14/03/95	-9.00	7.04	9.0	44.0	108.0	9.0	1.35	1.56	1.40	4.4		0.0	890.00	929.0		0.0	793.00	776.0
52	42983	San Miguel	Telluride HS	84.070	Above BC	27/03/95	-9.00	7.76	1.0	46.0	160.0	11.0	1.74	1.95	1.70	4.6		0.0	992.00	1089.0		0.0	946.00	978.0
52	38902	Bear Cr	Telluride HS	85.001	Bear Creek	16/12/91	-9.00	-9.00	0.0	78.0	106.0	11.0		0.00		1.0		0.0		0.0		0.0		0.0
52	38902	Bear Cr	Telluride HS	85.002	Bear Creek	20/01/92	-9.00	8.06	0.0	68.0	104.0	11.0		0.00		0.0		0.0		0.0		0.0		0.0
52	38902	Bear Cr	Telluride HS	85.003	Bear Creek	27/02/92	-9.00	8.07	1.0	72.0	104.0	9.0	0.16	0.12	1.40	2.8		0.0		0.0		0.0	-9.00	0.0
52	38902	Bear Cr	Telluride HS	85.004	Bear Creek	26/03/92	-9.00	8.12	2.0	76.0	108.0	11.0	0.10	0.00	1.00	1.1		0.0		0.0		0.0		0.0
52	38902	Bear Cr	Telluride HS	85.005	Bear Creek	30/03/92	-9.00	8.20	3.0	76.0	112.0	8.0		0.00		1.1		0.0		0.0		0.0		0.0
52	38902	Bear Cr	Telluride HS	85.006	Bear Creek	06/04/92	-9.00	8.36	11.0	72.0	110.0	9.0		0.00		0.0		0.0		0.0		0.0		0.0
52	38902	Bear Cr	Telluride HS	85.007	Bear Creek	27/04/92	-9.00	8.30	6.0	70.0	142.0	7.0		0.00		0.0	-9.00	117.0		0.0		0.0	-9.00	0.0
52	38902	Bear Cr	Telluride HS	85.008	Bear Creek	30/04/92	-9.00	7.84	6.0	68.0	92.0	10.0		0.00		0.0		283.0		14.0		0.0		0.0

kit #	river cd	river	school	station #	station name	date	flow	pH	temp	alk	hard	DO	cd dis	cd tot	cu dis	cu tot	fe dis	fe tot	mn dis	mn tot	pb dis	pb tot	zn dis	zn tot
52	38902	Bear Cr	Telluride HS	85.009	Bear Creek	07/05/92	-9.00	8.27	4.0	50.0	72.0	8.0		0.00		1.1		160.0		0.0		0.0		0.0
52	38902	Bear Cr	Telluride HS	85.010	Bear Creek	12/05/92	-9.00	8.04	4.0	62.0	70.0	11.0		0.00		1.2		0.0		0.0		0.0		0.0
52	38902	Bear Cr	Telluride HS	85.011	Bear Creek	20/05/92	-9.00	7.48	3.0	42.0	50.0	6.0		0.00	3.20	1.2	136.00	121.0		11.0		0.0	-9.00	0.0
52	38902	Bear Cr	Telluride HS	85.012	Bear Creek	26/05/92	-9.00	7.96	5.0	50.0	58.0	9.0		0.00	1.70	1.5		135.0		0.0		0.0	-9.00	0.0
52	38902	Bear Cr	Telluride HS	85.013	Bear Creek	02/06/92	-9.00	7.97	6.0	56.0	70.0	10.0		0.00	1.20	1.0		0.0		0.0		0.0		0.0
52	38902	Bear Cr	Telluride HS	85.014	Bear Creek	23/06/92	-9.00	7.60	4.0	18.0	46.0	9.0		0.00	1.20	0.0	173.00	150.0		0.0		0.0		0.0
52	38902	Bear Cr	Telluride HS	85.015	Bear Creek	30/06/92	-9.00	7.55	5.0	26.0	36.0	10.0		0.00	1.00	1.1		285.0		0.0		0.0		0.0
52	38902	Bear Cr	Telluride HS	85.016	Bear Creek	13/07/92	-9.00	7.76	6.0	26.0	40.0	9.0		0.00		0.0		0.0		0.0		0.0		0.0
52	38902	Bear Cr	Telluride HS	85.017	Bear Creek	16/07/92	-9.00	7.73	5.0	34.0	48.0	10.0		0.00		0.0		0.0		0.0		0.0		0.0
52	38902	Bear Cr	Telluride HS	85.018	Bear Creek	04/08/92	-9.00	7.96	6.0	44.0	58.0	9.0		0.00		0.0		0.0		0.0		0.0		0.0
52	38902	Bear Cr	Telluride HS	85.019	Bear Creek	31/08/92	-9.00	7.90	9.0	42.0	64.0	9.0		0.00		0.0		0.0		0.0		0.0		0.0
52	38902	Bear Cr	Telluride HS	85.020	Bear Creek	17/09/92	-9.00	8.11	9.0	42.0	76.0	10.0		0.00		0.0		0.0		0.0		0.0		0.0
52	38902	Bear Cr	Telluride HS	85.021	Bear Creek	01/10/92	-9.00	8.02	10.0	58.0	106.0	9.0		0.00		1.4		0.0		0.0		0.0		0.0
52	38902	Bear Cr	Telluride HS	85.022	Bear Creek	21/10/92	-9.00	8.13	4.0	60.0	90.0	9.0	-9.00	-9.00	-9.00	-9.0	-9.00	-9.0	-9.00	-9.0	-9.00	-9.0	-9.00	-9.
52	38902	Bear Cr	Telluride HS	85.023	Bear Creek	28/01/93	-9.00	8.18	0.0	80.0	106.0	10.0		0.00	1.60	2.9		0.0		0.0		0.0	18.00	18.
52	38902	Bear Cr	Telluride HS	85.024	Bear Creek	15/02/93	-9.00	7.92	1.0	72.0	102.0	10.0	-9.00	-9.00	-9.00	-9.0	-9.00	-9.0	-9.00	-9.0	-9.00	-9.0	-9.00	-9.
52	38902	Bear Cr	Telluride HS	85.025	Bear Creek	04/03/93	-9.00	8.14	0.5	64.0	116.0	11.0		0.00	1.80	1.6		0.0		0.0		0.0		0
52	38902	Bear Cr	Telluride HS	85.026	Bear Creek	17/03/93	-9.00	8.39	2.0	74.0	110.0	8.0		0.00		0.0		0.0		0.0		0.0		25
52	38902	Bear Cr	Telluride HS	85.027	Bear Creek	29/03/93	-9.00	8.24	3.0	72.0	112.0	11.0		0.00		0.0		0.0		0.0		0.0		0
52	38902	Bear Cr	Telluride HS	85.028	Bear Creek	08/04/93	-9.00	8.21	5.0	76.0	108.0	9.0		0.00		0.0		0.0		0.0		0.0	10.00	11
52	38902	Bear Cr	Telluride HS	85.029	Bear Creek	15/04/93	-9.00	8.10	8.0	76.0	110.0	11.0		0.00		0.0		0.0		127.0		0.0	11.00	220
52	38902	Bear Cr	Telluride HS	85.030	Bear Creek	04/05/93	-9.00	8.12	8.0	78.0	104.0	7.0		0.00		0.0		0.0		0.0		0.0		10
52	38902	Bear Cr	Telluride HS	85.031	Bear Creek	18/05/93	-9.00	8.06	7.0	76.0	82.0	12.0		0.00		1.3		170.0		13.0		0.0	13.00	15
52	38902	Bear Cr	Telluride HS	85.032	Bear Creek	25/05/93	-9.00	7.52	6.0	60.0	68.0	10.0		0.00	1.30	0.0		0.0		0.0		0.0		(
52	38902	Bear Cr	Telluride HS	85.033	Bear Creek	27/05/93	-9.00	7.77	7.0	48.0	54.0	10.0		0.00		1.6		138.0		12.0		0.0	13.00	1
52	38902	Bear Cr	Telluride HS	85.034	Bear Creek	01/06/93	-9.00	7.00	6.0	40.0	46.0	10.0	-9.00	-9.00	-9.00	-9.0	-9.00	-9.0	-9.00	-9.0	-9.00	-9.0	-9.00	-
52	38902	Bear Cr	Telluride HS	85.035	Bear Creek	24/07/93	-9.00	8.07	9.0	60.0	64.0	9.0		0.00		0.0		0.0		0.0		0.0	18.00	1
52	38902	Bear Cr	Telluride HS	85.036	Bear Creek	22/08/93	-9.00	7.74	8.0	46.0	60.0	10.0		0.00		0.0		0.0		0.0		0.0	15.00	2
52	38902	Bear Cr	Telluride HS	85.037	Bear Creek	29/08/93	-9.00	8.19	8.0	34.0	50.0	9.0		0.00	-9.00	1.2		0.0		0.0		0.0		
52	38902	Bear Cr	Telluride HS	85.038	Bear Creek	26/01/94	-9.00	8.11	2.0	72.0	106.0	10.0		0.00		0.0		0.0		0.0		0.0	10.00	
52	38902	Bear Cr	Telluride HS	85.039	Bear Creek	09/02/94	-9.00	8.09	3.0	82.0	102.0	9.0		0.00		0.0		0.0	16.00	23.0		0.0	40.00	1
52	38902	Bear Cr	Telluride HS	85.040	Bear Creek	16/02/94	-9.00	8.04	2.0	70.0	110.0	11.0		0.00		0.0		0.0	91.00	99.0		0.0	49.00	5

kit #	river cd	river	school	station #	station name	date	flow	pH	temp	alk	hard	DO	cd dis	cd tot	cu dis	cu tot	fe dis	fe tot	mn dis	mn tot	pb dis	pb tot	zn dis	zn tot
52	38902	Bear Cr	Telluride HS	85.041	Bear Creek	03/03/94	-9.00	8.33	4.5	76.0	110.0	9.0		0.00		0.0		0.0	27.00	34.0		0.0	16.00	36.0
52	38902	Bear Cr	Telluride HS	85.042	Bear Creek	28/03/94	-9.00	8.15	0.0	76.0	106.0	12.0		0.00		0.0		0.0		23.0		0.0	-9.00	0.0
52	38902	Bear Cr	Telluride HS	85.043	Bear Creek	08/04/94	-9.00	8.11	5.0	78.0	108.0	10.0		0.00		7.8		136.0		0.0	4.20	13.1	32.00	47.0
52	38902	Bear Cr	Telluride HS	85.044	Bear Creek	14/04/94	-9.00	8.22	5.0	80.0	120.0	11.0		0.00		7.2	-9.00	257.0	36.00	43.0	-9.00	13.8	-9.00	48.0
52	38902	Bear Cr	Telluride HS	85.045	Bear Creek	03/05/94	-9.00	8.70	5.0	76.0	114.0	12.0		0.00		1.2		0.0		0.0		0.0		11.0
52	38902	Bear Cr	Telluride HS	85.046	Bear Creek	10/05/94	-9.00	8.17	5.0	74.0	92.0	11.0		0.00		0.0		0.0		0.0		0.0	-9.00	10.0
52	38902	Bear Cr	Telluride HS	85.047	Bear Creek	16/05/94	-9.00	8.39	4.0	60.0	66.0	11.0		0.00		1.8		0.0		0.0		14.6		17.0
52	38902	Bear Cr	Telluride HS	85.051	Bear Creek	21/07/94	-9.00	8.31	0.0	52.0	64.0	11.0		0.00		3.6		0.0	19.00	24.0		0.0	30.00	47.0
52	38902	Bear Cr	Telluride HS	85.055	Bear Creek	07/09/94	-9.00	8.24	10.0	52.0	76.0	8.0		0.00		1.4		103.0		0.0		0.0		135.0
52	38902	Bear Cr	Telluride HS	85.056	Bear Creek	20/09/94	-9.00	8.41	10.0	52.0	72.0	9.0		0.00		1.1		0.0		0.0		0.0	-9.00	17.0
52	38902	Bear Cr	Telluride HS	85.057	Bear Creek	04/10/94	-9.00	8.41	8.0	56.0	80.0	10.0		0.00		0.0		0.0	15.00	14.0		0.0	-9.00	-9.0
52	38902	Bear Cr	Telluride HS	85.058	Bear Creek	12/10/94	-9.00	7.03	6.0	70.0	80.0	10.0		0.00		3.1		0.0		0.0		0.0	29.00	30.0
52	38902	Bear Cr	Telluride HS	85.059	Bear Creek	02/11/94	-9.00	8.84	5.5	64.0	64.0	12.0		0.00		0.0		0.0		0.0		0.0	45.00	43.0
52	38902	Bear Cr	Telluride HS	85.060	Bear Creek	02/12/94	-9.00	8.10	2.0	38.0	98.0	11.0		0.00		0.0		0.0		0.0		0.0	24.00	27.0
52	38902	Bear Cr	Telluride HS	85.061	Bear Creek	30/01/95	-9.00	8.03	1.0	74.0	104.0	13.0		0.00		2.3		0.0		0.0		0.0	43.00	50.0
52	38902	Bear Cr	Telluride HS	85.062	Bear Creek	21/02/95	-9.00	8.32	1.0	88.0	116.0	11.0		0.00		1.1		0.0		0.0		0.0	-9.00	-9.0
52	38902	Bear Cr	Telluride HS	85.064	Bear Creek	27/03/95	-9.00	8.59	6.0	86.0	100.0	11.0		0.00		1.3		0.0		0.0		0.0	23.00	26.0
53	42983	San Miguel	Telluride MS	86.001	Coonskin	04/12/91	-9.00	-9.00	3.5	56.0	-9.0	10.0	0.70	0.72	1.20	1.8	111.00	0.0	303.00	311.0		0.0	233.00	231.0
53	42983	San Miguel	Telluride MS	86.002	Coonskin	08/01/92	-9.00	7.60	4.0	86.0	172.0	10.0	0.40	0.39	1.60	2.2		0.0	155.00	155.0		0.0	130.00	129.0
53	42983	San Miguel	Telluride MS	86.003	Coonskin	25/02/92	-9.00	7.58	6.0	60.0	176.0	9.0	-9.00	0.23	-9.00	4.0	-9.00	398.0	-9.00	147.0	-9.00	0.0	-9.00	91.0
53	42983	San Miguel	Telluride MS	86.004	Coonskin	16/03/92	-9.00	-9.00	9.0	62.0	200.0	9.0	0.62	0.70	3.60	5.3		307.0	167.00	205.0		0.0	132.00	145.0
53	42983	San Miguel	Telluride MS	86.005	Coonskin	30/03/92	-9.00	7.90	6.0	62.0	174.0	11.0	0.44	0.44	2.40	2.4		0.0	161.00	157.0		0.0	-9.00	123.0
53	42983	San Miguel	Telluride MS	86.006	Coonskin	06/04/92	-9.00	7.84	10.0	58.0	166.0	7.0	0.66	0.72	2.70	2.8		142.0	170.00	182.0		0.0	200.00	206.0
53	42983	San Miguel	Telluride MS	86.007	Coonskin	27/04/92	-9.00	7.62	10.0	58.0	150.0	8.0	1.19	1.37	4.70	8.6		0.0	121.00	163.0		0.0	-9.00	352.0
53	42983	San Miguel	Telluride MS	86.009	Coonskin	11/05/92	-9.00	7.70	13.0	42.0	116.0	10.0	1.37	1.40	8.40	7.4		209.0	90.00	107.0		0.0	-9.00	441.0
53	42983	San Miguel	Telluride MS	86.010	Coonskin	21/05/92	-9.00	7.70	10.0	30.0	88.0	8.0	1.82	1.99	-9.00	17.7	-9.00	1125.0	260.00	240.0	-9.00	55.2	557.00	566.0
53	42983	San Miguel	Telluride MS	86.011	Coonskin	26/05/92	-9.00	7.80	10.0	32.0	76.0	9.0	1.27	1.42	9.60	9.3		482.0	89.00	127.0		0.0	393.00	412.0
53	42983	San Miguel	Telluride MS	86.012	Coonskin	01/06/92	-9.00	7.66	10.0	38.0	108.0	10.0	1.33	1.63	5.40	7.4		0.0	102.00	112.0		0.0	388.00	410.0
53	42983	San Miguel	Telluride MS	86.013	Coonskin	16/06/92	-9.00	7.90	4.0	30.0	74.0	11.0	1.38	1.41	6.60	9.1		0.0	79.00	94.0		0.0	436.00	420.0
53	42983	San Miguel	Telluride MS	86.014	Coonskin	21/06/92	-9.00	7.15	10.0	22.0	70.0	8.0	1.16	1.38	6.60	11.7	146.00	792.0	68.00	136.0		24.7	-9.00	349.0
53	42983	San Miguel	Telluride MS	86.015	Coonskin	29/06/92	-9.00	7.85	10.0	26.0	70.0	9.0	1.03	1.20	7.50	10.2		115.0	73.00	99.0		0.0	309.00	329.0
53	42983	San Miguel	Telluride MS	86.016	Coonskin	06/07/92	-9.00	7.51	12.0	24.0	72.0	7.0	0.95	0.99	7.50	10.5		313.0	144.00	210.0		0.0	306.00	293.0

kit #	river cd	river	school	station #	station name	date	flow	pH	temp	alk	hard	DO	cd dis	cd tot	cu dis	cu tot	fe dis	fe tot	mn dis	mn tot	pb dis	pb tot	zn dis	zn tot
53	42983	San Miguel	Telluride MS	86.017	Coonskin	24/07/92	-9.00	7.74	10.0	40.0	72.0	8.0	0.43	0.93	6.80	17.0	224.00	7220.0	270.00	623.0		53.1	179.00	351.0
53	42983	San Miguel	Telluride MS	86.018	Coonskin	29/07/92	-9.00	7.36	12.0	32.0	108.0	8.0	0.89	0.90	6.80	6.6		114.0	104.00	117.0		0.0	-9.00	290.0
53	42983	San Miguel	Telluride MS	86.019	Coonskin	26/08/92	-9.00	7.68	10.0	40.0	100.0	7.0	0.79	0.79	8.00	7.3	110.00	134.0	98.00	107.0		0.0	308.00	316.0
53	42983	San Miguel	Telluride MS	86.020	Coonskin	31/08/92	-9.00	7.62	10.0	36.0	122.0	10.0	0.99	1.10	4.80	3.7		0.0	132.00	123.0		0.0	-9.00	266.0
53	42983	San Miguel	Telluride MS	86.021	Coonskin	29/09/92	-9.00	7.54	10.0	56.0	160.0	11.0	0.63	0.76	4.10	6.1		151.0	155.00	197.0		0.0	254.00	282.0
53	42983	San Miguel	Telluride MS	86.022	Coonskin	16/10/92	-9.00	7.60	7.0	60.0	186.0	11.0	-9.00	-9.00	-9.00	-9.0	-9.00	-9.0	-9.00	-9.0	-9.00	-9.0	-9.00	-9.0
53	42983	San Miguel	Telluride MS	86.023	Coonskin	18/11/92	-9.00	7.48	5.0	68.0	176.0	10.0	-9.00	-9.00	-9.00	-9.0	-9.00	-9.0	-9.00	-9.0	-9.00	-9.0	-9.00	-9.0
53	42983	San Miguel	Telluride MS	86.024	Coonskin	23/12/92	-9.00	9.30	3.0	70.0	176.0	8.0	0.43	0.46	3.40	2.4		0.0	309.00	312.0		0.0	-9.00	207.0
53	42983	San Miguel	Telluride MS	86.025	Coonskin	30/01/93	-9.00	7.59	5.0	74.0	184.0	9.0	0.31	0.24	3.10	3.1	107.00	1269.0	198.00	431.0		0.0	192.00	356.0
53	42983	San Miguel	Telluride MS	86.026	Coonskin	10/02/93	-9.00	7.70	5.0	68.0	188.0	10.0	0.28	0.27	1.80	2.1		116.0	229.00	232.0		0.0	-9.00	153.0
53	42983	San Miguel	Telluride MS	86.027	Coonskin	23/02/93	-9.00	7.96	10.0	68.0	182.0	-9.0	0.59	0.71	12.40	18.2		465.0	347.00	401.0		0.0	243.00	294.0
53	42983	San Miguel	Telluride MS	86.028	Coonskin	29/03/93	-9.00	7.89	10.0	70.0	186.0	9.0	-9.00	0.89	-9.00	10.5	-9.00	1428.0	-9.00	502.0	-9.00	22.4	-9.00	338.0
53	42983	San Miguel	Telluride MS	86.029	Coonskin	05/04/93	-9.00	7.07	6.0	60.0	190.0	7.0	0.66	0.93	2.50	5.4		646.0	288.00	383.0		0.0	262.00	272.0
53	42983	San Miguel	Telluride MS	86.030	Coonskin	12/04/93	-9.00	7.93	8.0	74.0	194.0	8.0	0.65	0.62	2.90	3.3	-9.00	0.0	462.00	384.0		0.0	-9.00	261.0
53	42983	San Miguel	Telluride MS	86.031	Coonskin	15/04/93	-9.00	7.82	10.0	64.0	190.0	8.0	0.65	0.63	1.70	3.0		0.0	360.00	349.0		0.0	287.00	380.0
53	42983	San Miguel	Telluride MS	86.032	Coonskin	04/05/93	-9.00	7.99	10.0	52.0	142.0	8.0	1.08	1.29	5.50	9.4		287.0	216.00	333.0		0.0	492.00	546.0
53	42983	San Miguel	Telluride MS	86.033	Coonskin	11/05/93	-9.00	7.80	10.0	68.0	158.0	7.0	1.10	1.06	6.40	6.5		110.0	262.00	275.0		0.0	416.00	412.0
53	42983	San Miguel	Telluride MS	86.034	Coonskin	24/05/93	-9.00	8.05	7.0	40.0	112.0	8.0	-9.00	1.30	-9.00	10.6	-9.00	345.0	-9.00	146.0	-9.00	0.0	-9.00	472.0
53	42983	San Miguel	Telluride MS	86.035	Coonskin	24/07/93	-9.00	7.68	12.0	38.0	120.0	8.0	-9.00	0.89	1.30	6.0		0.0	127.00	131.0	-9.00	0.0	307.00	313.0
53	42983	San Miguel	Telluride MS	86.036	Coonskin	22/08/93	-9.00	7.17	10.0	50.0	116.0	8.0	0.84	0.89	0.80	4.9		114.0	126.00	137.0		2.8	324.00	331.0
53	42983	San Miguel	Telluride MS	86.037	Coonskin	29/08/93	-9.00	7.87	9.0	30.0	86.0	9.0	0.94	0.98	0.90	6.6		101.0	76.00	87.0		3.9	335.00	354.0
53	42983	San Miguel	Telluride MS	86.038	Coonskin	21/07/94	-9.00	7.70	16.0	44.0	116.0	8.0	0.70	0.68	0.70	3.3		0.0	203.00	204.0		0.0	264.00	277.0
53	42983	San Miguel	Telluride MS	86.039	Coonskin	26/07/94	-9.00	8.05	12.0	48.0	130.0	8.0	1.15	0.67	1.20	3.1		0.0	147.00	243.0		0.0	-9.00	292.0
53	42983	San Miguel	Telluride MS	86.041	Coonskin	27/08/94	-9.00	8.39	12.0	52.0	148.0	9.0	0.72	0.70	0.70	1.5		0.0	246.00	263.0		0.0	292.00	304.0
53	42983	San Miguel	Telluride MS	86.042	Coonskin	14/09/94	-9.00	7.86	10.0	42.0	130.0	8.0	0.76	0.92	0.80	4.7		308.0	220.00	308.0		3.7	338.00	386.0
53	42983	San Miguel	Telluride MS	86.043	Coonskin	07/02/95	-9.00	8.03	6.0	64.0	190.0	10.0	0.37	0.45	0.40	6.4	565.00	723.0	351.00	485.0	6.20	12.4	221.00	258.0
53	42983	San Miguel	Telluride MS	87.001	Society Turn	04/12/91	-9.00	-9.00	1.0	96.0	154.0	11.0	0.72	0.77	1.20	2.4		0.0	153.00	150.0		0.0	225.00	233.0
53	42983	San Miguel	Telluride MS	87.002	Society Turn	15/01/92	-9.00	7.70	0.0	72.0	142.0	10.0	0.46	0.47	1.90	2.7		0.0	114.00	103.0		0.0	196.00	173.0
53	42983	San Miguel	Telluride MS	87.003	Society Turn	28/02/92	-9.00	7.79	7.0	78.0	174.0	-9.0	0.46	0.47	2.90	3.1		204.0	117.00	116.0		0.0	159.00	160.0
53	42983	San Miguel	Telluride MS	87.005	Society Turn	31/03/92	-9.00	7.82	10.0	80.0	164.0	10.0	0.63	0.64	2.70	3.0	173.00	232.0	194.00	201.0		0.0	239.00	238.0
53	42983	San Miguel	Telluride MS	87.006	Society Turn	06/04/92	-9.00	7.85	10.0	78.0	140.0	11.0	0.79	0.91	2.40	3.8		925.0	195.00	214.0		0.0	334.00	489.0
53	42983	San Miguel	Telluride MS	87.007	Society Turn	27/04/92	-9.00	8.02	15.0	62.0	136.0	8.0	0.62	0.83	2.70	5.3		465.0	95.00	130.0		0.0	247.00	277.0

kit #	river cd	river	school	station #	station name	[illegible]	flow	pH	temp	alk	hard	DO	cd dis	cd tot	cu dis	cu tot	fe dis	fe tot	mn dis	mn tot	pb dis	pb tot	zn dis	zn tot
53	42983	San Miguel	Telluride MS	87.009	Society Turn	13/05/92	-9.00	7.61	13.0	34.0	98.0	10.0	1.05	1.17	5.20	7.1		215.0	68.00	101.0		0.0	324.00	342.0
53	42983	San Miguel	Telluride MS	87.010	Society Turn	22/05/92	-9.00	7.55	10.0	40.0	88.0	12.0	1.24	1.43	5.90	9.0		461.0	60.00	115.0		16.8	335.00	393.0
53	42983	San Miguel	Telluride MS	87.011	Society Turn	26/05/92	-9.00	7.44	10.0	44.0	84.0	9.0	0.98	1.29	9.00	14.0	817.00	2572.0	104.00	194.0		15.0	305.00	372.0
53	42983	San Miguel	Telluride MS	87.012	Society Turn	01/06/92	-9.00	7.80	11.0	54.0	102.0	9.0	0.95	1.00	6.50	7.4	246.00	353.0	108.00	110.0		0.0	311.00	317.0
53	42983	San Miguel	Telluride MS	87.013	Society Turn	16/06/92	-9.00	7.37	8.0	36.0	76.0	8.0	1.24	1.04	-9.00	5.6		559.0	66.00	137.0	-9.00	0.0	-9.00	346.0
53	42983	San Miguel	Telluride MS	87.014	Society Turn	21/06/92	-9.00	7.95	11.0	34.0	68.0	9.0	1.46	1.42	12.20	15.5		178.0	107.00	128.0		11.0	-9.00	386.0
53	42983	San Miguel	Telluride MS	87.015	Society Turn	29/06/92	-9.00	7.93	10.0	50.0	70.0	7.0	1.02	1.19	9.70	14.6	106.00	450.0	64.00	110.0	10.00	25.3	-9.00	299.0
53	42983	San Miguel	Telluride MS	87.016	Society Turn	06/07/92	-9.00	7.78	14.0	22.0	76.0	14.0	0.78	0.84	4.40	5.5		218.0	49.00	77.0		0.0	-9.00	239.0
53	42983	San Miguel	Telluride MS	87.017	Society Turn	22/07/92	-9.00	7.78	9.0	40.0	98.0	8.0	0.87	0.92	5.40	9.1		102.0	73.00	86.0		13.0	252.00	249.0
53	42983	San Miguel	Telluride MS	87.018	Society Turn	29/07/92	-9.00	7.77	15.0	50.0	98.0	7.0	0.73	0.87	3.40	5.2		208.0	79.00	99.0		0.0	-9.00	235.0
53	42983	San Miguel	Telluride MS	87.019	Society Turn	26/08/92	-9.00	8.19	14.0	46.0	100.0	8.0	0.66	0.66	2.20	2.6		112.0	86.00	90.0		0.0	228.00	226.0
53	42983	San Miguel	Telluride MS	87.020	Society Turn	31/08/92	-9.00	7.91	11.0	48.0	112.0	9.0	0.60	0.54	2.10	2.3		137.0	96.00	105.0		0.0	210.00	216.0
53	42983	San Miguel	Telluride MS	87.021	Society Turn	29/09/92	-9.00	7.90	11.0	64.0	156.0	8.0	0.59	0.56	1.70	2.4		126.0	148.00	138.0		0.0	216.00	220.0
53	42983	San Miguel	Telluride MS	87.022	Society Turn	20/10/92	-9.00	7.83	13.0	68.0	148.0	11.0	0.35	0.39	3.30	2.5		0.0	150.00	153.0		0.0	182.00	189.0
53	42983	San Miguel	Telluride MS	87.023	Society Turn	30/11/92	-9.00	7.75	-1.0	68.0	184.0	10.0	0.45	0.58	1.40	4.5	119.00	647.0	186.00	246.0		0.0	339.00	303.0
53	42983	San Miguel	Telluride MS	87.024	Society Turn	23/12/92	-9.00	-9.00	0.0	76.0	166.0	11.0	0.44	0.45	2.60	2.2	177.00	336.0	171.00	183.0		0.0	-9.00	250.0
53	42983	San Miguel	Telluride MS	87.025	Society Turn	30/01/93	-9.00	7.85	0.0	82.0	140.0	10.0	0.30	0.35	2.30	3.0	372.00	680.0	172.00	218.0		0.0	225.00	225.0
53	42983	San Miguel	Telluride MS	87.026	Society Turn	28/02/93	-9.00	7.93	9.0	82.0	182.0	8.0	0.19	0.32	3.10	4.3		884.0	145.00	195.0		0.0	-9.00	183.0
53	42983	San Miguel	Telluride MS	87.027	Society Turn	26/03/93	-9.00	8.00	8.0	78.0	166.0	7.0	0.68	0.73	3.50	4.4	193.00	446.0	231.00	244.0		0.0	312.00	341.0
53	42983	San Miguel	Telluride MS	87.028	Society Turn	31/03/93	-9.00	7.87	8.0	86.0	170.0	8.0	0.62	0.70	4.60	6.1	373.00	589.0	268.00	272.0		0.0	270.00	297.0
53	42983	San Miguel	Telluride MS	87.029	Society Turn	08/04/93	-9.00	7.79	10.0	86.0	168.0	7.0	0.22	0.54	1.50	19.0		505.0	237.00	274.0		0.0	210.00	302.0
53	42983	San Miguel	Telluride MS	87.030	Society Turn	14/04/93	-9.00	7.85	7.0	86.0	166.0	7.0	0.53	0.68	2.40	5.1		360.0	262.00	309.0		0.0	332.00	391.0
53	42983	San Miguel	Telluride MS	87.031	Society Turn	16/04/93	-9.00	7.97	10.0	86.0	174.0	7.0	0.71	0.77	-9.00	4.4	328.00	1740.0	276.00	274.0		0.0	377.00	407.0
53	42983	San Miguel	Telluride MS	87.032	Society Turn	05/05/93	-9.00	7.93	8.0	68.0	134.0	7.0	0.92	1.02	7.70	7.4	493.00	929.0	187.00	207.0		11.5	464.00	452.0
53	42983	San Miguel	Telluride MS	87.033	Society Turn	13/05/93	-9.00	8.11	10.0	66.0	124.0	9.0	1.03	1.77	8.90	18.4	162.00	2762.0	151.00	399.0		40.3	323.00	666.0
53	42983	San Miguel	Telluride MS	87.034	Society Turn	24/07/93	-9.00	7.89	16.0	52.0	116.0	8.0	0.62	0.65	0.60	3.4		113.0	91.00	99.0		0.0	256.00	267.0
55	46854	San Miguel	Nucla HS	99.001	Pinyon Bridge	07/12/91	-9.00	-9.00	0.0	122.0	242.0	12.0		0.00	1.70	1.7		220.0	13.00	16.0		0.0	-9.00	-9.0
55	46854	San Miguel	Nucla HS	99.002	Pinyon Bridge	28/01/92	-9.00	6.61	0.0	100.0	920.0	13.0		0.00	2.30	3.0		0.0		16.0		0.0	-9.00	33.0
55	46854	San Miguel	Nucla HS	99.003	Pinyon Bridge	22/02/92	-9.00	8.27	1.0	74.0	156.0	11.0		0.00	1.40	3.0		325.0		48.0		0.0	21.00	60.0
55	46854	San Miguel	Nucla HS	99.004	Pinyon Bridge	08/03/92	-9.00	8.33	16.9	116.0	208.0	14.0		0.00	1.60	1.6		0.0	10.00	14.0		0.0	35.00	29.0
55	46854	San Miguel	Nucla HS	99.005	Pinyon Bridge	23/03/92	-9.00	8.49	16.7	115.0	210.0	12.0		0.11	-9.00	-9.0	129.00	182.0	19.00	25.0		0.0	41.00	43.0
55	46854	San Miguel	Nucla HS	99.006	Pinyon Bridge	10/04/92	-9.00	8.45	12.0	70.0	114.0	15.0	-9.00	0.12	-9.00	5.3	-9.00	2460.0	-9.00	68.0	-9.00	0.0	-9.00	85.0

