Physical, Chemical, and Biological Data for Detailed Study of Irrigation Drainage in the Uncompahgre Project Area and in the Grand Valley, West-Central Colorado, 1991-92

by David L. Butler and Winfield G. Wright, U.S. Geological Survey, Dorothy A. Hahn, Richard P. Krueger, and Barbara Campbell Osmundson, U.S. Fish and Wildlife Service

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U.S. GEOLOGICAL SURVEY

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CONVERSION FACTORS, VERTICAL DATUM, AND ACRONYMS

Multiply	By	To obtain
cubic foot per second (ft^3/s)	0.02832	cubic meter per second
foot (ft)	0.3048	meter
foot squared per day (ft^2/d)	0.09290	meter squared per day
gallon per minute (gal/min)	0.06309	liter per second
inch (in.)	25.4	millimeter
liter (L)	0.2642	gallon
mile (mi)	1.609	kilometer
milliliter (mL)	0.0610	cubic inch
millimeter (mm)	0.03937	inch
ton per day	0.9072	metric ton per day

Degree Celsius (°C) may be converted to degree Fahrenheit (°F) by using the following equation:

$$°F = 9/5\ (°C) + 32.$$

Degree Fahrenheit (°F) may be converted to degree Celsius (°C) by using the following equation:

$$°C = 5/9\ (°F-32).$$

The following terms and abbreviations also are used in this report:

microgram per gram (µg/g)
microgram per liter (µg/L)
micrometer (µm)
milligram per liter (mg/L)
microsiemens per centimeter at 25 degrees Celsius (µS/cm)

DEF	S,S,S-Tributyl phosphoro trithioate
PCB	polychlorinated biphenyl
DDD	1,1-dichloro -2,2-bis (p-chlorophenyl) ethane
DDE	dichloro diphenyl dichloroethylene
DDT	dichloro diphenyl trichloroethane
BHC	benzene hexachloride
HCB	hexachlorobenzene

Sea level: In this report "sea level" refers to the National Geodetic Vertical Datum of 1929 (NGVD of 1929)--a geodetic datum derived from a general adjustment of the first-order level nets of both the United States and Canada, formerly called Sea Level Datum of 1929.

For those who wish to convert dry-weight concentrations to wet-weight concentrations for biological samples, the equation is:

wet weight concentration = dry weight concentration [1-(percent moisture)/100].

Physical, Chemical, and Biological Data for Detailed Study of Irrigation Drainage in the Uncompahgre Project Area and in the Grand Valley, West-Central Colorado, 1991–92

By David L. Butler, Winfield G. Wright, Dorothy A. Hahn, Richard P. Krueger, and Barbara Campbell Osmundson

Abstract

Because of concerns about potential effects of irrigation drainage on fish and wildlife resources and on human health, the U.S. Department of the Interior initiated a program in 1985 to assess water-quality problems associated with Federal irrigation projects in the Western United States. Physical, chemical, and biological data were collected for a detailed study of irrigation drainage in the Uncompahgre Project area and in the Grand Valley, west-central Colorado, during 1991–92.

This report lists onsite measurements and concentrations of major constituents, trace elements, and stable isotopes for surface-water- and ground-water-sampling sites in the Uncompahgre Project area and in the Grand Valley. Insecticide data collected at selected surface-water sites in the Grand Valley in 1991 are presented. Ranges of specific-conductance measurements and dissolved-oxygen concentrations for selected wells in both areas and a daily record of water-level altitude and specific conductance for a well in the Grand Valley are presented. The report also presents historical water-level and dissolved-solids data collected by the U.S. Bureau of Reclamation for two wells in the Grand Valley.

Concentrations of trace elements, major constituents, total carbon, and organic carbon in bottom-sediment, bedrock, and aquifer-sediment samples are listed in the report. Also presented are semiquantitative data on clay and bulk mineralogy of various types of samples from the Mancos Shale, selenium-speciation data for selected water and bottom-sediment samples, and selected aquifer-test results.

Biological samples collected in the Uncompahgre Project area and in the Grand Valley included aquatic plants, aquatic invertebrates, fish, birds, and bird eggs. The report lists concentrations of trace elements in biological samples collected in 1991–92. A limited number of biological samples were analyzed for pesticides, PCB's, and polycyclic aromatic hydrocarbons.

INTRODUCTION

Large concentrations of selenium have been detected in irrigation drain water in the San Joaquin Valley in California. In 1983, incidences of mortality, birth defects, and reproductive failure in waterfowl at the Kesterson National Wildlife Refuge in the western San Joaquin Valley were reported by the U.S. Fish and Wildlife Service. Irrigation drain water was impounded at the refuge. Because of the concern that problems related to selenium or other trace inorganic or organic constituents in irrigation drainage might not be limited to the Kesterson area, the U.S. Department of the Interior (DOI) began a program in 1985 to determine whether irrigation-drainage problems existed at other DOI constructed or managed irrigation projects, national wildlife refuges, or other wetland areas for which the DOI has responsibility. The program has evolved to include five phases (Deason, 1986): (1) Site identification, (2) reconnaissance investigations, (3) detailed studies, (4) planning, and (5) remediation. Activities in the first three phases are conducted by study teams consisting of scientists from the U.S. Geological Survey (USGS), the U.S. Fish and Wildlife Service (FWS), the U.S. Bureau of Reclamation (BOR), and the U.S. Bureau of Indian Affairs (BIA). A USGS scientist heads each study team. Activities in phases 4 and 5 are done by the BOR.

About 600 irrigation projects and major wildlife resource areas have been constructed or are managed by DOI bureaus in 17 Western States. Reconnaissance investigations are designed to determine whether irrigation drainage (1) has caused or has the potential to cause significant harmful effects on human health or on

fish and wildlife or (2) may limit the suitability of water for beneficial uses. The duration of reconnaissance investigations is about 2 years. Detailed studies are initiated if reconnaissance investigations indicate that potentially serious water-quality problems are related to irrigation drainage. The purpose of the detailed studies is to gather sufficient information to provide the scientific understanding needed for development of reasonable alternatives to mitigate or resolve identified problems. The purpose of planning is to develop coordinated action with appropriate Federal, State, and local agencies for cleanup. The final phase involves implementation of corrective actions developed during planning.

A reconnaissance investigation of the Uncompahgre Project (irrigated area outlined in fig. 1 and pl. 1), which is a BOR irrigation project, and of Sweitzer Lake documented elevated concentrations of selenium in some water, bottom-sediment, and biota samples collected in 1987-89 (Butler and others, 1991). Because of the limited scope of reconnaissance investigations, source areas and distribution of selenium in irrigated areas of the Uncompahgre Project were not determined nor were effects on biota documented. Also, trace-element data were not collected in other irrigated areas in the lower Gunnison River Basin that are adjacent to or upstream from the Uncompahgre Project. Based on results of the reconnaissance investigation, a detailed study of irrigation drainage in the Uncompahgre Project was initiated in 1991. The detailed study of the Uncompahgre Project (fig. 1) was expanded to include other irrigated areas in the lower Gunnison River Basin either adjacent to or upstream from the Uncompahgre Project. Therefore, the "Uncompahgre Project area" includes the irrigated area served by the Uncompahgre Project and selected drainage basins adjacent to or upstream from the Uncompahgre Project.

The BOR identified irrigation drainage from the Grand Valley (fig. 1) as a large source of salt to the Colorado River (U.S. Bureau of Reclamation, 1978). Irrigated land in the Grand Valley (fig. 1) is served by Federal and private irrigation systems. The geologic unit that is the source of the salt in the Grand Valley is a marine shale (the Mancos Shale), and selenium problems associated with irrigation on marine shales have been documented in other irrigated areas in the Western States (See and others, 1992; Stephens and others, 1992). Also, historical selenium data for the Colorado and Gunnison Rivers indicate that the Grand Valley may be contributing substantial quantities of selenium to the Colorado River. There are similarities of climate, physiography, and geology between the Grand Valley and the Uncompahgre Project area; therefore, the Grand Valley was included in the detailed study.

Purpose and Scope

This report presents physical, chemical, and biological data collected for the detailed study of the Uncompahgre Project area (pl. 1) and of the Grand Valley (pl. 2) during 1991-92. Additional water-quality data collected by the USGS at six streamflow-gaging stations on the Gunnison, Uncompahgre, and Colorado Rivers during 1991 and 1992 also are included in this report. Tables are presented that include data for onsite measurements done at surface-water and ground-water sites and concentrations of major constituents and trace elements in surface-water, ground-water, bottom-sediment, bedrock, aquifer-sediment, and various biological samples. Based on results of the reconnaissance investigation in 1987-89 (Butler and others, 1991), selenium was the primary trace element of concern in irrigation drainage in the study area. Data also are presented for stable isotopes, pesticides, clay and bulk mineralogy of material from the Mancos Shale, selenium speciation, and polycyclic aromatic hydrocarbons. Data collection primarily was in the irrigated areas served by the Uncompahgre Project and in irrigated areas in the Grand Valley. Water and biota samples also were collected in irrigated areas in the lower Gunnison River Basin that are adjacent to or upstream from the Uncompahgre Project. In addition, historical water-level and dissolved-solids data for two wells and selected aquifer-test data collected by the BOR in the Grand Valley are presented.

Soil and alfalfa samples were collected in June 1991 in irrigated areas in the Uncompahgre Project by the USGS. Soil samples were analyzed for total selenium, for selected trace elements, and for selected water-extractable constituents, including water-extractable selenium. Alfalfa samples were analyzed for total selenium. The chemical results for the water-extractable constituents in soils are listed in Stewart and others (1993), and the chemical results for total trace elements in soils and total selenium in alfalfa are listed in J.G. Crock and others, (U.S. Geological Survey, written commun., 1994).

Acknowledgments

The authors thank numerous property owners in the Uncompahgre Project area and in the Grand Valley for allowing access to their property for collection of samples. The authors thank Larry M. Fukui of

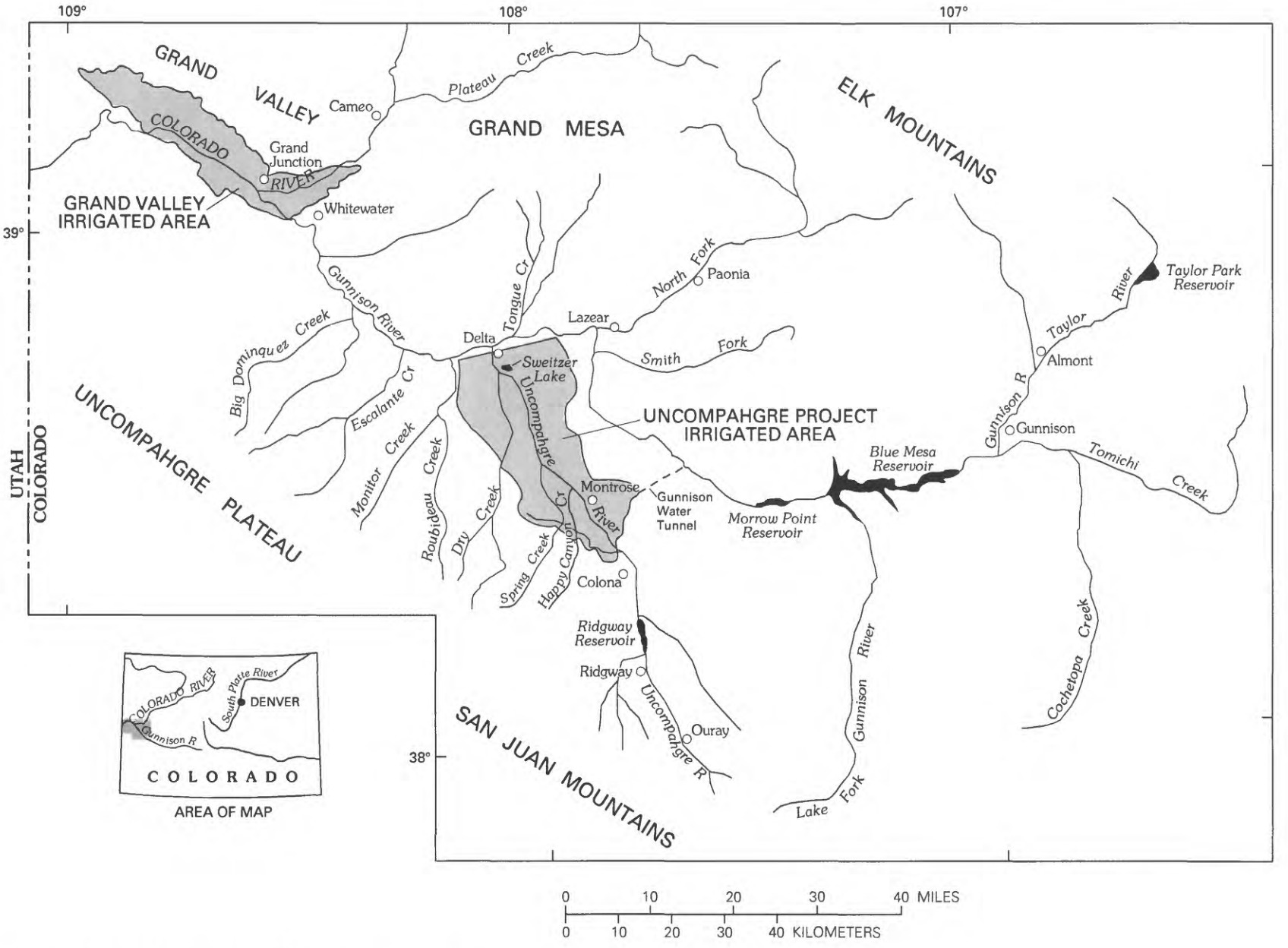

Figure 1. Location of the Uncompahgre Project and the Grand Valley.

Chem-Nuclear Geotech in Grand Junction, Colorado, for X-ray diffraction analyses and mineralogic analyses of solid-phase samples. The authors also thank Roger Fujii of the U.S. Geological Survey in Sacramento, California, for the selenium-speciation analyses and for his valuable technical support to this study.

SAMPLE COLLECTION AND ANALYSIS

Sampling Sites

Surface-water-sampling sites are listed in tables 1 and 2. The types of samples collected (water, bottom sediment, and biota) at each site are listed in tables 1 and 2. Ground-water sites where chemical samples were collected are listed in table 3. Tables 1-3 are in the "Hydrologic and Biological Data" section at the back of this report. All sampling sites in the Uncompahgre Project area are shown on plate 1, and sampling sites in the Grand Valley are shown on plate 2. Sites on the Gunnison River upstream from Escalante Creek are shown on plate 1, and the lower site on the Gunnison River at Whitewater is shown on plate 2. Site ESC3 (table 2), not shown on plate 2, is located about 3.4 mi north-northeast of site ESC2 (pl. 2).

The sites listed in tables 1 and 2 are ordered by drainage basins or by geographical areas relative to the irrigated areas. Much of the irrigation drainage from the Uncompahgre Project discharges into the Uncompahgre River or its tributaries; therefore, sites on the Uncompahgre River are listed first in table 1. The next group of sites listed in table 1 (sites WST through CC2) are in tributary basins west of the Uncompahgre River, followed by sites in tributary basins east of the river (sites SOC through GTP). The next group of sites in table 1 are on the Gunnison River. Sites CR through FRP in table 1 are in tributary basins of the Gunnison River that are outside the irrigated area of the Uncompahgre Project shown on plate 1. The remainder of the sites in table 1 are in basins tributary to the Gunnison River that drain irrigated areas of the Uncompahgre Project.

In the Grand Valley, the largest extent of irrigated area is in the western part of the valley west of Grand Junction (pl. 2). Therefore, sites north of the Colorado River and west of the Gunnison River confluence (sites SC through LC2) are listed first in table 2. Sites RED and LKG are located south of the Colorado River and west of the Gunnison River confluence. The next group of sites in table 2 (sites IW through CF2) are north of the Colorado River and upstream from the Gunnison River confluence. The next group of sites listed in table 2 (sites OMD through OM4) are on Orchard Mesa, which is south of the Colorado River and upstream from the Gunnison River confluence. The last group of sites in table 2 are data-collection sites on the Colorado River, Plateau Creek, and on the Gunnison River downstream from Escalante Creek.

Sampling Methods

Onsite measurements at surface-water-sampling sites included stream discharge, specific conductance, pH, water temperature, and dissolved oxygen. Water-quality measurements were made using methods similar to those described by Knapton (1985). Where samples were collected at USGS surface-water stations, stream discharge was determined from the stage record and the stage-discharge rating table. Otherwise, stream discharge was measured using methods described by Rantz and others (1982).

Water samples from streams and washes were collected using depth-integrating samplers and the equal-width method (Ward and Harr, 1990). At sites that had insufficient depth or discharge, water samples were collected from the centroid of flow or at several verticals in a cross section using 1-L plastic or glass bottles. Surface-water samples were composited in a churn splitter. Water samples for insecticide analyses were collected using bottles supplied by the USGS National Water Quality Laboratory (NWQL) in Arvada, Colorado. Water samples from ponds and wetlands were collected by wading into shallow areas and collecting samples in a 1-L bottle; the samples were composited in a churn splitter.

Many of the wells used for ground-water sampling were installed by the BOR as part of salinity investigations (U.S. Bureau of Reclamation, 1986). Five shallow observation wells were installed by the USGS that were drilled using the hollow-stem auger method. The wells were installed with 2-in. flush-threaded PVC casings that had 5-ft screens and were developed by purging approximately 30 well volumes. Prior to collection of water samples, three to six well volumes of water were purged using a centrifugal pump. Water samples were collected from wells using a Teflon bailer. Water in the bailer was carefully decanted into clean, 4-L polyethylene bottles using a bottom-emptying device to prevent sample agitation and loss of volatile components (Barcelona and others, 1984). Onsite measurements at wells included water level, specific conductance, pH, oxidation-reduction potential (Eh), water temperature, dissolved oxygen, and alkalinity. The Eh was measured using a platinum, silver/silver-chloride reference electrode that was calibrated at least once daily using ZoBell's solution maintained at the ambient ground-water temperature (Wood, 1976). Other meters were calibrated at least once daily,

and the dissolved-oxygen meter was calibrated to a zero dissolved-oxygen solution.

Water samples collected for dissolved-inorganic constituents were filtered onsite using a 0.45-µm cellulose filter and a plastic filtering unit. Samples for analyses of dissolved-organic carbon were filtered through a 0.45-µm silver filter using a stainless-steel filtering unit. Samples for analyses of inorganic constituents, uranium, insecticides, and organic carbon were processed and preserved for shipment to the NWQL according to procedures described by Pritt and Jones (1989). Water samples for determination of stable isotopes of hydrogen and oxygen were not filtered and were collected in 60-mL glass bottles and preserved with mercuric chloride. Water samples for determination of stable isotopes of sulfur and nitrogen were filtered through 0.2-µm filters and preserved with mercuric chloride. Water samples for selenium-speciation analyses were filtered through 0.2-µm filters and were acidified with hydrochloric acid to pH 2.

Quality-assurance sampling at surface- and ground-water sites included collection of four de-ionized water blanks, eight sequential duplicate samples, and five split samples. Selenium was not detected in the water blanks. Bottom-sediment samples from streams and ponds were collected using a BMH-53 sampler (Ward and Harr, 1990). Eight to twelve cores were collected and composited in a stainless-steel bucket using a stainless-steel spoon. Subsamples were collected in plastic cartons for shipment to the USGS Branch of Geochemistry Laboratory in Lakewood, Colorado. Bottom-sediment samples for determination of selenium species were placed in a plastic carton and frozen.

Sediment-core samples were collected during drilling of observation wells at 5-ft intervals using a split-spoon sampler. Sediment-core samples for trace-element analysis were air dried, and samples for selenium-speciation analysis were frozen. Bedrock-core samples of Mancos Shale were collected from core archived at the USGS Core Research Center in Lakewood, Colorado.

Biological samples were collected by the FWS using standard equipment and techniques (U.S. Fish and Wildlife Service, 1986; 1990). Fish were collected using electroshocking equipment and seine or gill nets. Fish were rinsed, weighed, and measured for length and then frozen on dry ice until stored in a freezer. Whole-body samples were composited by species into groups of three or more fish. Fillet samples were taken from individual fish and were not composited. Fish samples for inorganic analyses were frozen in plastic bags. Fish samples for organic analyses were wrapped in aluminum foil, placed in plastic bags, and frozen.

Vascular plants and algae were collected by handpicking. These samples were placed in chemically cleaned jars, weighed, and frozen. Stream invertebrates were collected using a kick screen. Crayfish were collected when present.

Prefledging and adult birds were shot using steel shot, and livers and muscle tissue were removed using stainless-steel dissecting equipment. The dissecting equipment was cleaned prior to removal of each liver. Bird livers and muscle tissue were placed in chemically cleaned jars, weighed, and frozen.

Bird eggs collected in 1991 were removed from nests, and the egg volume was determined by water displacement. The eggs were cracked open to examine embryos for developmental abnormalities. After examination, the eggs were placed in chemically cleaned jars, weighed, and frozen. Small eggs were composited to provide sufficient biomass for analysis.

Shorebird, blackbird, and waterfowl eggs collected in 1992 were brought back to the FWS office in Grand Junction because of high predation rates. Some of the eggs from each clutch were opened, and the contents frozen for later trace-element analysis; the remaining eggs from each clutch were incubated in a Humidaire incubator. Eggs were placed in incubator trays with the small end down and incubated at a constant temperature of 99°F and about 55 percent relative humidity. Eggs were mechanically turned at 4-hour intervals. Eggs were candled and a hatching date was projected. Newly hatched young were examined for external deformities. Eggs that failed to hatch within a few days of their estimated hatching date were opened and examined. All incubated and hatched specimens were frozen and sent to the laboratory for trace-element analysis.

Analytical Methods

Major constituents, nitrogen and phosphorus species, and trace elements in water samples were analyzed at the NWQL. Analytical methods are described in Fishman and Friedman (1989) and laboratory quality-assurance methods are described by Jones (1987). Analysis of uranium was done using a method described in Thatcher and others (1977). Methods for analysis for insecticides and organic carbon are described in Wershaw and others (1987). The analysis of water samples for stable isotopes of hydrogen and oxygen are described in Kendall and Coplen (1985) and in Epstein and Mayeda (1953).

Selenium-speciation analysis of water samples and extracts of bottom-sediment and aquifer-sediment samples were done by column chromatography and

hydride-generation atomic-absorption spectroscopy. Analytical methods for selenium speciation of water samples are described in Makita and Fujii (1992). Extraction methods for selenium in bottom sediment and aquifer sediment are described in Fio and Fujii (1990).

Bottom-sediment and aquifer-sediment samples for trace-element analyses were dry sieved at the laboratory through a 2-mm screen. The bottom-sediment samples then were sieved through a 0.0625-mm screen, and the trace-element analyses were done only on that size fraction. All samples were analyzed for selenium, uranium, other trace elements, total carbon, and organic carbon using methods described by Stewart and others (1992).

Selected sediment-core and bedrock samples were analyzed for semiquantitative data on bulk and clay mineralogy using X-ray diffraction (XRD) and for particle morphology and gross element composition using scanning-electron microscopy (SEM). In addition, a few of the filters used for filtering ground-water samples were saved, dried, and analyzed by XRD and SEM to characterize particulate phases in the ground water.

All biological samples were sent to contract laboratories through the FWS Patuxent Analytical Control Facility (PACF) in Patuxent, Maryland. Except for five samples, analyses for trace elements were done at the Environmental Trace Substances Research Center in Columbia, Missouri. The other five samples were analyzed at Research Triangle Institute, North Carolina. Samples were analyzed for selenium and selected trace elements using inductively coupled argon-plasma atomic-absorption spectrometry after complete digestion of the sample in strong acids. Analyses for arsenic and selenium were done using hydride-generation atomic absorption, and analyses for mercury were done by flameless cold-vapor atomic absorption. Analyses for organochlorine pesticides were done at the Mississippi State Chemical Laboratory, Mississippi State University, Mississippi, and analyses for polycyclic aromatic hydrocarbons were done at the Geochemical and Environmental Research Group, Texas A and M University, Texas. All analytical data were reviewed by the PACF. Quality-control procedures done by the PACF included sample spikes, duplicates, and blanks.

DESCRIPTION AND ORGANIZATION OF DATA

The hydrologic and biological data presented in this report are in tables 4-39 in the "Hydrologic and Biological Data" section at the back of this report. Onsite measurements and chemical analyses of surface-water samples are listed in tables 4 through 8. Data for the Uncompahgre Project area are listed in table 4, which includes data for all sites in the Uncompahgre River Basin and in the lower Gunnison River Basin upstream from Escalante Creek (at site GUN5 on pl. 1). Onsite measurements and chemical data for sites in the Grand Valley, excluding the sites on the Colorado River and Gunnison River are listed in table 5. Onsite measurements and chemical data for sites on the Colorado River, Plateau Creek, and the Gunnison River at Whitewater are listed in table 6. Some of the chemical data in tables 4 and 6 for sites on the Uncompahgre, Gunnison, and Colorado Rivers that are at USGS gaging stations were collected for other programs of the USGS during 1991 and 1992. Concentrations of stable isotopes of hydrogen and oxygen in surface-water samples are listed in table 7. The insecticide results for the samples collected in 1991 in the Grand Valley are listed in table 8.

Ranges of specific-conductance and dissolved-oxygen measurements for selected wells in the Uncompahgre Project area are shown in figures 2 and 3. Ranges of specific conductance and dissolved-oxygen measurements for selected wells in the Grand Valley are shown in figures 4 through 7. Daily records of water levels and daily specific conductance in well 143N0 in the Grand Valley are shown in figure 8. Onsite measurements and selected chemical data for ground-water sites where water-quality samples were collected are listed in tables 9 through 12. The onsite measurements are in table 9, and chemical analyses for major constituents, nitrogen species, and dissolved-organic carbon are listed in table 10. Trace-element data are listed in table 11, and stable-isotope data are listed in table 12.

The BOR collected extensive water-level and dissolved-solids data in the Grand Valley in the 1970's and 1980's for hydrosalinity studies. Selected historical water-level and dissolved-solids data for two wells are shown in figure 9 (Jack Cunningham, U.S. Bureau of Reclamation, written commun., 1992).

Chemical data for bottom-sediment samples, a salt-crust sample, and a soil sample collected during 1992 in the Uncompahgre Project area and in the Grand Valley are listed in tables 13 and 14. The analytical data for trace elements are listed in table 13, and the analytical data for major constituents, total carbon, and organic carbon are listed in table 14.

Trace-element concentrations in bedrock and aquifer-sediment samples collected in the Uncompahgre Project area and in the Grand Valley are listed in table 15, and the major-constituent, total-carbon, and organic-carbon data for the same group of samples are listed in table 16. Semiquantitative data on bulk and

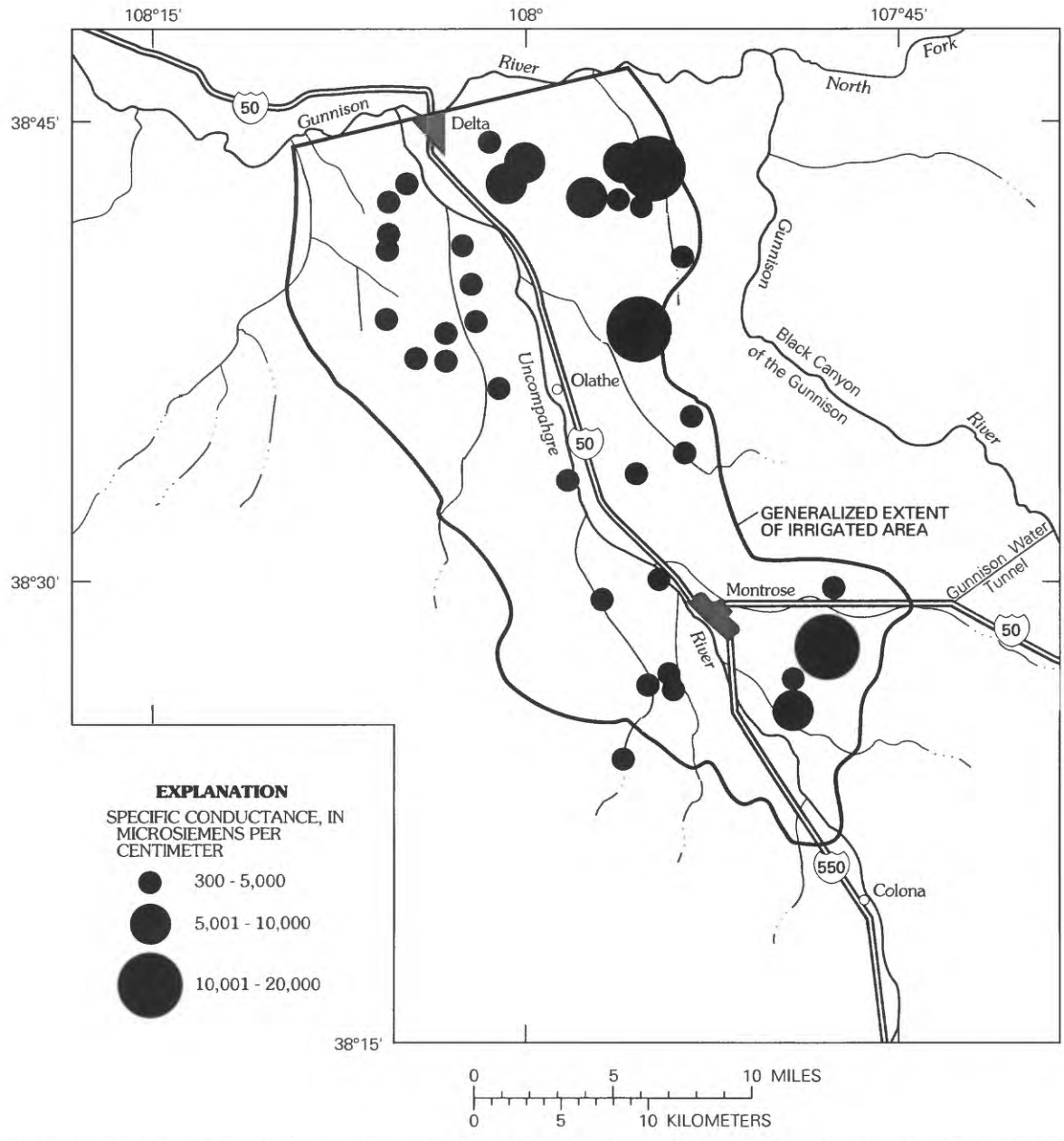

Figure 2. Ranges of downhole specific conductance of water from selected wells in the Uncompahgre Project area, October 1991. Well depths range from 8 to 60 feet.

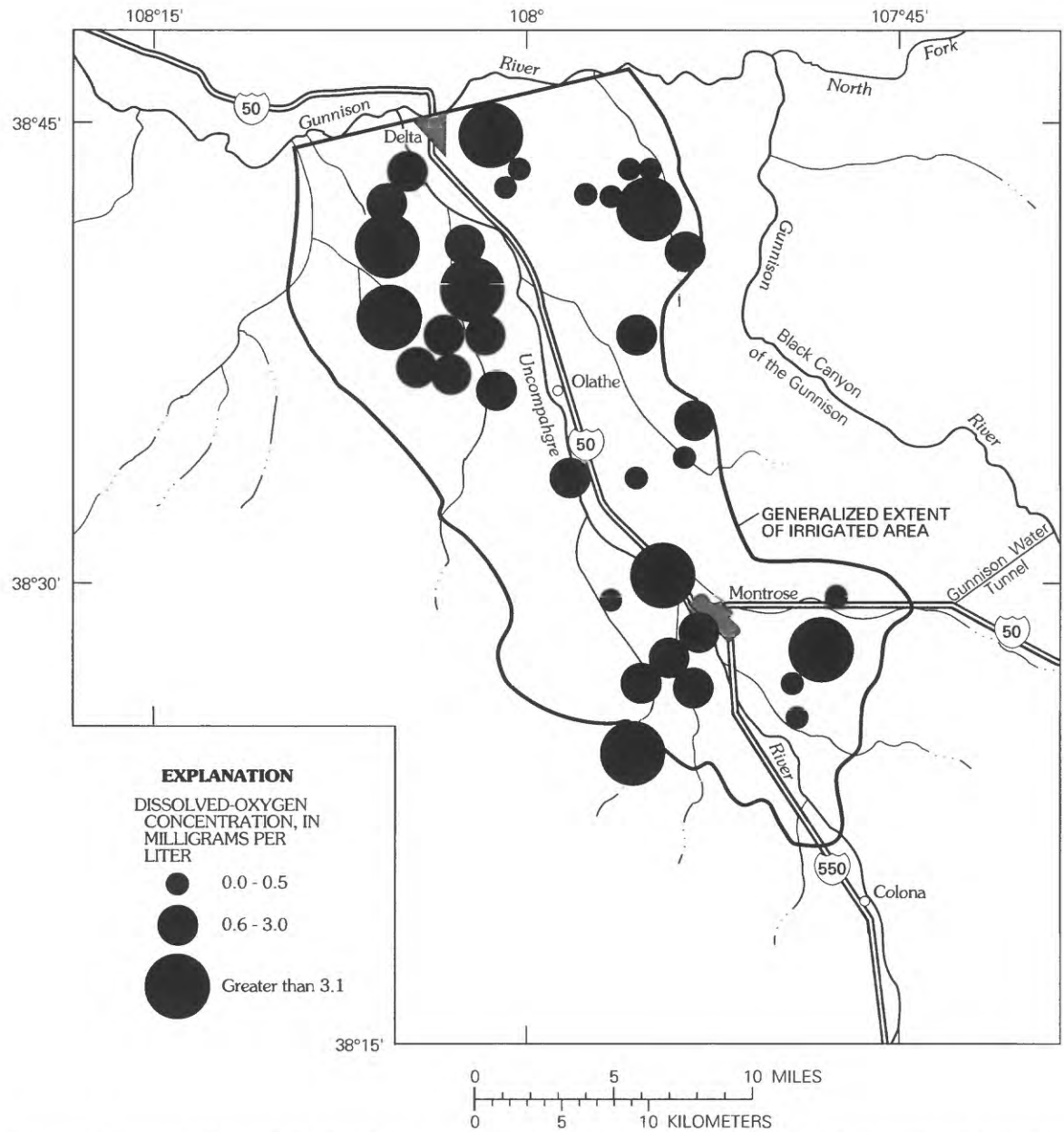

Figure 3. Ranges of downhole dissolved oxygen in water from selected wells in the Uncompahgre Project area, October 1991. Well depths range from 8 to 60 feet.

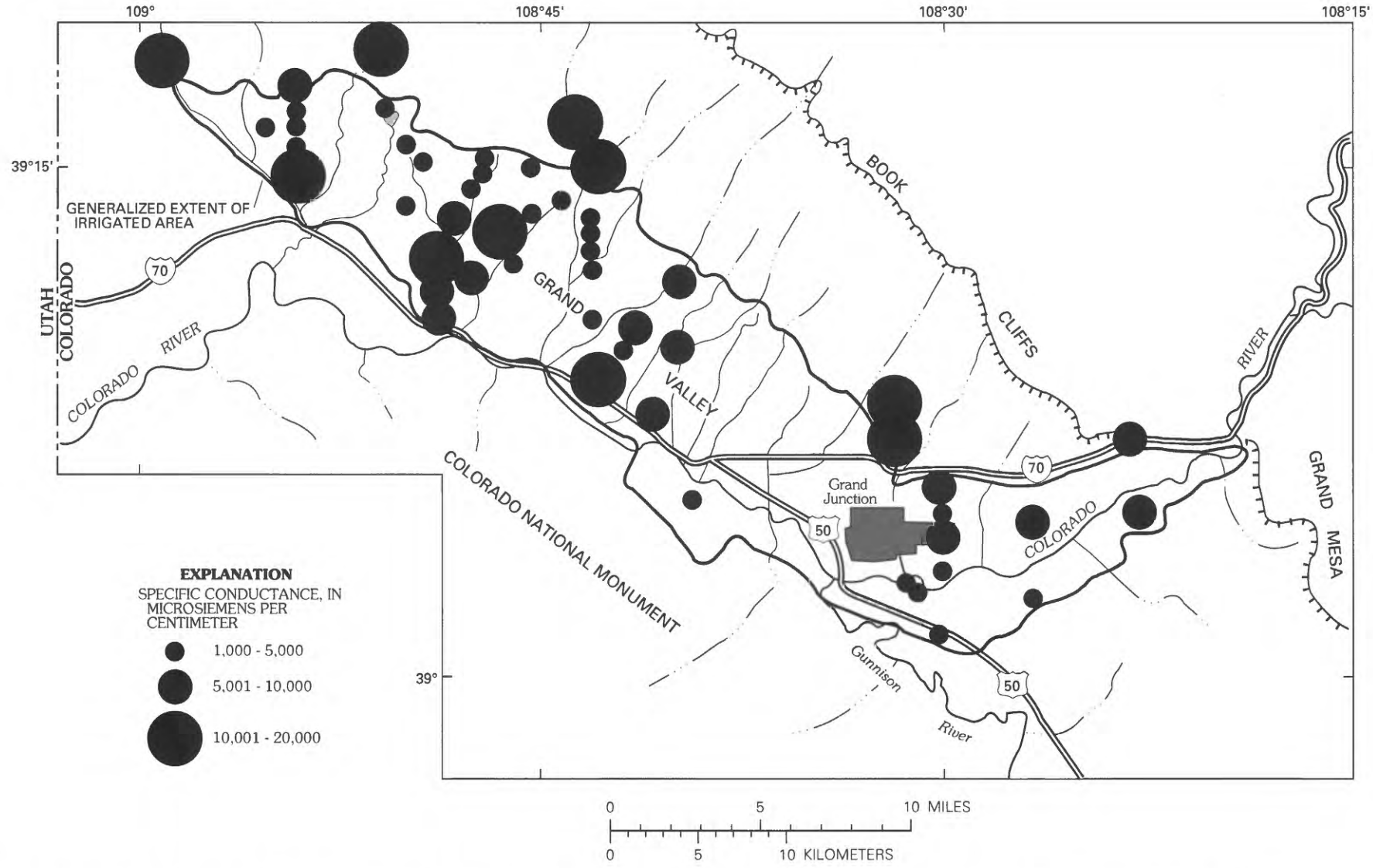

Figure 4. Ranges of downhole specific conductance of water from selected wells in the Grand Valley, June-July 1991. Well depths range from 9 to 100 feet.

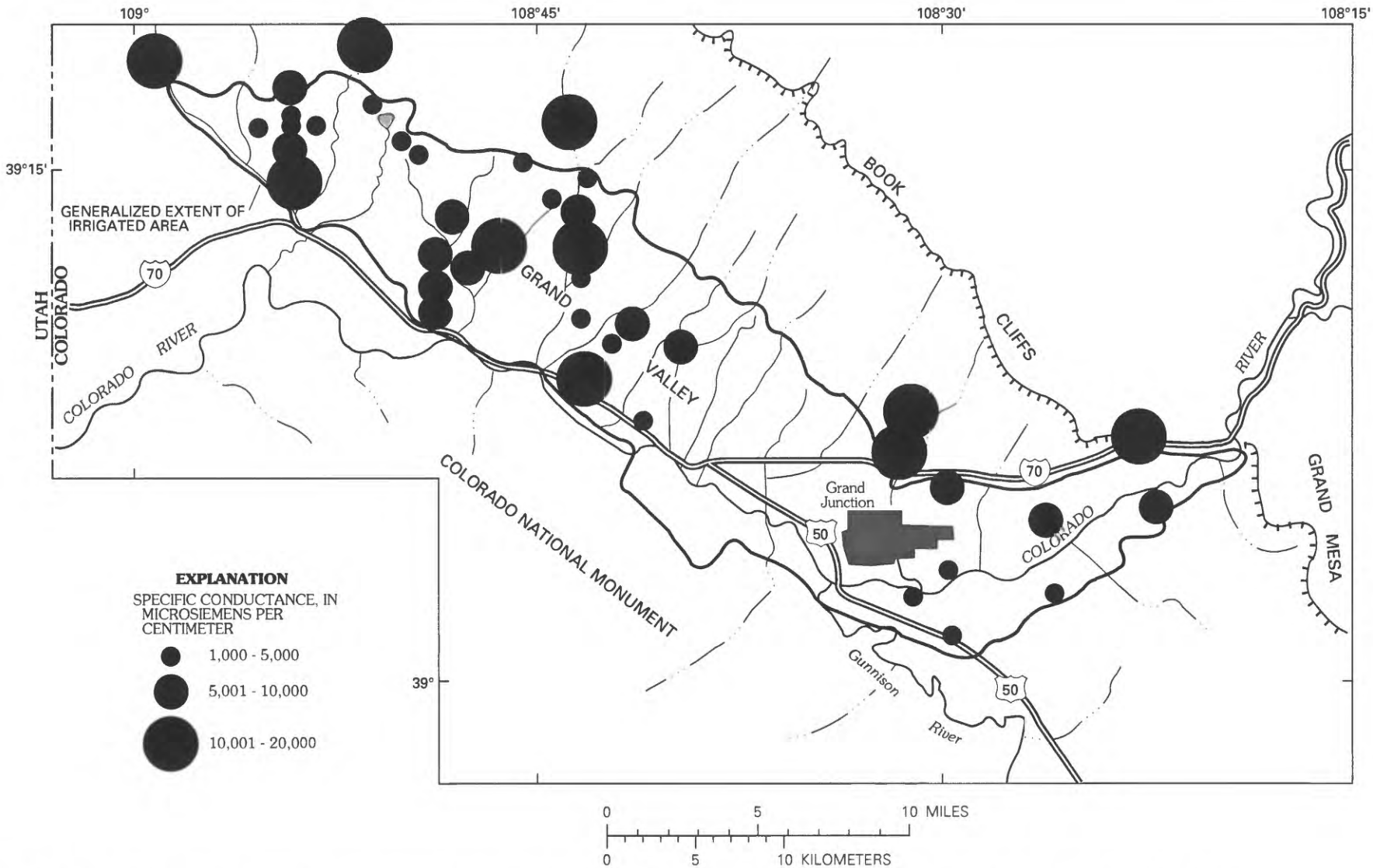

Figure 5. Ranges of downhole specific conductance of water from selected wells in the Grand Valley, March 1992. Well depths range from 9 to 100 feet.

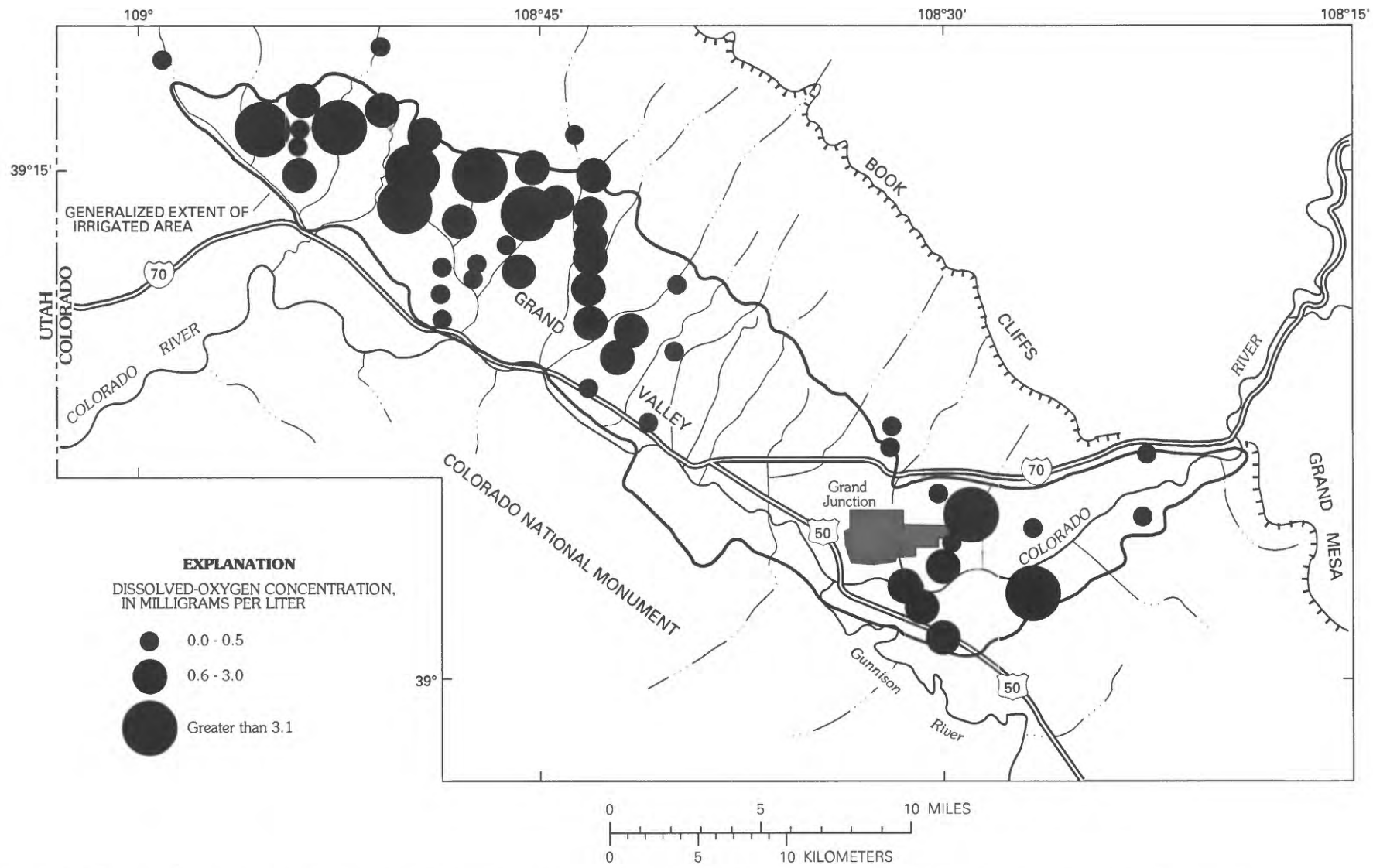

Figure 6. Ranges of downhole dissolved oxygen in water from selected wells in the Grand Valley, June-July 1991. Well depths range from 9 to 100 feet.

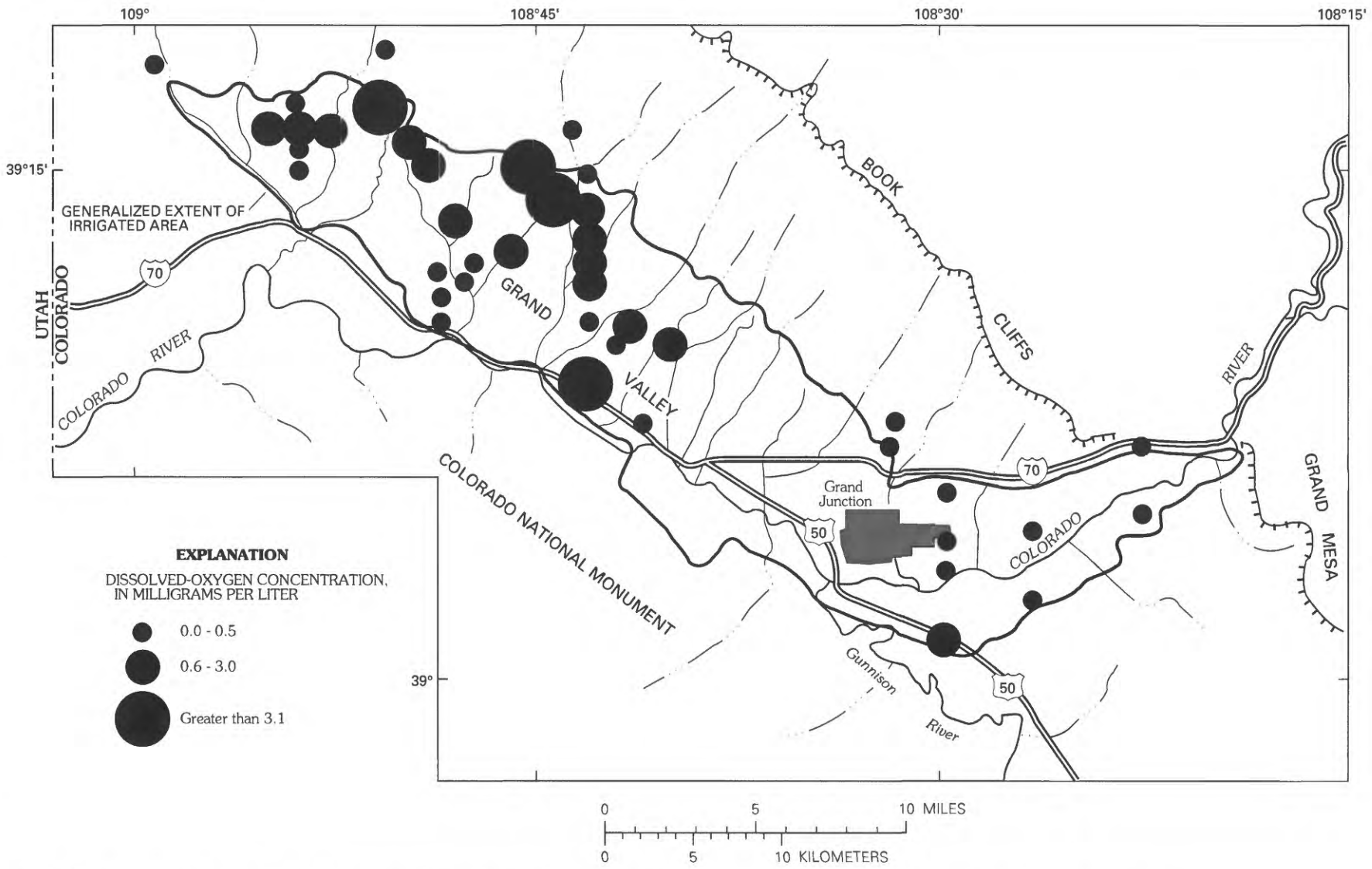

Figure 7. Ranges of downhole dissolved oxygen in water from selected wells in the Grand Valley, March 1992. Well depths range from 9 to 100 feet.

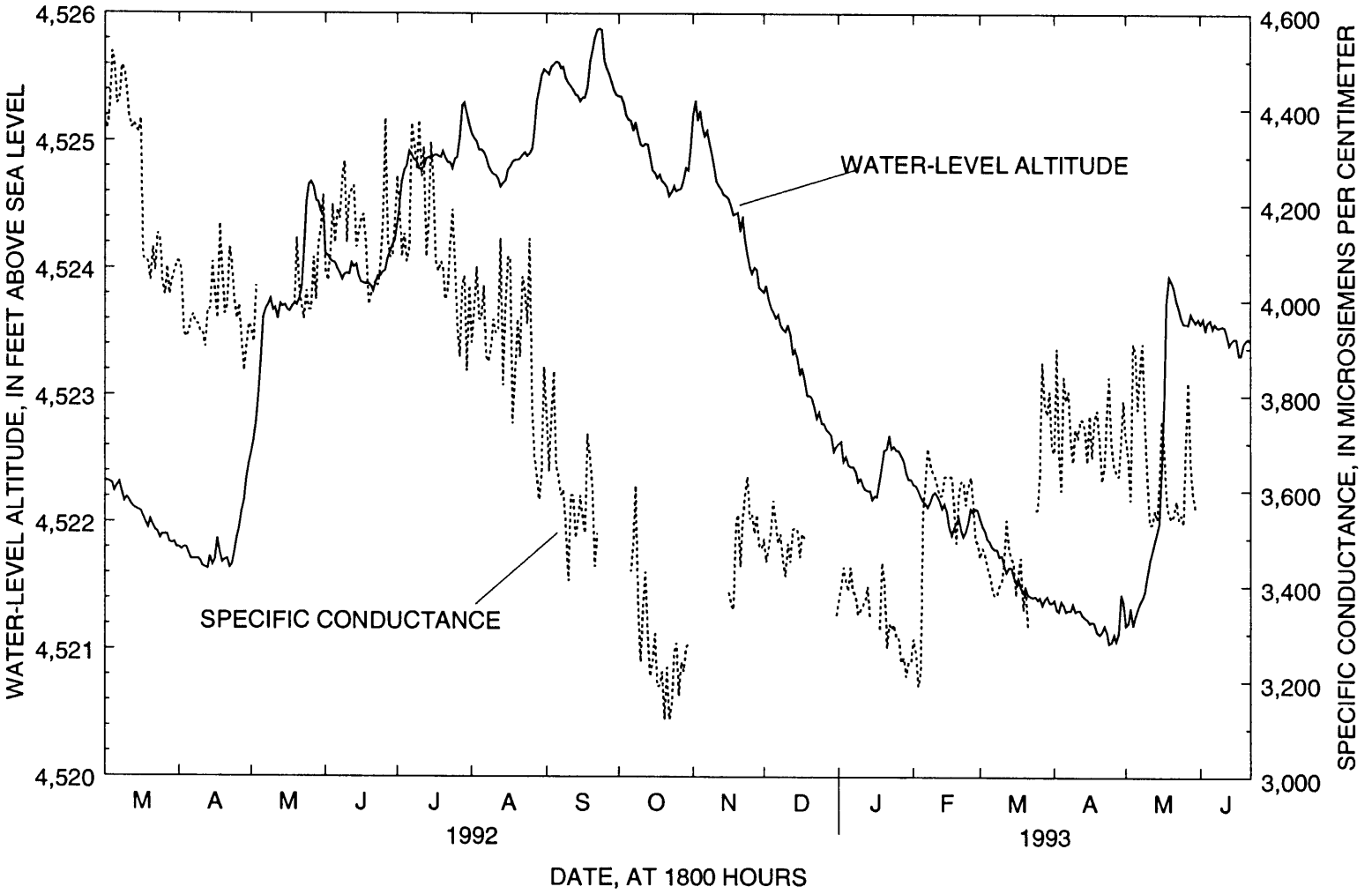

Figure 8. Water-level altitude and specific conductance of water in well 143NO, Grand Valley, March 1992-March 1993.