kit #	river cd	river	school	station #	station name	date	flow	pH	temp	alk	hard	DO	cd dis	cd tot	cu dis	cu tot	fe dis	fe tot	mn dis	mn tot	pb dis	pb tot	zn dis	zn tot
55	46854	San Miguel	Nucla HS	99.007	Pinyon Bridge	15/04/92	-9.00	8.31	9.0	80.0	106.0	5.0		0.00	3.70	4.3		1502.0		63.0		0.0	-9.00	39.0
55	46854	San Miguel	Nucla HS	99.008	Pinyon Bridge	30/04/92	-9.00	8.23	14.0	78.0	122.0	10.0		0.22	3.50	7.0	124.00	1288.0	14.00	99.0		0.0	85.00	90.0
55	46854	San Miguel	Nucla HS	99.009	Pinyon Bridge	04/05/92	-9.00	8.55	11.0	128.0	126.0	5.0	-9.00	0.00	4.30	3.9	856.00	881.0	48.00	45.0		0.0	-9.00	60.0
55	46854	San Miguel	Nucla HS	99.012	Pinyon Bridge	24/05/92	-9.00	-9.00	12.0	140.0	124.0	9.0	-9.00	0.18	-9.00	5.4	-9.00	1267.0	-9.00	40.0	-9.00	0.0	-9.00	83.0
55	46854	San Miguel	Nucla HS	99.013	Pinyon Bridge	31/05/92	-9.00	8.17	10.0	92.0	146.0	9.0		0.18	5.70	4.4		813.0		32.0		0.0	54.00	66.0
55	46854	San Miguel	Nucla HS	99.014	Pinyon Bridge	07/06/92	-9.00	8.22	11.0	70.0	114.0	10.0	0.19	0.17	3.50	5.8	276.00	698.0		45.0		0.0	-9.00	83.0
55	46854	San Miguel	Nucla HS	99.015	Pinyon Bridge	17/06/92	-9.00	8.17	12.0	72.0	134.0	9.0	0.10	0.14	2.50	4.6	114.00	468.0	11.00	23.0		0.0	41.00	62.0
55	46854	San Miguel	Nucla HS	99.016	Pinyon Bridge	28/06/92	-9.00	8.40	16.0	110.0	104.0	8.0	0.13	0.15	2.70	3.4		287.0	10.00	29.0		0.0	51.00	59.0
55	46854	San Miguel	Nucla HS	99.017	Pinyon Bridge	30/06/92	-9.00	8.36	15.0	72.0	92.0	10.0		0.16	4.40	3.9		332.0		32.0		0.0	66.00	69.0
55	46854	San Miguel	Nucla HS	99.018	Pinyon Bridge	08/07/92	-9.00	8.08	14.0	56.0	108.0	7.0		0.12	2.20	4.8		128.0	13.00	24.0		0.0	37.00	55.0
55	46854	San Miguel	Nucla HS	99.019	Pinyon Bridge	25/07/92	-9.00	8.10	15.0	76.0	122.0	8.0		0.50	2.60	16.5		2139.0	80.00	227.0		25.7	61.00	185.0
55	46854	San Miguel	Nucla HS	99.020	Pinyon Bridge	28/07/92	-9.00	8.50	17.0	90.0	130.0	9.0		0.30	2.90	4.3	109.00	656.0	21.00	77.0		11.9	28.00	89.0
55	46854	San Miguel	Nucla HS	99.021	Pinyon Bridge	21/08/92	-9.00	8.62	20.0	80.0	158.0	6.0		0.00	2.60	3.6		292.0		40.0		0.0	22.00	55.0
55	46854	San Miguel	Nucla HS	99.022	Pinyon Bridge	29/08/92	-9.00	8.97	20.0	76.0	178.0	8.0		0.00	1.80	2.4		0.0	17.00	18.0		0.0	26.00	24.0
55	46854	San Miguel	Nucla HS	99.023	Pinyon Bridge	29/09/92	-9.00	7.81	16.0	120.0	200.0	9.0		0.00	4.20	2.9		0.0	16.00	19.0		0.0	25.00	39.0
55	46854	San Miguel	Nucla HS	99.024	Pinyon Bridge	28/10/92	-9.00	8.24	9.0	110.0	220.0	9.0	-9.00	-9.00	-9.00	-9.0	-9.00	-9.0	-9.00	-9.0	-9.00	-9.0	-9.00	-9.0
55	46854	San Miguel	Nucla HS	99.025	Pinyon Bridge	23/11/92	-9.00	8.42	0.0	-9.0	200.0	11.0		0.00	1.30	1.5		0.0	13.00	27.0		0.0	39.00	45.0
55	46854	San Miguel	Nucla HS	99.026	Pinyon Bridge	31/12/92	-9.00	8.73	0.0	100.0	210.0	15.0		0.00	2.50	3.1		104.0		12.0		0.0	31.00	48.0
55	46854	San Miguel	Nucla HS	99.027	Pinyon Bridge	30/01/93	-9.00	8.50	1.0	116.0	200.0	14.0		0.00	1.80	2.5		203.0		25.0		0.0	44.00	52.0
55	46854	San Miguel	Nucla HS	99.028	Pinyon Bridge	22/02/93	-9.00	8.74	2.0	100.0	180.0	10.0		0.00		0.0		0.0		16.0		0.0	-9.00	18.0
55	46854	San Miguel	Nucla HS	99.029	Pinyon Bridge	20/02/93	-9.00	8.92	7.0	112.0	192.0	11.0		0.14	2.10	6.8		0.0		0.0		0.0	34.00	31.0
55	46854	San Miguel	Nucla HS	99.030	Pinyon Bridge	30/03/93	-9.00	9.20	7.0	106.0	148.0	8.0		0.00	3.60	3.6		408.0	13.00	18.0		0.0	17.00	33.0
55	46854	San Miguel	Nucla HS	99.031	Pinyon Bridge	25/04/93	-9.00	8.46	6.0	70.0	126.0	-9.0	-9.00	0.00	-9.00	3.6	-9.00	882.0	-9.00	48.0	-9.00	0.0	-9.00	7.0
55	46854	San Miguel	Nucla HS	99.032	Pinyon Bridge	19/05/93	-9.00	8.41	13.0	94.0	104.0	10.0	-9.00	0.16	-9.00	5.8	-9.00	1102.0	-9.00	100.0	-9.00	0.0	-9.00	9.0
55	46854	San Miguel	Nucla HS	99.033	Pinyon Bridge	20/05/93	-9.00	8.59	15.0	88.0	108.0	8.0	-9.00	0.10	-9.00	5.4	-9.00	933.0	-9.00	68.0	-9.00	0.0	-9.00	6.0
55	46854	San Miguel	Nucla HS	99.034	Pinyon Bridge	23/05/93	-9.00	8.30	12.0	82.0	116.0	8.0	-9.00	0.00	-9.00	5.1	-9.00	699.0	-9.00	69.0	-9.00	0.0	-9.00	7.0
55	46854	San Miguel	Nucla HS	99.035	Pinyon Bridge	19/06/93	-9.00	8.54	12.0	80.0	114.0	8.0	0.22	0.37	4.60	5.6		844.0		78.0		0.0	21.00	8.0
55	46854	San Miguel	Nucla HS	99.036	Pinyon Bridge	22/06/93	-9.00	8.55	10.0	56.0	80.0	10.0	-9.00	0.41	-9.00	10.7	-9.00	1310.0	-9.00	160.0	-9.00	23.4	99.00	12.0
55	46854	San Miguel	Nucla HS	99.037	Pinyon Bridge	18/07/93	-9.00	8.31	16.0	60.0	110.0	9.0	0.10	0.10	2.20	2.5		178.0	20.00	25.0		0.0	-9.00	2.0
55	46854	San Miguel	Nucla HS	99.038	Pinyon Bridge	28/07/93	-9.00	8.32	18.0	72.0	130.0	6.0		0.00	1.70	2.4		0.0	15.00	22.0		0.0	15.00	2.0
55	46854	San Miguel	Nucla HS	99.039	Pinyon Bridge	31/08/93	-9.00	8.20	14.0	90.0	144.0	8.0		0.00	2.60	2.9		217.0	11.00	37.0		0.0	47.00	5.0
55	46854	San Miguel	Nucla HS	99.040	Pinyon Bridge	29/09/93	-9.00	8.40	21.0	103.0	162.0	9.0		0.00	3.00	2.1		0.0	22.00	44.0		0.0	-9.00	1.0

kit #	river cd	river	school	station #	station name	date	flow	pH	temp	alk	hard	DO	cd dis	cd tot	cu dis	cu tot	fe dis	fe tot	mn dis	mn tot	pb dis	pb tot	zn dis	zn tot
55	46854	San Miguel	Nucla HS	99.041	Pinyon Bridge	30/10/93	-9.00	8.21	5.0	122.0	210.0	12.0		0.00		1.3		0.0	34.00	27.0		0.0	63.00	100.0
55	46854	San Miguel	Nucla HS	99.042	Pinyon Bridge	30/11/93	-9.00	8.14	0.0	118.0	232.0	12.0		0.00		1.3		0.0	12.00	32.0		0.0	62.00	58.0
55	46854	San Miguel	Nucla HS	99.043	Pinyon Bridge	11/01/94	-9.00	8.80	0.0	114.0	220.0	-9.0		0.00		1.1		119.0	21.00	18.0		0.0	-9.00	31.0
55	46854	San Miguel	Nucla HS	99.044	Pinyon Bridge	28/02/94	-9.00	8.40	4.0	98.0	188.0	-9.0		0.00		2.3		154.0		36.0		0.0	58.00	55.0
55	46854	San Miguel	Nucla HS	99.045	Pinyon Bridge	25/03/94	-9.00	8.19	8.0	114.0	192.0	11.0		0.00		1.6		154.0		0.0		0.0	20.00	20.0
55	46854	San Miguel	Nucla HS	99.048	Pinyon Bridge	17/04/94	-9.00	8.18	8.0	80.0	102.0	13.0		0.00		1.7		0.0		0.0		0.0	12.00	0.0
55	46854	San Miguel	Nucla HS	99.047	Pinyon Bridge	20/04/94	-9.00	8.36	10.0	90.0	130.0	13.0		0.14		4.5	433.00	1043.0	22.00	62.0		0.0	-9.00	51.0
55	46854	San Miguel	Nucla HS	99.048	Pinyon Bridge	30/04/94	-9.00	8.49	10.0	72.0	122.0	10.0		0.00		3.3	706.00	1011.0	32.00	39.0		0.0	57.00	48.0
55	46854	San Miguel	Nucla HS	99.049	Pinyon Bridge	18/05/94	-9.00	8.50	15.0	70.0	114.0	8.0		0.17		7.9		1120.0	13.00	114.0		4.8	66.00	250.0
55	46854	San Miguel	Nucla HS	99.050	Pinyon Bridge	22/05/94	-9.00	8.35	12.0	44.0	106.0	9.0	0.18	0.20	0.20	5.5	169.00	514.0	34.00	55.0	2.20	6.2	77.00	77.0
55	46854	San Miguel	Nucla HS	99.051	Pinyon Bridge	23/05/94	-9.00	8.34	15.0	68.0	126.0	7.0	0.10	0.28	0.10	9.4		798.0	32.00	103.0		8.5	59.00	115.0
55	46854	San Miguel	Nucla HS	99.052	Pinyon Bridge	31/05/94	-9.00	-9.00	14.0	-9.0	-9.0	10.0		0.64		16.6		2174.0	11.00	285.0		23.2	32.00	219.0
55	46854	San Miguel	Nucla HS	99.053	Pinyon Bridge	21/06/94	-9.00	8.21	14.0	50.0	80.0	9.0		0.21		4.1		406.0	12.00	46.0		4.1	-9.00	73.0
55	46854	San Miguel	Nucla HS	99.054	Pinyon Bridge	23/06/94	-9.00	7.97	13.0	54.0	84.0	8.0		0.15		5.4		339.0		36.0		5.1	62.00	98.0
55	46854	San Miguel	Nucla HS	99.055	Pinyon Bridge	25/06/94	-9.00	8.50	17.0	52.0	78.0	7.0	0.11	0.13	0.10	3.8		202.0	13.00	26.0		2.7	28.00	82.0
55	46854	San Miguel	Nucla HS	99.056	Pinyon Bridge	30/06/94	-9.00	8.44	17.0	62.0	96.0	8.0		0.00		2.5		0.0		0.0		0.0	23.00	39.0
55	46854	San Miguel	Nucla HS	99.057	Pinyon Bridge	29/07/94	-9.00	8.54	26.0	122.0	176.0	7.0		0.00		2.0		0.0		0.0		0.0		0.0
55	46854	San Miguel	Nucla HS	99.058	Pinyon Bridge	31/07/94	-9.00	8.54	25.0	98.0	174.0	7.0		0.00		2.1		0.0		11.0		0.0	-9.00	12.0
55	46854	San Miguel	Nucla HS	99.059	Pinyon Bridge	25/08/94	-9.00	8.22	20.0	116.0	240.0	8.0		0.00		2.0		0.0		14.0		0.0	14.00	17.0
55	46854	San Miguel	Nucla HS	99.060	Pinyon Bridge	30/08/94	-9.00	8.81	24.0	130.0	220.0	8.0		0.00		1.6		0.0	11.00	0.0		0.0		0.0
55	46854	San Miguel	Nucla HS	99.061	Pinyon Bridge	30/09/94	-9.00	8.55	14.0	74.0	180.0	10.0		0.00		3.3		0.0	13.00	15.0		0.0	39.00	37.0
55	46854	San Miguel	Nucla HS	99.062	Pinyon Bridge	31/10/94	-9.00	8.22	7.0	80.0	200.0	9.0		0.00		2.2		0.0		0.0		0.0	41.00	56.0
55	46854	San Miguel	Nucla HS	99.063	Pinyon Bridge	16/11/94	-9.00	8.21	3.0	92.0	196.0	9.0		0.13		2.5		279.0	21.00	58.0		2.5	65.00	88.0
55	46854	San Miguel	Nucla HS	99.064	Pinyon Bridge	13/12/94	-9.00	8.17	2.0	112.0	200.0	10.0		0.00		2.5		0.0	19.00	33.0		0.0	82.00	82.0
55	46854	San Miguel	Nucla HS	99.065	Pinyon Bridge	31/01/95	-9.00	8.10	0.0	110.0	220.0	12.0		0.00		0.0		0.0		15.0		0.0	47.00	73.0
55	46854	San Miguel	Nucla HS	100.001	Power Plant Bridge	03/12/91	-9.00	-9.00	0.0	130.0	240.0	8.0		0.00	1.50	2.0		0.0	10.00	14.0		0.0	60.00	26.0
55	46854	San Miguel	Nucla HS	100.002	Power Plant Bridge	29/01/92	-9.00	8.66	0.0	86.0	840.0	13.0		0.00	2.20	3.0		0.0		0.0		0.0	-9.00	24.0
55	46854	San Miguel	Nucla HS	100.003	Power Plant Bridge	22/02/92	-9.00	8.21	1.0	74.0	160.0	15.0	0.10	0.00	2.50	2.1		264.0		34.0		0.0	32.00	44.0
55	46854	San Miguel	Nucla HS	100.004	Power Plant Bridge	08/03/92	-9.00	8.37	18.9	120.0	216.0	10.0		0.00		0.0	110.00	142.0	23.00	25.0		0.0	-9.00	29.0
55	46854	San Miguel	Nucla HS	100.005	Power Plant Bridge	23/03/92	-9.00	8.87	17.1	106.0	200.0	9.0		0.00	3.10	0.0	-9.00	-9.0	27.00	40.0		0.0	-9.00	38.0
55	46854	San Miguel	Nucla HS	100.006	Power Plant Bridge	10/04/92	-9.00	8.51	11.0	76.0	102.0	12.0	-9.00	0.00	-9.00	4.0	-9.00	2868.0	-9.00	71.0	-9.00	0.0	-9.00	43.0
55	46854	San Miguel	Nucla HS	100.007	Power Plant Bridge	15/04/92	-9.00	8.24	10.0	84.0	98.0	9.0	-9.00	0.18	-9.00	4.5	-9.00	2094.0	-9.00	78.0	-9.00	0.0	-9.00	46.0

kit #	river cd	river	school	station #	station name	date	flow	pH	temp	alk	hard	DO	cd dis	cd tot	cu dis	cu tot	fe dis	fe tot	mn dis	mn tot	pb dis	pb tot	zn dis	zn tot
55	46854	San Miguel	Nucla HS	100.008	Power Plant Bridge	30/04/92	-9.00	8.11	15.0	86.0	118.0	11.0	-9.00	0.20	-9.00	7.3	-9.00	1640.0	-9.00	84.0	-9.00	0.0	-9.00	72.0
55	46854	San Miguel	Nucla HS	100.009	Power Plant Bridge	04/05/92	-9.00	8.25	11.0	128.0	128.0	12.0		0.11	2.50	2.9	253.00	752.0	22.00	39.0		0.0	-9.00	48.0
55	46854	San Miguel	Nucla HS	100.012	Power Plant Bridge	24/05/92	-9.00	8.35	14.0	86.0	138.0	9.0	-9.00	0.19	-9.00	5.2	-9.00	807.0	-9.00	60.0	-9.00	0.0	-9.00	74.0
55	46854	San Miguel	Nucla HS	100.013	Power Plant Bridge	31/05/92	-9.00	8.21	11.0	94.0	146.0	9.0	-9.00	0.00	2.90	4.0		700.0	12.00	38.0		0.0	30.00	54.0
55	46854	San Miguel	Nucla HS	100.014	Power Plant Bridge	07/06/92	-9.00	8.02	13.0	78.0	114.0	10.0	0.11	0.24	3.00	5.7	186.00	646.0	23.00	63.0		0.0	74.00	70.0
55	46854	San Miguel	Nucla HS	100.015	Power Plant Bridge	17/06/92	-9.00	8.15	14.0	74.0	135.0	9.0		0.14	2.40	3.5	139.00	306.0	19.00	23.0		0.0	47.00	53.0
55	46854	San Miguel	Nucla HS	100.016	Power Plant Bridge	28/06/92	-9.00	8.28	17.0	78.0	110.0	9.0		0.11	2.50	3.6		240.0	10.00	37.0		0.0	29.00	61.0
55	46854	San Miguel	Nucla HS	100.017	Power Plant Bridge	30/10/92	-9.00	8.20	16.0	70.0	106.0	10.0		0.15	2.50	4.4		290.0	10.00	34.0		0.0	44.00	71.0
55	46854	San Miguel	Nucla HS	100.018	Power Plant Bridge	08/07/92	-9.00	8.40	15.0	62.0	110.0	8.0	0.14	0.19	3.20	4.4		126.0	16.00	26.0		0.0	45.00	65.0
55	46854	San Miguel	Nucla HS	100.019	Power Plant Bridge	25/07/92	-9.00	7.80	15.0	74.0	128.0	10.0		0.22	2.30	7.1		1448.0	27.00	150.0		15.7	47.00	119.0
55	46854	San Miguel	Nucla HS	100.020	Power Plant Bridge	28/07/92	-9.00	8.47	17.0	105.0	138.0	10.0		0.11	2.00	3.4		254.0	13.00	38.0		0.0	16.00	45.0
55	46854	San Miguel	Nucla HS	100.021	Power Plant Bridge	26/08/92	-9.00	8.60	20.0	92.0	172.0	8.0		0.00	1.90	3.5		207.0		30.0		0.0	41.00	39.0
55	46854	San Miguel	Nucla HS	100.022	Power Plant Bridge	29/08/92	-9.00	9.01	20.0	118.0	186.0	8.0		0.00	1.90	2.0		0.0	12.00	18.0		0.0	10.00	13.0
55	46854	San Miguel	Nucla HS	100.023	Power Plant Bridge	27/09/92	-9.00	8.72	19.0	156.0	235.0	11.0		0.00	-9.00	3.2		0.0	12.00	14.0		0.0	-9.00	0.0
55	46854	San Miguel	Nucla HS	100.024	Power Plant Bridge	28/10/92	-9.00	8.20	9.0	116.0	220.0	9.0		0.00	1.60	2.0		0.0	12.00	16.0		0.0	17.00	23.0
55	46854	San Miguel	Nucla HS	100.025	Power Plant Bridge	23/11/92	-9.00	8.28	0.0	-9.0	204.0	12.0		0.00	1.10	1.3		129.0	12.00	18.0		0.0	22.00	43.0
55	46854	San Miguel	Nucla HS	100.026	Power Plant Bridge	31/12/92	-9.00	8.67	0.0	106.0	198.0	13.0		0.00		1.9		151.0		17.0		0.0	34.00	42.0
55	46854	San Miguel	Nucla HS	100.027	Power Plant Bridge	30/01/93	-9.00	8.64	2.0	108.0	220.0	9.0		0.00	3.40	2.7		205.0	11.00	31.0		0.0	37.00	60.0
55	46854	San Miguel	Nucla HS	100.028	Power Plant Bridge	22/02/93	-9.00	8.63	3.0	116.0	200.0	13.0		0.00		0.0		0.0		0.0		0.0	-9.00	17.0
55	46854	San Miguel	Nucla HS	100.029	Power Plant Bridge	20/03/93	-9.00	8.81	8.0	114.0	178.0	11.0		0.00	2.50	4.7	173.00	1065.0	16.00	65.0		0.0	44.00	66.0
55	46854	San Miguel	Nucla HS	100.030	Power Plant Bridge	30/03/93	-9.00	8.74	8.0	96.0	150.0	8.0	-9.00	0.00	-9.00	-9.0	-9.00	392.0	-9.00	26.0	-9.00	0.0	-9.00	40.0
55	46854	San Miguel	Nucla HS	100.031	Power Plant Bridge	25/04/93	-9.00	8.50	8.0	78.0	98.0	8.0	-9.00	0.00	-9.00	3.5	-9.00	937.0	-9.00	48.0	-9.00	0.0	-9.00	45.0
55	46854	San Miguel	Nucla HS	100.032	Power Plant Bridge	19/05/93	-9.00	8.56	15.0	88.0	110.0	7.0	-9.00	0.00	-9.00	6.1	-9.00	1206.0	-9.00	109.0	-9.00	0.0	-9.00	69.0
55	46854	San Miguel	Nucla HS	100.033	Power Plant Bridge	20/05/93	-9.00	8.33	14.0	94.0	118.0	8.0	-9.00	0.00	-9.00	5.5	-9.00	761.0	-9.00	89.0	-9.00	0.0	-9.00	58.0
55	46854	San Miguel	Nucla HS	100.034	Power Plant Bridge	24/05/93	-9.00	8.03	13.0	88.0	124.0	9.0	-9.00	0.37	-9.00	6.3	-9.00	772.0	-9.00	101.0	-9.00	0.0	-9.00	71.0
55	46854	San Miguel	Nucla HS	100.035	Power Plant Bridge	19/06/93	-9.00	8.55	13.0	74.0	104.0	7.0		0.22	2.10	8.0		704.0	20.00	82.0		11.9	18.00	65.
55	46854	San Miguel	Nucla HS	100.036	Power Plant Bridge	22/06/93	-9.00	8.14	11.0	54.0	90.0	9.0		0.40	3.80	11.3	197.00	1436.0	36.00	157.0		24.5	39.00	119.
55	46854	San Miguel	Nucla HS	100.037	Power Plant Bridge	18/07/93	-9.00	7.97	18.0	100.0	110.0	9.0		0.12	2.60	2.8		176.0	32.00	25.0		0.0	-9.00	36.
55	46854	San Miguel	Nucla HS	100.038	Power Plant Bridge	28/07/93	-9.00	8.25	19.0	76.0	136.0	6.0		0.00	1.20	1.7		0.0	14.00	26.0		0.0		14.
55	46854	San Miguel	Nucla HS	100.039	Power Plant Bridge	31/08/93	-9.00	8.52	15.0	128.0	186.0	11.0		0.00	2.40	2.7		153.0	11.00	34.0		0.0	-9.00	29
55	46854	San Miguel	Nucla HS	100.040	Power Plant Bridge	29/09/93	-9.00	8.10	20.0	86.0	170.0	9.0		0.00	-9.00	1.9		110.0	61.00	109.0		0.0	67.00	25.
55	46854	San Miguel	Nucla HS	100.041	Power Plant Bridge	30/10/93	-9.00	8.55	6.0	126.0	216.0	8.0		0.00		2.5		0.0	29.00	44.0		0.0	35.00	53.

kit #	river cd	river	school	station #	station name	date	flow	pH	temp	alk	hard	DO	cd dis	cd tot	cu dis	cu tot	fe dis	fe tot	mn dis	mn tot	pb dis	pb tot	zn dis	zn tot
55	46854	San Miguel	Nucla HS	100.042	Power Plant Bridge	30/11/93	-9.00	8.04	0.0	106.0	222.0	13.0		0.00		1.1		142.0	21.00	37.0		0.0	30 00	40.0
55	46854	San Miguel	Nucla HS	100.043	Power Plant Bridge	11/01/94	-9.00	9.01	0.0	112.0	240.0	13.0		0.00		0.0		0.0	-9.00	0.0		0.0	-9.00	27.0
55	46854	San Miguel	Nucla HS	100.044	Power Plant Bridge	28/02/94	-9.00	8.50	4.0	98.0	190.0	-9.0		0.00		2.1	106.00	211.0	23.00	21.0		0.0	-9.00	32.0
55	46854	San Miguel	Nucla HS	100.045	Power Plant Bridge	25/03/94	-9.00	8.75	9.0	128.0	196.0	9.0		0.00		1.9		133.0	19.00	39.0		0.0	12.00	36.0
55	46854	San Miguel	Nucla HS	100.046	Power Plant Bridge	17/04/94	-9.00	8.28	9.0	76.0	100.0	12.0		0.00		1.6		0.0		0.0		0.0		0.0
55	46854	San Miguel	Nucla HS	100.047	Power Plant Bridge	20/04/94	-9.00	8.31	10.0	88.0	126.0	10.0		0.00		4.6		947.0		52.0		2.3	29.00	43.0
55	46854	San Miguel	Nucla HS	100.048	Power Plant Bridge	30/04/94	-9.00	8.30	9.0	80.0	124.0	11.0		0.00		3.7		694.0	15.00	40.0		0.0	27.00	37.0
55	46854	San Miguel	Nucla HS	100.049	Power Plant Bridge	18/05/94	-9.00	8.43	16.0	64.0	126.0	6.0		0.36		11.2		1034.0	32.00	183.0		11.7	44.00	109.0
55	46854	San Miguel	Nucla HS	100.050	Power Plant Bridge	22/05/94	-9.00	8.40	15.0	78.0	112.0	10.0		0.00		4.8	136.00	407.0	28.00	39.0		2.9	36.00	57.0
55	46854	San Miguel	Nucla HS	100.051	Power Plant Bridge	23/05/94	-9.00	8.35	15.0	66.0	116.0	5.0		0.24		9.2	246.00	1026.0	40.00	109.0	1.70	10.5	40.00	119.0
55	46854	San Miguel	Nucla HS	100.052	Power Plant Bridge	31/05/94	-9.00	-9.00	14.0	-9.0	-9.0	10.0		0.75		22.1		2326.0		338.0		40.0		214.0
55	46854	San Miguel	Nucla HS	100.053	Power Plant Bridge	21/06/94	-9.00	8.27	15.0	28.0	82.0	8.0		0.17		5.8		450.0		33.0		4.7	36.00	104.0
55	46854	San Miguel	Nucla HS	100.054	Power Plant Bridge	23/06/94	-9.00	8.07	14.0	62.0	86.0	8.0		0.17		4.8		371.0		31.0		5.9		40.0
55	46854	San Miguel	Nucla HS	100.057	Power Plant Bridge	29/07/94	-9.00	8.76	28.0	126.0	180.0	8.0		0.00		2.1		0.0	14.00	18.0		0.0	11.00	0.0
55	46854	San Miguel	Nucla HS	100.058	Power Plant Bridge	31/07/94	-9.00	8.74	25.0	136.0	196.0	7.0		0.28		4.8		362.0	29.00	356.0		3.2	58.00	92.0
55	46854	San Miguel	Nucla HS	100.059	Power Plant Bridge	25/08/94	-9.00	8.46	24.0	184.0	320.0	9.0		0.00		2.3		331.0	14.00	289.0		0.0	13.00	50.0
55	46854	San Miguel	Nucla HS	100.060	Power Plant Bridge	30/08/94	-9.00	10.04	24.0	168.0	300.0	10.0		0.00		1.1		0.0		0.0		0.0		0.0
55	46854	San Miguel	Nucla HS	100.061	Power Plant Bridge	30/09/94	-9.00	8.44	14.0	98.0	200.0	9.0		0.00		2.7		291.0		141.0		1.6	11.00	47.0
55	46854	San Miguel	Nucla HS	100.062	Power Plant Bridge	31/10/94	-9.00	8.19	7.0	94.0	196.0	12.0		0.00		2.1		0.0		0.0		0.0	40.00	45.0
55	46854	San Miguel	Nucla HS	100.063	Power Plant Bridge	16/11/94	-9.00	8.30	3.0	100.0	200.0	14.0		0.00		2.4		0.0		10.0		0.0	58.00	119.0
55	46854	San Miguel	Nucla HS	100.064	Power Plant Bridge	13/12/94	-9.00	8.14	4.0	112.0	184.0	13.0		0.00		7.6		0.0	21.00	27.0		0.0	109.00	126.0
55	46854	San Miguel	Nucla HS	100.065	Power Plant Bridge	31/01/95	-9.00	8.25	1.0	116:0	202.0	14.0		0.00		0.0		0.0		0.0		0.0	-9.00	63.0
54	46854	San Miguel	Naturita MS	101.001	Naturita Bridge	07/12/91	-9.00	-9.00	-9.0	136.0	336.0	11.0		0.00		1.5		0.0	30.00	36.0		0.0	28.00	22.0
54	46854	San Miguel	Naturita MS	101.002	Naturita Bridge	25/01/92	-9.00	8.19	2.0	120.0	242.0	12.0		0.00		1.4		0.0	-9.00	52.0		0.0	36.00	26.0
54	46854	San Miguel	Naturita MS	101.003	Naturita Bridge	08/03/92	-9.00	8.69	19.3	172.0	360.0	8.0		0.00		0.0		187.0	14.00	39.0		0.0	20.00	36.0
54	46854	San Miguel	Naturita MS	101.004	Naturita Bridge	08/03/92	-9.00	8.68	19.5	154.0	332.0	9.0	0.14	0.15		0.0		244.0	35.00	63.0		0.0	15.00	25.0
54	46854	San Miguel	Naturita MS	101.005	Naturita Bridge	22/03/92	-9.00	8.80	8.0	142.0	296.0	10.0		0.12		0.0		199.0	20.00	36.0		0.0	16.00	27.0
54	46854	San Miguel	Naturita MS	101.006	Naturita Bridge	10/04/92	-9.00	8.02	8.0	76.0	110.0	9.0	-9.00	0.13	-9.00	5.7	-9.00	2209.0	-9.00	115.0	-9.00	0.0	-9.00	63.0
54	46854	San Miguel	Naturita MS	101.007	Naturita Bridge	17/04/92	-9.00	8.46	9.0	86.0	126.0	10.0		0.00	3.40	4.5		887.0	11.00	43.0		0.0	-9.00	34.0
54	46854	San Miguel	Naturita MS	101.008	Naturita Bridge	30/04/92	-9.00	8.29	14.0	88.0	136.0	11.0		0.11	5.10	7.3		1318.0	21.00	100.0		0.0	13.00	74.0
54	46854	San Miguel	Naturita MS	101.009	Naturita Bridge	09/05/92	-9.00	8.14	12.0	92.0	128.0	8.0	0.25	0.40	4.20	8.8		1119.0		99.0		0.0	34.00	108.0
54	46854	San Miguel	Naturita MS	101.010	Naturita Bridge	18/05/92	-9.00	8.50	15.0	86.0	160.0	8.0		0.00	3.50	3.7	129.00	490.0	16.00	33.0		0.0	-9.00	124.0