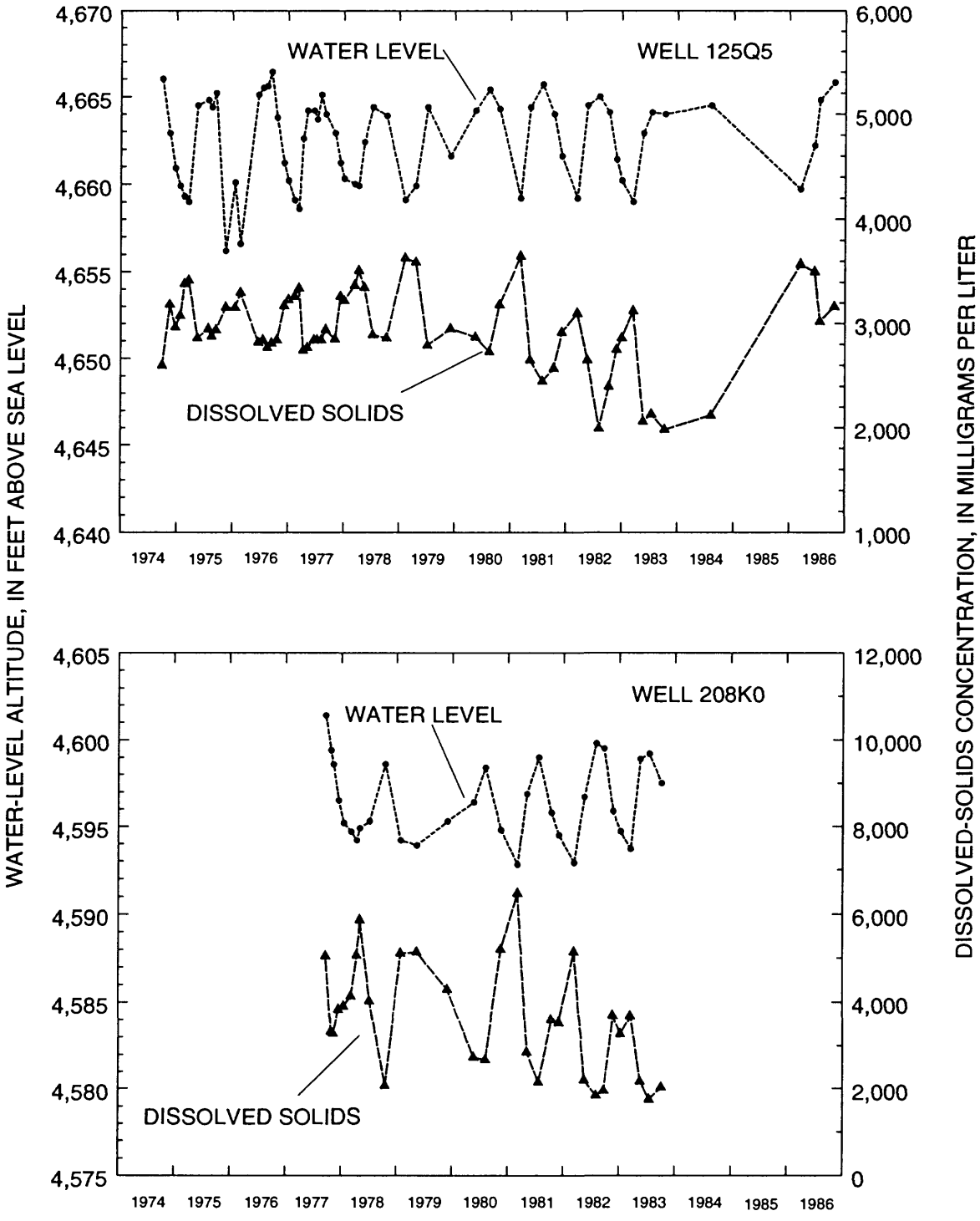

Figure 9. Historical water-level altitudes and concentrations of dissolved solids in water from wells 125Q5 and 208KO, located in the Grand Valley (Jack Cunningham, Bureau of Reclamation, written commun., 1992).

clay mineralogy for Mancos Shale core, shale residuum, alluvium, and ground-water filter residuum are listed in table 17.

Selenium-speciation data are listed in tables 18 through 21. Concentrations of dissolved-selenium species (selenate and selenite) for selected surface-water and ground-water samples are listed in tables 18 and 19. Selenium concentrations and speciation data for sequential extractions of selenium from selected bottom-sediment and aquifer-sediment samples are listed in tables 20 and 21.

The U.S. Bureau of Reclamation did aquifer tests for hydrogeological investigations of the Grand Valley during the 1970's and 1980's. Selected aquifer-test results are summarized in table 22 (L.K. Weston, U.S. Bureau of Reclamation, written commun., 1992).

Trace-element concentrations in biota samples are listed in tables 23 through 37. Trace-element data collected in 1991 for the synoptic sampling of mainstem rivers and tributaries are listed in tables 23 through 31. Biota data for tributaries of the Uncompahgre River are listed in tables 23 and 24, and biota data for the Gunnison River and its tributaries, including Crawford Reservoir, are listed in tables 25 through 27. Biota data collected in 1991 in the Grand Valley for tributaries of the Colorado River are listed in tables 28 through 30, and biota data collected for the Colorado River in 1991 are listed in table 31. Trace-element data for biota samples collected from wetland sites in 1991-92 are listed in tables 32 through 34. Trace- element concentrations in fish samples collected in 1992 from the North Fork of the Gunnison, Gunnison, Uncompahgre, and Colorado Rivers are listed in tables 35 through 37.

A limited number of biota samples were collected for organic analyses, and the analytical results are listed in tables 38 and 39. Organochlorine-pesticide and PCB data are listed in table 38, and polycyclic aromatic hydrocarbon data are listed in table 39.

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HYDROLOGIC AND BIOLOGICAL DATA

Table 1. Surface-water-sampling sites and types of samples collected in the Uncompahgre Project area

[USGS, U.S. Geological Survey; sample types: W, water, inorganic; B, bottom sediment; BI, biota; --, no number]

Site code (pl. 1)	USGS station number	Sample types	Site name
UC1	09147500	W	Uncompahgre River at Colona
UC2	09148000	W, BI	Uncompahgre River at Uncompahgre Road
UC3	382331107492401	W	Uncompahgre River above Montrose and Delta Canal
UC4	382524107511001	W	Uncompahgre River at Racine Road
UC5	382600107515701	W	Uncompahgre River at Highway 550
UC6	382831107530601	W	Uncompahgre River at Montrose, at Highway 90
UC7	383014107544001	W	Uncompahgre River above Selig Canal
UC8	383200107575201	W	Uncompahgre River at Jay-Jay Road
UC9	383357107581801	W	Uncompahgre River above Ironstone Canal
UC10	383620107592101	W, BI	Uncompahgre River at Highway 348, at Olathe
UC11	383833107594601	W	Uncompahgre River at Blossom Road
UC12	383950108001701	W	Uncompahgre River above Loutsenhizer Arroyo
UC13	384043108003801	W	Uncompahgre River at B Road, near Chipeta
UC14	384208108024401	W	Uncompahgre River at Ash Mesa Road, above Dry Creek
UC15	384243108034501	W	Uncompahgre River at 1600 Road
UC16	09149500	W, BI	Uncompahgre River at Delta
WST	382220107484901	W	West Canal at Highway 550
MDC1	382636107553901	W	Montrose and Delta Canal at Highway 90
MDC2	383345108025401	W	Montrose and Delta Canal at Hickory Road
HFC	382522107512601	W, BI	Horsefly Creek at Racine Road, near mouth
HCC1	382928107541101	W, BI	Happy Canyon Creek at Marine Road, near mouth
HCC2	382551107532501	W	Happy Canyon Creek above Dolores Creek
DOL	382553107532401	W	Dolores Creek at mouth
MXG	383013107552501	W	Mexican Gulch at LaSalle Road, near mouth
SP1	383201107575301	W, BI	Spring Creek at Jay-Jay Road, near mouth
SP2	382921107572001	W	Spring Creek at Maple Grove Road
SP3	382727107553801	W	Spring Creek at Highway 90, at Oak Grove
SP4	382532107560101	W, BI	Spring Creek at Poplar Road, below West Canal
IRC1	383622108011901	W	Ironstone Canal at Highway 348 and 5700 Road
IRC2	383725108043601	W	Ironstone Canal at 5400 Road
UNBL	383834108001701	W	Unnamed drainage at Blossom Road, near Chipeta
UND1	384150108023101	W	Ditch at Ash Mesa Road, upper ditch
UND2	384152108024401	W	Ditch at D10 and Ash Mesa Roads
DRY1	384202108032001	W, B, BI	Dry Creek at D10 Road, near mouth
DRY2	383847108025401	W	Dry Creek at Begonia Road

Table 1. Surface-water-sampling sites and types of samples collected in the Uncompahgre Project area--Continued

Site code (pl. 1)	USGS station number	Sample types	Site name
DRY3	383623108014901	W	Dry Creek at Highway 348
DRY4	383416108022401	W	Dry Creek at 5600 Road
DRY5	09149450	W, BI	Dry Creek at Holly Road, below CQ lateral
ASH	384043108012201	W	Drain on Ash Mesa at B Road
CAL	383458108022401	W	Drain near 5600 and Fern Roads on California Mesa
CC1	383517108012801	W	Coal Creek at Fern Road, near mouth
CC2	383134107595701	W	Coal Creek at Jig Road
SOC	382241107480401	W	South Canal at Uncompahgre Road
DCC1	382711107520101	W, BI	Dry Cedar Creek at Highway 550, near mouth
DCC2	382508107482601	W	Dry Cedar Creek at Sunshine Road
CD1	383041107544201	W, B, BI	Cedar Creek at Highway 50, near mouth
CD2	382928107521401	W	Cedar Creek at Stough Avenue
CD3	382915107480801	W	Cedar Creek at Miguel Road, at Fairview
CD4	382908107445601	W, BI	Cedar Creek at AB Lateral
MA1	382918107523601	W	Montrose Arroyo at 7th Street
MA2	382802107513301	W	Montrose Arroyo at East Niagara Street
MA3	382711107500501	W	Montrose Arroyo at 6700 Road
SGC1	383338107535001	W	Selig Canal at 6400 Road
SGC2	383857107550701	W	Selig Canal at Peach Valley Road
LZAM	383953108001701	W	Loutsenhizer Arroyo at mouth, below Garnet diversion
LZA1	383946107595301	W, B, BI	Loutsenhizer Arroyo at North River Road, near mouth
LZA2	383857107575801	W	Loutsenhizer Arroyo at Banner and 6000 Roads
LZA3	383756107572501	W	Loutsenhizer Arroyo above west tributary
LZA4	383633107560701	W	Loutsenhizer Arroyo at David Road
LZA5	383408107535101	W	Loutsenhizer Arroyo at 6400 Road
WLZ1	383753107572801	W	West tributary of Loutsenhizer Arroyo at mouth
WLZ2	383632107564501	W	West tributary of Loutsenhizer Arroyo at David Road
WLZ3	383527107555001	W	West tributary of Loutsenhizer Arroyo at Falcon Road
MKP	383337107555101	W, B, BI	Markley Pond on East Mesa, southeast of Olathe
GTP	383756107570101	W, BI	Gretts Pond near Olathe
GUN1	09128000	W	Gunnison River Below Gunnison Tunnel
GUN2	--	BI	Gunnison River below North Fork confluence
GUN3	384624107570701	W, BI	Gunnison River at old Austin bridge
GUN4	09144250	W, BI	Gunnison River at Delta
GUN5	384527108152701	W	Gunnison River above Escalante Creek
CR	--	BI	Crawford Reservoir

Table 1. Surface-water-sampling sites and types of samples collected in the Uncompahgre Project area--Continued

Site code (pl. 1)	USGS station number	Sample types	Site name
SMF	09129600	W, BI	Smith Fork at County Road, below Crawford
NFK1	09136100	W	North Fork Gunnison River at mouth
NFK2	--	BI	North Fork Gunnison River near Lazear
NFK3	--	BI	North Fork Gunnison River at Paonia
CRC	09137050	W, BI	Currant Creek below Highway 92, near Read
FGR	--	BI	Fruitgrowers Reservoir
AFR	384649107570501	W, BI	Alfalfa Run at Austin
TGC	09144200	W, BI	Tongue Creek at Cory
SGP	--	BI	St. George Pond near Austin
AKR	--	BI	Alkali Reservoir, northwest of Delta
FRP	384743107533801	W, BI	Ferriers Pond near Austin
PVA1	384604107570701	W, BI	Peach Valley Arroyo near mouth
PVA2	384322107543401	W	Peach Valley Arroyo at 2450 Road
RD1	384551107591901	W	Unnamed drainage at Highway 92, near Read
RD2	384457107584801	W	Unnamed drainage at 2050 Road
RD3	384243107574001	W	Unnamed drainage at E Road
BZP	384353107575401	W, B, BI	Brozina Pond near F and 2100 Roads, east of Delta
RFD	384519108004401	W	Relief ditch above Garnet Canal
VT	--	BI	Wetland site at vocational tech center, near Delta
GAR1	384012108000701	W	Garnet Canal at Highway 50
GAR2	384247108012401	W	Garnet Canal above Sweitzer Lake diversion
GAR3	384403108022601	W	Garnet Canal at Hartig Road
GAR4	384518108010501	W	Garnet Canal at mouth
SWL	--	BI	Sweitzer Lake
UNGR	384426108010301	W, BI	Unnamed drainage at G Road, below GHC lateral
BFD	384459108033201	W	Bonafide ditch at Highway 92, at Delta
CMG1	384448108070301	W, BI	Cummings Gulch at mouth
CMG2	384428108055401	W	Cummings Gulch at G Road, above Bixley Gulch
BXG	384433108064101	W	Bixley Gulch at mouth
SEP1	384408108091501	W	Seep Creek at G Road, near mouth
SEP2	384151108063401	W	Seep Creek at Mesa Road
RB1	09150500	W, BI	Roubideau Creek at mouth
RB2	384133108084601	W	Roubideau Creek above Buttermilk Creek
RB3	384013108091401	W, BI	Roubideau Creek above Ironstone Canal
BMC	384138108084401	W	Buttermilk Creek at mouth
WSC	383951108071201	W	Wise Creek at Amber Road

Table 2. Surface-water-sampling sites and types of samples collected in the Grand Valley

[USGS, U.S. Geological Survey; sample types: W, water, inorganic; WP, water, pesticides; B, bottom sediment; BI, biota; --, no number]

Site code (pl. 2)	USGS station number	Sample types	Site name
		SITES ON TRIBUTARY STREAMS AND PONDS	
SC	09163490	W, WP, B, BI	Salt Creek at I-70
WSC1	391403108534701	W	West Salt Creek at mouth
WSC2	391646108572301	W	West Salt Creek near S Road
ESC1	391409108534201	W	East Salt Creek at Highway 50
ESC2	09163310	W	East Salt Creek near Government Highline Canal
ESC3[1]	392031108503701	W	East Salt Creek at Mitchell Road
HR	--	BI	Highline Lake
MW1	391331108532201	W	Mack Wash at mouth
RMP	--	BI	Romigs Pond near Mack
MWP	391504108504801	W, B, BI	Wetland in Mack Wash, at Q Road
RDP	391346108503601	W, B, BI	Reids Pond near 12 and O Roads, near Mack
TMP	--	BI	Thompsons Pond near 12 and O Roads, near Mack
RW1A	391029108480200	W, WP	Reed Wash at I-70
RW1	09153300	W, B, BI	Reed Wash at Highway 50
RWEB	391134108471101	W, BI	East Branch of Reed Wash at M Road
RWTR	391147108472501	W	Unnamed tributary of Reed Wash, near 14 and M Roads
RW2	09153290	W	Reed Wash near N Road
RWPB	391339108473701	W	Peck and Beede Wash at 14 Road
RW3	391335108484301	W	Reed Wash at 13 Road
RW4	391503108494601	W	Upper Reed Wash near 12 and Q Roads
FR1	391015108454801	W	Drain at Highway 50, near Fruita
BSW1	09153270	W, BI	Big Salt Wash at Highway 50
BSEB	391149108434201	W	East Branch of Big Salt Wash at 17 1/2 Road
BSW2	391246108434401	W	Big Salt Wash at 17 1/2 Road
BSW3	391509108433001	W	Big Salt Wash at Government Highline Canal
19M	--	BI	Bird site at 19 and M Roads
LSW1	390938108443101	W, WP, BI	Little Salt Wash at Highway 50, at Fruita
LSW2	391119108405401	W	Little Salt Wash at 20 Road
AC1	09152900	W, B, BI	Adobe Creek at River Road
AC2	391030108394701	W	Adobe Creek at 21 Road
HW1	390717108400501	W, WP, BI	Hunter Wash at River Road
HW2	390952108394501	W	Hunter Wash at 21 and K Roads
PRW	390700108393101	W, BI	Pritchard Wash at River Road
PSW1	390645108390101	W, WP, BI	Persigo Wash at River Road
PSW2	390859108364101	W	Persigo Wash at J Road

Table 2. Surface-water-sampling sites and types of samples collected in the Grand Valley--Continued

Site code (pl. 2)	USGS station number	Sample types	Site name
		SITES ON TRIBUTARY STREAMS AND PONDS--Continued	
AD	390613108380101	W, BI	Appleton Drain at River Road
LC1	09152650	W, WP, B, BI	Leach Creek at Highway 50
IRD	390530108362301	W	Independent Ranchmens Ditch at Leach Creek
LCTR	390614108362601	W	West Tributary of Leach Creek at mouth
LC2	390705108341301	W	Leach Creek at 26 Road
RED	390514108373201	W, WP, BI	Drain along Redlands Parkway, at mouth
LKG	390529108385401	W	Limeklin Gulch near mouth
IW	390320108315901	W, B, BI	Indian Wash at C 1/2 Road
GJ1	390319108312501	W, BI	Drain at C 1/2 and 28 1/2 Roads
GJ2	390345108073301	W	Drain at D and 29 3/4 Roads
GJ3	390343108292801	W	Drain at D and 30 1/4 Roads
LW	09106200	W, WP, BI	Lewis Wash at 31 Road, near mouth
CF1	390348108265601	W, BI	Drain at D and 32 1/2 Roads, near Clifton
CF2	390450108254701	W, WP	Drain at E 1/4 and 33 1/2 Roads, near Clifton
OMD	09152600	W, WP, BI	Orchard Mesa Drain at mouth
OM1	390255108291201	W	Drain at C and 30 1/2 Roads, Orchard Mesa
OM2	390322108263001	W, BI	Drain at C 1/2 and 33 Roads, Orchard Mesa
OM3	390322108253401	W, WP	Drain at C 1/2 and 33 3/4 Roads, Orchard Mesa
OM4	390517108230501	W	Drain at 36 Road, East Orchard Mesa
		SITES ON MAIN-STEM RIVERS	
COL1	--	BI	Colorado River at De Beque
COL2	09095500	W	Colorado River near Cameo
PLT	09105000	W	Plateau Creek near mouth
COL3	09106150	W	Colorado River below Grand Valley Canal, at Palisade
COL4	390319108273200	WP, BI	Colorado River at 32 Road, near Clifton
COL5	390337108342800	W	Colorado River above Gunnison River
GUN6	09152500	W, BI	Gunnison River at Whitewater
COL6	--	BI	Colorado River at Redlands Parkway
COL7	390830108441601	WP	Colorado River at Highway 340, at Fruita
COL8	09163500	W, BI	Colorado River near Colorado-Utah State line

[1]Site ESC3 is located about 3.4 miles north-northeast of site ESC2 on plate 2.

Table 3. Records of selected wells and a spring in the Uncompahgre Project area and selected wells in the Grand Valley

[ft BMP, feet below measuring point, which is about 2 feet above land surface for most of the wells; {Q=0.07}, discharge of flowing well or spring, in gallons per minute (gal/min); Mancos Shale residuum, weathered Mancos Shale; alluvium on Mancos Shale, alluvium derived partly or mostly from Mancos Shale; Cobble aquifer, valley-fill deposits in eastern Grand Valley; terrace deposits, terrace deposits of Quaternary age in western Uncompahgre Project area; dms, degrees, minutes, seconds; --, no data]

Well or spring name or number (pls. 1,2)	Latitude/Longitude dms			Latitude/Longitude dms			Well depth (feet)	Well diameter (inches)	Water level (ft BMP) or discharge (gal/min)	Date water level or discharge measured	Altitude of well or spring (feet above sea level)	Geologic unit	Date of construction
UNCOMPAHGRE PROJECT AREA (pl. 1)													
B254334	38	42	43	107	57	37	26	2	13.82	06-19-91	5,222	Mancos Shale residuum	01-03-1979
Combs	38	29	18	107	56	54	234	6	{Q=0.08}	05-10-91	5,810	Dakota Sandstone	1970
H361144	38	33	33	107	55	47	25	2	4.40	05-21-91	5,570	Alluvium on Mancos Shale	08-18-1978
Holden	38	39	58	108	02	25	28	6	13.99	07-09-91	5,225	Terrace deposits	--
Kramer	38	38	47	108	02	40	693	6.5	{Q=0.01}	07-03-91	5,265	Dakota Sandstone	1963
P023211	38	26	52	107	49	53	19.5	2	5.00	05-09-91	5,965	Alluvium on Mancos Shale	01-10-1979
Scheetz	38	41	08	108	02	44	22.5	36	13.72	07-02-91	5,175	Terrace deposits	1977
Schmalz	38	38	32	108	02	10	56	5.5	23.40	07-02-91	5,288	Terrace deposits	02-01-1967
SL1	38	43	13	108	00	31	18.0	2	{Q=0.07}	09-11-91	5,155	Mancos Shale residuum	08-21-1991
SL2	38	43	09	108	00	46	8	2	.35	09-11-91	5,152	Mancos Shale residuum	08-21-1991
SLSW1 (spring)	38	43	02	108	01	17	--	--	{Q=0.25}	12-05-91	5,135	Alluvium/shale residuum	--
Webb	38	36	21	108	01	20	60	6	20.52	01-10-192	5,410	Terrace deposits	--
Woerner	38	29	33	107	57	11	25.5	6	18.75	05-10-91	5,790	Terrace deposits	1970
GRAND VALLEY (pl. 2)													
080Q9	39	15	59	108	54	00	35	2	9.56	09-04-91	4,572	Alluvium on Mancos Shale	07-06-1977
090R5	39	16	30	108	52	57	19	2	12.26	09-04-91	4,626	Mancos Shale residuum	11-21-1977
108U0	39	18	53	108	51	04	100	1.5	20.43	10-04-91	4,720	Mancos Shale residuum	07-01-1975
125Q5	39	15	30	108	49	18	18.5	1.5	8.78	09-04-91	4,672	Mancos Shale residuum	07-17-1974
130L3	39	10	57	108	48	43	30	2	8.56	09-03-91	4,516	Mancos Shale residuum	07-12-1977
143N0	39	12	26	108	47	28	37	3	4.70	09-03-91	4,534	Alluvium on Mancos Shale	1982
208K0	39	09	52	108	39	59	50	2	5.08	09-09-91	4,606	Cobble aquifer	08-11-1977
300D6	39	04	19	108	29	46	59	2	17.24	09-11-91	4,630	Cobble aquifer	09-19-1977
Morrison	39	04	45	108	39	39	210	10	{Q=10.0}	05-08-91	4,700	Morrison Formation	05-08-1991
RWG1	39	12	03	108	47	38	28	2	9.00	08-28-91	4,500	Alluvium on Mancos Shale	08-20-1991
RWG2	39	12	07	108	47	43	28	2	11.70	08-28-91	4,510	Alluvium on Mancos Shale	08-20-1991
RWG3	39	12	08	108	47	38	20	2	7.72	08-28-91	4,510	Alluvium on Mancos Shale	08-20-1991
Wingate	39	02	46	108	34	03	1,210	7	{Q=12.0}	04-02-91	4,625	Wingate Sandstone	1904

Table 4. Onsite measurements and chemical data for surface-water sites in the Uncompahgre Project area,1991-92

[ft^3/s, cubic feet per second; µS/cm, microsiemens per centimeter at 25 degrees Celsius; °C, degrees Celsius; mg/L, milligrams per liter; lab, laboratory; µg/L, micrograms per liter; E, estimated; <, less than; --, no data]

Site code (pl. 1)	Site name	Date	Time	Stream discharge (ft^3/s)	Specific conductance (µS/cm)	pH, field (standard units)	Water temperature (°C)
UC1	Uncompahgre River at Colona	03-21-91	0845	106	668	8.4	3.0
UC1		06-07-91	0810	511	354	8.0	7.0
UC1		07-17-91	0810	310	550	7.9	14.0
UC1		08-28-91	1505	251	471	8.3	17.5
UC1		11-07-81	0745	113	586	8.4	8.0
UC1		02-19-92	1000	54	765	8.2	0
UC1		03-19-92	0830	126	684	8.3	3.0
UC1		06-18-92	0730	680	504	8.0	6.5
UC1		08-13-92	0830	430	485	8.2	12.0
UC2	Uncompahgre River at Uncompahgre Road	02-19-92	1240	66	869	8.4	3.0
UC2		06-09-92	1030	E1,100	374	8.3	8.0
UC3	Uncompahgre River above Montrose and Delta Canal	02-19-92	1335	62	838	8.6	4.5
UC4	Uncompahgre River at Racine Road	02-19-92	0945	15	920	8.4	0
UC5	Uncompahgre River at Highway 550	02-19-92	1050	26	943	8.3	1.5
UC6	Uncompahgre River at Montrose, at Highway 90	07-18-91	1310	290	526	8.4	18.5
UC6		02-19-92	1225	28	1,270	8.2	3.5
UC7	Uncompahgre River above Selig Canal	02-19-92	1350	30	1,360	8.4	7.0
UC8	Uncompahgre River at Jay-Jay Road	02-19-92	1000	42	1,720	8.4	1.5
UC9	Uncompahgre River above Ironstone Canal	02-19-92	1200	53	1,690	8.4	3.5
UC10	Uncompahgre River at Highway 348, at Olathe	07-17-91	1430	3.8	1,250	8.1	25.5
UC10		02-19-92	1335	29	1,720	8.4	5.5
UC11	Uncompahgre River at Blossom Road	02-19-92	1445	31	1,730	8.4	7.0
UC12	Uncompahgre River above Loutsenhizer Arroyo	02-19-92	1300	40	1,800	8.4	5.5
UC13	Uncompahgre River at B Road, near Chipeta	02-19-92	1140	56	2,370	8.4	4.0
UC14	Uncompahgre River at Ash Mesa Road, above Dry Creek	02-19-92	1030	59	2,370	8.4	2.5
UC15	Uncompahgre River at 1600 Road	02-19-92	0940	122	1,970	8.3	2.0
UC16	Uncompahgre River at Delta	03-21-91	1100	128	1,950	8.2	5.0
UC16		05-30-91	0800	282	1,450	8.2	11.5
UC16		06-07-91	1035	450	1,250	8.0	14.0
UC16		07-15-91	1440	202	1,620	8.3	23.0
UC16		08-22-91	0730	186	1,690	8.2	15.0
UC16		08-29-91	0835	188	1,710	8.2	15.0
UC16		09-23-91	1025	342	1,510	8.2	11.5

Table 4. Onsite measurements and chemical data for surface-water sites in the Uncompahgre Project area, 1991–92--Continued

Site code (pl. 1)	Date	Oxygen, dissolved (mg/L)	Oxygen, dissolved (percent saturation)	Hardness, total (mg/L as $CaCO_3$)	Calcium, dissolved (mg/L as Ca)	Magnesium, dissolved (mg/L as Mg)	Sodium, dissolved (mg/L as Na)	Potassium, dissolved (mg/L as K)	Alkalinity, lab (mg/L as $CaCO_3$)	Sulfate, dissolved (mg/L as SO_4)	Chloride, dissolved (mg/L as Cl)	Fluoride, dissolved (mg/L as F)
UC1	03-21-91	10.8	104	330	100	19	29	2.8	132	280	5.9	0.40
UC1	06-07-91	9.4	98	160	51	8.5	13	1.6	81	120	3.0	.30
UC1	07-17-91	7.9	96	250	79	13	17	2.3	110	170	4.5	.30
UC1	08-28-91	--	--	190	60	10	13	1.9	92	170	2.4	.40
UC1	11-07-91	--	--	280	88	15	20	2.1	131	220	4.2	.40
UC1	02-19-92	--	--	320	100	17	26	2.5	143	240	5.6	.40
UC1	03-19-92	11.2	103	310	96	17	27	2.8	132	250	6.0	.40
UC1	06-18-92	9.5	98	210	67	11	16	1.8	97	150	3.9	.30
UC1	08-13-92	8.6	101	220	70	11	13	1.7	99	130	--	.30
UC2	02-19-92	--	--	390	120	22	33	2.7	159	280	6.1	.40
UC2	06-09-92	9.0	95	160	49	9.5	12	1.9	93	91	2.5	.20
UC3	02-19-92	--	--	390	120	22	33	2.8	155	290	6.1	.40
UC4	02-19-92	--	--	450	140	25	39	2.8	187	330	6.7	.40
UC5	02-19-92	--	--	430	130	25	38	2.8	184	320	6.6	.40
UC6	07-18-91	8.8	116	230	70	13	20	2.3	123	140	4.5	.30
UC6	02-19-92	--	--	570	160	42	77	3.7	209	480	11	.40
UC7	02-19-92	--	--	600	160	48	88	4.1	207	540	12	.40
UC8	02-19-92	--	--	740	180	70	140	5.4	257	750	19	.40
UC9	02-19-92	--	--	750	190	67	120	4.6	260	740	16	.50
UC10	07-17-91	12.0	179	500	130	42	89	4.4	202	480	9.3	.60
UC10	02-19-92	--	--	750	190	68	130	4.9	259	740	17	.50
UC11	02-19-92	--	--	750	190	66	130	4.4	253	750	17	.50
UC12	02-19-92	--	--	750	190	68	140	5.0	256	800	17	.50
UC13	02-19-92	--	--	1,000	240	100	220	6.0	266	1,100	38	.60
UC14	02-19-92	--	--	1,000	240	99	220	5.2	270	1,100	38	.70
UC15	02-19-92	--	--	890	220	83	160	4.8	255	890	33	.80
UC16	03-21-91	10.4	100	810	200	75	170	5.0	216	980	18	.50
UC16	05-30-91	9.0	100	630	180	45	90	3.9	191	640	16	.70
UC16	06-07-91	8.4	98	550	150	42	87	3.7	160	540	9.3	.60
UC16	07-15-91	7.5	105	710	200	51	110	4.0	214	780	10	1.3
UC16	08-22-91	8.0	95	710	200	52	100	3.2	236	710	8.9	.60
UC16	08-29-91	--	--	760	210	58	110	3.7	208	740	12	.80
UC16	09-23-91	9.4	103	680	190	49	93	3.7	214	640	6.4	.60

Table 4. Onsite measurements and chemical data for surface-water sites in the Uncompahgre Project area, 1991–92--Continued

Site code (pl.1)	Date	Silica, dissolved (mg/L as SiO_2)	Solids, residue at 180°C, dissolved (mg/L)	Solids, sum of constituents, dissolved (mg/L)	Solids, dissolved (tons per day)	Nitrogen, nitrite, dissolved (mg/L as N)	Nitrogen, NO_2+ NO_3, dissolved (mg/L as N)	Nitrogen, ammonia, dissolved (mg/L as N)	Phosphorus, ortho, dissolved (mg/L as P)	Arsenic, dissolved (µg/L as As)	Boron, dissolved (µg/L as B)
UC1	03-21-91	10	--	526	151	--	--	--	--	--	--
UC1	06-07-91	11	--	257	355	--	--	--	--	--	--
UC1	07-17-91	8.8	367	361	307	<0.01	0.09	<0.01	0.02	1	30
UC1	08-28-91	8.2	--	321	218	--	--	--	--	--	--
UC1	11-07-91	10	--	438	134	--	--	--	--	--	--
UC1	02-19-92	11	--	489	71.1	--	.13	--	--	--	50
UC1	03-19-92	11	--	489	166	--	--	--	--	--	--
UC1	06-18-92	10	--	318	584	--	--	--	--	--	--
UC1	08-13-92	8.7	--	297	344	--	--	--	--	--	--
UC2	02-19-92	11	--	571	102	--	.20	--	--	--	50
UC2	06-09-92	14	--	236	E701	--	.10	--	--	--	20
UC3	02-19-92	12	--	580	97.0	--	.18	--	--	--	60
UC4	02-19-92	12	--	669	27.7	--	.30	--	--	--	60
UC5	02-19-92	12	--	647	45.0	--	.34	--	--	--	60
UC6	07-18-91	11	348	335	272	<.01	.12	.03	<.01	1	40
UC6	02-19-92	12	--	915	68.7	--	.86	--	--	--	100
UC7	02-19-92	13	--	995	79.2	--	1.1	--	--	--	120
UC8	02-19-92	16	--	1,340	151	--	2.2	--	--	--	210
UC9	02-19-92	15	-	1,320	187	--	2.3	--	--	--	190
UC10	07-17-91	14	866	892	8.9	<.01	.25	.02	<.01	1	160
UC10	02-19-92	15	--	1,330	103	--	2.2	--	--	--	200
UC11	02-19-92	14	--	1,330	113	--	2.1	--	--	--	190
UC12	02-19-92	14	--	1,400	149	--	2.3	--	--	--	190
UC13	02-19-92	13	--	1,890	285	--	3.5	--	--	--	260
UC14	02-19-92	13	--	1,890	302	--	3.7	--	--	--	260
UC15	02-19-92	13	--	1,570	518	--	3.2	--	--	--	220
UC16	03-21-91	9.8	--	1,590	549	--	--	--	--	--	--
UC16	05-30-91	14	--	1,120	850	.03	2.7	.07	.03	--	150
UC16	06-07-91	15	--	944	1,150	--	--	--	--	--	--
UC16	07-15-91	15	1,280	1,310	698	.04	2.4	<.01	.03	1	190
UC16	08-22-91	15	--	1,250	627	--	4.0	--	--	--	220
UC16	08-29-91	16	--	1,280	647	--	--	--	--	--	--
UC16	09-23-91	15	--	1,140	1,050	--	2.4	--	--	--	180

Table 4. Onsite measurements and chemical data for surface-water sites in the Uncompahgre Project area, 1991–92--Continued

Site code (pi.1)	Date	Cadmium, dissolved (µg/L as Cd)	Chromium, dissolved (µg/L as Cr)	Copper, dissolved (µg/L as Cu)	Lead, dissolved (µg/L as Pb)	Mercury, dissolved (µg/L as Hg)	Molybdenum, dissolved (µg/L as Mo)	Selenium, dissolved (µg/L as Se)	Vanadium, dissolved (µg/L as V)	Zinc, dissolved (µg/L as Zn)	Uranium, natural, total (µg/L as U)
UC1	03-21-91	1	--	4	<1	<0.1	--	2	--	26	--
UC1	06-07-91	<1	--	4	<1	<.1	--	<1	--	7	--
UC1	07-17-91	<1	<1	3	<1	<.1	2	<1	1	7	2.0
UC1	08-28-91	<1	--	4	<1	<.1	--	<1	--	<10	--
UC1	11-07-91	<1	--	2	<1	<.1	--	1	--	11	--
UC1	02-19-92	--	--	--	--	--	--	2	--	--	--
UC1	03-19-92	<1	--	2	<1	<.1	--	2	--	5	--
UC1	06-18-92	<1	--	4	<1	<.1	--	<1	--	5	--
UC1	08-13-92	<1	--	3	<1	<.1	--	<1	--	3	--
UC2	02-19-92	--	--	--	--	--	--	3	--	--	--
UC2	06-09-92	--	--	--	--	--	--	<1	--	--	--
UC3	02-19-92	--	--	--	--	--	--	3	--	--	--
UC4	02-19-92	--	--	--	--	--	--	4	--	--	--
UC5	02-19-92	--	--	--	--	--	--	3	--	--	--
UC6	07-18-91	<1	<1	5	<1	<.1	<1	2	2	6	2.6
UC6	02-19-92	--	--	--	--	--	--	10	--	--	--
UC7	02-19-92	--	--	--	--	--	--	9	--	--	--
UC8	02-19-92	--	--	--	--	--	--	17	--	--	--
UC9	02-19-92	--	--	--	--	--	--	15	--	--	--
UC10	07-17-91	<1	<1	5	<1	<.1	3	7	2	4	9.7
UC10	02-19-92	--	--	--	--	--	--	13	--	--	--
UC11	02-19-92	--	--	--	--	--	--	15	--	--	--
UC12	02-19-92	--	--	--	--	--	--	15	--	--	--
UC13	02-19-92	--	--	--	--	--	--	34	--	--	--
UC14	02-19-92	--	--	--	--	--	--	34	--	--	--
UC15	02-19-92	--	--	--	--	--	--	22	--	--	--
UC16	03-21-91	<1	--	3	<1	<0.1	--	26	--	22	--
UC16	05-30-91	--	--	--	--	--	--	5	--	--	--
UC16	06-07-91	<1	--	<1	<1	<.1	--	10	--	16	--
UC16	07-15-91	<1	<1	4	<1	<.1	4	13	4	15	8.1
UC16	08-22-91	--	--	--	--	--	--	12	--	--	--
UC16	08-29-91	<1	--	2	4	<.1	--	15	--	<10	--
UC16	09-23-91	--	--	--	--	--	--	12	--	--	--

Table 4. Onsite measurements and chemical data for surface-water sites in the Uncompahgre Project area, 1991–92--Continued

Site code (pl. 1)	Site name	Date	Time	Stream discharge (ft^3/s)	Specific conductance (µS/cm)	pH, field (standard units)	Water temperature (°C)
UC16	Uncompahgre River at Delta	10-21-91	0930	254	1,510	8.4	9.0
UC16		11-07-91	1010	221	1,720	8.3	9.0
UC16		11-13-91	1200	260	1,630	8.3	7.0
UC16		12-12-91	0850	229	1,730	8.2	3.0
UC16		01-14-92	1200	118	1,970	8.4	0
UC16		02-19-92	0840	124	2,090	8.3	1.0
UC16		03-19-92	1040	192	1,580	8.4	6.5
UC16		03-27-92	1245	183	1,490	8.3	11.0
UC16		04-22-92	1130	315	1,050	8.3	11.0
UC16		05-12-92	1130	380	1,150	8.2	14.0
UC16		06-10-92	1200	525	1,120	8.3	16.0
UC16		06-18-92	1055	415	1,230	8.5	15.0
UC16		08-13-92	1055	351	1,430	8.3	17.0
WST	West Canal at Highway 550	02-19-92	1130	4.4	788	8.3	2.0
MDC1	Montrose and Delta Canal at Highway 90	02-12-92	0920	20	835	8.3	.5
MDC2	Montrose and Delta Canal at Hickory Road	02-11-92	1030	5.1	1,030	8.3	3.5
HFC	Horsefly Creek at Racine Road, near mouth	07-17-91	0930	5.3	480	8.0	14.0
HFC		02-20-92	1025	.32	1,840	7.9	0
HCC1	Happy Canyon Creek at Marine Road, near mouth	07-17-91	1210	44	927	8.1	16.5
HCC1		02-20-92	1310	5.7	1,470	8.6	6.0
HCC2	Happy Canyon Creek above Dolores Creek	02-20-92	0920	.50	2,430	8.0	2.0
DOL	Dolores Creek at mouth	02-20-92	0910	1.9	1,530	8.1	.5
MXG	Mexican Gulch at LaSalle Road, near mouth	02-20-92	1040	1.4	940	8.0	5.5
SP1	Spring Creek at Jay-Jay Road, near mouth	07-24-91	1315	89	840	7.6	18.5
SP1		01-12-92	1250	14	1,540	8.4	7.5
SP1		02-19-92	1050	8.2	1,470	8.6	2.0
SP2	Spring Creek at Maple Grove Road	01-12-92	1200	4.0	945	8.4	2.5
SP3	Spring Creek at Highway 90, at Oak Grove	02-12-92	1040	3.9	755	8.4	3.0
SP4	Spring Creek at Poplar Road, below West Canal	07-24-91	0930	.81	692	7.8	16.0
SP4		02-12-92	0800	1.4	741	8.2	0
IRC1	Ironstone Canal at Highway 348 and 5700 Road	02-11-92	1400	--	1,840	8.3	3.5
IRC2	Ironstone Canal at 5400 Road	01-29-92	1045	5.3	1,530	8.0	.5
UNBL	Unnamed drainage at Blossom Road, near Chipeta	02-20-92	1150	.11	5,370	7.9	7.0
UND1	Ditch at Ash Mesa Road, upper ditch	02-20-92	1245	1.5	1,400	8.1	9.5
UND2	Ditch at D10 and Ash Mesa Roads	02-20-92	1320	.48	1,320	8.0	8.5

Table 4. Onsite measurements and chemical data for surface-water sites in the Uncompahgre Project area, 1991–92--Continued

Site code (pl. 1)	Date	Oxygen, dissolved (mg/L)	Oxygen, dissolved (percent saturation)	Hardness, total (mg/L as $CaCO_3$)	Calcium, dissolved (mg/L as Ca)	Magnesium, dissolved (mg/L as Mg)	Sodium, dissolved (mg/L as Na)	Potassium, dissolved (mg/L as K)	Alkalinity, lab (mg/L as $CaCO_3$)	Sulfate, dissolved (mg/L as SO_4)	Chloride, dissolved (mg/L as Cl)	Fluoride, dissolved (mg/L as F)
UC16	10-21-91	10.1	105	660	180	50	92	3.6	211	650	4.8	0.60
UC16	11-07-91	--	--	830	220	68	130	4.4	216	750	18	.70
UC16	11-13-91	11.4	113	740	200	58	110	4.1	214	700	13	.60
UC16	12-12-91	11.3	101	720	190	60	120	4.3	224	770	20	.60
UC16	01-14-92	13.4	110	850	220	73	140	4.2	247	880	19	.90
UC16	02-19-92	--	--	890	220	83	170	4.7	259	900	33	.70
UC16	03-19-92	10.9	106	690	180	59	120	4.6	218	740	15	.50
UC16	03-27-92	9.2	101	580	150	51	110	4.2	188	590	15	.30
UC16	04-22-92	9.6	105	460	130	33	62	3.2	148	400	10	.50
UC16	05-12-92	8.5	99	500	140	36	69	3.6	162	370	12	.50
UC16	06-10-92	8.1	98	460	130	34	64	3.1	168	410	12	.50
UC16	06-18-92	8.6	106	520	150	36	67	3.3	180	470	9.7	.50
UC16	08-13-92	8.1	--	640	180	46	84	3.5	213	550	11	.60
WST	02-19-92	--	--	360	110	21	30	2.8	156	270	6.0	.40
MDC1	02-12-92	10.3	89	400	120	24	35	2.9	158	280	6.7	.30
MDC2	02-11-92	11.4	105	510	140	38	45	3.7	242	310	7.7	.70
HFC	07-17-91	8.4	101	210	62	14	16	3.5	131	110	5.0	.20
HFC	02-20-92	--	--	940	180	120	100	11	255	870	25	.80
HCC1	07-17-91	9.1	115	390	110	28	46	4.3	199	270	8.4	.40
HCC1	02-20-92	--	--	650	160	60	91	6.2	224	560	14	1.1
HCC2	02-20-92	--	--	1,300	300	130	98	10	315	610	9.6	.40
DOL	02-20-92	--	--	660	160	64	87	6.0	213	610	13	<.10
MXG	02-20-92	--	--	480	130	38	43	2.6	231	310	5.3	1.0
SP1	07-24-91	8.0	105	390	110	27	25	2.5	196	260	5.4	.50
SP1	02-12-92	10.8	110	700	180	62	88	3.3	229	590	9.8	.70
SP1	02-19-92	--	--	740	190	64	72	3.0	250	590	11	.60
SP2	02-12-92	12.5	113	470	130	36	34	3.3	206	300	7.6	.40
SP3	02-12-92	12.6	116	360	100	27	33	2.9	185	200	6.7	.30
SP4	07-24-91	8.7	110	300	79	24	35	5.7	283	94	7.3	.30
SP4	02-12-92	11.1	95	320	93	21	44	3.4	182	210	7.9	.30
IRC1	02-11-92	11.6	107	760	190	70	140	5.6	246	810	15	.50
IRC2	01-29-92	14.8	124	740	200	59	81	3.8	253	650	14	1.1
UNBL	02-20-92	--	--	2,000	450	220	680	15	368	3,100	56	.20
UND1	02-20-92	--	--	640	180	47	83	2.4	215	520	13	.90
UND2	02-20-92	--	--	630	180	44	66	2.0	251	470	11	.90

Table 4. Onsite measurements and chemical data for surface-water sites in the Uncompahgre Project area, 1991–92--Continued

Site code (pl.1)	Date	Silica, dissolved (mg/L as SiO_2)	Solids, residue at 180°C, dissolved (mg/L)	Solids, sum of constituents, dissolved (mg/L)	Solids, dissolved (tons per day)	Nitrogen, nitrite, dissolved (mg/L as N)	Nitrogen, NO_2+ NO_3, dissolved (mg/L as N)	Nitrogen, ammonia, dissolved (mg/L as N)	Phosphorus, ortho, dissolved (mg/L as P)	Arsenic, dissolved (µg/L as As)	Boron, dissolved (µg/L as B)
UC16	10-21-91	15	--	1,130	778	--	2.5	--	--	--	190
UC16	11-07-91	16	--	1,340	798	--	--	--	--	--	--
UC16	11-13-91	14	--	1,240	871	--	2.8	--	--	--	200
UC16	12-12-91	12	--	1,320	819	--	2.8	--	--	--	200
UC16	01-14-92	14	--	1,510	481	--	3.5	--	--	--	230
UC16	02-19-92	13	--	1,590	534	--	3.3	--	--	--	210
UC16	03-19-92	13	--	1,260	655	--	--	--	--	--	--
UC16	03-27-92	12	--	1,050	521	--	1.9	--	--	--	150
UC16	04-22-92	12	--	748	636	--	1.9	--	--	--	110
UC16	05-12-92	15	--	750	770	--	1.6	--	--	--	120
UC16	06-10-92	15	--	777	1,100	--	1.6	--	--	--	120
UC16	06-18-92	15	-	859	963	--	--	--	--	--	--
UC16	08-13-92	16	--	1,020	966	--	--	--	--	--	--
WST	02-19-92	12	--	546	6.42	--	.15	--	--	--	50
MDC1	02-12-92	11	--	576	31.4	--	.26	--	--	--	60
MDC2	02-11-92	15	--	716	9.86	--	2.4	--	--	--	140
HFC	07-17-91	12	316	304	4.52	0.02	.35	0.02	0.23	2	40
HFC	02-20-92	9.9	-	1,470	1.27	--	.11	--	--	--	130
HCC1	07-17-91	17	954	609	113	<.01	1.2	<.01	.03	1	100
HCC1	02-20-92	16	--	1,050	16.1	--	1.3	--	--	--	140
HCC2	02-20-92	15	--	1,360	1.84	--	.30	--	--	--	140
DOL	02-20-92	12	--	1,080	5.46	--	.16	--	--	--	120
MXG	02-20-92	22	--	696	2.61	--	1.3	--	--	--	80
SP1	07-24-91	15	601	570	145	.01	1.5	.05	.02	1	90
SP1	02-12-92	13	--	1,100	40.3	--	3.2	--	--	--	140
SP1	02-19-92	15	--	1,110	24.6	--	3.6	--	--	--	140
SP2	02-12-92	10	--	648	6.91	--	.66	--	--	--	90
SP3	02-12-92	11	--	495	5.27	--	.71	--	--	--	70
SP4	07-24-91	10	404	425	.88	<.01	<.05	.04	<.01	1	90
SP4	02-12-92	8.6	--	498	1.88	--	.09	--	--	--	60
IRC1	02-11-92	13	--	1,400	--	--	2.7	--	--	--	200
IRC2	01-29-92	16	--	1,190	17.1	--	4.1	--	--	--	180
UNBL	02-20-92	42	--	4,840	1.44	--	13	--	--	--	860
UND1	02-20-92	21	--	1,030	4.07	--	8.2	--	--	--	170
UND2	02-20-92	22	--	977	1.27	--	6.9	--	--	--	150

Table 4. Onsite measurements and chemical data for surface-water sites in the Uncompahgre Project area, 1991–92--Continued

Site code (pl.1)	Date	Cadmium, dissolved (µg/L as Cd)	Chromium, dissolved (µg/L as Cr)	Copper, dissolved (µg/L as Cu)	Lead, dissolved (µg/L as Pb)	Mercury, dissolved (µg/L as Hg)	Molybdenum, dissolved (µg/L as Mo)	Selenium, dissolved (µg/L as Se)	Vanadium, dissolved (µg/L as V)	Zinc, dissolved (µg/L as Zn)	Uranium, natural, total (µg/L as U)
UC16	10-21-91	--	--	--	--	--	--	24	--	--	--
UC16	11-07-91	<1	--	1	<1	<0.1	--	21	--	<3	--
UC16	11-13-91	--	--	--	--	--	--	16	--	--	--
UC16	12-12-91	--	--	--	--	--	--	20	--	--	--
UC16	01-14-92	--	--	--	--	--	--	25	--	--	--
UC16	02-19-92	--	--	--	--	--	--	21	--	--	--
UC16	03-19-92	<1	--	5	<1	<.1	--	15	--	20	--
UC16	03-27-92	--	--	--	--	--	--	15	--	--	--
UC16	04-22-92	--	--	--	--	--	--	9	--	--	--
UC16	05-12-92	--	--	--	--	--	--	9	--	--	--
UC16	06-10-92	--	--	--	--	--	--	8	--	--	--
UC16	06-18-92	<1	--	2	<1	<.1	--	11	--	<3	--
UC16	08-13-92	<1	--	2	<1	<.1	--	11	--1	<3	--
WST	02-19-92	--	--	--	--	--	--	2	--	--	--
MDC1	02-12-92	--	--	--	--	--	--	2	--	--	--
MDC2	02-11-92	--	--	--	--	--	--	3	--	--	--
HFC	07-17-91	<1	1	2	<1	<.1	2	<1	3	7	2.7
HFC	02-20-92	--	--	--	--	--	--	<1	--	--	--
HCC1	07-17-91	<1	<1	3	<1	<.1	1	1	2	13	3.4
HCC1	02-20-92	--	--	--	--	--	--	2	--	--	--
HCC2	02-20-92	--	--	--	--	--	--	<1	--	--	--
DOL	02-20-92	--	--	--	--	--	--	1	--	--	--
MXG	02-20-92	--	--	--	--	--	--	2	--	--	--
SP1	07-24-91	<1	<1	2	<1	<.1	<1	1	2	5	5.1
SP1	02-12-92	--	--	--	--	--	--	3	--	--	--
SP1	02-19-92	--	--	--	--	--	--	2	--	--	--
SP2	02-12-92	--	--	--	--	--	--	2	--	--	--
SP3	02-12-92	--	--	--	--	--	--	1	--	--	--
SP4	07-24-91	<1	<1	<1	<1	<.1	<1	<1	<1	9	2.9
SP4	02-12-92	--	--	--	--	--	--	2	--	--	--
IRC1	02-11-92	--	--	--	--	--	--	16	--	--	--
IRC2	01-29-92	--	--	--	--	--	--	8	--	--	--
UNBL	02-20-92	--	--	--	--	--	--	34	--	--	--
UND1	02-20-92	--	--	--	--	--	--	11	--	--	--
UND2	02-20-92	--	--	--	--	--	--	8	--	--	--

Table 4. Onsite measurements and chemical data for surface-water sites in the Uncompahgre Project area, 1991–92--Continued

Site code (pl. 1)	Site name	Date	Time	Stream discharge (ft^3/s)	Specific conductance (µS/cm)	pH, field (standard units)	Water temperature (°C)
DRY1	Dry Creek at D10 Road, near mouth	07-10-91	1400	74	1,250	8.1	17.5
DRY1		07-23-91	1500	86	1,230	8.0	20.5
DRY1		10-21-91	1140	169	1,200	8.3	11.0
DRY1		11-13-91	1030	128	1,310	8.3	6.5
DRY1		12-12-91	1030	74	1,370	8.2	3.5
DRY1		01-14-92	1000	52	1,630	8.3	0
DRY1		02-10-92	1200	69	1,630	8.5	5.0
DRY1		02-20-92	1420	54	1,600	8.2	6.5
DRY1		03-27-92	1140	65	1,200	8.4	10.5
DRY1		05-12-92	1030	200	795	8.2	13.5
DRY1		06-10-92	1105	96	1,170	8.3	16.5
DRY2	Dry Creek at Begonia Road	02-10-92	1440	56	1,550	8.3	5.0
DRY3	Dry Creek at Highway 348	02-10-92	1545	55	1,540	8.4	5.0
DRY4	Dry Creek at 5600 Road	02-11-92	1130	20	1,000	8.4	3.0
DRY5	Dry Creek at Holly Road, below CQ lateral	07-10-91	1130	3.0	750	7.7	22.0
DRY5		07-23-91	1320	2.2	1,050	8.1	23.0
DRY5		02-11-92	0940	4.5	768	8.2	1.0
ASH	Drain on Ash Mesa at B Road	02-10-92	1250	E.01	5,290	7.7	3.0
CAL	Drain near 5600 and Fern Roads on California Mesa	02-11-92	1220	E.05	3,210	8.0	2.0
CC1	Coal Creek at Fern Road, near mouth	02-11-92	1310	2.6	1,940	8.2	6.0
CC2	Coal Creek at Jig Road	02-11-92	0820	15	898	8.3	3.0
SOC	South Canal at Uncompahgre Road	07-18-91	1510	745	225	7.9	11.0
DCC1	Dry Cedar Creek at Highway 550, near mouth	07-17-91	1050	11	1,240	8.2	15.0
DCC1		02-20-92	1215	2.0	4,930	8.0	2.5
DCC1		04-28-92	1000	6.4	1,840	8.3	11.0
DCC1		06-09-92	1135	23	968	8.1	10.5
DCC2	Dry Cedar Creek at Sunshine Road	02-20-92	1110	.77	4,920	8.1	2.0
CD1	Cedar Creek at Highway 50, near mouth	07-24-91	1145	E150	800	8.0	13.5
CD1		10-29-91	1140	45	2,190	8.3	4.5
CD1		02-20-92	1000	15	2,620	8.5	2.0
CD1		03-03-92	0845	18	2,810	8.1	5.0
CD1		03-27-92	0815	22	2,630	8.3	6.5
CD1		04-28-92	0850	68	1,340	8.3	9.5
CD1		06-09-92	0920	200	702	8.4	9.5
CD1		06-23-92	1400	213	769	8.1	16.0
CD1		07-14-92	1015	208	839	8.2	12.5
CD1		08-11-92	0845	178	841	8.3	13.0
CD2	Cedar Creek at Stough Avenue	03-03-92	0950	15	2,200	8.3	5.0
CD3	Cedar Creek at Miguel Road, at Fairview	03-03-92	1150	12	2,310	8.4	6.0
CD4	Cedar Creek at AB Lateral	07-24-91	0830	5.5	1,630	7.9	13.0
CD4		03-03-92	1245	12	2,010	8.4	7.5

Table 4. Onsite measurements and chemical data for surface-water sites in the Uncompahgre Project area, 1991–92--Continued

Site code (pl. 1)	Date	Oxygen, dissolved (mg/L)	Oxygen, dissolved (percent saturation)	Hardness, total (mg/L as $CaCO_3$)	Calcium, dissolved (mg/L as Ca)	Magnesium, dissolved (mg/L as Mg)	Sodium, dissolved (mg/L as Na)	Potassium, dissolved (mg/L as K)	Alkalinity, lab (mg/L as $CaCO_3$)	Sulfate, dissolved (mg/L as SO_4)	Chloride, dissolved (mg/L as Cl)	Fluoride, dissolved (mg/L as F)
DRY1	07-10-91	8.0	101	620	180	42	64	2.8	211	540	9.7	0.90
DRY1	07-23-91	7.0	94	580	170	38	52	3.3	197	490	7.3	.70
DRY1	10-21-91	10.3	113	560	160	39	52	2.9	206	500	3.0	.70
DRY1	11-13-91	9.8	96	640	180	46	64	3.2	219	520	9.3	.70
DRY1	12-12-91	10.5	95	640	180	47	68	3.5	206	580	13	.70
DRY1	01-14-92	12.2	100	770	210	60	90	3.4	229	620	15	.70
DRY1	02-10-92	11.9	113	750	200	61	100	4.8	245	670	15	.60
DRY1	02-20-92	--	--	730	190	61	100	4.0	217	690	14	1.3
DRY1	03-27-92	9.2	100	520	140	41	70	3.8	177	450	11	.30
DRY1	05-12-92	8.4	97	350	100	24	33	2.8	136	250	5.4	.40
DRY1	06-10-92	8.3	102	510	150	34	49	3.1	191	410	9.7	.60
DRY2	02-10-92	11.3	108	720	190	59	99	4.5	246	620	15	.60
DRY3	02-10-92	11.2	107	700	180	61	100	4.5	239	640	15	.60
DRY4	02-11-92	12.7	115	510	140	39	45	3.7	231	320	8.3	.60
DRY5	07-10-91	7.6	105	360	100	27	25	4.2	209	220	6.1	.50
DRY5	07-23-91	8.6	123	550	160	36	23	6.6	208	400	3.4	.60
DRY5	02-11-92	11.7	101	370	110	24	33	3.1	179	220	6.4	.40
ASH	02-10-92	--	--	2,100	460	220	670	11	271	3,100	42	.80
CAL	02-11-92	--	--	1,600	430	120	250	7.2	299	1,700	20	.90
CC1	02-11-92	12.0	118	1,000	270	80	92	3.5	256	840	12	1.2
CC2	02-11-92	11.4	104	420	110	36	40	3.1	250	230	7.3	.50
SOC	07-18-91	9.8	111	100	30	6.8	6.3	1.7	89	26	2.1	.20
DCC1	07-17-91	8.1	99	490	120	46	97	3.3	160	480	9.1	.30
DCC1	02-20-92	--	--	2,200	440	270	510	9.2	337	2,700	55	.40
DCC1	04-28-92	8.8	99	--	--	--	--	--	--	--	--	--
DCC1	06-09-92	8.5	94	--	--	--	--	--	--	--	--	--
DCC2	02-20-92	--	--	2,300	430	290	450	9.1	353	2,800	62	1.6
CD1	07-24-91	8.5	100	340	93	26	44	3.0	134	310	5.2	.30
CD1	10-29-91	--	--	--	--	--	--	--	--	--	--	--
CD1	02-20-92	--	--	1,300	270	140	250	6.9	310	1,300	26	.70
CD1	03-03-92	9.6	93	1,100	240	130	260	8.2	293	1,300	31	.50
CD1	03-27-92	9.0	91	--	--	--	--	--	--	--	--	--
CD1	04-28-92	8.7	93	--	--	--	--	--	--	--	--	--
CD1	06-09-92	8.8	95	290	76	24	39	2.7	117	230	4.6	.30
CD1	06-23-92	8.1	101	--	--	--	--	--	--	--	--	--
CD1	07-14-92	8.6	99	340	90	29	48	2.8	141	280	4.4	.30
CD1	08-11-92	8.0	93	--	--	--	--	--	--	--	--	--
CD2	03-03-92	10.2	100	940	180	120	210	5.9	279	990	21	.50
CD3	03-03-92	10.0	102	900	180	110	200	5.9	316	940	22	.60
CD4	07-24-91	7.9	95	720	170	72	100	7.0	290	610	11	.40
CD4	03-03-92	9.8	105	790	150	100	150	5.4	337	790	18	.50

Table 4. Onsite measurements and chemical data for surface-water sites in the Uncompahgre Project area, 1991–92--Continued

Site code (pl.1)	Date	Silica, dissolved (mg/L as SiO_2)	Solids, residue at 180°C, dissolved (mg/L)	Solids, sum of constituents, dissolved (mg/L)	Solids, dissolved (tons per day)	Nitrogen, nitrite, dissolved (mg/L as N)	Nitrogen, NO_2+ NO_3, dissolved (mg/L as N)	Nitrogen, ammonia, dissolved (mg/L as N)	Phosphorus, ortho, dissolved (mg/L as P)	Arsenic, dissolved (µg/L as As)	Boron, dissolved (µg/L as B)
DRY1	07-10-91	17	1,020	993	204	0.02	3.6	0.02	0.03	1	150
DRY1	07-23-91	17	932	914	216	.11	3.6	.84	.02	1	140
DRY1	10-21-91	16	--	906	413	--	1.9	--	--	--	140
DRY1	11-13-91	16	--	982	339	--	2.5	--	--	--	160
DRY1	12-12-91	13	--	1,040	207	--	2.6	--	--	--	160
DRY1	01-14-92	15	--	1,170	163	--	3.2	--	--	--	190
DRY1	02-10-92	14	--	1,230	228	--	3.2	--	--	--	180
DRY1	02-20-92	14	--	1,220	176	--	2.9	--	--	--	190
DRY1	03-27-92	12	--	841	147	--	.6	--	--	--	120
DRY1	05-12-92	14	--	516	278	--	1.1	--	--	--	80
DRY1	06-10-92	17	--	800	209	--	2.8	--	--	--	130
DRY2	02-10-92	14	--	1,160	177	--	2.7	--	--	--	170
DRY3	02-10-92	14	--	1,170	174	--	2.7	--	--	--	170
DRY4	02-11-92	13	--	717	37.9	--	2.0	--	--	--	130
DRY5	07-10-91	11	544	511	4.41	<.01	<.05	.02	<.01	1	100
DRY5	07-23-91	16	758	772	4.50	.02	.27	.05	.11	1	130
DRY5	02-11-92	8.8	--	514	6.24	--	.14	--	--	--	60
ASH	02-10-92	11	--	4,700	E.13	--	4.9	--	--	--	1600
CAL	02-11-92	22	--	2,760	E.37	--	6.3	--	--	--	350
CC1	02-11-92	22	--	1,510	10.6	--	7.2	--	--	--	220
CC2	02-11-92	13	--	598	24.1	--	1.9	--	--	--	150
SOC	07-18-91	12	138	138	278	<.01	<.05	<.01	<.01	1	10
DCC1	07-17-91	14	896	867	25.6	<.01	.31	.02	.02	1	150
DCC1	02-20-92	14	--	4,220	22.6	--	5.0	--	--	--	580
DCC1	04-28-92	--	1,340	--	23.2	--	.44	--	--	--	200
DCC1	06-09-92	--	678	--	42.1	--	.58	--	--	--	100
DCC2	02-20-92	14	--	4,290	8.91	--	4.3	--	--	--	620
CD1	07-24-91	12	552	576	E233	<.01	.38	.04	.01	1	90
CD1	10-29-91	--	1,850	--	225	--	--	--	--	--	--
CD1	02-20-92	19	--	2,220	92.1	--	3.8	--	--	--	370
CD1	03-03-92	17	--	2,180	108	--	4.9	--	--	--	340
CD1	03-27-92	--	--	--	--	--	--	--	--	--	350
CD1	04-28-92	--	966	--	177	--	1.2	--	--	--	150
CD1	06-09-92	15	--	465	251	--	.74	--	--	--	70
CD1	06-23-92	--	--	--	--	--	--	--	--	--	80
CD1	07-14-92	15	--	556	313	--	0.48	--	--	--	80
CD1	08-11-92	--	--	--	--	--	.47	--	--	--	--
CD2	03-03-92	18	--	1,740	72.8	--	6.2	--	--	--	300
CD3	03-03-92	21	--	1,710	54.8	--	8.2	--	--	--	300
CD4	07-24-91	24	1,230	1,180	18.3	0.03	1.8	0.06	0.05	2	260
CD4	03-03-92	22	--	1,470	46.5	--	7.9	--	--	--	260

Table 4. Onsite measurements and chemical data for surface-water sites in the Uncompahgre Project area, 1991–92--Continued

Site code (pl.1)	Date	Cadmium, dissolved (µg/L as Cd)	Chromium, dissolved (µg/L as Cr)	Copper, dissolved (µg/L as Cu)	Lead, dissolved (µg/L as Pb)	Mercury, dissolved (µg/L as Hg)	Molybdenum, dissolved (µg/L as Mo)	Selenium, dissolved (µg/L as Se)	Vanadium, dissolved (µg/L as V)	Zinc, dissolved (µg/L as Zn)	Uranium, natural, total (µg/L as U)
DRY1	07-10-91	<1	<1	2	<1	<0.1	3	8	4	5	8.0
DRY1	07-23-91	<1	<1	1	<1	<.1	2	6	3	7	3.4
DRY1	10-21-91	--	--	--	--	--	--	6	--	--	--
DRY1	11-13-91	--	--	--	--	--	--	6	--	--	--
DRY1	12-12-91	--	--	--	--	--	--	5	--	--	--
DRY1	01-14-92	--	--	--	--	--	--	9	--	--	--
DRY1	02-10-92	--	--	--	--	--	--	10	--	--	--
DRY1	02-20-92	--	--	--	--	--	--	10	--	--	--
DRY1	03-27-92	--	--	--	--	--	--	8	--	--	--
DRY1	05-12-92	--	--	--	--	--	--	4	--	--	--
DRY1	06-10-92	--	--	--	--	--	--	5	--	--	--
DRY2	02-10-92	--	--	--	--	--	--	8	--	--	--
DRY3	02-10-92	--	--	--	--	--	--	11	--	--	--
DRY4	02-11-92	--	--	--	--	--	--	3	--	--	--
DRY5	07-10-91	<1	<1	2	<1	<.1	1	<1	2	<3	3.0
DRY5	07-23-91	<1	<1	2	<1	<.1	<1	<1	3	6	5.2
DRY5	02-11-92	--	--	--	--	--	--	<1	--	--	--
ASH	02-10-92	--	--	--	--	--	--	55	--	--	--
CAL	02-11-92	--	--	--	--	--	--	6	--	--	--
CC1	02-11-92	--	--	--	--	--	--	7	--	--	--
CC2	02-11-92	--	--	--	--	--	--	3	--	--	--
SOC	07-18-91	<1	<1	2	<1	<.1	<1	<1	2	4	1.9
DCC1	07-17-91	<1	<1	2	<1	<.1	5	9	3	8	13
DCC1	02-20-92	--	--	--	--	--	--	68	--	--	--
DCC1	04-28-92	--	--	--	--	--	--	20	--	--	--
DCC1	06-09-92	--	--	--	--	--	--	9	--	--	--
DCC2	02-20-92	--	--	--	--	--	--	59	--	--	--
CD1	07-24-91	<1	<1	<1	<1	<.1	1	6	2	3	3.4
CD1	10-29-91	--	--	--	--	--	--	36	--	--	--
CD1	02-20-92	--	--	--	--	--	--	34	--	--	--
CD1	03-03-92	--	--	--	--	--	--	45	--	--	--
CD1	03-27-92	--	--	--	--	--	--	42	--	--	--
CD1	04-28-92	--	--	--	--	--	--	15	--	--	--
CD1	06-09-92	--	--	--	--	--	--	6	--	--	--
CD1	06-23-92	--	--	--	--	--	--	6	--	--	--
CD1	07-14-92	--	--	--	--	--	--	9	--	--	--
CD1	08-11-92	--	--	--	--	--	--	9	--	--	--
CD2	03-03-92	--	--	--	--	--	--	34	--	--	--
CD3	03-03-92	--	--	--	--	--	--	38	--	--	--
CD4	07-24-91	<1	<1	1	<1	<.1	3	14	3	7	13
CD4	03-03-92	--	--	--	--	--	--	32	--	--	--

Table 4. Onsite measurements and chemical data for surface-water sites in the Uncompahgre Project area, 1991–92--Continued

Site code (pl. 1)	Site name	Date	Time	Stream discharge (ft^3/s)	Specific conductance (µS/cm)	pH, field (standard units)	Water temperature (°C)
MA1	Montrose Arroyo at 7th Street	03-02-92	1140	3.4	4,540	8.2	8.5
MA2	Montrose Arroyo at East Niagara Street	03-02-92	1240	2.2	5,810	8.2	6.5
MA3	Montrose Arroyo at 6700 Road	03-02-92	1240	.80	7,180	8.1	4.5
SGC1	Selig Canal at 6400 Road	03-10-92	1300	7.5	1,190	8.4	7.0
SGC2	Selig Canal at Peach Valley Road	03-10-92	1300	7.5	1,190	8.4	7.0
LZAM	Loutsenhizer Arroyo at mouth, below Garnet diversion	02-19-92	1330	12	4,250	8.3	4.5
LZA1	Loutsenhizer Arroyo at North River Road, near mouth	07-23-91	1200	77	1,720	8.0	16.5
LZA1		10-29-91	0940	61	2,100	8.3	4.0
LZA1		11-13-91	0820	35	2,930	8.2	5.5
LZA1		12-12-91	1230	23	2,760	8.3	3.0
LZA1		01-14-92	0900	13	4,770	8.2	.0
LZA1		03-09-92	1050	15	4,680	8.1	5.0
LZA1		03-27-92	0940	13	4,100	8.2	8.5
LZA1		04-22-92	1010	65	1,660	8.0	10.0
LZA1		05-12-92	0840	84	1,610	8.1	12.5
LZA1		06-09-92	1340	109	1,390	8.3	15.0
LZA1		06-24-92	0850	91	1,610	8.2	16.0
LZA1		07-14-92	0830	105	1,520	8.2	14.0
LZA1		08-11-92	1030	108	1,670	8.1	17.5
LZA2	Loutsenhizer Arroyo at Banner and 600 Roads	03-09-92	1205	13	4,760	8.1	6.0
LZA3	Loutsenhizer Arroyo above west tributary	03-09-92	1410	7.0	4,990	8.1	6.0
LZA4	Loutsenhizer Arroyo at David Road	03-10-92	0930	5.7	4,980	8.3	3.0
LZA5	Loutsenhizer Arroyo at 6400 Road	03-10-92	1210	4.7	3,830	8.3	5.5
WLZ1	West tributary of Loutsenhizer Arroyo at mouth	03-09-92	1500	5.9	4,640	8.3	7.5
WLZ2	West tributary of Loutsenhizer Arroyo at David Road	03-10-92	0830	4.3	5,100	8.1	4.0
WLZ3	West tributary of Loutsenhizer Arroyo at Falcon Road	03-10-92	1105	2.5	4,820	8.2	6.0
MKP	Markley Pond on East Mesa, southeast of Olathe	06-18-91	0900	--	2,860	8.1	19.0
MKP		06-23-92	1150	--	3,550	9.3	22.0
GTP	Gretts Pond near Olathe	06-18-91	1010	--	1,410	9.7	21.5

Table 4. Onsite measurements and chemical data for surface-water sites in the Uncompahgre Project area, 1991–92--Continued

Site code (pl. 1)	Date	Oxygen, dissolved (mg/L)	Oxygen, dissolved (percent saturation)	Hardness, total (mg/L as $CaCO_3$)	Calcium, dissolved (mg/L as Ca)	Magnesium, dissolved (mg/L as Mg)	Sodium, dissolved (mg/L as Na)	Potassium, dissolved (mg/L as K)	Alkalinity, lab (mg/L as $CaCO_3$)	Sulfate, dissolved (mg/L as SO_4)	Chloride, dissolved (mg/L as Cl)	Fluoride, dissolved (mg/L as F)
MA1	03-02-92	12.5	134	1,900	400	230	490	8.4	355	2,500	43	.70
MA2	03-02-92	13.0	133	2,400	460	310	670	11	380	3,300	65	.80
MA3	03-02-92	12.7	125	2,600	400	380	1,000	13	439	4,200	110	.90
SGC1	03-10-92	11.7	118	510	140	39	68	4.5	182	460	10	.30
SGC2	03-12-92	11.4	130	580	150	49	100	5.7	174	600	13	.30
LZAM	02-19-92	--	--	1,700	350	200	480	10	306	2,300	46	.60
LZA1	07-23-91	7.5	93	750	200	60	120	5.2	198	820	12	.40
LZA1	10-29-91	--	--	--	--	--	--	--	--	--	--	--
LZA1	11-13-91	10.3	99	1,300	290	140	320	7.5	256	1,600	24	.60
LZA1	12-12-91	--	--	1,500	320	170	420	10	289	2,000	44	.60
LZA1	01-14-92	11.1	92	2,000	420	220	570	10	341	2,600	52	1.2
LZA1	03-09-92	10.0	96	1,800	440	180	610	15	264	2,700	49	.40
LZA1	03-27-92	9.3	98	--	--	--	--	--	--	--	--	--
LZA1	04-22-92	8.6	93	700	190	54	140	4.8	159	740	16	.70
LZA1	05-12-92	8.1	92	680	180	55	130	6.0	174	680	15	.60
LZA1	06-09-92	7.8	94	540	140	46	100	4.3	160	530	14	.40
LZA1	06-24-92	7.3	90	--	--	--	--	--	--	--	--	--
LZA1	07-14-92	8.0	94	630	170	51	110	5.1	182	710	15	.40
LZA1	08-11-92	7.1	89	680	180	57	120	6.0	193	690	13	.40
LZA2	03-09-92	9.8	97	1,900	440	200	610	12	275	2,600	47	.30
LZA3	03-09-92	9.7	96	1,700	400	170	680	14	258	2,600	61	.40
LZA4	03-10-92	10.6	97	1,600	360	180	700	12	274	2,600	73	.40
LZA5	03-10-92	10.4	102	1,100	260	120	490	8.9	230	1,600	55	.40
WLZ1	03-09-92	12.0	124	2,000	410	230	530	12	219	2,700	36	.30
WLZ2	03-10-92	10.3	97	2,200	450	250	590	12	325	2,900	40	.50
WLZ3	03-10-92	10.5	104	2,200	460	260	500	12	304	2,900	40	.30
MKP	06-18-91	7.3	97	1,200	220	150	270	11	187	1,700	16	.50
MKP	06-23-92	12.0	170	1,300	210	190	380	11	50	2,000	43	.50
GTP	06-18-91	10.0	138	430	86	53	140	11	77	660	21	.40

Table 4. Onsite measurements and chemical data for surface-water sites in the Uncompahgre Project area, 1991–92--Continued

Site code (pl.1)	Date	Silica, dissolved (mg/L as SiO_2)	Solids, residue at 180°C, dissolved (mg/L)	Solids, sum of constituents, dissolved (mg/L)	Solids, dissolved (tons per day)	Nitrogen, nitrite, dissolved (mg/L as N)	Nitrogen, NO_2+ NO_3, dissolved (mg/L as N)	Nitrogen, ammonia, dissolved (mg/L as N)	Phosphorus, ortho, dissolved (mg/L as P)	Arsenic, dissolved (µg/L as As)	Boron, dissolved (µg/L as B)
MA1	03-02-92	14	--	3,920	35.9	--	4.1	--	--	--	290
MA2	03-02-92	7.9	--	5,070	29.8	--	3.2	--	--	--	530
MA3	03-02-92	8.2	--	6,380	13.8	--	.88	--	--	--	300
SGC1	03-10-92	12	--	845	17.1	--	.54	--	--	--	100
SGC2	03-12-92	9.7	--	1,040	12.2	--	.76	--	--	--	120
LZAM	02-19-92	10	--	3,620	122	--	9.9	--	--	--	530
LZA1	07-23-91	13	1,350	1,360	280	.06	2.3	.10	.04	1	220
LZA1	10-29-91	--	1,760	--	290	--	--	--	--	--	--
LZA1	11-13-91	9.9	--	2,570	240	--	5.2	--	--	--	390
LZA1	12-12-91	9.8	--	3,180	193	--	7.3	--	--	--	500
LZA1	01-14-92	11	--	4,130	148	--	10	--	--	--	680
LZA1	03-09-92	9.1	4,450	4,220	184	--	13	.18	--	--	570
LZA1	03-27-92	--	--	--	--	--	--	--	--	--	540
LZA1	04-22-92	11	--	1,260	220	--	1.3	--	--	--	180
LZA1	05-12-92	14	--	1,190	270	--	1.9	--	--	--	180
LZA1	06-09-92	13	--	950	280	--	1.4	--	--	--	150
LZA1	06-24-92	--	--	--	--	--	--	--	--	--	240
LZA1	07-14-92	14	--	1,190	339	--	2.1	--	--	--	160
LZA1	08-11-92	14	--	1,210	352	--	2.0	--	--	--	190
LZA2	03-09-92	8.7	--	4,140	145	--	12	--	--	--	580
LZA3	03-09-92	9.3	--	4,170	79.2	--	19	--	--	--	500
LZA4	03-10-92	9.3	--	4,180	63.9	--	18	--	--	--	470
LZA5	03-10-92	9.8	--	2,740	35.1	--	13	--	--	--	290
WLZ1	03-09-92	7.8	--	4,080	64.9	--	5.0	--	--	--	670
WLZ2	03-10-92	7.6	--	4,470	52.1	--	5.4	--	--	--	730
WLZ3	03-10-92	7.7	--	4,380	29.6	--	4.7	--	--	--	730
MKP	06-18-91	10	2,490	2,490	--	<.01	<.05	.05	<.01	<1	610
MKP	06-23-92	7.7	--	2,870	--	--	<.05	--	--	--	720
GTP	06-18-91	1.3	1,020	1,020	--	<.01	<.05	.02	.06	3	160

Table 4. Onsite measurements and chemical data for surface-water sites in the Uncompahgre Project area, 1991–92--Continued

Site code (pl.1)	Date	Cadmium, dissolved (µg/L as Cd)	Chromium, dissolved (µg/L as Cr)	Copper, dissolved (µg/L as Cu)	Lead, dissolved (µg/L as Pb)	Mercury, dissolved (µg/L as Hg)	Molybdenum, dissolved (µg/L as Mo)	Selenium, dissolved (µg/L as Se)	Vanadium, dissolved (µg/L as V)	Zinc, dissolved (µg/L as Zn)	Uranium, natural, total (µg/L as U)
MA1	03-02-92	--	--	--	--	--	--	85	--	--	--
MA2	03-02-92	--	--	--	--	--	--	95	--	--	--
MA3	03-02-92	--	--	--	--	--	--	90	--	--	--
SGC1	03-10-92	--	--	--	--	--	--	5	--	--	--
SGC2	03-12-92	--	--	--	--	--	--	12	--	--	--
LZAM	02-19-92	--	--	--	--	--	--	130	--	--	--
LZA1	07-23-91	<1	<1	2	<1	<.1	4	34	3	6	6.2
LZA1	10-29-91	--	--	--	--	--	--	56	--	--	--
LZA1	11-13-91	--	--	--	--	--	--	70	--	--	--
LZA1	12-12-91	--	--	--	--	--	--	110	--	--	--
LZA1	01-14-92	--	--	--	--	--	--	180	--	--	--
LZA1	03-09-92	--	--	--	--	--	9	190	4	--	--
LZA1	03-27-92	--	--	--	--	--	--	140	--	--	--
LZA1	04-22-92	--	--	--	--	--	--	29	--	--	--
LZA1	05-12-92	--	--	--	--	--	--	31	--	--	--
LZA1	06-09-92	--	--	--	--	--	--	26	--	--	--
LZA1	06-24-92	--	--	--	--	--	--	25	--	--	--
LZA1	07-14-92	--	--	--	--	--	--	25	--	--	--
LZA1	08-11-92	--	--	--	--	--	--	33	--	--	--
LZA2	03-09-92	--	--	--	--	--	--	160	--	--	--
LZA3	03-09-92	--	--	--	--	--	--	180	--	--	--
LZA4	03-10-92	--	--	--	--	--	--	230	--	--	--
LZA5	03-10-92	--	--	--	--	--	--	220	--	--	--
WLZ1	03-09-92	--	--	--	--	--	--	100	--	--	--
WLZ2	03-10-92	--	--	--	--	--	--	110	--	--	--
WLZ3	03-10-92	--	--	--	--	--	--	110	--	--	--
MKP	06-18-91	<1	<1	3	<1	<.1	5	5	4	<10	16
MKP	06-23-92	--	--	--	--	--	--	6	--	--	--
GTP	06-18-91	<1	<1	2	<1	<.1	7	5	8	59	8.0

Table 4. Onsite measurements and chemical data for surface-water sites in the Uncompahgre Project area, 1991–92--Continued

Site code (pl. 1)	Site name	Date	Time	Stream discharge (ft^3/s)	Specific conductance (µS/cm)	pH, field (standard units)	Water temperature (°C)
GUN1	Gunnison River below Gunnison Tunnel	07-16-91	0830	1,110	217	7.8	9.0
GUN3	Gunnison River at old Austin bridge	07-18-91	0930	1,030	433	8.1	14.0
GUN4	Gunnison River at Delta	03-21-91	1255	801	604	8.5	4.5
GUN4		06-07-91	1215	4,300	497	7.8	12.5
GUN4		07-18-91	1140	1,070	694	8.2	17.5
GUN4		08-29-91	1040	1,130	753	8.3	15.0
GUN4		11-07-91	1140	1,570	627	8.4	9.0
GUN4		03-19-92	1145	960	632	8.7	6.0
GUN4		06-18-92	1405	1,520	--	--	18.0
GUN4		08-13-92	1355	1,070	821	8.3	19.0
GUN5	Gunnison River above Escalante Creek	07-19-91	0730	E1,280	916	8.0	18.0
SMF	Smith Fork at County Road, below Crawford	07-16-91	1120	.82	2,130	8.1	23.5
NFK1	North Fork Gunnison River at mouth	07-22-91	1000	118	1,690	8.1	20.5
CRC	Currant Creek below Highway 92, near Read	07-16-91	1330	.94	4,550	8.0	22.0
AFR	Alfalfa Run at Austin	07-22-91	1130	13	443	7.7	17.5
TGC	Tongue Creek at Cory	07-19-91	1000	2.3	2,280	8.0	20.0
FRP	Ferriers Pond near Austin	06-18-91	1330	--	2,780	8.4	24.0
PVA1	Peach Valley Arroyo near mouth	07-22-91	1350	14	1,160	8.0	19.0
PVA1		03-12-92	0940	.55	4,930	8.4	1.5
PVA2	Peach Valley Arroyo at 2450 Road	03-12-92	1300	.60	4,440	8.2	5.0
RD1	Unnamed drainage at Highway 92, near Read	07-22-91	1445	37	1,650	8.0	20.0
RD1		03-12-92	0840	4.9	5,490	8.3	4.0
RD1		04-28-92	1350	34	1,510	8.2	15.0
RD1		06-10-92	0815	76	917	8.2	14.0
RD1		07-14-92	1230	64	1,400	8.3	17.0
RD1		08-11-92	1330	63	1,450	8.2	18.5
RD2	Unnamed drainage at 2050 Road	03-12-92	1040	4.7	6,150	8.2	6.0
RD3	Unnamed drainage at E Road	03-12-92	1210	2.0	2,950	8.4	10.0
BZP	Brozina Pond near F and 2100 Roads, east of Delta	06-18-91	1220	--	2,460	8.2	22.5
BZP		06-23-92	1005	--	2,160	9.4	18.0
RFD	Relief Ditch above Garnet Canal	03-11-92	1020	.01	3,580	8.0	4.5
GAR1	Garnet Canal at Highway 50	03-11-92	1440	1.3	4,670	8.1	10.0
GAR2	Garnet Canal above Sweitzer Lake diversion	03-11-92	1330	1.7	6,350	8.4	13.0
GAR3	Garnet Canal at Hartig Road	03-11-92	1230	.40	3,450	8.2	10.5

Table 4. Onsite measurements and chemical data for surface-water sites in the Uncompahgre Project area, 1991–92--Continued

Site code (pl. 1)	Date	Oxygen, dissolved (mg/L)	Oxygen, dissolved (percent saturation)	Hardness, total (mg/L as $CaCO_3$)	Calcium, dissolved (mg/L as Ca)	Magnesium, dissolved (mg/L as Mg)	Sodium, dissolved (mg/L as Na)	Potassium, dissolved (mg/L as K)	Alkalinity, lab (mg/L as $CaCO_3$)	Sulfate, dissolved (mg/L as SO_4)	Chloride, dissolved (mg/L as Cl)	Fluoride, dissolved (mg/L as F)
GUN1	07-16-91	9.4	102	100	29	6.6	5.7	1.6	89	22	1.7	0.20
GUN3	07-18-91	8.6	100	180	46	15	18	2.5	110	110	6.0	.30
GUN4	03-21-91	11.4	107	260	64	25	40	2.8	127	240	7.8	.20
GUN4	06-07-91	8.8	99	200	55	15	26	2.2	107	180	9.6	.20
GUN4	07-18-91	10.0	125	280	75	23	37	3.2	127	220	7.1	.30
GUN4	08-29-91	--	--	300	78	26	40	3.2	135	270	6.5	.40
GUN4	11-07-91	--	--	260	67	23	35	2.8	130	230	6.1	.30
GUN4	03-19-92	13.2	127	240	58	22	33	3.0	127	190	6.8	.30
GUN4	06-18-92	7.6	--	250	63	22	30	2.5	113	190	17	.30
GUN4	08-13-92	8.3	107	350	90	30	44	3.8	146	270	6.8	.30
GUN5	07-19-91	7.5	94	390	110	29	47	3.4	150	340	8.5	.40
SMF	07-16-91	8.5	124	1,100	200	150	86	8.5	142	1,200	21	.50
NFK1	07-22-91	10.2	137	820	190	85	81	7.4	246	770	10	.50
CRC	07-16-91	8.9	124	1,900	320	270	470	20	269	2,900	32	.40
AFR	07-22-91	8.2	103	180	47	16	18	2.2	109	120	4.8	.30
TGC	07-19-91	8.9	119	990	200	120	190	13	344	980	14	.50
FRP	06-18-91	15.0	218	1,100	220	130	260	12	155	1,600	38	.80
PVA1	07-22-91	7.8	101	410	110	33	87	4.1	170	460	6.8	.40
PVA1	03-12-92	12.0	104	1,500	320	160	720	8.9	238	2,700	35	.40
PVA2	03-12-92	12.3	118	1,200	260	140	650	7.9	242	2,300	32	.50
RD1	07-22-91	8.2	109	630	160	55	140	5.1	110	820	10	.40
RD1	03-12-92	10.8	100	1,800	360	220	800	13	280	3,000	52	.30
RD1	04-28-92	8.7	104	--	--	--	--	--	--	--	--	--
RD1	06-10-92	8.3	96	340	89	28	63	3.0	131	310	5.8	.30
RD1	07-14-92	8.1	101	--	--	--	--	--	--	--	--	--
RD1	08-11-92	7.4	95	--	--	--	--	--	--	--	--	--
RD2	03-12-92	11.4	112	1,900	370	240	910	12	308	3,300	61	.40
RD3	03-12-92	9.2	99	1,100	250	110	310	8.2	205	1,500	28	.30
BZP	06-18-91	6.4	90	550	110	67	340	9.2	151	1,400	19	.40
BZP	06-23-92	11.4	146	420	80	53	320	6.0	74	970	17	.40
RFD	03-11-92	--	--	2,100	560	160	200	7.5	277	2,000	33	.60
GAR1	03-11-92	9.4	102	1,500	440	100	600	13	281	2,500	64	.50
GAR2	03-11-92	14.2	166	1,800	390	200	980	14	288	3,300	89	.50
GAR3	03-11-92	13.6	148	1,500	440	100	330	6.2	194	2,000	130	.90

Table 4. Onsite measurements and chemical data for surface-water sites in the Uncompahgre Project area, 1991–92--Continued

Site code (pl.1)	Date	Silica, dissolved (mg/L as SiO_2)	Solids, residue at 180°C, dissolved (mg/L)	Solids, sum of constituents, dissolved (mg/L)	Solids, dissolved (tons per day)	Nitrogen, nitrite, dissolved (mg/L as N)	Nitrogen, NO_2+ NO_3, dissolved (mg/L as N)	Nitrogen, ammonia, dissolved (mg/L as N)	Phosphorus, ortho, dissolved (mg/L as P)	Arsenic, dissolved (µg/L as As)	Boron, dissolved (µg/L as B)
GUN1	07-16-91	12	133	132	399	<0.01	<0.05	<0.01	0.01	<1	10
GUN3	07-18-91	--	280	264	779	<.01	<.05	<.01	<.01	2	50
GUN4	03-21-91	11	--	467	1,010	--	--	--	--	--	--
GUN4	06-07-91	14	--	366	4,250	--	--	--	--	--	--
GUN4	07-18-91	12	474	455	1,370	<.01	.21	.01	<.01	2	100
GUN4	08-29-91	12	--	517	1,580	--	--	--	--	--	--
GUN4	11-07-91	12	--	454	1,930	--	--	--	--	--	--
GUN4	03-19-92	12	--	401	1,040	--	--	--	--	--	--
GUN4	06-18-92	13	--	406	1,660	--	--	--	--	--	--
GUN4	08-13-92	13	--	545	1,580	--	--	--	--	--	--
GUN5	07-19-91	13	667	646	2,310	.02	.98	.02	.02	2	100
SMF	07-16-91	12	1,830	1,760	4.05	<.01	<.05	<.01	<.01	<1	260
NFK1	07-22-91	16	1,320	1,310	421	.01	.07	<.01	<.01	<1	210
CRC	07-16-91	25	4,420	4,210	11.2	.02	1.6	.02	<.01	<1	740
AFR	07-22-91	11	275	285	9.88	<.01	<.05	.03	<.01	1	50
TGC	07-19-91	24	1,860	1,750	11.6	<.01	<.05	.01	<.01	2	320
FRP	06-18-91	24	2,420	2,380	--	<.01	<.05	.03	<.01	1	570
PVA1	07-22-91	13	828	820	31.5	<.01	.73	.05	<.01	1	110
PVA1	03-12-92	5.6	--	4,130	6.13	--	8.6	--	--	--	360
PVA2	03-12-92	6.5	--	3,580	5.81	--	9.6	--	--	--	270
RD1	07-22-91	13	1,310	1,280	130	.01	2.0	.05	.01	1	170
RD1	03-12-92	5.2	--	4,640	61.3	--	5.6	--	--	--	500
RD1	04-28-92	--	1,080	--	99.1	--	1.6	--	--	--	130
RD1	06-10-92	13	--	593	122	--	.62	--	--	--	80
RD1	07-14-92	--	1,040	--	180	--	1.3	--	--	--	140
RD1	08-11-92	--	--	--	--	--	1.4	--	--	--	--
RD2	03-12-92	5.7	--	5,150	65.0	--	14	--	--	--	570
RD3	03-12-92	7.0	--	2,360	12.7	--	5.1	--	--	--	290
BZP	06-18-91	3.3	1,870	2,040	--	.01	.11	.14	<.01	<1	220
BZP	06-23-92	7.0	--	1,500	--	--	<.05	--	--	--	180
RFD	03-11-92	10	--	3,180	.09	--	9.4	--	--	--	370
GAR1	03-11-92	9.5	--	3,950	14.2	--	12	--	--	--	520
GAR2	03-11-92	8.1	--	5,250	24.4	--	21	--	--	--	600
GAR3	03-11-92	11	--	3,140	3.39	--	.95	--	--	--	260

Table 4. Onsite measurements and chemical data for surface-water sites in the Uncompahgre Project area, 1991–92--Continued

Site code (pl.1)	Date	Cadmium, dissolved (µg/L as Cd)	Chromium, dissolved (µg/L as Cr)	Copper, dissolved (µg/L as Cu)	Lead, dissolved (µg/L as Pb)	Mercury, dissolved (µg/L as Hg)	Molybdenum, dissolved (µg/L as Mo)	Selenium, dissolved (µg/L as Se)	Vanadium, dissolved (µg/L as V)	Zinc, dissolved (µg/L as Zn)	Uranium, natural, total (µg/L as U)
GUN1	07-16-91	<1	<1	3	<1	<0.1	1	<1	2	<3	1.5
GUN3	07-18-91	<1	<1	3	1	<.1	<1	1	2	5	3.5
GUN4	03-21-91	<1	--	2	<1	<.1	--	5	--	13	--
GUN4	06-07-91	<1	--	2	2	<.1	--	3	--	6	--
GUN4	07-18-91	<1	<1	6	3	<.1	<1	4	2	<3	5.2
GUN4	08-29-91	<1	--	<1	<1	<.1	--	4	--	<10	--
GUN4	11-07-91	<1	--	<1	<1	<.1	--	3	--	10	--
GUN4	03-19-92	<1	--	1	<1	<.1	--	4	--	3	--
GUN4	06-18-92	<1	--	2	<1	<.1	--	3	--	<3	--
GUN4	08-13-92	<1	--	1	<1	<.1	--	5	--	<3	--
GUN5	07-19-91	<1	<1	3	<1	<.1	2	6	2	9	7.4
SMF	07-16-91	<1	1	2	<1	<.1	3	<1	1	<10	4.3
NFK1	07-22-91	<1	<1	2	<1	<.1	4	4	2	7	7.9
CRC	07-16-91	<1	<1	3	<1	<.1	10	19	4	10	15
AFR	07-22-91	<1	<1	1	<1	<.1	<1	<1	2	7	2.7
TGC	07-19-91	<1	<1	1	<1	<.1	8	6	3	<10	11
FRP	06-18-91	<1	3	3	<1	<.1	10	10	7	<10	62
PVA1	07-22-91	<1	<1	2	<1	<.1	3	6	3	6	8.4
PVA1	03-12-92	--	--	--	--	--	--	32	--	--	--
PVA2	03-12-92	--	--	--	--	--	--	19	--	--	--
RD1	07-22-91	<1	1	2	<1	<.1	3	29	3	9	10
RD1	03-12-92	--	--	--	--	--	--	170	--	--	--
RD1	04-28-92	--	--	--	--	--	--	18	--	--	--
RD1	06-10-92	--	--	--	--	--	--	8	--	--	--
RD1	07-14-92	--	--	--	--	--	--	6	--	--	--
RD1	08-11-92	--	--	--	--	--	--	21	--	--	--
RD2	03-12-92	--	--	--	--	--	--	200	--	--	--
RD3	03-12-92	--	--	--	--	--	--	88	--	--	--
BZP	06-18-91	<1	<1	2	<1	<.1	4	8	3	<10	9.1
BZP	06-23-92	--	--	--	--	--	--	2	--	--	--
RFD	03-11-92	--	--	--	--	--	--	260	--	--	--
GAR1	03-11-92	--	--	--	--	--	--	160	--	--	--
GAR2	03-11-92	--	--	--	--	--	--	240	--	--	--
GAR3	03-11-92	--	--	--	--	--	--	23	--	--	--

Table 4. Onsite measurements and chemical data for surface-water sites in the Uncompahgre Project area, 1991–92--Continued

Site code (pl. 1)	Site name	Date	Time	Stream discharge (ft^3/s)	Specific conductance (µS/cm)	pH, field (standard units)	Water temperature (°C)
GAR4	Garnet Canal at mouth	07-23-91	0830	31	1,720	7.9	16.5
GAR4		03-11-92	0930	2.3	5,680	8.1	3.5
UNGR	Unnamed drainage at G Road, below GHC lateral	03-11-92	1110	2.2	6,280	8.3	6.0
BFD	Bonafide Ditch at Highway 92, at Delta	07-23-91	1000	109	1,410	8.0	16.5
BFD		03-11-92	0840	3.5	4,380	7.9	4.5
BFD		04-28-92	1245	78	901	8.3	15.0
BFD		06-10-92	0920	119	1,250	8.2	14.0
BFD		07-14-92	1400	128	1,370	8.2	18.0
BFD		08-11-92	1205	76	1,590	8.1	17.5
CMG1	Cummings Gulch at mouth	07-15-91	1340	35	1,840	8.2	20.0
CMG1		01-28-92	1300	7.8	2,270	8.2	2.0
CMG2	Cummings Gulch at G Road, above Bixley Gulch	01-28-92	1120	4.7	2,210	8.1	1.0
BXG	Bixley Gulch at mouth	01-28-92	1020	.13	2,840	7.8	2.5
SEP1	Seep Creek at G Road, near mouth	01-29-92	1400	2.3	3,140	8.2	1.5
SEP2	Seep Creek at Mesa Road	01-29-92	1310	.40	3,120	7.8	.0
RB1	Roubideau Creek at mouth	07-15-91	1015	91	1,390	8.2	18.0
RB1		01-30-92	1010	17	1,720	8.1	.0
RB2	Roubideau Creek above Buttermilk Creek	01-30-92	1300	3.6	1,590	8.1	.0
RB3	Roubideau Creek above Ironstone Canal	07-15-91	1130	.67	772	8.4	25.0
RB3		01-30-92	1345	1.4	1,420	8.1	.5
BMC	Buttermilk Creek at mouth	01-30-92	1145	19	1,770	8.2	.0
WSC	Wise Creek at Amber Road	01-29-92	1140	10	1,550	8.1	3.0

Table 4. Onsite measurements and chemical data for surface-water sites in the Uncompahgre Project area, 1991–92--Continued

Site code (pl. 1)	Date	Oxygen, dissolved (mg/L)	Oxygen, dissolved (percent saturation)	Hardness, total (mg/L as $CaCO_3$)	Calcium, dissolved (mg/L as Ca)	Magnesium, dissolved (mg/L as Mg)	Sodium, dissolved (mg/L as Na)	Potassium, dissolved (mg/L as K)	Alkalinity, lab (mg/L as $CaCO_3$)	Sulfate, dissolved (mg/L as SO_4)	Chloride, dissolved (mg/L as Cl)	Fluoride, dissolved (mg/L as F)
GAR4	07-23-91	7.5	92	750	220	49	120	4.6	208	840	9.6	0.50
GAR4	03-11-92	10.8	99	1,800	400	200	800	13	292	3,100	60	.70
UNGR	03-11-92	12.8	126	1,900	370	230	960	15	295	3,400	67	.40
BFD	07-23-91	8.0	98	630	180	44	90	4.2	183	630	8.2	.40
BFD	03-11-92	8.3	78	1,700	410	160	550	12	285	2,400	33	.40
BFD	04-28-92	8.5	101	--	--	--	--	--	--	--	--	--
BFD	06-10-92	8.1	94	--	--	--	--	--	--	--	--	--
BFD	07-14-92	8.2	104	--	--	--	--	--	--	--	--	--
BFD	08-11-92	7.3	91	--	--	--	--	--	--	--	--	--
CMG1	07-15-91	7.4	84	960	300	50	69	2.7	207	920	10	1.6
CMG1	01-28-92	11.9	102	1,300	390	75	110	2.1	211	1,200	14	2.0
CMG2	01-28-92	12.1	101	1,300	380	74	110	2.0	237	1,200	20	2.0
BXG	01-28-92	10.6	93	1,600	430	120	180	5.8	310	1,600	23	1.3
SEP1	01-29-92	12.1	103	1,500	400	130	290	5.9	288	1,700	14	1.1
SEP2	01-29-92	9.1	75	1,800	580	86	180	3.0	300	1,700	29	1.6
RB1	07-15-91	7.5	95	690	200	47	54	3.0	219	610	6.7	1.2
RB1	01-30-92	11.8	95	830	220	69	85	3.4	252	760	12	1.2
RB2	01-30-92	12.0	97	700	200	49	110	4.0	251	570	38	.60
RB3	07-15-91	6.9	101	230	66	15	78	4.3	196	150	38	.50
RB3	01-30-92	11.0	91	440	130	28	160	4.3	251	370	120	.50
BMC	01-30-92	12.4	102	950	250	80	81	2.7	247	820	5.9	1.2
WSC	01-29-92	12.1	108	840	220	70	60	3.4	276	660	14	1.0

Table 4. Onsite measurements and chemical data for surface-water sites in the Uncompahgre Project area, 1991–92--Continued

Site code (pl.1)	Date	Silica, dissolved (mg/L as SiO_2)	Solids, residue at 180°C, dissolved (mg/L)	Solids, sum of constituents, dissolved (mg/L)	Solids, dissolved (tons per day)	Nitrogen, nitrite, dissolved (mg/L as N)	Nitrogen, NO_2+ NO_3, dissolved (mg/L as N)	Nitrogen, ammonia, dissolved (mg/L as N)	Phosphorus, ortho, dissolved (mg/L as P)	Arsenic, dissolved (µg/L as As)	Boron, dissolved (µg/L as B)
GAR4	07-23-91	15	1,390	1,390	117	0.03	1.5	0.04	0.03	1	160
GAR4	03-11-92	7.1	--	4,790	29.8	--	7.9	--	--	--	480
UNGR	03-11-92	6.0	--	5,270	31.6	--	11	--	--	--	540
BFD	07-23-91	14	1,080	1,090	318	.02	1.1	.02	.01	1	140
BFD	03-11-92	11	--	3,770	35.9	--	5.2	--	--	--	390
BFD	04-28-92	--	618	--	130	--	.44	--	--	--	80
BFD	06-10-92	--	928	--	298	--	.38	--	--	--	120
BFD	07-14-92	--	1,050	--	363	--	.92	--	--	--	130
BFD	08-11-92	--	--	--	--	--	.87	--	--	--	--
CMG1	07-15-91	24	1,540	1,530	146	.14	6.4	.24	.07	2	220
CMG1	01-28-92	23	--	1,990	41.9	--	11	--	--	--	260
CMG2	01-28-92	24	--	2,010	25.5	--	12	--	--	--	250
BXG	01-28-92	17	--	2,600	.91	--	8.4	--	--	--	350
SEP1	01-29-92	17	--	2,760	17.1	--	6.8	--	--	--	300
SEP2	01-29-92	22	--	2,840	3.07	--	14	--	--	--	300
RB1	07-15-91	22	1,060	1,080	262	.02	1.2	<.01	.02	2	160
RB1	01-30-92	20	--	1,350	60.4	--	5.7	--	--	--	230
RB2	01-30-92	14	--	1,140	11.1	--	1.4	--	--	--	360
RB3	07-15-91	8.9	488	479	.88	<.01	<.05	.01	.05	1	330
RB3	01-30-92	7.3	--	971	3.67	--	<.05	--	--	--	500
BMC	01-30-92	24	--	1,450	75.0	--	7.7	--	--	--	220
WSC	01-29-92	23	--	1,240	34.8	--	4.8	--	--	--	200

Table 4. Onsite measurements and chemical data for surface-water sites in the Uncompahgre Project area, 1991–92--Continued

Site code (pl.1)	Date	Cadmium, dissolved (µg/L as Cd)	Chromium, dissolved (µg/L as Cr)	Copper, dissolved (µg/L as Cu)	Lead, dissolved (µg/L as Pb)	Mercury, dissolved (µg/L as Hg)	Molybdenum, dissolved (µg/L as Mo)	Selenium, dissolved (µg/L as Se)	Vanadium, dissolved (µg/L as V)	Zinc, dissolved (µg/L as Zn)	Uranium, natural, total (µg/L as U)
GAR4	07-23-91	<1	<1	1	<1	<0.1	4	12	4	15	8.6
GAR4	03-11-92	--	--	--	--	--	--	140	--	--	--
UNGR	03-11-92	--	--	--	--	--	--	200	--	--	--
BFD	07-23-91	<1	<1	1	<1	<.1	3	10	3	7	9.8
BFD	03-11-92	--	--	--	--	--	--	95	--	--	--
BFD	04-28-92	--	--	--	--	--	--	10	--	--	--
BFD	06-10-92	--	--	--	--	--	--	10	--	--	--
BFD	07-14-92	--	--	--	--	--	--	12	--	--	--
BFD	08-11-92	--	--	--	--	--	--	12	--	--	--
CMG1	07-15-91	<1	2	4	<1	<.1	7	9	7	10	4.4
CMG1	01-28-92	--	--	--	--	--	--	16	--	--	--
CMG2	01-28-92	--	--	--	--	--	--	16	--	--	--
BXG	01-28-92	--	--	--	--	--	--	11	--	--	--
SEP1	01-29-92	--	--	--	--	--	--	10	--	--	--
SEP2	01-29-92	--	--	--	--	--	--	23	--	--	--
RB1	07-15-91	<1	1	3	<1	<.1	3	2	3	5	7.0
RB1	01-30-92	--	--	--	--	--	--	5	--	--	--
RB2	01-30-92	--	--	--	--	--	--	2	--	--	--
RB3	07-15-91	<1	1	4	<1	<.1	2	<1	2	27	3.3
RB3	01-30-92	--	--	--	--	--	--	<1	--	--	--
BMC	01-30-92	--	--	--	--	--	--	5	--	--	--
WSC	01-29-92	--	--	--	--	--	--	4	--	--	--

Table 5. Onsite measurements and chemical data for surface-water sites in the Grand Valley, 1991–92

[ft^3/s, cubic feet per second; µS/cm, microsiemens per centimeter at 25 degrees Celsius; °C, degrees Celsius; mg/L, milligrams per liter; lab, laboratory; µg/L, micrograms per liter; E. estimated; <, less than; --, no data]

Site code (pl. 2)	Site name	Date	Time	Stream discharge (ft^3/s)	Specific conductance (µS/cm)	pH, field (standard units)	Water temperature (°C)
SC	Salt Creek at I-70	03-20-91	0830	7.1	4,940	8.2	5.0
SC		08-27-91	0730	123	1,670	8.3	19.0
SC		02-04-92	1300	12	4,540	8.1	0.0
SC		03-24-92	1500	11	5,100	8.1	13.0
SC		04-27-92	1020	171	1,310	8.1	13.5
SC		06-08-92	1005	203	1,030	8.1	17.0
SC		07-15-92	0805	185	1,290	8.3	18.5
SC		08-10-92	1000	179	1,450	8.3	21.0
WSC1	West Salt Creek at mouth	02-04-92	1000	3.1	4,650	8.1	.5
WSC2	West Salt Creek near S Road	05-02-91	0730	.10	13,500	8.3	7.0
WSC2		03-17-92	1030	.53	12,400	8.4	11.0
ESC1	East Salt Creek at Highway 50	02-04-92	1030	1.9	5,490	8.1	.5
ESC2	East Salt Creek near Government Highline Canal	05-02-91	0930	.43	7,000	8.2	11.0
ESC2		02-04-92	0815	.20	6,580	7.9	.0
ESC3[1]	East Salt Creek at Mitchell Road	05-05-92	0915	2.2	3,680	8.6	12.5
MW1	Mack Wash at mouth	02-04-92	1230	4.3	3,950	8.1	.0
MWP	Wetland in Mack Wash, at Q Road	06-19-92	1110	--	1,260	7.8	19.0
RDP	Reids Pond near 12 and O Roads, near Mack	06-19-91	0900	--	1,770	8.5	22.5
RDP		06-19-92	0930	--	1,430	8.4	20.0
RW1A	Reed Wash at I-70	03-20-91	0930	7.0	4,630	8.1	6.0
RW1	Reed Wash at Highway 50	08-27-91	0930	168	1,900	8.0	19.0
RW1		10-22-91	1000	147	1,950	8.0	9.5
RW1		11-13-91	1440	24	4,270	8.0	9.0
RW1		12-10-91	1100	15	4,350	8.3	4.0
RW1		01-13-92	1400	11	4,400	8.1	1.0
RW1		02-04-92	1420	9.1	4,440	8.2	4.0
RW1		03-13-92	0930	7.5	4,620	8.1	6.0
RW1		03-24-92	1330	7.1	4,620	8.1	11.5
RW1		04-21-92	1210	129	1,230	7.9	12.0
RW1		05-13-92	0820	146	1,350	8.2	13.0
RW1		06-08-92	1125	129	1,530	8.0	16.0
RW1		06-24-92	1415	140	1,700	8.1	21.5
RW1		07-15-92	0950	148	1,750	8.1	17.5
RW1		08-10-92	1140	158	1,860	8.1	20.0
RWEB	East Branch of Reed Wash at M Road	06-19-91	1000	E35	1,780	8.0	15.0

Table 5. Onsite measurements and chemical data for surface-water sites in the Grand Valley, 1991–92--Continued

Site code (pl. 2)	Date	Oxygen, dissolved (mg/L)	Oxygen, dissolved (percent saturation)	Hardness, total (mg/L as $CaCO_3$)	Calcium, dissolved (mg/L as Ca)	Magnesium, dissolved (mg/L as Mg)	Sodium, dissolved (mg/L as Na)	Potassium, dissolved (mg/L as K)	Alkalinity, lab (mg/L as $CaCO_3$)	Sulfate, dissolved (mg/L as SO_4)	Chloride, dissolved (mg/L as Cl)	Fluoride, dissolved (mg/L as F)
SC	03-20-91	11.3	107	2,200	440	270	500	8.3	171	3,300	230	0.40
SC	08-27-91	7.6	97	620	170	48	130	4.8	177	570	150	.30
SC	02-04-92	11.8	96	2,100	450	230	420	4.6	302	2,400	190	.40
SC	03-24-92	10.4	119	--	--	--	--	--	--	--	--	--
SC	04-27-92	7.4	83	--	--	--	--	--	--	--	--	--
SC	06-08-92	8.0	98	--	--	--	--	--	--	--	--	--
SC	07-15-92	7.6	96	--	--	--	--	--	--	--	--	--
SC	08-10-92	7.6	100	--	--	--	--	--	--	--	--	--
WSC1	02-04-92	11.2	92	2,100	460	230	450	3.8	320	2,200	190	.30
WSC2	05-02-91	--	--	4,000	330	780	2,400	13	303	9,500	320	1.6
WSC2	03-17-92	9.5	108	3,800	370	700	2,000	13	385	7,600	190	.60
ESC1	02-04-92	11.5	95	2,300	410	310	660	3.2	378	3,000	250	.50
ESC2	05-02-91	9.1	101	2,000	210	370	1,200	6.9	425	3,900	220	.50
ESC2	02-04-92	10.1	83	2,300	370	340	1,000	2.5	505	3,600	310	.60
ESC3[1]	05-05-92	9.3	105	1,100	110	190	510	5.5	418	1,600	88	.50
MW1	02-04-92	11.8	95	2,000	480	190	280	4.0	263	2,100	170	.30
MWP	06-19-92	5.0	64	490	130	40	76	4.2	194	300	100	.40
RDP	06-19-91	9.1	126	680	130	86	140	5.4	134	720	130	.30
RDP	06-19-92	9.5	124	520	120	54	110	5.7	108	450	120	.20
RW1A	03-20-91	10.3	100	2,200	460	250	410	11	206	2,900	210	.30
RW1	08-27-91	7.4	94	740	200	59	130	5.6	203	650	160	.30
RW1	10-22-91	9.7	101	740	190	64	150	5.8	209	640	150	.30
RW1	11-13-91	10.0	103	2,200	530	210	300	9.9	247	2,200	220	.30
RW1	12-10-91	11.5	104	2,200	510	220	320	9.4	290	2,300	200	.60
RW1	01-13-92	12.6	105	2,300	530	240	320	9.6	297	2,300	240	1.0
RW1	02-04-92	13.4	121	2,200	490	230	350	11	302	2,300	210	.30
RW1	03-13-92	11.6	113	2,400	530	250	370	9.0	302	2,400	220	.30
RW1	03-24-92	12.0	133	--	--	--	--	--	--	--	--	--
RW1	04-21-92	8.9	98	460	120	38	93	4.5	146	380	160	.50
RW1	05-13-92	8.3	93	560	150	45	86	4.0	154	410	69	.30
RW1	06-08-92	8.2	98	620	160	54	98	4.2	169	500	93	.30
RW1	06-24-92	6.7	91	--	--	--	--	--	--	--	--	--
RW1	07-15-92	7.2	89	710	190	58	130	5.0	190	630	130	.30
RW1	08-10-92	7.2	93	720	190	60	130	5.6	194	570	130	.30
RWEB	06-19-91	7.2	85	830	210	75	94	4.8	167	750	77	.20

Table 5. Onsite measurements and chemical data for surface-water sites in the Grand Valley, 1991–92--Continued