kit #	river cd	river	school	station #	station name	date	flow	pH	temp	alk	hard	DO	cd dis	cd tot	cu dis	cu tot	fe dis	fe tot	mn dis	mn tot	pb dis	pb tot	zn dis	zn tot
54	46854	San Miguel	Naturita MS	101.011	Naturita Bridge	27/05/92	-9.00	8.12	15.0	90.0	200.0	7.0		0.95	2.80	19.9	139.00	8727.0	41.00	486.0		27.2	12.00	238.0
54	46854	San Miguel	Naturita MS	101.012	Naturita Bridge	31/05/92	-9.00	8.23	12.0	110.0	204.0	9.0		0.10	4.30	4.2		1920.0	26.00	78.0		0.0	27.00	47.0
54	46854	San Miguel	Naturita MS	101.013	Naturita Bridge	07/06/92	-9.00	8.29	13.0	94.0	180.0	10.0		0.13	3.00	5.8		927.0	14.00	74.0		0.0	20.00	56.0
54	46854	San Miguel	Naturita MS	101.014	Naturita Bridge	17/06/92	-9.00	8.04	11.0	88.0	160.0	10.0		0.00	2.80	3.7		295.0	20.00	37.0		0.0	22.00	37.0
54	46854	San Miguel	Naturita MS	101.015	Naturita Bridge	30/06/92	-9.00	8.50	17.0	62.0	132.0	8.0		0.18	4.10	8.6		253.0		28.0		0.0	27.00	62.0
54	46854	San Miguel	Naturita MS	101.016	Naturita Bridge	25/07/92	-9.00	8.31	15.0	108.0	224.0	7.0		0.15	2.20	7.7		2764.0	22.00	221.0		14.4	22.00	108.0
54	46854	San Miguel	Naturita MS	101.017	Naturita Bridge	28/07/92	-9.00	8.31	16.0	98.0	218.0	8.0		0.00	1.40	3.6		327.0	27.00	57.0		0.0	14.00	47.0
54	46854	San Miguel	Naturita MS	101.018	Naturita Bridge	26/08/92	-9.00	8.69	15.0	116.0	284.0	9.0		0.00	1.70	2.2		272.0	21.00	47.0		0.0	14.00	23.0
54	46854	San Miguel	Naturita MS	101.019	Naturita Bridge	29/08/92	-9.00	8.82	18.0	136.0	344.0	8.0		0.00	1.30	1.5		141.0	27.00	31.0		0.0	17.00	13.0
54	46854	San Miguel	Naturita MS	101.020	Naturita Bridge	27/09/92	-9.00	8.65	16.0	190.0	842.0	7.0		0.00	2.00	2.9		0.0		0.0		0.0	18.00	11.0
54	46854	San Miguel	Naturita MS	101.021	Naturita Bridge	30/09/92	-9.00	8.41	19.0	188.0	708.0	7.0		0.00	1.00	1.0		0.0		0.0		0.0		0.0
54	46854	San Miguel	Naturita MS	101.022	Naturita Bridge	25/10/92	-9.00	8.53	15.0	80.0	322.0	8.0		0.00	3.70	4.2		0.0	17.00	32.0		0.0	13.00	12.0
54	46854	San Miguel	Naturita MS	101.023	Naturita Bridge	30/11/92	-9.00	8.47	0.0	156.0	366.0	13.0		0.00	1.70	2.3		136.0	20.00	53.0		0.0	14.00	27.0
54	46854	San Miguel	Naturita MS	101.024	Naturita Bridge	31/12/92	-9.00	8.57	0.0	120.0	306.0	13.0		0.00	1.70	2.6		474.0	19.00	81.0		0.0	16.00	41.0
54	46854	San Miguel	Naturita MS	101.025	Naturita Bridge	31/01/93	-9.00	8.22	0.0	126.0	332.0	10.0		0.00	1.70	2.2		115.0		33.0		0.0	18.00	40.0
54	46854	San Miguel	Naturita MS	101.026	Naturita Bridge	23/02/93	-9.00	8.60	5.0	168.0	244.0	10.0		0.00	1.30	1.5		204.0	39.00	58.0		0.0	18.00	29.0
54	46854	San Miguel	Naturita MS	101.027	Naturita Bridge	20/03/93	-9.00	8.58	10.0	140.0	252.0	9.0		0.00	1.40	5.8	-9.00	205.0	13.00	31.0		15.1	17.00	60.0
54	46854	San Miguel	Naturita MS	101.028	Naturita Bridge	29/03/93	-9.00	8.60	10.0	128.0	236.0	8.0		0.00		1.8		586.0	19.00	46.0		0.0		24.0
54	46854	San Miguel	Naturita MS	101.029	Naturita Bridge	22/04/93	-9.00	8.30	9.0	96.0	136.0	10.0		0.00	2.50	4.2		1303.0		96.0		0.0	16.00	53.0
54	46854	San Miguel	Naturita MS	101.030	Naturita Bridge	29/04/93	-9.00	8.17	10.0	76.0	126.0	9.0	-9.00	-9.00	-9.00	-9.0	-9.00	-9.0	-9.00	-9.0	-9.00	-9.0	-9.00	-9.0
54	46854	San Miguel	Naturita MS	101.031	Naturita Bridge	20/05/93	-9.00	8.10	14.0	102.0	172.0	8.0		0.00	2.30	5.7	968.00	1674.0	-9.00	135.0		0.0	-9.00	57.0
54	46854	San Miguel	Naturita MS	101.032	Naturita Bridge	25/05/93	-9.00	8.18	13.0	98.0	156.0	-9.0	-9.00	0.00	-9.00	5.5	-9.00	985.0	-9.00	104.0	-9.00	0.0	-9.00	65.0
54	46854	San Miguel	Naturita MS	101.033	Naturita Bridge	27/05/93	-9.00	8.10	11.0	84.0	122.0	-9.0	-9.00	0.77	-9.00	23.0	-9.00	1980.0	-9.00	268.0	-9.00	62.6	-9.00	240.0
54	46854	San Miguel	Naturita MS	101.034	Naturita Bridge	19/06/93	-9.00	8.32	16.0	80.0	136.0	9.0		0.00	2.10	6.6		719.0	21.00	74.0		13.5	17.00	54.0
54	46854	San Miguel	Naturita MS	101.035	Naturita Bridge	22/06/93	-9.00	8.13	12.0	146.0	126.0	9.0		0.34	3.00	11.0		1362.0	26.00	151.0		28.8	77.00	137.
54	46854	San Miguel	Naturita MS	101.036	Naturita Bridge	29/06/93	-9.00	8.00	13.0	64.0	112.0	10.0		0.23	2.10	6.6		700.0	18.00	102.0		15.0	23.00	84.
54	46854	San Miguel	Naturita MS	101.038	Naturita Bridge	28/07/93	-9.00	8.60	16.0	94.0	140.0	9.0		0.00	1.40	1.9		0.0	20.00	27.0		0.0	29.00	22.
54	46854	San Miguel	Naturita MS	101.039	Naturita Bridge	31/07/93	-9.00	8.43	24.0	92.0	208.0	8.0		0.00	2.10	1.9		0.0	23.00	35.0		0.0	-9.00	17.
54	46854	San Miguel	Naturita MS	101.040	Naturita Bridge	29/08/93	-9.00	8.48	19.0	94.0	208.0	8.0		0.12	1.90	4.4		468.0	22.00	95.0		0.0		55
54	46854	San Miguel	Naturita MS	101.041	Naturita Bridge	31/08/93	-9.00	8.62	18.0	96.0	224.0	8.0		0.00	1.90	2.9		175.0	15.00	46.0		0.0		28
54	46854	San Miguel	Naturita MS	101.042	Naturita Bridge	15/09/93	-9.00	8.31	17.0	156.0	734.0	9.0		0.00		1.6		0.0	32.00	28.0		0.0		11
54	46854	San Miguel	Naturita MS	101.043	Naturita Bridge	31/10/93	-9.00	-9.00	-9.0	-9.0	-9.0	-9.0		0.00		1.6	-9.00	0.0	-9.00	36.0		0.0	18.00	30

kit #	river cd	river	school	station #	station name	date	flow	pH	temp	alk	hard	DO	cd dis	cd tot	cu dis	cu tot	fe dis	fe tot	mn dis	mn tot	pb dis	pb tot	zn dis	zn tot
54	46854	San Miguel	Naturita MS	101.044	Naturita Bridge	10/11/93	-9.00	-9.00	2.0	-9.0	-9.0	10.0		0.00		1.0		0.0	24.00	33.0		0.0	19.00	23.0
54	46854	San Miguel	Naturita MS	101.045	Naturita Bridge	09/12/93	-9.00	8.42	0.0	132.0	214.0	6.0		0.00		1.3		0.0	18.00	35.0		0.0	23.00	57.0
54	46854	San Miguel	Naturita MS	101.046	Naturita Bridge	29/01/94	-9.00	8.41	0.0	116.0	178.0	6.0		0.00		2.3		135.0	18.00	35.0		0.0	-9.00	41.0
54	46854	San Miguel	Naturita MS	101.047	Naturita Bridge	27/02/94	-9.00	8.72	3.0	124.0	318.0	6.0		0.00		1.6		189.0	38.00	57.0		0.0	28.00	32.0
54	46854	San Miguel	Naturita MS	101.048	Naturita Bridge	24/03/94	-9.00	8.70	8.0	114.0	246.0	5.0		0.00		2.1		247.0	33.00	48.0		0.0	21.00	80.0
54	46854	San Miguel	Naturita MS	101.049	Naturita Bridge	31/03/94	-9.00	8.49	11.0	130.0	246.0	4.0		0.00		1.8		124.0	11.00	39.0		0.0	19.00	50.0
54	46854	San Miguel	Naturita MS	101.050	Naturita Bridge	24/04/94	-9.00	8.29	10.0	86.0	138.0	5.0		0.19		8.3		1751.0	19.00	89.0		4.6	36.00	62.0
54	46854	San Miguel	Naturita MS	101.051	Naturita Bridge	18/05/94	-9.00	8.31	14.0	82.0	124.0	11.0	-9.00	0.25	-9.00	8.3	-9.00	1003.0	-9.00	93.0	-9.00	8.2	-9.00	99.0
54	46854	San Miguel	Naturita MS	101.052	Naturita Bridge	25/05/94	-9.00	8.10	12.0	80.0	132.0	9.0		0.14		6.6		361.0		47.0		3.6	55.00	79.0
54	46854	San Miguel	Naturita MS	101.053	Naturita Bridge	31/05/94	-9.00	7.87	16.0	68.0	100.0	10.0	0.11	0.99	0.10	23.0		2689.0		364.0	1.90	39.2		206.0
54	46854	San Miguel	Naturita MS	101.055	Naturita Bridge	23/06/94	-9.00	8.35	16.0	62.0	120.0	7.0		0.00		4.6		342.0		27.0		4.8	24.00	67.0
54	46854	San Miguel	Naturita MS	101.057	Naturita Bridge	30/06/94	-9.00	8.51	19.0	72.0	132.0	8.0		0.00		2.5		0.0		0.0		0.0	17.00	31.0
54	46854	San Miguel	Naturita MS	101.058	Naturita Bridge	29/07/94	-9.00	8.57	28.0	148.0	476.0	7.0		0.00		1.8		0.0		12.0		0.0		10.0
54	46854	San Miguel	Naturita MS	101.059	Naturita Bridge	31/07/94	-9.00	8.28	25.0	154.0	572.0	6.0		0.00		2.2		0.0	28.00	39.0		0.0	-9.00	10.0
54	46854	San Miguel	Naturita MS	101.060	Naturita Bridge	26/08/94	-9.00	8.43	17.0	212.0	774.0	8.0		0.00		0.0		0.0		0.0		0.0	15.00	0.0
54	46854	San Miguel	Naturita MS	101.061	Naturita Bridge	31/08/94	-9.00	8.54	22.0	186.0	704.0	9.0		0.00		0.0		0.0		0.0		0.0		0.0
54	46854	San Miguel	Naturita MS	101.062	Naturita Bridge	23/09/94	-9.00	9.07	17.0	94.0	192.0	8.0		0.00		2.1		0.0	20.00	30.0		0.0	16.00	0.0
54	46854	San Miguel	Naturita MS	101.063	Naturita Bridge	28/11/94	-9.00	8.42	0.0	24.0	206.0	12.0		0.00		1.2		115.0	20.00	39.0		0.0	29.00	39.0
54	46854	San Miguel	Naturita MS	101.064	Naturita Bridge	31/12/94	-9.00	8.13	0.0	118.0	176.0	9.0		0.00		1.9		0.0	21.00	25.0		0.0	49.00	56.0
54	46854	San Miguel	Naturita MS	101.065	Naturita Bridge	26/01/95	-9.00	8.60	2.0	114.0	252.0	12.0		0.00		2.2		0.0	24.00	32.0		0.0	37.00	33.0
54	46854	San Miguel	Naturita MS	102.001	W Uravan Bridge	07/12/91	-9.00	-9.00	0.0	348.0	416.0	10.0		0.00		1.6		415.0	56.00	76.0		0.0		11.0
54	46854	San Miguel	Naturita MS	102.002	W Uravan Bridge	25/01/92	-9.00	8.07	0.0	128.0	326.0	12.0		0.00	1.40	0.0		0.0	20.00	25.0		0.0	-9.00	0.0
54	46854	San Miguel	Naturita MS	102.003	W Uravan Bridge	21/02/92	-9.00	8.38	5.0	140.0	146.0	82.0	-9.00	0.10	-9.00	2.4	-9.00	2387.0	-9.00	130.0	-9.00	0.0	-9.00	41.0
54	46854	San Miguel	Naturita MS	102.004	W Uravan Bridge	08/03/92	-9.00	8.69	8.0	172.0	360.0	8.0		0.12		2.2		3057.0	20.00	115.0		0.0		51.0
54	46854	San Miguel	Naturita MS	102.005	W Uravan Bridge	23/03/92	-9.00	8.65	10.0	148.0	350.0	11.0		0.00		0.0	266.00	367.0	31.00	42.0		0.0	12.00	19.0
54	46854	San Miguel	Naturita MS	102.006	W Uravan Bridge	10/04/92	-9.00	7.99	9.0	78.0	122.0	9.0	-9.00	0.24	-9.00	8.2	-9.00	4827.0	-9.00	183.0	-9.00	12.5	-9.00	88.0
54	46854	San Miguel	Naturita MS	102.007	W Uravan Bridge	17/04/92	-9.00	8.34	8.0	90.0	132.0	7.0		0.00	1.90	4.1		1319.0	14.00	57.0		0.0		26.0
54	46854	San Miguel	Naturita MS	102.008	W Uravan Bridge	28/04/92	-9.00	8.51	15.0	94.0	150.0	9.0		0.00	3.60	5.1		1677.0	19.00	82.0		0.0	13.00	37.0
54	46854	San Miguel	Naturita MS	102.009	W Uravan Bridge	09/05/92	-9.00	8.17	11.0	124.0	232.0	9.0		0.65	3.30	16.1	132.00	5801.0	12.00	355.0		16.4		74.0
54	46854	San Miguel	Naturita MS	102.010	W Uravan Bridge	18/05/92	-9.00	8.36	17.0	96.0	180.0	9.0		0.00	3.10	4.0	254.00	428.0	22.00	31.0		0.0	11.00	21.0
54	46854	San Miguel	Naturita MS	102.011	W Uravan Bridge	27/05/92	-9.00	8.05	16.0	116.0	296.0	8.0	-9.00	2.82	-9.00	42.0	-9.00	5099.0	-9.00	928.0	-9.00	24.6	-9.00	281.0
54	46854	San Miguel	Naturita MS	102.012	W Uravan Bridge	31/05/92	-9.00	8.31	14.0	124.0	222.0	10.0	-9.00	0.00	-9.00	4.1	-9.00	2011.0	-9.00	78.0	-9.00	0.0	-9.00	37.0

kit #	river cd	river	school	station #	station name	date	flow	pH	temp	alk	hard	DO	cd dis	cd tot	cu dis	cu tot	fe dis	fe tot	mn dis	mn tot	pb dis	pb tot	zn dis	zn tot
54	46854	San Miguel	Naturita MS	102.013	W Uravan Bridge	07/06/92	-9.00	8.53	14.0	104.0	192.0	8.0		0.00	2.40	4.5		836.0		63.0		0.0	21.00	41.0
54	46854	San Miguel	Naturita MS	102.014	W Uravan Bridge	17/06/92	-9.00	8.29	12.0	96.0	194.0	11.0		0.00	2.10	3.4		291.0	14.00	32.0		0.0	11.00	25.0
54	46854	San Miguel	Naturita MS	102.015	W Uravan Bridge	30/06/92	-9.00	8.74	19.0	70.0	182.0	8.0		0.00	3.60	5.3	305.00	306.0	25.00	28.0		0.0	31.00	31.0
54	46854	San Miguel	Naturita MS	102.016	W Uravan Bridge	25/07/92	-9.00	8.19	20.0	162.0	280.0	6.0	-9.00	0.65	-9.00	22.4	-9.00	39975.0	-9.00	586.0	-9.00	27.5	-9.00	189.0
54	46854	San Miguel	Naturita MS	102.017	W Uravan Bridge	28/07/92	-9.00	8.38	18.0	104.0	166.0	8.0		0.00	3.50	5.7	435.00	1089.0	34.00	76.0		0.0	31.00	65.0
54	46854	San Miguel	Naturita MS	102.018	W Uravan Bridge	26/08/92	-9.00	8.76	19.0	132.0	434.0	10.0		0.00		1.2		617.0	10.00	32.0		0.0	15.00	16.0
54	46854	San Miguel	Naturita MS	102.019	W Uravan Bridge	29/08/92	-9.00	-9.00	20.0	-9.0	-9.0	8.0	-9.00	0.00	-9.00	1.6		173.0		0.0		0.0	-9.00	10.0
54	46854	San Miguel	Naturita MS	102.020	W Uravan Bridge	27/09/92	-9.00	8.40	16.0	116.0	782.0	8.0		0.00		1.1		0.0		0.0		0.0		0.0
54	46854	San Miguel	Naturita MS	102.021	W Uravan Bridge	30/09/92	-9.00	8.26	19.0	170.0	856.0	8.0		0.00	-9.00	0.0		0.0		0.0		0.0	-9.00	0.0
54	46854	San Miguel	Naturita MS	102.022	W Uravan Bridge	25/10/92	-9.00	8.30	13.0	130.0	434.0	9.0		0.00	7.80	8.4		0.0		0.0		0.0		0.0
54	46854	San Miguel	Naturita MS	102.023	W Uravan Bridge	23/11/92	-9.00	8.50	3.0	140.0	456.0	12.0	-9.00	0.00	-9.00	2.4		192.0	15.00	11.0		0.0		0.0
54	46854	San Miguel	Naturita MS	102.024	W Uravan Bridge	31/12/92	-9.00	8.35	0.0	154.0	428.0	12.0		0.00	2.70	2.0		2534.0	13.00	58.0		0.0	-9.00	0.0
54	46854	San Miguel	Naturita MS	102.025	W Uravan Bridge	31/01/93	-9.00	8.70	3.0	162.0	412.0	11.0		0.13	2.40	4.1		192.0	34.00	48.0		0.0		0.0
54	46854	San Miguel	Naturita MS	102.026	W Uravan Bridge	24/02/93	-9.00	8.45	5.0	142.0	344.0	10.0		0.00	2.00	2.6	331.00	331.0	56.00	56.0		0.0		0.0
54	46854	San Miguel	Naturita MS	102.027	W Uravan Bridge	20/03/93	-9.00	8.52	11.0	146.0	330.0	9.0	-9.00	0.00	-9.00	6.9	-9.00	3382.0	-9.00	165.0	-9.00	0.0	-9.00	44.0
54	46854	San Miguel	Naturita MS	102.028	W Uravan Bridge	31/03/93	-9.00	8.33	10.0	116.0	244.0	9.0	-9.00	0.00	-9.00	3.4	-9.00	769.0	-9.00	59.0	-9.00	0.0	-9.00	24.0
54	46854	San Miguel	Naturita MS	102.029	W Uravan Bridge	22/04/93	-9.00	8.11	9.0	98.0	132.0	10.0	-9.00	0.26	-9.00	10.4	-9.00	3164.0	-9.00	246.0	-9.00	16.8	-9.00	96.0
54	46854	San Miguel	Naturita MS	102.030	W Uravan Bridge	29/04/93	-9.00	8.43	10.0	108.0	132.0	8.0	-9.00	0.13	-9.00	7.6	-9.00	2299.0	-9.00	182.0	-9.00	12.6	-9.00	59.0
54	46854	San Miguel	Naturita MS	102.031	W Uravan Bridge	20/05/93	-9.00	8.36	15.0	102.0	158.0	8.0		0.83	2.40	8.6		3912.0	14.00	182.0		0.0		48.0
54	46854	San Miguel	Naturita MS	102,032	W Uravan Bridge	25/05/93	-9.00	8.05	13.0	98.0	166.0	-9.0		0.12	2.20	6.3		3946.0		159.0		11.0		59.0
54	46854	San Miguel	Naturita MS	102.033	W Uravan Bridge	27/05/93	-9.00	8.22	10.0	110.0	158.0	-9.0		0.61	12.10	22.8		4292.0	21.00	441.0		48.1	13.00	223.0
54	46854	San Miguel	Naturita MS	102.034	W Uravan Bridge	19/06/93	-9.00	8.41	16.0	84.0	148.0	6.0		0.00	4.20	5.7		530.0	21.00	72.0		10.2	23.00	47.0
54	46854	San Miguel	Naturita MS	102.035	W Uravan Bridge	22/06/93	-9.00	8.20	15.0	76.0	150.0	10.0		0.23	3.50	11.4	116.00	1459.0	23.00	152.0		25.2	34.00	110.0
54	46854	San Miguel	Naturita MS	102.036	W Uravan Bridge	29/06/93	-9.00	8.31	15.0	70.0	136.0	10.0		0.13	2.10	7.0		679.0		84.0		12.4	11.00	65.0
54	46854	San Miguel	Naturita MS	102.037	W Uravan Bridge	26/07/93	-9.00	8.41	20.5	100.0	176.0	8.0		0.00	1.40	1.3		0.0	11.00	24.0		0.0		15.0
54	46854	San Miguel	Naturita MS	102.038	W Uravan Bridge	28/07/93	-9.00	8.43	19.0	110.0	334.0	9.0		0.00	1.10	1.8		0.0		14.0		0.0		0.0
54	46854	San Miguel	Naturita MS	102.039	W Uravan Bridge	31/07/93	-9.00	8.56	25.0	120.0	316.0	9.0		0.00	1.10	1.7		114.0	11.00	33.0		0.0		0.0
54	46854	San Miguel	Naturita MS	102.040	W Uravan Bridge	29/08/93	-9.00	8.44	20.0	116.0	322.0	8.0		0.16	2.30	5.0	623.00	1727.0	89.00	210.0		0.0	19.00	49.0
54	46854	San Miguel	Naturita MS	102.041	W Uravan Bridge	31/08/93	-9.00	8.34	19.0	114.0	326.0	8.0		0.00		1.9		600.0	14.00	77.0		0.0		17.0
54	46854	San Miguel	Naturita MS	102.042	W Uravan Bridge	29/09/93	-9.00	8.39	18.0	158.0	644.0	9.0		0.00		1.4		0.0		14.0		0.0	-9.00	28.0
54	46854	San Miguel	Naturita MS	102.043	W Uravan Bridge	31/10/93	-9.00	-9.00	-9.0	-9.0	-9.0	-9.0		0.00		1.9		244.0	27.00	59.0		0.0	19.00	17.0
54	46854	San Miguel	Naturita MS	102.044	W Uravan Bridge	30/11/93	-9.00	8.40	3.0	154.0	392.0	8.0		0.00		1.3		264.0	21.00	54.0		0.0		15.0

kit #	river cd	river	school	station #	station name	date	flow	pH	temp	alk	hard	DO	cd dis	cd tot	cu dis	cu tot	fe dis	fe tot	mn dis	mn tot	pb dis	pb tot	zn dis	zn tot
54	46854	San Miguel	Naturita MS	102.046	W Uravan Bridge	29/01/94	-9.00	8.39	0.0	114.0	362.0	8.0		0.00		1.4		180.0	54.00	69.0		0.0	18.00	21.0
54	46854	San Miguel	Naturita MS	102.047	W Uravan Bridge	27/02/94	-9.00	8.08	6.0	120.0	398.0	5.0	0.46	2.81	0.50	25.0	-9.00	0.0	52.00	897.0		12.9	28.00	212.0
54	46854	San Miguel	Naturita MS	102.048	W Uravan Bridge	24/03/94	-9.00	9.00	9.0	128.0	188.0	5.0		0.00		2.1		562.0	26.00	63.0		0.0	-9.00	15.0
54	46854	San Miguel	Naturita MS	102.049	W Uravan Bridge	31/03/94	-9.00	8.54	11.0	108.0	304.0	5.0		0.00		1.7		338.0	18.00	47.0		0.0		11.0
54	46854	San Miguel	Naturita MS	102.050	W Uravan Bridge	24/04/94	-9.00	8.14	11.0	88.0	132.0	4.0		0.00	1.20	5.1		968.0	25.00	101.0		3.3	15.00	44.0
54	46854	San Miguel	Naturita MS	102.051	W Uravan Bridge	18/05/94	-9.00	8.30	15.0	84.0	138.0	8.0		0.00		5.4		1287.0	14.00	138.0		3.4	16.00	81.0
54	46854	San Miguel	Naturita MS	102.052	W Uravan Bridge	25/05/94	-9.00	8.22	12.0	88.0	144.0	9.0		0.00		6.2		0.0		0.0		6.8	36.00	34.0
54	46854	San Miguel	Naturita MS	102.053	W Uravan Bridge	31/05/94	-9.00	7.93	17.0	82.0	122.0	10.0		0.83		23.2		3060.0	27.00	460.0		50.8	24.00	315.0
54	46854	San Miguel	Naturita MS	102.054	W Uravan Bridge	21/06/94	-9.00	8.40	17.0	72.0	142.0	8.0		0.00		3.3		234.0	17.00	41.0		0.0	109.00	106.0
54	46854	San Miguel	Naturita MS	102.055	W Uravan Bridge	23/06/94	-9.00	8.59	17.0	74.0	136.0	8.0		0.00	1.00	4.0		323.0		44.0		2.4	15.00	51.0
54	46854	San Miguel	Naturita MS	102.056	W Uravan Bridge	25/06/94	-9.00	8.72	21.0	74.0	72.0	8.0		0.00		4.3		341.0		45.0		2.8	13.00	47.0
54	46854	San Miguel	Naturita MS	102.057	W Uravan Bridge	30/06/94	-9.00	8.47	21.0	82.0	174.0	8.0		0.00		2.4		152.0		29.0		0.0	16.00	34.0
54	46854	San Miguel	Naturita MS	102.058	W Uravan Bridge	29/07/94	-9.00	8.57	28.0	120.0	564.0	7.0		0.00		1.7		0.0	12.00	21.0		0.0		0.0
54	46854	San Miguel	Naturita MS	102.059	W Uravan Bridge	31/07/94	-9.00	8.35	22.0	132.0	690.0	8.0		0.00		0.0		0.0	31.00	40.0		0.0		0.0
54	46854	San Miguel	Naturita MS	102.060	W Uravan Bridge	26/08/94	-9.00	8.42	19.0	160.0	876.0	8.0		0.00		0.0		224.0	32.00	57.0		0.0	10.00	0.0
54	46854	San Miguel	Naturita MS	102.061	W Uravan Bridge	31/08/94	-9.00	8.76	22.0	172.0	958.0	7.0		0.00		0.0		0.0	31.00	32.0		0.0		0.0
54	46854	San Miguel	Naturita MS	102.063	W Uravan Bridge	14/11/94	-9.00	8.67	3.0	44.0	304.0	10.0		0.00		1.9		0.0	22.00	30.0		0.0	19.00	23.0
54	46854	San Miguel	Naturita MS	102.064	W Uravan Bridge	31/12/94	-9.00	8.35	1.0	120.0	362.0	11.0		0.00		3.9		0.0	55.00	71.0		0.0	16.00	22.0
54	46854	San Miguel	Naturita MS	102.065	W Uravan Bridge	31/01/95	-9.00	8.56	2.0	136.0	390.0	12.0		0.00		4.4		0.0	50.00	52.0		0.0	13.00	20.0
148	39760	Dolores	Gateway School	290.001	Hwy 141 Bridge	17/11/93	-9.00	8.25	4.0	178.0	412.0	10.8	-9.00	0.00	-9.00	0.0	-9.00	224.0	-9.00	50.0	-9.00	0.0	-9.00	0.0
148	39760	Dolores	Gateway School	290.002	Hwy 141 Bridge	13/12/93	-9.00	8.04	0.0	177.0	398.0	11.7	-9.00	0.00	-9.00	1.3	-9.00	180.0	-9.00	41.0	-9.00	0.0	-9.00	0.0
148	39760	Dolores	Gateway School	290.003	Hwy 141 Bridge	19/01/94	-9.00	8.16	0.0	188.0	396.0	6.0	-9.00	0.00	-9.00	0.0	-9.00	188.0	-9.00	43.0	-9.00	0.0	-9.00	0.0
148	39760	Dolores	Gateway School	290.004	Hwy 141 Bridge	16/02/94	-9.00	8.06	0.0	158.0	394.0	11.7	-9.00	0.00	-9.00	0.0	-9.00	267.0	-9.00	58.0	-9.00	0.0	-9.00	0.0
148	39760	Dolores	Gateway School	290.005	Hwy 141 Bridge	09/03/94	-9.00	8.30	7.0	170.0	450.0	9.7	-9.00	0.11	-9.00	4.6	-9.00	4354.0	-9.00	147.0	-9.00	0.0	-9.00	30.0
148	39760	Dolores	Gateway School	290.006	Hwy 141 Bridge	23/03/94	-9.00	8.28	8.0	158.0	348.0	9.5	-9.00	0.14	-9.00	4.8	-9.00	2849.0	-9.00	172.0	-9.00	0.0	-9.00	42.0
148	39760	Dolores	Gateway School	290.007	Hwy 141 Bridge	06/04/94	-9.00	8.13	8.0	139.0	238.0	10.4	-9.00	0.00	-9.00	5.0	-9.00	2749.0	-9.00	144.0	-9.00	0.0	-9.00	39.0
148	39760	Dolores	Gateway School	290.008	Hwy 141 Bridge	13/04/94	-9.00	8.24	11.0	142.0	280.0	9.0	-9.00	0.00	-9.00	3.4	-9.00	1555.0	-9.00	140.0	-9.00	0.0	-9.00	43.0
148	39760	Dolores	Gateway School	290.009	Hwy 141 Bridge	27/04/94	-9.00	8.26	9.9	100.0	199.0	9.2	-9.00	0.00	-9.00	4.9	-9.00	1518.0	-9.00	93.0	-9.00	0.0	-9.00	30.0
148	39760	Dolores	Gateway School	290.010	Hwy 141 Bridge	04/05/94	-9.00	8.24	11.0	174.0	235.0	8.5	-9.00	1.62	-9.00	18.8	-9.00	0.0	-9.00	656.0	-9.00	17.3	-9.00	121.0
148	39760	Dolores	Gateway School	290.011	Hwy 141 Bridge	11/05/94	-9.00	8.21	15.0	116.0	152.0	8.3	-9.00	0.10	-9.00	8.3	-9.00	2590.0	-9.00	154.0	-9.00	2.7	-9.00	32.0
148	39760	Dolores	Gateway School	290.018	Hwy 141 Bridge	13/07/94	-9.00	8.46	25.0	56.0	360.0	7.8	-9.00	0.00	-9.00	3.3	-9.00	184.0	-9.00	20.0	-9.00	0.0	-9.00	27.0
148	39760	Dolores	Gateway School	290.019	Hwy 141 Bridge	20/07/94	-9.00	8.41	28.0	124.0	364.0	7.5	-9.00	0.00	-9.00	2.7	-9.00	215.0	-9.00	55.0	-9.00	0.0	-9.00	16.0

kit #	river cd	river	school	station #	station name	date	flow	pH	temp	alk	hard	DO	cd dis	cd tot	cu dis	cu tot	fe dis	fe tot	mn dis	mn tot	pb dis	pb tot	zn dis	zn tot
148	39760	Dolores	Gateway School	290.020	Hwy 141 Bridge	27/07/94	-9.00	8.44	25.0	126.0	384.0	7.4	-9.00	0.00	-9.00	2.2	-9.00	126.0	-9.00	34.0	-9.00	0.0	-9.00	16.0
148	39760	Dolores	Gateway School	290.021	Hwy 141 Bridge	10/08/94	-9.00	8.23	23.0	110.0	378.0	8.3	-9.00	0.00	-9.00	1.4	-9.00	266.0	-9.00	57.0	-9.00	0.0	-9.00	18.0
148	39760	Dolores	Gateway School	290.022	Hwy 141 Bridge	31/08/94	-9.00	8.33	20.0	166.0	418.0	5.6	-9.00	0.00	-9.00	10.8	-9.00	1983.0	-9.00	194.0	-9.00	0.0	-9.00	23.0
148	39760	Dolores	Gateway School	290.023	Hwy 141 Bridge	14/09/94	-9.00	8.46	17.0	130.0	506.0	8.3	-9.00	0.00	-9.00	2.2	-9.00	398.0	-9.00	100.0	-9.00	0.0	-9.00	17.0
148	39760	Dolores	Gateway School	290.024	Hwy 141 Bridge	19/10/94	-9.00	8.37	11.0	128.0	336.0	8.4	-9.00	0.00	-9.00	6.9	-9.00	734.0	-9.00	44.0	-9.00	0.0	-9.00	14.0
148	39760	Dolores	Gateway School	290.027	Hwy 141 Bridge	09/01/95	-9.00	8.18	6.0	-9.0	326.0	-9.0	-9.00	0.00	-9.00	0.0	-9.00	173.0	-9.00	43.0	-9.00	0.0	-9.00	22.0
148	39760	Dolores	Gateway School	290.028	Hwy 141 Bridge	17/02/95	-9.00	8.47	7.0	152.0	378.0	10.6	-9.00	0.00	-9.00	0.0	-9.00	272.0	-9.00	57.0	-9.00	0.0	-9.00	17.0
160	46866	San Miguel	Norwood HS	433.001	Norwood Hill	10/11/94	3.90	8.25	4.0	102.0	200.0	12.0	-9.00	0.32	-9.00	3.4	-9.00	0.0	-9.00	27.0	-9.00	0.0	-9.00	86.0
160	46866	San Miguel	Norwood HS	433.003	Norwood Hill	10/01/95	-9.00	8.15	0.0	96.0	210.0	12.0	-9.00	0.14	-9.00	1.6	-9.00	0.0	-9.00	0.0	-9.00	0.0	-9.00	66.0
160	46866	San Miguel	Norwood HS	433.004	Norwood Hill	09/02/95	3.55	7.94	0.0	84.0	190.0	12.0	-9.00	0.00	-9.00	1.5	-9.00	0.0	-9.00	0.0	-9.00	0.0	-9.00	58.0
160	46866	San Miguel	Norwood HS	433.005	Norwood Hill	07/03/95	-9.00	8.26	0.0	108.0	188.0	13.0	-9.00	0.00	-9.00	2.5	-9.00	0.0	-9.00	17.0	-9.00	0.0	-9.00	66.0
160	46866	San Miguel	Norwood HS	433.006	Norwood Hill	24/03/95	-9.00	8.60	5.0	120.0	188.0	13.0	-9.00	0.00	-9.00	3.2	-9.00	0.0	-9.00	40.0	-9.00	0.0	-9.00	76.0

Example Data Display and Discussion for the Dolores River Watershed

Explanation of Graphical Data Display

The following pages show graphical displays of data obtained by students in the Dolores River Watershed. Alongside the graphs is a summary of observations about the variable. Concentration and reporting units are shown on the vertical scale (Y-axis), and the date a sample was taken is shown on the horizontal axis (X-axis). The same horizontal scale is used for all the graphs and runs from December 1991 to April 1995. A line joins the points if measurements were continuous. Breaks are seen in the line if a measurement for that date was unavailable or found to be incorrect during the process of validation.

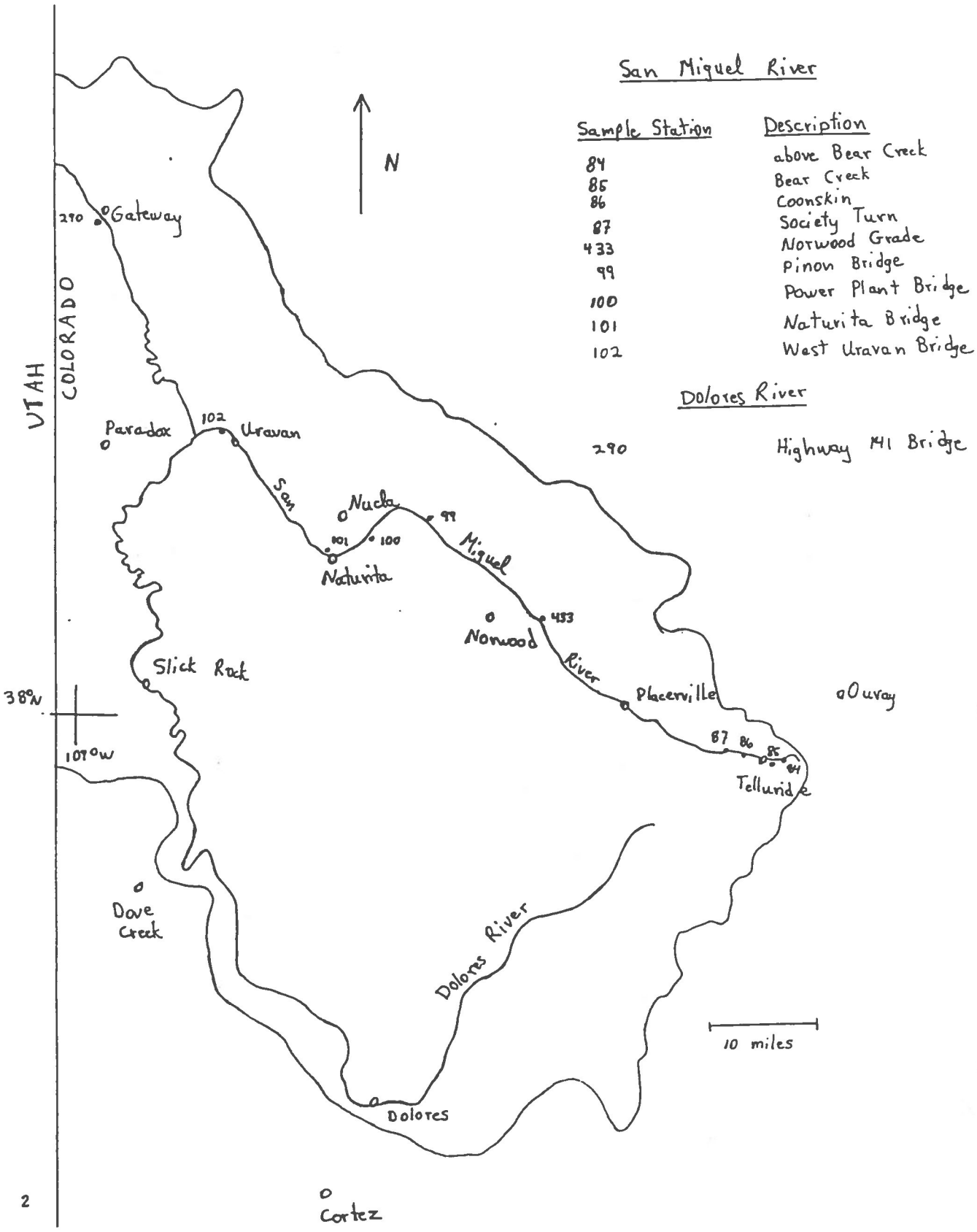
The first set of graphs display data for all variables measured at individual stations for the entire sampling period. Seven graphs are shown in the following order: 1) pH; 2) hardness and alkalinity; 3) temperature and dissolved oxygen; 4) total and dissolved iron; 5) total and dissolved manganese and zinc; 6) total and dissolved copper and cadmium; and 7) total and dissolved lead. Variables that tend to be related to one another and that can be shown on the same scale are graphed together. This makes it easier to visualize how they change together or in opposite manners. Hardness and alkalinity tend to change in the same direction. Temperature and dissolved oxygen often change in opposite directions.

Most of the schools in the Dolores River Watershed take a filtered sample for metals in order to determine the concentration of dissolved metals (see text under METALS). Total and dissolved metal concentrations change in the same direction and are therefore graphed together. The concentration of suspended metals is equal to the difference between the total and dissolved concentrations.

Each variable is plotted on the same vertical scale in all graphs so that concentrations can be easily compared between stations. If concentrations are much higher at one station than at another station, it is more difficult to read the lower concentration. This is illustrated by the large scale needed to show manganese and zinc at station 84 (graph 5). Concentrations of manganese and zinc are difficult to read on graphs of other stations because they are so much lower, but the data are still in the printout. Schools or other groups can change the scale in their own Quattro Pro software for better visualization.

The second set of seven graphs shows the same variables for a two-day time period from upstream to downstream along the San Miguel River. Data used for these graphs were from samples taken in the afternoon on April 28 or April 30, 1992. At the present, this is the closest we can come to displaying a snapshot of water chemistry on the San Miguel River.

Dolores Watershed map



Graphs of all variables for individual stations

Dolores River Watershed—San Miguel River

Station 84—above Bear Creek

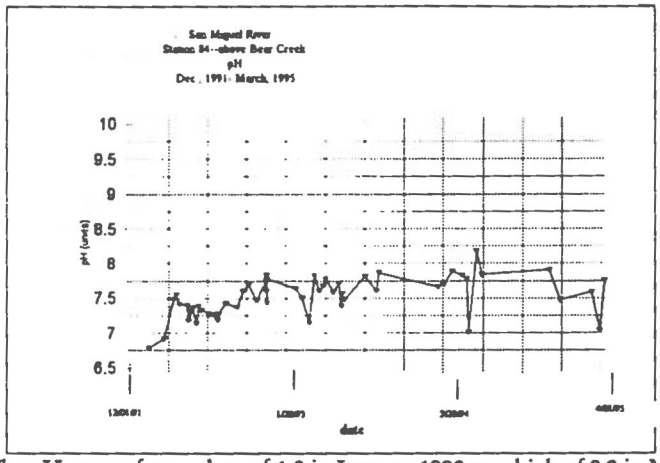


Figure 1 The pH ranges from a low of 6.8 in January 1992 to a high of 8.2 in May 1994. The mean pH is tending to rise over the sampling period from approximately 7 to 7.5. The pH tends to show the lowest values in the winter or spring.

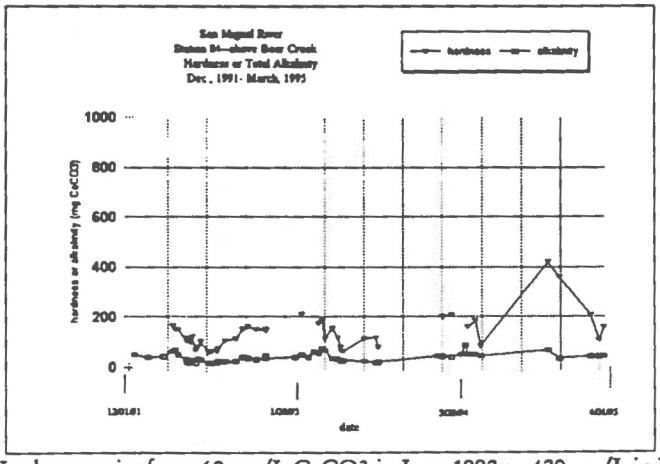


Figure 2 Hardness varies from 60 mg/L CaCO3 in June 1992 to 420 mg/L in May 1994. Two values during that time period were higher than the mean of approximately 100 mg/L. Total alkalinity varies from 16 mg/L in June 1992 to 88 mg/L in April 1994. Values for total alkalinity are consistently lower than for hardness.

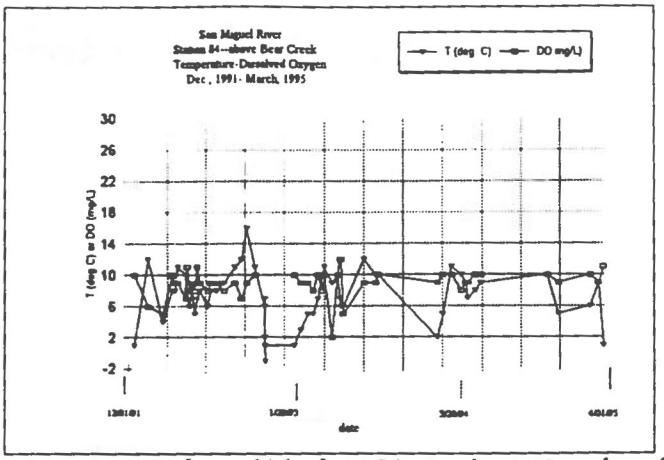


Figure 3 Temperature varies from a high of 16 °C in October 1992 to a low of -1 °C in November 1992. The temperature averages about 7.5 °C. Dissolved oxygen shows a low of 2 mg/L and also a high of 12 mg/L in May 1993. Dissolved oxygen averages about 9 mg/L.

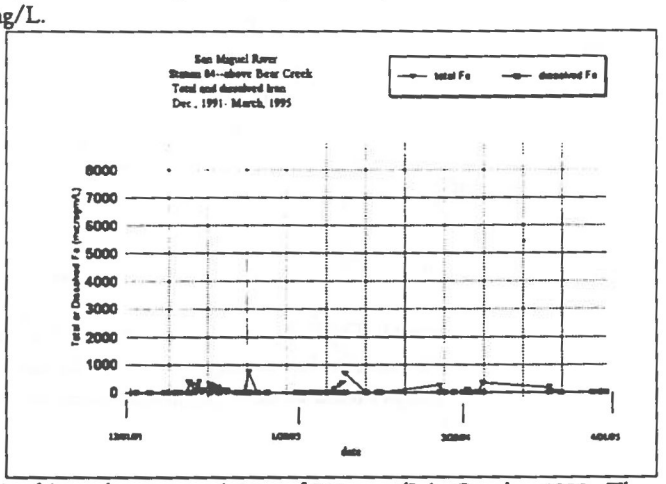


Figure 4 Total iron shows a maximum of 760 μgm/L in October 1992. The maximum dissolved iron was 120 μgm/L in July 1992. The low values for dissolved iron show that most iron in the water was not dissolved.

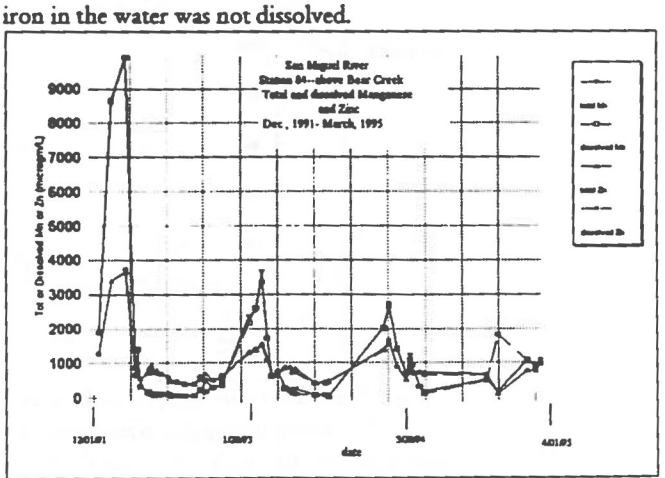


Figure 5 Total and dissolved manganese showed maximum concentrations of 10,000 μgm/L in February 1992. All manganese present in the water is dissolved. Manganese peaked again in early March 1993 and early February 1994. Total and dissolved zinc show the same trends as manganese, although its concentrations are mostly lower. From April to November zinc concentrations are higher than manganese.

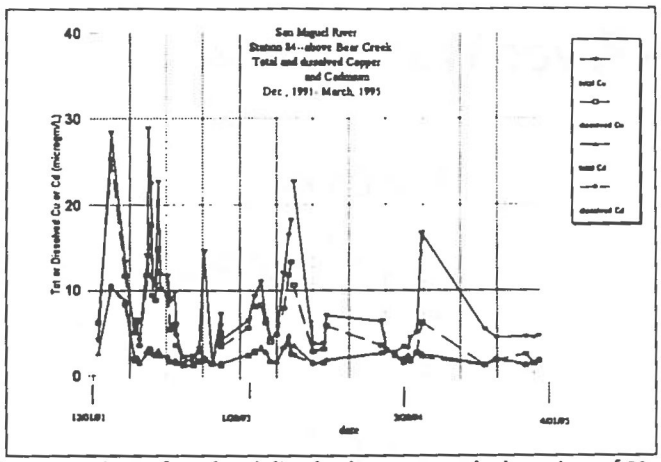


Figure 6 Concentrations of total and dissolved copper reached maxima of 28 µgm/L in January 1992 and 29 µgm/L in late April 1992. Total and dissolved cadmium followed a similar trend. Prior to September 1993, most of the copper and cadmium in the water is dissolved. Compare these trends with manganese and zinc in graph 5.

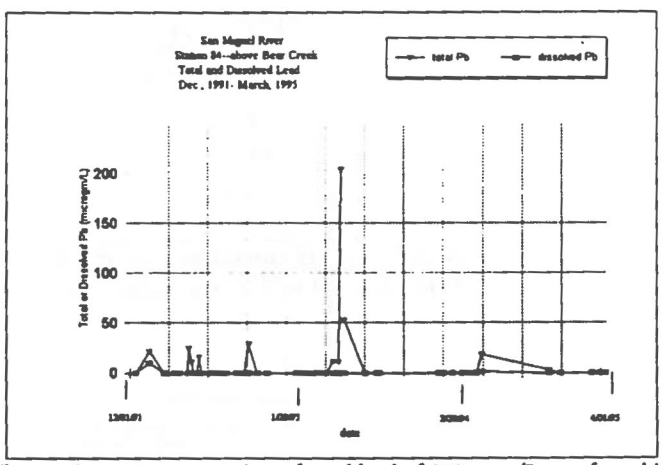


Figure 7 The maximum concentration of total lead of 200 µgm/L was found in May 1993. Dissolved lead was not detectable except in the first sample.

Dolores River Watershed

Bear Creek

Station 85—Bear Creek

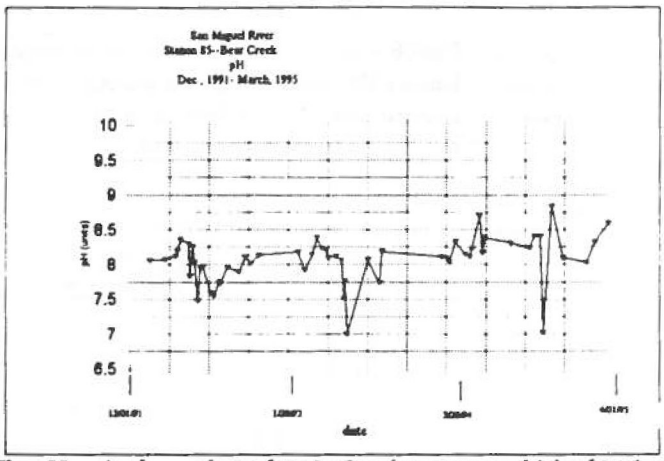


Figure 8 The pH varies from a low of 7.0 in October 1993 to a high of 8.8 in October 1994. Mean pH tends to rise slightly over the sampling period from 7.8 to 8.2

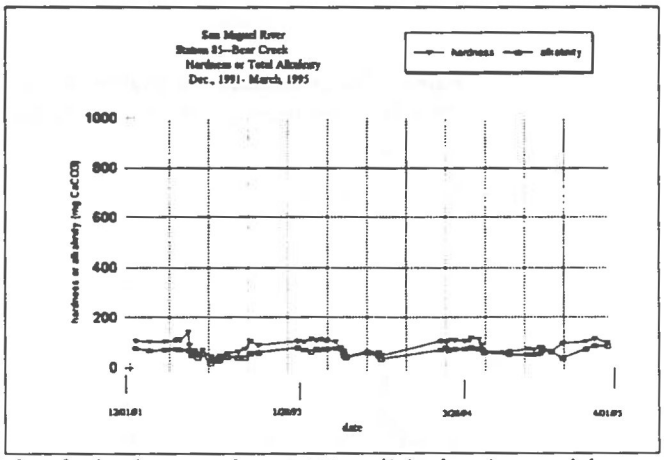


Figure 9 Values for hardness are close to 100 mg/L in the winter and decrease to around 40 mg/L during the summer. Values for total alkalinity are somewhat less than those for hardness, but follow the same trend

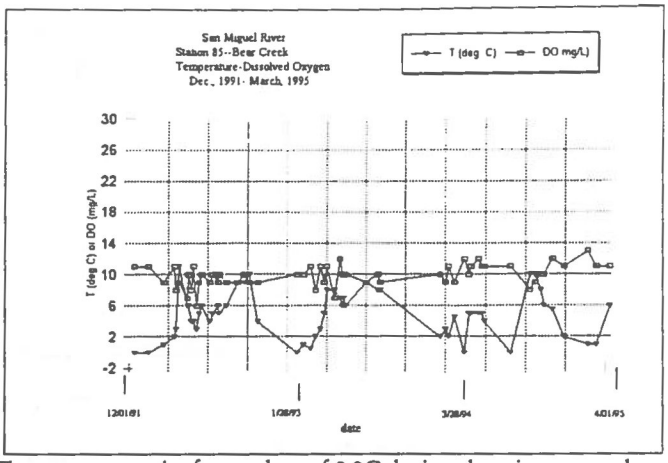


Figure 10 Temperature varies from a low of 0 °C during the winter months to a high of 11 °C in April 1992. In general, water temperatures seem to be the highest in September and early October. Dissolved oxygen shows a narrow range of concentration. It averages about 10 mg/L.

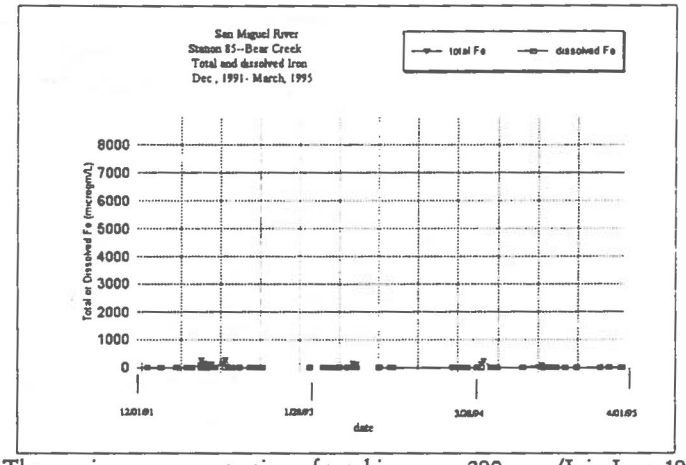


Figure 11 The maximum concentration of total iron was 290 µgm/L in June 1992. This is less than half the maximum iron concentration at station 84 above Bear Creek.

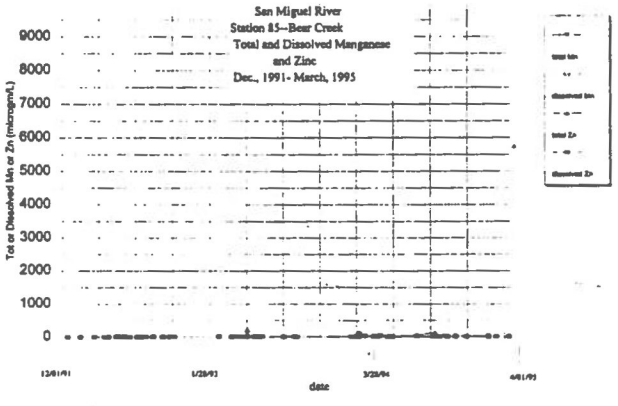


Figure 12 Concentrations of manganese and zinc can hardly be seen when graphed on the same scale as station 84. The high of 130 µgm/L was found in April 1993. This sample also contained the highest total zinc of 220 µgm/L.

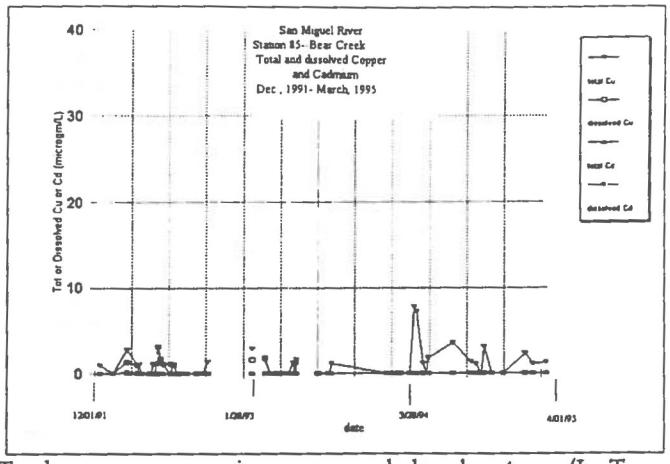


Figure 13 Total copper concentrations were mostly less than 4 μgm/L. Two values were found above 7 μgm/L in April 1994. There is no detectable cadmium at this station.

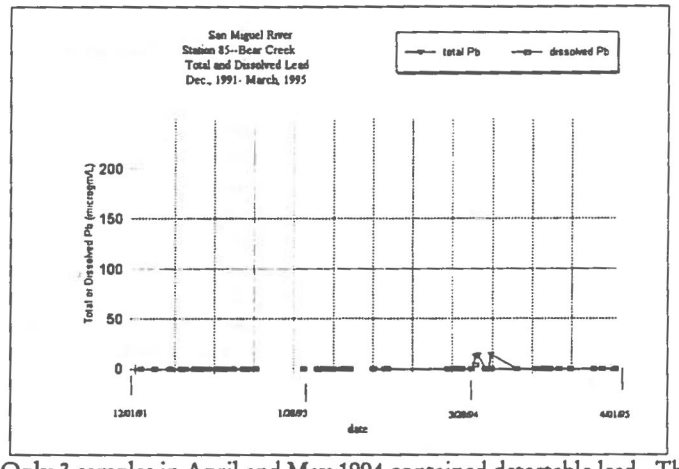


Figure 14 Only 3 samples in April and May 1994 contained detectable lead. The high value was 15 μgm/L.

Dolores River Watershed

San Miguel River

Station 86—Coonskin

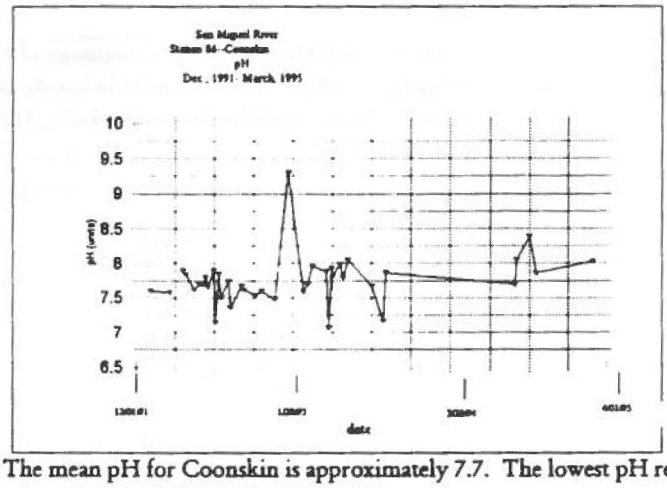


Figure 15 The mean pH for Coonskin is approximately 7.7. The lowest pH recorded was 7.1 at the end of April 1993. The high pH recorded was 9.3 in December of 1992.

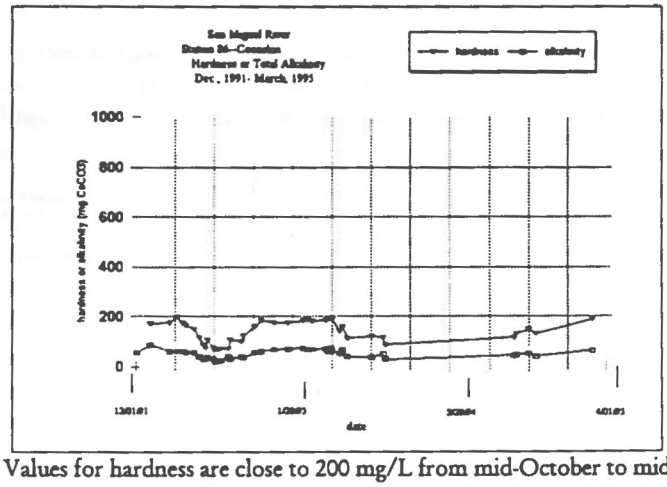


Figure 16 Values for hardness are close to 200 mg/L from mid-October to mid-April and drop to about 100 mg/L from April to October. Values for total alkalinity average about 60 mg/L and follow the same trend as hardness.

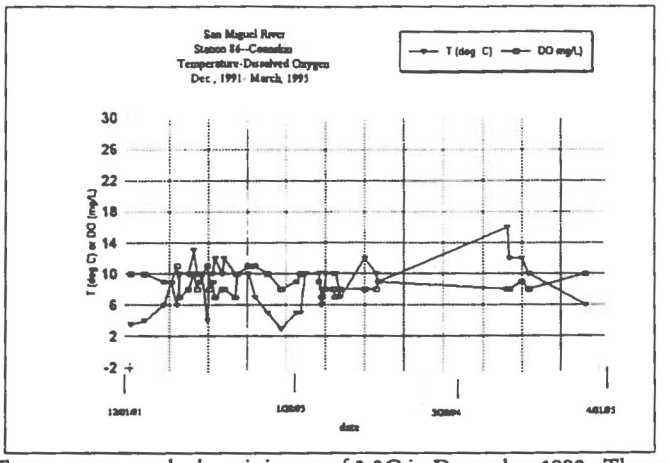


Figure 17 Temperature reached a minimum of 3 °C in December 1992. The maximum temperature of 15 °C was recorded in late April 1992. Maximum dissolved oxygen of 11 mg/L was recorded in November 1992. The mean dissolved oxygen concentration is about 9 mg/L.

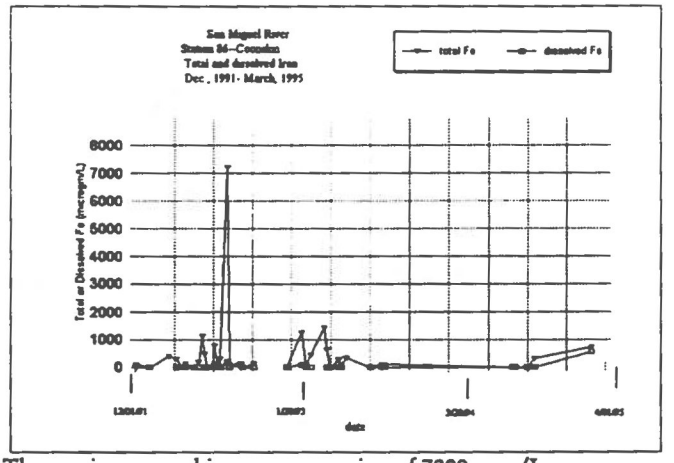


Figure 18 The maximum total iron concentration of 7200 μgm/L was measured in July 1992. Other peaks of total iron appear from January to April 1993. Except for the last sample, dissolved iron cannot be found in significant quantities.

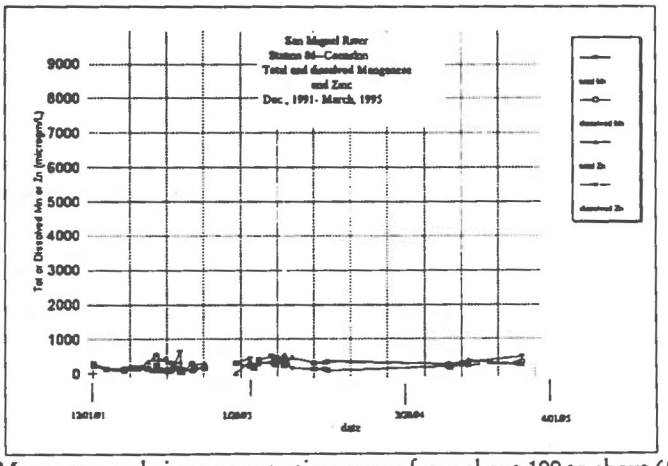


Figure 19 Manganese and zinc concentrations range from about 100 to about 600 μgm/L. Almost all the manganese and zinc is dissolved. Concentrations are difficult to see when graphed on the same scale used for station 84.

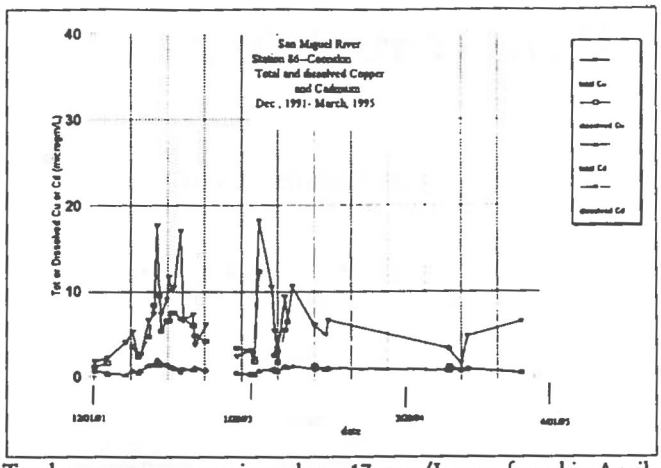


Figure 20 Total copper concentrations above 17 µgm/L were found in April and July 1992 and February 1993. Before May 1993, most of the total copper is also dissolved, but after May, dissolved copper drops to very low concentrations. The high total cadmium concentration of 2 µgm/L was found in May 1992. Similar to copper, most of the cadmium is dissolved.