Site code (pl.2)	Date	Silica, dissolved (mg/L as SiO_2)	Solids, residue at 180°C, dissolved (mg/L)	Solids, sum of constituents, dissolved (mg/L)	Solids, dissolved (tons per day)	Nitrogen, nitrite, dissolved (mg/L as N)	Nitrogen, NO_2+ NO_3, dissolved (mg/L as N)	Nitrogen, ammonia, dissolved (mg/L as N)	Phosphorus, ortho, dissolved (mg/L as P)	Arsenic, dissolved (µg/L as As)	Boron, dissolved (µg/L as B)	Cadmium, dissolved (µg/L as Cd)
SC	03-20-91	8.4	4,660	4,870	89.3	--	2.8	0.02	<0.01	<1	310	<1
SC	08-27-91	8.6	1,070	1,190	355	0.01	.67	.01	<.01	1	90	<1
SC	02-04-92	10	--	3,900	125	--	3.4	--	--	--	300	--
SC	03-24-92	--	--	--	--	--	--	--	--	--	330	--
SC	04-27-92	--	828	--	382	--	.32	--	--	--	60	--
SC	06-08-92	--	648	--	355	--	.35	--	--	--	60	--
SC	07-15-92	--	844	--	422	--	.53	--	--	--	70	--
SC	08-10-92	--	--	--	--	--	.48	--	--	--	--	--
WSC1	02-04-92	9.3	--	3,750	31.4	--	2.9	--	--	--	290	--
WSC2	05-02-91	6.5	13,500	13,500	3.65	<.01	<.05	.01	<.01	<1	400	<2
WSC2	03-17-92	6.1	--	11,100	15.9	--	<.05	--	--	--	410	--
ESC1	02-04-92	12	--	4,890	25.1	--	4.2	--	--	--	370	--
ESC2	05-02-91	5.6	6,480	6,170	7.52	<.01	<.05	<.01	<.01	<1	310	<1
ESC2	02-04-92	14	--	5,940	3.21	--	.81	--	--	--	350	--
ESC3[1]	05-05-92	12	--	2,770	16.6	--	.08	--	--	--	190	--
MW1	02-04-92	11	--	3,410	39.6	--	3.5	--	--	--	310	--
MWP	06-19-92	11	--	780	--	--	.40	--	--	--	90	--
RDP	06-19-91	1.2	1,240	1,290	--	<.01	<.05	<.01	<.01	1	180	<1
RDP	06-19-92	3.2	--	928	--	--	<.05	--	--	--	140	--
RW1A	03-20-91	7.0	4,380	4,410	82.2	--	8.2	.07	<.01	<1	360	2
RW1	08-27-91	9.8	1,360	1,350	617	.02	2.2	.01	.04	1	120	<1
RW1	10-22-91	8.6	--	1,340	533	--	2.2	--	--	--	110	--
RW1	11-13-91	10	--	3,670	240	--	9.1	--	--	--	380	--
RW1	12-10-91	9.4	--	3,790	154	--	9.7	--	--	--	370	--
RW1	01-13-92	9.2	--	3,870	117	--	10	--	--	--	380	--
RW1	02-04-92	8.4	--	3,820	94.0	--	9.7	--	--	--	380	--
RW1	03-13-92	6.3	4,250	4,030	85.9	.08	9.6	.10	--	--	370	--
RW1	03-24-92	--	--	--	--	--	--	--	--	--	370	--
RW1	04-21-92	9.6	--	899	313	--	1.3	--	--	--	80	--
RW1	05-13-92	9.1	--	874	344	--	1.8	--	--	--	80	--
RW1	06-08-92	8.4	--	1,030	358	--	1.8	--	--	--	100	--
RW1	06-24-92	--	--	--	--	--	--	--	--	--	120	--
RW1	07-15-92	9.6	--	1,280	511	--	2.1	--	--	--	100	--
RW1	08-10-92	9.7	--	1,220	520	--	2.0	--	--	--	130	--
RWEB	06-19-91	8.2	1,330	1,330	E126	.03	2.0	.04	.10	<1	110	<1

Table 5. Onsite measurements and chemical data for surface-water sites in the Grand Valley, 1991–92--Continued

Site code (pl.2)	Date	Chromium, dissolved (µg/L as Cr)	Copper, dissolved (µg/L as Cu)	Lead, dissolved (µg/L as Pb)	Mercury, dissolved (µg/L as Hg)	Molybdenum, dissolved (µg/L as Mo)	Selenium, dissolved (µg/L as Se)	Vanadium, dissolved (µg/L as V)	Zinc, dissolved (µg/L as Zn)	Uranium, natural, total (µg/L as U)	Carbon, organic, dissolved (mg/L as C)
SC	03-20-91	1	3	<1	<0.1	4	120	5	10	23	--
SC	08-27-91	<1	1	<1	<.1	7	13	3	10	8.8	--
SC	02-04-92	--	--	--	--	--	86	--	--	--	--
SC	03-24-92	--	--	--	--	--	65	--	--	--	4.4
SC	04-27-92	--	--	--	--	--	6	--	--	--	--
SC	06-08-92	--	--	--	--	--	7	--	--	--	--
SC	07-15-92	--	--	--	--	--	7	--	--	--	--
SC	08-10-92	--	--	--	--	--	10	--	--	--	--
WSC1	02-04-92	--	--	--	--	--	66	--	--	--	--
WSC2	05-02-91	<2	2	<2	<.1	4	6	7	<10	26	--
WSC2	03-17-92	--	--	--	--	--	2	--	--	--	--
ESC1	02-04-92	--	--	--	--	--	150	--	--	--	--
ESC2	05-02-91	<1	1	<1	<.1	6	8	7	<10	11	--
ESC2	02-04-92	--	--	--	--	--	21	--	--	--	--
ESC3[1]	05-05-92	--	--	--	--	--	1	--	--	--	--
MW1	02-04-92	--	--	--	--	--	54	--	--	--	--
MWP	06-19-92	--	--	--	--	--	5	--	--	--	--
RDP	06-19-91	<1	2	<1	<.1	6	5	6	16	7.4	--
RDP	06-19-92	--	--	--	--	--	5	--	--	--	--
RW1A	03-20-91	2	3	<1	<.1	5	120	6	10	32	--
RW1	08-27-91	<1	1	<1	<.1	8	24	4	10	9.0	--
RW1	10-22-91	--	--	--	--	--	23	--	--	--	--
RW1	11-13-91	--	--	--	--	--	100	--	--	--	--
RW1	12-10-91	--	--	--	--	--	100	--	--	--	--
RW1	01-13-92	--	--	--	--	--	150	--	--	--	--
RW1	02-04-92	--	--	--	--	--	150	--	--	--	--
RW1	03-13-92	--	--	--	--	6	130	5	--	35	5.5
RW1	03-24-92	--	--	--	--	--	130	--	--	--	5.5
RW1	04-21-92	--	--	--	--	--	14	--	--	--	--
RW1	05-13-92	--	--	--	--	--	19	--	--	--	--
RW1	06-08-92	--	--	--	--	--	20	--	--	--	--
RW1	06-24-92	--	--	--	--	--	24	--	--	--	--
RW1	07-15-92	--	--	--	--	--	16	--	--	--	--
RW1	08-10-92	--	--	--	--	--	27	--	--	--	--
RWEB	06-19-91	<1	2	<1	<.1	5	24	4	15	9.9	--

Table 5. Onsite measurements and chemical data for surface-water sites in the Grand Valley, 1991–92--Continued

Site code (pl. 2)	Site name	Date	Time	Stream discharge (ft^3/s)	Specific conductance (µS/cm)	pH, field (standard units)	Water temperature (°C)
RWEB	East Branch of Reed Wash at M Road	03-12-92	0900	2.0	4,520	7.9	4.5
RWTR	Unnamed Tributary of Reed Wash, near 14 and M Roads	03-12-92	1030	.16	4,480	7.8	7.5
RW2	Reed Wash near N Road	09-10-91	1100	85	1,530	7.8	18.0
RW2		03-12-92	1230	4.6	4,600	7.9	9.0
RWPB	Peck and Beede Wash at 14 Road	03-13-92	1100	1.0	4,300	7.6	8.0
RW3	Reed Wash at 13 Road	03-12-92	1330	1.5	4,230	7.8	12.0
RW4	Upper Reed Wash near 12 and Q Roads	09-10-91	0845	.64	2,520	7.8	17.0
RW4		03-13-92	1300	.03	4,510	8.1	8.0
FR1	Drain at Highway 50, near Fruita	03-20-91	1030	E.20	2,410	8.1	9.0
FR1		08-27-91	1100	4.5	1,340	7.9	21.0
FR1		02-05-92	0830	.45	2,430	7.9	3.0
BSW1	Big Salt Wash at Highway 50	03-20-91	1100	6.9	3,370	8.2	7.5
BSW1		08-27-91	1230	99	1,860	8.0	20.5
BSW1		02-05-92	0910	8.7	3,230	8.0	1.5
BSW1		04-27-92	1200	74	1,320	8.2	15.0
BSW1		06-08-92	1310	75	1,560	8.2	18.0
BSEB	East Branch of Big Salt Wash at 17 1/2 Road	02-05-92	1145	1.1	3,600	8.1	1.0
BSW2	Big Salt Wash at 17 1/2 Road	02-05-92	1050	1.5	5,470	8.0	1.5
BSW3	Big Salt Wash at Government Highline Canal	05-02-91	1200	.15	21,100	8.3	17.5
BSW3		03-17-92	0915	1.6	3,580	8.4	6.0
LSW1	Little Salt Wash at Highway 50, at Fruita	03-20-91	1215	2.2	3,620	8.2	10.0
LSW1		08-27-91	1400	67	1,350	8.3	23.0
LSW1		02-05-92	1000	3.1	3,450	8.0	.0
LSW2	Little Salt Wash at 20 Road	02-05-92	1245	.57	2,970	8.2	1.5
AC1	Adobe Creek at River Road	03-20-91	1310	1.8	4,260	8.1	6.5
AC1		08-28-91	0800	46	1,570	8.1	19.5
AC1		02-05-92	1410	2.2	3,970	8.1	3.0
AC1		03-24-92	1200	2.3	4,270	8.0	10.0
AC2	Adobe Creek at 21 Road	02-05-92	1325	.78	3,790	8.0	5.0
HW1	Hunter Wash at River Road	03-20-91	1350	2.6	4,340	8.1	8.0
HW1		08-28-91	0930	74	1,490	8.1	20.0
HW1		02-03-92	1250	2.9	4,070	8.1	3.5
HW2	Hunter Wash at 21 and K Roads	02-03-92	1340	1.3	4,070	7.9	7.5
PRW	Pritchard Wash at River Road	03-21-91	0740	1.6	3,780	8.1	5.0
PRW		08-28-91	1100	21	1,830	8.0	20.0

Table 5. Onsite measurements and chemical data for surface-water sites in the Grand Valley, 1991–92--Continued

Site code (pl. 2)	Date	Oxygen, dissolved (mg/L)	Oxygen, dissolved (percent saturation)	Hardness, total (mg/L as $CaCO_3$)	Calcium, dissolved (mg/L as Ca)	Magnesium, dissolved (mg/L as Mg)	Sodium, dissolved (mg/L as Na)	Potassium, dissolved (mg/L as K)	Alkalinity, lab (mg/L as $CaCO_3$)	Sulfate, dissolved (mg/L as SO_4)	Chloride, dissolved (mg/L as Cl)	Fluoride, dissolved (mg/L as F)
RWEB	03-12-92	12.0	113	2,300	530	240	340	7.8	291	2,400	210	0.30
RWTR	03-12-92	11.6	117	2,400	550	240	340	11	328	2,400	210	.20
RW2	09-10-91	7.8	98	740	190	64	140	6.6	205	640	140	.40
RW2	03-12-92	11.5	120	2,300	520	240	370	9.5	312	2,300	240	.30
RWPB	03-13-92	10.6	108	2,300	570	220	270	8.0	327	2,200	230	.30
RW3	03-12-92	14.0	157	2,300	560	220	290	8.5	307	2,200	230	.30
RW4	09-10-91	7.2	89	1,200	310	110	170	6.7	227	1,100	190	.50
RW4	03-13-92	11.8	120	2,500	570	260	290	8.0	282	2,300	230	.30
FR1	03-20-91	11.9	123	1,100	270	98	200	3.0	302	830	170	.50
FR1	08-27-91	7.0	93	450	120	37	130	4.3	220	290	140	.40
FR1	02-05-92	9.7	85	1,000	260	96	200	4.1	348	760	160	.40
BSW1	03-20-91	9.4	94	1,500	350	160	290	6.2	301	1,500	170	.30
BSW1	08-27-91	7.6	100	730	200	56	130	5.4	155	660	150	.30
BSW1	02-05-92	10.2	86	1,500	370	150	270	6.7	351	1,500	160	.30
BSW1	04-27-92	7.4	86	--	--	--	--	--	--	--	--	--
BSW1	06-08-92	7.8	98	--	--	--	--	--	--	--	--	--
BSEB	02-05-92	12.0	100	2,000	520	160	220	6.4	273	1,900	160	.20
BSW2	02-05-92	11.2	96	1,800	320	250	800	3.7	426	2,700	200	.40
BSW3	05-02-91	--	--	5,800	340	1,200	4,900	3.2	576	15,000	270	2.6
BSW3	03-17-92	9.8	95	770	110	120	590	3.0	289	1,700	36	.50
LSW1	03-20-91	10.3	110	1,200	300	120	430	5.0	195	2,200	220	.40
LSW1	08-27-91	7.8	108	390	110	29	130	4.1	147	360	150	.30
LSW1	02-05-92	11.6	94	1,300	330	120	400	3.6	306	1,500	190	.40
LSW2	02-05-92	12.1	103	1,200	290	110	310	1.1	267	1,200	150	.50
AC1	03-20-91	11.6	114	1,900	450	200	420	7.4	169	2,800	220	.30
AC1	08-28-91	7.4	95	730	200	55	150	6.3	162	670	150	.30
AC1	02-05-92	11.4	101	1,900	450	180	380	4.0	331	1,900	210	.50
AC1	03-24-92	10.3	110	--	--	--	--	--	--	--	--	--
AC2	02-05-92	12.2	114	2,000	530	170	250	3.5	295	1,900	190	.40
HW1	03-20-91	14.1	144	1,900	400	230	330	8.6	145	2,300	230	.30
HW1	08-28-91	7.1	93	550	150	42	130	5.0	176	470	150	.30
HW1	02-03-92	11.5	103	2,100	490	210	300	7.9	343	2,100	200	.30
HW2	02-03-92	11.0	109	2,200	520	210	260	7.3	345	2,000	200	.20
PRW	03-21-91	9.8	93	1,900	500	170	250	6.2	171	2,600	210	.30
PRW	08-28-91	7.0	91	540	150	41	140	5.2	186	490	160	.40

Table 5. Onsite measurements and chemical data for surface-water sites in the Grand Valley, 1991–92--Continued

Site code (pl.2)	Date	Silica, dissolved (mg/L as SiO_2)	Solids, residue at 180°C, dissolved (mg/L)	Solids, sum of constituents, dissolved (mg/L)	Solids, dissolved (tons per day)	Nitrogen, nitrite, dissolved (mg/L as N)	Nitrogen, NO_2+ NO_3, dissolved (mg/L as N)	Nitrogen, ammonia, dissolved (mg/L as N)	Phosphorus, ortho, dissolved (mg/L as P)	Arsenic, dissolved (µg/L as As)	Boron, dissolved (µg/L as B)	Cadmium, dissolved (µg/L as Cd)
RWEB	03-12-92	5.7	4,220	3,970	23.2	0.04	6.1	0.07	--	--	330	--
RWTR	03-12-92	8.8	4,200	3,990	1.81	.08	8.7	.13	--	--	460	--
RW2	09-10-91	11	1,330	1,330	305	--	2.7	.02	--	--	120	--
RW2	03-12-92	30	4,220	3,940	52.9	.09	12	.10	--	--	360	--
RWPB	03-13-92	7.1	3,860	3,730	10.6	.06	6.4	.09	--	--	330	--
RW3	03-12-92	6.9	3,900	3,760	15.8	.07	6.8	.11	--	--	340	--
RW4	09-10-91	9.9	2,180	2,050	3.77	--	4.1	.05	--	--	170	--
RW4	03-13-92	7.9	4,110	3,950	33	.08	19	.09	--	--	260	--
FR1	03-20-91	21	1,790	1,830	E.99	--	12	.01	<0.01	<1	190	<1
FR1	08-27-91	14	850	883	10.3	.01	3.4	.02	.02	1	90	<1
FR1	02-05-92	20	--	1,760	2.14	--	12	--	--	--	210	--
BSW1	03-20-91	13	2,900	2,690	54.0	--	4.0	.03	<.01	<1	220	<1
BSW1	08-27-91	11	1,350	1,310	361	.02	1.4	.02	.02	1	120	<1
BSW1	02-05-92	13	--	2,700	63.8	--	4.4	--	--	--	240	--
BSW1	04-27-92	--	846	--	169	--	.77	--	--	--	70	--
BSW1	06-08-92	--	1,100	--	223	--	1.2	--	--	--	90	--
BSEB	02-05-92	11	--	3,160	9.38	--	4.1	--	--	--	250	--
BSW2	02-05-92	15	--	4,570	18.5	--	6.7	--	--	--	280	--
BSW3	05-02-91	12	23,400	22,100	9.48	<.01	<.05	.02	<.01	1	750	<2
BSW3	03-17-92	6.4	--	2,740	11.6	--	.23	--	--	--	110	--
LSW1	03-20-91	13	2,970	3,420	17.6	--	4.3	.04	<.01	<1	210	<1
LSW1	08-27-91	10	858	885	155	.02	.68	.01	.04	1	70	<1
LSW1	02-05-92	12	--	2,760	23.1	--	5.1	--	--	--	220	--
LSW2	02-05-92	13	--	2,260	3.47	--	4.6	--	--	--	150	--
AC1	03-20-91	9.0	3,820	4,240	18.6	--	8.1	.05	<.01	<1	310	<1
AC1	08-28-91	10	1,310	1,340	163	.02	1.1	.01	.06	1	120	<1
AC1	02-05-92	11	--	3,380	20.4	--	10	--	--	--	300	--
AC1	03-24-92	--	--	--	--	--	--	--	--	--	330	--
AC2	02-05-92	9.5	--	3,260	6.86	--	6.2	--	--	--	280	--
HW1	03-20-91	11	3,960	3,630	27.8	--	6.8	.03	<.01	<1	340	<1
HW1	08-28-91	9.5	1,020	1,070	204	.01	1.2	<.01	.02	<1	80	<1
HW1	02-03-92	13	--	3,560	27.9	--	7.8	--	--	--	340	--
HW2	02-03-92	10	--	3,440	12.1	--	5.1	--	--	--	360	--
PRW	03-21-91	12	3,420	3,880	14.8	--	6.0	.06	<.01	<1	270	<1
PRW	08-28-91	9.4	1,060	1,110	60.1	.01	1.4	<.01	.04	2	80	<1

Table 5. Onsite measurements and chemical data for surface-water sites in the Grand Valley, 1991–92--Continued

Site code (pl.2)	Date	Chromium, dissolved (µg/L as Cr)	Copper, dissolved (µg/L as Cu)	Lead, dissolved (µg/L as Pb)	Mercury, dissolved (µg/L as Hg)	Molybdenum, dissolved (µg/L as Mo)	Selenium, dissolved (µg/L as Se)	Vanadium, dissolved (µg/L as V)	Zinc, dissolved (µg/L as Zn)	Uranium, natural, total (µg/L as U)	Carbon, organic, dissolved (mg/L as C)
RWEB	03-12-92	--	--	--	--	6	260	4	--	39	5.0
RWTR	03-12-92	--	--	--	--	1	40	4	--	40	4.9
RW2	09-10-91	--	--	--	--	11	32	5	--	11	--
RW2	03-12-92	--	--	--	--	6	170	5	--	46	5.8
RWPB	03-13-92	--	--	--	--	6	70	4	--	48	5.0
RW3	03-12-92	--	--	--	--	6	100	4	--	53	5.0
RW4	09-10-91	--	--	--	--	10	58	4	--	10	--
RW4	03-13-92	--	--	--	--	6	380	5	--	72	6.4
FR1	03-20-91	<1	1	<1	<0.1	3	22	4	10	30	--
FR1	08-27-91	<1	1	<1	<.1	8	7	4	7	9.6	--
FR1	02-05-92	--	--	--	--	--	24	--	--	--	--
BSW1	03-20-91	<1	4	<1	<.1	4	33	4	<10	12	--
BSW1	08-27-91	<1	1	<1	<.1	7	20	3	8	8.8	--
BSW1	02-05-92	--	--	--	--	--	46	--	--	--	--
BSW1	04-27-92	--	--	--	--	--	8	--	--	--	--
BSW1	06-08-92	--	--	--	--	--	15	--	--	--	--
BSEB	02-05-92	--	--	--	--	--	48	--	--	--	--
BSW2	02-05-92	--	--	--	--	--	35	--	--	--	--
BSW3	05-02-91	<2	2	<2	<.1	17	2	15	<10	83	--
BSW3	03-17-92	--	--	--	--	--	4	--	--	--	--
LSW1	03-20-91	<1	3	<1	<.1	4	17	5	<10	13	--
LSW1	08-27-91	<1	1	<1	<.1	8	6	4	5	5.3	--
LSW1	02-05-92	--	--	--	--	--	24	--	--	--	--
LSW2	02-05-92	--	--	--	--	--	28	--	--	--	--
AC1	03-20-91	2	2	<1	<0.1	5	92	5	20	17	--
AC1	08-28-91	<1	<1	<1	<.1	8	9	4	9	8.3	--
AC1	02-05-92	--	--	--	--	--	76	--	--	--	--
AC1	03-24-92	--	--	--	--	--	80	--	--	--	--
AC2	02-05-92	--	--	--	--	--	50	--	--	--	--
HW1	03-20-91	1	2	<1	<.1	4	30	5	30	8.3	--
HW1	08-28-91	<1	1	<1	<.1	8	7	3	14	7.4	--
HW1	02-03-92	--	--	--	--	--	35	--	--	--	--
HW2	02-03-92	--	--	--	--	--	26	--	--	--	--
PRW	03-21-91	3	1	<1	<.1	5	17	4	<10	29	--
PRW	08-28-91	<1	1	<1	<.1	8	12	4	7	6.4	--

Table 5. Onsite measurements and chemical data for surface-water sites in the Grand Valley, 1991–92--Continued

Site code (pl. 2)	Site name	Date	Time	Stream discharge (ft^3/s)	Specific conductance (µS/cm)	pH, field (standard units)	Water temperature (°C)
PRW	Pritchard Wash at River Road	02-03-92	1215	1.8	3,740	8.1	3.5
PSW1	Persigo Wash at River Road	03-21-91	0800	3.2	4,670	8.2	6.0
PSW1		08-28-91	1240	35	1,750	8.2	21.5
PSW1		02-03-92	1120	3.2	4,570	8.0	2.0
PSW2	Persigo Wash at J Road	02-03-92	1430	.56	4,260	7.9	4.5
AD	Appleton Drain at River Road	03-21-91	0900	E.40	4,110	8.2	5.0
AD		08-28-91	1400	11	1,330	8.1	24.5
AD		02-06-92	0820	.44	4,000	8.1	.0
LC1	Leach Creek at Highway 50	03-21-91	0920	5.3	3,990	8.1	5.0
LC1		08-30-91	0730	46	1,730	8.2	18.5
LC1		11-12-91	1340	12	3,630	8.2	10.5
LC1		12-10-91	1320	8.2	3,920	8.2	5.5
LC1		01-13-92	1220	7.9	3,860	8.1	.5
LC1		02-06-92	1035	5.8	3,710	8.1	2.0
LC1		03-24-92	1000	5.2	3,840	8.1	9.0
LC1		04-27-92	1320	38	1,370	8.3	16.5
LC1		06-08-92	1420	35	1,370	8.4	17.5
LC1		07-15-92	1140	52	1,420	8.4	20.0
LC1		08-10-92	1340	39	1,820	8.3	21.5
IRD	Independent Ranchmens Ditch at Leach Creek	02-06-92	1055	1.7	3,470	8.1	3.0
LCTR	West Tributary of Leach Creek at mouth	02-06-92	1215	2.0	4,010	8.3	2.5
LC2	Leach Creek at 26 Road	02-06-92	1300	.77	4,320	7.8	8.0
RED	Drain along Redlands Parkway, at mouth	03-21-91	1010	E.40	2,680	8.2	3.0
RED		08-30-91	0850	2.3	1,470	8.0	18.0
RED		02-06-92	1000	.65	2,630	8.1	3.0
LKG	Limeklin Gulch near mouth	02-06-92	0900	.67	2,740	8.2	4.0
IW	Indian Wash at C 1/2 Road	03-21-91	1040	1.2	5,220	8.1	7.0
IW		09-04-91	0730	38	1,300	8.2	19.0
IW		02-27-92	1340	1.2	5,030	8.2	10.0
IW		03-24-92	0900	1.4	4,650	8.0	8.0
GJ1	Drain at C 1/2 and 28 1/2 Roads	03-21-91	1150	E.15	3,900	7.8	3.0
GJ1		09-04-91	0820	3.3	2,010	7.8	17.5
GJ1		02-27-92	1300	.42	3,850	7.9	13.0
GJ2	Drain at D and 29 3/4 Roads	02-27-92	1140	.14	6,860	7.9	14.0
GJ3	Drain at D and 30 1/4 Roads	02-27-92	1105	.28	5,900	7.7	11.0

Table 5. Onsite measurements and chemical data for surface-water sites in the Grand Valley, 1991–92--Continued

Site code (pl. 2)	Date	Oxygen, dissolved (mg/L)	Oxygen, dissolved (percent saturation)	Hardness, total (mg/L as $CaCO_3$)	Calcium, dissolved (mg/L as Ca)	Magnesium, dissolved (mg/L as Mg)	Sodium, dissolved (mg/L as Na)	Potassium, dissolved (mg/L as K)	Alkalinity, lab (mg/L as $CaCO_3$)	Sulfate, dissolved (mg/L as SO_4)	Chloride, dissolved (mg/L as Cl)	Fluoride, dissolved (mg/L as F)
PRW	02-03-92	13.4	120	1,900	510	150	240	5.7	297	1,800	180	0.30
PSW1	03-21-91	10.0	98	2,200	470	250	420	9.3	159	3,100	290	.50
PSW1	08-28-91	7.3	98	660	170	58	160	5.5	186	710	150	.30
PSW1	02-03-92	12.0	103	2,200	500	230	390	6.2	283	2,300	220	.30
PSW2	02-03-92	11.4	105	2,100	500	210	330	5.3	304	2,100	190	.30
AD	03-21-91	10.3	98	2,100	490	220	300	6.7	158	2,800	230	.40
AD	08-28-91	6.7	95	430	120	32	120	5.1	176	350	150	.40
AD	02-06-92	10.6	86	2,000	490	190	280	6.3	285	2,000	230	.30
LC1	03-21-91	10.4	99	2,100	470	220	310	9.1	63	2,100	190	.40
LC1	08-30-91	7.6	96	670	180	54	140	5.5	192	610	150	.40
LC1	11-12-91	9.1	96	--	--	--	--	--	--	1,100	--	--
LC1	12-10-91	10.5	99	2,000	490	190	280	9.0	248	2,100	180	.60
LC1	01-13-92	12.0	98	2,200	520	210	290	8.2	268	2,100	190	.70
LC1	02-06-92	12.0	103	1,900	460	180	270	7.1	273	1,900	160	.50
LC1	03-24-92	10.2	106	--	--	--	--	--	--	--	--	--
LC1	04-27-92	7.7	93	--	--	--	--	--	--	--	--	--
LC1	06-08-92	8.1	101	530	140	44	86	3.6	152	420	82	.30
LC1	07-15-92	7.5	98	--	--	--	--	--	--	--	--	--
LC1	08-10-92	8.1	108	--	--	--	--	--	--	--	--	--
IRD	02-06-92	11.5	101	1,600	410	150	270	7.5	286	1,700	170	.50
LCTR	02-06-92	11.8	103	2,100	490	220	290	7.6	272	2,200	170	.30
LC2	02-06-92	9.4	65	2,200	520	210	340	7.7	304	2,200	180	.30
RED	03-21-91	10.2	92	1,200	230	150	280	7.6	292	1,200	53	.90
RED	08-30-91	7.3	91	630	150	61	130	4.5	209	690	21	.70
RED	02-06-92	11.2	98	1,100	220	140	260	7.3	400	940	51	1.1
LKG	02-06-92	10.6	96	1,000	180	140	330	8.0	422	1,200	63	1.1
IW	03-21-91	9.7	97	2,400	450	320	500	11	285	2,900	330	1.2
IW	09-04-91	7.1	91	390	100	34	120	4.5	164	290	130	.20
IW	02-27-92	13.3	140	2,300	460	290	470	11	294	2,600	240	.70
IW	03-24-92	11.5	117	--	--	--	--	--	--	--	--	--
GJ1	03-21-91	9.8	88	1,700	340	210	350	5.4	246	2,200	290	.70
GJ1	09-04-91	6.3	78	720	160	79	180	5.0	231	620	170	.30
GJ1	02-27-92	13.6	152	1,700	350	200	340	5.3	390	1,600	290	.60
GJ2	02-27-92	13.1	152	3,100	450	470	710	12	418	3,500	420	1.2
GJ3	02-27-92	10.0	108	2,800	460	390	510	11	465	3,200	300	1.1

Table 5. Onsite measurements and chemical data for surface-water sites in the Grand Valley, 1991–92--Continued

Site code (pi.2)	Date	Silica, dissolved (mg/L as SiO_2)	Solids, residue at 180°C, dissolved (mg/L)	Solids, sum of constituents, dissolved (mg/L)	Solids, dissolved (tons per day)	Nitrogen, nitrite, dissolved (mg/L as N)	Nitrogen, NO_2+ NO_3, dissolved (mg/L as N)	Nitrogen, ammonia, dissolved (mg/L as N)	Phosphorus, ortho, dissolved (mg/L as P)	Arsenic, dissolved (µg/L as As)	Boron, dissolved (µg/L as B)	Cadmium, dissolved (µg/L as Cd)
PRW	02-03-92	14	--	3,100	15.1	--	5.6	--	--	--	270	--
PSW1	03-21-91	9.7	4,590	4,680	39.7	--	7.4	0.02	<0.01	<1	410	<1
PSW1	08-28-91	9.5	1,210	1,380	114	0.02	1.4	<.01	.03	<1	110	<1
PSW1	02-03-92	12	--	3,870	33.4	--	8.6	--	--	--	400	--
PSW2	02-03-92	10	--	3,550	5.37	--	4.6	--	--	--	340	--
AD	03-21-91	12	3,930	4,170	E4.50	--	4.6	.09	<.01	<1	320	<1
AD	08-28-91	11	832	896	24.3	<.01	.32	.02	.04	1	80	<1
AD	02-06-92	15	--	3,410	4.05	--	6.5	--	--	--	320	--
LC1	03-21-91	12	3,660	3,370	52.4	.05	5.2	.05	<.01	<1	380	<1
LC1	08-30-91	11	1,240	1,270	155	.01	.89	.01	.02	<1	120	<1
LC1	11-12-91	--	3,350	--	109	--	--	--	--	--	--	--
LC1	12-10-91	13	--	3,440	76.2	--	6.3	--	--	--	370	--
LC1	01-13-92	13	--	3,520	75.1	--	6.1	--	--	--	370	--
LC1	02-06-92	13	--	3,180	49.4	--	6.2	--	--	--	340	--
LC1	03-24-92	--	--	--	--	--	--	--	--	--	370	--
LC1	04-27-92	--	904	--	92.8	--	.56	--	--	--	80	--
LC1	06-08-92	8.7	--	879	83.8	--	.78	--	--	--	90	--
LC1	07-15-92	--	956	--	134	--	.60	--	--	--	90	--
LC1	08-10-92	--	--	--	--	--	.79	--	--	--	--	--
IRD	02-06-92	14	--	2,940	13.3	--	9.8	--	--	--	290	--
LCTR	02-06-92	12	--	3,570	19.4	--	4.0	--	--	--	390	--
LC2	02-06-92	12	--	3,710	7.70	--	12	--	--	--	380	--
RED	03-21-91	26	2,280	2,140	E2.30	.02	3.1	.02	<.01	2	530	<1
RED	08-30-91	18	1,090	1,210	6.77	<.01	1.2	.01	.02	1	250	<1
RED	02-06-92	27	--	1,900	3.34	--	3.8	--	--	--	500	--
LKG	02-06-92	28	--	2,210	4.00	--	2.2	--	--	--	530	--
IW	03-21-91	12	4,860	4,720	15.7	.05	4.9	.03	<.01	<1	600	<1
IW	09-04-91	9.2	846	788	86.8	<.01	.31	<.01	<.01	1	90	<1
IW	02-27-92	14	--	4,280	13.8	--	4.8	--	--	--	500	--
IW	03-24-92	--	--	--	--	--	--	--	--	--	500	--
GJ1	03-21-91	15	3,280	3,560	E1.44	.04	1.1	.03	.01	<1	380	<1
GJ1	09-04-91	11	1,450	1,370	12.9	.02	.56	.01	.02	1	160	<1
GJ1	02-27-92	15	--	3,040	3.45	--	.81	--	--	--	370	--
GJ2	02-27-92	19	--	5,860	2.21	--	4.9	--	--	--	790	--
GJ3	02-27-92	21	--	5,210	3.94	--	8.8	--	--	--	680	--

Table 5. Onsite measurements and chemical data for surface-water sites in the Grand Valley, 1991–92--Continued

Site code (pl.2)	Date	Chromium, dissolved (µg/L as Cr)	Copper, dissolved (µg/L as Cu)	Lead, dissolved (µg/L as Pb)	Mercury, dissolved (µg/L as Hg)	Molybdenum, dissolved (µg/L as Mo)	Selenium, dissolved (µg/L as Se)	Vanadium, dissolved (µg/L as V)	Zinc, dissolved (µg/L as Zn)	Uranium, natural, total (µg/L as U)	Carbon, organic, dissolved (mg/L as C)
PRW	02-03-92	--	--	--	--	--	23	--	--	--	--
PSW1	03-21-91	2	2	<1	<0.1	10	86	6	10	26	--
PSW1	08-28-91	<1	1	<1	<.1	8	15	4	13	6.4	--
PSW1	02-03-92	--	--	--	--	--	66	--	--	--	--
PSW2	02-03-92	--	--	--	--	--	74	--	--	--	--
AD	03-21-91	2	1	<1	<.1	6	25	6	10	31	--
AD	08-28-91	<1	1	<1	.2	8	2	4	10	4.9	--
AD	02-06-92	--	--	--	--	--	32	--	--	--	--
LC1	03-21-91	1	2	<1	<.1	5	100	4	30	20	--
LC1	08-30-91	<1	1	<1	<.1	7	14	3	8	6.7	--
LC1	11-12-91	--	--	--	--	--	82	--	--	--	--
LC1	12-10-91	--	--	--	--	--	84	--	--	--	--
LC1	01-13-92	--	--	--	--	--	87	--		--	--
LC1	02-06-92	--	--	--	--	--	50	--	--	--	--
LC1	03-24-92	--	--	--	--	--	110	--	--	--	4.6
LC1	04-27-92	--	--	--	--	--	9	--	--	--	--
LC1	06-08-92	--	--	--	--	--	14	--	--	--	--
LC1	07-15-92	--	--	--	--	--	10	--	--	--	--
LC1	08-10-92	--	--	--	--	--	13	--	--	--	--
IRD	02-06-92	--	--	--	--	--	120	--	--	--	--
LCTR	02-06-92	--	--	--	--	--	50	--	--	--	--
LC2	02-06-92	--	--	--	--	--	160	--	--	--	--
RED	03-21-91	1	1	<1	<.1	3	27	5	<10	40	--
RED	08-30-91	<1	<1	<1	<.1	2	12	2	9	12	--
RED	02-06-92	--	--	--	--	--	37	--	--	--	--
LKG	02-06-92	--	--	--	--	--	16	--	--	--	--
IW	03-21-91	2	2	<1	<.1	27	96	9	20	48	--
IW	09-04-91	<1	1	<1	<.1	12	6	4	4	5.4	--
IW	02-27-92	--	--	--	--	--	110	--	--	--	--
IW	03-24-92	--	--	--	--	--	100	--	--	--	9.5
GJ1	03-21-91	1	1	<1	<.1	33	16	7	10	29	--
GJ1	09-04-91	<1	1	<1	<.1	21	9	5	<10	12	--
GJ1	02-27-92	--	--	--	--	--	13	--	--	--	--
GJ2	02-27-92	--	--	--	--	--	44	--	--	--	--
GJ3	02-27-92	--	--	--	--	--	67	--	--	--	--

Table 5. Onsite measurements and chemical data for surface-water sites in the Grand Valley, 1991–92--Continued

Site code (pl. 2)	Site name	Date	Time	Stream discharge (ft^3/s)	Specific conductance (µS/cm)	pH, field (standard units)	Water temperature (°C)
LW	Lewis Wash at 31 Road, near mouth	03-21-91	1200	E0.40	4,640	8.0	4.0
LW		09-04-91	1000	1.0	1,410	8.0	19.0
LW		02-27-92	0950	.20	4,680	8.0	4.0
CF1	Drain at D and 32 1/2 Roads, near Clifton	03-22-91	1010	E1.5	5,740	7.8	8.0
CF1		09-04-91	1115	17	2,080	7.8	19.5
CF1		02-27-92	0800	2.0	5,790	7.8	7.0
CF2	Drain at E 1/4 and 33 1/2 Roads, near Clifton	03-22-91	1030	E.10	4,710	8.3	6.0
CF2		09-04-91	1230	5.2	1,210	8.3	22.0
CF2		02-27-92	0910	E.01	4,580	8.2	2.5
OMD	Orchard Mesa Drain at mouth	03-22-91	0800	.83	3,800	8.1	5.0
OMD		09-03-91	1400	19	1,530	8.3	23.0
OMD		02-25-92	0840	.79	3,960	8.2	3.5
OM1	Drain at C and 30 1/2 Roads, Orchard Mesa	02-25-92	0950	.34	3,590	8.2	7.0
OM2	Drain at C 1/2 and 33 Road, Orchard Mesa	03-22-91	0900	.60	2,800	8.0	8.0
OM2		09-03-91	1210	9.0	1,380	8.2	21.0
OM2		02-25-92	1040	.82	2,870	8.2	9.5
OM3	Drain at C 1/2 and 33 3/4 Roads, Orchard Mesa	03-22-91	0940	E.20	2,670	7.7	5.0
OM3		09-03-91	1100	.91	2,180	7.5	18.0
OM3		02-25-92	1200	.07	2,510	7.8	11.0
OM4	Drain at 36 Road, East Orchard Mesa	02-25-92	1250	.03	2,720	7.5	13.0

Site code (pl. 2)	Date	Oxygen, dissolved (mg/L)	Oxygen, dissolved (percent saturation)	Hardness, total (mg/L as $CaCO_3$)	Calcium, dissolved (mg/L as Ca)	Magnesium, dissolved (mg/L as Mg)	Sodium, dissolved (mg/L as Na)	Potassium, dissolved (mg/L as K)	Alkalinity, lab (mg/L as $CaCO_3$)	Sulfate, dissolved (mg/L as SO_4)	Chloride, dissolved (mg/L as Cl)	Fluoride, dissolved (mg/L as F)
LW	03-21-91	10.2	95	2,300	440	300	380	9.3	209	2,800	230	0.50
LW	09-04-91	7.0	89	440	100	46	130	4.8	176	340	130	.30
LW	02-27-92	11.2	101	2,400	480	290	360	6.6	287	2,400	220	.40
CF1	03-22-91	12.6	129	2,300	310	380	690	11	356	2,300	230	1.2
CF1	09-04-91	6.6	85	660	120	87	210	5.9	215	680	140	.40
CF1	02-27-92	6.6	65	2,400	320	380	650	11	376	3,000	220	1.0
CF2	03-22-91	13.8	134	2,100	410	270	420	9.3	299	2,200	420	.50
CF2	09-04-91	7.8	106	360	99	28	110	4.5	167	240	140	.30
CF2	02-27-92	--	--	2,200	450	250	390	6.4	264	2,100	390	.30
OMD	03-22-91	10.5	99	1,900	480	170	300	7.3	298	1,600	210	1.2
OMD	09-03-91	9.4	130	520	150	35	120	3.9	164	460	140	.40
OMD	02-25-92	12.4	110	2,000	530	160	310	6.3	294	2,000	190	.90
OM1	02-25-92	10.3	101	1,800	550	110	240	3.0	247	1,700	190	.90
OM2	03-22-91	7.8	79	1,500	450	91	130	3.3	136	1,600	160	.80
OM2	09-03-91	8.1	107	480	140	31	99	3.6	160	400	130	.30
OM2	02-25-92	9.6	100	1,600	480	93	130	3.1	228	1,400	140	.60
OM3	03-22-91	8.9	83	1,400	440	78	130	3.4	141	1,400	170	1.0
OM3	09-03-91	6.1	76	1,000	320	52	120	3.5	123	910	140	.80
OM3	02-25-92	7.9	85	1,300	420	64	120	2.9	265	1,100	140	.70
OM4	02-25-92	3.6	41	1,300	360	100	180	7.8	266	1,200	140	.40

Table 5. Onsite measurements and selected chemical data for surface-water sites in the Grand Valley, 1991–92--Continued

Site code (pl. 2)	Date	Silica, dissolved (mg/L as SiO_2)	Solids, residue at 180°C dissolved (mg/L)	Solids, sum of constituents, dissolved (mg/L)	Solids, dissolved (tons per day)	Nitrogen, nitrite, dissolved (mg/L as N)	Nitrogen, NO_2+NO_3, dissolved (mg/L as N)	Nitrogen, ammonia, dissolved (mg/L as N)	Phosphorus, ortho, dissolved (mg/L as P)	Arsenic, dissolved (µg/L as As)	Boron, dissolved (µg/L as B)
LW	03-21-91	7.5	4,440	4,320	E4.67	0.06	5.2	0.06	<0.01	<1	530
LW	09-04-91	11	928	874	2.51	.02	1.4	<.01	<.01	1	90
LW	02-27-92	8.6	--	3,960	2.14	--	5.7	--	--	--	490
CF1	03-22-91	16	5,260	4,350	E17.6	.32	44	2.6	.92	<1	380
CF1	09-04-91	12	1,440	1,410	65.7	.02	5.9	.03	<.01	2	130
CF1	02-27-92	17	--	5,030	27.2	--	46	--	--	--	380
CF2	03-22-91	7.9	4,100	3,920	E1.06	.02	.19	3.7	.48	<1	360
CF2	09-04-91	11	748	733	10.5	<.01	<.05	<.01	<.01	2	60
CF2	02-27-92	4.1	--	3,750	E.10	--	<.05	--	--	--	310
OMD	03-22-91	20	3,490	2,980	7.82	.03	2.0	.14	.07	<1	180
OMD	09-03-91	10	1,020	1,020	53.4	<.01	.19	<.01	<.01	1	140
OMD	02-25-92	19	--	3,400	7.25	--	1.8	--	--	--	700
OM1	02-25-92	23	--	2,980	2.74	--	3.6	--	--	--	360
OM2	03-22-91	22	2,480	2,540	4.02	<.01	1.0	.03	<.01	<1	20
OM2	09-03-91	11	900	912	21.9	<.01	.28	.01	<.01	<1	80
OM2	02-25-92	20	--	2,410	5.33	--	1.1	--	--	--	220
OM3	03-22-91	20	2,310	2,330	E1.26	<.01	.66	.03	<.01	<1	200
OM3	09-03-91	22	1,750	1,640	4.30	<.01	.53	.02	<.01	1	150
OM3	02-25-92	22	--	2,030	.38	--	.98	--	--	--	170
OM4	02-25-92	22	--	2,170	.18	--	.77	--	--	--	220

Site code (pl. 2)	Date	Cadmium, dissolved (µg/L as Cd)	Chromium, dissolved (µg/L as Cr)	Copper, dissolved (µg/L as Cu)	Lead dissolved (µg/L as Pb)	Mercury, dissolved (µg/L as Hg)	Molybdenum, dlssolved (µg/L as Mo)	Selenium, dissolved (µg/L as Se)	Vanadium, dissolved (µg/L as V)	Zinc, dissolved (µg/L as Zn)	Uranium, natural, total (µg/L as U)
LW	03-21-91	<1	2	2	<1	<0.1	17	47	6	30	31
LW	09-04-91	<1	<1	1	<1	<.1	13	8	4	8	8.3
LW	02-27-92	--	--	--	--	--	--	39	--	--	--
CF1	03-22-91	<1	<1	2	<1	<.1	70	86	9	20	25
CF1	09-04-91	<1	<1	2	<1	<.1	26	18	5	<10	7.5
CF1	02-27-92	--	--	--	--	--	--	100	--	--	--
CF2	03-22-91	<1	1	1	<1	<.1	6	3	11	10	33
CF2	09-04-91	<1	<1	1	<1	<.1	10	<1	4	4	3.5
CF2	02-27-92	--	--	--	--	--	--	1	--	--	--
OMD	03-22-91	<1	2	1	<1	<.1	21	11	7	<10	56
OMD	09-03-91	<1	<1	1	<1	<.1	13	3	5	4	15
OMD	02-25-92	--	--	--	--	--	--	11	--	--	--
OM1	02-25-92	--	--	--	--	--	--	30	--	--	--
OM2	03-22-91	<1	1	1	<1	<.1	10	12	5	10	36
OM2	09-03-91	<1	<1	2	<1	<.1	11	4	4	5	11
OM2	02-25-92	--	--	--	--	--	--	15	--	--	--
OM3	03-22-91	<1	1	1	<1	<.1	8	9	5	<10	30
OM3	09-03-91	<1	<1	1	<1	<.1	10	6	4	<10	16
OM3	02-25-92	--	--	--	--	--	--	7	--	--	--
OM4	02-25-92	--	--	--	--	--	--	5	--	--	--

[1] Site ESC3 is located about 3.4 miles north-northeast of site ESC2 on plate 2.

Table 6. Onsite measurements and chemical data for sites on the Colorado River and Plateau Creek and the Gunnison River at Whitewater, 1991–92

[ft^3/s, cubic feet per second; µS/cm, microsiemens per centimeter at 25 degrees Celsius; °C, degrees Celsius; mg/L, milligrams per liter; lab, laboratory; µg/L, micrograms per liter; E. estimated; <, less than; --, no data]

Site code (pl. 2)	Site name	Date	Time	Stream discharge (ft^3/s)	Specific conductance (µS/cm)	pH, field (standard units)	Water temperature (°C)
COL2	Colorado River near Cameo	03-13-91	1300	1,300	1,250	8.6	6.0
COL2		03-27-91	1120	1,680	1,240	8.4	6.0
COL2		04-24-91	1400	2,370	850	8.3	11.0
COL2		05-15-91	1100	6,220	470	8.1	10.5
COL2		05-22-91	0900	10,400	335	8.1	10.5
COL2		05-30-91	1100	10,100	334	8.1	10.5
COL2		06-12-91	1300	11,200	342	8.0	14.0
COL2		07-10-91	1000	4,680	565	8.1	17.5
COL2		07-30-91	0830	2,340	805	8.4	19.5
COL2		08-14-91	1355	2,200	910	8.7	22.5
COL2		09-24-91	0930	2,210	957	8.5	13.5
COL2		09-25-91	1100	2,010	952	8.3	13.0
COL2		10-17-91	1235	1,960	1,060	8.7	11.0
COL2		11-12-91	1040	2,110	1,020	8.5	7.0
COL2		12-03-91	0930	1,520	1,190	8.2	.0
COL2		02-26-92	1045	1,460	1,130	8.4	4.0
COL2		03-18-92	1400	1,680	1,070	8.4	9.0
COL2		04-21-92	0930	2,970	650	8.3	9.5
COL2		04-28-92	1300	2,710	740	8.4	17.0
COL2		05-27-92	1445	7,440	442	8.4	14.0
COL2		06-25-92	1050	4,520	549	8.6	18.0
COL2		07-22-92	0905	2,730	873	8.6	19.0
COL2		08-25-92	1410	2,640	861	8.4	18.0
COL2		09-16-92	1510	2,420	931	8.5	18.5
PLT	Plateau Creek near mouth	03-27-91	0830	70	730	8.5	4.0
PLT		05-22-91	1100	557	238	8.3	11.5
PLT		07-30-91	0940	67	730	8.6	20.0
PLT		09-24-91	0730	55	710	8.6	10.0
PLT		11-12-91	1200	131	579	8.5	4.5
PLT		12-03-91	0840	108	634	8.4	.0
PLT		02-26-92	0900	65	688	8.5	1.5
COL3	Colorado River below Grand Valley Canal, at Palisade	01-16-92	1400	1,310	1,100	8.2	.5
COL5	Colorado River above Gunnison River	08-15-91	0900	E850	1,120	8.4	21.5

Table 6. Onsite measurements and chemical data for sites on the Colorado River and Plateau Creek and the Gunnison River at Whitewater, 1991–92--Continued

Site code (pl. 2)	Date	Oxygen, dissolved (mg/L)	Oxygen, dissolved (percent saturation)	Hardness, total (mg/L as $CaCO_3$)	Calcium, dissolved (mg/L as Ca)	Magnesium, dissolved (mg/L as Mg)	Sodium, dissolved (mg/L as Na)	Potassium, dissolved (mg/L as K)	Alkalinity, lab (mg/L as $CaCO_3$)	Sulfate, dissolved (mg/L as SO_4)	Chloride, dissolved (mg/L as Cl)	Fluoride, dissolved (mg/L as F)
COL2	03-13-91	--	--	270	77	20	150	5.0	150	180	200	0.30
COL2	03-27-91	10.2	98	270	77	20	150	4.4	153	180	200	.30
COL2	04-24-91	--	--	200	57	13	86	3.7	121	110	120	.30
COL2	05-15-91	--	--	130	40	8.3	34	1.9	93	56	47	.20
COL2	05-22-91	9.2	99	120	35	7.1	23	1.7	94	44	30	<.10
COL2	05-30-91	--	--	120	35	7.0	23	1.4	86	40	31	.10
COL2	06-12-91	--	--	120	35	7.2	21	1.2	84	46	29	<.10
COL2	07-10-91	--	--	160	50	9.1	50	2.7	112	85	64	.20
COL2	07-30-91	7.2	93	210	64	13	80	2.9	135	120	120	.20
COL2	08-14-91	8.1	112	230	68	15	98	3.2	136	110	110	.30
COL2	09-24-91	9.1	103	230	68	15	100	3.4	126	120	140	.30
COL2	09-25-91	--	--	240	70	15	110	3.6	138	140	150	.30
COL2	10-17-91	9.2	100	230	68	15	110	3.6	138	150	170	.40
COL2	11-12-91	10.5	102	250	71	17	110	3.8	150	150	160	.40
COL2	12-03-91	13.1	105	270	78	19	140	4.1	157	180	180	.30
COL2	02-26-92	11.2	100	240	68	16	130	4.2	140	130	170	.20
COL2	03-18-92	9.9	103	230	67	16	120	4.3	140	140	170	.30
COL2	04-21-92	9.2	96	180	52	11	64	2.7	107	84	89	.30
COL2	04-28-92	9.1	113	180	52	12	75	2.9	113	93	110	.30
COL2	05-27-92	8.5	100	130	39	7.0	37	1.8	95	56	46	.20
COL2	06-25-92	7.7	97	150	46	9.2	48	1.7	103	71	68	<.10
COL2	07-22-92	7.6	98	230	68	14	91	2.9	139	110	130	.30
COL2	08-25-92	9.0	114	220	65	13	88	3.5	130	110	120	.30
COL2	09-16-92	9.4	120	210	61	13	100	3.5	123	100	140	.30
PLT	03-27-91	10.9	100	260	58	29	74	4.0	305	110	11	.50
PLT	05-22-91	9.1	100	100	28	8.1	12	1.6	110	16	4.9	<.10
PLT	07-30-91	8.4	110	270	42	39	67	5.5	328	91	9.0	.60
PLT	09-24-91	9.1	95	280	53	37	56	5.4	324	76	8.9	.60
PLT	11-12-91	10.7	98	240	48	28	45	3.9	275	66	6.5	.50
PLT	12-03-91	--	--	250	52	30	52	4.5	285	68	7.6	.40
PLT	02-26-92	11.3	95	270	57	32	59	4.7	317	74	11	.20
COL3	01-16-92	--	--	250	71	17	130	3.8	152	140	190	.30
COL5	08-15-91	6.7	90	330	91	25	110	3.9	160	230	130	.40

Table 6. Onsite measurements and chemical data for sites on the Colorado River and Plateau Creek and the Gunnison River at Whitewater, 1991–92--Continued

Site code (pl.2)	Date	Silica, dissolved (mg/L as SiO_2)	Solids, residue at 180°C, dissolved (mg/L)	Solids, sum of constituents, dissolved (mg/L)	Solids, dissolved (tons per day)	Nitrogen, nitrite, dissolved (mg/L as N)	Nitrogen, NO_2+ NO_3, dissolved (mg/L as N)	Nitrogen, ammonia, dissolved (mg/L as N)	Phosphorus, ortho, dissolved (mg/L as P)	Arsenic, dissolved (µg/L as As)	Boron, dissolved (µg/L as B)
COL2	03-13-91	7.1	--	729	2,600	--	--	--	--	--	--
COL2	03-27-91	6.5	729	730	3,310	<0.01	<0.05	<0.01	<0.01	<1	50
COL2	04-24-91	7.5	--	470	3,010	--	--	--	--	--	--
COL2	05-15-91	8.4	--	252	4,220	--	--	--	--	--	--
COL2	05-22-91	--	205	198	5,760	<.01	.19	.06	<.01	<1	10
COL2	05-30-91	7.2	--	196	5,350	--	--	--	--	--	--
COL2	06-12-91	7.0	--	197	5,950	--	--	--	--	--	--
COL2	07-10-91	6.9	--	335	4,230	--	--	--	--	--	--
COL2	07-30-91	10	470	492	2,970	.02	.12	.02	<.01	<1	40
COL2	08-14-91	9.1	--	495	2,940	--	--	--	--	--	--
COL2	09-24-91	6.7	--	529	3,160	--	<.05	--	--	--	30
COL2	09-25-91	7.4	--	579	3,140	--	--	--	--	--	--
COL2	10-17-91	5.8	--	606	3,200	--	--	--	--	--	--
COL2	11-12-91	6.4	--	609	3,470	--	<.05	--	--	--	40
COL2	12-03-91	8.0	--	704	2,890	--	.17	--	--	--	50
COL2	02-26-92	7.6	--	611	2,410	--	.17	--	--	--	50
COL2	03-18-92	7.9	--	610	2,770	--	.15	--	--	--	40
COL2	04-21-92	9.1	--	382	3,060	--	1.2	--	--	--	30
COL2	04-28-92	6.9	--	420	3,070	--	--	--	--	--	--
COL2	05-27-92	6.2	--	250	5,030	--	--	--	--	--	--
COL2	06-25-92	6.1	--	312	3,800	--	<.05	--	--	--	20
COL2	07-22-92	8.0	--	508	3,740	--	--	--	--	--	--
COL2	08-25-92	8.3	--	486	3,470	--	.09	--	--	--	40
COL2	09-16-92	6.3	--	498	3,250	--	--	--	--	--	--
PLT	03-27-91	21	492	491	93.0	<.01	.17	<.01	<.01	2	60
PLT	05-22-91	--	160	137	241	<.01	.11	.04	.02	1	20
PLT	07-30-91	27	445	478	80.5	.02	<.05	<.01	<.01	3	100
PLT	09-24-91	28	--	459	68.2	--	<.05	--	--	--	80
PLT	11-12-91	21	--	384	136	--	<.05	--	--	--	60
PLT	12-03-91	25	--	412	120	--	.25	--	--	--	60
PLT	02-26-92	23	--	452	79.3	--	.15	--	--	--	60
COL3	01-16-92	8.3	--	653	2,310	--	.31	--	--	--	40
COL5	08-15-91	11	703	699	E1,600	<.01	.31	.01	<.01	1	70

Table 6. Onsite measurements and chemical data for sites on the Colorado River and Plateau Creek and the Gunnison River at Whitewater, 1991–92--Continued

Site code (pl.2)	Date	Cadmium, dissolved (µg/L as Cd)	Chromium, dissolved (µg/L as Cr)	Copper, dissolved (µg/L as Cu)	Lead, dissolved (µg/L as Pb)	Mercury, dissolved (µg/L as Hg)	Molybdenum, dissolved (µg/L as Mo)	Selenium, dissolved (µg/L as Se)	Vanadium, dissolved (µg/L as V)	Zinc, dissolved (µg/L as Zn)	Uranium, natural, total (µg/L as U)
COL2	03-13-91	--	--	--	--	--	--	--	--	--	--
COL2	03-27-91	<1	<1	3	<1	<0.1	6	1	4	6	3.2
COL2	04-24-91	--	--	--	--	--	--	--	--	--	--
COL2	05-15-91	--	--	--	--	--	--	--	--	--	--
COL2	05-22-91	1	<1	10	2	<.1	2	<1	3	11	1.9
COL2	05-30-91	--	--	--	--	--	--	--	--	--	--
COL2	06-12-91	--	--	--	--	--	--	--	--	--	--
COL2	07-10-91	--	--	--	--	--	--	--	--	--	--
COL2	07-30-91	<1	<1	6	<1	<.1	7	<1	2	4	5.2
COL2	08-14-91	--	--	--	--	--	--	--	--	--	--
COL2	09-24-91	--	--	--	--	--	--	<1	--	--	--
COL2	09-25-91	--	--	--	--	--	--	--	--	--	--
COL2	10-17-91	--	--	--	--	--	--	--	--	--	--
COL2	11-12-91	--	--	--	--	--	--	2	--	--	--
COL2	12-03-91	--	--	--	--	--	--	<1	--	--	--
COL2	02-26-92	--	--	--	--	--	--	<1	--	--	--
COL2	03-18-92	--	--	--	--	--	--	1	--	--	--
COL2	04-21-92	--	--	--	--	--	--	<1	--	--	--
COL2	04-28-92	--	--	--	--	--	--	--	--	--	--
COL2	05-27-92	--	--	--	--	--	--	--	--	--	--
COL2	06-25-92	--	--	--	--	--	--	<1	--	--	--
COL2	07-22-92	--	--	--	--	--	--	--	--	--	--
COL2	08-25-92	--	--	--	--	--	--	<1	--	--	--
COL2	09-16-92	--	--	--	--	--	--	--	--	--	--
PLT	03-27-91	<1	<1	2	<1	<0.1	1	2	6	27	6.8
PLT	05-22-91	<1	<1	6	6	<.1	2	<1	5	<3	2.1
PLT	07-30-91	<1	<1	2	<1	<.1	5	<1	6	17	11
PLT	09-24-91	--	--	--	--	--	--	<1	--	--	--
PLT	11-12-91	--	--	--	--	--	--	<1	--	--	--
PLT	12-03-91	--	--	--	--	--	--	1	--	--	--
PLT	02-26-92	--	--	--	--	--	--	1	--	--	--
COL3	01-16-92	--	--	--	--	--	--	<1	--	--	--
COL5	08-15-91	<1	<1	2	<1	<.1	10	2	3	6	6.0

Table 6. Onsite measurements and chemical data for sites on the Colorado River and Plateau Creek and the Gunnison River at Whitewater, 1991–92--Continued

Site code (pl. 2)	Site name	Date	Time	Stream discharge (ft^3/s)	Specific conductance ($\mu S/cm$)	pH, field (standard units)	Water temperature (°C)
GUN6	Gunnison River at Whitewater	03-26-91	1230	997	942	8.1	7.5
GUN6		04-30-91	1345	1,880	658	8.0	8.0
GUN6		05-29-91	1335	5,030	431	8.0	12.0
GUN6		07-31-91	1230	1,600	970	8.1	18.5
GUN6		09-24-91	0950	1,510	1,210	8.3	13.0
GUN6		11-13-91	1200	2,100	837	8.7	7.0
GUN6		12-03-91	1120	2,000	797	8.5	2.0
GUN6		01-16-92	1100	1,300	855	8.2	.5
GUN6		02-26-92	1245	1,110	881	8.4	5.0
GUN6		03-18-92	0945	1,390	894	8.4	8.0
GUN6		04-21-92	1220	2,950	538	8.1	9.0
GUN6		06-24-92	1230	1,890	826	8.4	19.0
GUN6		08-19-92	1300	1,720	1,030	8.3	19.0
COL8	Colorado River near Colorado-Utah State line	03-07-91	1300	3,260	1,180	8.3	6.0
COL8		04-30-91	1300	3,900	890	8.3	9.5
COL8		05-29-91	1300	16,900	422	8.0	13.5
COL8		06-04-91	0900	13,300	511	8.4	12.5
COL8		06-13-91	1300	16,700	435	8.1	15.5
COL8		07-23-91	1200	4,750	1,110	8.5	21.5
COL8		07-31-91	1000	3,850	1,120	8.4	22.0
COL8		09-24-91	1230	3,500	1,170	8.2	16.0
COL8		10-16-91	1235	3,910	1,130	8.6	13.0
COL8		11-13-91	1300	4,650	1,120	8.6	7.5
COL8		12-03-91	1115	3,600	1,120	8.6	.5
COL8		01-15-92	0930	3,150	1,110	8.1	.0
COL8		02-26-92	1115	2,880	1,170	8.8	5.5
COL8		03-19-92	1045	3,190	1,100	8.5	9.0
COL8		04-22-92	1245	4,970	702	8.2	12.0
COL8		05-21-92	1215	11,300	569	8.2	15.0
COL8		06-24-92	1320	6,020	794	8.7	21.0
COL8		07-21-92	1445	3,440	1,200	8.6	22.0
COL8		08-19-92	1010	3,340	1,210	8.2	22.0
COL8		09-17-92	1500	3,490	1,290	8.5	20.0

Table 6. Onsite measurements and chemical data for sites on the Colorado River and Plateau Creek and the Gunnison River at Whitewater, 1991–92--Continued

Site code (pl. 2)	Date	Oxygen, dissolved (mg/L)	Oxygen, dissolved (percent saturation)	Hardness, total (mg/L as $CaCO_3$)	Calcium, dissolved (mg/L as Ca)	Magnesium, dissolved (mg/L as Mg)	Sodium, dissolved (mg/L as Na)	Potassium, dissolved (mg/L as K)	Alkalinity, lab (mg/L as $CaCO_3$)	Sulfate, dissolved (mg/L as SO_4)	Chloride, dissolved (mg/L as Cl)	Fluoride, dissolved (mg/L as F)
GUN6	03-26-91	8.5	86	380	94	36	63	3.4	143	400	9.7	0.30
GUN6	04-30-91	10.6	106	270	73	21	39	2.9	125	210	7.8	.30
GUN6	05-29-91	9.0	100	180	50	13	20	2.0	85	130	3.3	.20
GUN6	07-31-91	9.0	114	430	120	32	54	3.5	156	350	8.1	.30
GUN6	09-24-91	8.8	99	530	140	43	70	4.1	187	530	7.9	.60
GUN6	11-13-91	11.3	111	360	93	30	49	3.0	146	340	9.1	.40
GUN6	12-03-91	11.1	94	340	87	29	51	3.0	144	270	7.0	.30
GUN6	01-16-92	--	--	350	89	31	50	2.9	154	290	10	.40
GUN6	02-26-92	11.3	104	360	88	34	58	3.1	152	310	11	.30
GUN6	03-18-92	9.4	94	360	89	33	57	3.5	152	320	9.1	.30
GUN6	04-21-92	9.3	96	220	58	18	29	2.3	105	170	5.9	.20
GUN6	06-24-92	9.8	127	360	98	28	44	2.7	135	280	6.8	.30
GUN6	08-19-92	7.8	100	450	120	36	57	3.5	171	400	11	.50
COL8	03-07-91	10.4	98	360	91	31	120	4.3	162	320	110	.40
COL8	04-30-91	9.5	97	300	80	24	75	3.5	132	220	58	.40
COL8	05-29-91	8.3	94	160	44	11	24	2.2	92	92	23	.20
COL8	06-04-91	--	--	190	53	13	31	1.9	99	94	24	.20
COL8	06-13-91	--	--	160	46	11	25	1.6	91	98	18	.20
COL8	07-23-91	--	--	370	100	28	73	3.1	147	290	71	.30
COL8	07-31-91	6.6	89	400	110	31	82	3.5	159	350	73	.40
COL8	09-24-91	9.0	107	410	110	32	94	3.2	156	380	93	.60
COL8	10-16-91	10.0	112	380	100	31	85	3.5	151	360	84	.40
COL8	11-13-91	10.0	98	370	97	30	93	3.7	161	310	98	.40
COL8	12-03-91	12.1	98	370	97	32	94	3.4	158	290	75	.40
COL8	01-15-92	12.1	95	330	87	28	98	3.4	161	260	100	.40
COL8	02-26-92	11.1	102	350	89	31	110	3.8	158	240	100	.40
COL8	03-19-92	9.7	98	330	85	28	100	4.2	156	270	100	.40
COL8	04-22-92	9.2	103	240	65	20	52	2.6	115	180	46	.30
COL8	05-21-92	8.1	95	200	54	15	37	2.1	102	120	34	.30
COL8	06-24-92	7.5	99	300	82	22	56	2.4	124	220	49	.10
COL8	07-21-92	7.8	106	420	110	35	90	3.5	166	350	81	.20
COL8	08-19-92	6.8	92	450	120	35	93	4.4	167	360	84	.50
COL8	09-17-92	9.8	127	460	120	38	99	4.2	154	390	79	.30

Table 6. Onsite measurements and chemical data for sites on the Colorado River and Plateau Creek and the Gunnison River at Whitewater, 1991–92--Continued

Site code (pl.2)	Date	Silica, dissolved (mg/L as SiO_2)	Solids, residue at 180°C, dissolved (mg/L)	Solids, sum of constituents, dissolved (mg/L)	Solids, dissolved (tons per day)	Nitrogen, nitrite, dissolved (mg/L as N)	Nitrogen, NO_2+NO_3, dissolved (mg/L as N)	Nitrogen, ammonia, dissolved (mg/L as N)	Phosphorus, ortho, dissolved (mg/L as P)	Arsenic, dissolved (µg/L as As)	Boron, dissolved (µg/L as B)
GUN6	03-26-91	8.6	659	702	1,770	<0.01	0.48	0.01	<0.01	<1	--
GUN6	04-30-91	11	472	448	2,400	.02	.57	.03	<.01	--	--
GUN6	05-29-91	13	294	283	3,990	.05	.47	.07	.02	--	--
GUN6	07-31-91	15	720	687	3,110	.03	1.4	.06	.03	1	--
GUN6	09-24-91	16	906	931	3,690	<.01	1.3	<.01	<.01	1	--
GUN6	11-13-91	11	536	628	3,540	.02	.65	.02	<.01	--	110
GUN6	12-03-91	12	--	549	2,960	--	.73	--	--	--	80
GUN6	01-16-92	13	--	582	2,040	--	.84	--	--	--	90
GUN6	02-26-92	12	627	610	1,880	<.01	.62	.03	<.01	--	70
GUN6	03-18-92	11	--	617	2,320	--	.62	--	--	--	90
GUN6	04-21-92	13	366	361	2,880	<.01	.35	.03	.02	--	50
GUN6	06-24-92	13	581	552	2,820	.01	.84	<.01	<.01	--	--
GUN6	08-19-92	15	760	750	3,380	<.01	1.2	<.01	.01	--	--
COL8	03-07-91	8.4	822	781	7,240	.01	.54	.06	.01	<1	--
COL8	04-30-91	9.3	578	548	6,090	.02	.53	.05	.02	--	--
COL8	05-29-91	9.1	272	254	12,400	.01	.36	.05	<.01	--	--
COL8	06-04-91	9.6	--	289	10,400	<.01	.58	.02	<.01	--	30
COL8	06-13-91	8.5	--	263	11,900	--	--	--	--	--	--
COL8	07-23-91	10	--	664	8,510	--	--	--	--	--	--
COL8	07-31-91	12	740	752	7,690	.02	1.0	.03	.02	1	--
COL8	09-24-91	9.3	758	807	7,160	<.01	.64	<.01	.01	<1	--
COL8	10-16-91	7.5	--	762	8,040	--	--	--	--	--	--
COL8	11-13-91	8.8	718	738	9,010	.02	.48	.02	<.01	--	80
COL8	12-03-91	10	--	699	6,800	--	.61	--	--	--	80
COL8	01-15-92	11	--	688	5,850	--	.70	--	--	--	70
COL8	02-26-92	9.7	801	680	6,230	<.01	.61	.04	.03	--	70
COL8	03-19-92	9.6	--	693	5,970	--	.48	--	--	--	70
COL8	04-22-92	11	470	448	6,310	<.01	.44	.07	.03	--	50
COL8	05-21-92	10	348	333	10,600	<.01	.37	.03	.02	--	--
COL8	06-24-92	7.3	517	525	8,400	.01	.36	<.01	<.01	--	--
COL8	07-21-92	9.9	--	779	7,230	--	--	--	--	--	--
COL8	08-19-92	11	834	814	7,520	.02	.96	<.01	.02	--	--
COL8	09-17-92	8.9	--	832	7,840	--	--	--	--	--	--

Table 6. Onsite measurements and chemical data for sites on the Colorado River and Plateau Creek and the Gunnison River at Whitewater, 1991–92--Continued

Site code (pl.2)	Date	Cadmium, dissolved (µg/L as Cd)	Chromium, dissolved (µg/L as Cr)	Copper, dissolved (µg/L as Cu)	Lead, dissolved (µg/L as Pb)	Mercury, dissolved (µg/L as Hg)	Molybdenum, dissolved (µg/L as Mo)	Selenium, dissolved (µg/L as Se)	Vanadium, dissolved (µg/L as V)	Zinc, dissolved (µg/L as Zn)	Uranium, natural, total (µg/L as U)
GUN6	03-26-91	<1	<1	1	<1	<0.1	<10	8	<6	7	7.7
GUN6	04-30-91	--	--	--	--	--	--	--	--	--	--
GUN6	05-29-91	--	--	--	--	--	--	--	--	--	--
GUN6	07-31-91	<1	<1	4	<1	<.1	<10	5	<6	5	--
GUN6	09-24-91	<1	<1	3	<1	<.1	<10	9	<6	6	--
GUN6	11-13-91	--	--	--	--	--	<10	5	<6	--	--
GUN6	12-03-91	--	--	--	--	--	--	7	--	--	--
GUN6	01-16-92	--	--	--	--	--	--	5	--	--	--
GUN6	02-26-92	--	--	--	--	--	--	5	--	--	--
GUN6	03-18-92	--	--	--	--	--	--	7	--	--	--
GUN6	04-21-92	--	--	--	--	--	<10	3	<6	--	--
GUN6	06-24-92	--	--	--	--	--	<10	6	<6	--	--
GUN6	08-19-92	--	--	--	--	--	<10	7	<6	--	--
COL8	03-07-91	<1	<1	4	<1	.1	<10	3	<6	4	--
COL8	04-30-91	--	--	--	--	--	--	--	--	--	--
COL8	05-29-91	--	--	--	--	--	--	--	--	--	3.5
COL8	06-04-91	--	--	--	--	--	--	<1	--	--	--
COL8	06-13-91	--	--	--	--	--	--	--	--	--	--
COL8	07-23-91	--	--	--	--	--	--	--	--	--	--
COL8	07-31-91	<1	<1	2	<1	<.1	<10	5	<6	7	--
COL8	09-24-91	<1	<1	2	<1	<.1	<10	6	<6	7	--
COL8	10-16-91	--	--	--	--	--	--	--	--	--	--
COL8	11-13-91	--	--	--	--	--	<10	5	<6	--	--
COL8	12-03-91	--	--	--	--	--	--	7	--	--	--
COL8	01-15-92	--	--	--	--	--	--	5	--	--	--
COL8	02-26-92	--	--	--	--	--	--	5	--	--	--
COL8	03-19-92	--	--	--	--	--	--	4	--	--	--
COL8	04-22-92	--	--	--	--	--	--	--	--	--	--
COL8	05-21-92	--	--	--	--	--	--	--	--	--	--
COL8	06-24-92	--	--	--	--	--	<10	4	<6	--	--
COL8	07-21-92	--	--	--	--	--	--	--	--	--	--
COL8	08-19-92	--	--	--	--	--	<10	7	<6	--	--
COL8	09-17-92	--	--	--	--	--	--	--	--	--	--

Table 7. Stable-isotope ratios of hydrogen and oxygen in surface water, Uncompahgre Project area and the Grand Valley, 1991–92

Site code (pls. 1, 2)	Site name	Date	Time	H-2/H-1 stable-isotope ratio	0-18/0-16 stable-isotope ratio
	UNCOMPAHGRE PROJECT AREA (pl. 1)				
UC2	Uncompahgre River at Uncompahgre Road	04-22-92	0830	-118.0	-15.90
UC2		06-09-92	1030	-119.0	-16.15
DRY1	Dry Creek at D10 Road, near mouth	07-10-91	1400	-114.0	-15.25
DRY1		11-13-91	1030	-117.0	-15.55
DRY5	Dry Creek at Holly Road, below CQ lateral	07-10-91	1130	-100.0	-13.25
LZAM	Loutsenhizer Arroyo at mouth, below Garnet diversion	02-19-92	1330	-116.0	-15.50
LZA1	Loutsenhizer Arroyo at North River Road, near mouth	12-12-91	1230	-118.0	-15.75
LZA1		01-14-92	0900	-118.0	-15.45
LZA1		03-09-92	1050	-117.0	-15.80
LZA1		04-22-92	1010	-117.0	-15.60
LZA1		05-12-92	0840	-117.0	-15.50
LZA1		06-09-92	1340	-119.0	-15.70
	GRAND VALLEY (pl. 2)				
RW1	Reed Wash at Highway 50	11-13-91	1440	-122.0	-16.20
RW1		12-10-91	1100	-123.0	-16.05
RW1		01-13-92	1400	-123.0	-16.10
RW1		02-04-92	1420	-122.0	-16.25
RW1		03-13-92	0930	-123.0	-16.15
RW1		04-21-92	1210	-125.0	-16.60
RW1		05-13-92	0820	-122.0	-16.50
RW1		06-08-92	1125	-122.0	-16.55
RWEB	East Branch of Reed Wash at M Road	03-12-92	0900	-123.0	-16.20
RWTR	Unnamed Tributray of Reed Wash, near 14 and M Roads	03-12-92	1030	-123.0	-16.25
RW2	Reed Wash near N Road	09-10-91	1100	-120.0	-16.10
RW2		03-12-92	1230	-124.0	-16.20
RWPB	Peck and Beede Wash at 14 Road	03-13-92	1100	-123.0	-16.35
RW3	Reed Wash at 13 Road	03-12-92	1330	-123.0	-16.25
RW4	Upper Reed Wash near 12 and Q Roads	09-10-91	0845	-124.0	-16.20
RW4		03-13-92	1300	-122.0	-16.30
COL2	Colorado River near Cameo	04-21-92	0930	-126.0	-16.90
COL2		06-25-92	1050	-123.0	-17.05

Table 8. Concentrations of insecticides in water samples from the Grand Valley, 1991

[Concentrations in micrograms per liter; <, less than]

Site code (pl. 2)	Site name	Date	Chlor-dyrifos	DEF	Deme-ton	Diazinon	Disyston
SC	Salt Creek at I-70	06-25-91	<0.01	<0.01	<0.10	<0.01	<0.01
RW1A	Reed Wash at I-70	06-25-91	.06	<.01	<.10	<.01	<.01
LSW1	Little Salt Wash at Highway 50, at Fruita	06-25-91	<.01	<.01	<.10	<.01	<.01
HW1	Hunter Wash at River Road	06-24-91	<.01	<.01	<.10	.12	<.01
PSW1	Persigo Wash at River Road	06-24-91	<.01	<.01	<.10	<.01	<.01
LC1	Leach Creek at Highway 50	06-25-91	<.01	<.01	<.10	<.01	<.01
RED	Drain along Redlands Parkway, at mouth	06-25-91	<.01	<.01	<.10	<.01	<.01
LW	Lewis Wash at 31 Road, near mouth	06-26-91	<.01	<.01	<.10	.01	<.01
CF2	Drain at E 1/4 and 33 1/2 Roads, near Clifton	06-26-91	<.01	<.01	<.10	<.01	<.01
OMD	Orchard Mesa Drain at mouth	06-26-91	<.01	<.01	<.10	.02	<.01
OM3	Drain at C 1/2 and 33 3/4 Roads, Orchard Mesa	06-26-91	<.01	<.01	<.10	.04	<.01
COL4	Colorado River at 32 Road, near Clifton	08-15-91	.01	<.01	<.10	.01	<.01
COL7	Colorado River at Highway 340, at Fruita	08-15-91	<.01	<.01	<.10	<.01	<.01

Site code (pl. 2)	Date	Eth-ion	Fono-fos	Guth-ion	Mala-thion	Para-thion	Methyl-para-thion	Methyl-trithion	Pho-rate	Ter-bufos	Tri-thion	Aldi-carb
SC	06-25-91	<0.01	<0.01	<0.10	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5
RW1A	06-25-91	<.01	<.01	<.10	<.01	.01	<.01	<.01	<.01	<.01	<.01	<.5
LSW1	06-25-91	<.01	<.01	<.10	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.5
HW1	06-24-91	<.01	<.01	<.10	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.5
PSW1	06-24-91	<.01	<.01	<.10	<.01	.09	<.01	<.01	<.01	<.01	<.01	<.5
LC1	06-25-91	<.01	<.01	<.10	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.5
RED	06-25-91	<.01	<.01	<.10	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.5
LW	06-26-91	<.01	<.01	<.10	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.5
CF2	06-26-91	<.01	<.01	<.10	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.5
OMD	06-26-91	<.01	<.01	<.10	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.5
OM3	06-26-91	<.01	<.01	<.10	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.5
COL4	08-15-91	<.01	<.01	<.10	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.5
COL7	08-15-91	<.01	<.01	<.10	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.5

Site code (pl. 2)	Date	Aldi-carb sulf-oxide	Aldi-carb sulfone	Carbo-furan	3-Hydroxy carbo-furan	Methio-carb	Metho-myl	1-Naph-thol	Oxya-myl	Pro-poxur	Sevin
SC	06-25-91	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
RW1A	06-25-91	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
LSW1	06-25-91	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
HW1	06-24-91	<.5	<.5	<.5	.8	<.5	<.5	<.5	<.5	<.5	<.5
PSW1	06-24-91	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
LC1	06-25-91	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
RED	06-25-91	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
LW	06-26-91	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
CF2	06-26-91	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
OMD	06-26-91	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
OM3	06-26-91	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
COL4	08-15-91	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
COL7	08-15-91	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5

Table 9. Onsite measurements of selected properties of water from selected wells and a spring in the Uncompahgre Project area and selected wells in the Grand Valley, 1991–92

[ft BMP, feet below measuring point, which is about 2 feet above land surface for most of the wells; µS/cm, microsiemens per centimeter at 25 degrees Celsius; mV, millivolt; °C, degrees Celsius, mg/L, milligrams per liter; IT, incremental titration; MP, measuring point; --, no data]

Well or spring name or number (pls. 1, 2)	Date	Time	Water level (ft BMP)	Specific conductance (µS/cm)	pH (standard units)	Oxidation/ reduction potential (mV)	Water temperature (°C)	Oxygen, dissolved (mg/L)	Alkalinity, dissolved, IT (mg/L as $CaCO_3$)	Geologic unit
UNCOMPAHGRE PROJECT AREA (pl. 1)										
B254334	06-19-91	1000	13.82	7,940	6.9	500	12.5	0.2	325	Mancos Shale residuum
	03-04-92	1300	16.78	4,040	6.9	390	11.5	.1	330	
Combs	05-10-91	1330	-15.00 (ft above MP)	1,090	7.4	--	11.5	.5	455	Dakota Sandstone
H361144	05-21-91	1030	4.40	4,010	6.9	--	8.0	.4	435	Alluvium overlying
	03-05-92	1100	4.26	4,450	6.8	460	5.5	.0	395	Mancos Shale
Holden	07-09-91	1100	13.99	1,120	7.2	450	14.0	9.6	260	Terrace deposits
	03-03-92	1200	20.00	1,300	7.2	270	11.0	6.8	270	
	03-23-92	1430	--	1,345	7.2	320	11.1	6.9	--	
Kramer	07-02-91	0930	-1.00	3,830	7.1	20	16.0	1.7	2,300	Dakota Sandstone
P023211	05-09-91	1230	5.0	3,800	7.0	--	10.0	.3	370	Alluvium overlying
	03-05-92	1400	6.90	3,770	6.8	190	7.5	.0	405	Mancos Shale
Scheetz	07-02-91	1000	13.72	1,190	6.9	480	10.5	7.7	225	Terrace deposits
	03-03-92	0930	22.90	1,310	7.1	320	11.0	7.3	280	
	03-23-92	1200	22.80	1,320	7.1	250	11.0	5.9	--	
Schmalz	07-02-91	1200	23.40	1,310	7.0	440	14.5	7.4	225	Terrace deposits
	03-04-92	0930	36.92	1,310	7.1	290	9.0	8.1	270	
	03-23-92	1300	37.10	1,400	7.1	340	13.0	7.1	--	
SL1	09-11-91	0900	-1.18	5,170	7.0	360	11.0	.5	314	Mancos Shale residuum
	12-05-91	1200	.15	5,340	7.0	460	11.5	.3	285	
	01-10-92	1330	1.15	5,220	6.8	470	11.0	.3	310	
	03-02-92	1100	1.91	5,290	7.0	440	8.5	.3	300	

Table 9. Onsite measurements of selected properties of water from selected wells and a spring in the Uncompahgre Project area and selected wells in the Grand Valley, 1991–92 --Continued

Well or spring name or number (pls. 1, 2)	Date	Time	Water level (ft BMP)	Specific conductance (µS/cm)	pH (standard units)	Oxidation/ reduction potential (mV)	Water temperature (°C)	Oxygen, dissolved (mg/L)	Alkalinity, dissolved, IT (mg/L as $CaCO_3$)	Geologic unit
					UNCOMPAHGRE PROJECT AREA (pl. 1)–Continued					
	03-23-92	1600	4.31	5,420	7.0	420	8.2	.1	--	
	04-20-92	1030	4.85	5,690	7.0	430	8.5	.0	270	
	05-28-92	1100	2.36	5,270	7.0	390	8.0	.4	285	
SL2	09-11-91	1100	.35	5,010	6.9	370	15.5	1.6	327	Mancos Shale residuum
	03-02-92	1300	3.10	5,040	7.0	250	5.0	.5	310	
SLSW1 (spring)	12-05-91	1500	--	7,320	7.0	300	.0	4.6	440	Alluvium overlying Mancos Shale
	03-05-92	0900	--	8,310	7.9	460	.5	9.9	385	
Webb	01-10-92	1030	20.52	2,380	6.7	470	13.0	6.2	200	Terrce deposits
	03-04-92	1100	22.74	2,640	7.0	360	12.0	4.7	245	
Woerner	05-10-91	1230	18.75	700	7.4	--	10.0	7.7	287	Terrace deposits
	03-05-92	1530	27.50	450	7.3	280	10.5	.2	175	
					GRAND VALLEY (pl. 2)					
080Q9	03-29-91	1300	14.51	3,710	7.2	--	10.5	5.7	350	Alluvium overlying
	09-94-91	1030	9.56	3,920	6.8	370	11.0	1.0	362	Mancos Shale
	02-21-92	0900	12.84	4,110	6.7	430	11.0	.2	355	
090R5	03-29-91	1350	14.30	4,150	7.1	--	11.5	1.6	300	Mancos Shale residuum
	09-04-91	1200	12.26	4,590	6.8	260	14.0	.8	352	
	02-21-92	1000	11.52	4,650	6.8	290	12.0	.9	330	
108U0	04-01-91	1000	19.89	13,900	7.8	--	13.0	1.2	1,007	Mancos Shale residuum
	10-04-91	1030	20.43	14,500	8.0	-120	13.0	.0	934	
	03-20-92	0900	19.76	14,020	7.7	150	11.5	.0	730	
125Q5	03-29-91	0930	13.42	3,450	7.1	--	10.0	6.0	355	Alluvium overlying
	09-04-91	0830	8.78	3,520	7.0	360	13.5	.7	327	Mancos Shale
	02-19-92	0900	12.16	3,650	6.6	470	12.0	1.9	340	
	03-18-92	0900	13.14	3,860	6.9	450	13.1	.9	--	
130L3	03-28-91	1100	11.15	6,480	6.8	--	13.0	2.3	770	Mancos Shale residuum

Table 9. Onsite measurements of selected properties of water from selected wells and a spring in the Uncompahgre Project area and selected wells in the Grand Valley, 1991–92 --Continued

Well or spring name or number (pls. 1, 2)	Date	Time	Water level (ft BMP)	Specific conductance (µS/cm)	pH (standard units)	Oxidation/ reduction potential (mV)	Water temperature (°C)	Oxygen, dissolved (mg/L)	Alkalinity, dissolved, IT (mg/L as $CaCO_3$)	Geologic unit
GRAND VALLEY (pl. 2)–Continued										
	09-03-91	1030	8.56	5,990	7.0	340	11.5	.8	595	
	02-19-92	1200	9.25	6,140	6.6	310	11.0	.8	570	
143N0	03-28-91	1330	6.01	3,780	7.3	--	8.0	7.3	285	Alluvium overlying
	09-03-91	1400	4.70	4,210	6.8	380	13.0	1.5	325	Mancos Shale
	02-18-92	1400	6.42	4,400	6.6	470	8.0	1.5	305	
208K0	04-02-91	1000	12.72	5,190	6.7	--	10.5	2.5	430	Alluvium/cobble aquifer
	09-09-91	1245	5.08	4,370	7.0	410	13.0	.9	463	
	02-21-92	1300	10.48	4,820	6.7	390	10.5	.2	490	
	03-20-92	1300	11.66	5,720	6.7	350	10.2	.2	--	
300D6	04-01-91	1430	13.90	5,960	7.2	--	14.5	3.2	440	Alluvium/cobble aquifer
	03-10-92	0900	18.60	6,250	7.0	450	13.0	.7	420	
Morrison	05-08-91	0900	--	3,120	7.5	--	12.5	1.4	450	Morrison Formation
RWG1	08-28-91	0900	9.00	11,900	7.1	430	11.5	0.6	450	Alluvium overlying
	12-10-91	0900	7.21	13,300	7.1	460	12.0	.0	525	Mancos Shale
	01-13-92	1230	7.44	13,300	7.1	430	12.0	.0	520	
	02-20-92	1100	7.15	14,400	7.1	450	11.0	.0	475	
	02-20-92	1300	7.15	14,400	7.1	450	11.0	.0	475	
	03-19-92	0900	9.30	14,900	7.1	470	11.0	.0	435	
	04-17-92	0900	9.07	14,700	7.1	420	10.5	.0	435	
	05-29-92	1000	8.81	15,000	7.2	240	10.0	.2	470	
RWG2	08-28-91	1030	11.70	6,020	7.0	410	12.0	.6	400	Alluvium overlying
	02-20-92	0900	10.30	5,990	6.8	410	11.0	.1	350	Mancos Shale
	03-18-92	1030	12.16	6,020	7.0	460	11.0	.1	--	
RWG3	08-28-91	1230	7.72	4,220	6.8	400	13.0	1.8	306	Alluvium overlying
	02-18-92	1130	6.97	4,410	6.7	460	11.5	.1	300	Mancos Shale
Wingate	04-02-91	0830	-150	560	8.0	--	19.0	1.4	225	Wingate Sandstone

Table 10. Concentrations of major dissolved constituents, nitrogen species, and dissolved organic carbon in water from selected wells and a spring in the Uncompahgre Project area and selected wells in the Grand Valley, 1991-92

[mg/L, milligrams per liter; IT, incremental titration; ROE, residue on evaporation at 180 degrees Celsius; <, less than ; --, no data]

Well or spring name or number (pls. 1, 2)	Date	Time	Calcium, dissolved (mg/L as Ca)	Magnesium, dissolved (mg/L as Mg)	Sodium, dissolved (mg/L as Na)	Potassium, dissolved (mg/L as K)	Bicarbonate, dissolved, iT (mg/L as HCO_3)	Sulfate, dissolved (mg/L as SO_4)
			UNCOMPAHGRE PROJECT AREA (pl. 1)					
B254335	06-19-91	1000	500	170	440	14	430	2,400
	03-04-92	1300	520	180	340	9.0	403	2,400
Combs	05-10-91	1330	15	6.3	230	9.1	555	86
H361144	05-21-91	1030	450	230	340	6.8	550	2,400
	03-05-92	1100	510	270	410	5.5	482	2,600
Holden	07-09-91	1100	160	39	62	2.5	317	420
	03-03-92	1200	170	43	67	2.1	329	440
	03-23-92	1430	--	--	--	--	--	--
Kramer	07-03-91	0930	24	9.8	1,100	19	2,810	60
	07-03-91	1100	23	918	1,100	19	2,810	71
P023211	05-09-91	1230	480	220	260	12	460	2,100
	03-05-92	1400	510	220	290	12	494	2,300
Scheetz	07-02-91	1000	170	43	63	2.1	275	480
	03-03-92	0930	170	44	63	2.2	342	420
	03-23-92	1200	--	--	--	--	--	--
Schmalz	07-02-91	1200	180	39	64	1.3	275	460
	03-04-92	0930	610	37	68	1.6	329	410
	03-23-92	1300	--	--	--	--	--	--
SL1	09-11-91	0900	390	250	750	14	380	3,400
	12-05-91	1200	410	230	760	20	348	3,300
	01-10-92	1330	440	230	770	15	350	2,900
	03-02-92	1100	430	240	700	15	366	3,300
	03-23-92	1600	--	--	--	--	--	--
	04-20-92	1030	390	220	800	14	329	3,800
	05-28-92	1100	420	230	600	14	348	2,900
SL2	09-11-91	1100	410	250	650	17	400	3,400
	03-02-92	1300	440	230	600	2.6	378	3,000
SLSW1	12-05-91	1500	450	250	1,300	13	547	4,400
	03-05-92	0900	340	280	1,600	21	470	4,700
Webb	01-10-92	1030	530	73	82	1.9	244	1,600
	03-04-92	1100	540	73	78	1.7	299	1,400
Woerner	05-10-91	1230	100	22	22	1.1	290	160
	03-05-92	1530	56	16	19	2.0	214	100

Table 10. Concentrations of major dissolved constituents, nitrogen species, and dissolved organic carbon in water from selected wells and a spring in the Uncompahgre Project area and selected wells in the Grand Valley, 1991-92--Continued

Well or spring name or number (pls. 1, 2)	Date	Chloride, dissolved (mg/L as Cl)	Fluoride, dissolved (mg/L as F)	Silica, dissolved (mg/L as SiO_2)	Dissolved solids, ROE (mg/L)	Nitrite, dissolved (mg/L as N)	NO_2+NO_3, dissolved (mg/L as N)	Ammonia, dissolved (mg/L as N)	Carbon, organic, dissolved (mg/L as C)
UNCOMPAHGRE PROJECT AREA (pl. 1)--Continued									
B254334	06-19-91	18	0.40	11	3,920	0.18	10	0.09	--
	03-04-92	19	.40	12	3,850	.15	3.4	<.01	--
Combs	05-10-91	13	3.0	7.8	636	<.01	<.05	.61	--
H361144	05-21-91	15	.60	11	4,090	.06	1.1	.05	--
	03-05-92	22	.40	12	4,660	.09	1.9	<.01	--
Holden	07-09-91	9.7	1.3	23	946	<.01	4.2	<.01	--
	03-03-92	19	1.3	24	948	<.01	7.4	<.01	--
	03-23-92	--	--	--	--	--	--	--	2.0
Kramer	07-03-91	82	2.9	4	2,670	<.01	<.05	1.5	--
	07-03-91	80	2.9	6.7	2,700	<.01	<.05	1.4	--
P023211	05-09-91	17	.50	7.8	3,740	<.01	.18	.09	--
	03-05-92	35	.40	8.9	3,980	<.01	<.08	>11	
Scheetz	07-02-91	12	.90	--	946	<.01	8.9	.02	--
	03-03-92	10	.90	25	934	<.01	7.8	<.01	--
	03-23-92	--	--	--	--	--	--	--	2.0
Schmalz	07-02-91	12	1.1	--	918	<.01	5.4	<.01	--
	03-04-92	11	1.1	26	972	<.01	6.2	<.01	--
	03-23-92	--	--	--	--	--	--	--	2.3
SL1	09-11-91	14	.30	9.8	5,190	--	3.1	.06	--
	12-05-91	17	.90	9.7	6,610	--	--	--	--
	01-10-92	30	1.0	10	5,480	--	3.7	.02	--
	03-02-92	26	.80	9.9	5,260	.51	3.2	.04	--
	03-23-92	--	--	--	--	--	--	--	6.3
	04-20-92	33	.60	9.8	5,440	.70	6.8	.03	6.4
	05-28-92	26	<.10	10	5,280	.45	2.5	.06	--
SL2	09-11-91	16	.40	13	5,060	--	1.8	.07	--
	03-02-92	24	.30	9.9	4,850	.34	1.3	.04	--
SLSW1 (spring)	12-05-91	69	3.6	14	7,500	--	.06	.05	--
	03-05-92	96	1.0	15	7,660	.01	.19	.19	--
Webb	01-10-92	18	1.9	37	2,480	--	6.7	.03	--
	03-04-92	14	1.5	37	2,450	<.01	6.8	.02	--
Woerner	05-10-91	6.3	.50	17	486	<.01	2.2	<.01	--
	03-05-92	6.8	.30	8.8	322	<.01	1.3	.07	--

Table 10. Concentrations of major dissolved constituents, nitrogen species, and dissolved organic carbon in water from selected wells and a spring in the Uncompahgre Project area and selected wells in the Grand Valley, 1991–92--Continued

Well or spring name or number (pls. 1, 2)	Date	Time	Calcium, dissolved (mg/L as Ca)	Magnesium, dissolved (mg/L as Mg)	Sodium, dissolved (mg/L as Na)	Potassium, dissolved (mg/L as K)	Bicarbonate, dissolved, IT (mg/L as HCO_3)	Sulfate, dissolved (mg/L as SO_4)
				GRAND VALLEY (pl. 2)				
080Q9	03-29-91	1300	410	220	280	8.5	430	2,500
	09-04-91	1030	550	220	260	8.2	440	2,500
	02-21-92	0900	540	200	270	7.0	433	2,100
090R5	03-29-91	1350	340	210	500	8.8	369	3,400
	09-04-91	1200	500	200	570	9.5	430	2,900
	02-21-92	1000	500	190	500	8.0	403	2,500
108U0	04-01-91	1000	98	360	3,200	9.0	1,228	4,600
	10-04-91	1030	240	540	3,200	8.9	1,140	5,700
	03-20-92	0900	310	520	2,600	8.8	891	7,300
125Q5	03-29-91	0930	490	110	220	5.2	439	2,400
	09-04-91	0830	580	120	240	7.8	400	2,000
	09-04-91	0930	610	120	250	5.0	368	2,100
	02-19-92	0900	600	120	250	5.6	415	1,800
	03-18-92	0900	--	--	--	--	--	--
130L3	03-28-91	1100	430	250	1,200	15	958	4,100
	09-03-91	1030	430	250	1,100	15	720	3,800
	02-19-92	1200	470	250	830	12	696	3,100
143N0	03-28-91	1330	370	270	260	12	347	2,800
	09-03-91	1400	530	280	250	14	400	2,600
	02-18-92	1400	540	270	250	2.1	372	2,000
208K0	04-02-91	1000	480	310	590	14	531	3,400
	09-09-91	1245	520	240	410	4.6	565	2,500
	02-21-92	1300	540	280	650	9.5	598	2,700
	03-20-92	1300	--	--	--	--	--	--
300D6	04-01-91	1430	560	390	630	7.0	536	3,700
	09-11-91	1430	450	500	740	11	500	3,800
	03-10-92	0900	480	430	660	12	513	3,500
Morrison	05-08-91	0900	37	56	600	11	555	1,100
RWG1	08-28-91	0900	400	890	2,800	20	550	9,700
	12-10-91	0900	370	810	2,600	17	641	8,200
	01-13-92	1230	390	830	2,700	18	635	8,500
	02-20-92	1100	410	810	2,300	15	580	8,100
	02-20-92	1300	410	840	2,300	15	580	8,200
	03-19-92	0900	420	910	2,600	19	530	8,200
	04-17-92	0900	360	860	2,600	17	531	8,000
	05-29-92	1000	410	830	2,600	16	574	7,700
RWG2	08-28-91	1030	430	430	870	11	490	4,200
	02-20-92	0900	440	380	630	10	427	3,500
	03-18-92	1030	--	--	--	--	--	--
RWG3	08-28-91	1230	480	300	330	16	375	2,700
	02-18-92	1130	510	300	310	2.9	366	2,500
Wingate	04-02-91	0830	16	8.1	98	2.4	281	53

Table 10. Concentrations of major dissolved constituents, nitrogen species, and dissolved organic carbon in water from selected wells and a springin the Uncompahgre Project area and selected wells in the Grand Valley, 1991-92--Continued

Well or spring name or number (pls. 1, 2)	Date	Chloride, dissolved (mg/L as Cl)	Fluoride, dissolved (mg/L) as F)	Silica, dissolved (mg/L as SiO_2)	Dissolved solids, ROE (mg/L)	Nitrite, dissolved (mg/L as N)	NO_2+NO_3, dissolved (mg/L as N)	Ammonia, dissolved (mg/L as N)	Carbon, organic, dissolved (mg/L as C)
				GRAND VALLEY (pl. 2)—Continued					
080Q9	03-29-91	190	0.50	9.9	3,990	0.24	3.0	0.02	--
	09-04-91	230	.50	10	3,800	--	2.1	.10	--
	02-21-92	250	.40	9.9	3,820	.15	3.4	.04	--
090R5	03-29-91	140	.50	8.4	4,570	.07	.19	.17	--
	09-04-91	180	.70	9.4	4,530	--	2.2	.22	--
	02-21-92	170	.60	8.8	4,430	.06	2.7	.17	--
108U0	04-01-91	2500	3.0	9.9	12,000	<.01	<.05	1.6	
	10-04-91	1900	1.7	11	13,500	--	<.01	2.8	--
	03-20-92	690	.60	7.9	13,400	<.01	<.05	2.5	10
125Q5	03-29-91	170	.50	13	3,340	.06	3.8	.04	--
	09-04-91	200	.40	13	3,300	--	3.1	.12	--
	09-04-91	200	.50	13	3,420	--	3.2	.12	--
	02-19-92	230	.80	12	3,400	.10	3.1	.08	--
	03-18-92	--	--	--	--	--	--	--	5.1
130L3	03-28-91	210	.80	9.8	6,560	.06	1.4	1.4	--
	09-03-91	230	.90	9.5	6,300	--	4.1	1.4	--
	02-19-92	240	1.5	10	5,910	.19	4.0	1.1	--
143N0	03-28-91	230	.30	9.3	4,110	.05	2.3	.04	--
	09-03-91	250	.20	11	4,120	--	6.6	.10	--
	02-18-92	270	.30	.10	4,030	.12	7.7	.02	--
208K0	04-02-91	280	.50	9.5	5,260	.19	4.1	.03	--
	09-09-91	240	.60	12	4,470	--	3.7	.08	--
	02-21-92	270	1.0	11	--	.19	8.6	.02	--
	03-20-91	--	--	--	--	--	--	--	8.6
300D6	04-01-91	250	.80	13	6,140	.17	2.9	.04	--
	09-11-91	320	1.1	18	6,780	--	6.9	.08	--
	03-19-92	300	1.1	15	6,460	.12	5.9	.03	--
Morrison	05-08-91	100	1.1	24	2,220	<.01	1.5	.07	--
RWG1	08-28-91	630	1.7	10	15,600	--	210	.07	--
	12-10-91	540	2.0	11	13,800	--	190	.04	--
	01-13-92	570	3.1	11	13,400	.89	180	.02	--
	02-20-92	620	1.2	11	15,000	.68	190	.03	--
	02-29-92	630	1.2	9.9	15,400	.90	190	.04	--
	03-19-92	560	.40	8.7	15,200	.04	190	<.01	17
	04-17-92	550	.90	11	15,100	.82	180	.06	18
	05-29-92	500	.80	9.6	16,100	1.0	180	.04	--
RWG2	08-28-91	190	.60	12	6,730	--	1.2	.09	--
	02-20-92	190	1.0	12	6,030	.16	1.0	.01	--
	03-18-92	--	--	--	--	--	--	--	4.2
RWG3	08-28-91	210	.40	9.9	4,500	--	4.1	.09	--
	02-18-92	190	.30	11	4,490	.25	2.4	.03	--
Wingate	04-02-91	9.6	.40	15	316	<.01	<.05	.12	--

Table 11. Concentrations of dissolved trace elements in water from selected wells and a spring in the Uncompahgre Project area and selected wells in the Grand Valley, 1991–92

[µg/L, micrograms per liter; <, less than; --, no data]

Well or spring name or number (pls. 1, 2)	Date	Time	Arsenic, dissolved (µg/L as As)	Boron, dissolved (µg/L as B)	Cadmium, dissolved (µg/L as Cd)	Chromium, dissolved (µg/L as Cr)	Copper, dissolved (µg/L as Cu)
			UNCOMPAHGRE PROJECT AREA (pl. 1)				
B254334	06-19-91	1000	<1	510	<1	<1	10
	03-04-92	1300	--	20	--	--	--
Combs	05-10-91	1330	8	400	<1	<1	<1
H361144	05-21-91	1030	<1	590	<1	1	4
	03-05-92	1100	--	610	--	--	--
Holden	07-09-91	1100	<1	140	<1	1	7
	03-03-92	1200	--	150	--	--	--
Kramer	07-03-91	0930	<1	960	<1	<1	2
	07-03-91	1100	<1	970	<1	<1	<1
P023211	05-09-91	1230	<1	640	<1	2	3
	03-05-92	1400	--	560	--	--	--
Scheetz	07-02-91	1000	1	140	<1	<1	2
	03-03-92	0930	--	150	--	--	--
Schmalz	07-02-91	1200	<1	140	<1	<1	38
	03-04-92	0930	--	190	--	--	--
SL1	09-11-91	0900	--	860	--	--	--
	12-05-91	1200	--	960	--	--	--
	01-10-92	1330	--	940	--	--	--
	03-02-91	1100	--	960	--	--	--
	04-20-92	1030	--	900	--	--	4
	05-28-92	1100	--	880	--	--	--
SL2	09-11-91	1100	--	1,200	--	--	--
	03-02-92	1300	--	790	--	--	--
SLSW1 (spring)	12-05-91	1500	--	470	---	--	--
	03-05-92	0900	--	740	--	--	--
Webb	01-10-92	1030	--	350	--	--	--
	03-04-92	1100	--	600	--	--	--
Woerner	05-10-91	1230	1	50	<1	<1	2
	03-05-92	1530	--	30	--	--	--

Table 11. Concentrations of dissolved trace elements in water from selected wells and a spring in the Uncompahgre Project area and selected wells in the Grand Valley, 1991–92--Continued

Well or spring name or number (pls. 1, 2)	Date	Iron, dissolved (µg/L as Fe)	Lead, dissolved (µg/L as Pb)	Manganese, dissolved (µg/L as Mn)	Mercury, dissolved (µg/L as Hg)	Molybdenum, dissolved (µg/L as Mo)	Selenium, dissolved (µg/L as Se)	Uranium, natural, total (µg/L as U)	Vanadium, dissolved (µg/L as V)
UNCOMPAHGRE PROJECT AREA (pl. 1)--Continued									
B254334	06-19-91	<10	<1	70	<0.1	2	45	21	2
	03-04-92	<10	--	30	--	2	25	--	1
Combs	05-10-91	700	1	11	<.1	<1	<1	<1	<1
H361144	05-21-91	10	<1	320	<.1	2	<1	49	2
	03-05-92	<10	--	260	--	1	65	--	1
Holden	07-09-91	21	<1	3	<.1	5	5	10	2
	03-03-92	280	--	36	--	3	6	6.6	<2
Kramer	07-03-91	620	<1	80					
	07-03-91	520	<1	70	<.1	<1	<1	1.4	<4
P023211	05-09-91	20	<1	250	<.1	4	20	72	4
	03-05-92	100	--	220	--	4	1	--	4
Scheetz	07-02-91	6	<1	3	<.1	4	11	9.6	2
	03-03-92	95	--	65	--	4	7	6.7	<1
Schmalz	07-02-91	33	1	3	<.1	6	7	12	<1
	03-04-92	97	--	9	--	6	7	7.3	<1
SL1	09-11-91	<10	--	180	--	2	50	10	1
	12-05-91	<10	--	200	--	--	60	--	--
	01-10-92	<10	--	170	--	--	34	--	--
	03-02-92	<10	--	130	--	2	53	24	1
	04-20-92	<10	--	160	--	--	88	--	--
	05-28-92	20	--	160	--	--	22	--	--
SL2	09-11-91	<10	--	260	--	4	18	8.5	2
	03-02-92	1,200	--	330	--	3	4	--	<1
SLSW1 (spring)	12-05-91	280	--	240	--	--	3	--	--
	03-05-92	210	--	340	--	5	8	75	6
Webb	01-10-92	<10	--	10	--	9	17	16	<1
	03-04-92	20	--	10	--	6	22	15	<1
Woerner	05-10-91	13	<1	12	<.1	1	<1	3.2	2
	03-05-92	130	--	420	--	<1	<1	--	<1

Table 11. Concentrations of dissolved trace elements in water from selected wells and a spring in the Uncompahgre Project area and selected wells iin the Grand Valley, 1991–92--Continued

Well or spring name or number (pls. 1, 2)	Date	Time	Arsenic, dissolved (µg/L as As)	Boron, dissolved (µg/L as B)	Cadmium, dissolved (µg/L as Cd)	Chromium, dissolved (µg/L as Cr)	Copper, dissolved (µg/L as Cu)
			GRAND VALLEY (pl. 2)				
080Q9	03-29-91	1300	<1	400	<1	5	5
	09-04-91	1030	--	370	--	--	--
	02-21-92	0900	--	370	--	--	--
090R5	03-29-91	1350	2	430	<1	3	1
	09-04-91	1200	--	410	--	--	--
	02-21-92	1000	--	420	--	--	--
108U0	04-01-91	1000	<1	700	<2	<2	2
	20-04-91	1030	--	690	--	--	--
	03-20-92	0900	--	640	--	--	--
125Q5	03-29-91	0930	<1	210	2	8	16
	09-04-91	0830	--	210	--	--	--
	09-04-91	0930	--	130	--	--	--
	02-19-92	0900	--	220	--	--	--
130L3	03-28-91	1100	<1	430	<1	<1	2
	09-03-91	1030	--	400	--	--	--
	02-19-92	1200	--	420	--	--	--
143N0	03-28-91	1330	<1	420	<1	2	1
	09-03-91	1400	--	530	--	--	--
	02-18-92	1400	--	450	--	--	--
208K0	04-02-91	1000	<1	450	2	2	5
	09-09-91	1245	--	430	--	--	--
	02-21-92	1300	--	420	--	--	--
300D6	04-01-91	1430	<1	850	<1	<1	4
	09-11-91	1430	--	900	--	--	--
	03-10-92	0900	--	920	--	--	--
Morrison	05-08-91	0900	4	690	1	1	5
RWG1	08-28-91	0900	--	360	--	--	--
	12-10-91	0900	--	720	--	--	--
	01-13-92	1230	--	730	--	--	--
	02-20-92	1100	--	710	--	--	--
	02-20-92	1300	--	720	--	--	--
	03-19-92	0900	--	730	--	--	--
	04-17-92	0900	--	820	--	--	4
	05-29-92	1000	--	690	--	--	--
RWG2	08-28-91	1030	--	690	--	--	--
	02-20-92	0900	--	640	--	--	--
RWG3	08-28-91	1230	--	530	--	--	--
	02-18-92	1130	--	560	--	--	--
Wingate	04-02-91	0830	<1	230	<1	<1	<1

Table 11. Concentrations of dissolved trace elements in water from selected wells and a spring in the Uncompahgre Project area and selected wells iin the Grand Valley, 1991–92--Continued

Well and spring name or number (pls. 1, 2)	Date	Iron, dissolved (µg/L as Fe)	Lead, dissolved (µg/L as Pb)	Manganese, dissolved (µg/L as Mn)	Mercury, dissolved (µg/L as Hg)	Molybdenum, dissolved (µg/L as Mo)	Selenium, dissolved (µg/L as Se)	Uranium, natural, total (µg/L as U)	Vanadium, dissolved (µg/L) as V)
				GRAND VALLEY (pl. 2)--Continued					
080Q9	03-29-91	--	<1	--	<0.1	6	71	18	5
	09-40-91	20	--	220	--	5	51	--	9
	02-21-92	<10	--	200	--	6	61	--	4
090R5	03-29-91	--	<1	--	<.1	9	3	42	4
	09-04-91	500	--	210	--	7	35	--	4
	02-21-92	440	--	190	--	9	9	--	3
108U0	04-01-91	--	<2	--	<.1	<1	<1	9.4	170
	10-04-91	40	--	80	--	<1	<1	3.8	44
	03-20-92	320	--	40	--	1	<1	450	32
125Q5	03-29-91	--	<1	--	<.1	4	140	23	7
	09-04-91	<10	--	30	--	6	86	41	4
	09-04-91	<10	--	30	--	6	130	--	4
	02-19-92	<10	--	30	--	6	68	17	6
130L3	03-28-91	--	<1	--	<.1	2	5	40	6
	09-03-91	80	--	550	--	2	5	30	6
	02-19-92	260	--	540	--	2	3	17	8
143N0	03-28-91	--	<1	--	<.1	<1	49	22	5
	09-03-91	<10	--	460	--	<1	35	55	5
	02-18-92	<10	--	450	--	<1	35	2.3	5
208K0	04-02-91	--	<1	--	<.1	1	170	54	6
	09-09-91	20	--	240	--	2	86	--	6
	02-21-92	<10	--	280	--	1	160	--	--
300D6	04-01-91	--	<1	--	<.1	22	25	6.4	10
	09-11-91	<10	--	920	--	38	38	--	10
	03-10-92	10	--	350	--	36	32	--	6
Morrison	05-08-91	760	1	40	<.1	6	11	27	11
RWG1	08-28-91	<10	--	140	--	10	1,100	74	24
	12-10-91	20	--	120	--	--	1,300	--	--
	01-13-92	10	--	100	--	--	1,100	--	--
	02-20-92	<10	--	130	--	15	990	27	22
	02-20-92	<10	--	130	--	13	1,000	23	23
	03-19-92	50	--	100	--	--	1,100	--	--
	04-17-92	<10	--	<10	--	--	1,100	--	--
	05-29-92	<10	--	110	--	--	1,000	--	--
RWG2	08-28-91	<10	--	190	--	7	43	33	4
	02-20-92	<10	--	<130	--	7	1	17	5
RWG3	08-28-91	30	--	930	--	<1	<1	8.5	3
	02-18-92	<10	--	860	--	<1	2	6.6	3
Wingate	04-02-91	--	<1	--	<.1	2	<1	<1.0	<1

Table 12. Stable-isotope ratios of oxygen, hydrogen, sulfate sulfur, and nitrate nitrogen in water from selected wells and a spring in the Uncompahgre Project area and selected wells in the Grand Valley, 1991–92