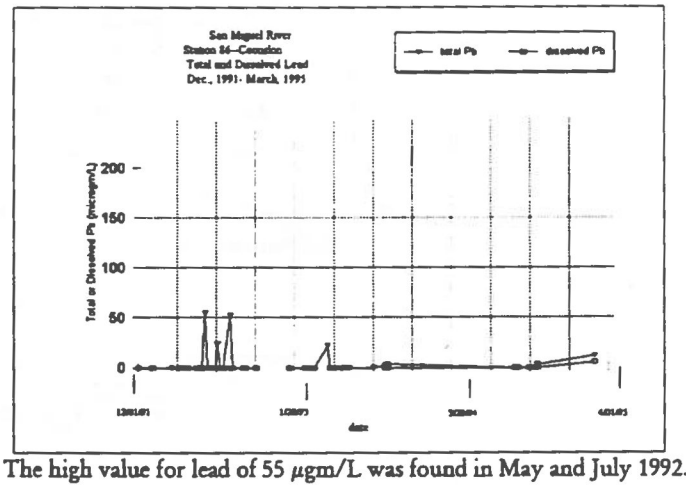


Figure 21 The high value for lead of 55 µgm/L was found in May and July 1992. There was no detectable dissolved lead at this station.

Dolores River Watershed

San Miguel River

Station 87—Society Turn

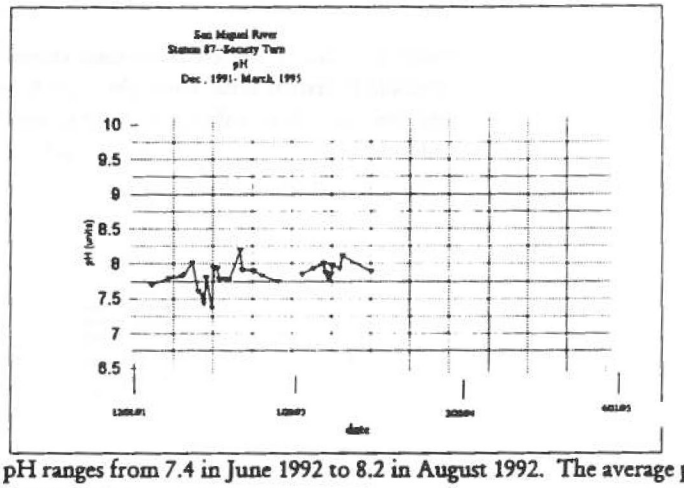


Figure 22 pH ranges from 7.4 in June 1992 to 8.2 in August 1992. The average pH is about 7.8 at this station.

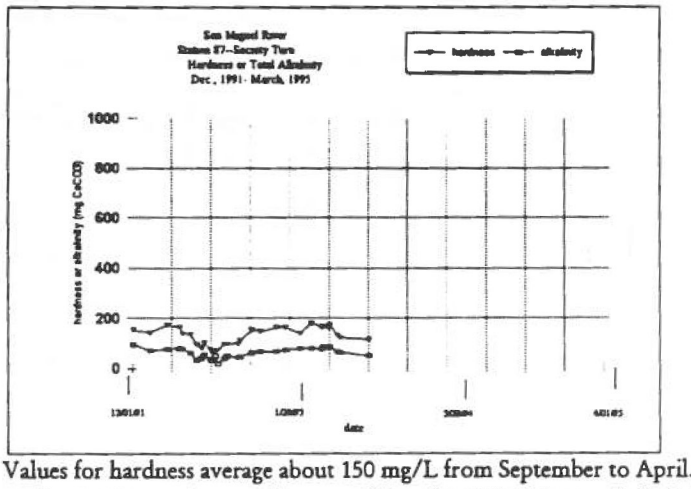


Figure 23 Values for hardness average about 150 mg/L from September to April. From September to April values are closer to 100 mg/L. Values for total alkalinity are about half those for hardness and they follow the same trend that hardness does.

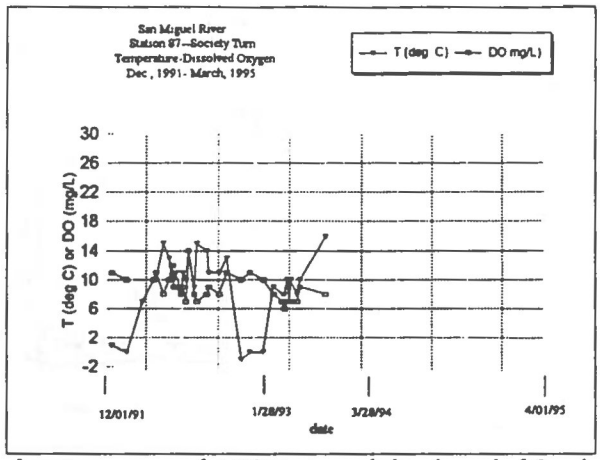


Figure 24 The low temperature of -1 °C was recorded at the end of October 1992. The high value of 16 °C was recorded in July 1993. The average concentration for dissolved oxygen at this station is about 9.5 mg/L.

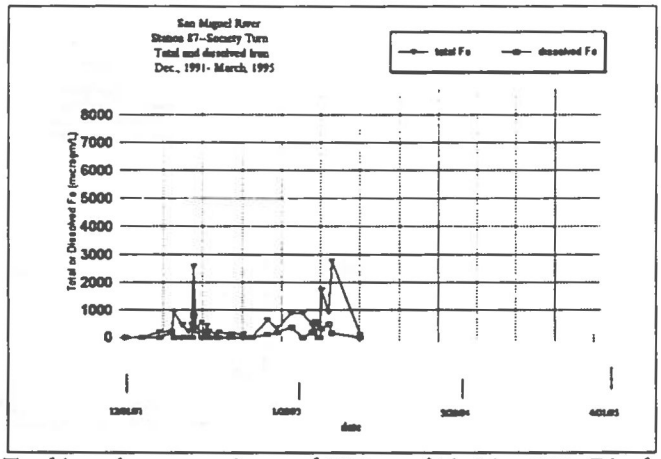


Figure 25 Total iron shows a maximum of 2800 µgm/L in May 1993. Dissolved iron concentrations are less than half of the total iron which means the iron is present mostly as suspended sediments.

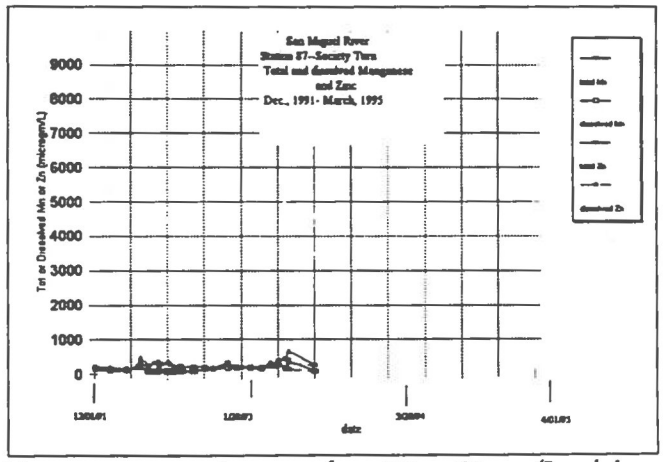


Figure 26 Manganese concentrations range from 100 to 400 µgm/L and show a maximum in May 1993. Zinc concentrations are about twice the manganese concentrations and show a maximum concentration of 670 µgm/L in May 1993. Most of the manganese and zinc is dissolved.

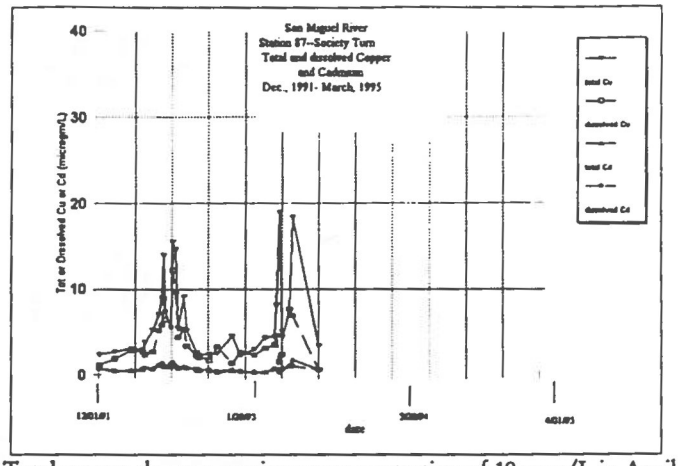


Figure 27 Total copper shows a maximum concentration of 19 μgm/L in April 1993. Except for the last 6 samples taken in 1993, most of the copper is dissolved. Cadmium concentrations are all less that 2 μgm/L.

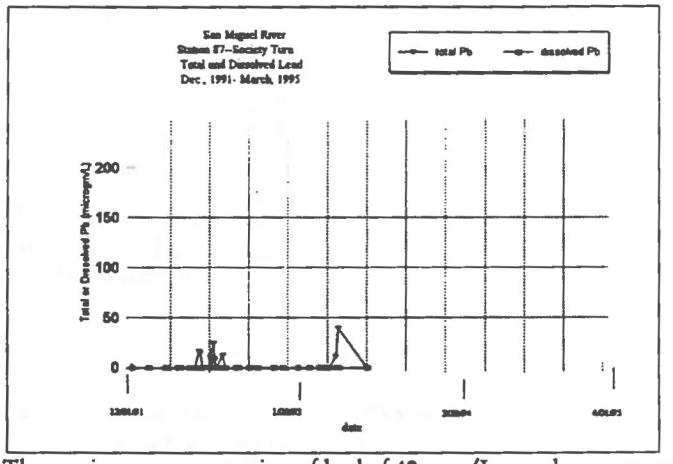


Figure 28 The maximum concentration of lead of 40 μgm/L was also measured in April 1993. No dissolved lead was found at this station.

Dolores River Watershed

San Miguel River

Station 433—Norwood Grade

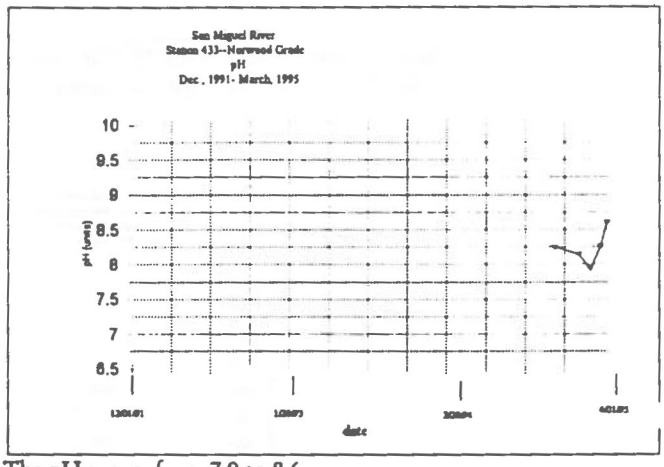


Figure 29 The pH ranges from 7.9 to 8.6.

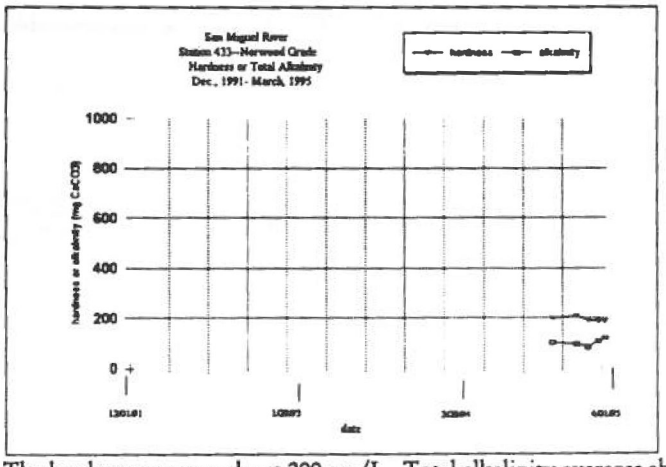


Figure 30 The hardness averages about 200 mg/L. Total alkalinity averages about 100 mg/L.

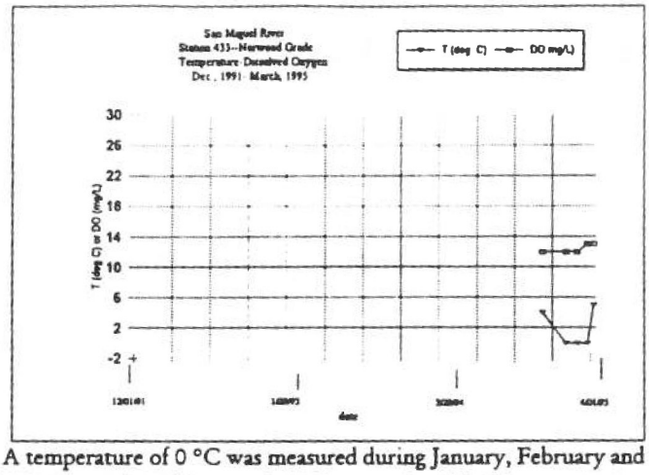


Figure 31 A temperature of 0 °C was measured during January, February and March 1995. The concentration of dissolved oxygen was 12 or 13 mg/L.

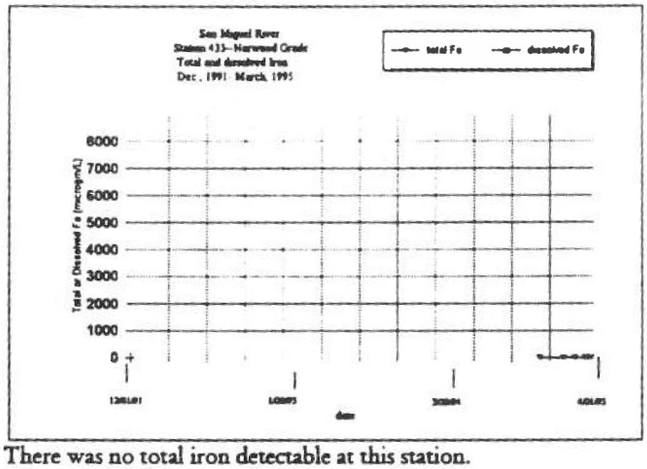


Figure 32 There was no total iron detectable at this station.

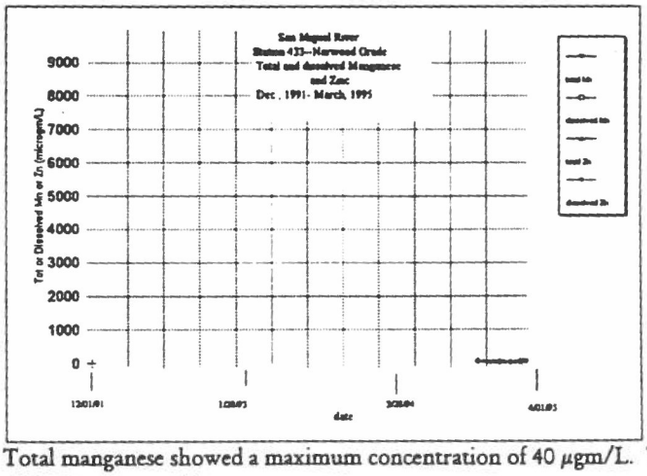


Figure 33 Total manganese showed a maximum concentration of 40 μgm/L. Total zinc ranged from 66-86 μgm/L.

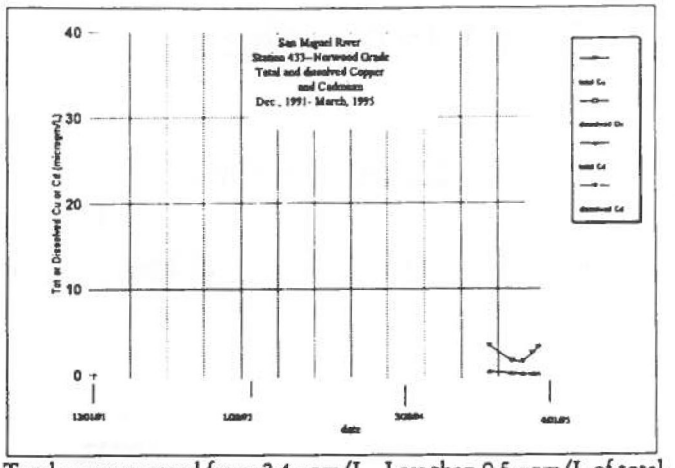


Figure 34 Total copper ranged from 2-4 µgm/L. Less than 0.5 µgm/L of total cadmium was measured.

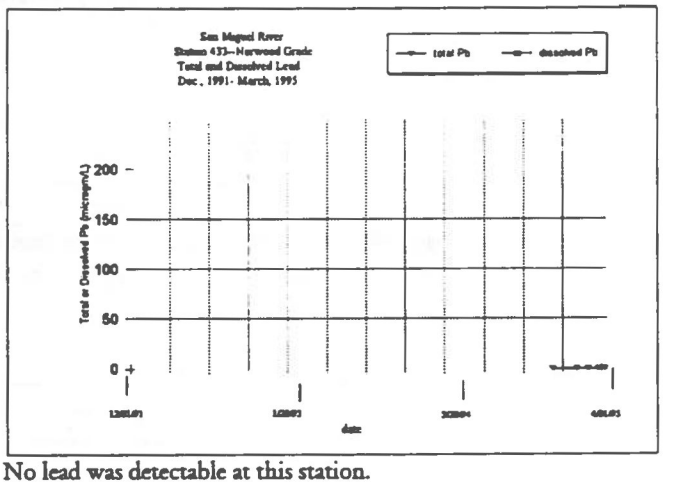


Figure 35 No lead was detectable at this station.

Dolores River Watershed

San Miguel River

Station 99—Pinon Bridge

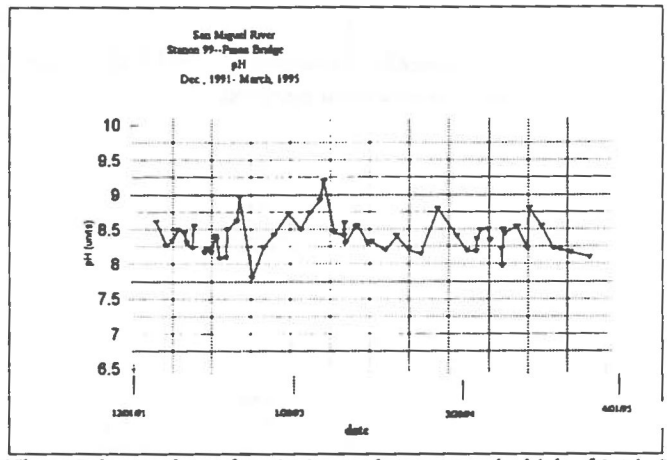


Figure 36 The pH shows a low of 7.8 in September 1992 and a high of 9.2 in March 1993. The trend for pH is uniform over the sampling period and averages about 8.4.

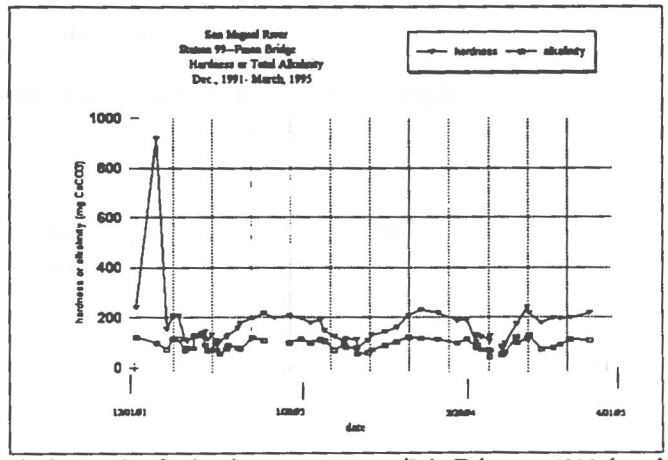


Figure 37 The high value for hardness was 920 mg/L in February 1992, but this value was an exception compared to the rest of the data. Hardness measured about 200 mg/L during the winter and dropped to around 120 mg/L during the summer. Values showed regular seasonal fluctuations. Values for total alkalinity averaged about 100 mg/L. Alkalinity followed a seasonal trend similar to hardness, although less pronounced.

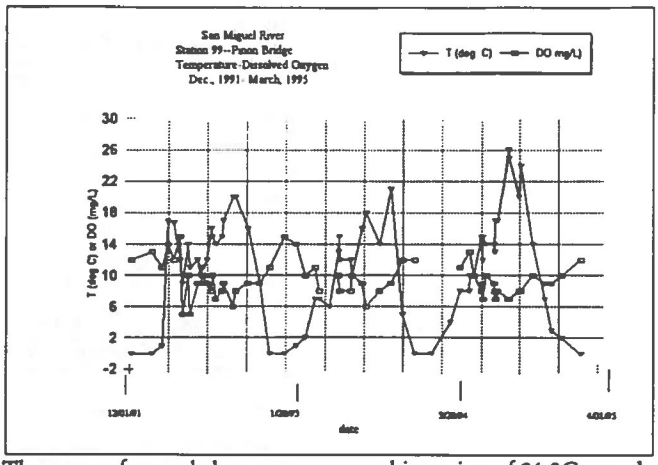


Figure 38 The range of recorded temperatures at this station of 26 °C was almost twice that of any station upstream. Temperatures of 0 °C were routinely found during the winter months and highs were measured during the late summer months. The highs reached during late summer of 1994 were higher than for the previous two years. Dissolved oxygen varies from 5 mg/L to 15 mg/L and tends to increase during the winter months.

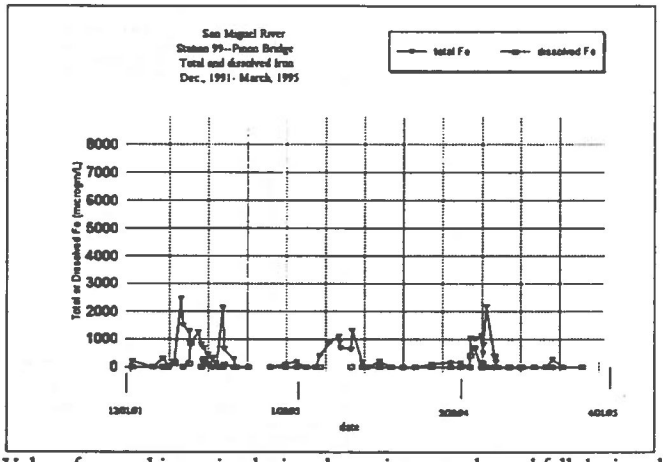


Figure 39 Values for total iron rise during the spring months and fall during the summer months. The high value of 2500 µgm/L was measured in April 1992. Except for 3 samples, very little dissolved iron was measured.

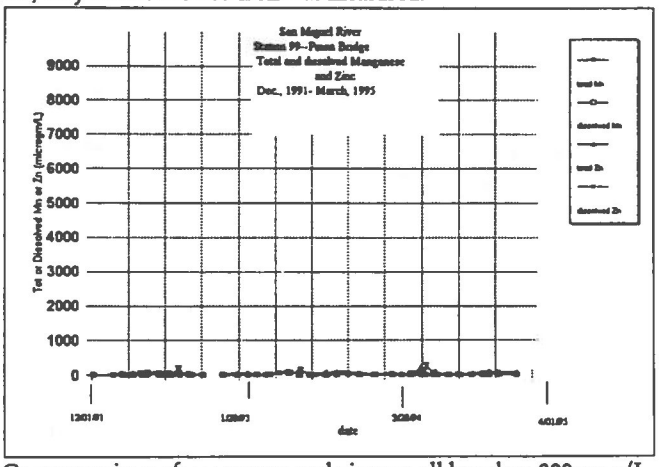


Figure 40 Concentrations of manganese and zinc are all less than 200 µgm/L. The data points can hardly be seen when plotted on the scale used for station 84, but showed peaks for the same samples that were high in iron.

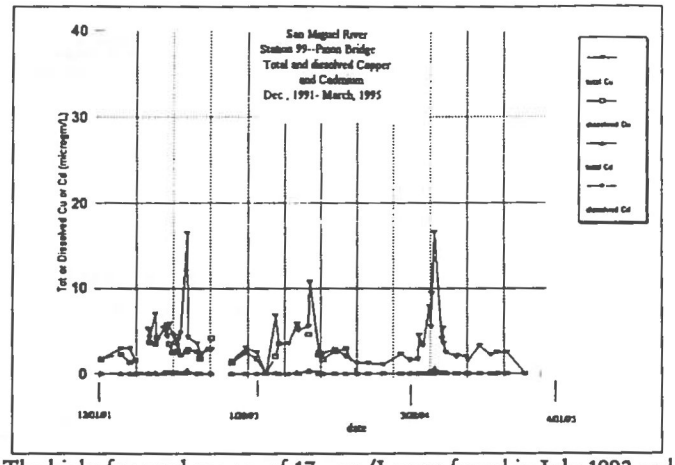


Figure 41 The highs for total copper of 17 µgm/L were found in July 1992 and again in May 1994. Most of the copper is found in the dissolved portion prior to September 1993. After that, no dissolved copper is detectable. Concentrations of cadmium are mostly below the detection limit.

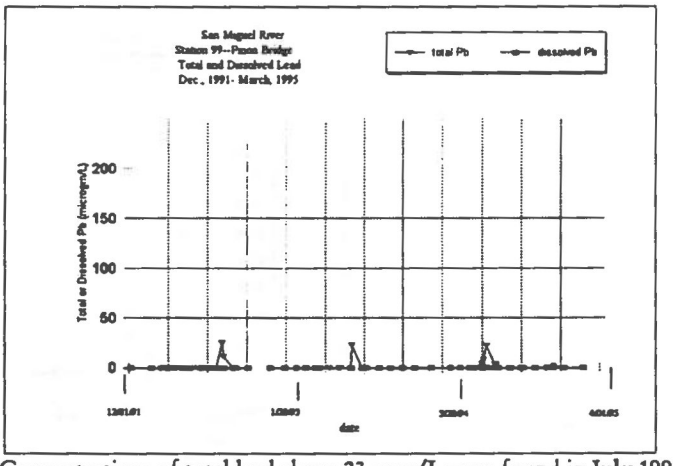


Figure 42 Concentrations of total lead above 23 µgm/L were found in July 1992, June 1993, and May 1994. These peaks corresponded with peaks for other metals.

Dolores River Watershed

San Miguel River

Station 100—Power Plant Bridge

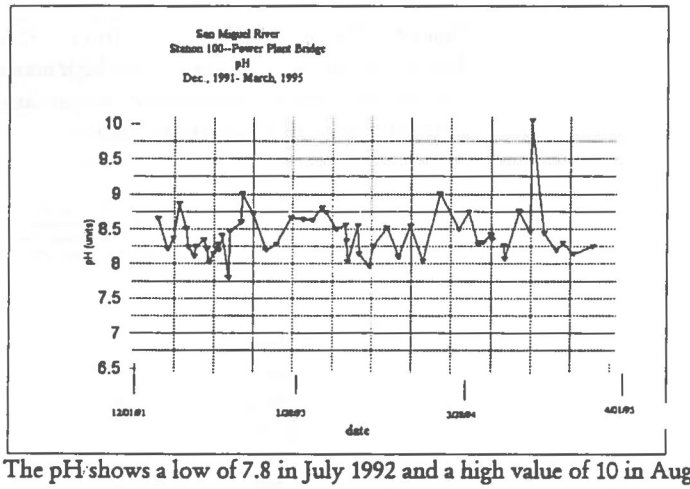


Figure 43 The pH shows a low of 7.8 in July 1992 and a high value of 10 in August 1994. The trend for pH is uniform over the time sampled and averages about 8.4.

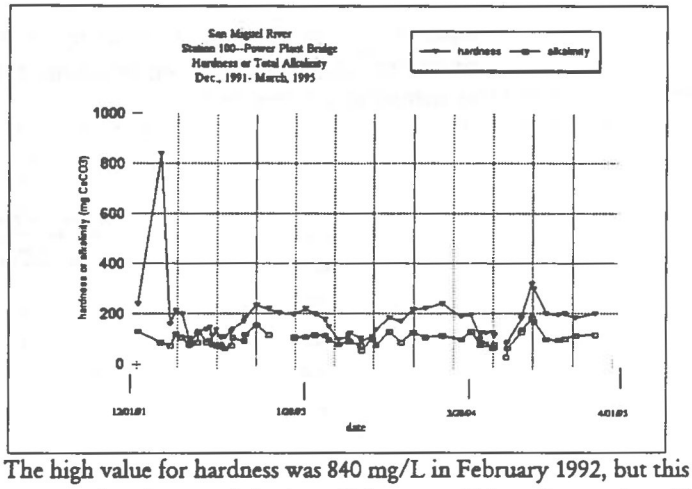


Figure 44 The high value for hardness was 840 mg/L in February 1992, but this was an exception compared to the rest of the data. Values over 300 mg/L were found in August 1994. Hardness values showed regular seasonal fluctuations. Highs around 220 mg/L were found during the winter and lows around 120 were found during the summer. Values for total alkalinity averaged about 100 mg/L. Alkalinity followed a seasonal trend similar to hardness, although less pronounced.

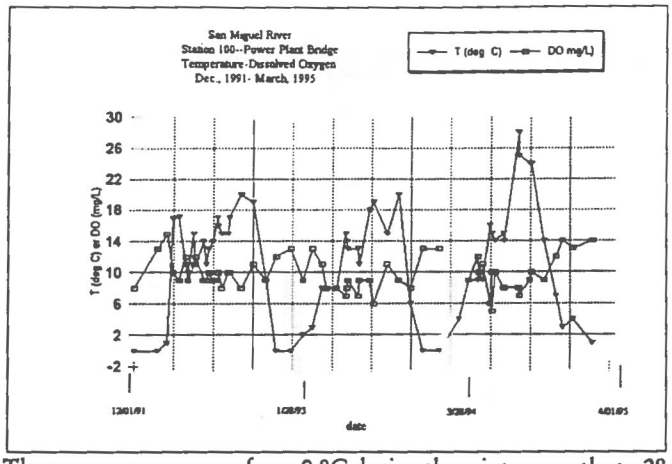


Figure 45 The temperature ranges from 0 °C during the winter months to 28 °C in July 1994. Similar to station 99, the high temperatures in 1994 were higher than for the previous two years. Dissolved oxygen ranges from 8-13 mg/L and tends to be higher in the winter than in the summer.

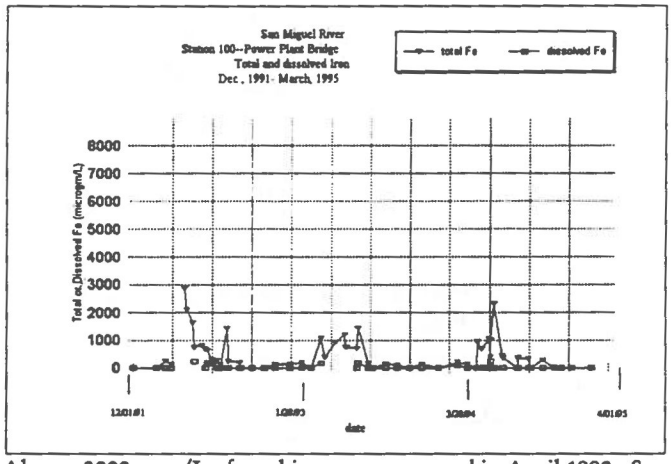


Figure 46 Almost 3000 μgm/L of total iron was measured in April 1992. Seasonal iron peaks were also measured during the springs of 1993 and 1994. Most of the samples contained no dissolved iron.

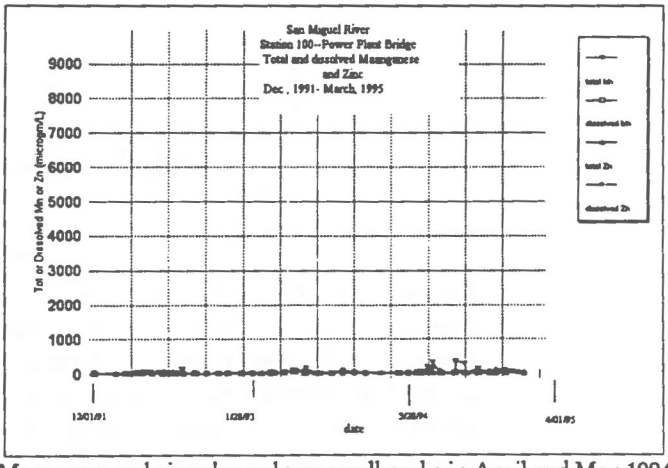


Figure 47 Manganese and zinc showed two small peaks in April and May 1994, but most values are less than 100 μgm/L.