[Oxygen- and hydrogen-isotope values are in permil relative to Vienna Standard Mean Ocean Water (VSMOW) and normalized on scales such that the oxygen- and hydrogen-isotope values of Standard Light Antarctic Precipitation (SLAP) are -55.5 and -428 permil; sulfur-isotope values are in permil relative to the Canyon Diablo troilite (CDT); nitrogen-isotope values are in permil; --, no data]

Well or spring name or number (pls. 1, 2)	Date	Time	Stable-isotope ratio			
			0-18/0-16	H-2/H-1	S-34/S-32	N-15/N-14
		UNCOMPAHGRE PROJECT AREA (pl. 1)				
B254334	06-19-91	1000	-15.30	-117.0	-26.40	--
Combs	05-10-91	1330	-15.75	-117.0	--	--
Holden	07-09-91	1100	-15.50	-115.0	-15.60	--
	03-03-92	1200	-15.50	-116.0	-17.90	--
Kramer	07-03-91	0930	-16.05	-119.0	--	--
Scheetz	07-02-91	1000	-15.45	-115.0	--	--
	03-03-92	0930	-15.50	-116.0	-17.40	--
Schmalz	07-02-91	1200	-15.45	-116.0	--	--
	03-04-92	0930	-15.50	-116.0	-18.40	--
SL1	09-11-91	0900	-15.55	-115.0	-20.90	--
	12-05-91	1200	-15.45	-117.0	--	--
	01-10-92	1330	-15.40	-118.0	--	--
	03-02-92	1100	-15.55	-116.0	-22.00	--
	04-20-92	1030	-15.45	-117.0	--	--
	05-28-92	1100	-15.50	-116.0	--	--
SL2	09-11-91	1100	-15.70	-118.0	-20.20	--
	03-02-92	1300	-15.75	-117.0	--	--
SLSW1 (spring)	12-05-91	1500	-14.95	-112.0	--	--
	03-05-92	0900	-15.25	-115.0	-19.90	--
Webb	01-10-92	1030	-15.50	-117.0	-17.60	--
	03-04-92	1100	-15.65	-117.0	-17.80	--
Woerner	05-10-91	1230	-15.90	-118.0	--	--

Table 12. Stable-isotope ratios of oxygen, hydrogen, sulfate sulfur, and nitrate nitrogen in water from selected wells and a spring in the Uncompahgre Project area and selected wells in the Grand Valley, 1991–92 --Continued

Well or spring name or number (pls. 1, 2)	Date	Time	Stable-isotope ratio			
			0-18/0-16	H-2/H-1	S-34/S-32	N-15/N-14
			GRAND VALLEY (pl. 2)			
108U0	10-04-91	1030	-13.65	-103.0	6.40	--
	03-20-92	0900	-14.20	-108.0	3.60	--
125Q5	09-04-91	0830	-16.50	-121.0	-8.90	--
	02-19-92	0900	-16.45	-123.0	-19.70	--
130L3	09-03-91	1030	-16.45	-124.0	-14.80	--
	02-19-92	1200	-16.35	-123.0	-16.00	--
143N0	09-03-91	1400	-16.30	-122.0	--	--
	02-18-92	1400	-16.25	-121.0	-17.00	--
RWG1	08-28-91	0900	-15.45	-119.0	-21.00	--
	12-10-91	0900	-15.40	-120.0	--	--
	01-13-92	1230	-15.45	-118.0	--	13.40
	02-20-92	1100	-15.45	-118.0	-21.10	--
	02-20-92	1300	15.45	-118.0	-20.80	--
	03-19-92	0900	-15.40	-118.0	--	--
	04-17-92	0900	-15.45	-119.0	--	--
	05-29-92	1000	-15.55	-119.0	--	--
RWG2	08-28-91	1030	-16.45	-124.0	-20.30	--
	02-20-92	0900	-16.45	-123.0	-20.60	--
RWG3	08-28-91	1230	-16.45	123.0	-19.60	--
	02-18-92	1130	-16.40	-124.0	-18.50	--

Table 13. Trace-element concentrations in bottom-sediment samples, in a salt-crust sample, and in a soil sample

[Concentrations in micrograms per gram; analyses are for the less than 0.0625-millimeter size fraction, except for the salt-crust and soil samples, which are for the less than 2-millimeter size fraction; <, less than; --, no data; all samples are bottom-sediment samples unless otherwise noted]

Site code (pls. 1, 2)	Site name	Date	Arsenic	Barium	Beryllium	Bismuth	Cadmium	Cerium	Chromium
	UNCOMPAHGRE PROJECT AREA (pl. 1)								
DRY1	Dry Creek at D10 Road, near mouth	03-27-92	<10	640	1	<10	<2	65	39
CD1	Cedar Creek at Highway 50, near mouth	03-27-92	10	410	1	<10	<2	63	62
LZA1	Loutsenhizer Arroyo at North River Road, near mouth	03-27-92	<10	530	1	<10	<2	49	58
MKP	Markley Pond on East Mesa, southeast of Olathe	06-23-92	<10	480	2	<10	<2	61	58
BZP	Brozina Pond near F and 2100 Roads, east of Delta	06-23-92	<10	280	<1	<10	<2	22	35
BZP	Salt crust at Brozina Pond	06-23-92	<10	23	<1	<10	<2	18	19
	GRAND VALLEY (pl. 2)								
SC	Salt Creek at I-70	03-24-92	<10	570	1	<10	<2	62	45
MWP	Wetland in Mack Wash, at Q Road	06-19-92	<10	470	2	<10	<2	44	66
RDP	Reids Pond near 12 and O Roads, near Mack	06-19-92	<10	480	2	<10	<2	61	58
RDP	Soil sample near Reids Pond	06-19-92	10	580	1	<10	2	50	59
RW1	Reed Wash at Highway 50	03-24-92	<10	560	1	<10	2	56	56
AC1	Adobe Creek at River Road	03-24-92	<10	580	1	<10	<2	75	52
LC1	Leach Creek at Highway 50	03-24-92	<10	570	1	<10	<2	61	48
IW	Indian Wash at C 1/2 Road	03-24-92	<10	500	1	<10	<2	66	55

Site code (pls. 1,2)	Date	Cobalt	Copper	Europium	Gallium	Gold	Holmium	Lanthanum	Lead	Lithium	Manganese	Molybdenum	Neodymium	Nickel
	UNCOMPAHGRE PROJECT AREA (pl. 1)--Continued													
DRY1	03-27-92	8	20	<2	12	<8	<4	36	24	39	480	<2	32	17
CD1	03-27-92	10	32	<2	12	<8	<4	35	20	39	320	4	32	27
LZA1	03-27-92	9	26	<2	12	<8	<4	29	22	37	290	4	27	29
MKP	06-23-92	10	24	<2	15	<8	<4	34	21	46	440	5	28	26
BZP	06-23-92	7	18	<2	8	<8	<4	15	13	30	370	6	10	34
BZP-crust	06-23-92	4	8	<2	4	<8	<4	10	7	21	140	2	9	40

Table 13. Trace-element concentrations in bottom-sediment samples, in a salt-crust sample, and in a soil sample--Continued

Site code (pls. 1,2)	Date	Cobalt	Copper	Euro-pium	Gal-lium	Gold	Hol-mium	Lantha-num	Lead	Lith-ium	Manga-nese	Molyb-denum	Neo-dym-ium	Nic-kel
GRAND VALLEY (pl. 2)–Continued														
SC	03-24-92	8	20	<2	10	<8	<4	34	18	29	430	<2	32	23
MWP	06-19-92	8	24	<2	16	<8	<4	28	17	47	250	3	20	29
RDP	06-19-92	10	24	<2	15	<8	<4	34	21	46	440	5	28	26
RDP-soil	06-19-92	7	24	<2	13	<8	<4	29	19	33	320	4	25	28
RW1	03-24-92	10	20	<2	11	<8	<4	32	19	32	430	4	30	25
AC1	03-24-92	9	22	<2	12	<8	<4	44	24	31	840	<2	40	18
LC1	03-24-92	8	21	<2	11	<8	<4	36	27	28	530	<2	32	20
IW	03-24-92	10	20	<2	13	<8	<4	37	39	35	540	4	33	23

Site code (pls. 1, 2)	Date	Nio-bium	Scan-dium	Sele-nium	Silver	Stron-tium	Tanta-lum	Thorium	Tin	Ura-nium	Vana-dium	Ytter-bium	Yttriu m	Zinc
UNCOMPAHGRE PROJECT AREA (pl. 1)–Continued														
DRY1	03-27-92	4	7	2.0	<2	370	<40	10.6	<5	4.46	67	2	20	83
CD1	03-27-92	8	8	3.5	<2	230	<40	11.0	<5	5.18	110	2	20	110
LZA1	03-27-92	6	8	6.9	<2	290	<40	6.95	<5	5.09	120	2	18	110
MKP	06-23-92	8	9	16	<2	320	<40	<4.8	<5	12.5	130	2	13	100
BZP	06-23-92	4	5	47	<2	1,400	<40	<5.3	<5	12.1	82	<1	7	65
BZP-crust	06-23-92	<4	3	3.4	<2	240	<40	<3.4	<5	5.62	43	<1	7	35
GRAND VALLEY (pl. 2)–Continued														
SC	03-24-92	4	6	1.9	<2	240	<40	7.77	<5	4.55	75	2	18	79
MWP	06-19-92	7	9	21	<2	740	<40	10.6	<5	6.28	150	1	15	110
RDP	06-19-92	8	9	15	<2	320	<40	9.08	<5	7.39	130	2	18	100
RDP-soil	06-19-92	6	7	4.1	<2	310	<40	11.4	<5	4.90	180	2	17	100
RW1	03-24-92	6	7	6.3	<2	470	<40	10.2	<5	5.62	120	2	17	100
AC1	03-24-92	5	7	3.9	<2	460	<40	13.9	<5	6.45	85	2	19	92
LC1	03-24-92	<4	7	5.6	<2	430	<40	11.6	<5	5.45	78	2	18	120
IW	03-24-92	7	8	16	<2	320	<40	12.1	<5	6.69	99	2	19	170

Table 14. Major-constituent, total-carbon, and organic-carbon concentrations in bottom-sediment samples, in a salt-crust sample, and in a soil sample

[Concentrations in percent; --, no data; all samples are bottom-sediment samples unless otherwise noted]

Site code (pls. 1, 2)	Site name	Date	Calcium	Magnesium	Sodium
	UNCOMPAHGRE PROJECT AREA (pl. 1)				
DRY1	Dry Creek at D10 Road, near mouth	03-27-92	6.0	1.0	0.65
CD1	Cedar Creek at Highway 50, near mouth	03-27-92	5.5	2.0	.63
LZA1	Loutsenhizer Arroyo at North River Road, near mouth	03-27-92	7.7	2.2	.58
MKP	Markley Pond on East Mesa, southeast of Olathe	06-23-92	13	1.2	.66
BZP	Brozina Pond near F and 2100 Roads, east of Delta	06-23-92	23	1.3	.51
BZP	Salt crust at Brozina Pond	06-23-92	4.1	.84	14
	GRAND VALLEY (pl. 2)				
SC	Salt Creek at I-70	03-24-92	5.3	1.6	.72
MWP	Wetland in Mack Wash, at Q Road	06-19-92	12	1.6	.37
RDP	Reids Pond near 12 and O Roads, near Mack	06-19-92	6.2	1.6	.65
RDP	Soil sample near Reids Pond	06-19-92	8.5	1.5	.58
RW1	Reed Wash at Highway 50	03-24-92	8.8	1.7	.66
AC1	Adobe Creek at River Road	03-24-92	8.0	1.4	.69
LC1	Leach Creek at Highway 50	03-24-92	7.5	1.5	.75
IW	Indian Wash at C 1/2 Road	03-24-92	5.9	1.6	.80

Site code (pls. 1, 2)	Date	Potassium	Phos-phorus	Aluminum	Iron	Titanium	Total carbon	Organic carbon
			UNCOMPAHGRE PROJECT AREA (pl. 1)--Continued					
DRY1	03-27-92	1.8	0.08	5.2	2.1	0.26	2.32	0.67
CD1	03-27-92	1.7	.11	5.5	3.0	.25	2.96	.88
LZA1	03-27-92	1.7	.12	5.1	2.5	.21	3.34	.60
MKP	06-23-92	1.3	.10	3.7	1.8	.16	5.48	1.73
BZP	06-23-92	.96	.06	3.4	1.3	.10	9.30	2.72
BZP-crust	06-23-92	.66	.05	2.0	.88	.08	1.56	.56
			GRAND VALLEY (pl. 2)--Continued					
SC	03-24-92	1.6	.09	4.6	2.0	.21	2.32	.51
MWP	06-19-92	1.8	.12	6.3	2.1	.20	5.62	2.21
RDP	06-19-92	1.9	.09	6.3	2.7	.23	3.79	1.95
RDP-soil	06-19-92	1.9	.10	5.4	2.2	.19	3.48	.94
RW1	03-24-92	1.6	.11	4.8	2.1	.20	3.44	.62
AC1	03-24-92	1.6	.10	5.1	2.2	.22	3.37	.92
LC1	03-24-92	1.6	.09	4.8	2.1	.20	3.35	.93
IW	03-24-92	1.8	.10	5.5	2.4	.24	3.17	1.25

Table 15. Trace-element concentrations from whole-rock analyses of bedrock and aquifer-sediment samples

[Concentrations in micrograms per gram; ft BLS, feet below land surface; <, less than; --, no data; core samples collected from Mitchell #8-1 Federal 10S-100W-8-CSWNE, Core #A-261, U.S. Geological Survey Core Research Center, Denver, Colorado]

Site name or number (pls. 1, 2)	Geologic description and location	Arsenic	Barium	Beryllium	Bismuth	Cadmium	Cerium	Chromium
	UNCOMPAHGRE PROJECT AREA (pl. 1)							
SL1	Mancos Shale residuum, 19 ft BLS, eastern Uncompahgre Valley	10	500	2	<10	<2	54	60
SL2	Mancos Shale residuum, 2 ft BLS, eastern Uncompahgre Valley	<10	180	1	<10	<2	49	69
SL2	Mancos Shale residuum, 7 ft BLS, eastern Uncompahgre Valley	10	420	1	<10	<2	55	76
SL2	Mancos Shale residuum, 9 ft BLS, eastern Uncompahgre Valley	10	460	2	<10	<2	55	76
Gypsum	Bedding-plane parting from Mancos Shale residuum, site SL1	--	--	--	--	--	--	--
	GRAND VALLEY (pl. 2)							
RWG1	Alluvium, 6 ft BLS, Reed Wash basin, western Grand Valley	10	560	1	<10	2	47	44
RWG1	Alluvium, 8 ft BLS, Reed Wash basin, western Grand Valley	10	550	1	<10	3	42	36
RWG1	Alluvium, 27 ft BLS, Reed Wash basin, western Grand Valley	10	1,200	<1	<10	<2	37	39
CORE	Core of Mancos Shale bedrock, 2,317 ft BLS	10	440	2	<10	<2	50	25
CORE	Core of Mancos Shale/ash layer contact, 2,297 ft BLS	22	83	3	<10	<2	76	<1
CORE	Pyrite euhedron from ash layer/shale contact, 2,297 ft BLS	--	--	--	--	--	--	--
CORE	Core of ash layer, 2,271 ft BLS	20	320	2	<10	<2	110	<1
Ash layer	Weathered outcrop of ash layer interbedded within Mancos Shale, Prairie Canyon, western Grand Valley (location not shown on pl. 2)	25	240	<1	<10	<2	200	13

Table 15. Trace-element concentrations from whole-rock analyses of bedrock and aquifer-sediment samples--Continued

Site name or number (pls. 1, 2)	Geologic description and location	Cobalt	Copper	Europium	Gallium	Gold	Holium	Lantha-num
	UNCOMPAHGRE PROJECT AREA (pl. 1)–Continued							
SL1	Mancos Shale residuum, 19 ft BLS, eastern Uncompahgre Valley	9	19	<2	15	<8	<4	31
SL2	Mancos Shale residuum, 2 ft BLS, eastern Uncompahgre Valley	8	13	<2	13	<8	<4	30
SL2	Mancos Shale residuum, 7 ft BLS, eastern Uncompahgre Valley	9	16	<2	16	<8	<4	34
SL2	Mancos Shale residuum, 9 ft BLS, eastern Uncompahgre Valley	10	18	<2	17	<8	<4	34
Gypsum	Bedding-plane parting from Mancos Shale residuum, site SL1	--	--	--	--	--	--	--
	GRAND VALLEY (pl. 2)–Continued							
RWG1	Alluvium, 6 ft BLS, Reed Wash basin, western Grand Valley	8	24	<2	11	<8	<4	28
RWG1	Alluvium, 8 ft BLS, Reed Wash basin, western Grand Valley	9	21	<2	11	<8	<4	25
RWG1	Alluvium, 27 ft BLS, Reed Wash basin, western Grand Valley	7	15	<2	9	<8	<4	22
CORE	Core of Mancos Shale bedrock, 2,317 ft BLS	5	17	<2	17	<8	<4	30
CORE	Core of Mancos Shale/ash layer contact, 2,297 ft BLS	1	7	<2	33	<8	<4	43
CORE	Pyrite euhedron from ash layer/shale contact, 2,297 ft BLS	--	--	--	--	--	--	--
CORE	Core of ash layer, 2,271 ft BLS	1	4	<2	27	<8	<4	56
Ash layer	Weathered outcrop of ash layer interbedded within Mancos Shale, Prairie Canyon, western Grand Valley (location not shown on pl. 2)	2	10	<2	19	<8	<4	130

Table 15. *Trace-element concentrations from whole-rock analyses of bedrock and aquifer-sediment samples--Continued*

Site name or number (pls. 1, 2)	Geologic description and location	Lead	Lithium	Manganese	Molybdenum	Neodymium	Nickel	Niobium	Scandium	Selenium
				UNCOMPAHGRE PROJECT AREA (pl. 1)–Continued						
SL1	Mancos Shale residuum, 19 ft BLS, eastern Uncompahgre Valley	15	50	210	5	27	34	8	9	1.6
SL2	Mancos Shale residuum, 2 ft BLS, eastern Uncompahgre Valley	15	49	200	3	26	26	10	9	1.1
SL2	Mancos Shale residuum, 7 ft BLS, eastern Uncompahgre Valley	15	52	220	5	29	30	11	10	.8
SL2	Mancos Shale residuum, 9 ft BLS, eastern Uncompahgre Valley	15	53	220	2	30	30	10	10	.8
Gypsum	Bedding-plane parting from Mancos Shale residuum, site SL1	--	--	--	--	--	--	--	--	[1]<1.0
				GRAND VALLEY (pl. 2)–Continued						
RWG1	Alluvium, 6 ft BLS, Reed Wash basin, western Grand Valley	18	38	220	7	26	29	7	8	3.6
RWG1	Alluvium, 8 ft BLS, Reed Wash basin, western Grand Valley	16	35	220	7	27	27	6	8	2.8
RWG1	Alluvium, 27 ft BLS, Reed Wash basin, western Grand Valley	12	35	330	4	20	20	6	7	1.7
CORE	Core of Mancos Shale bedrock, 2,317 ft BLS	25	27	200	<2	18	14	17	6	.8
CORE	Core of Mancos Shale/ash layer contact, 2,297 ft BLS	58	38	270	4	30	<2	19	10	1.6
CORE	Pyrite euhedron from ash layer/shale contact, 2,297 ft BLS	--	--	--	--	--	--	--	--	[1]19
CORE	Core of ash layer, 2,271 ft BLS	56	14	180	3	51	<2	21	6	<.1
Ash layer	Weathered outcrop of ash layer interbedded within Mancos Shale, Prairie Canyon, western Grand Valley (location not shown on pl. 2)	61	54	30	16	78	5	13	10	3.9

Table 15. Trace-element concentrations from whole-rock analyses of bedrock and aquifer-sediment samples--Continued

Site name or number (pls. 1, 2)	Geologic description and location	Silver	Stron-tium	Tan-talum	Tho-rium	Tin	Ura-nium	Vana-dium	Ytter-bium	Yttrium	Zinc
					UNCOMPAHGRE PROJECT AREA (pl. 1)–Continued						
SL1	Mancos Shale residuum, 19 ft BLS, eastern Uncompahgre Valley	<2	480	<40	10	<5	5.4	180	2	19	110
SL2	Mancos Shale residuum, 2 ft BLS, eastern Uncompahgre Valley	<2	460	<40	10	<5	4.7	130	2	18	90
SL2	Mancos Shale residuum, 7 ft BLS, eastern Uncompahgre Valley	<2	310	<40	11	<5	4.6	160	2	20	100
SL2	Mancos Shale residuum, 9 ft BLS, eastern Uncompahgre Valley	<2	270	40	12	<5	4.1	160	2	19	110
Gypsum	Bedding-plane parting from Mancos Shale residuum, site SL1	--	--	--	--	--	--	--	--	--	--
					GRAND VALLEY (pl. 2)–Continued						
RWG1	Alluvium, 6 ft BLS, Reed Wash basin western Grand Valley	<2	320	<40	8	<5	4.5	150	1	17	100
RWG1	Alluvium, 8 ft BLS, Reed Wash basin, western Grand Valley	<2	410	<40	9	<5	4.5	140	2	16	97
RWG1	Alluvium, 27 ft BLS, Reed Wash basin, western Grand Valley	<2	610	<40	6	<5	3.7	100	1	16	70
CORE	Core of Mancos Shale bedrock, 2,317 ft BLS	<2	270	<40	23	<5	7.4	50	2	16	69
CORE	Core of Mancos Shale/ash layer contact, 2,297 ft BLS	<2	520	<40	50	<5	11.2	13	2	25	66
CORE	Pyrite euhedron from ash layer/ shale contact, 2,297 ft BLS	--	--	--	--	--	--	--	--	--	--
CORE	Core of ash layer, 2,271 ft BLS	<2	350	<40	54	6	13.9	4	5	46	110
Ash layer	Weathered outcrop of ash layer interbedded within Mancos Shale, Prairie Canyon, western Grand Valley (location not shown on pl. 2)	<2	400	<40	29	<5	8.4	40	3	26	44

[1]Analytical data from L.M. Fukui (Chem-Nuclear Geotech, Grand Junction, Colorado, written commun., 1992).

Table 16. Major-constituent, total-carbon, and organic-carbon concentrations from whole-rock analyses of bedrock and aquifer-sediment samples

[Concentrations in percent; ft BLS, feet below land surface; core samples collected from Mitchell #8-1 Federal 10S-100W-8-CSWNE, Core #A-261, U.S. Geological Survey Core Research Center, Denver, Colorado]

Site name or number (pls. 1, 2)	Geologic description and location	Calcium	Mag-	Sodium	Potas-sium	Phos-phorus	Alum-inum	Iron	Titanium	Total carbon	Organic carbon
					UNCOMPAHGRE PROJECT AREA (pl. 1)						
SL1	Mancos Shale residuum, 19 ft BLS, eastern Uncompahgre Valley	8.9	1.7	0.56	1.9	0.11	6.1	2.5	0.25	3.14	0.64
SL2	Mancos Shale residuum, 2 ft BLS, eastern Uncompahgre Valley	8.6	1.7	.48	1.8	.10	5.7	2.1	.24	2.29	.44
SL2	Mancos Shale residuum, 7 ft BLS, eastern Uncompahgre Valley	7.2	1.9	.42	2.0	.11	6.3	2.4	.27	2.74	.56
SL2	Mancos Shale residuum, 9 ft BLS, eastern Uncompahgre Valley	7.2	1.8	.42	2.1	.11	6.5	2.5	.27	2.54	.51
					GRAND VALLEY (pl. 2)						
RWG1	Alluvium, 6 ft BLS, ReedWash basin, western Grand Valley	8.7	1.5	.84	1.7	.09	5.1	2.2	.20	3.16	.38
RWG1	Alluvium, 8 ft BLS, Reed Wash basin, western Grand Valley	11	1.4	.65	1.5	.08	4.7	2.1	.18	3.43	.32
RWG1	Alluvium, 27 ft BLS, Reed Wash basin, western Grand Valley	14	1.5	.61	1.4	.08	4.3	2.0	.14	4.60	.32
CORE	Core of Mancos Shale bedrock, 2,317 ft BLS	.83	.92	.87	2.3	.07	7.8	1.7	.21	1.59	1.36
CORE	Core of Mancos Shale/ash layer contact, 2,297 ft BLS	1.5	.78	1.1	2.0	.01	12	2.0	.19	1.86	1.55
CORE	2,271 ft BLS	.49	1.2	1.1	3.9	.02	12	1.8	.09	.15	.12
Ash layer	Weathered outcrop of ash layer interbedded within Mancos Shale, Prairie Canyon, western Grand Valley (location not shown on pl. 2)	.74	1.4	.59	1.4	.08	12	2.3	.36	.44	.39

Table 17. Semiquantitative bulk and clay mineralogy of Mancos Shale core, shale residuum, alluvium, and ground-water filter residuum (L.M. Fukui, Chem-Nuclear Geotech, Grand Junction, Colorado, written commun., 1992)

[P, plagioclase feldspar; K, orthoclase feldspar; Ill/Smec, illite/smectite; ft BLS, feet below land surface; dom, predominant mineral in X-ray pattern; tr, <7 percent of intensity of dominant phase; sdom, 70 to 99 percent of intensity of dominant phase; min, 7 to 30 percent of intensity of dominant phase; mod, 30 to 70 percent of intensity of dominant phase; nd, not detected; core samples collected from Mitchell #8-1 Federal 10S-100W-8-CSWNE, Core #A-261, U.S. Geological Survey Core Research Center, Denver, Colorado]

Sample description and site name or number	Quartz	Feldspar		Calcite	Dolomite	Gypsum	Illite	Ill/smec	Kaolinite	Smectite	Chlorite	Pyrite
		P	K									
Mancos Shale bedrock from core, 2,317 ft BLS	dom	tr	nd	min	nd	nd	nd	tr	min	min	tr?	nd
Ash layer from core, 2,271 ft BLS	dom	nd	nd	tr?	nd	nd	nd	min	min	mod	min?	nd
Pyrite euhedron from core, 2,297 ft BLS	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	dom
Shale residuum, borehole, well SL1, 5 ft BLS	sdom	tr	tr	min	min	dom	tr	nd	nd	nd	nd	nd
Shale residuum, borehole, well SL1, 15.5 ft BLS	dom	tr	tr	min-mod	min	nd	min	tr	tr	nd	nd	nd
Shale residuum, gypsum, borehole, well SL1	min	nd	nd	min	nd	dom	nd	nd	nd	nd	nd	nd
Weathered ash layer from outcrop	mod	nd	nd	nd	tr	nd	nd	mod	dom	mod	nd	nd
Alluvium, borehole well RWG1, 1ft BLS	dom	min-tr	tr	min	min	nd	min-tr	tr	tr	nd	nd	nd
Alluvium, borehole, well RWG1, 6 ft BLS	dom	min	tr	min	min	nd	min-tr	tr	tr	nd	nd	nd
Alluvum, borehole, well RWG1, 17 ft BLS	dom	tr	tr	min-mod	min	min-mod	tr-min	tr	tr	nd	nd	nd
Alluvium, borehole, well RWG1, 24.5 ft BLS	dom	tr	nd	mod	min-mod	tr	tr	tr	tr	nd	nd	nd
Alluvium, borehole, well RWG1, 27.5 ft BLS	sdom	tr	tr	dom	min	nd	tr	nd	tr	nd	nd	tr
Ground-water filter residuum, well 125Q5	sdom	tr	nd	dom	min	tr	nd	min	min	nd	nd	nd
Ground-water filter residuum, wel 108U0	dom	min-tr	nd	min-tr	min-tr	nd	min-tr	min-tr	min	nd	nd	tr
Ground-water filter residuum, well SL1	dom	nd	nd	mod	min	min-tr	nd	nd	min	nd	nd	nd

Table 18. Concentrations of dissolved selenium species in surface-water samples from the Grand Valley, March 24, 1992

[Selenium-speciation analyses performed by A.T. Chalmers and Roger Fujii, U.S. Geological Survey; µg/L, micrograms per liter; $Se^{VI}O_4^{2-}$, selenate and $Se^{IV}O_3^{2-}$, selenite, where VI and IV are the valence states of the selenium]

Site code (pl. 2)	Hydrogeologic setting	Dissolved selenium (µg/L)	$Se^{VI}O_4^{2-}$ (µg/L)	$Se^{IV}O_3^{2-}$ (µg/L)	Percent $Se^{IV}O_3^{2-}$ in sample
SCI	Alluvium overlying Mancos Shale	72.8	71.7	1.1	1.6
RW1	Alluvium overlying Mancos Shale	126.2	126.2	.0	.0
AC1	Alluvium overlying Mancos Shale	74.8	72.5	2.3	3.1
LC1	Alluvium overlying cobble aquifer	85.6	83.4	2.2	2.5
IW	Alluvium overlying cobble aquifer	86.1	82.8	3.3	3.8

Table 19. Concentrations of dissolved selenium species in water from selected wells in the Uncompahgre Project area and in the Grand Valley, 1992

[Selenium-speciation analyses performed by A.T. Chalmers and Roger Fujii, U.S. Geological Survey; µg/L, micrograms per liter; $Se^{VI}O_4^{2-}$, selenate, and $Se^{IV}O_3^{2-}$, selenite, where VI and IV are the valence states of the selenium]

Well name or number (pls. 1, 2)	Hydrogeologic setting	Sample date	Dissolved selenium (µg/L)	$Se^{VI}O_4^{2-}$ (µg/L)	$Se^{IV}O_3^{2-}$ (µg/L)	Percent $Se^{IV}O_3^{2-}$ in sample
		UNCOMPAHGRE PROJECT AREA (pl. 1)				
Holden	Terrace deposits	03-23-92	7.0	6.8	0.2	2
Sheetz	Terrace deposits	03-23-92	9.1	8.9	.2	1.4
Schmalz	Terrace deposits	03-23-92	6.9	3.4	3.5	50.5
SL1	Mancos Shale residuum	03-23-92	50.1	49.0	1.1	2.3
		GRAND VALLEY (pl. 2)				
125Q5	Mancos Shale residuum	03-17-92	72.7	71.6	1.1	1.5
208K0	Cobble aquifer	03-20-92	175.2	173.4	1.8	1.1
RWG1	Alluvium overlying Mancos Shale	03-19-92	1,056.2	1,055.4	.8	.08
RWG2	Alluvium overlying Mancos Shale	03-19-92	1.9	1.4	.5	28.3

Table 20. Concentrations and speciation of extractable selenium in bottom-sediment samples from the Uncompahgre Project area and the Grand Valley, 1992

[Selenium-speciation and extraction analyses performed by A.T. Chalmers and Roger Fujii, U.S. Geological Survey; KCL extractable selenium is the potentially water-soluble selenium in sediment sample; K_2HPO_4 extractable selenium is an estimate of the surface-adsorbed selenium; µg/g, micrograms per gram; $Se^{IV}O_3^{2-}$, selenite, where IV is the valence state of the selenium]

Site code (pls. 1, 2)	Hydrogeologic setting	Sample date	KCL extractable selenium		K_2HPO_4 extractable selenium	
			Total selenium (µg/g)	Percent $Se^{IV}O_3^{2-}$	Total selenium (µg/g)	Percent $Se^{IV}O_3^{2-}$
		UNCOMPAHGRE PROJECT AREA (pl. 1)				
DRY1	Terrace deposits	03-27-92	0.010	0.0	0.054	25
CD1	Alluvium overlying Mancos Shale	03-27-92	.007	1.5	.181	18
LZA1	Alluvium overlying Mancos Shale	03-27-92	.038	10	.430	19
		GRAND VALLEY (pl. 2)				
SC1	Alluvium overlying Mancos Shale	03-24-92	.027	26	.128	90
RW1	Alluvium overlying Mancos Shale	03-24-92	.057	15	.156	13
AC1	Alluvium overlying Mancos Shale	03-24-92	.048	12	.291	19
LC1	Alluvium overlying cobble aquifer	03-24-92	.071	5	.944	11
IW	Alluvium overlying cobble aquifer	03-24-92	.076	14	.813	10

Table 21. Concentrations and speciation of extractable selenium in aquifer-sediment samples from the Grand Valley

[Selenium-speciation and extraction analyses performed by A.T. Chalmers and Roger Fujii, U.S. Geological Survey; KCL extractable selenium is the potentially water-soluble selenium in sediment sample; K_2HPO_4 extractable selenium is an estimate of the surface-adsorbed selenium; µg/g, micrograms per gram; $Se^{IV}O_3^{2-}$,selenite, where IV is the valence state of the selenium; ft BLS, feet below land surface;]

Well name or number (pl. 2)	Hydrogeoogic setting	KCL extractable selenium		K_2HPO_4 extractable selenium	
		Total selenium (µg/g)	Percent $Se^{IV}O_3^{2-}$	Total selenium (µg/g)	Percent $Se^{IV}O_3^{2-}$
RWG1	Alluvium overlying Mancos Shale, 13 ft BLS	0.160	1.5	0.120	96
RWG1	Allugium overlying Mancos Shale, 24 ft BLS	.020	4	.084	76

Table 22. Aquifer-test results from wells in the Mancos Shale and associated alluvium, Grand Valley (L.K. Weston, U.S. Bureau of Reclamation, written commun., 1992)

[ft, feet; ft^2/d, feet squared per day; storage coefficient is unitless; site name or number follows a U.S. Bureau of Reclamation numbering system, which refers to a grid system for the Grand Valley; --, no data]

Site name or number	Hydrogeologic setting	Well depth (ft)	Screened interval (ft)	Transmissivity (ft^2/d)	Storage coefficient	Length of test (minutes)	Type of analysis and comments
09909	Weathered or fractured Mancos Shale	37.8	8.8-28.8	3,390	0.010	260	Delayed yield from storage
065S2	do	34.5	9.0-29.5	1,120	.034	240	Delayed yield from storage
080Q9	do	30.6	10.3-30.0	3,040	.002	360	Nonsteady radial flow (Theis)
081P6	do	38.0	16.0-35.0	2,180	.030.	340	Delayed yield from storage
119M2	do	49.0	19.0-49.0	960	.003	260	Nonsteady radial flow (Theis)
128L8	do	41.5	15.5-41.5	70	.036	170	Delayed yield from storage
131M8	do	51.0	8.0-51.0	180	.004	240	Nonsteady radial flow (Theis)
169L9	do	38.0	20.0-38.0	240	.004	250	Nonsteady radial flow (Theis)
170P5	do	32.0	12.0-32.0	90	.001	240	Nonsteady radial flow (Theis)
182P6	do	30.0	10.0-30.0	1,100	.005	270	Nonsteady radial flow (Theis)
193N1	do	54.0	15.0-54.0	1,150	.004	250	Delayed yield from storage
194O4	do	26.0	5.5-25.5	740	.046	320	Delayed yield from storage
196L7	do	25.0	10.0-25.0	1,630	.005	260	Nonsteady radial flow (Theis)
204M9	do	39.9	24.9-39.9	3,230	.002	340	Nonsteady radial flow (Theis)
205K8	do	40.0	25.0-40.0	4,520	.001	180	Straight line (Jacob's approximation)
217J3	do	34.6	14.9-34.6	2,760	.005	270	Straight line (Jacob's approximation)
217L3	do	37.0	19.5-34.0	1,230	.004	300	Straight line (Jacob's approximation)
104P7	Pediment gravel overlying Mancos Shale	21.5	10.2-20.4	6,540	.018	320	Delayed yield from storage
045S2	Alluvium overlying Mancos Shale	47.5	12.0-32.0	1,550	.002	240	Nonsteady radial flow (Theis)
193K6	do	39.4	21.0-39.4	140	.013	50	Nonsteady radial flow (Theis)
203L7	do	29.5	14.8-29.5	2,060	.019	460	Delayed yield from storage

Table 23. Trace-element concentrations in aquatic-plant, aquatic-invertebrate, and fish samples collected from tributaries west of the Uncompahgre River and within the Uncompahgre Project during 1991

[Analysis by U.S. Fish and Wildlife Service; sites are listed in table 1 and locations are on plate 1; average length in millimeters; aq., aquatic; --, no data; comp., composite; concentrations in micrograms per gram dry weight; inv., invertebrates; <, less than; w.b., whole body]

Site code	Matrix	Species	Date	Average length	Number in sample	Percent moisture	Aluminum	Arsenic	Barium	Beryllium	Boron
HFC	Aq. plant	Potamogeton	07-09-91	--	Comp.	91.2	4,460	1.9	57.3	0.16	335
HFC	Aq. inv.	Invertebrates	07-09-91	--	Comp.	83.9	4,550	2.4	35.0	.16	6
HCC1	Aq. plant	Algae	07-17-91	--	Comp.	83.7	17,100	4.8	89.1	.68	68
HCC1	Aq. inv.	Crayfish	07-17-91	--	3	75.2	473	1.2	42.0	.02	<2
HCC1	Fish w.b.	Brown trout	07-17-91	410	3	74.3	27	.7	1.7	<.01	<2
HCC1	Fish w.b.	White sucker	07-17-91	388	2	74.1	280	.5	4.0	.02	<2
HCC1	Fish w.b.	Mottled sculpin	07-17-91	120	2	78.6	481	.6	4.3	<.01	2
HCC1	Fish fillet	Brown trout	07-17-91	440	1	73.4	15	.6	<50	<.01	<2
HCC1	Fish fillet	Rainbow trout	07-17-91	260	1	74.7	<3	.3	34	<.01	<2
HCC1	Fish liver	Brown trout	07-17-91	440	2	77.5	5	.6	<50	<.01	<2
SP1	Aq. plant	Algae	07-17-91	--	Comp.	81.9	8,860	4.0	121	.37	79
SP1	Fish w.b.	Brown trout	07-17-91	287	3	74.0	91	.5	1.0	<.01	<2
SP1	Fish w.b.	Bluehead sucker	07-17-91	330	3	74.9	1,650	1.2	13.5	.06	3
SP1	Fish w.b.	White sucker	07-17-91	380	3	72.4	698	.6	7.8	<.03	<2
SP1	Fish fillet	Brown trout	07-17-91	355	1	73.8	13	<.2	<50	<.01	<2
SP1	Fish fillet	Rainbow trout	07-17-91	305	1	79.6	7	.3	65	<.01	<2
SP1	Fish liver	Trout-comp.	07-17-91	330	2	77.5	67	.5	<70	<.01	<3
SP4	Aq. plant	Algae	07-31-91	--	Comp.	85.7	2,850	2.2	313	.16	49
SP4	Fish w.b.	Rainbow trout	07-31-91	222	1	74.1	36	<.4	5.2	<.01	<2
SP4	Fish w.b.	Flannelmouth sucker	07-31-91	260	3	75.2	130	.6	9.4	<.01	<2
SP4	Fish w.b.	White sucker	07-31-91	315	3	73.6	190	.5	12.0	<.01	<2
SP4	Fish w.b.	Speckled dace	07-31-91	65	15	71.6	170	<.4	12.0	.01	<2
SP4	Fish fillet	Brown trout	07-31-91	340	1	76.1	14	.5	<50	<.01	<2
SP4	Fish fillet	Rainbow trout	07-31-91	295	1	78.0	4	.3	1.1	<.01	<2
DRY1	Aq. plant	Algae	07-17-91	--	Comp.	79.8	12,000	5.0	159	.52	100
DRY1	Fish w.b.	Brown trout	07-17-91	185	2	75.3	780	.7	18.0	.04	<2
DRY1	Fish w.b.	Roundtail chub	07-17-91	365	3	75.4	48	<.2	3.7	<.01	<2
DRY1	Fish w.b.	Bluehead sucker	07-17-91	310	3	65.9	3,040	1.6	28.3	.10	3
DRY1	Fish w.b.	Flannelmouth sucker	07-17-91	480	3	72.8	200	.4	2.8	.01	<2
DRY1	Fish w.b.	White sucker	07-17-91	378	3	75.8	220	<.2	4.1	<.01	<2
DRY1	Fish w.b.	Speckled face	07-17-91	65	15	72.7	689	.5	7.6	.03	<2
DRY5	Aq. plant	Algae	07-02-91	--	Comp.	91.2	17,000	5.1	3,330	.76	14
DRY5	Fish w.b.	Brown trout	07-02-91	220	2	75.9	14	<.2	5.0	<.01	<2
DRY5	Fish w.b.	Roundtail chub	07-02-91	55	6	75.6	77	<.2	19.0	<.01	<2
DRY5	Fish w.b.	White sucker	07-02-91	290	2	77.9	250	<.2	8.4	.01	<2
DRY5	Fish w.b.	Fathead minnow	07-02-91	55	8	75.9	440	.4	37.0	.02	<3
DRY5	Fish fillet	Brown trout	07-02-91	280	1	73.8	5	1.1	1.0	<.01	<2

Table 23. Trace-element concentrations in aquatic-plant, aquatic-invertebrate, and fish samples collected from tributaries west of the Uncompahgre River and within the Uncompahgre Project during 1991--Continued

Site code	Cadmium	Chromium	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Selenium	Strontium	Vanadium	Zinc
HFC	0.94	7.9	12.0	3,390	9.0	3,610	921	0.029	2	4.8	1.5	92.5	9.8	87.2
HFC	.51	3.7	15.0	3,070	8.3	1,640	574	.074	<1	3.0	6.1	24.0	9.1	149
HCC1	.61	14.7	15.0	11,000	15	5,260	779	.030	<1	9.2	1.4	149	25	71.0
HCC1	.20	.79	113	330	<.4	1,530	73.4	.086	<1	.81	2.1	487	.9	65.9
HCC1	.05	.73	14.0	81	<.5	1,050	6.8	.290	<1	.30	4.2	49.4	<.3	113
HCC1	.12	2.2	4.9	376	<.5	1,210	17.0	.370	<1	.99	3.0	64.8	.7	48.7
HCC1	.08	3.0	5.1	307	1.0	1,360	36.4	.190	<1	1.8	5.6	104	2.2	93.0
HCC1	<.02	.46	1.4	29	<.4	977	.8	.370	<1	.45	2.8	6.9	<.3	23.8
HCC1	<.04	1.4	.6	21	<.5	1,070	2.5	.120	<1	1.1	2.1	18.6	<.3	29.0
HCC1	.94	<.10	1,150	1,200	<.4	711	5.9	.420	<1	.20	110	1.0	.9	132
SP1	.71	9.5	16.0	6,610	21	3,510	350	.048	<1	8.9	.7	79.7	15	59.2
SP1	.11	.76	9.6	116	.6	1,050	7.1	.180	<1	.56	4.5	29.7	<.3	129
SP1	.22	1.9	4.3	992	2.9	1,320	45.7	.460	<1	1.3	2.0	44.3	2.9	72.0
SP1	.20	3.3	3.9	477	2.0	1,190	18.9	.470	<1	2.4	2.6	52.6	1.1	48.0
SP1	<.02	.33	1.7	28	<.4	1,160	1.1	.360	<1	.20	3.8	8.0	<.3	30.5
SP1	<.04	1.4	1.5	30	<.5	1,170	1.9	.280	<1	.99	2.8	14.3	<.3	37.0
SP1	1.4	<.10	1,540	3,010	.6	761	8.5	--	2	.61	180	1.7	1.8	156
SP4	1.4	3.6	2.1	2,540	1.5	4,120	1,420	.034	<1	3.2	2	677	3.2	13.0
SP4	.04	.30	11.0	82	<.4	1,190	34.4	.640	<1	.40	4.1	46.4	<.3	77.4
SP4	.05	.58	3.5	125	<.5	1,210	68.1	.721	<1	.60	1.2	69.2	<.3	85.0
SP4	.04	2.5	2.5	181	<.4	1,160	78.9	.724	<1	1.8	2.0	70.3	2.0	53.8
SP4	.05	1.4	2.9	152	<.4	1,090	33.9	1.200	<1	.81	5.6	90.5	<.3	117
SP4	.06	<.10	1.8	27	<.4	1,250	1.5	.759	<1	.30	5.3	4.5	<.3	19.9
SP4	.04	1.0	3.3	32	<.5	1,200	4.5	.480	<1	.80	3.7	6.8	<.3	26.0
DRY1	0.92	13	19.0	9,340	21	5,030	906	0.039	1	11.0	2.9	193	25	77.5
DRY1	.18	4.4	9.6	1,340	.8	1,390	375	.031	1	2.5	25.0	96.3	2.4	145
DRY1	.11	1.6	7.7	103	<.4	1,120	7.6	.699	<1	.74	8.1	64.6	.7	76.6
DRY1	.17	3.3	4.6	1,590	3.4	1,680	122	.130	<1	2.2	2.0	112	6.7	61.0
DRY1	.08	.96	3.4	190	1.3	1,100	15.0	.230	<1	.63	5.9	63.0	.5	53.9
DRY1	.10	.46	6.6	221	1.0	1,530	16.0	.300	<1	.40	4.9	135	.4	66.0
DRY1	.10	1.8	3.2	452	.9	1,480	25.7	.180	<1	1.1	9.7	147	1.3	161
DRY5	5.38	9.9	14.0	9,230	3.3	5,050	1,590	.075	<1	8.6	.6	117	17	73.6
DRY5	.15	.30	2.8	30	<.5	1,180	17.0	.400	<1	.30	3.4	62.5	<.3	120
DRY5	.38	1.5	5.8	71	<.4	1,250	11.0	.440	<1	.78	8.3	106	<.3	131
DRY5	.10	.83	4.4	180	<.4	1,470	19.0	.744	<1	.48	2.5	82.1	<.3	63.5
DRY5	.50	2.8	7.1	275	<.6	1,360	32.4	.500	<2	1.8	5.9	107	<.5	129
DRY5	.03	.30	1.3	16	<.4	1,280	3.8	.553	<1	.38	4.2	25.5	<.3	34.4

Table 24. Trace-element concentrations in aquatic-plant, aquatic-invertebrate, and fish samples collected from tributaries east of the Uncompahgre River and within the Uncompahgre Project during 1991

[Analysis by U.S. Fish and Wildlife Service; sites are listed in table 1 and locations are on plate 1; average length in millimeters; w.b., whole body; concentrations in micrograms per gram dry weight; <, less than; --, comp., composite; aq., aquatic; --, no data; inv., invertebrates]

Site code	Matrix	Species	Date	Average length	Number in sample	Percent moisture	Aluminum	Arsenic	Barium	Beryllium	Boron
DCC1	Fish w.b.	White sucker	07-09-91	225	3	79.6	364	0.3	7.0	<0.01	<2
DCC1	Fish w.b.	Suckers-comp.	07-09-91	287	3	77.0	1,450	1.0	21.0	.06	2
DCC1	Fish w.b.	Speckled dace	07-09-91	85	1	75.2	532	<.2	6.6	.07	<2
CD1	Fish w.b.	Suckers-comp.	07-17-91	262	4	75.1	470	.8	13.0	.02	<2
CD4	Fish w.b.	Suckers-comp.	07-09-91	260	5	69.9	1,550	.9	23.0	.06	<2
CD4	Fish w.b.	Suckers-comp.	07-09-91	80	7	76.5	1,530	.5	11.0	.05	<2
CD4	Fish w.b.	Speckled dace	07-09-91	70	18	72.5	646	.9	6.4	.02	<2
LZA1	Aq. plant	Algae	07-19-91	--	Comp.	83.6	4,810	2.9	102	.11	110
LZA1	Aq. inv.	Crayfish	07-17-91	100	3	79.9	806	1.4	20.0	.03	4
LZA1	Aq. inv.	Invertebrates	07-17-91	--	Comp.	79.8	4,540	.9	31.0	.16	95
LZA1	Fish w.b.	Bluehead sucker	07-17-91	275	2	75.8	2,330	1.1	59.1	.08	5
LZA1	Fish w.b.	Flannelmouth sucker	07-17-91	320	3	73.2	260	.4	5.6	.01	<2
LZA1	Fish w.b.	Green sunfish	07-17-91	60	4	76.4	190	.4	2.2	.02	<2
LZA1	Fish w.b.	Speckled dace	07-17-91	99	5	73.1	79	.3	2.1	<.01	<2

Site code	Cadmium	Chromium	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Selenium	Strontium	Vanadium	Zinc
DCC1	0.28	0.96	8.3	373	<0.5	1,610	30.4	0.067	<1	1.3	22.0	90.4	1.7	91.0
DCC1	.22	4.8	7.7	1,300	1.0	1,790	58.1	.064	<1	3.4	13.0	70.6	6.4	104
DCC1	.23	3.3	4.6	353	.6	1,710	24.0	.073	<1	4.3	27.0	163	11	191
CD1	.10	2.3	3.9	442	.5	1,420	15.0	.087	<1	1.4	12.0	70.5	1.6	77.8
CD4	.19	3.6	4.0	1,060	.8	1,600	40.4	.120	<1	2.0	6.1	99.8	3.5	62.6
CD4	.22	3.1	3.9	835	1.0	1,690	33.9	.054	<1	1.6	4.7	98.6	3.2	89.2
CD4	.29	1.4	4.1	470	<.5	1,330	25.1	.130	<1	.92	9.9	115	1.5	144
LZA1	.97	5.6	9.5	5,160	7.3	5,200	142	.027	1	6.8	4.1	182	17	35.6
LZA1	1.2	1.5	219	560	.5	1,890	39.5	.026	<1	5.7	12.0	508	2.3	86.8
LZA1	1.2	5.4	28.2	2,330	3.0	2,250	157	.093	<1	4.6	26.0	41.6	14	110
LZA1	.33	4.3	7.2	1,750	1.9	2,220	63.1	.078	<1	3.4	9.0	121	8.5	43.0
LZA1	.07	1.6	3.3	272	<.5	1,160	12.0	.036	<1	1.0	17.0	59.1	.8	53.1
LZA1	.12	.60	8.2	143	<.5	1,710	18.0	.098	<1	.30	37.0	169	.7	96.5
LZA1	.10	1.2	3.8	116	<.5	1,300	11.0	.089	<1	.75	28.0	124	1.3	140

Table 25. Trace-element concentrations in aquatic-plant, aquatic-invertebrate, and fish samples collected from Crawford Reservoir, the Smith Fork, and the North Fork of the Gunnison River during 1991

[Analysis by U.S. Fish and Wildlife Service; sites are listed in table 1 and locations are on plate 1; average length in millimeters; w.b., whole body; concentrations in micrograms per gram dry weight; <, less than; aq., aquatic; --, no data; comp., composite; inv., invertebrates]

Site code	Matrix	Species	Date	Average length	Number in sample	Percent moisture	Aluminum	Arsenic	Barium	Beryllium	Boron
CR	Fish w.b.	Channel catfish	06-27-91	555	1	62.5	110	0.3	1.0	<0.01	<2
CR	Fish w.b.	Brown trout	06-27-91	390	1	78.7	<3	<.3	<.5	<.01	<2
CR	Fish w.b.	Brown trout	06-27-91	220	2	78.4	5	.4	.3	<.01	<2
CR	Fish w.b.	Rainbow trout	06-27-91	248	3	79.7	55	.5	.9	<.01	<2
CR	Fish w.b.	Yellow perch	06-27-91	203	5	76.9	240	11	3.1	<.01	<2
CR	Fish fillet	Channel catfish	06-27-91	530	1	78.7	7	.4	<.5	<.01	<2
CR	Fish fillet	Rainbow trout	06-27-91	253	3	82.9	<3	.9	<.6	<.01	<2
CR	Fish fillet	Yellow perch	06-27-91	199	7	80.4	15	.4	<.5	<.01	<2
CR	Fish liver	Channel catfish	06-27-91	530	1	78.8	7	<.2	<.5	<.01	<2
CR	Fish egg	Channel catfish	06-27-91	530	1	59.1	<3	<.4	<.5	<.01	<2
SMF	Aq. plant	Potamogeton	07-08-91	--	Comp.	88.2	2,330	1.4	62.5	.13	18
SMF	Aq. inv.	Invertebrates	07-08-91	--	Comp.	88.5	789	1.5	7.6	.04	4
SMF	Fish w.b.	Brown trout	07-08-91	340	3	73.0	54	<.4	3.0	<.01	<2
SMF	Fish w.b.	Brown trout	07-08-91	195	3	74.5	36	.2	.4	<.01	<2
SMF	Fish w.b.	Speckled dace	07-08-91	89	7	70.5	54	<.4	2.0	<.01	<2
SMF	Fish fillet	Brown trout	07-08-91	303	2	75.8	6	.2	<.5	<.01	<2
SMF	Fish egg	Brown trout	07-08-91	303	2	54.4	22	<.2	1.9	<.01	<2
NFK2	Aq. plant	Algae	07-16-91	--	Comp.	80.2	6,520	2.7	84.0	.06	75
NFK2	Aq. inv.	Crayfish	07-16-91	68	8	80.1	1,520	2.0	55.6	.06	4
NFK2	Fish w.b.	Rainbow trout	07-16-91	247	3	72.5	47	1.0	1.0	<.01	<2
NFK2	Fish w.b.	Roundtail chub	07-16-91	127	5	73.9	39	.6	3.7	<.01	<2
NFK2	Fish w.b.	Common carp	07-16-91	690	1	70.0	210	.6	5.1	.01	<2
NFK2	Fish w.b.	Suckers-comp.	07-16-91	475	3	73.6	63	.5	3.2	<.01	<2
NFK2	Fish w.b.	Mottled sculpin	07-16-91	90	3	74.9	72	.4	2.8	<.01	<2
NFK2	Fish w.b.	Speckled dace	07-16-91	90	5	70.2	61	<.4	5.4	<.01	<2
NFK2	Fish fillet	Rainbow trout	07-16-91	330	1	70.4	<3	.4	<.5	<.01	<2
NFK2	Fish liver	Rainbow trout	07-16-91	330	1	76.6	3	.9	<.5	<.01	<2
NFK3	Aq. plant	Algae	07-16-91	--	Comp.	85.5	7,890	2.6	115	.36	25
NFK3	Aq. inv.	Invertebrates	07-16-91	--	Comp.	87.6	966	.5	13.0	.03	<3
NFK3	Fish w.b.	Brown trout	07-16-91	216	2	74.0	37	<.4	1.0	<.01	<2
NFK3	Fish w.b.	Rainbow trout	07-16-91	240	2	74.1	59	<.4	2.9	<.01	<2
NFK3	Fish w.b.	Bluehead sucker	07-16-91	325	3	74.7	354	.6	20.0	<.01	<2
NFK3	Fish w.b.	White sucker	07-16-91	398	3	74.1	11	<.4	11.0	<.01	<2
NFK3	Fish w.b.	Mottled sculpin	07-16-91	100	25	77.0	140	.4	9.0	<.01	<2
NFK3	Fish w.b.	Speckled dace	07-16-91	80	35	70.4	72	<.4	9.5	<.01	<2

Table 25. Trace-element concentrations in aquatic-plant, aquatic-invertebrate, and fish samples collected from Crawford Reservoir, the Smith Fork, and the North Fork of the Gunnison River during 1991--Continued