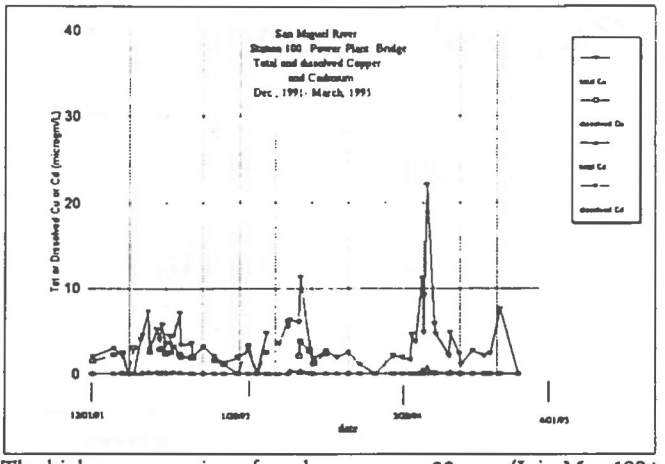


Figure 48 The high concentration of total copper was 22 µgm/L in May 1994. Total copper was highest during the summer months. Prior to September 1993 samples show that most of the copper is dissolved. After that, no dissolved copper is detectable. Concentrations of cadmium are mostly below the detection limit.

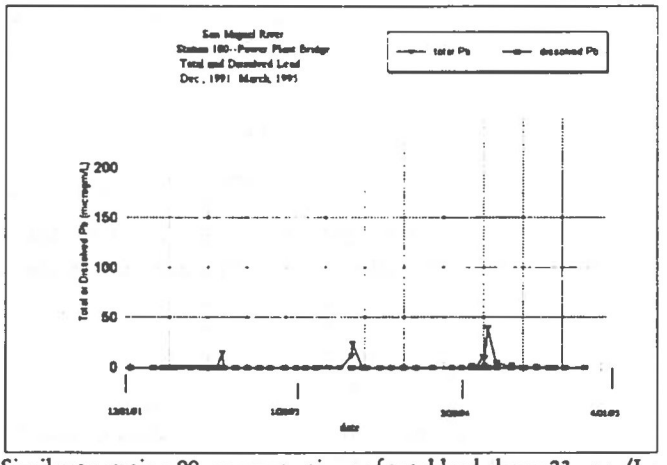


Figure 49 Similar to station 99, concentrations of total lead above 23 µgm/L were found in July 1992, June 1993, and May 1994. There was no detectable dissolved lead at this station.

Dolores River Watershed

San Miguel River

Station 101—Naturita Bridge

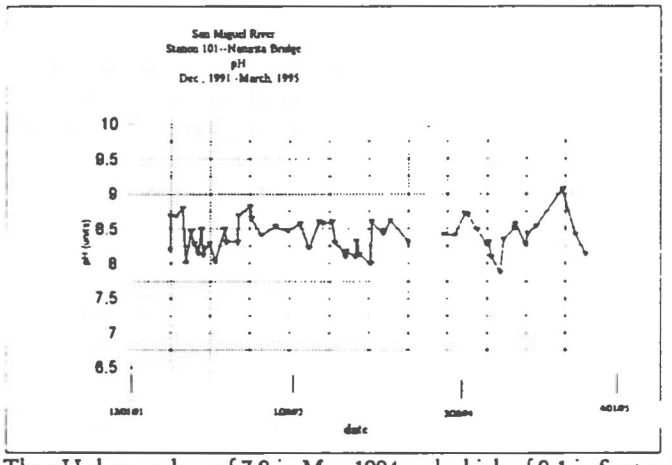


Figure 50 The pH shows a low of 7.9 in May 1994 and a high of 9.1 in September 1994. The trend for pH is uniform over the sampling period and averages about 8.4.

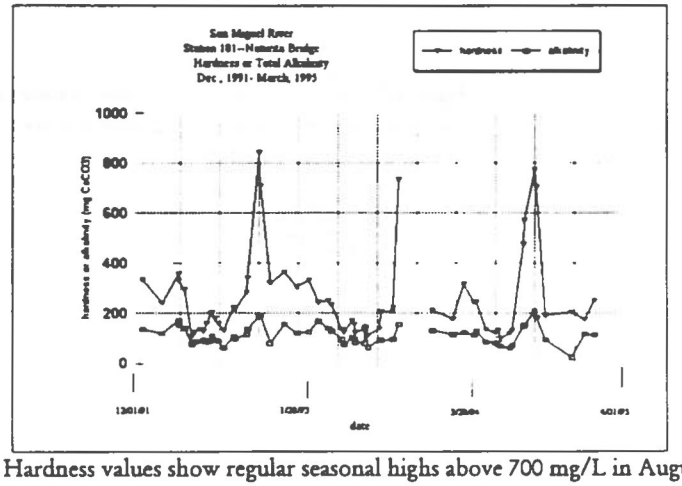


Figure 51 Hardness values show regular seasonal highs above 700 mg/L in August and September. From April to August, hardness values drop to 200 mg/L or below. Values for total alkalinity vary from 60-210 mg/L. Alkalinity follows a seasonal trend similar to hardness, although less pronounced.

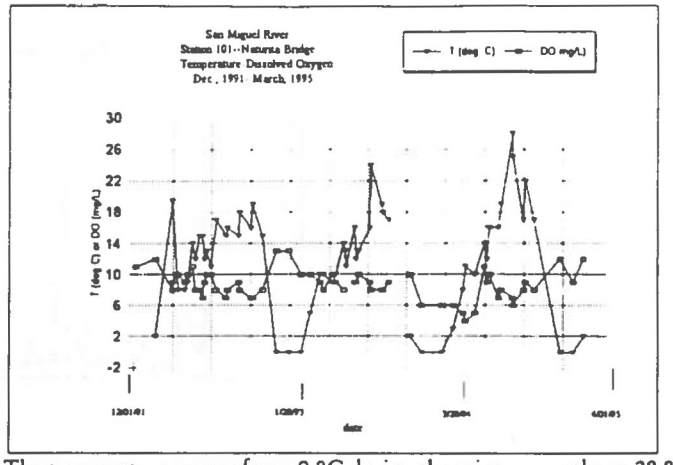


Figure 52 The temperature ranges from 0 °C during the winter months to 28 °C in July 1994. The seasonal highs appear to increase over the sampling period. Dissolved oxygen varies from 7-12 mg/L.

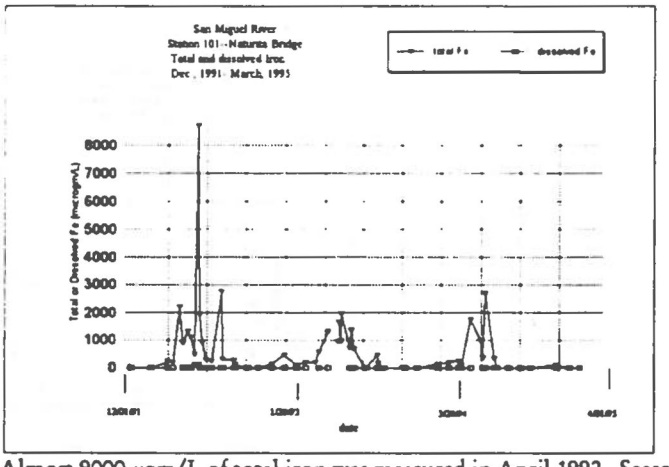


Figure 53 Almost 9000 µgm/L of total iron was measured in April 1992. Seasonal iron peaks were also seen during the springs of 1993 and 1994. Except for one sample, there was no detectable dissolved iron present.

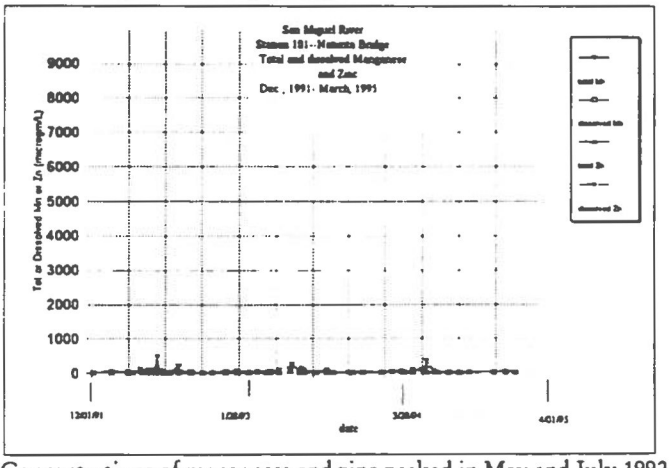


Figure 54 Concentrations of manganese and zinc peaked in May and July 1992, and in May of 1993 and 1994. These were the only samples with concentrations above 200 µgm/L.

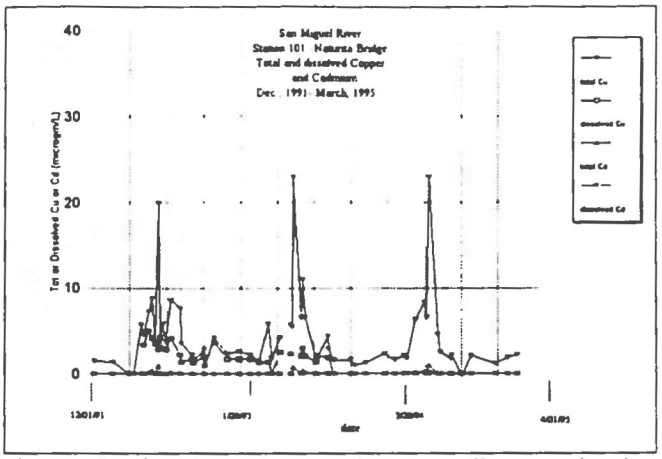


Figure 55 Three peaks of total copper 20 µgm/L or were all measured at the end of May for each year shown. Prior to September 1993, samples show a high proportion of the total copper in the dissolved form. After September, there is no detectable dissolved copper. Concentrations of cadmium are mostly below the detection limit.

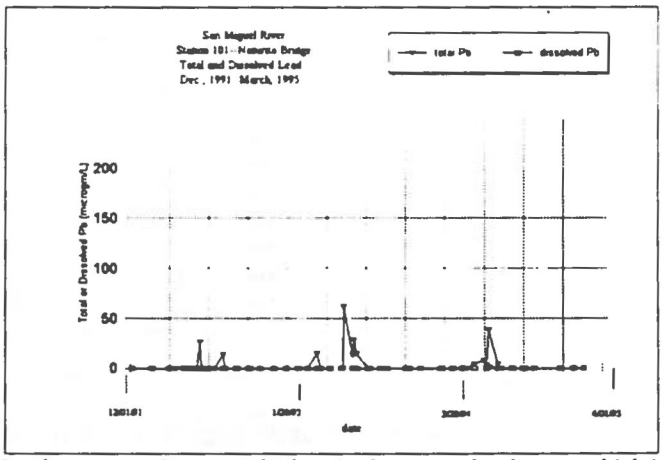


Figure 56 Lead concentrations were highest in those samples that were high in other metals. The high concentration of 63 µgm/L was found in May 1993. There was no detectable dissolved lead at this station.

Dolores River Watershed

San Miguel River

Station 102—West Uravan Bridge

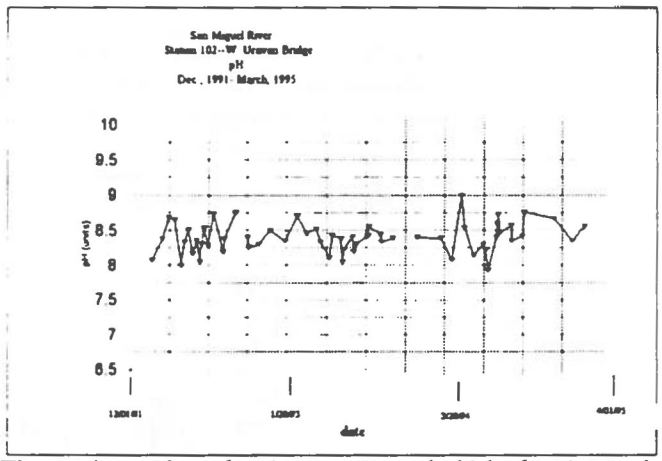


Figure 57 The pH shows a low of 7.9 in May 1994 and a high of 9.0 in March 1994. The trend for pH is uniform over the sampling period and averages about 8.4.

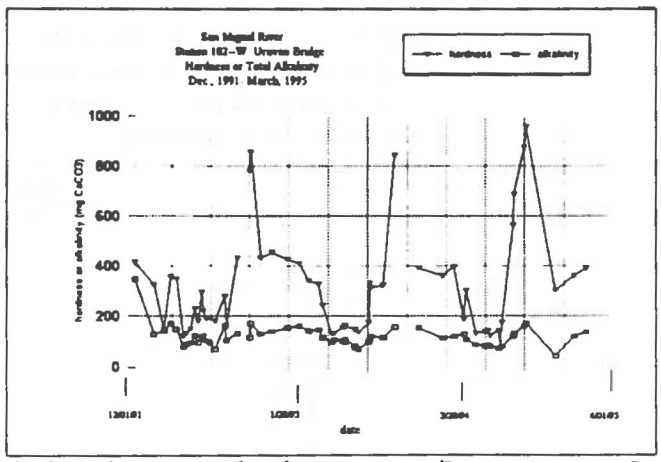


Figure 58 Hardness shows seasonal peaks over 800 mg/L every August or September for the sampling period. These are the highest values recorded for the entire San Miguel River. From March or April until June or July, values for hardness are below 200 mg/L. Total alkalinity follows a seasonal trend similar to hardness, although less pronounced. Values for total alkalinity are all less than 200 mg/L.

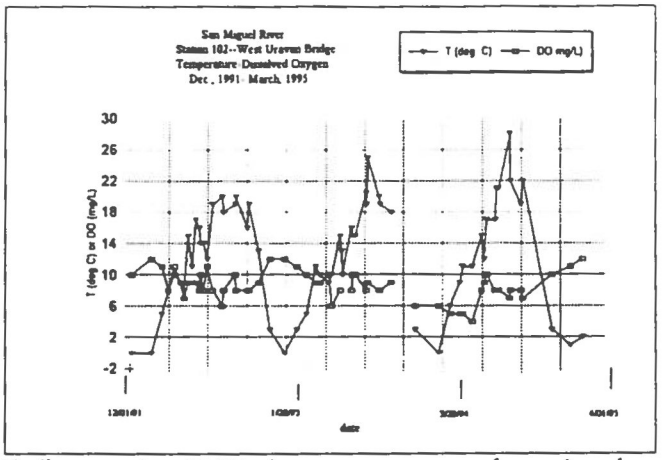


Figure 59 Similar to stations 99-101, the temperature ranges from winter lows of 0 °C to summer highs over 20 °C. The seasonal highs increase over the sampling period. Dissolved oxygen ranges from 4-12 mg/L. Values tend to be higher during the winter.

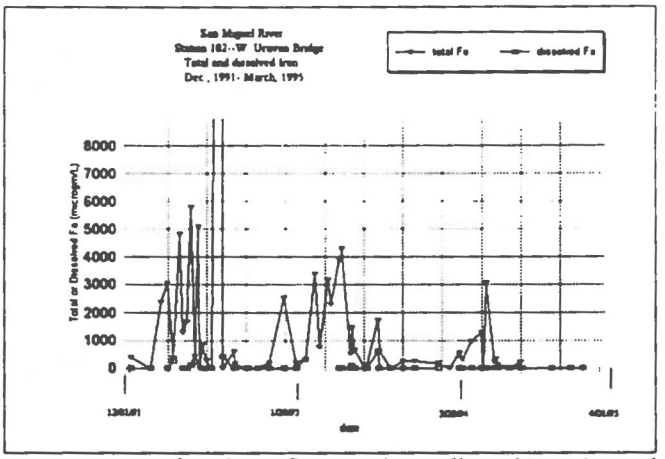


Figure 60 Concentrations of total iron fluctuate drastically at this station and are the highest recorded along the San Miguel River. One point was so high that it is off the scale of the graph. Iron can always be found in the water at this station, although values drop below 400 µgm/L for time periods during the summer. Only a very small proportion of the iron is dissolved.

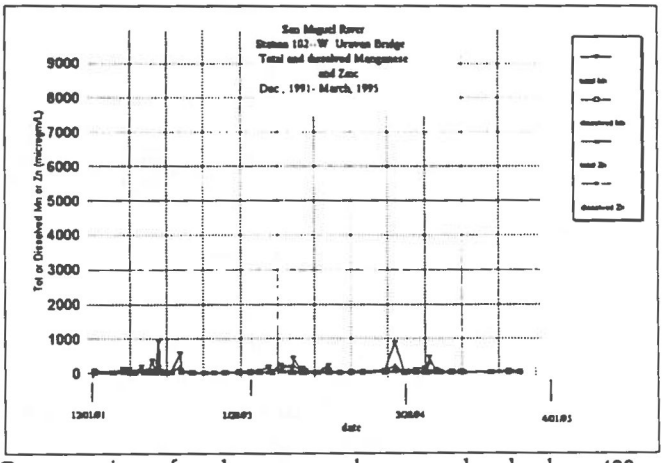


Figure 61 Concentrations of total manganese show several peaks above 400 µgm/L. For the most part, high concentrations of manganese are found in those samples that are also high in iron and zinc.

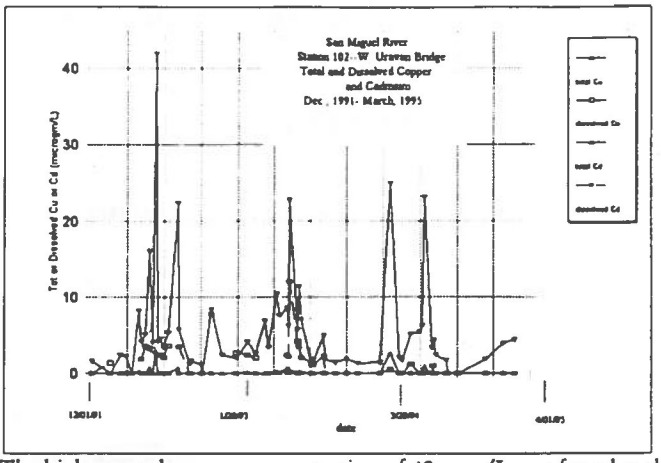


Figure 62 The highest total copper concentration of 42 μgm/L was found at the end of May 1992. Like total iron, values fluctuate drastically, and samples that are high in total iron are also high in total copper. Prior to September 1993, samples show that a high proportion of the total copper is also dissolved, but after September, there is little dissolved copper. Concentrations of cadmium are mostly below the detection limit.

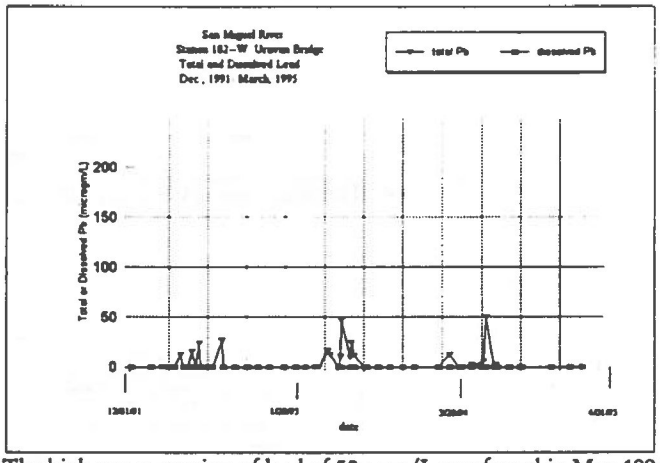


Figure 63 The high concentration of lead of 50 μgm/L was found in May 1994. The peaks of lead concentration correspond with peaks for other metals. Little or no dissolved lead is present.

Dolores River

Station 290—Highway 141 Bridge

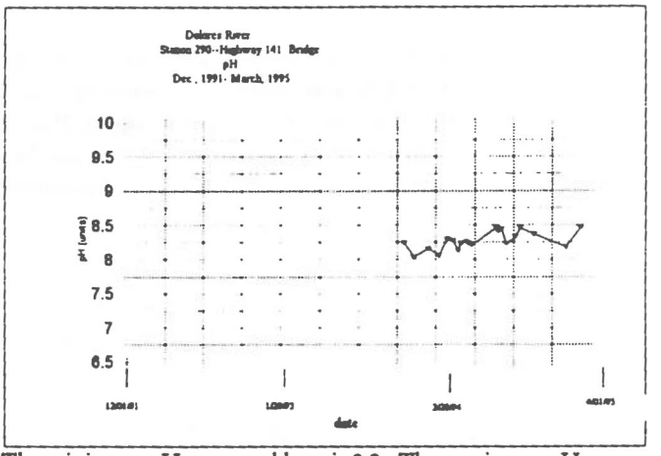


Figure 64 The minimum pH measured here is 8.0. The maximum pH measured is 8.6.

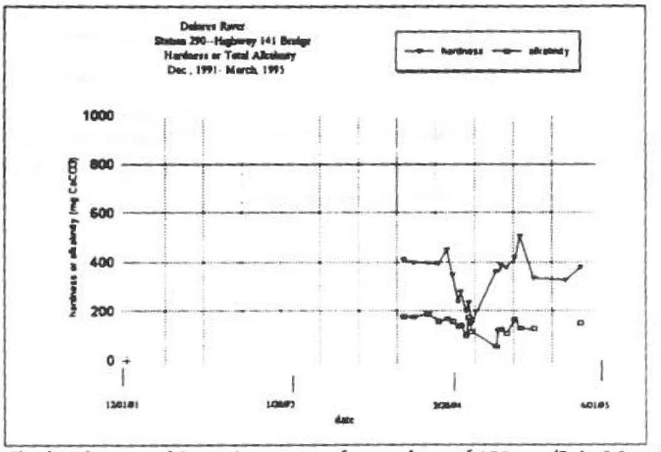


Figure 65 The hardness at this station ranges from a low of 150 mg/L in May 1994 to a high of 510 mg/L in September 1994. Total alkalinity varies from 60 mg/L to 170 mg/L.

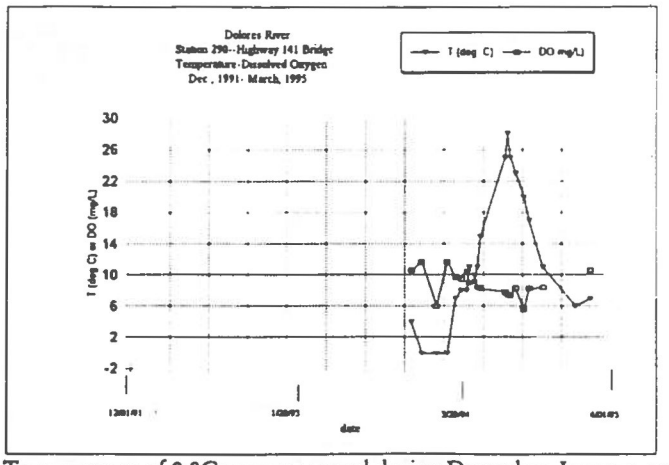


Figure 66 Temperatures of 0 °C were measured during December, January, and February. In March, temperatures began a steep rise and reached a maximum of 28 °C in the middle of July. Concentrations of dissolved oxygen average about 9 mg/L.

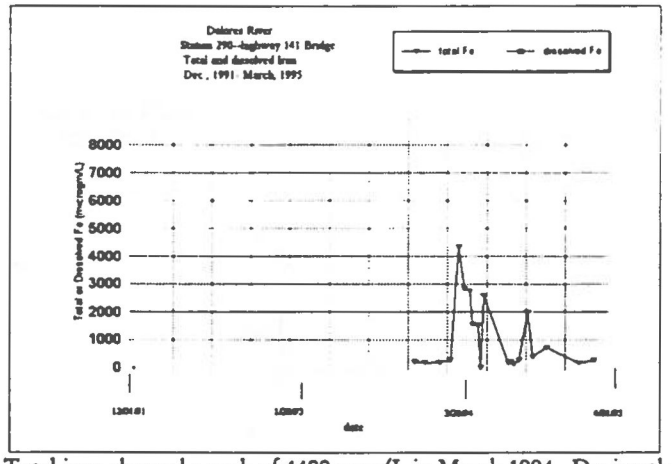


Figure 67 Total iron showed a peak of 4400 µgm/L in March 1994. During the winter months total iron was below 300 mg/L. No samples were taken to determine dissolved iron.

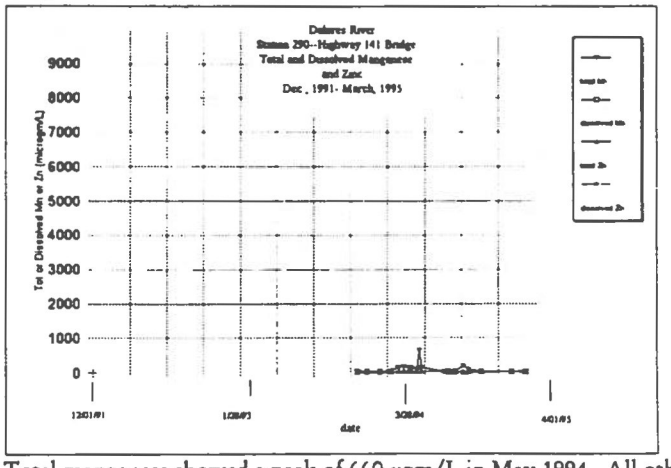


Figure 68 Total manganese showed a peak of 660 µgm/L in May 1994. All other samples at this station are below 200 µgm/L. Concentrations of total zinc are all less than 150 µgm/L. No samples were taken to determine dissolved manganese and zinc.

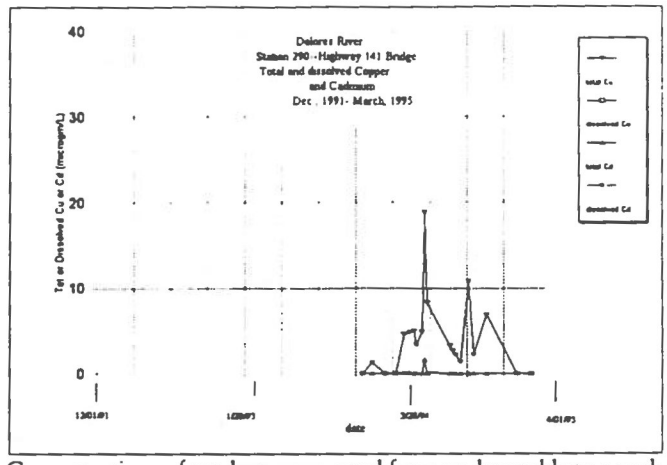


Figure 69 Concentrations of total copper ranged from undetectable to a peak of 19 µgm/L in May 1994. Only one sample showed detectable cadmium. No samples were taken to determine dissolved copper and cadmium.

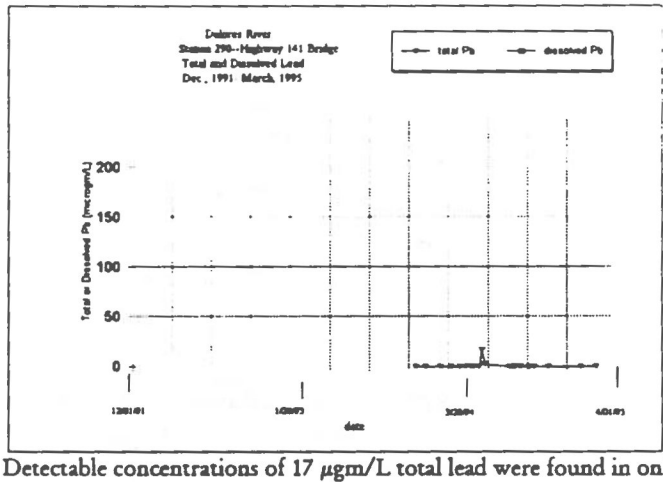


Figure 70 Detectable concentrations of 17 µgm/L total lead were found in only one sample. No samples were taken to determine dissolved lead.

Graphs of selected variables from upstream to downstream

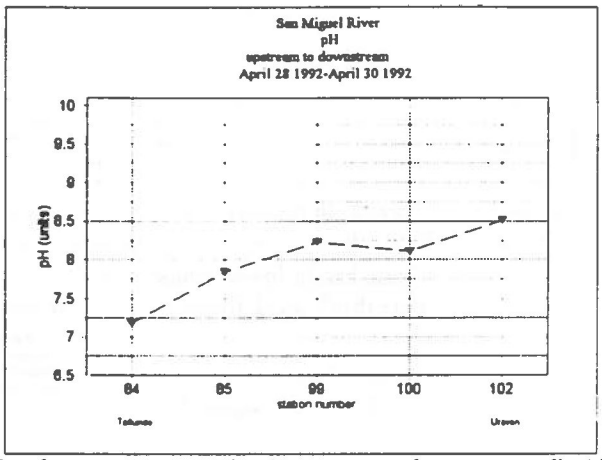


Figure 71 In the afternoon over two days, pH increases from 7.2 at Telluride to 8.5 downstream at Uravan. The sample taken at station 85 is from Bear Creek.

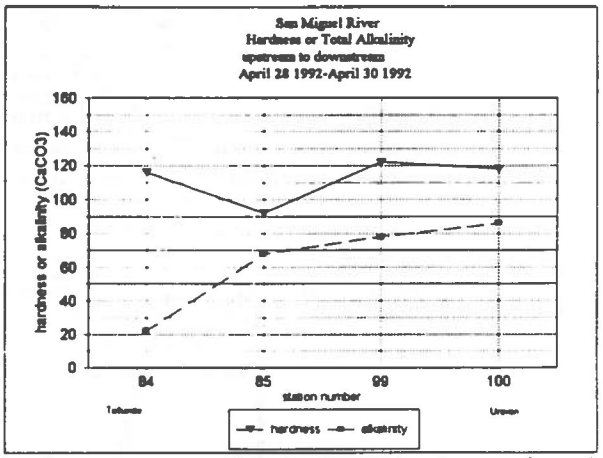


Figure 72 In the afternoon over two days, hardness values increase from about 120 mg/L at Telluride to 150 mg/L downstream at Uravan. The sample taken from station 85 (Bear Creek) shows the lowest value for hardness. Total alkalinity (or buffering capacity) is 4 times lower at Telluride than at station 99.

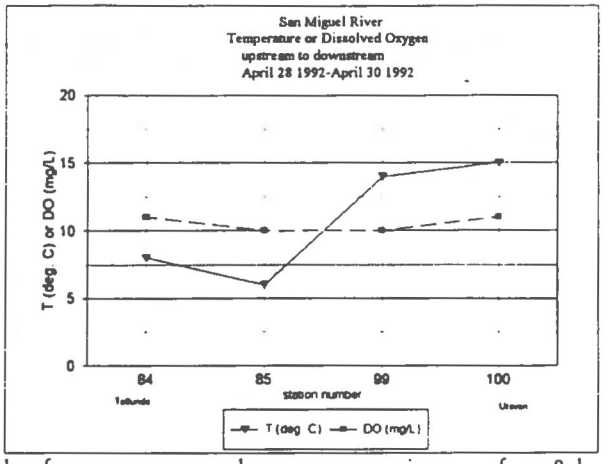


Figure 73 In the afternoon over two days temperature increases from 8 deg. C at Telluride to 15 deg. C downstream at Uravan. The sample from station 85 (Bear Creek) has the lowest temperature of 6 deg. C. Dissolved oxygen does not vary by more than 2 mg/L from upstream to downstream.

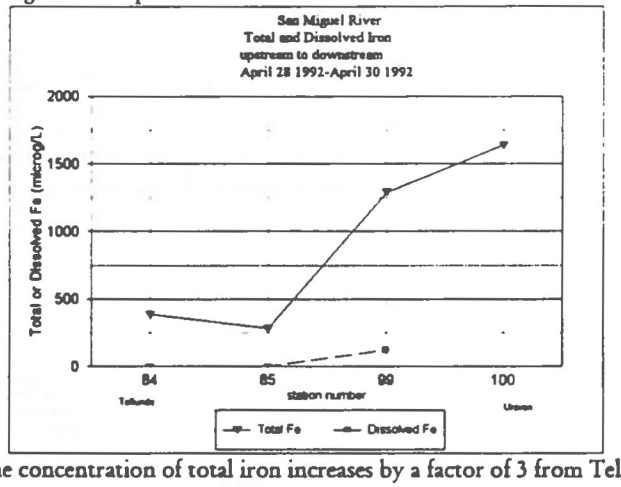


Figure 74 The concentration of total iron increases by a factor of 3 from Telluride downstream to Uravan. The sample taken from station 85 (Bear Creek) contains the lowest concentration of total iron. Dissolved iron is very low or undetectable.