Site code	Cadmium	Chromium	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Selenium	Strontium	Vanadium	Zinc
CR	0.04	0.71	0.85	99	<0.4	610	3.0	0.090	<1	0.55	2.9	33.3	0.3	39.5
CR	.03	.20	6.5	45	<.4	1,100	.9	.150	<1	.30	18.0	18.1	<.3	134
CR	.10	<.10	9.7	51	<.5	1,060	3.7	.120	<1	.40	4.2	13.4	<.3	119
CR	.04	.48	4.2	75	<.4	1,360	2.8	.058	<1	.40	3.2	36.8	<.3	117
CR	.09	.88	1.3	186	<.4	1,560	8.2	.150	<1	.62	11.0	88.4	1.1	91.4
CR	.05	.40	1.3	16	<.4	934	.5	.340	<1	.40	3.5	1.0	<.3	25.5
CR	.03	<.10	1.5	18	<.4	1,500	2.2	.064	<1	.20	2.2	25.8	<.3	34.7
CR	.02	.20	.80	20	<.4	1,360	1.3	.250	<1	.20	16.0	3.1	<.3	34.5
CR	1.4	<.10	6.6	1,140	<.5	1,020	6.1	.095	<1	<.10	12.0	.9	11.0	98.4
CR	<.03	.10	3.7	33	<.5	1,210	4.9	<.005	<1	.20	8.3	9.5	<.3	124
SMF	1.0	4.6	4.9	3,360	2.3	5,460	966	.016	<1	4.2	1.6	628	6.2	69.9
SMF	.37	.96	16.0	1,010	<.6	1,980	256	.060	<1	1.7	4.8	34.9	2.1	84.7
SMF	.07	.63	14.0	105	<.4	1,100	9.9	.032	<1	.41	9.4	41.3	<.3	93.1
SMF	<.04	.61	4.9	82	<.5	1,010	9.7	.032	<1	.60	8.4	21.8	<.3	108
SMF	.17	1.4	3.0	108	<.5	1,090	21.6	.085	<1	.82	7.8	80.7	<.3	97.2
SMF	.03	.30	1.7	18	<.4	1,320	1.7	.044	<1	.46	6.7	21.2	<.3	37.3
SMF	.05	<.10	35.6	160	<.5	1,420	51.3	.022	<1	<.10	31.0	6.2	<.3	209
NFK2	.45	6.5	5.8	5,150	4.1	3,920	582	.030	<1	8.1	1.6	359	9.2	57.8
NFK2	.41	2.4	56.9	921	.9	2,220	177	.092	<1	1.9	3.1	469	2.7	83.5
NFK2	<.02	1.1	3.1	128	<.4	1,060	4.5	.091	<1	.43	3.6	40.5	<.3	124
NFK2	.02	.46	2.9	66	<.4	1,240	11.0	.200	<1	<.10	6.1	74.7	<.3	127
NFK2	.07	1.1	3.4	173	<.5	1,080	22.0	.400	<1	.30	4.9	105	<.3	269
NFK2	.29	.76	2.3	111	<.5	1,150	34.0	.592	<1	.20	3.5	71.8	<.3	67.2
NFK2	.08	2.0	2.0	118	<.5	1,180	20.0	.190	<1	1.3	6.4	86.8	.7	80.0
NFK2	.08	.81	2.6	78	<.5	1,130	14.0	.250	<1	.57	6.9	107	<.3	137
NFK2	<.02	.20	1.2	13	<.4	866	1.1	.170	<1	.30	2.8	8.9	<.3	29.5
NFK2	.04	<.10	73.9	276	<.4	611	4.8	.150	<1	.10	20.0	.7	<.3	106
NFK3	.41	36.2	12.0	10,700	7.5	3,780	1,010	.032	<1	19.9	1.6	58.1	18.0	57.1
NFK3	.11	.88	5.7	934	<.6	513	176	.083	<1	.73	2.0	5.7	2.2	42.2
NFK3	.10	1.1	4.3	71	<.5	903	7.0	.160	<1	.58	5.0	9.1	<.3	78.7
NFK3	.06	.80	4.9	96	<.4	948	15.0	.120	<1	.47	4.7	15.7	<.3	88.6
NFK3	.25	1.0	7.9	366	<.5	1,480	65.3	.220	<1	.80	1.4	115	.8	85.0
NFK3	.06	.46	2.0	66	<.5	1,370	31.2	.420	<1	.39	3.9	88.1	<.3	52.1
NFK3	.20	2.9	3.3	156	.6	1,230	43.3	.160	<1	2.0	5.8	83.7	.4	73.0
NFK3	.20	.87	3.2	115	<.4	1,020	18.8	.200	<1	.54	7.1	69.7	<.3	123

Table 26. Trace-element concentrations in aquatic-plant, aquatic-invertebrate, and fish samples collected from the Gunnison River and tributaries between the confluence with the North Fork and the confluence with the Uncompahgre River during 1991

[Analysis by U.S. Fish and Wildlife Service; sites are listed in table 1 and locations are on plate 1; average length in millimeters; aq., aquatic; --, no data; comp., composite; concentrations in micrograms per gram dry weight; inv., invertebrates; <, less than; w.b., whole body]

Site code	Matrix	Species	Date	Average length	Number in sample	Percent moisture	Aluminum	Arsenic	Barium	Beryllium	Boron
GUN2	Aq. plant	Algae	07-16-91	--	Comp.	87.3	6,280	2.4	77.0	0.27	130
GUN2	Aq. inv.	Crayfish	07-16-91	85	13	76.0	1,000	2.1	97.2	.04	5
GUN2	Fish fillet	Brown trout	07-16-91	353	1	74.4	4	.4	<.5	<.01	<2
GUN2	Fish w.b.	Brown trout	07-16-91	232	3	75.9	32	<.2	1.0	<.01	<2
GUN2	Fish w.b.	Rainbow trout	07-16-91	418	2	76.8	51	.5	5.5	<.01	<2
GUN2	Fish w.b.	Roundtail chub	07-16-91	110	12	71.3	17	<.2	4.2	<.01	<2
GUN2	Fish w.b.	Common carp	07-16-91	620	1	70.9	66	.2	6.1	<.01	<2
GUN2	Fish w.b.	Bluehead sucker	07-16-91	392	2	74.3	437	<.2	12.0	.03	<2
GUN2	Fish w.b.	White sucker	07-16-91	310	2	79.0	250	.3	3.6	<.01	<2
GUN2	Fish w.b.	Fathead minnow	07-16-91	65	12	76.2	376	.9	19.0	.02	<2
GUN2	Fish w.b.	Speckled dace	07-16-91	75	5	72.4	220	.6	7.0	<.01	<2
CRC	Aq. plant	Algae	07-01-91	--	Comp.	66.6	10,300	7.5	104	.80	59
CRC	Aq. inv.	Crayfish	07-01-91	60	8	77.3	845	4.4	33.0	.05	7
CRC	Fish w.b.	Roundtail chub	07-01-91	115	10	75.0	58	<.2	1.8	<.01	<2
CRC	Fish w.b.	Flannelmouth sucker	07-01-91	130	8	77.2	428	.4	4.8	.03	<2
CRC	Fish w.b.	Fathead minnow	07-01-91	60	18	75.3	1,040	1.4	14.0	.06	4
CRC	Fish w.b.	Speckled dace	07-01-91	60	7	75.1	210	.2	3.5	.02	<2
AFR	Aq. plant	Algae	07-08-91	--	Comp.	85.1	9,980	4.7	93.6	.44	41
AFR	Aq. inv.	Crayfish	07-08-91	60	3	73.9	591	1.4	13.0	.02	4
TGC	Aq. plant	Algae	07-08-91	--	Comp.	87.2	10,300	5.5	104	.51	43
TGC	Aq. inv.	Crayfish	07-08-91	90	5	81.5	812	2.4	17.0	.03	5
TGC	Fish w.b.	Roundtail chub	07-08-91	80	2	73.9	250	.3	1.9	<.01	<2
TGC	Fish w.b.	Fathead minnow	07-08-91	75	15	74.0	160	.4	5.6	<.01	<2
TGC	Fish w.b.	Fathead minnow	07-08-91	70	20	76.2	341	.8	7.6	.02	<2
TGC	Fish w.b.	Speckled dace	07-08-91	90	7	70.0	52	.7	2.4	<.01	<2
PVA1	Aq. inv.	Crayfish	07-18-91	--	7	72.6	499	.7	37.0	.02	<2

Table 26. Trace-element concentrations in aquatic-plant, aquatic-invertebrate, and fish samples collected from the Gunnison River and tributaries between the confluence with the North Fork and the confluence with the Uncompahgre River during 1991 --Continued

Site code	Cadmium	Chromium	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Selenium	Strontium	Vanadium	Zinc
GUN2	3.2	9.9	10.0	6,050	5.3	3,930	736	0.025	<1	9.1	1.4	199	12	54.2
GUN2	.35	1.8	61.8	734	.6	2,570	423	.098	<1	2.3	2.8	693	2.0	73.1
GUN2	<.02	.56	2.0	21	<.4	1,140	12	.350	<1	1.1	6.3	8.2	<.3	26.1
GUN2	.05	1.5	6.6	89	<.5	1,060	5.7	.120	<1	.77	5.9	19.7	<.3	113
GUN2	.03	.87	9.3	144	<.4	1,180	21.8	.370	<1	.39	5.4	34.9	<.3	69.6
GUN2	.05	.20	2.9	55	<.4	1,190	8.4	.220	<1	.20	6.8	61.3	<.3	130
GUN2	.04	.85	4.2	131	<.4	1,010	8.8	.310	<1	.30	6.3	54.1	<.3	220
GUN2	.05	2.8	2.8	584	<.4	1,150	37.7	.260	<1	1.4	3.6	60.4	1.5	64.3
GUN2	.08	.58	8.9	321	<.5	1,530	13.0	.130	<1	.70	20.0	106	.4	78.0
GUN2	.04	.84	4.2	289	<.5	1,360	21.5	.130	<1	.46	7.5	71.5	.7	137
GUN2	.05	1.1	3.8	104	<.4	1,160	14.0	.170	<1	.67	8.9	79.9	<.3	126
CRC	1.8	16.7	8.5	8,920	5.1	6,450	2,430	.025	1	26.3	5.8	824	25	97.7
CRC	.22	1.2	70.1	539	<.4	3,300	129	.045	<1	4.6	7.5	768	1.8	78.8
CRC	.06	.46	3.3	82	<.4	1,380	10.0	.130	<1	.66	19.0	106	<.3	131
CRC	.05	1.4	2.7	284	<.4	1,660	28.7	.066	<1	1.1	12.0	133	.8	76.4
CRC	.17	2.1	4.5	655	<.4	1,730	58.9	.065	<1	2.1	20.4	126	2.5	147
CRC	.05	1.3	2.8	152	<.4	1,240	20.4	.077	<1	.96	13.0	131	.4	125
AFR	1.3	18.3	14.0	8,400	9.6	6,370	190	.030	1	16.0	12.0	544	37.4	58.0
AFR	.25	2.0	50.9	382	.8	2,260	19.5	.021	<1	3.2	9.4	673	1.9	51.7
TGC	1.5	20.2	12.0	12,500	7.0	7,310	2,840	.032	1	15.4	4.1	258	28	63.8
TGC	.23	1.7	78.8	573	<.4	2,360	129	.096	<1	2.3	4.9	450	1.8	77.5
TGC	.15	2.4	5.7	88	<.4	1,230	18.0	.160	<1	3.4	10.0	69.7	8.1	111
TGC	.07	2.2	7.6	200	<.5	1,530	14.0	.210	<1	1.5	11.0	106	.5	138
TGC	.10	1.9	6.6	306	<.4	1,380	40.8	.280	<1	1.2	11.0	82.7	.8	136
TGC	.06	1.3	2.6	97	<.4	1,150	17.0	.350	<1	.98	12.0	112	.5	130
PVA1	1.0	1.1	120	309	<.4	1,480	47.4	.029	<1	6.4	7.1	586	1.1	57.9

Table 27. Trace-element concentrations in aquatic-plant, aquatic-invertebrate, amphibian, and fish samples collected from tributaries of the Gunnison River downstream from the confluence with the Uncompahgre River during 1991

[Analysis by U.S. Fish and Wildlife Service; aq., aquatic; w.b., whole body; inv., invertebrates; average length in millimeters; comp, composite; concentrations in micrograms per gram dry weight; <, less than; sites are listed in table 1 and locations are on plate 1; --, no data]

Site code	Matrix	Species	Date	Average length	Number in sample	Percent moisture	Aluminum	Arsenic	Barium	Beryllium	Boron
CMG1	Aq. plant	Algae	07-18-91	--	Comp	70.0	20,400	5.5	151	0.76	71
CMG1	Fish w.b.	Roundtail chub	07-18-91	334	3	75.3	81	<.3	5.0	<.01	<2
CMG1	Fish w.b.	Common carp	07-18-91	530	1	74.3	69	<.3	1.0	<.01	<2
CMG1	Fish w.b.	Bluehead sucker	07-18-91	304	3	73.0	855	.8	9.8	.03	2
CMG1	Fish w.b.	White sucker	07-18-91	418	3	72.8	321	.3	4.4	.01	<2
CMG1	Fish w.b.	Speckled dace	07-18-91	95	15	73.3	180	.4	5.3	<.01	<2
CMG1	Fish fillet	Brown trout	07-18-91	320	1	74.2	8	.2	<.5	<.01	<2
RB1	Aq. plant	Potamogeton	07-17-91	--	Comp	84.4	9,360	3.6	104	.30	224
RB1	Aq. inv.	Crayfish	07-17-91	90	5	78.8	2,110	1.8	57.5	.07	4
RB1	Fish w.b.	Roundtail chub	07-17-91	323	3	73.4	76	.5	4.8	<.01	<2
RB1	Fish w.b.	Common carp	07-17-91	600	1	69.2	517	<.4	5.7	.02	<2
RB1	Fish w.b.	Bluehead sucker	07-17-91	280	3	70.0	4,480	2.1	26.1	.15	5
RB1	Fish w.b.	Flannelmouth sucker	07-17-91	365	3	69.7	1,420	1.0	23.0	.05	<2
RB3	Aq. inv.	Crayfish	07-02-91	60	9	80.3	842	1.4	291	.03	5
RB3	Amphibian	Bullfrog	07-02-91	380	1	78.2	260	.5	47.2	<.01	3
RB3	Fish w.b.	Roundtail chub	07-02-91	163	3	70.8	15	<.4	7.0	<.01	<2
RB3	Fish w.b.	Bluehead sucker	07-02-91	100	6	73.6	1,040	1.1	33.6	.03	<2
RB3	Fish w.b.	Flannelmouth sucker	07-02-91	135	5	73.9	250	.9	9.8	.01	<2
RB3	Fish w.b.	Speckled dace	07-02-91	55	4	73.7	74	<.4	7.9	<.01	<2

Site code	Cadmium	Chromium	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Selenium	Strontium	Vanadium	Zinc
CMG1	0.75	16.9	17.0	12,100	16.0	6,220	407	0.034	1	11	1.5	282	37.4	72.2
CMG1	.10	.85	4.2	136	<.4	1,280	12.0	.505	<1	.72	7.7	98.0	.8	87.4
CMG1	.14	.50	5.7	164	.5	1,110	8.2	.150	<1	.48	12.0	91.9	<.3	243
CMG1	.08	1.0	5.3	524	.8	1,300	30.7	.180	<1	.90	2.6	105	2.0	78.0
CMG1	.07	2.8	3.8	288	.7	1,450	21.2	.320	<1	1.8	5.7	124	1.4	75.6
CMG1	.37	.73	4.0	228	.5	1,480	21.9	.360	<1	.48	13.0	185	.5	189
CMG1	<.02	.30	1.5	20	<.4	1,140	1.1	.350	<1	.30	9.9	14.1	<.3	31.3
RB1	.78	12.6	14.0	6,730	15.0	4,940	463	.027	2	11	1.4	320	16	60.3
RB1	.27	2.9	112.0	1,000	1.7	2,260	93.6	.130	<1	2.3	2.1	697	3.0	82.5
RB1	.51	1.3	5.9	106	<.4	999	8.8	.748	<1	.82	5.9	72	.3	78.9
RB1	.14	1.4	6.2	368	.8	1,090	12.0	.290	<1	.76	5.1	107	.7	247
RB1	.14	4.0	5.7	1,780	4.1	1,750	93.2	.120	<1	2.3	2.2	105	6.9	59.0
RB1	.05	3.3	2.7	842	1.0	1,220	35.5	.160	<1	1.7	4.6	61.1	2.3	59.4
RB3	.57	1.1	97.4	472	<.5	1,960	147	.290	<1	1.7	1.6	990	1.0	70.2
RB3	.10	.42	25.0	296	<.5	1,130	25.4	1.20	<1	.70	3.5	151	<.3	135
RB3	.12	.70	2.2	51	<.4	1,190	5.7	.390	<1	.38	5.4	111	<.3	111
RB3	.42	5.3	5.9	491	<.5	1,390	48.4	.400	<1	2.8	1.3	133	1.1	62.0
RB3	.43	1.5	3.0	157	<.4	1,300	22.6	.450	<1	.87	2.9	103	<.3	70.0
RB3	.57	3.6	3.2	82	<.4	1,020	12.0	.410	<1	2.1	9.3	110	<.3	120

Table 28. Trace-element concentrations in aquatic-invertebrate, amphibian, and fish samples collected from tributaries of the Colorado River west of Fruita and from Highline Lake during 1991

[Analysis by U.S. Fish and Wildlife Service; w.b., whole body; aq., aquatic; inv., invertebrates; average length in millimeters; concentrations in micrograms per gram dry weight; <, less than; sites are listed in table 2 and locations are on plate 2; --, no data]

Site code	Matrix	Species	Date	Average length	Number in sample	Percent moisture	Aluminum	Arsenic	Barium	Beryllium	Boron
SC	Amphibian	Frog	03-28-91	135	1	84.5	23	<0.2	6.3	<0.01	<2
SC	Fish w.b.	Roundtail chub	03-28-91	250	5	75.3	35	<.2	2.0	.01	<2
SC	Fish w.b.	Bluehead sucker	03-28-91	300	1	73.4	3,010	1.2	24.9	.10	62
SC	Fish w.b.	Flannelmouth sucker	03-28-91	445	3	76.7	1,670	.3	14.4	.07	76
SC	Fish w.b.	White sucker	03-28-91	390	1	82.7	560	.6	9.4	.03	<2
SC	Fish w.b.	Speckled dace	03-28-91	90	1	70.7	74	<.3	11.0	<.04	<5
HR	Fish w.b.	Channel catfish	05-08-91	325	2	81.5	2,290	.4	33.1	.10	3
HR	Fish w.b.	Channel catfish	05-16-91	627	1	78.3	19	.4	1.0	<.01	<2
HR	Fish w.b.	Crappie	04-11-91	162	5	79.4	39	.4	4.4	<.01	<2
HR	Fish w.b.	Largemouth bass	05-16-91	400	1	78.4	4	.8	2.1	<.01	<2
HR	Fish w.b.	Common carp	04-11-91	403	2	77.3	33	<.2	8.7	<.01	<2
HR	Fish w.b.	Common carp	04-11-91	491	1	79.3	23	<.2	7.3	<.01	<2
HR	Fish w.b.	White sucker	04-11-91	324	1	76.1	319	<.2	7.7	.02	<2
HR	Fish fillet	Channel catfish	05-16-91	588	2	80.4	5	.7	<50	<.01	<2
HR	Fish fillet	Largemouth bass	05-16-91	426	1	81.4	13	.4	<50	<.01	<2
HR	Fish egg	Channel catfish	05-16-91	621	1	60.4	<3	<.4	<50	<.01	<2
HR	Fish liver	Channel catfish	05-16-91	621	1	75.5	7	.3	<50	<.01	<2
RW1	Fish w.b.	Roundtail chub	03-27-91	195	2	75.1	119	<.2	2.9	.01	<2
RW1	Fish w.b.	Common carp	03-27-91	545	1	74.2	159	<.2	3.2	<.01	<2
RW1	Fish w.b.	Flannelmouth sucker	03-27-91	341	2	76.9	1,310	.6	16.7	.04	2
RW1	Fish w.b.	Flannelmouth sucker	03-27-91	425	2	77.9	1,160	.2	11.6	.06	89
RW1	Fish w.b.	White sucker	03-27-91	197	2	76.0	398	<.2	10.3	.02	<2
BSW1	Aq. inv.	Crayfish	03-28-91	90	1	69.3	2,080	2.3	70.8	.05	3
BSW1	Fish w.b.	Roundtail chub	03-28-91	208	5	75.8	201	<.2	2.0	.02	<2
BSW1	Fish w.b.	Common carp	03-28-91	285	1	76.6	153	<.2	2.9	<.01	<2
BSW1	Fish w.b.	Bluehead sucker	03-28-91	177	2	72.0	3,000	.9	102	.12	<2
BSW1	Fish w.b.	Flannelmouth sucker	03-28-91	301	5	74.7	1,520	.3	11.5	.07	4
BSW1	Fish w.b.	Bullhead	03-28-91	230	1	81.2	267	<0.2	2.1	.01	<2
BSW1	Fish w.b.	Speckled dace	03-28-91	100	8	72.0	519	<.2	9.3	.02	<2
LSW1	Aq. inv.	Crayfish	03-28-91	105	1	71.8	2,340	1.5	127	.06	5
LSW1	Fish w.b.	Roundtail chub	03-28-91	224	5	75.5	694	<.2	7.7	.03	3
LSW1	Fish w.b.	Flannelmouth sucker	03-28-91	290	4	75.2	1,100	.2	10.5	.05	10
LSW1	Fish w.b.	Fathead minnow	03-28-91	70	6	76.0	740	.7	21.7	.04	<2
LSW1	Fish w.b.	Red shiners	03-28-91	60	2	79.8	989	<.3	16.0	<.04	<5
LSW1	Fish w.b.	Speckled dace	03-28-91	75	2	78.4	430	<.2	10.8	<.01	<2

Table 28. Trace-element concentrations in aquatic-invertebrate, amphibian, and fish samples collected from tributaries of the Colorado River west of Fruita and from Highline Lake during 1991--Continued

Site code	Cadmium	Chromium	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Selenium	Strontium	Vanadium	Zinc
SC	0.16	0.85	9.77	185	<0.4	1,110	5.4	0.120	<1	0.67	12.0	65.6	<0.3	104
SC	.14	.51	5.60	105	<.4	1,080	5.0	.190	<1	.45	12.0	56.1	.5	90.6
SC	.21	4.4	5.50	1,560	1.0	2,180	104	.170	<1	2.7	5.2	154	7.9	52.0
SC	.45	3.3	5.25	928	2.9	1,850	71.5	.280	<1	2.1	12.0	149	3.9	71.5
SC	.26	1.2	3.70	615	<.5	1,480	19.0	.200	<1	1.1	19.0	72.6	1.6	50.0
SC	.20	2.0	10.2	200	<2.0	2,570	38.9	.240	<2	1.0	19.0	371	<.8	402
HR	.24	3.5	7.18	1,260	2.0	1,630	36.0	.200	<1	2.1	6.2	81.8	7.7	88.7
HR	.05	.64	1.70	57	<.4	1,130	1.8	.629	<1	.20	4.9	67.0	<.3	75.8
HR	.08	.83	2.00	88	<.5	1,500	5.4	.210	<1	.50	6.9	141	<.3	84.7
HR	.03	.66	1.70	68	<.5	1,780	1.8	.700	<1	.20	9.2	151	<.3	57.9
HR	.73	.30	5.50	173	1.7	1,690	7.5	.360	<1	.40	8.4	200	.4	304
HR	.96	.79	4.43	209	.9	1,360	9.1	.570	<1	.30	10.0	133	.5	382
HR	.12	1.5	4.82	311	.5	1,140	9.7	.140	<1	.88	15.0	44.3	1.3	50.9
HR	<.02	.62	1.30	36	.4	1,230	.6	1.00	<1	.52	9.7	8.0	<.3	24.0
HR	.02	.10	1.40	11	<.4	1,320	.3	1.30	<1	.20	12.0	.9	<.3	26.7
HR	<.02	.20	3.00	45	<.4	1,010	3.1	.016	<1	<.10	11.0	11.0	<.3	109
HR	.33	.20	7.00	694	<.4	826	4.1	.360	<1	.30	16.0	.8	2.0	103
RW1	.09	1.4	4.17	123	<.4	1,320	10.3	.130	<1	1.3	9.7	95.2	.6	114
RW1	.54	1.1	5.55	241	1.9	1,070	9.2	.140	<1	.54	9.3	93.0	.9	272
RW1	.15	2.3	3.60	757	.9	1,660	23.0	.130	<1	1.4	13.0	79.6	2.6	68.0
RW1	.38	3.0	4.74	672	2.3	1,520	37.6	.180	<1	2.2	15.0	80.3	4.4	60.8
RW1	.08	1.3	5.07	335	<.5	1,580	28.2	.068	<1	1.2	10.0	149	1.6	62.7
BSW1	.38	3.7	87.7	1,290	2.0	2,090	189	.050	<1	2.8	5.0	597	4.6	55.8
BSW1	.08	5.3	5.18	202	<.4	1,000	5.6	.150	<1	2.9	8.1	31.5	.8	84.0
BSW1	.09	.69	5.87	205	<.4	1,120	6.0	.045	<1	.20	12.0	108	.3	284
BSW1	.09	4.8	4.38	1,810	1.0	2,020	56.6	.120	<1	2.7	3.3	130	5.7	63.9
BSW1	.08	2.0	5.57	939	1.0	1,600	28.2	.110	<1	1.2	9.6	92.8	2.9	60.8
BSW1	.14	1.4	4.27	289	<.4	989	3.4	.350	<1	.77	4.1	11.0	.6	49.4
BSW1	.11	2.2	3.14	413	<.5	1,330	20.1	.190	<1	1.2	15.0	152	1.0	122
LSW1	.28	2.9	104	1,350	2.3	2,460	663	.055	<1	2.9	3.9	714	4.7	67.5
LSW1	.15	1.8	4.16	463	.6	1,230	12.3	.140	<1	1.1	5.8	50.1	1.5	85.1
LSW1	.20	1.9	4.77	735	2.1	1,430	33.3	.110	<1	1.7	6.7	74.3	2.2	116
LSW1	.42	2.1	3.51	453	.6	1,400	19.0	.010	<1	1.0	7.3	127	1.6	141
LSW1	1.2	1.6	4.40	877	<2.0	2,450	26.3	.200	<2	1.0	14.0	252	2.0	382
LSW1	.28	1.3	3.73	301	<.5	1,280	19.6	.230	<1	.77	8.3	147	1.0	166

Table 29. Trace-element concentrations in aquatic-plant, aquatic-invertebrate, amphibian, and fish samples collected from tributaries of the Colorado River between the confluence with the Gunnison River and Fruita during 1991

[Analysis by U.S. Fish and Wildlife Service; aq., aquatic; w.b., whole body; inv., invertebrates; comp., composite; average length in millimeters; concentrations in micrograms per gram dry weight; <, less than; sites are listed in table 2 and locations are on plate 2, --, no data]

Site code	Matrix	Species	Date	Average length	Number in sample	Percent moisture	Aluminum	Arsenic	Barium	Beryllium	Boron
AC1	Aq. plant	Algae	03-28-91	--	Comp.	82.4	14,500	4.7	117	0.60	43
AC1	Fish w.b.	Flannelmouth sucker	03-28-91	180	1	73.9	203	<.2	3.3	.02	3
AC1	Fish w.b.	Fish-comp.	03-28-91	60	3	74.3	189	<.2	4.1	.02	<2
HW1	Aq. plant	Algae	03-27-91	--	Comp.	69.0	10,000	3.4	77.3	.42	40
HW1	Fish w.b.	Roundtail chub	03-27-91	105	1	73.7	130	<.2	5.9	.01	<2
HW1	Fish w.b.	Flannelmouth sucker	03-27-91	157	4	73.1	271	<.2	3.3	.02	4
HW1	Fish w.b.	Fathead minnow	03-27-91	60	1	73.5	219	.5	22.0	<.04	<5
PRW	Aq. plant	Algae	03-27-91	--	Comp.	70.6	12,100	3.9	197	.51	18
PRW	Aq. inv.	Crayfish	03-27-91	60	1	71.8	1,440	1.4	57.9	.03	3
PRW	Fish w.b.	Fish-comp.	03-27-91	--	4	75.3	70	<.2	3.5	.01	<2
PSW1	Aq. inv.	Crayfish	03-27-91	40	6	71.2	2,800	1.9	80.1	.08	58
PSW1	Fish w.b.	Roundtail chub	03-27-91	90	5	76.1	289	<.2	6.8	.03	3
PSW1	Fish w.b.	Flannelmouth sucker	03-27-91	230	1	77.4	285	.2	4.3	.02	5
PSW1	Fish w.b.	Fathead minnow	03-27-91	55	2	73.9	752	.3	29.2	<.04	5
PSW1	Fish w.b.	Speckled dace	03-27-91	90	6	75.2	395	<.2	9.4	.09	<2
AD	Aq. inv.	Crayfish	03-27-91	70	3	71.5	1,860	1.6	85.8	.04	4
AD	Fish w.b.	Roundtail chub	03-27-91	80	2	76.3	64	<.3	3.8	.01	2
AD	Fish w.b.	Fathead minnow	03-27-91	60	22	76.3	185	.3	13.6	.01	<2
AD	Fish w.b.	Red shiners	03-27-91	50	15	73.9	51	<.2	3.5	<.01	<2
LC1	Amphibian	Bullfrog	03-26-91	310	1	83.2	75	<.2	5.3	.01	<2
LC1	Fish w.b.	Roundtail chub	03-26-91	197	5	78.8	74	<.2	2.7	.01	2
LC1	Fish w.b.	Roundtail chub	03-26-91	355	1	72.9	26	<.2	1.4	<.01	<2
LC1	Fish w.b.	Common carp	03-26-91	515	1	73.2	11	<.2	1.5	<.01	<2
LC1	Fish w.b.	Bluehead sucker	03-26-91	245	2	71.4	1,720	1.1	21.8	.06	3
LC1	Fish w.b.	Flannelmouth sucker	03-26-91	263	5	78.0	1,410	<.2	12.8	.06	4
LC1	Fish w.b.	White sucker	03-26-91	218	5	78.7	154	<.2	5.8	<.01	<2
LC1	Fish w.b.	Bullhead	03-26-91	180	1	79.3	572	<.2	8.2	.03	<2
LC1	Fish w.b.	Fathead minnow	03-26-91	60	13	78.5	342	.4	15.1	.01	<2
LC1	Fish w.b.	Red shiners	03-26-91	70	7	72.5	83	<.2	3.3	<.01	<2
RED	Aq. plant	Algae	03-28-91	--	Comp.	62.9	20,000	5.6	183	.96	28
RED	Fish w.b.	Fathead minnow	03-28-91	60	5	76.5	678	.6	9.1	.03	<2

Table 29. Trace-element concentrations in aquatic-plant, aquatic-invertebrate, amphibian, and fish samples collected from tributaries of the Colorado River between the confluence with the Gunnison River and Fruita during 1991--Continued

Site code	Cadmium	Chromium	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Selenium	Strontium	Vanadium	Zinc
AC1	1.7	12.0	8.62	9,820	21	5,400	1,270	0.030	<1	17.0	1.7	750	32.0	64.4
AC1	.08	.76	3.31	156	.6	1,320	26.9	.038	<1	.80	9.6	78.4	.6	69.0
AC1	.19	2.6	3.58	213	1.0	1,300	24.1	.055	<1	1.7	11.0	104	.7	84.4
HW1	1.4	7.6	6.99	6,470	6.2	4,870	1,190	.025	<1	12.0	.8	840	22.0	57.5
HW1	.07	1.0	6.22	131	<.4	1,200	8.8	.060	<1	1.8	6.8	91.4	.6	132
HW1	.09	.96	2.82	189	.5	1,250	22.0	.043	<1	.73	7.8	82.0	.9	69.3
HW1	.39	4.7	8.74	298	<2.0	2,550	40.5	.110	<2	2.4	18.0	211	1.0	337
PRW	.57	21.8	8.85	9,690	8.3	5,210	449	.030	<1	19.6	1.2	454	30.6	55.6
PRW	.27	4.0	99.1	901	1.0	2,680	449	.080	<1	4.8	6.2	622	3.8	58.0
PRW	.04	.66	4.62	94	<.4	1,300	12.3	.095	<1	.49	7.9	119	<.3	116
PSW1	.44	4.4	115	1,730	3.0	2,390	311	.031	<1	4.8	3.7	666	8.2	67.3
PSW1	.10	1.0	5.37	200	.5	1,410	15.8	.080	<1	.77	7.7	101	1.0	153
PSW1	.09	1.7	3.49	219	.5	1,500	40.7	.140	<1	1.2	9.4	104	1.1	78.1
PSW1	<.10	1.9	6.70	529	<2.0	2,530	41.8	.088	<2	2.4	22.0	220	2.7	302
PSW1	.26	2.7	4.89	347	1.0	1,550	38.5	.340	<1	2.0	13.0	167	1.4	173
AD	.23	2.8	106	1,010	3.1	2,060	414	.028	<1	2.8	2.7	754	4.4	69.8
AD	.06	.20	3.73	91	<.4	1,340	10.2	.180	<1	1.6	7.1	110	.4	190
AD	.05	1.1	3.35	177	<.4	1,370	14.1	.120	<1	.49	9.6	105	.7	139
AD	.05	1.7	7.12	91	<.4	1,340	11.6	.180	<1	.79	7.3	133	<.3	181
LC1	.08	.53	10.1	213	<.4	1,070	4.6	.150	<1	.60	8.4	47.8	<.3	102
LC1	.15	.59	5.48	120	<.4	1,170	7.1	.160	<1	.53	8.4	51.7	.5	107
LC1	.19	.68	3.41	90	<.4	872	3.7	.370	<1	.90	7.9	30.3	<.3	52.6
LC1	.13	.38	4.16	141	<.5	846	3.2	.100	<1	<.20	8.2	64.5	<.3	247
LC1	.13	2.7	4.30	1,020	2.0	1,620	94.0	.080	<1	2.4	3.9	154	4.6	61.0
LC1	.07	1.8	5.04	831	1.3	1,700	24.8	.130	<1	1.2	10.0	96.3	3.2	55.4
LC1	.06	.65	2.96	219	<.5	1,300	14.0	.140	<1	.30	8.6	81.1	.7	59.8
LC1	.14	1.2	4.18	471	.8	1,450	35.4	.120	<1	.73	5.7	166	1.6	91.2
LC1	.11	.90	3.28	274	.8	1,370	20.5	.096	<1	.48	8.0	94.5	1.1	139
LC1	.11	.81	2.26	97	<.4	1,260	13.0	.180	<1	.50	9.0	121	.4	190
RED	.56	10.0	11.2	10,700	11	7,660	615	.043	<1	8.3	7.0	1,290	30.1	70.5
RED	.16	1.2	3.55	382	.7	1,360	24.0	.083	<1	.48	13.0	199	1.3	175

Table 30. Trace-element concentrations in aquatic-plant, aquatic-invertebrate, and fish samples collected from tributaries of the Colorado River upstream from the confluence with the Gunnison River during 1991

[Analysis by U.S. Fish and Wildlife Service; aq., aquatic; w.b., whole body; inv., invertebrates; comp., composite; average length in millimeters; concentrations in micrograms per gram dry weight; <, less than; sites are listed in table 2 and locations are on plate 2, --, no data; QNS, quantity not sufficient for analysis]

Site code	Matrix	Species	Date	Average length	Number in sample	Percent moisture	Aluminum	Arsenic	Barium	Beryllium	Boron
IW	Aq. plant	Algae	03-26-91	--	Comp.	79.7	14,600	7.2	191	0.72	44
IW	Aq. inv.	Crayfish	03-26-91	40	10	75.4	1,670	2.0	137	.04	5
IW	Aq. inv.	Invertebrates	03-26-91	--	Comp.	78.6	6,060	3.5	99.4	.22	6
IW	Fish w.b.	Roundtail chub	03-26-91	315	2	72.1	45	<.2	1.4	.01	<2
IW	Fish w.b.	White sucker	03-26-91	245	5	76.9	358	<.2	5.5	.01	<2
IW	Fish w.b.	Fathead minnow	03-26-91	60	40	75.4	860	.7	16.5	.04	<2
IW	Fish w.b.	Red shiners	03-26-91	60	25	75.7	48	<.2	2.9	<.01	<2
IW	Fish w.b.	Speckled dace	03-26-91	100	2	73.0	43	<.2	4.8	<.01	<2
GJ1	Fish w.b.	Fathead minnow	03-25-91	35	30	81.6	1,000	.6	21.3	.04	<2
GJ1	Fish w.b.	Green sunfish	03-25-91	70	1	81.3	172	<.3	4.5	<.04	<5
LW	Aq. inv.	Crayfish	03-25-91	45	13	74.0	1,880	2.6	258	.05	4
LW	Fish w.b.	Roundtail chub	03-25-91	110	5	75.5	357	.2	7.6	.02	<2
LW	Fish w.b.	Red shiners	03-25-91	60	2	72.7	322	.4	8.9	.05	<5
LW	Fish w.b.	Speckled dace	03-25-91	70	8	72.0	99	<.2	5.7	<.01	<2
CF1	Aq. plant	Algae	03-25-91	--	Comp.	75.7	17,700	8.8	165	.86	30
CF1	Aq. inv.	Crayfish	03-25-91	60	7	73.3	1,640	2.1	91.3	.04	5
CF1	Fish w.b.	Fathead minnow	03-25-91	75	7	77.4	691	.5	16.0	.03	<2
CF1	Fish w.b.	Speckled dace	03-25-91	55	21	78.2	617	<.2	7.2	.02	<2
OMD	Aq. inv.	Crayfish	03-26-91	--	2	72.1	5,570	2.4	143	.08	20
OMD	Fish w.b.	Fathead minnow	03-26-91	50	1	76.7	718	<.3	17.0	.05	6
OM2	Aq. plant	Watercress	03-25-91	--	Comp.	93.2	17,200	13.0	108	.68	34
OM2	Fish w.b.	Fathead minnow	03-25-91	65	10	76.3	764	.6	11.7	.04	<2
OM2	Fish w.b.	Green sunfish	03-25-91	90	5	77.8	284	<.2	2.6	.01	<2

Table 30. Trace-element concentrations in aquatic-plant, aquatic-invertebrate, and fish samples collected from tributaries of the Colorado River upstream from the confluence with the Gunnison River during 1991--Continued

Site code	Cadmium	Chromium	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Selenium	Strontium	Vanadium	Zinc
IW	1.3	20.0	17.7	12,600	32	7,820	2,010	0.041	2	18	5.2	439	39.7	116
IW	.25	2.8	83.5	1,070	4.6	2,780	461	.034	<1	4.2	5.7	738	4.6	68.1
IW	.51	19.1	19.4	5,590	11	3,910	2,010	.040	6	14	11.0	130	16.0	129
IW	.06	.56	3.9	82	<.4	943	6.9	.190	<1	1.7	8.5	33.8	.4	60.6
IW	.06	1.4	5.17	291	.9	1,390	31.9	.092	<1	.81	9.7	99.0	1.2	65.8
IW	.09	1.5	3.63	559	1.6	1,570	42.2	.064	<1	.77	10.0	93.4	2.7	135
IW	.10	2.4	2.75	88	<.4	1,420	12.7	.180	<1	1.3	8.3	119	<.3	174
IW	.08	1.1	4.91	103	<.4	1,300	17.5	.170	<1	.40	10.0	146	.4	160
GJ1	.60	1.9	8.3	778	3.0	1,950	68.4	.094	<1	2.9	9.1	118	3.0	205
GJ1	.10	3.8	6.5	293	<2.0	2,920	56.8	.150	<2	2.0	17.0	277	<.8	227
LW	.17	2.8	89.3	1,470	3.5	1,890	383	.068	<1	3.4	3.0	774	4.5	68.6
LW	.06	2.3	5.28	338	.5	1,440	17.4	.130	<1	1.4	4.5	86.9	1.0	145
LW	.20	2.1	11.1	421	<2.0	3,030	45.6	.240	<2	1.0	19.0	273	.8	379
LW	.03	.64	2.55	120	<.4	1,200	17.0	.240	<1	.30	6.2	109	<.3	129
CF1	.49	18.3	18.8	14,300	24	8,340	1,010	.030	3	16	1.8	120	36.4	65.6
CF1	.39	2.5	124	1,060	4.3	3,250	2,140	.040	10	3.1	3.6	680	4.8	61.9
CF1	.04	4.2	4.54	502	1.0	1,690	44.3	.130	<1	2.1	7.9	102	1.7	162
CF1	.06	3.2	3.79	451	1.0	1,530	80.7	.150	<1	1.6	6.1	109	1.4	171
OMD	.60	13.0	146	5,100	8.0	4,050	2,270	.042	<3	19.0	7.3	1,530	14.0	153
OMD	.30	2.9	7.9	832	<2.0	2,680	56.5	.091	<2	2.1	13.0	227	2.6	286
OM2	1.7	18.0	16.8	15,200	11	5,280	377	QNS	2	15	7.5	380	52.4	65.1
OM2	.22	2.1	7.62	617	.8	1,400	18.1	.074	<1	1.1	11.0	175	2.6	196
OM2	.12	1.1	2.34	251	.7	1,610	10.0	.080	<1	.80	12.0	193	1.4	98.7

Table 31. Trace-element concentrations in aquatic-invertebrate and fish samples collected from the Colorado River during 1991

[Analysis by U.S. Fish and Wildlife Service; sites are listed in table 2 and locations are on plate 2; average length in millimeters; aq., aquatic; inv., invertebrates; --, no data; concentrations in micrograms per gram dry weight; w.b., whole body; <, less than]

Site code	Matrix	Species	Date	Average length	Number in sample	Percent moisture	Aluminum	Arsenic	Barium	Beryllium	Boron
COL1	Aq. inv.	Crayfish	07-25-91	105	--	74.2	743	1.9	207	0.03	4
COL1	Fish w.b.	Roundtail chub	07-25-91	430	2	74.1	69	<.2	9.0	<.01	<2
COL1	Fish w.b.	Roundtail chub	07-25-91	368	2	77.0	15	<.2	7.2	<.01	<2
COL1	Fish w.b.	Bluehead sucker	07-25-91	320	2	69.9	1,060	.8	10.5	.04	2
COL1	Fish w.b.	Flannelmouth sucker	07-25-91	410	2	69.1	210	.2	9.0	.01	<2
COL4	Fish w.b.	Channel catfish	05-01-91	630	1	66.2	48	<.3	2.9	<.01	<2
COL4	Fish w.b.	Channel catfish	07-25-91	226	4	71.1	366	<.3	4.2	.02	<2
COL4	Fish w.b.	Brown trout	07-25-91	260	1	76.6	20	.6	<50	<.01	<2
COL4	Fish w.b.	Roundtail chub	07-25-91	280	3	74.5	22	.7	4.9	<.01	<2
COL4	Fish w.b.	Common carp	07-25-91	523	2	76.7	91	.4	5.2	<.01	<2
COL4	Fish w.b.	Bluehead sucker	07-25-91	384	3	63.3	688	1.4	9.6	.03	<2
COL4	Fish w.b.	Flannelmouth sucker	07-25-91	405	3	68.5	327	.8	7.4	.02	<2
COL4	Fish w.b.	Speckled dace	07-25-91	80	4	69.8	79	.6	11.0	<.01	<2

Site code	Cadmium	Chromium	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Selenium	Strontium	Vanadium	Zinc
COL1	0.28	1.2	82.6	545	2.4	1,900	348	0.045	<1	1.6	1.5	695	1.6	72.9
COL1	.07	.75	5.7	103	<.4	1,090	9.1	1.300	<1	.50	2.6	69.2	.7	71.2
COL1	.10	.20	7.8	84	<.5	1,120	6.4	1.400	<1	.60	2.6	57.5	.5	85.0
COL1	.06	1.6	4.4	656	.6	1,190	55.5	.130	<1	1.3	1.6	43.2	2.3	54.0
COL1	.03	3.2	1.9	215	<.4	1,150	24.1	.170	<1	1.6	1.9	58.5	.4	56.1
COL4	<.02	.31	1.8	81	<.4	649	10.0	.280	<1	.30	1.9	42.8	<.3	33.6
COL4	.08	1.3	2.3	287	<.4	1,030	15.0	.190	<1	.82	5.1	59.5	.8	73.1
COL4	<.02	.50	11.0	69	<.4	1,020	1.7	.400	<1	.49	12.0	13.8	<.3	85.4
COL4	.04	.34	3.0	86	<.4	1,110	4.4	.763	<1	.30	5.7	54.5	<.3	89.4
COL4	.07	.86	3.8	167	.5	1,310	7.7	.190	<1	.73	9.1	233	.7	313
COL4	.10	1.5	2.5	423	.9	849	37.2	.089	<1	1.5	9	53.8	2.9	38.0
COL4	.04	2.7	2.2	274	<.4	1,210	32.9	.120	<1	1.6	2.6	68.9	.7	51.4
COL4	.04	2.1	2.6	112	<.4	1,130	14.0	.240	<1	1.2	6.0	102	<.3	138

Table 32. Trace-element concentrations in aquatic-plant, aquatic-invertebrate, fish, and bird samples collected from wetlands within the Uncompahgre Project during 1991 and 1992

[Analysis by U.S. Fish and Wildlife Service; aq., aquatic; w.b., whole body; inv., invertebrates; comp., composite; average length in millimeters; concentrations in micrograms per gram dry weight; <, less than; sites are listed in table 1 and locations are on plate 1, --, no data]

Site code	Matrix	Species	Date	Average length	Number in sample	Percent moisture	Aluminum	Arsenic	Barium	Beryllium	Boron
MKP	Aq. plant	Potamogeton	06-11-91	--	Comp.	90.4	6,260	4.9	46.9	0.28	170
MKP	Aq. plant	Potamogeton	07-06-92	--	Comp.	85.3	2,060	1.1	39.7	.07	120
MKP	Aq. inv.	Invertebrates	06-11-91	--	Comp.	91.2	1,750	1.4	12.0	.06	9
MKP	Fish w.b.	Fathead minnow	06-11-91	61	28	78.3	79	.5	1.7	<.01	<2
MKP	Bird egg	Mallard	05-20-91	--	2	66.8	<3	<.1	6.4	<.01	<2
MKP	Bird egg	American coot	06-24-92	--	1	71.5	10	<.2	.36	<.01	<2
MKP	Bird egg	American coot	06-24-92	--	2	77.0	<8	<.2	.42	<.01	<2
MKP	Bird egg	American coot	06-24-92	--	1	74.7	<8	<.2	.20	<.01	3
MKP	Bird egg	American coot	06-24-92	--	2	72.2	<8	<.2	.63	<.01	3
MKP	Bird egg	Common snipe	06-06-91	--	2	75.5	<3	<.1	.43	<.01	<2
MKP	Bird egg	Common snipe	05-19-92	--	3	74.0	64	<.2	.30	.03	<2
MKP	Bird egg	Red-winged bb	05-20-91	--	6	82.4	<3	<.1	1.4	<.01	<2
MKP	Bird egg	Red-winged bb	06-04-91	--	6	82.5	<3	<.1	1.6	<.01	<2
MKP	Bird egg	Red-winged bb	05-19-92	--	2	80.1	<10	<.2	.58	<.02	3
MKP	Bird egg	Red-winged bb	05-19-92	--	3	79.9	<5	<.3	.30	<.02	<3
MKP	Bird egg	Red-winged bb	05-19-92	--	2	81.1	<10	<.3	.71	<:02	4
MKP	Bird egg	Yellow-headed bb	06-04-91	--	6	83.1	<3	<.1	.74	<.01	<2
MKP	Bird egg	Yellow-headed bb	05-19-92	--	2	79.3	<3	<.2	.53	<.01	<2
MKP	Bird egg	Yellow-headed bb	05-19-92	--	2	79.9	<10	<.3	.92	<.01	<3
MKP	Bird egg	Yellow-headed bb	06-09-92	--	6	81.7	<8	<.2	1.0	<.01	<2
	Bird egg	Yellow-headed bb	05-28-92	--	1	66.7	6	<2.0	1.2	<.04	<3
MKP	Bird egg	Ring-necked pheasant	05-20-91	--	3	70.3	<3	<.1	2.3	<.01	<2
MKP	Bird w.b.	Mallard-imm.	05-19-92	--	1	79.4	1,750	1.0	22.3	.06	4
MKP	Bird w.b.	Mallard-imm.	05-27-92	--	1	85.4	360	.5	8.0	.02	<2
MKP	Bird w.b.	American coot-imm.	06-24-92	--	2	75.0	<8	<.2	.56	<.01	<2
MKP	Bird w.b.	American coot-imm.	06-24-92	--	2	83.2	56	.3	.58	<.03	<2
MKP	Bird w.b.	Common snipe-imm.	05-24-92	--	2	78.9	36	<.2	.41	<.01	<2
MKP	Bird w.b.	Red-winged bb-imm.	06-06-91	--	1	75.9	140	.1	4.0	<.01	2
MKP	Bird w.b.	Red-winged bb-imm.	05-19-92	--	2	86.0	<4	<.2	.49	<.04	<3
MKP	Bird w.b.	Red-winged bb-imm.	05-28-92	--	2	86.3	13	<.2	.68	<.02	<3
MKP	Bird w.b.	Red-winged bb-imm.	06-09-92	--	1	73.6	55	<.2	2.2	<.01	<2
MKP	Bird w.b.	Red-winged bb-imm.	06-09-92	--	1	75.0	200	.3	3.8	<.01	<2
MKP	Bird w.b.	Red-winged bb-imm.	06-24-92	--	1	72.1	21	<.2	4.6	<.01	<2
MKP	Bird w.b.	Yellow-headed bb-imm.	05-28-92	--	2	83.4	<4	<.2	.80	<.05	<3
MKP	Bird w.b.	Yellow-headed bb-imm.	05-28-92	--	1	84.3	<5	<.3	.79	<.04	<3
MKP	Bird w.b.	Yellow-headed bb-imm.	06-15-92	--	1	81.8	67	<.2	3.1	<.01	<2

Table 32. Trace-element concentrations in aquatic-plant, aquatic-invertebrate, fish, and bird samples collected from wetlands within the Uncompahgre Project during 1991 and 1992--Continued

Site code	Cadmium	Chromium	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Selenium	Strontium	Vanadium	Zinc
MKP	0.25	8.9	8.7	7,630	4.2	6,900	182	0.030	3	11	9.9	248	23.0	43.8
MKP	.03	3.4	2.8	1,200	2.3	9,180	196	.010	<1	5.9	4.2	653	9.6	27.0
MKP	.15	2.2	15.0	1,090	.6	2,460	98.9	.050	<1	2.6	32.0	71.4	5.9	77.6
MKP	.38	.63	4.5	126	<.5	1,600	16.0	.038	<1	.53	51.0	165	<.3	141
MKP	<.04	<.10	2.3	133	<.4	330	3.2	.028	<1	<.4	9.5	15.0	<.3	65.2
MKP	<.02	1.3	4.6	90	.5	567	1.5	.110	<.9	1.9	30.3	52.8	5.0	71.0
MKP	<.02	<.10	3.0	140	<.4	511	1.4	.270	<1	<.1	27.0	14.8	<.3	52.0
MKP	<.02	.20	3.3	120	<.4	541	1.1	.170	<1	<.1	31.0	14.6	<.3	52.0
MKP	<.02	.20	3.0	96	<.4	450	1.2	.210	<1	<.1	14.0	29.6	<.3	61.0
MKP	.68	.63	3.9	134	.4	385	3.5	.150	<1	.8	11.0	9.2	<.3	52.8
MKP	.22	6.3	3.9	37	2.1	713	5.0	.170	<1	23.6	12.0	20.9	48	61.0
MKP	<.04	<.10	2.5	180	<.4	338	2.8	.018	<1	<.4	8.1	15.9	<.3	71.2
MKP	<.04	<.10	2.8	174	<.4	444	2.6	.037	<1	<.4	7.1	21.5	<.3	67.5
MKP	.03	<.20	3.6	170	<.6	436	2.7	.026	<1	<.1	16.0	16.5	<.4	65.0
MKP	.05	<.20	3.4	120	<.7	400	1.3	.020	<2	<.2	9.2	7.3	<.5	38.0
MKP	<.03	<.20	3.4	110	<.7	423	2.0	.031	<1	<.2	15.0	15.6	<.4	50.0
MKP	.04	<.10	2.1	154	<.4	339	3.2	.034	<1	.4	12.0	14.0	<.3	72.8
MKP	<.02	<.10	2.3	141	<.4	313	3.0	.020	<1	<.1	9.9	12.9	<.3	60.0
MKP	<.02	<.10	2.0	140	<.4	358	4.5	.021	<1	<.1	10.0	15.8	<.4	64.0
MKP	<.02	<.10	2.7	150	<.4	348	4.3	.037	<1	<.1	17.0	13.4	<.3	64.0
MKP	<.07	<.50	3.8	187	<1	592	3.4	.009	<2	<.3	15.0	68.9	<.5	76.0
MKP	<.04	<.10	2.9	89	<.4	389	1.0	.010	<1	<.4	7.0	7.5	<.3	59.3
MKP	.06	3.5	9.8	1,710	2.7	1,800	49.1	.070	<1	5.7	26.0	106	16	87.0
MKP	.18	3.5	12.0	424	1.0	2,210	26.6	.071	<1	15.1	27.0	159	37.1	110
MKP	<.02	.75	4.5	91	.6	686	1.9	.120	<1	2.5	39.0	67.5	8.1	77.0
MKP	.10	3.5	8.0	89	2.0	1,120	5.6	.220	<1	20.0	19.0	104	51.5	110
MKP	.06	2.0	5.5	119	1.3	801	5.2	.300	<1	14.0	8.9	25.9	29	82.9
MKP	0.10	2.6	9.2	303	<0.5	1,290	10.0	0.066	<1	1.6	14.0	57.7	0.6	102
MKP	<.07	<.4	3.9	157	<1	818	2.6	.043	<1	<.3	17.0	50.2	<.4	70.0
MKP	<.03	<.2	4.7	233	2.3	842	2.9	.058	<1	<.2	19.0	71.7	<.4	98.8
MKP	<.02	2.0	7.0	165	.7	1,120	3.2	.010	<1	2.7	7.7	38.1	12	74.4
MKP	.03	2.9	6.7	209	1.3	1,150	5.1	.010	<1	7.2	7.5	42.2	23	77.3
MKP	<.02	1.3	6.0	156	.8	1,310	2.4	.010	<1	4.8	7.1	75.5	14	86.1
MKP	<.09	<.6	3.3	184	<2.0	735	5.5	.032	<1	<.5	12.0	71.2	<.4	76.2
MKP	<.08	<.5	2.9	170	2.0	699	2.5	.030	<2	1.0	8.7	76.9	<.5	84.0
MKP	.03	2.3	13	164	1.3	1,120	8.8	.029	<.9	7.8	10.0	60.9	22	99.0

Table 32. Trace-element concentrations in aquatic-plant, aquatic-invertebrate, fish, and bird samples collected from wetlands within the Uncompahgre Project during 1991 and 1992--Continued