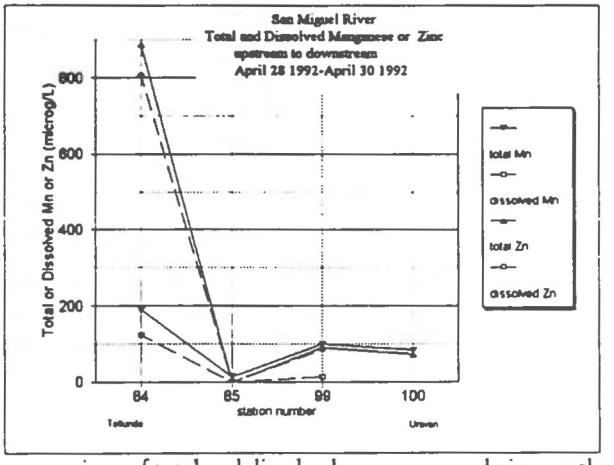


Figure 75 Concentrations of total and dissolved manganese and zinc are the highest at Telluride and lowest at station 85 (Bear Creek). Total manganese is almost 1000 times higher at station 84 than at station 99. Most of the manganese and zinc is in the dissolved form.

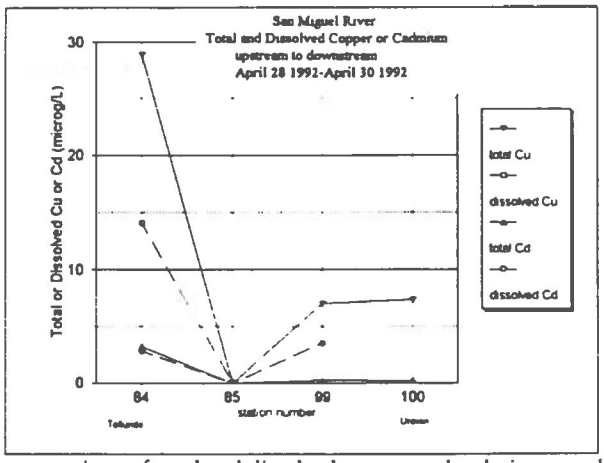


Figure 76 Concentrations of total and dissolved copper and cadmium are the highest at Telluride and lowest at station 85 (Bear Creek). Fifty percent or more of the total copper is dissolved.

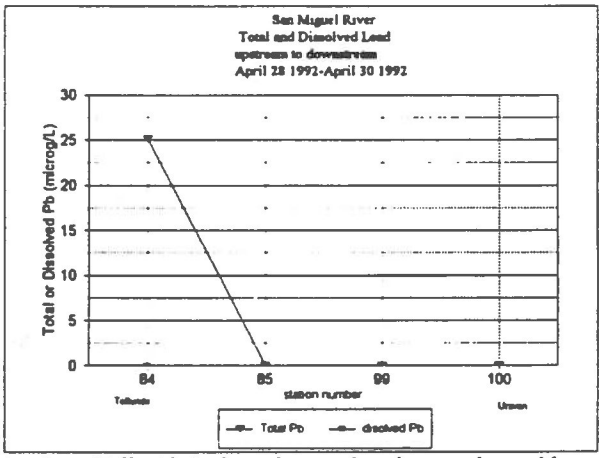


Figure 77 Station 84 at Telluride is the only one that shows a detectable concentration of lead, and none of it is dissolved.

Graphs comparing selected data to biological thresholds

This information will be completed for the next watershed report.

Graphs comparing selected data to Colorado Water Quality Control Commission standards

This information will be completed for the next watershed report.

Discussion

The graphs are a visual aid. They are produced from the numbers in the Printout of Chemical Data that will come with individual Watershed Reports and should be used with the actual data. Because of inherent variation or "noise" in the analytical techniques, the numbers shown in the printout should be rounded off for the purposes of discussion. The following table shows the detection limits and number of significant figures for rounding off.

Variable	Detection Limit, Reporting Units	# Significant Figures
pH	standard units	2
hardness, alkalinity	2 milligrams/liter (mg/L)	1 if < 100 mg/L, 2 if > 100 mg/L
temperature	degrees Celsius (°C)	1 if < 10°C, 2 if > 10°C
dissolved oxygen	1 mg/L	1 if < 10 μg/L, 2 if > 10 μg/L
iron	100 microgram/L (μg/L)	1 if < 1000 μg/L, 2 if > 1000 μg/L
manganese, zinc	10 μg/L	1 if < 10 mg/L, 2 if > 10 mg/L
copper, lead	1 μg/L	1 if < 10 μg/L, 2 if > 10 μg/L
cadmium	0.1 μg/L	1 if < 1 μg/L, 2 if > μg/L

When viewing the graphs, look for sudden changes and ask yourselves what could have caused the changes. Look for relationships among variables. Could a change in one have caused a change in another? Look for data that are not reasonable and postulate reasons. Even with all the data validation procedures, it is still possible to make errors. If you find errors in the data, please notify us.

The following questions can be asked about the some of the graphs presented here. At station 84 in graph 3, what could have happened in May to cause the dissolved oxygen to rise suddenly from 2 mg/L to 12 mg/L? In graph 5, can you determine the source of manganese and zinc? Can you propose a reason that the concentration rises during the winter? Is the flow less at this time? Do you see a point on the graph where the concentration of dissolved manganese is higher than the total manganese? Is this reasonable? In graph 7, can you recall an event in May 1993 that could account for the exceptionally high concentration of lead, or could this be our decimal error?

At station 86 in graph 1, one value for pH is much higher than all the rest. How can you determine that the pH is accurate? Did you make other measurements of pH on the same day? Can you compare the measurements to determine if the electrode was working properly? Do you remember anything that might have happened to raise the pH?

At station 100 in graph 1, one value for pH is much higher than all the rest. How can you determine that the pH is accurate? Can you compare other measurements of pH from the same day to determine if the electrode was working properly? Do you remember anything that might have happened to raise the pH? In graph 6, a high proportion of the total copper is dissolved prior to September 1993, but this drops to almost none after this time. How would you determine whether this is because of filtering efficiency, actual river conditions, contamination of your equipment or ours? Can you compare your data at this station to other stations?

At station 101 in graph 4, one sample stands out as being extremely high in total iron concentration. What makes you think that this reflects actual river conditions and not your filtering technique?

At station 102 in graph 4, total iron concentration goes off the scale. What makes you think that this reflects actual river conditions? Was this sample high in other metals also? Look at the numbers in the data printout. Could this be a decimal error? Do you see any points where the concentration of dissolved iron is much higher than the total iron? Is this reasonable?

In summary, think about the relationship between the water chemistry that these data show and conditions that you actually observe along the river. Consider the how these conditions interrelate and affect the quality of the water and life in the river. Consider, for example, that from March to May, fish eggs have just hatched and are most vulnerable to chemical conditions in the stream. Water flow is usually low. These graphs show that hardness is also low and that metal concentrations are often high. This would mean that fish fry would would not have high values of hardness to protect them against high metals concentrations and that mortality would be high.

Finally, when you consider the things that adversely affect water chemistry and life in the river, consider how you as a school, civic group or water user could change things to improve the conditions along your stream reach.

Appendix A

Participant Schools and Teachers

The following list names the schools, teachers, and other interested parties that participate in the Rivers of Colorado Water Watch Network. The list is sorted in alphabetical order by school or organization name.

		School		Fax
182	S Platte	Michael Bentley ADAMS CITY MS	4451 E 72ND AVE COMMERCE CITY, CO 80022	303/289-5881
182	S Platte	Colin Ellerbruch ADAMS CITY MS	4451 E 72ND AVE COMMERCE CITY, CO 80022	303/853-5470
182	S Platte	Andy Kimball ADAMS CITY MS	4451 E 72ND AVE COMMERCE CITY, CO 80022	303/289-5881 FAX: 303/288-8574
034	Rio Grande	Dr. Benita Brink ADAMS STATE COLLEGE	DEPT OF BIOLOGY ALAMOSA, CO 81102-0001	719/589-7426
034	Rio Grande	Dr. John Ninnemen ADAMS STATE COLLEGE	Dean of Science/Math/Technology ALAMOSA, CO 81102-0001	719/589-7531
156	Arkansas	Richard Fanning AIR ACADEMY HS	no street USAFA, CO 80840	719/472-1295 FAX: 719/472-6085
032	Rio Grande	Kerry D. Adams ALAMOSA HS	401 VICTORIA AVE ALAMOSA, CO 81101-2211	719/589-6696 FAX: 719/589-5510
131	Rio Grande	Mary Ann DeBoer ALAMOSA OPEN	216 VICTORIA AVE ALAMOSA, CO 81101-2210	719/589-9011 FAX: 719/589-5110
189	S Platte	Bill Meyers ALEXANDER DAWSON SCHOOL	4801 N 107TH ST LAFAYETTE, CO 80026	303/665-6679 FAX: 303/665-6679
234	Rio Grande	Antonio Lucero ANTONITO HS	PO BOX 398 ANTONITO, CO 81120-0398	719/376-5512 FAX: 719/376-5425
234	Rio Grande	Mary Alice Trujillo ANTONITO HS	PO BOX 398 ANTONITO, CO 81120-0398	719/376-5512 FAX: 719/376-5425
082	S Platte	Ted Bertoli ARAPAHOE HS	2201 E DRY CREEK RD LITTLETON, CO 80122-3101	303/347-6037
082	S Platte	Roger Coffey ARAPAHOE HS	2201 E DRY CREEK RD LITTLETON, CO 80122-3101	303/347-6037
044	Colorado	Mark Munger ASPEN MS	235 HIGH SCHOOL RD ASPEN, CO 81611-3357	970/925-6623
224	S Platte	Amy Rogers AURORA NORTH MS	12095 MONTVIEW BLVD AURORA, CO 80010	303/364-7411
224	S Platte	Alice Sampson AURORA NORTH MS	12095 MONTVIEW BLVD AURORA, CO 80010	303/364-7411 FAX: 303/340-0848
047	Colorado	Andre Wille BASALT HS	600 SOUTHSIDE DR BASALT, CO 81621-9265	970/927-3325
017	Colorado	Derrick Eggleston BATTLE MOUNTAIN HS	PO BOX 249 MINTURN, CO 81645-0249	970/949-4490
017	Colorado	Mike King BATTLE MOUNTAIN HS	PO BOX 249 MINTURN, CO 81645-0249	970/949-4490
056	San Juan	Tina Jones BAYFIELD HS	PO BOX 258 BAYFIELD, CO 81122-0258	970/884-9521

Kit #	Watershed	Teacher School	Mailing address	Phone Fax
056	San Juan	Vernon Kimball BAYFIELD HS	615 OAK DR BAYFIELD, CO 81122-9791	970/884-9521
057	San Juan	Victor Pennell BAYFIELD MS	PO BOX 258 BAYFIELD, CO 81122-0258	970/884-9592 FAX: 970/884-4110
123	S Platte	Harry Buckler BERTHOUD HS	850 SPARTAN AVE BERTHOUD, CO 80513	970/532-3743
235	Arkansas	Matt Sherman BEULAH MS	8734 SCH HOUSE LN W BEULAH, CO 81023-9770	719/485-3127
191	S Platte	Dottie Martin-Stewart BILL REED MS	370 4TH ST LOVELAND, CO 80537	970/667-5136
191	S Platte	Mike Shearer BILL REED MS	370 W 4TH ST LOVELAND, CO 80537	970/667-5136
192	S Platte	Jean Bradley BLEVINS JHS	2101 S TAFT HILL RD FT COLLINS, CO 80526	970/484-8350
192	S Platte	Jean Carpenter BLEVINS JHS	2101 S TAFT HILL RD FORT COLLINS, CO 80526	970/484-8350 FAX: 970/484-7189
205	Colorado	Teri Lindauer BOOKCLIFF MS	2935 ORCHARD AVE GRAND JUNCTION, CO 81504-5341	970/243-6350
205	Colorado	Kelly Rienks BOOKCLIFF MS	2935 ORCHARD AVE GRAND JUNCTION, CO 81504	970/243-6350
069	S Platte	Marcelle Partridge BOULDER HS	1604 ARAPAHOE AVE BOULDER, CO 80302-6312	303/442-2430
100	S Platte	Jim Barrington BRENTWOOD MS	2600 24TH AVE CT GREELEY, CO 80631-7926	970/330-2556
100	S Platte	Christina Kauffman BRENTWOOD MS	2600 24TH AVE CT GREELEY, CO 80631-7926	303/330-2556
100	S Platte	Natalie Weaber BRENTWOOD MS	2600 24TH AVE CT GREELEY, CO 80631	970/330-2556
226	S Platte	Dani Meyers BRIDGE SCHOOL	6717 S BOULDER RD BOULDER, CO 80303	303/494-7551
097	S Platte	Terry Strahm BRIGHTON HS	270 S 8TH AVE BRIGHTON, CO 80601-2132	303/659-4830 FAX: 303/659-9561
127	S Platte	Bob Little BROOMFIELD HS	1000 DAPHNE ST BROOMFIELD, CO 80020-1906	303/466-7344
104	S Platte	Don Gabriel BRUSH HS	PO BOX 585 BRUSH, CO 80723-0585	970/842-5171 FAX: 970/842-2804
103	S Platte	Roliegh Schamberger BRUSH MS	PO BOX 585 BRUSH, CO 80723-0585	970/842-5035 FAX: 970/842-3009
009	Arkansas	LaDona Horton BUENA VISTA HS	PO BOX 938 BUENA VISTA, CO 81211-2027	719/395-2487

Kit #	Watershed	Teacher School	Mailing address	Phone Fax
009	Arkansas	Denine Schmitz BUENA VISTA HS	PO BOX 938 BUENA VISTA, CO 81211-2027	719/395-2487
150	S Platte	Dan Tomlin BURBANK MS	290 MANHATTAN DR BOULDER, CO 80303	303/494-0336
227	S Platte	Kandy Prochaska BURLINGTON HS	380 MILE LOUNGE DR BURLINGTON, CO 80807	719/346-8455 FAX: 719/346-5599
108	S Platte	Jim Manuello CALICHE HS	RR 1 ILIFF, CO 80736-9801	970/522-8200 FAX: 970/522-9400
236	Arkansas	John Balweber CANON CITY ELEM SCHOOL	CANON ELEM SCHOOL COLO SPGS, CO 80906	719/475-0252
014	Arkansas	Carole Brown CANON CITY HS	1313 COLLEGE AVE CANON CITY, CO 81212-3540	719/269-6200 FAX: 719/269-6219
014	Arkansas	Jill Decker CANON CITY HS	1313 COLLEGE AVE CANON CITY, CO 81212-3540	719/269-6200
013	Arkansas	Cheryl Erickson CANON CITY MS	1215 MAIN CANON CITY, CO 81212	719/269-6220 FAX: 719/269-6234
236	Arkansas	Patty Hawkins CANON ELEM SCHOOL	CANON ELEM SCHOOL COLO SPGS, CO 80906	719/475-0252
049	Colorado	Susy Ellison CARBONDALE MS	455 S 3RD ST CARBONDALE, CO 81623-2058	970/963-2240
157	S Platte	Phil Love CAREER ENRICHMENT PARK	7300 LOWELL BLVD WESTMINSTER, CO 80030	303/428-2600 FAX: 303/428-2142
072	S Platte	Ray Sperger CARSON NATURE CENTER	7301 S PLATTE RIVER PKY LITTLETON, CO 80120-2968	303/730-1022
139	S Platte	Greg Crugor CASEY MS	2410 13TH BOULDER, CO 80304-4103	303/442-5235
139	S Platte	Anitta Frant CASEY MS	2410 13TH BOULDER, CO 80304-4103	303/442-5235
139	S Platte	Tony Moats CASEY MS	2410 13TH ST BOULDER, CO 80304-4103	303/442-5235
117	Gunnison	Matt Diers CEDAREDGE HS	2375 COTTONWOOD LN CEDAREDGE, CO 81413-9314	970/856-6882
117	Gunnison	Bruce L. Rife CEDAREDGE HS	2375 COTTONWOOD LN CEDAREDGE, CO 81413-9314	970/856-6882
116	Gunnison	Louisa Lewis CEDAREDGE MS	380 N GRAND MESA DR CEDAREDGE, CO 81413-3321	970/856-3118
143	Rio Grande	Tracy Swedlund CENTAURI HS	17889 STATE HIGHWAY 285 LA JARA, CO 81140	719/274-5178
193	Arkansas	David Barber CENTENNIAL HS	2525 MONTVIEW DR PUEBLO, CO 81008	719/549-7335 FAX: 719/549-7352

Kit #	Watershed	Teacher School	Mailing address	Phone Fax
036	Rio Grande	Charlie Jaquez CENTENNIAL HS	PO BOX 350 SAN LUIS, CO 81152-0350	719/672-3322 FAX: 719/672-3345
228	S Platte	Tim Swanson CENTENNIAL HS	300 E LAUREL FT COLLINS, CO 80524	970/484-0115 FAX: 970/484-8037
206	Gunnison	Clayton Beaudry CENTENNIAL JHS	PO BOX 219 MONTROSE, CO 81402-0219	970/249-2576
202	Gunnison	Jeff Blacker CENTENNIAL JHS	1100 S 5TH MONTROSE, CO 81401	970/249-2576
088	S Platte	Stan Wells CHALLENGE SCHOOL	9659 E MISSISSIPPI AVE DENVER, CO 80231-2401	303/340-5168
147	S Platte	Nancy Spletzer CLEAR CREEK HS	PO BOX 3369 IDAHO SPRINGS, CO 80452-3369	303/567-4420
147	S Platte	Virginia Unseld CLEAR CREEK HS	PO BOX 3369 IDAHO SPRINGS, CO 80452-3369	303/567-4420
250	Green	Amy Kennedy COLO MTN COLLEGE	no street STEAMBOAT SPGS, CO	
048	Colorado	Spafford Ackerly COLO ROCKY MTN SCHOOL	1493 CR 106 CARBONDALE, CO 81623-2357	970/963-2562
048	Colorado	Franz Froelicher COLO ROCKY MTN SCHOOL	1493 CR 106 CARBONDALE, CO 81623-2357	970/963-2562
		Matt McIntyre COLORADO DIVSION OF WILDLIFE	317 W PROSPECT FT COLLINS, CO 80526	970/484-2836
	S Platte	Mason COLORADO ACADEMY	3800 S PIERCE ST DENVER, CO 80235	303/986-1501
019	Arkansas	Peter Jeschofnig COLORADO MOUNTAIN COLLEGE	901 US HWY 24 LEADVILLE, CO 80461-9724	719/486-4230 FAX: 719/486-3212
186	Arkansas	Chris Matthews COLORADO SPRINGS NORTH MS	612 E YAMPA ST COLORADO SPRINGS, CO 80903-2941	719/520-2450
186	Arkansas	Wendy Rockhill COLORADO SPRINGS NORTH MS	1830 WOOTEN RD COLORADO SPRINGS, CO 80915	719/520-2450
207	Gunnison	Mike Nadiak COLUMBINE MS	PO BOX 1328 MONTROSE, CO 81402-1328	970/249-2581 FAX: 970/240-6404
207	Gunnison	Dave Reddish COLUMBINE MS	PO BOX 1328 MONTROSE, CO 81402-1328	970/249-2581
166	Arkansas	Tamara Wiley CONNECT SCHOOL	104 E 7TH PUEBLO, CO 81001	719/542-0224
194	S Platte	Ken Gwynn CONRAD BALL MS	PO BOX 138 LOVELAND, CO 80538	970/669-3550 FAX: 970/669-3550
012	Arkansas	Richie Gatlin COTOPAXI JR SR HS	PO BOX 385 COTOPAXI, CO 81223-0385	719/942-4131

Kit #	Watershed	Teacher School	Mailing address	Phone Fax
012	Arkansas	David Hemming COTOPAXI JR SR HS	PO BOX 385 COTOPAXI, CO 81223-0385	719/942-4131
149	Green	Sam Johnson CRAIG MS	915 YAMPA AVE CRAIG, CO 81625-2127	970/824-3289
149	Green	Norm Yost CRAIG MS	915 YAMPA AVE CRAIG, CO 81625-2127	970/824-3289 FAX: 970/824-3858
028	Rio Grande	Charles Downing CREEDE HS	PO BOX 429 CREEDE, CO 81130-0429	719/658-2220
073	Gunnison	Susan Hoffman CRESTED BUTTE MS	PO BOX 2115 CRESTED BUTTE, CO 81224-2115	970/349-5014
041	S Platte	Don Stensrud CRESTHILL MS	9195 S CRESTHILL LANE HIGHLANDS RANCH, CO 80126	303/470-0300
195	Arkansas	Sam Crane CRIPPLE CREEK-VICTOR HS	PO BOX 897 CRIPPLE CREEK, CO 80813-0897	719/689-2661 FAX: 719/689-2256
125	S Platte	Margie Robinson DEER CREEK MS	9201 W COLUMBINE DR LITTLETON, CO 80123-4140	303/978-1662
029	Rio Grande	Laura Stuemky DEL NORTE HS	PO BOX 159 DEL NORTE, CO 81132-0159	719/657-4020 FAX: 719/657-4024
030	Rio Grande	Jenny Knoblauch DEL NORTE MS	PO BOX 159 DEL NORTE, CO 81132-0159	719/657-4030 FAX: 719/657-2546
	S Platte	Jean Kovatovich DENVER CHILDRENS HOME	1501 ALBION DENVER, CO 80220	303/399-4890 FAX: 303/399-9846
090	S Platte	William Rash DENVER NORTH HS	2960 N SPEER BLVD DENVER, CO 80211-3793	303/964-2841 FAX: 303/964-2708
		Don Hollums DEPARTMNET OF EDUCATION	201 E COLFAX AVE RM 400 DENVER, CO 80203-1704	303/866-6787
	Dolores	Dave Hopshia DOLORES HS	PO BOX 757 DOLORES, CO 81323-0757	970/677-2237
142	Dolores	Charles Powell DOLORES HS	PO BOX 757 DOLORES, CO 81323-0757	970/677-2237 FAX: 970/677-2712
040	S Platte	Dan Gammon DOUGLAS COUNTY HS	2693 FRONT ST CASTLE ROCK, CO 80104-1681	303/688-3166
060	San Juan	Deb Barnes DURANGO HS	PO BOX 2467 DURANGO, CO 81302-2467	970/259-1630 FAX: 970/385-1493
060	San Juan	Bill Koons DURANGO HS	PO BOX 2467 DURANGO, CO 81302-2467	970/259-1630 FAX: 970/385-1493
018	Colorado	Sue Hicks EAGLE VALLEY HS	PO BOX 295 GYPSUM, CO 81637-0295	970/524-7511
084	S Platte	Lou Baldelli EAGLECREST HS	5100 S PICADILLY ST AURORA, CO 80015-3300	303/699-0408

Kit #	Watershed	Teacher School	Mailing address	Phone Fax
238	S Platte	Bob Beebe ELBERT HS	PO BOX 38 ELBERT, CO 80106	303/648-3030 FAX: 303/648-2536
083	S Platte	Brent R. Getchel ENGLEWOOD HS	3800 S LOGAN ST ENGLEWOOD, CO 80110-3723	303/762-8630
061	San Juan	Linda Herz ESCALANTE MS	PO BOX 2467 DURANGO, CO 81301-2467	970/247-9490
061	San Juan	Donna Kirby ESCALANTE MS	PO BOX 2467 DURANGO, CO 81301	970/247-9490
061	San Juan	Yvonne Walker ESCALANTE MS	PO BOX 2467 DURANGO, CO 81301-2467	970/247-9491
196	S Platte	Ann Bentz ESTES PARK HS	PO BOX 1140 ESTES PARK, CO 80517-1140	970/586-5321 FAX: 970/586-1102
	S Platte	ESTES PARK MS	P.O. BOX 1140 ESTES PARK, CO 80517-1140	970/586-4439
197	S Platte	Leo Wertin EVERETT MS	3900 KIPLING ST WHEAT RIDGE, CO 80033	303/421-6910 FAX: 303/467-9553
022	S Platte	Fran Enright EVERGREEN HS	5300 S OLIVE RD EVERGREEN, CO 80439-7306	303/674-3341 FAX: 303/982-5102
022	S Platte	Mick Ondris EVERGREEN HS	5300 S OLIVE RD EVERGREEN, CO 80439-7306	303/674-3341 FAX: 303/982-5102
198	San Juan	Carolan Knott EXCEL SCHOOL	215 E 12TH ST DURANGO, CO 81301	970-259-0203
086	S Platte	Susan Hickel FITZSIMMONS MS	PO BOX 295 BAILEY, CO 80421-0295	303/838-2054 FAX: 303/838-6866
086	S Platte	Carolyn Kirk FITZSIMMONS MS	PO BOX 295 BAILEY, CO 80421-0295	303/838-2054 FAX: 303/838-6866
015	Arkansas	Ellen Sacksteder FLORENCE HS	215 N MAPLE AVE FLORENCE, CO 81226-1443	719/784-6414 FAX: 719/784-3821
199	S Platte	Ron Jensen FORT COLLINS HS	3400 LAMBKIN WAY FORT COLLINS, CO 80525	970/416-8221 FAX: 970/416-8008
199	S Platte	Alene Patterson FORT COLLINS HS	3400 LAMBKIN WAY FORT COLLINS, CO 80525	970/416-8221 FAX: 970/416-8008
098	S Platte	Mike Caciari FORT LUPTON HS	530 REYNOLDS ST FORT LUPTON, CO 80621-1326	303/857-2728
098	S Platte	Sam Trujillo FORT LUPTON HS	530 REYNOLDS ST FORT LUPTON, CO 80621-1326	303/857-2728 FAX: 303/857-9673
102	S Platte	Tom Kammer FORT MORGAN HS	709 E RIVERVIEW AVE FORT MORGAN, CO 80701-3263	970/867-5648 FAX: 970/867-3347
128	Arkansas	Craig Kimball FOUNTAIN-FT CARSON	515 S SANTA FE AVE FOUNTAIN, CO 80817-2015	719/382-1640

Kit #	Watershed	Teacher School	Mailing address	Phone Fax
170	Arkansas	Tim Baublits FOWLER JR SR HS	600 W EUGENE AVE FOWLER, CO 81039-1500	719/263-4279
148	Dolores	Mark Garske GATEWAY SCHOOL	#1 SCHOOL RD GATEWAY, CO 81522	970/931-2276
021	Colorado	Mike Wilde GLENWOOD SPRINGS HS	1340 PITKIN AVE GLENWOOD SPRINGS, CO 81601-4186	970/945-5762
089	S Platte	Nelson S. Ford GODDARD MS	3800 W BERRY AVE LITTLETON, CO 80123-2814	303/341-3917 FAX: 303/347-7880
112	S Platte	Elaine Smith GOLDEN HS	1701 24TH ST GOLDEN, CO 80401-2379	303/279-0503
208	Colorado	Larry Allison GRAND JUNCTION EAST MS	830 GUNNISON AVE GRAND JUNCTION, CO 81501	970/242-0512 FAX: 970/242-0512
208	Colorado	Mike Warner GRAND JUNCTION EAST MS	830 GUNNISON AVE GRAND JUNCTION, CO 81501	970/242-0512 FAX: 970/242-0512
209	Colorado	Kenneth Edwards GRAND JUNCTION HS	1400 N 5TH ST GRAND JUNCTION, CO 81501	970/242-7496
209	Colorado	Mary Korte GRAND JUNCTION HS	1400 N 5TH ST GRAND JUNCTION, CO 81501	970/242-7496
025	Colorado	Terry Harrington GRAND MESA HS	RR 1 BOX 26 COLLBRAN, CO 81624-9704	970/487-3576
039	S Platte	Eric Nerwin GRIFFITH CENTER	PO BOX 95 LARKSPUR, CO 80118-0095	303/681-2400
158	Gunnison	John Stegmaier GUNNISON HS	800 W OHIO GUNNISON, CO 81230	970/641-7700
005	Green	Greg Richards HAYDEN MS	PO BOX 70 HAYDEN, CO 81639-0070	970/276-3762
138	S Platte	Paul Hempel	PO BOX 926 NEDERLAND, CO 80466-0926	303/258-0323
080	S Platte	Missy Marchino HERITAGE HS	1401 W GEDDES AVE LITTLETON, CO 80120-4120	303/347-7671
173	Arkansas	Beth Kreutzer HOEHNE HS	PO BOX 91 HOEHNE, CO 81046	719/846-4457
174	Arkansas	Kathy Barta HOEHNE JHS	PO BOX 91 HOEHNE, CO 81046	719/846-9453 FAX: 719/846-4450
174	Arkansas	Eva Benine HOEHNE JHS	PO BOX 91 HOEHNE, CO 81046	719/846-4457 FAX: 719/846-2732
239	Arkansas	Debbie Bland HOLLY MIDDLE HS	PO BOX 608 HOLLY, CO 81047	719/537-6512 FAX: 719/537-0312
096	S Platte	Jo Smith HORIZON HS	5321 E 136TH AVE BRIGHTON, CO 80601-7714	303/450-5227 FAX: 303/450-3894

Kit #	Watershed	Teacher School	Mailing address	Phone Fax
136	Gunnison	Teresa Phelps HOTCHKISS HS	3535 J 60 RD HOTCHKISS, CO 81419-9507	970/872-3882 FAX: 970/872-2390
058	San Juan	Martha Dyer IGNACIO HS	PO BOX 460 IGNACIO, CO 81137-0460	970/563-9431
058	San Juan	Julia Somers IGNACIO HS	PO BOX 460 IGNACIO, CO 81137-0460	970/563-9431 FAX: 970/563-9463
059	San Juan	Danny Jaques IGNACIO JHS	PO BOX 460 IGNACIO, CO 81137	970/563-4522 FAX: 970/563-4524
200	Arkansas	Neil Nelson JANITELL JHS	7635 FOUNTAIN MESA RD FOUNTAIN, CO 80817	719/391-3295
240	S Platte	W David Erwin JEFFERSON HS	2305 PIERCE ST EDGEWATER, CO 80214	303/982-6079 FAX: 303/982-6134
159	Arkansas	Kathy Close JEFFERSON MS	901 S 11TH ST ROCKY FORD, CO 81067-2154	719/254-7669 FAX: 719/254-7425
159	Arkansas	Darla Meier JEFFERSON MS	901 S 11TH ST ROCKY FORD, CO 81067-2309	719/254-7669
067	S Platte	Bernie Kendall JOHN EVANS JHS	2900 15TH AVE GREELEY, CO 80631-8902	970/353-5165
109	S Platte	Norman W Barden JULESBURG HS	102 W 6TH ST JULESBURG, CO 80737-1518	970/474-3364
009	Arkansas	Jeff Keidel	PO BOX 938 BUENA VISTA, CO 81211-0938	719/395-6035
023	Colorado	Chris Chopyack-Minor KEYSTONE SCIENCE SCHOOL	PO BOX 8606 KEYSTONE, CO 80435-7998	970/468-5824 FAX: 970/468-7769
023	Colorado	Jennifer Jolliffe KEYSTONE SCIENCE SCHOOL	PO BOX 8606 KEYSTONE, CO 80435-7998	970/468-5824
175	Arkansas	Judy Anderson KIM JR SR HS	PO BOX 100 KIM, CO 81049-0100	719/643-5295 FAX: 719/643-5295
175	Arkansas	Mark Korbitz KIM JR SR HS	PO BOX 100 KIM, CO 81049-0100	719/643-5295 FAX: 719/643-5295
241	Arkansas	Tim Hogan KIT CARSON SCHOOL	PO BOX 185 KIT CARSON, CO 80825	719/962-3219 FAX: 719/962-3317
241	Arkansas	Malcolm Schnabel KIT CARSON SCHOOL	PO BOX 185 KIT CARSON, CO 80825	719/962-3239 FAX: 719/962-3317
184	Arkansas	Meredith Bradfield LA JUNTA HS	1817 SMITHLAND LA JUNTA, CO 81050-3455	719/384-4467 FAX: 719/384-9160
187	Arkansas	Joy Klein LA JUNTA MS	9TH & SMITHLAND LA JUNTA, CO 81050	719/384-4371 FAX: 719/384-6910
176	Arkansas	Emery Ashby LA VETA HS	PO BOX 85 LA VETA, CO 81055	719/742-3662 FAX: 719/742-3959

Kit #	Watershed	Teacher School	Mailing address	Phone Fax
077	S Platte	Nick Lessi LAKE GEORGE ELEM	PO BOX 420 LAKE GEORGE, CO 80827	719/748-3945
242	S Platte	Marilyn Hanawalt LAKE GEORGE ELEM SCH	PO BOX 420 LAKE GEORGE, CO 80827-0420	719/748-3911 FAX: 719/748-8151
177	Arkansas	Alan Setter LAMAR MS	104 W PARK ST LAMAR, CO 81052-3147	719/336-7436 FAX: 719/336-5457
177	Arkansas	Robin Staker LAMAR MS	104 W PARK ST LAMAR, CO 81052-3147	719/336-7436 FAX: 719/336-5457
111	Arkansas	Cynthia Ice LAS ANIMAS HS	300 GROVE AVE LAS ANIMAS, CO 81054-1026	719/456-0211 FAX: 719/456-1117
243	Arkansas	Patricia St Germain LEWIS PALMER HS	1300 HIGBY MONUMENT, CO 80132	719/488-4620
243	Arkansas	Thomas Stout LEWIS PALMER HS	1300 HIGBY MONUMENT, CO 80132	719/488-4620
229	S Platte	Renny James LIBERTY HS	PO BOX 112 JOES, CO 80822-0112	970/358-4288
079	S Platte	Ann Molzer LITTLETON HS	199 E LITTLETON BLVD LITTLETON, CO 80121-1106	303/347-7744 FAX: 303/347-7750
081	S Platte	Brian Hensman LITTLETON STUDENT OPT. PRG.	6558 S ACOMA ST LITTLETON, CO 80120-3413	303/347-3580
074	S Platte	Dan Kowal LOGAN SCHOOL	1836 LOGAN ST DENVER, CO 80203-1207	303/830-0326 FAX: 303/830-0849
151	S Platte	Bill Eyl LONGMONT HS	1040 SUNSET ST LONGMONT, CO 80501-4118	303/776-6014
151	S Platte	Madeline Niccore LONGMONT HS	1040 SUNSET ST LONGMONT, CO 80501-4118	303/776-6014
244	S Platte	Nancy Boscheinen LOUISVILLE MS	1341 MAIN LOUISVILLE, CO 80027	303/666-6503
	S Platte	Paula Edwards LOVELAND HS	920 W 29TH AVE LOVELAND, CO 80538	970/667-5374
245	S Platte	Jim Osborn LOVELAND HS	920 W 29TH AVE LOVELAND, CO 80538	970/667-5374
145	S Platte	Ken Poppe LYONS JR SR HS	PO BOX 619 LYONS, CO 80540-0619	303/823-6631
140	San Juan	Bill Tourjee MANCOS HS	PO BOX 420 MANCOS, CO 81328-0420	970/533-7746
141	San Juan	Bill Ryter MANCOS JHS	PO BOX 420 MANCOS, CO 81328-0420	970/533-7746
246	Arkansas	Jill Smith MCCLAVE SCHOOLS	PO BOX 1 MCCLAVE, CO 81057-0001	719/829-4517

Kit #	Watershed	Teacher School	Mailing address	Phone Fax
210	Green	Beverly DeVore MEEKER HS	PO BOX 159 MEEKER, CO 81641-0159	970/878-3631 FAX: 970/878-3570
210	Green	Bill Turner MEEKER HS	PO BOX 159 MEEKER, CO 81641-0159	970/878-5801 FAX: 970/878-3570
105	S Platte	Penny Propst MERINO HS	315 LEE ST MERINO, CO 80741	970/522-7424
212	Colorado	Wayne Benesch MIDDLE PARK HS	PO BOX 130 GRANBY, CO 80446	970/887-2104
062	San Juan	Nancy Federico MILLER MS	2608 JUNCTION ST DURANGO, CO 81301-4133	970/247-1418
016	Colorado	John Brendza MINTURN MS	GENERAL DELIVERY MINTURN, CO 81645-9999	970/827-5721
016	Colorado	Brian Murray MINTURN MS	1951 S HWY 24 MINTURN, CO 81645	970/827-5721
006	Green	Doug Field MOFFAT COUNTY HS	900 FINLEY LN CRAIG, CO 81625-3241	970/824-7036
		Kristy Bradford MONTANA WATERCOURSE, MSU	201 CULBERTSON HALL BOZEMAN, MT 59717	
035	Rio Grande	David Cooper MONTE VISTA HS	345 PROSPECT ST MONTE VISTA, CO 81144	719/852-3586
031	Rio Grande	Dirk Oden MONTE VISTA MS	3720 SHERMAN AVE MONTE VISTA, CO 81144-9402	719/852-5984
202	Gunnison	Rusty George MONTROSE HS	PO BOX 1626 MONTROSE, CO 81401	970/249-6636
085	S Platte	Emily Beall Pringle MOREY MS	840 E 14TH AVE DENVER, CO 80218-1803	303/832-1139
211	Colorado	Carol LeCrone MT GARFIELD MS	3475 FRONT ST CLIFTON, CO 81520	970/464-0533 FAX: 970/464-0536
211	Colorado	Steve Rocha MT GARFIELD MS	3475 FRONT ST CLIFTON, CO 81526	970/464-7910 FAX: 970/464-5270
211	Colorado	Mark Schmalz MT GARFIELD MS	3475 FRONT ST CLIFTON, CO 81526	970/464-7910 FAX: 970/464-5270
211	Colorado	Marty Shelp MT GARFIELD MS	3475 FRONT ST CLIFTON, CO 81520	970/464-0533 FAX: 970/464-0536
	Arkansas	Jill Smith McCLAVE HS	PO BOX 1 McCLAVE, CO 81057	719/829-4517
203	S Platte	Forrest Ketchin NAROPA INSTITUTE	2130 ARAPAHOE AVE BOULDER, CO 80302-6697	303/444-0202 FAX: 303/444-0410
203	S Platte	Mark McCaffrey NAROPA INSTITUTE	2130 ARAPAHOE AVE BOULDER, CO 80302-6697	303/546-3550 FAX: 303/444-0410

Kit #	Watershed	Teacher School	Mailing address	Phone Fax
203	S Platte	Anne Parker NAROPA INSTITUTE	2130 ARAPAHOE AVE BOULDER, CO 80232	303/444-0202
225	Gunnison	Matt Nalick NATIONAL PARK SERVICE	102 ELK CREEK GUNNISON, CO 81230	970/641-2337 FAX: 970/641-3127
054	Dolores	Rodney Sandefur NATURITA MS	200 MAIN ST NATURITA, CO 81422	970/865-2204
071	S Platte	Al Huck NIWOT HS	GENERAL DELIVERY NIWOT, CO 80544-9999	303/652-2550 FAX: 303/440-9399
110	Green	Phil Anderson NORTH PARK HS	910 4TH ST WALDEN, CO 80480-0798	970/723-4392 FAX: 970/723-8486
094	S Platte	Doug Smith NORTHGLENN HS	601 W 100TH PL NORTHGLENN, CO 80221-6098	303/451-1241 FAX: 303/450-3880
094	S Platte	Belia Straushein NORTHGLENN HS	601 W 100TH PL NORTHGLENN, CO 80221-6098	303/451-1241
160	Dolores	Nancy Wells NORWOOD HS	PO BOX 448 NORWOOD, CO 81423-0448	970/327-4336
160	Dolores	Donald Wilson NORWOOD HS	1225 N SUMMIT AVE NORWOOD, CO 81423	970/327-4336
055	Dolores	Denice Sandefur NUCLA HS	PO BOX 570 NUCLA, CO 81424-0570	970/864-7350
214	Gunnison	Kari Jo Keller OLATHE HS	PO BOX 430 OLATHE, CO 81425	970/323-5546
213	Gunnison	Kari Jo Keller OLATHE MS	PO BOX 430 OLATHE, CO 81425	970/323-5521
120	S Platte	Quentin Baker OLDE COLUMBINE HS	1200 S SUNSET ST LONGMONT, CO 80501-6527	303/772-3333 FAX: 303/651-7446
215	Colorado	John Hurley ORCHARD MESA MS	3475 FRONT ST GRAND JUNCTION, CO 81503-2003	970/242-5563
215	Colorado	Jim White ORCHARD MESA MS	2736 UNAWEEP GRAND JUNCTION, CO 81503	970/242-5563 FAX: 970/243-7343
214	Gunnison	Eric Fagrelius OURAY HS	PO BOX N OURAY, CO 81427	970/325-4218 FAX: 970/325-7343
247	S Platte	Mary Jansen-Hedrick OVERLAND TRAIL MS	455 N 19TH BRIGHTON, CO 80601	303/659-3491
247	S Platte	Alice Sueltenfuss OVERLAND TRAIL MS	455 N 19TH BRIGHTON, CO 80601	303/659-3491
	San Juan	Joel Thompson PAGOSA SPRINGS HS	PO BOX 1498 PAGOSA SPRINGS, CO 81147-1498	970/264-2231 FAX: 970/264-2239
051	San Juan	Tom McCollough PAGOSA SPRINGS MS	PO BOX 1498 PAGOSA SPRINGS, CO 81147-1498	970/264-2794

Kit #	Watershed	Teacher School	Mailing address	Phone Fax
201	San Juan	Cindy Nobles PAGOSA SPRINGS MS	PO BOX 1498 PAGOSA SPRINGS, CO 81147-1498	970/264-2794 FAX: 970/264-4631
217	Colorado	Bob Cameron PALISADE HS	3679 G RD PALISADE, CO 81526	970/464-5937 FAX: 970/464-5102
217	Colorado	Drake Jandreau PALISADE HS	3679 G RD PALISADE, CO 81526	970/464-5937 FAX: 970/464-5102
217	Colorado	Chuck Kem PALISADE HS	3679 G RD PALISADE, CO 81526	970/464-5937
135	Gunnison	Tracy Campbell PAONIA HS	1551 HWY 187 PAONIA, CO 81428-9410	970/527-4882
161	Arkansas	Glenda Carpenter PITTS MS	25 CORNELL CIR PUEBLO, CO 81005-1961	719/549-7430 FAX: 719/549-7433
179	Arkansas	Toni Cortese PITTS MS	25 CORNELL CIR PUEBLO, CO 81005-1961	719/549-7430 FAX: 719/549-7433
161	Arkansas	Louis Lile PITTS MS	25 CORNELL CIR PUEBLO, CO 81005-1961	719/549-7430 FAX: 719/549-7433
087	S Platte	Jerry Blamey PLACE MS	7125 CHERRY CREEK DR N DENVER, CO 80224-2044	303/758-6111 FAX: 303/758-6114
024	Colorado	Lester Wheeler PLATEAU VALLEY HS	RR 1 BOX 26 COLLBRAN, CO 81624-9704	970/487-3547
068	S Platte	Kimberly Greene PLATT JHS-CHOICE PRG	6096 BASELINE RD BOULDER, CO 80303-3001	303/499-6800
068	S Platte	Jerolyn Holland PLATT JHS-CHOICE PRG	6096 BASELINE RD BOULDER, CO 80303-3001	303/499-6800
078	S Platte	Glenn Pence PLATTE CANYON HS	PO BOX 295 BAILEY, CO 80421-0295	303/838-4642 FAX: 303/838-4266
101	S Platte	Steve Peasley PLATTE VALLEY HS	PO BOX 487 KERSEY, CO 80644-0485	970/352-6168 FAX: 970/353-7730
204	S Platte	John Moos PONDEROSA HS	7007 E BOYOU GULCH RD PARKER, CO 80134-6699	303/841-2770 FAX: 303/841-5623
204	S Platte	Andrew Wilke PONDEROSA HS	7007 E BOYOU GULCH RD PARKER, CO 80134-6699	303/841-2770 FAX: 303/841-5623
122	S Platte	Tom Davis POUDRE HS	201 IMPALA DR FORT COLLINS, CO 80521	970/416-6160
122	S Platte	John Knight POUDRE HS	201 IMPALA DR FORT COLLINS, CO 80521	970/416-6158
122	S Platte	Tim Lenczycki POUDRE HS	201 IMPALA DR FORT COLLINS, CO 80521	970/416-6000 FAX: 970/416-6060
122	S Platte	Kelly Suto POUDRE HS	201 IMPALA DR FORT COLLINS, CO 80521	970/416-6162 FAX: 970/416-6060

Kit #	Watershed	Teacher School	Mailing address	Phone Fax
178	Arkansas	Darryl Abeyta PRIMERO HS	20200 HWY 12 WESTON, CO 81091	719/868-2715
178	Arkansas	Doug Little PRIMERO HS	20208 HWY 12 WESTON, CO 81091	719/868-2715
178	Arkansas	Kristen Trujillo PRIMERO HS	20200 HWY 12 WESTON, CO 81091	719/868-2715
248	S Platte	David Hoskins PS1 CHARTER SCHOOL	901 BANNOCK DENVER, CO 80204	303/575-6690 FAX: 303/575-6661
230	Arkansas	Melissa Colussi PUEBLO COUNTY HS	1050 35TH LN PUEBLO, CO 81006	719/948-3351
065	Arkansas	John Fabian, Jr. PUEBLO COUNTY HS	1050 35TH LN PUEBLO, CO 81006	719/948-3351
185	Arkansas	Bill Rottinghaus PUEBLO EAST HS	29074 HILLSIDE RD PUEBLO, CO 81006	719/549-7757 FAX: 719/549-7755
164	Arkansas	Tom Gribben PUEBLO SOUTH HS	1801 HOLLYWOOD PUEBLO, CO 81005-2511	719/549-7255
188	Green	Ed Anderson RANGELY HS	234 S JONES AVE RANGELY, CO 81648-3029	970/675-2253 FAX: 970/675-2224
218	Green	Duane Moeller RANGELY MS	550 RIVER RD RANGELY, CO 81648	970/675-5021 FAX: 970/675-5023
152	S Platte	Cole Freeman REVERE JR SR HS	300 MORGAN OVID, CO 80744	970/463-5477
072	S Platte	Shawna Crocker RICK CTR FOR GIFTED CHILDREN	2040 S YORK DENVER, CO 80208	303/871-2515
219	Colorado	Robert Koper RIFLE HS	1350 PREFONTAINE AVE RIFLE, CO 81650	970/625-1596 FAX: 970/625-4350
220	Colorado	Karen Hammann RIFLE MS	200 W 6TH RIFLE, CO 81650	970/625-1776 FAX: 970/625-4190
179	Arkansas	Patrick Farrell RISLEY MS	625 MONUMENT PUEBLO, CO 81001	719/549-7440
221	Colorado	Joyce Wizer RIVERSIDE JHS	PO BOX 199 NEW CASTLE, CO 81647-0199	970/984-2611 FAX: 970/984-3178
046	Colorado	William Vetter ROARING FORK HS	180 SNOWMASS DR CARBONDALE, CO 81623-2166	970/963-3840
163	Arkansas	T. Shawn McGrath ROCKY FORD HS	100 W WASHINGTON AVE ROCKY FORD, CO 81067-2345	719/254-7431
163	Arkansas	Jeff Miller ROCKY FORD HS	100 W WASHINGTON AVE ROCKY FORD, CO 81067-2345	719/254-2607
	Arkansas	David Ritter ROCKY FORD HS	100 W WASHINGTON AVE ROCKY FORD, CO 81067	719/254-7431

Kit #	Watershed	Teacher School	Mailing address	Phone Fax
	S Platte	Scott Kemp ROCKY MOUNTAIN HS	1300 W SWALLOW RD FORT COLLINS, CO 80526-2412	970/226-5626
	S Platte	Jon Mann ROCKY MOUNTAIN SCHOOL	3755 S MAGNOLIA WAY DENVER, CO 80237	303/759-2076
231	S Platte	Carol Seemueller ROCKY MT HS	1300 W SWALLOW FT COLLINS, CO 80526	970/416-7179
231	S Platte	Debbie Waterloo ROCKY MT HS	1300 W SWALLOW FT COLLINS, CO 80526	970/416-7192
118	S Platte	Howard Palmer ROOSEVELT HS	616 N 2ND ST JOHNSTOWN, CO 80534-8538	970/587-4633 FAX: 970/587-2608
180	Gunnison	Hap Channell RULAND MS	700 E VIRGINIA AVE GUNNISON, CO 81230-2043	970/641-7710
011	Arkansas	Doug Hansen SALIDA HS	PO BOX 70 SALIDA, CO 81201-0070	719/539-2267
249	S Platte	John Petering SHINING MT WALDORF	987 LOCUST BOULDER, CO 80304-0551	303/444-7697 FAX: 303/444-7701
038	Rio Grande	Roger Dawson SIERRA GRANDE HS	RR 1 BOX 15 BLANCA, CO 81123-9799	719/379-3257
038	Rio Grande	Marilyn Epley SIERRA GRANDE HS	RR1 BOX 15 BLANCA, CO 81123-9799	719/379-3257
063	San Juan	Lena Gibson SILVERTON HS	GENERAL DELIVERY SILVERTON, CO 81433-9999	970/387-5544
063	San Juan	Janet O'Leary SILVERTON HS	PO BOX 128 SILVERTON, CO 81433-0128	970/387-5543 FAX: 970/387-5791
153	S Platte	David Balstad SKYLINE HS	600 E MOUNTAIN VIEW AVE LONGMONT, CO 80501	303/651-0123 FAX: 303/678-1830
153	S Platte	Doug Hunter SKYLINE HS	600 E MOUNTAIN VIEW AVE LONGMONT, CO 80501-3044	303/651-0123
092	S Platte	Holly Cook SKYVIEW HS	9000 YORK ST THORNTON, CO 80229-4659	303/853-1200
001	Green	Ed Hayne SOROCO HS	PO BOX 158 OAK CREEK, CO 80467-0158	970/736-2531 FAX: 970/736-2458
027	Green	Kate Hayne SOROCO MS	PO BOX 158 OAK CREEK, CO 80467-0158	970/736-8531
076	S Platte	George Vardas SOUTH PARK JR SR HS	HATHAWAY ST FAIRPLAY, CO 80440	719/836-2007
190	S Platte	Raylene Olinger SOUTH VALLEY MS	PO BOX 404 PLATTEVILLE, CO 80651	970/785-2205 FAX: 970/785-2182
232	S Platte	Charles Horner SPRINGFIELD HS	389 TIPTON SPRINGFIELD, CO 81073	719/523-6522 FAX: 719/523-4164

Kit #	Watershed	Teacher School	Mailing address	Phone Fax
222	San Juan	Barb Swain ST COLUMBA MS	1801 E 3RD AVE DURANGO, CO 81301	970/247-5527
154	S Platte	George Barker STANDLEY LAKE HS	9300 W 104TH AVE BROOMFIELD, CO 80021-3686	303/465-1144
154	S Platte	Wayne Cowell STANDLEY LAKE HS	9300 W 104TH AVE BROOMFIELD, CO 80021-3686	303/465-1144 FAX: 303/465-1144
004	Green	Jeff Hartig STEAMBOAT SPRINGS HS	PO BOX 774368 STEAMBOAT SPRINGS, CO 80477	970/879-1562 FAX: 970/879-8039
004	Green	Bill McKelvie STEAMBOAT SPRINGS HS	PO BOX 774368 STEAMBOAT SPRINGS, CO 80477-4368	970/879-1562
003	Green	Winston Walker STEAMBOAT SPRINGS MS	PO BOX 774368 STEAMBOAT SPRINGS, CO 80477-4368	970/879-1058
107	S Platte	Kent Swedlund STERLING HS	7TH & BROADWAY STERLING, CO 80751	970/522-2944
106	S Platte	Rick Kaiser STERLING MS	1177 PAWNEE AVE STERLING, CO 80751-4902	970/522-1041
115	Colorado	Ed Adams SUMMIT HS	PO BOX 7 FRISCO, CO 80443-0007	970/668-3522 FAX: 970/668-1272
114	Colorado	Gail Roach SUMMIT MS	PO BOX 7 FRISCO, CO 80443-0007	970/668-5037 FAX: 970/668-5038
165	Arkansas	Lyn Neve SWINK JR SR HS	PO BOX 485 SWINK, CO 81077-0485	719/384-8103
052	Dolores	Ann Larivee TELLURIDE HS	PO BOX 187 TELLURIDE, CO 81435-0187	970/728-4377 FAX: 970/728-0257
052	Dolores	Gerald Martin TELLURIDE HS	PO BOX 187 TELLURIDE, CO 81435-0187	970/728-4377 FAX: 970/728-0257
053	Dolores	Don Mitchell TELLURIDE MS	PO BOX 187 TELLURIDE, CO 81435-0187	970/728-4377
155	S Platte	Rob Buirgy THOMPSON VALLEY HS	1669 EAGLE DR LOVELAND, CO 80537-6225	970/669-0801 FAX: 970/667-1628
093	S Platte	Paula Tutt THORNTON HS	9351 WASHINGTON ST THORNTON, CO 80229-3520	303/452-4800
132	S Platte	Mark Williams TOWN OF JAMESTOWN	PO BOX 298 JAMESTOWN, CO 80455-0298	303/449-2621 FAX: 303/449-2621
066	S Platte	Arvon Engel UNIVERSITY LAB HS	UNC BISHOP-LEHR HALL GREELEY, CO 80639-0001	970/351-2745
066	S Platte	Ray Tschillard UNIVERSITY LAB HS	UNC BISHOP-LEHR HALL GREELEY, CO 80639-0001	970/351-2291
183	Arkansas	Jeff Habig USC/NATURE CENTER	5200 NATURE CENTER RD PUEBLO, CO 81003-3974	719/549-2327

Kit #	Watershed	Teacher School	Mailing address	Phone Fax
183	Arkansas	Matt Keefauver USC/NATURE CENTER	5200 NATURE CENTER RD PUEBLO, CO 81003-3974	719/549-2327
223	Colorado	Brett Falk VAIL MOUNTAIN SCHOOL	3160 KATSOS RANCH ROAD VAIL, CO 81657	970/476-3850 FAX: 970/476-3851
099	S Platte	Jeff Cogburn VALLEY HS	PO BOX 156 GILCREST, CO 80623-0156	970/737-2494
099	S Platte	Terry Larrick VALLEY HS	PO BOX 156 GILCREST, CO 80623-0156	970/737-2494
233	Arkansas	Bob Barber WALSENBURG MS	415 WALSEN AVE WALSENBURG, CO 81089	719/738-3083
233	Arkansas	Christine Terrell WALSENBURG MS	415 WALSEN AVE WALSENBURG, CO 81089	719/783-3083
119	S Platte	Terry Hunter WALT CLARK MS	2605 CARLISLE DR LOVELAND, CO 80537-6714	970/667-7236
		Chris Bridges WATER CONSERVATION BOARD	1313 SHERMAN ST STE 721 DENVER, CO 80203-2278	303/866-3441
113	Colorado	Mike Wilson WEST GRAND HS	1201 N PARK AVE KREMMLING, CO 80459	970/724-3425
129	Arkansas	Al Derby WIDEFIELD HS	615 WIDEFIELD DR COLORADO SPRINGS, CO 80911-1839	719/391-3000 FAX: 719/391-8072
124	S Platte	Roberta Barrington WINDSOR MS	PO BOX 609 WINDSOR, CO 80550-0609	970/686-7496 FAX: 970/686-7122
124	S Platte	Jim Houck WINDSOR MS	PO BOX 609 WINDSOR, CO 80550-0609	970/686-7496
124	S Platte	Gary Perko WINDSOR MS	PO BOX 609 WINDSOR, CO 80550-0609	970/686-7496 FAX: 970/686-7122
168	S Platte	Les Brokaw WRAY HS	PO BOX 157 WRAY, CO 80758-0157	970/332-5758
091	S Platte	Peggy McCoy YORK JHS	9200 YORK ST THORNTON, CO 80229-7653	303/853-1600 FAX: 303/853-1656

Appendix B

Quality Assurance/Quality Control Plan

A quality assurance and quality control (QA/QC) plan is necessary when performing water quality analyses. An effective quality assurance plan checks the precision and accuracy of an analytical result and maintains an acceptable level of analytical reliability. Good precision means the ability to repeat an analysis and obtain consistent results. In other words the method chosen for a particular analysis can repeatedly produce the same result for the same sample amount, within a margin of error. Accuracy refers to how close a measurement is to the true value. Thus, when a method is first developed or an existing method is applied in a new way, the quality assurance program validates the method. If the new method provides acceptable levels of precision and accuracy, it may be applied routinely.

After a method is chosen, a quality control program is initiated to maintain the reliability of the measurement process. This includes such things as minimizing contamination to equipment and stock chemicals, equipment operation and maintenance, sample tracking, duplicates, replicates, blanks and so forth. Quality control measures are routinely applied to reduce the occurrence of error.

The following items are included in the Rivers of Colorado Water Watch Network quality assurance and quality control (QA/QC) plan.

QUALITY ASSURANCE

Sample Training

A minimum of two students and one teacher from each participating school must attend a four-day workshop in which they are trained to operate the water quality sampling equipment. Training includes sample preparation, collection, analyses, shipping, recording, and QA/QC procedures. Participants must complete the cycle of sample preparation to analyses including all QA/QC procedures at least twice during the workshop. Each school receives a video tape with the sampling techniques and procedures to refer to after the workshop. A "kick-off" day is chosen for all schools to target collection of the first "real" sample. Hot line telephone numbers are also available to the teacher if they need to answer questions about sampling procedures. After training, teachers take practice runs prior to the "real" sampling event. Following training and the kick-off day, at least one QA/QC site visit occurs by trained DOW personnel.

Each school is visted annually, tested and certified for that year. An annual activity report is produced of each school's QA/QC data.

The Sampling Plan

A specific sampling plan is outlined and agreed upon with each school during the four-day training workshop. Included in this sampling plan are sample station locations, sample frequency, parameters and starting date. Sample station locations for surface water chemistry are school and river specific. In general stations will duplicate existing monitoring stations and be proximate to USGS gauging stations when ever possible. Sample frequency is a function of parameters, seasons, and school calendars. The minimum sample frequency for basic stream parameters is illustrated below:

Month	J	F	M	A	M	J	J	A	S	O	N	D
# of Samples	1	1	2	3	4	4	3	2	1	1	1	1

This is subject to change for special projects, parameters and/or schools.

Initially, each school takes measurements for temperature, alkalinity, hardness, pH, dissolved oxygen, and heavy metals. Individual metals may vary but usually include iron, cadmium, copper, manganese, lead, and zinc. Students analyze all the above parameters except metals. Metals samples are shipped to the CDOW laboratory in Ft. Collins. A trained technician performs the metals analysis. Heavy metals sampling may be phased out and organic or other parameters phased in as results are reviewed. Sampling parameters remain flexible since each river is a unique system.

Sampling Procedures

Sampling procedures, labeling, containers, and preservation follow Standard Methods (1989) and/or EPA guidelines (from Table II of 40 CFR 136). This would include such items as keeping samples chilled until analysis, compliance with sample holding time for respective parameters, using certified reagents and standards, and using appropriate detection (EPA, CDH and/or CDOW) limits. The accuracy and precision for each chemical parameter is determined by the CDOW but generally follows Standard Methods (1989) and/or EPA requirements. All equipment is frequently serviced, calibrated, cleaned, and maintained. The CDOW supplies all equipment and chemicals to the schools. Some parameters may be measured for educational not analytical purposes and thus may not follow all QA/QC procedures and/or EPA requirements (this does not include pH, temperature, alkalinity, hardness, and metals).

Colorado Division of Wildlife standardized report forms will be utilized to record data. The use of these forms provide a consistent methodology to record data. The data is also entered into a computer and files backed up regularly. Electronic data is checked against hard copies and validated. The primary databases will be located at the CDOW. Each school will have their own database. The CDOW and schools will transfer data via a modem and hard copy. Data validation is performed by CDOW personnel. A teacher at each school is designated as the sample custodian and is responsible for the samples and records of the samples. The CDOW chain-of-custody procedure is followed when custody is exchanged . Samples are shipped and secured in taped coolers by UPS to the CDOW. The chain-of-custody record

accompanies all samples and will be checked and signed by the appropriate sample custodian.

Laboratory

The laboratory refers to the CDOW laboratory in Ft. Collins which is used for the metals analysis. Instrumentation includes the Video 22 Atomic Absorption (AA) Spectrometer with Smith-Hieftje background correction, a 755 Controlled Temperature Furnace Atomizer, and a Fastac II Automatic Sampler.

Quality assurance in the laboratory includes the cleaning of glassware washed with 6M nitric acid, rinsed with deionized water, then rinsed with 18 megahom (nano pure) water. Pipets will be washed in acid, then rinsed with deionized water only. Tubes used for the AA sit in sample water for approximately one hour to leach off any metals on the tube before analysis begins.

QUALITY CONTROL

Each school will collect field duplicates and blank samples for metals analysis. Duplicate metal samples will be collected and sent to the CDOW for analysis at a frequency of 1/5 samples per station. Field blanks will also be collected and sent to the CDOW for analysis at a frequency of 1/5 samples per station. Unknown standards for pH, alkalinity and hardness are prepared for the students to check their procedural accuracy as well as chemical accuracy at least twice a year. Students are instructed how to keep the equipment clean and techniques to minimize contamination. A duplicate test between each schools' and CDOW equipment is performed for alkalinity and hardness tests.

Laboratory

This section refers to the Colorado Division of Wildlife Laboratory in Fort Collins where the metals analyses will take place. Students are encouraged to visit a laboratory or college to see how the atomic absorption spectrometer (AA) analyzes for metals. The laboratory will use pure standards, solvents and reagents. When applicable, reference standards solutions will be traceable to National Bureau of Standards. Each new lot of reagent grade chemicals shall be tested for quality of performance. Pure water is used in analytical procedures and the cleaning of glassware. The water is prepared by a special deionized water system.

There are several types of quality control samples, including a method blank, calibration standards, check standards, a control standard, spikes, and duplicate samples. Each of these are described in the following paragraphs.

A method blank containing distilled, deionized water and reagents is carried through the entire analytical procedure. Calibration standards (usually five) are prepared in the laboratory by adding a known amount of a pure compound in an appropriate matrix. The results obtained from these standards are used to generate a standard curve and thereby quantify the compound in the environmental sample.

Two check standards are prepared (usually they are two of the calibration standards) in the same manner as the calibration standards. The check standard is used to verify that the existing concentration calibration standard file or calibration curve is still valid during analysis. The check standards can provide information on the accuracy of the total analytical method and of instrumental performance.

Approximately every 7 to 8 samples per metal the atomic absorption spectrometer is autozeroed then a blank and check standard (usually the middle concentration calibration standard) are read. The instrument automatically adjusts the calibration curve. The previous seven samples will be re-analyzed if the determination of the calibration standard deviates by greater than 15 percent. Smith-Hieftje background correction will be used. This procedure keeps the calibration curve valid throughout the analysis.

A control sample of a known value is used to validate the calibration curve, the calibration standards, and the analytical procedure. The control sample is used for validation before analysis begins and the value obtained must fall within -/+ 10 percent of the true value for validation. This control sample is obtained from the EPA and is analyzed every 20 samples (5 percent).

A matrix spike is prepared by adding a known amount of a pure compound to the environmental sample. The compound is the same as that being assayed for in the environmental sample. For example, if an environmental sample is being analyzed for iron, then pure iron is added to an environmental sample to make the matrix spike for iron. A random 5% of samples for each metal analyzed are spiked and reanalyzed. Matrix spikes simulate the background and interferences found in the actual samples. The calculated percent recovery of the matrix spike is considered to be a measure of accuracy of the total analytical method, sample preparation to analysis. The tolerance limits for acceptable percent recovery are usually those established by the EPA (usually 80 percent or greater percent recovery).

Aliquots are made in the laboratory of the same sample and each aliquot is treated exactly the same throughout the analytical method. These aliquots are referred to as laboratory duplicates, similar to a field duplicate but prepared in the laboratory not the field. Duplicate analysis will be performed on at least 5 percent of the samples. In addition a "blind" duplicate sample per sampling period will be analyzed.

The difference between the values of the laboratory duplicate samples is referred to as the relative percent difference (RPD) and is a measure of the precision of the analytical method. The tolerance limit for percent difference between laboratory duplicates is usually those established by the EPA.

Metal concentrations will be reported as the mean of the three sample injections in the case of analyses by graphite furnace or three five second absorbance determinations in the case of analyses by flame.

School's QA/QC Responsibilities

Without quality control and quality assurance (QA/QC) the data each school collects would not be real or usable. Some of these procedures may seem tedious or not relevant, however the procedures are a critical component of the program. If every school does its part, the River Watch Network will collect valuable and usable data which can make a difference to your river.

Quality control and quality assurance items each school is directly responsible for include the following:

1. Taking a blank and duplicate sample every five samples per station.

2. Completing a duplicate sample from CDOW.

3. Completing the unknown tests for pH, alkalinity and hardness in an accurate and timely fashion.

4. Keep a good record of your sample numbers by using the sample tracking sheet. Keep an organized file of hard copy data.

5. Accurately enters data on computer, (if school has a CDOW computer) and frequently mails the SEND.DBF file to the CDOW.

6. Participate in QA/QC visits.

7. Use appropriate procedures for sample collection and analysis of samples. Recording data with accuracy and care. Ensuring proper care and maintenance of chemicals and equipment.

Based on the above items, each school will become *Certified* in the eyes of the Colorado Division of Wildlife. Each school should strive to be certified. This means your school is providing reliable and consistent data that the CDOW can use to protect your river. Annual quality control charts and evaluations will be assessed for your school. Once certified, based on annual reviews, your school will remain certified or could go on probation.

The CDOW intends to reward schools who perform well and remain certified. This may include trips, computer software and games, as well as prizes.