Site code	Matrix	Species	Date	Average length	Number in sample	Percent moisture	Aluminum	Arsenic	Barium	Beryllium	Boron
GTP	Aq. plant	Potamogeton	05-28-91	--	Comp.	89.6	1,070	6.0	21.3	0.04	170
GTP	Fish w.b.	Fathead minnow	06-11-91	88	6	77.2	627	.7	13.0	.03	<2
GTP	Bird egg	American coot	05-28-91	--	2	76.0	8	<.1	1.2	<.01	<2
GTP	Bird egg	American coot	06-11-91	--	2	75.8	<3	<.1	.55	<.01	<2
GTP	Bird egg	Yellow-headed bb	05-28-91	--	6	81.8	<3	<.1	.73	<.01	<2
GTP	Bird egg	Yellow-headed bb	05-28-91	--	6	83.2	<3	<.1	.73	<.01	<2
GTP	Bird w.b.	American coot-imm.	07-23-91	--	1	78.7	110	.6	11.0	<.01	4
GTP	Bird w.b.	American coot-imm.	07-23-91	--	1	79.4	55	.7	8.5	<.01	6
BZP	Aq. plant	Chara	06-08-92	--	Comp.	79.6	5,770	2.5	116	.21	23
BZP	Aq. plant	Potomogeton	07-23-91	--	Comp.	80.5	451	2.2	51.3	.02	90
BZP	Fish w.b.	Fathead minnow	06-11-91	62	44	75.5	1,330	1.3	14.0	.05	2
BZP	Fish w.b.	Fathead minnow	06-11-91	69	3	79.0	532	.8	9.0	.02	2
BZP	Fish w.b.	Green sunfish	05-19-92	171	5	73.6	4	<.3	.71	<.01	<2
BZP	Bird egg	American avocet	05-21-91	--	2	74.0	<3	<.1	.39	<.01	<2
BZP	Bird egg	American avocet	05-21-91	--	2	73.7	<3	<.1	.30	<.01	<2
BZP	Bird egg	American avocet	05-28-91	--	2	75.9	<3	<.1	.56	<.01	<2
BZP	Bird egg	American avocet	05-28-91	--	1	74.6	<3	<.1	.47	<.01	<2
BZP	Bird egg	American avocet	05-19-92	--	1	73.0	<8	<.2	.39	<.01	<2
BZP	Bird egg	Killdeer	06-08-92	--	1	70.5	<8	<.2	.72	<.01	<2
BZP	Bird w.b.	American avocet-imm.	05-19-92	--	3	75.9	46	<.2	.57	<.01	<2
BZP	Bird w.b.	Wilson's phalarope	05-21-91	--	1	59.1	280	.3	5.3	<.01	5
BZP	Bird w.b.	Killdeer-imm.	06-08-92	--	3	74.8	35	<.2	1.4	<.01	<2
BZP	Bird liver	American avocet	07-23-91	--	1	72.9	<3	<.1	<.10	<.01	<2
VT	Bird w.b.	Red-winged bb-imm.	06-17-92	--	1	77.4	190	<.2	3.5	<.01	<2
SWL	Bird egg	Killdeer	05-21-92	--	2	70.5	<8	<.2	1.8	<.01	<2
SWL	Bird egg	Killdeer	05-21-92	--	2	71.0	<8	<.2	1.2	<.01	<2
SWL	Bird egg	Killdeer	05-21-92	--	2	73.3	<8	<.2	.52	<.01	<2
SWL	Bird egg	Yellow-headed bb	06-13-91	--	6	83.4	<3	<.1	1.3	<.01	<2
SWL	Bird w.b.	Killdeer-imm.	05-21-92	--	1	76.7	427	.3	4.7	.03	<2
SWL	Bird w.b.	Killdeer-imm.	06-08-92	--	2	78.5	100	.3	.92	<.01	<2
SWL	Bird w.b.	Killdeer-imm.	06-08-92	--	2	75.1	78	<.2	1.2	.01	<2
SWL	Bird w.b.	Killdeer-imm.	06-08-92	--	2	78.2	51	<.2	3.0	.02	<2
SWL	Bird w.b.	Yellow-headed bb-imm.	06-04-91	--	1	83.5	35	<.1	1.2	<.01	<2
SWL	Bird w.b.	Yellow-headed bb-imm.	06-13-91	--	1	69.7	35	<.1	1.3	<.01	<2
SWL	Bird w.b.	Yellow-headed bb-imm.	06-13-91	--	1	72.3	20	<.1	4.2	<.01	<2
SWL	Bird w.b.	Yellow-headed bb-imm.	06-15-92	--	1	82.1	120	.2	4.9	<.01	<2
SWL	Bird w.b.	Yellow-headed bb-imm.	06-15-92	--	1	76.1	41	<.2	2.8	<.01	<2

Table 32. Trace-element concentrations in aquatic-plant, aquatic-invertebrate, fish, and bird samples collected from wetlands within the Uncompahgre Project during 1991 and 1992--Continued

Site code	Matrix	Species	Date	Average length	Number in sample	Percent moisture	Aluminum	Arsenic	Barium	Beryllium	Boron
SWL	Bird w.b.	Yellow-headed bb-imm.	06-15-92	--	1	77.9	383	.2	9.0	.02	<2
UNGR	Bird egg	Yellow-headed bb	05-21-92	--	1	58.8	5	<2.0	.66	<.03	<3
UNGR	Bird egg	Yellow-headed bb	05-21-92	--	2	79.9	<7	<.4	.28	<.01	<2
UNGR	Bird w.b.	Yellow-headed bb-imm.	05-21-92	--	1	87.5	<3	<.2	.90	<.01	<2
UNGR	Bird w.b.	Yellow-headed bb-imm.	05-21-92	--	4	81.2	7	<.2	.72	<.01	<2
UNGR	Bird w.b.	Yellow-headed bb-imm.	05-21-92	--	3	83.8	8	<.2	.84	<.03	<2

Site code	Cadmium	Chromium	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Selenium	Strontium	Vanadium	Zinc
GTP	0.26	1.2	5.9	3,900	1.5	6,010	118	0.027	2	5.2	5.1	153	6.2	30.4
GTP	.21	1.7	3.9	421	<.5	1,640	12.0	.029	<1	.87	36.0	155	2.2	193
GTP	<.04	.1	3.1	106	<.4	427	1.0	.076	<1	<.4	7.2	18.7	<.3	54.6
GTP	<.04	<.1	2.4	84	<.4	440	.7	.083	<1	<.4	7.2	11.5	<.3	45.5
GTP	<.04	<.1	2.3	146	<.4	345	2.4	.010	<1	<.4	13.0	9.1	<.3	65.2
GTP	<.04	<.1	2.2	133	<.4	390	2.2	.016	<1	<.4	10.0	8.9	<.3	58.1
GTP	.10	.68	18.0	233	.4	2,170	24.0	.066	<1	.77	14.0	165	.5	85.0
GTP	.15	1.3	13.0	263	.6	2,000	21.0	.066	<1	1.2	14.0	141	.6	86.9
BZP	.22	6.0	3.6	2,530	5.5	8,360	370	.017	<1	8.2	8.0	1,140	22	22.0
BZP	.15	1.3	2.5	500	.9	6,390	497	.018	1	7.0	12.0	1,200	1.6	12.0
BZP	.08	2.0	4.0	783	.5	1,700	38.4	.034	<1	1.6	59.0	154	4.0	199
BZP	.08	1.8	3.7	434	<.5	1,540	19.0	.041	<1	1.9	51.0	144	2.0	204
BZP	<.02	.71	1.5	60	<.4	1,530	3.8	.055	<1	1.9	55.0	171	6.0	85.7
BZP	<.03	<.1	3.7	107	<.4	367	2.1	.290	<1	<.1	44.4	8.4	<.3	53.6
BZP	<.03	<.1	3.6	126	<.4	400	1.0	.210	<1	.1	34.0	9.5	<.3	56.3
BZP	<.03	<.1	3.7	150	<.4	489	2.4	.150	<1	.2	44.6	11.4	<.3	60.2
BZP	<.03	<.1	3.3	125	<.4	512	2.2	.140	<1	.2	47.6	12.2	<.3	57.1
BZP	<.02	<.1	3.6	130	<.4	430	1.8	.170	<1	.1	40.0	14.1	<.3	50.0
BZP	<.02	.3	3.5	81	<.4	379	1.2	.072	<.9	<.1	19.0	10.5	<.3	43.0
BZP	.14	3.0	5.0	71	2.5	710	3.1	.250	<1	18.2	31.0	30.4	43.8	69.0
BZP	1.9	4.8	14.0	431	<.4	1,250	6.7	.390	<1	2.7	19.0	28.2	1.1	98.1
BZP	.078	3.0	5.0	71	2.6	731	1.9	.074	<1	14.3	27.0	43.8	34.2	67.0
BZP	.07	<.1	16.0	920	<.4	806	11.0	.150	2	<.2	98.0	1.2	<.3	110
VT	.09	.76	11.0	227	.6	1,740	7.4	.031	<1	1.3	8.7	94.2	3.5	134

Table 32. Trace-element concentrations in aquatic-plant, aquatic-invertebrate, fish, and bird samples collected from wetlands within the Uncompahgre Project during 1991 and 1992--Continued

Site code	Cadmium	Chromium	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Selenium	Strontium	Vanadium	Zinc
SWL	<0.02	<.10	3.1	94	<0.4	390	1.7	0.074	<1	<0.10	13.0	11.9	<0.3	43.0
SWL	.03	<.10	2.8	90	<.4	349	1.6	.086	<1	<.10	8.1	8.7	<.3	48.0
SWL	.02	<.10	3.1	96	<.4	386	1.2	.056	<1	<.10	16.0	11.8	<.3	43.0
SWL	<.03	<.10	1.8	136	<.4	390	3.3	.038	<1	<.20	12.0	12.8	<.3	60.8
SWL	.17	3.8	5.7	186	<.5	874	4.6	.639	<.9	25.3	5.7	31.1	40.8	59.9
SWL	.20	3.9	4.6	40	1.0	703	3.0	.120	<.9	34.6	4.2	26.5	56.3	55.4
SWL	.20	3.6	4.2	58	<.5	695	1.9	.053	<1	35.1	7.8	49.8	40.8	58.2
SWL	.11	3.7	4.9	110	<.4	778	2.5	.076	<1	15.0	15.0	38.2	31.7	68.0
SWL	.11	1.5	9.2	242	<.4	1,120	6.0	.057	<1	.99	33.0	44.5	<.3	104
SWL	.05	1.3	7.8	264	<.4	1,130	3.7	.150	<1	.79	23.0	45.5	<.3	113
SWL	.18	2.0	8.2	263	<.4	1,110	4.9	.030	<1	1.1	12.0	61.4	<.3	85.6
SWL	.21	1.5	14	590	<.4	1,130	8.4	.053	<1	3.2	21.0	40.9	7.1	112
SWL	.02	1.0	9.1	233	<.4	1,150	6.4	.019	<1	3.6	12.0	58.3	7.8	92.9
SWL	.23	3.5	16	560	<.5	1,140	15	.020	<1	11.5	13.0	56.6	28	111
UNGR	<.06	<.4	2.6	166	<1	352	4.4	<.009	<1	.6	15.0	20.6	<.4	71.0
UNGR	.02	<.1	1.0	67	<.4	196	1.4	.009	<.9	<.1	7.4	5.6	<.3	30.0
UNGR	<.02	.46	2.6	179	<.4	770	3.0	.026	<1	<.1	9.0	57.9	<.3	82.2
UNGR	<.02	.2	3.8	174	<.4	647	2.9	.021	<1	<.1	12.0	57.3	<.3	75.2
UNGR	<.07	<.4	4.3	150	<1	824	4.0	.017	<1	<.3	15.0	116	<.3	81.6

Table 33. Trace-element concentrations in aquatic-plant, fish, and bird samples collected from wetlands adjacent to the Uncompahgre Project during 1991 and 1992

[Analysis by U.S. Fish and Wildlife Service; sites are listed in table 1 and locations are on plate 1; average length in millimeters; aq., aquatic; --, no data; comp., composite; concentrations in micrograms per gram dry weight; w.b., whole body; <, less than; bb., blackbird; imm., immature]

Site code	Matrix	Species	Date	Average length	Number in sample	Percent moisture	Aluminum	Arsenic	Barium	Beryllium	Boron
FGR	Aq. plant	Potamogeton	06-13-91	--	Comp.	86.0	2,610	1.4	69.1	0.10	26
FGR	Fish w.b.	Common carp	06-13-91	235	4	75.6	66	.3	1.6	<.01	<2
FGR	Fish w.b.	Common carp	06-13-91	542	2	72.1	150	<.2	2.0	.01	<2
FGR	Bird egg	American coot	05-22-91	--	3	77.8	<3	<.1	<.10	<.01	<2
FGR	Bird egg	American coot	06-13-91	--	2	75.9	<3	<.1	3.3	.10	<2
FGR	Bird egg	American coot	06-13-91	--	2	78.5	<3	<.1	1.9	.23	<2
FGR	Bird egg	Pied-billed grebe	06-06-91	--	1	78.5	<3	<.1	.30	<.01	<2
FGR	Bird egg	Western grebe	05-22-91	--	4	76.1	<3	<.1	.20	<.01	<2
FGR	Bird egg	Western grebe	05-22-91	--	4	77.3	<3	<.1	.30	.01	<2
FGR	Bird egg	Western grebe	05-22-91	--	4	78.5	<3	<.1	.30	<.01	<2
FGR	Bird egg	Red-winged bb	05-30-91	--	6	79.4	<3	<.1	1.1	<.01	<2
FGR	Bird egg	Yellow-headed bb	05-22-91	--	4	84.3	<3	<.1	2.0	<.01	<2
FGR	Bird egg	Yellow-headed bb	05-30-91	--	6	83.9	<3	<.1	1.0	<.01	<2
FGR	Bird egg	Yellow-headed bb	05-30-91	--	4	78.6	<3	<.1	3.1	<.01	<2
FGR	Bird liver	Gadwall-imm.	07-24-91	--	1	69.6	<3	<.1	<.10	<.01	<2
FGR	Bird liver	American coot-imm.	07-30-91	--	1	74.9	<3	.1	<.10	<.01	2
FGR	Bird liver	American coot-imm.	07-30-91	--	1	74.6	<3	<.1	<.10	.01	<2
FGR	Bird liver	Western grebe	07-30-91	--	1	69.6	<3	<.1	.43	<.01	<2
FGR	Bird liver	Western grebe-imm.	07-30-91	--	1	75.1	<3	<.1	.10	<.01	<2
FGR	Bird breast	American coot-imm.	07-30-91	--	1	70.7	7	<.1	.30	<.01	<2
FGR	Bird breast	American coot-imm.	07-30-91	--	1	78.4	11	.1	.62	<.01	<2
SGP	Fish w.b.	Fathead minnow	06-12-91	49	20	78.9	729	.9	9.99	.02	5
SGP	Fish w.b.	Fathead minnow	06-12-91	58	17	81.7	130	.5	4.4	<.01	<2
SGP	Bird egg	Killdeer	05-23-92	--	1	76.5	10	<.2	.75	<.01	2
SGP	Bird egg	Red-winged bb	06-04-91	--	5	81.4	<3	<.1	.89	<.01	<2
AKR	Bird egg	Mallard	05-22-91	--	1	65.4	<3	<.1	2.9	<.01	<2

Table 33. Trace-element concentrations in aquatic-plant, fish, and bird samples collected from wetlands adjacent to the Uncompahgre Project during 1991 and 1992--Continued

Site code	Cadmium	Chromium	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Selenium	Strontium	Vanadium	Zinc
FGR	0.28	3.9	14.0	1,880	2.7	5,540	520	0.020	<1	6.2	8.3	535	6.5	30.5
FGR	.09	.42	3.7	114	<.5	1,170	6.1	.130	<1	.6	14.0	117	.6	149
FGR	.05	.9	2.9	161	<.4	1,000	17.0	.130	<1	.52	15.0	102	.5	168
FGR	<.03	<.1	2.5	130	<.4	467	3.5	.733	<1	.2	18.0	8.7	<.3	51.5
FGR	.21	.5	3.6	116	<.4	417	2.6	.280	<1	.4	6.5	12.7	<.3	69.2
FGR	.58	1.2	3.8	85	1.0	555	1.8	.390	<1	.95	12.0	11.4	<.3	50.4
FGR	<.03	.2	3.3	120	<.4	485	2.6	1.70	<1	.4	13.0	10.0	<.3	54.9
FGR	<.03	<.1	2.6	162	<.4	354	2.9	.290	<1	.2	11.0	7.7	<.3	56.6
FGR	<.03	<.1	2.2	180	<.4	381	2.4	.430	<1	.3	12.0	8.0	<.3	62.0
FGR	<.03	<.1	2.2	163	<.4	384	2.4	.370	<1	.2	11.0	7.4	<.3	57.9
FGR	<.03	<.1	2.8	153	<.4	439	2.4	.030	<1	.3	4.1	10.8	<.3	58.7
FGR	<.03	<.1	1.9	159	<.4	345	4.8	.023	<1	.3	7.1	15.8	<.3	67.1
FGR	<.03	<.1	1.8	172	<.4	390	4.2	.023	<1	.2	8.3	13.4	<.3	69.2
FGR	<.03	<.1	2.0	221	<.4	333	5.1	.033	<1	.3	7.6	13.7	<.3	77.0
FGR	1.5	<.1	88.6	2,300	<.5	770	17.0	.440	4	<.2	22.0	.4	<.3	152
FGR	.06	<.1	20.0	5,070	<.5	742	11.0	.190	5	<.2	20.0	.5	<.3	165
FGR	.36	<.1	55.4	3,220	<.5	657	8.7	.598	3	<.2	17.0	.4	<.3	141
FGR	.87	<.1	19.0	1,680	<.4	711	15.0	6.60	2	<.2	26.0	.2	<.3	97.9
FGR	3.36	<.1	13.0	3,240	<.5	826	12.0	1.98	1	<.2	28.0	.3	<.3	133
FGR	<.02	<.1	146	504	<.4	804	.9	.160	<1	.4	10.0	.3	<.3	66.0
FGR	<.02	<.1	20.0	402	<.4	902	1.1	.066	<1	<.1	11.0	1.0	<.3	67.1
SGP	.14	2.4	4.9	999	.7	1,890	134	.040	<1	2.4	72.0	208	1.8	209
SGP	.06	1.7	4.6	304	<.4	1,690	49.0	.029	<1	1.2	110	223	<.3	226
SGP	.05	.2	4.9	100	<.5	699	3.6	.054	<1	<.1	20.7	21.3	<.4	66.0
SGP	.11	.2	3.1	154	<.4	412	2.6	.028	<1	.7	18.0	14.6	<.3	59.9
AKR	<.03	<.1	3.5	127	<.4	281	1.9	.077	<1	<.2	22.0	7.7	<.3	54.7

Table 33. Trace-element concentrations in aquatic-plant, fish, and bird samples collected from wetlands adjacent to the Uncompahgre Project during 1991 and 1992--Continued

Site code	Matrix	Species	Date	Average length	Number in sample	Percent moisture	Aluminum	Arsenic	Barium	Beryllium	Boron
FRP	Aq. plant	Potamogeton	05-30-91	--	Comp.	88.2	2,000	1.3	283	0.06	140
FRP	Fish w.b.	Fathead minnow	06-12-91	67	20	75.6	2,440	.8	24.0	.09	84
FRP	Fish w.b.	Fathead minnow	06-12-91	66	10	80.2	1,630	.8	18.7	.05	78
FRP	Bird egg	Canada goose	05-21-91	--	3	68.7	<3	<.1	1.1	<.01	<2
FRP	Bird egg	American coot	05-30-91	--	2	73.8	<3	<.1	1.2	<.01	<2
FRP	Bird egg	American coot	05-30-91	--	2	75.7	<3	<.1	1.4	<.01	<2
FRP	Bird egg	American coot	05-20-92	--	1	70.9	<8	<.2	.43	<.01	<2
FRP	Bird egg	American coot	05-20-92	--	1	76.4	<8	<.2	1.1	<.01	<2
FRP	Bird egg	American coot	06-08-92	--	2	76.7	<8	<.2	.85	<.01	2
FRP	Bird egg	Yellow-headed bb	05-30-91	--	6	84.0	<3	<.1	1.0	<.01	<2
FRP	Bird egg	Yellow-headed bb	05-20-92	--	2	80.0	<20	<.3	.94	<.02	<4
FRP	Bird egg	Yellow-headed bb	05-20-92	--	2	80.7	<10	<.2	.68	<.02	<3
FRP	Bird egg	Yellow-headed bb	05-20-92	--	2	80.8	<10	<.2	1.2	<.02	<3
FRP	Bird egg	Yellow-headed bb	06-08-92	--	2	76.2	<20	<.2	1.1	<.03	<5
FRP	Bird w.b.	American coot-imm.	05-20-92	--	3	71.7	<8	<.2	1.0	<.01	2
FRP	Bird w.b.	American coot-imm.	05-20-92	--	3	74.7	33	.3	.48	<.01	<2
FRP	Bird w.b.	Yellow-headed bb-imm.	07-24-91	--	1	68.2	270	.2	4.5	.01	5
FRP	Bird w.b.	Yellow-headed bb-imm.	07-24-91	--	1	67.9	46	<.1	1.4	<.01	<2
FRP	Bird w.b.	Yellow-headed bb-imm.	05-20-92	--	2	80.6	5	<.2	1.8	<.01	<2
FRP	Bird w.b.	Yellow-headed bb-imm.	05-20-92	--	2	79.1	<20	<.4	1.9	<.05	<5
FRP	Bird w.b.	Yellow-headed bb-imm.	05-20-92	--	2	79.0	30	.2	2.8	<.02	5
FRP	Bird w.b.	Yellow-headed bb-imm.	06-08-92	--	1	75.5	49	<.2	2.2	<.01	<2
FRP	Bird w.b.	Yellow-headed bb-imm.	06-08-92	--	1	71.6	81	.5	2.3	<.01	<2
FRP	Bird w.b.	Yellow-headed bb-imm.	06-08-92	--	1	74.0	71	.3	3.3	<.01	<2
FRP	Bird w.b.	Yellow-headed bb-imm.	06-08-92	--	1	73.7	180	<.2	3.0	<.01	<2
FRP	Bird w.b.	Yellow-headed bb-imm.	06-08-92	--	1	79.0	20	1.3	2.4	<.01	<2
FRP	Bird w.b.	Yellow-headed bb-imm.	06-08-92	--	1	72.9	26	<.2	2.6	<.01	<2
FRP	Bird liver	Mallard	07-30-91	--	1	69.3	5	.1	.10	<.01	<2
FRP	Bird liver	Mallard	07-30-91	--	1	69.5	<3	<.1	<.10	<.01	2
FRP	Bird liver	Mallard	08-06-92	--	1	70.0	13	<.5	<.50	<.10	--
FRP	Bird liver	Mallard-imm.	07-30-91	--	1	68.3	<3	<.1	<.10	<.01	<2
FRP	Bird liver	Mallard-imm.	08-06-92	--	1	72.9	1.1	<.5	<.50	<.10	--
FRP	Bird liver	American coot	07-30-91	--	1	76.4	<3	.3	.20	<.01	<2
FRP	Bird liver	American coot-imm.	08-06-92	--	1	66.9	1.7	<.5	<.50	<.10	--
FRP	Bird liver	American coot-imm.	08-06-92	--	1	76.9	24	<.5	<.50	<.10	--
FRP	Bird liver	Pied-billed grebe	05-21-91	--	1	74.6	4	<.1	<.10	<.01	<2
FRP	Bird breast	Mallard	07-30-91	--	1	76.2	<3	<.1	.10	.07	<2
FRP	Bird breast	Mallard	07-30-91	--	1	74.4	<3	<.1	<.10	.01	<2
FRP	Bird breast	Mallard-imm.	07-30-91	--	1	78.2	3	<.1	.20	<.01	3

Table 33. Trace-element concentrations in aquatic-plant, fish, and bird samples collected from wetlands adjacent to the Uncompahgre Project during 1991 and 1992--Continued

Site code	Cadmium	Chromium	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Selenium	Strontium	Vanadium	Zinc
FRP	0.29	2.8	6.2	1,970	2.0	5,190	152	0.023	2	7.2	68.0	815	8.9	22.0
FRP	.10	3.2	4.6	1,410	.8	2,580	40.2	.027	<1	3.1	75.0	286	6.7	230
FRP	.10	3.8	4.6	951	.9	2,410	30.2	.039	<1	3.2	64.0	291	4.8	223
FRP	<.03	<.1	3.3	122	<.4	355	1.1	.025	<1	<.1	19.0	12.9	<.3	46.6
FRP	<.03	.1	3.5	130	<.4	422	.9	.079	<1	.2	23.0	18.2	<.3	65.7
FRP	<.03	<.1	3.3	117	<.4	476	1.0	.030	<1	<.1	24.0	19.2	<.3	64.6
FRP	<.02	.2	3.2	110	<.4	477	.86	.220	<1	.1	17.0	13.8	<.3	49.0
FRP	<.02	.3	2.7	100	<.4	423	.78	.053	<.9	<.1	20.0	16.1	<.3	51.0
FRP	<.02	.2	2.0	93	<.4	418	1.0	.082	<1	<.1	19.0	19.8	<.3	60.0
FRP	<.03	<.1	2.6	153	<.4	364	3.7	.036	<1	.3	21.0	11.4	<.3	58.8
FRP	<.05	<.3	2.0	120	<.9	452	2.8	.010	<2	<.2	17.0	26.0	<.7	67.0
FRP	<.03	.2	2.0	110	<.7	388	2.8	.020	<2	<.2	14.0	17.9	<.5	56.0
FRP	.06	<.2	3.0	120	<.7	402	1.7	.020	<2	.2	9.3	15.0	<.5	59.0
FRP	<.06	.5	<2.0	100	<1	374	1.0	.025	<3	<.3	13.0	15.0	<.8	53.0
FRP	<.02	.2	3.3	120	<.4	481	.86	.064	<1	<.1	17.0	22.0	<.3	56.0
FRP	.10	3.0	4.7	100	1.9	696	1.6	.330	<1	11.8	23.0	29.3	30.1	67.0
FRP	.20	1.9	8.9	353	.9	1,240	13.0	.350	<1	1.4	20.0	27.6	.8	95.6
FRP	.33	3.2	6.3	136	.8	1,010	2.8	.250	<1	1.6	18.0	54.7	<.3	95.9
FRP	.03	<.2	3.1	184	<.5	859	2.4	.033	<1	.2	22.1	100	<.4	85.0
FRP	<.10	<.6	2.0	170	<2	602	5.0	.026	<2	<.5	15.0	95.7	<.7	76.0
FRP	<.04	<.3	8.4	460	2.8	1,520	4.2	.032	<2	<.2	12.0	97.1	<.6	200
FRP	.06	2.0	8.3	160	2.7	1,180	3.2	.065	<1	9.2	33.0	52.6	23.0	89.0
FRP	.15	4.1	7.2	56	2.7	976	3.3	.026	<1	25.5	10.0	38.0	54.9	70.0
FRP	.10	3.3	8.5	120	2.1	948	3.8	.023	<1	16.3	13.0	46.6	42.8	74.0
FRP	<.02	2.4	7.9	253	1.4	1,110	4.6	.049	<1	6.9	15.0	64.3	19.0	81.0
FRP	<.02	1.5	8.8	180	1.0	1,320	3.7	.081	<1	5.2	43.0	73.7	16.0	100
FRP	.02	1.6	7.6	210	.7	1,170	4.2	.045	<1	3.0	17.0	52.6	10.0	83.0
FRP	0.80	0.2	225	1,760	<.4	576	7.9	.120	3	<.1	40.2	.7	<.3	126
FRP	.86	<.1	8.0	5,630	1.0	578	7.7	.120	3	<.2	30.0	1.3	<.3	95.8
FRP	1.4	.5	54.7	2,910	1.3	643	8.5	.189	3	<.5	46.6	.4	<.5	126
FRP	.08	<.1	8.1	1,070	<.4	517	7.0	.070	1	<.1	32.0	.6	<.3	74.4
FRP	.93	<.5	10.3	4,150	.7	633	4.6	.103	2	<.5	59.0	.3	<.5	114
FRP	.20	<.1	9.6	10,400	.8	809	3.6	.270	4	<.2	31.0	1.0	<.3	114
FRP	.36	<.5	10.1	3,570	6.1	781	8.6	.160	2	<.5	18.1	.5	<.5	111
FRP	<.10	.5	54.4	3,890	1.2	774	5.3	.401	4	<.5	34.6	1.5	<.5	141
FRP	.26	<.1	17.0	1,780	<.4	591	5.1	15.60	<1	<.2	49.1	1.3	<.3	64.6
FRP	.24	.1	17.0	287	<.4	1,040	.9	.041	<1	1.7	31.0	.6	<.3	33.3
FRP	.03	<.1	19.0	271	<.4	970	1.1	.032	<1	.48	22.0	.7	<.3	43.7
FRP	<.02	.1	9.2	117	<.4	955	.6	.085	<1	.4	47.0	1.3	<.3	47.8

Table 34. Trace-element concentrations in fish and bird samples collected from wetlands in the Grand Valley during 1991 and 1992

[Analysis by U.S. Fish and Wildlife Service; sites are listed in table 2 and locations are on plate 2; average length in millimeters; --, no data; concentrations in micrograms per gram dry weight; <, less than; w.b., whole body; imm., immature; bb, blackbird]

Site code	Matrix	Species	Date	Average length	Number in sample	Percent moisture	Aluminum	Arsenic	Barium	Beryllium	Boron
RMP	Bird egg	Mallard	05-29-92	--	2	67.1	<8	<0.2	10.4	<0.01	<2
RMP	Bird egg	Cinnamon teal	05-29-92	--	1	68.0	27	<.2	1.5	.01	<2
RMP	Bird w.b.	Cinnamon teal-imm.	05-29-92	--	2	73.6	90	.3	1.6	.01	<2
RMP	Bird liver	Mallard-imm.	06-19-92	--	1	75.3	<3	<.2	<.10	<.10	<2
RMP	Bird liver	Mallard-imm.	06-19-92	--	1	76.3	<3	<.2	<.09	<.09	<2
MWP	Bird egg	Red-winged bb	05-29-92	--	1	80.2	<4	<2	1.2	<.03	<3
MWP	Bird egg	Red-winged bb	05-29-92	--	1	75.7	<5	<.2	1.1	<.10	<3
MWP	Bird egg	Red-winged bb	05-29-92	--	2	79.3	<6	<.3	1.4	<.02	<4
MWP	Bird egg	Red-winged bb	05-29-92	--	2	80.7	<20	<.2	1.9	<.03	<4
MWP	Bird egg	Red-winged bb	05-29-92	--	2	75.0	<5	<.3	2.7	<.20	<3
MWP	Bird liver	Cinnamon teal-imm.	05-29-92	--	1	71.3	8	<.2	.20	<.09	<2
RDP	Bird egg	Common snipe	07-24-91	--	2	76.6	<3	<.1	.58	<.01	<2
RDP	Bird egg	Red-winged bb	06-04-91	--	6	83.5	<3	<.1	1.4	<.01	<2
RDP	Bird egg	Red-winged bb	06-04-91	--	6	83.3	<3	<.1	2.5	<.01	<2
RDP	Bird w.b.	Red-winged bb-imm.	06-04-91	--	2	70.8	210	<.1	4.8	.02	<2
RDP	Bird w.b.	Red-winged bb-imm.	07-24-91	--	1	71.8	67	<.1	2.4	<.01	<2
RDP	Bird w.b.	Red-winged bb-imm.	06-12-92	--	2	82.7	7	<.2	1.1	<.04	<3
RDP	Bird w.b.	Red-winged bb-imm.	06-12-92	--	4	84.2	15	<.2	1.8	<.01	<2
RDP	Bird w.b.	Red-winged bb-imm.	06-12-92	--	3	81.8	<3	<.2	1.8	<.01	<2
RDP	Bird liver	Mallard	07-24-91	--	1	72.0	<3	<.1	<.10	<.01	<2
RDP	Bird liver	Mallard	06-12-92	--	1	70.1	<3	<.2	4.2	<.10	<2
RDP	Bird liver	Mallard-imm.	06-26-92	--	1	69.4	<3	<.2	<.10	<.10	<2
RDP	Bird liver	Mallard-imm.	07-01-92	--	1	73.8	4	<.2	.10	<.10	<2
RDP	Bird liver	Mallard-imm.	07-01-92	--	1	77.0	<3	<.2	<.10	<.10	<2
RDP	Bird liver	American widgeon	05-13-91	--	1	73.8	80	9.4	.63	<.01	<2
TMP	Fish w.b.	Green sunfish	06-12-92	141	5	76.6	76	<.3	5.1	.02	<2
TMP	Bird egg	American avocet	06-04-91	--	3	73.3	<3	.2	7.5	<.01	<2
TMP	Bird egg	American avocet	06-04-91	--	2	73.8	<3	<.1	3.8	<.01	<2
TMP	Bird egg	American avocet	06-03-92	--	1	69.3	<8	<.2	5.4	<.01	<2
TMP	Bird w.b.	American avocet-imm.	06-09-92	--	2	77.8	52	<.2	5.5	.03	<2
TMP	Bird w.b.	Killdeer-imm.	06-19-92	--	1	79.6	1,450	.4	14.8	.04	<2
TMP	Bird w.b.	Killdeer-imm.	06-26-92	--	1	76.7	61	.3	5.5	<.01	<2

Table 34. Trace-element concentrations in fish and bird samples collected from wetlands in the Grand Valley during 1991 and 1992 --Continued

[Analysis by U.S. Fish and Wildlife Service; sites are listed in table 2 and locations are on plate 2; average length in millimeters; --, no data; concentrations in micrograms per gram dry weight; <, less than; w.b., whole body; imm., immature; bb, blackbird]

Site code	Matrix	Species	Date	Average length	Number in sample	Percent moisture	Aluminum	Arsenic	Barium	Beryllium	Boron
RWEB	Fish w.b.	Flannelmouth sucker	03-27-91	341	4	76.9	1,310	.6	16.7	.04	2
RWEB	Bird egg	Mallard	05-22-91	--	2	65.5	<3	<.1	7.2	<.01	<2
RWEB	Bird egg	Mallard	05-22-91	--	2	69.7	<3	<.1	4.6	<.01	<2
RWEB	Bird egg	Mallard	05-22-91	--	2	69.9	<3	<.1	6.6	<.01	<2
RWEB	Bird egg	Mallard	06-04-91	--	2	68.3	<3	<.1	4.9	<.01	<2
RWEB	Bird egg	Red-winged bb	05-22-91	--	6	84.0	<3	<.1	1.3	<.01	<2
RWEB	Bird w.b.	Mallard-imm.	05-22-91	--	1	71.4	470	<.1	9.5	.01	<2
RWEB	Bird liver	Cinnamon teal-imm.	07-01-92	--	1	73.7	<3	<.2	<.1	<.10	<2
RWEB	Bird liver	Cinnamon teal-imm.	07-01-92	--	1	69.8	<5	<.5	<.5	<.10	--
19M	Bird egg	Mallard	06-03-92	--	1	67.0	<8	<.2	10.8	<.01	<2
19M	Bird egg	Mallard	06-03-92	--	2	67.2	10	<.2	13.9	<.01	<2

Site code	Cadmium	Chromium	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Selenium	Strontium	Vanadium	Zinc
RMP	0.05	0.66	3.5	110	<0.4	487	1.7	0.049	<1	2.8	4.8	29.8	4.6	67.0
RMP	.11	1.2	3.6	66	<.4	423	1.3	.570	<1	7.4	4.5	30.8	30.3	55.0
RMP	.24	2.7	5.0	65	.6	591	1.6	.630	<.9	34.7	2.3	58.2	51.9	61.1
RMP	<.20	<2.0	31.4	1,290	<4	720	14.0	.140	2.9	<1.0	30.0	2.9	<.3	138
RMP	<.20	<2.0	30.0	1,380	<4	724	12.0	.130	3	<.9	22.0	5.4	<.3	122
MWP	<.06	<.4	2.5	181	<1	714	2.7	.080	<1	.3	8.0	38.9	<.4	70.0
MWP	<.30	<3.0	3.4	169	<6	523	2.7	.044	<1	<2.0	6.4	31.3	<.5	62.0
MWP	.05	<.3	3.4	150	<.9	327	2.8	.026	<2	<.2	4.9	12.0	<.6	51.0
MWP	<.05	<.3	<2.0	120	<1	224	1.9	.038	<2	<.2	6.4	9.8	<.7	41.0
MWP	<.30	<3.0	4.1	244	<6	797	4.3	.047	<2	<2.0	13.0	72.0	<.5	84.0
MWP	.30	<2.0	67	2,320	<4	810	17.0	.190	3	<.9	26.0	1.4	<.3	168
RDP	<.04	<.10	4.0	126	<.4	400	3.4	.280	<1	.4	10.0	10.0	<.3	46.5
RDP	<.04	.10	3.1	151	<.4	520	2.6	.041	<1	<.4	6.8	20.5	<.3	64.2
RDP	<.04	<.10	2.5	166	<.4	418	2.3	.110	<1	.5	11.0	28.0	<.3	60.1
RDP	.24	2.5	8.0	336	<.4	1,060	11.0	.062	<1	2.2	17.0	66.1	.7	93.2
RDP	.37	2.6	9.7	318	<.4	1,050	6.3	.099	<1	1.7	16.0	44.5	.4	96.7
RDP	<.08	<.5	3.7	226	<2	753	4.1	.120	<1	<.4	18.0	91.8	<.4	82.7
RDP	.04	.3	3.7	160	3	861	3.8	.064	<1	<.1	12.0	65.1	<.3	92.7

Table 34. Trace-element concentrations in fish and bird samples collected from wetlands in the Grand Valley during 1991 and 1992--Continued

Site code	Cadmium	Chromium	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Selenium	Strontium	Vanadium	Zinc
RDP	<.02	<.1	3.3	198	<.4	656	3.9	.097	<1	<.1	15.0	159	<.3	64.4
RDP	.30	<.1	36.3	3,640	<.4	733	13.0	.058	3	<.2	29.0	.6	<.3	135
RDP	1.3	<2.0	65.1	3,300	<4	598	9.7	.682	4.1	<1.0	10.0	1.2	<.3	78.3
RDP	<.20	2.0	153	1,630	<4	734	11.0	.065	3.4	<1.0	33.0	.49	<.3	132
RDP	<.20	2.0	90.7	1,700	<4	806	15.0	.029	4	<1.0	23.0	.81	<.3	133
RDP	.30	<2.0	92.5	1,560	<4	714	9.2	.035	3.3	<1.0	24.0	.79	<.3	107
RDP	19.6	.95	196	3,010	<.5	776	22.9	.250	5	.6	37.0	3.8	.5	172
TMP	<0.02	2.7	1.5	71	<0.5	1,640	12.0	.080	<1	7.9	13.0	196	23.0	91.0
TMP	<.03	<.1	2.0	126	<.4	417	1.4	.360	1	<.2	5.1	10.8	<.3	40.6
TMP	<.03	<.1	1.9	94	<.4	381	1.3	.210	<1	<.2	5.6	11.0	<.3	44.5
TMP	.04	.2	4.1	95	<.4	429	.97	.260	<1	<.1	7.2	5.1	<.3	40.0
TMP	.12	4.0	4.2	76	<.5	650	1.8	.150	<1	18.5	7.4	26.1	34.5	53.0
TMP	<.02	4.9	7.4	865	<.4	1,590	16.0	.081	<1	13.5	8.1	45.8	37.9	82.0
TMP	.17	1.2	7.4	237	<.4	1,250	4.0	.034	<1	4.5	6.6	43.6	12.0	92.2
RWEB	.15	2.3	3.6	757	.9	1,660	23.0	.130	<1	1.4	13.0	79.6	2.6	68.0
RWEB	<.04	<.1	2.4	105	<.4	335	1.7	.058	<1	.5	7.0	9.8	<.3	52.0
RWEB	<.04	.2	3.3	103	<.4	361	1.0	.038	<1	<.4	17.0	8.8	<.3	57.4
RWEB	<.04	<.1	3.8	92	<.4	395	1.8	.034	<1	<.4	7.8	8.9	<.3	54.1
RWEB	<.04	<.1	2.6	111	<.4	330	1.4	.025	<1	<.4	6.9	11.7	<.3	57.1
RWEB	.06	<.1	2.0	132	<.5	392	2.6	.023	<1	.5	4.6	14.1	<.3	58.3
RWEB	.31	1.8	11.0	425	.5	1,120	36.1	.069	<1	1.3	12.0	62.2	1.6	96.2
RWEB	.50	<2.0	118	2,140	<4	784	14.0	.022	2	<1.0	15.0	.57	<.3	109
RWEB	.71	.5	49.7	515	<.5	729	11.5	.186	2	<.5	29.5	.75	<.5	92.1
19M	<.02	.1	3.4	120	<.4	364	2.2	.270	<1	<.1	4.4	10.4	<.3	50.0
19M	<.02	1.1	4.1	110	1.4	509	1.6	.240	<1	4.8	3.9	26.4	17.0	63.0

Table 35. Trace-element concentrations in fish samples collected from the North Fork of the Gunnison River and the Gunnison River during 1992

[Analysis by U.S. Fish and Wildlife Service; average length in millimeters; concentrations in micrograms per gram dry weight; <, less than; sites NFK2, GUN3, and GUN4 are listed in table 1 and locations are on plate 1; site GUN6 is listed in table 2 and location is on plate 2]

Site code	Matrix	Species	Date	Average length	Percent moisture	Aluminum	Arsenic	Barium	Beryllium	Boron	Cadmium
NFK2	Whole body	Longnose sucker	03-12-92	520	68.7	362	0.7	4.1	0.02	<2	<0.02
NFK2	Whole body	Longnose sucker	03-12-92	475	68.2	468	.4	5.5	.02	<2	<.02
NFK2	Whole body	Longnose sucker	03-12-92	475	69.7	230	<.4	2.0	.03	<2	<.02
NFK2	Whole body	Longnose sucker	03-12-92	465	64.3	407	.7	4.8	.02	<2	<.02
NFK2	Whole body	Longnose sucker	03-12-92	470	70.7	250	<.4	3.7	.01	<2	<.02
NFK2	Whole body	Longnose sucker	03-12-92	518	68.5	482	.8	4.5	.03	<2	.02
NFK2	Whole body	Longnose sucker	03-12-92	494	63.9	393	.7	3.9	.02	<2	<.02
NFK2	Whole body	Longnose sucker	03-12-92	460	70.2	453	<.4	5.4	.02	5	<.02
NFK2	Whole body	Longnose sucker	03-12-92	500	68.5	344	.6	3.7	.02	<2	.02
NFK2	Whole body	Longnose sucker	03-12-92	440	65.9	280	<.4	3.1	.01	<2	<.02
NFK2	Whole body	Speckled dace	03-12-92	95	67.6	435	.7	6.2	.02	<2	<.03
NFK2	Whole body	Speckled dace	03-12-92	72	72.7	200	1.0	5.0	<.02	<3	.03
NFK2	Whole body	Speckled dace	03-12-92	67	73.7	180	.7	7.3	<.02	<3	.04
NFK2	Whole body	Speckled dace	03-12-92	50	78.2	97	2.0	2.8	<.04	<6	<.07
NFK2	Whole body	Speckled dace	03-12-92	55	71.6	95	<.8	2.7	<.03	<5	<.05
NFK2	Whole body	Speckled dace	03-12-92	58	72.2	200	.9	3.9	<.03	8	.06
NFK2	Whole body	Speckled dace	03-12-92	52	74.7	170	2.0	4.0	<.03	<6	.10
NFK2	Whole body	Speckled dace	03-12-92	56	72.7	95	2.0	2.7	<.03	<5	<.06
NFK2	Whole body	Speckled dace	03-12-92	55	72.8	76	3.0	2.4	<.03	<5	<.06
NFK2	Whole body	Speckled dace	03-12-92	56	64.4	190	<.8	3.7	<.03	<5	<.05
NFK2	Liver	Longnose sucker	03-12-92	445	76.0	8	<.3	<10	<.01	<2	.18
NFK2	Liver	Longnose sucker	03-12-92	426	64.2	9.5	.7	<10	<.01	11	.088
NFK2	Liver	Longnose sucker	03-12-92	470	76.4	52	<.3	.59	<.01	12	.28
GUN3	Whole body	Roundtail chub	03-12-92	381	75.3	140	<.4	4.5	<.01	<2	.07
GUN3	Whole body	Roundtail chub	03-12-92	337	79.3	59	<.4	1.4	.01	<2	.16
GUN3	Whole body	Roundtail chub	03-12-92	351	77.7	36	.7	4.3	<.01	<2	.06
GUN3	Whole body	Roundtail chub	03-12-92	372	76.9	180	<.4	5.1	<.01	<2	.06
GUN3	Whole body	Roundtail chub	03-12-92	398	76.9	20	<.4	2.6	<.01	<2	.068
GUN3	Whole body	Roundtail chub	03-12-92	410	76.9	12	<.4	2.6	<.01	<2	.07
GUN3	Whole body	Roundtail chub	03-12-92	322	76.1	89	.6	4.4	<.01	<2	.11
GUN3	Whole body	Roundtail chub	03-12-92	356	74.1	14	<.4	3.0	<.01	<2	.06
GUN3	Whole body	Roundtail chub	03-12-92	357	78.2	19	<.4	4.8	<.01	<2	.06
GUN3	Whole body	Roundtail chub	03-12-92	316	79.1	170	<.4	7.1	<.01	<2	.06

Table 35. Trace-element concentrations in fish samples collected from the North Fork of the Gunnison River and the Gunnison River during 1992--Continued

Site code	Chromium	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Selenium	Strontium	Vanadium	Zinc
NFK2	1.3	3.8	303	<0.4	886	32.1	0.34	<1	0.83	3.2	34.0	1.2	42
NFK2	1.1	1.9	358	.5	839	31.8	.17	<1	.81	4.0	20.2	1.6	36
NFK2	2.0	2.4	157	<.4	684	13.0	.40	<.9	7.3	2.1	8.4	21.0	41
NFK2	1.8	3.6	303	<.4	752	29.3	.29	<1	1.3	2.5	32.1	1.9	47
NFK2	1.7	3.3	222	<.4	965	28.2	.42	<1	.83	3.4	41.9	.87	49
NFK2	2.6	2.9	401	<.4	899	35.3	.39	<1	2.2	2.9	33.0	3.1	62
NFK2	1.9	2.6	296	<.4	812	25.4	.25	<.9	1.7	2.8	32.9	3.1	42
NFK2	1.1	5.6	274	<.4	870	28.5	.36	3	2.0	3.3	29.6	5.6	58
NFK2	1.4	2.3	318	<.5	835	30.4	.46	<1	1.8	3.0	30.2	3.7	57
NFK2	1.4	2.9	217	<.5	786	16.0	.13	<1	1.2	2.7	29.2	2.4	44
NFK2	.80	2.1	222	<.5	980	16.0	.21	<1	.30	6.4	83.3	1.1	130
NFK2	.60	2.0	141	<.6	1,180	11.0	.18	<1	.20	6.3	113.0	.60	140
NFK2	1.0	2.3	170	<.8	1,230	13.0	.17	<2	.81	6.7	122.0	.60	140
NFK2	<.80	2.0	130	<1.0	1,030	9.7	.13	<3	1.4	5.4	91.9	<.90	93
NFK2	<.60	2.5	100	<1.0	938	8.9	.15	<2	.70	6.1	80.3	<.70	110
NFK2	<.60	4.8	160	<1.0	1,100	12.0	.14	<2	.50	4.8	97.2	<.70	120
NFK2	<.70	2.0	180	<1.0	1,220	12.0	.17	<3	.40	7.4	104.0	<.90	130
NFK2	<.70	2.5	120	<1.0	1,090	11.0	.01	<3	.30	5.7	103.0	<.80	120
NFK2	<.70	2.0	100	<1.0	1,080	10.0	.13	<3	<.30	6.2	94.8	<.80	110
NFK2	<.60	2.4	170	<1.0	1,170	14.0	.14	<2	<.30	8.7	101.0	<.80	120
NFK2	<.30	27.0	396	<.5	543	5.5	.074	<1	<.10	7.3	.38	.80	120
NFK2	<.30	4.3	91	<.5	335	3.1	.036	<1	<.10	3.7	.20	.50	39
NFK2	<.30	36.0	157	<.5	892	11.0	.12	<1	.20	7.0	.66	.30	100
GUN3	12.5	12.0	277	<.4	1,030	27.8	.22	<1	2.1	9.6	70.3	.70	100
GUN3	3.0	35.1	51	<.4	945	7.7	.504	<.9	11.1	7.2	16.6	34.5	86
GUN3	5.5	12.0	132	<.4	1,020	6.3	.57	<1	1.9	8.2	32.9	.50	73
GUN3	4.2	8.0	240	<.4	1,130	12.0	.891	<.9	2.1	6.8	53.4	.70	100
GUN3	.98	2.9	92	<.4	1,010	4.4	1.03	<.9	1.3	8.0	26.9	3.0	66
GUN3	.70	3.8	75	<.4	1,000	5.1	1.0	<1	.49	5.5	25.9	.40	70
GUN3	4.7	10.0	169	<.5	1,040	9.1	.50	<1	2.3	8.8	57.7	.80	77
GUN3	.97	2.5	60	<.4	895	5.1	.639	<1	1.5	8.2	35.0	3.8	69
GUN3	.66	3.2	99	<.5	1,200	9.8	.849	<1	.82	7.8	58.6	2.1	100
GUN3	.81	3.7	238	<.4	1,240	12.0	.45	<1	1.3	6.6	66.5	3.7	110

Table 35. Trace-element concentrations in fish samples collected from the North Fork of the Gunnison River and the Gunnison River during 1992--Continued

Site code	Matrix	Species	Date	Average length	Percent moisture	Aluminum	Arsenic	Barium	Beryllium	Boron	Cadmium
GUN3	Whole body	Flannelmouth sucker	03-12-92	485	72.0	36	<0.4	2.1	<0.01	<2	<0.02
GUN3	Whole body	Flannelmouth sucker	03-12-92	475	69.1	110	<.4	2.8	.01	<2	.02
GUN3	Whole body	Flannelmouth sucker	03-12-92	470	61.9	170	<.4	3.3	<.01	<2	.03
GUN3	Whole body	Flannelmouth sucker	03-12-92	525	72.2	220	<.4	4.0	.02	<2	.10
GUN3	Whole body	Flannelmouth sucker	03-12-92	440	67.3	210	<.4	5.1	.01	<2	.04
GUN3	Whole body	Flannelmouth sucker	03-12-92	515	70.2	390	.9	5.4	.02	<2	.03
GUN3	Whole body	Flannelmouth sucker	03-12-92	490	68.6	65	.9	2.4	<.01	<2	.04
GUN3	Whole body	Flannelmouth sucker	03-12-92	455	70.4	120	.4	3.6	<.01	<2	.04
GUN3	Whole body	Flannelmouth sucker	03-12-92	503	66.7	120	.6	3.2	<.01	<2	.04
GUN3	Whole body	Flannelmouth sucker	03-12-92	464	65.5	240	2.0	4.0	<.01	<2	.04
GUN3	Whole body	Speckled dace	03-12-92	85	71.6	7	.5	8.7	<.01	<2	.14
GUN3	Whole body	Speckled dace	03-12-92	66	70.2	36	<.8	1.4	<.02	<3	<.04
GUN3	Whole body	Speckled dace	03-12-92	83	72.8	26	<.5	5.1	<.01	<2	.06
GUN3	Whole body	Speckled dace	03-12-92	74	67.3	<4	2.0	3.6	<.02	<3	.06
GUN3	Whole body	Speckled dace	03-12-92	68	74.3	8	<.7	7.6	<.02	<3	.08
GUN3	Whole body	Speckled dace	03-12-92	75	75.4	21	.5	4.9	<.01	<2	.06
GUN3	Whole body	Speckled dace	03-12-92	78	70.2	<4	<.7	7.0	<.02	<3	.05
GUN3	Whole body	Speckled dace	03-12-92	69	75.9	36	<.6	6.7	<.02	<3	.30
GUN3	Whole body	Speckled dace	03-12-92	75	75.1	35	<.5	8.5	<.02	<3	.12
GUN3	Whole body	Speckled dace	03-12-92	69	73.1	10	.7	4.8	<.02	<3	.06
GUN3	Liver	Flannelmouth sucker	03-12-92	470	62.2	<3	<.3	<10	<.01	2	.16
GUN3	Liver	Flannelmouth sucker	03-12-92	485	60.8	<3	<.4	<10	<.01	2	.081
GUN3	Liver	Flannelmouth sucker	03-12-92	462	73.8	5	<.4	<10	<.01	<2	.17
GUN4	Whole body	Roundtail chub	04-11-92	365	74.7	120	.7	12.6	<.03	<2	.10
GUN4	Whole body	Roundtail chub	04-11-92	357	77.3	65	.5	3.7	<.02	<2	.14
GUN4	Whole body	Roundtail chub	04-11-92	362	75.3	130	<.4	5.8	<.02	<2	.06
GUN4	Whole body	Roundtail chub	04-11-92	--	72.4	160	.4	8.8	<.02	<2	.10
GUN4	Whole body	Roundtail chub	04-11-92	270	76.8	423	.5	13.9	<.02	<2	.10
GUN4	Whole body	Roundtail chub	04-11-92	226	75.4	72	<.4	2.6	<.03	<2	<.04
GUN4	Whole body	Roundtail chub	04-11-92	247	78.6	646	.5	9.0	.03	<2	<.02
GUN4	Whole body	Roundtail chub	04-11-92	246	76.6	12	<.4	2.8	<.01	<2	.03
GUN4	Whole body	Roundtail chub	04-11-92	355	72.9	38	<.4	1.8	<.01	<2	.16
GUN4	Whole body	Roundtail chub	04-11-92	302	78.1	467	.7	6.4	.02	<2	.02

Table 35. Trace-element concentrations in fish samples collected from the North Fork of the Gunnison River and the Gunnison River during 1992--Continued

Site code	Chromium	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Selenium	Strontium	Vanadium	Zinc
GUN3	12.0	308.0	150	<0.4	694	11.0	0.47	<0.9	2.3	3.0	9.2	<0.30	52
GUN3	1.7	4.5	122	2.5	813	29.2	.22	<.9	6.4	3.8	32.0	7.9	55
GUN3	.20	1.9	249	<.4	565	20.5	.22	<.9	.42	1.8	9.2	.60	39
GUN3	2.9	6.7	200	<.4	944	35.7	.34	<.9	9.1	2.4	33.7	26.0	62
GUN3	3.9	3.4	246	<.4	704	35.8	.21	<.9	2.1	3.1	10.1	.50	60
GUN3	3.6	3.7	370	<.5	815	36.7	.46	<1	3.5	3.2	24.9	6.2	46
GUN3	1.6	1.8	123	<.4	768	21.1	.45	<1	1.9	2.7	19.0	3.1	46
GUN3	2.8	3.6	180	.4	800	19.9	.33	<1	1.2	2.8	14.4	.50	52
GUN3	15.5	4.3	267	<.5	799	31.5	.18	<1	1.3	3.3	34.4	.60	49
GUN3	5.0	2.0	310	<.5	720	34.9	.26	<1	2.4	3.1	18.4	.90	46
GUN3	.50	2.4	44	<.5	1,090	13.0	.22	<1	<.10	11.0	93.2	<.40	130
GUN3	.30	.8	39	<.7	447	5.9	.076	<2	<.20	4.6	70.0	<.50	47
GUN3	.30	14.0	343	<.5	1,160	15.0	.19	<1	.20	11.0	82.0	<.30	120
GUN3	<.20	1.9	50	<.6	912	7.9	.12	<1	<.20	13.0	74.4	<.40	110
GUN3	.50	2.0	49	<.8	1,220	14.0	.17	<2	<.20	10.0	99.4	<.50	130
GUN3	.20	1.7	34	<.6	929	10.0	.16	<1	<.10	6.9	82.2	<.40	120
GUN3	.40	2.5	67	<.6	1,050	13.0	.15	<1	<.10	11.0	91.0	<.40	120
GUN3	.63	2.3	64	<.7	1,140	12.0	.20	<2	<.20	12.0	95.3	<.50	120
GUN3	.40	1.8	90	<.7	1,120	9.3	.21	<2	<.20	14.0	86.1	<.50	150
GUN3	.20	2.1	41	<.7	1,110	10.0	.12	<2	.20	13.0	114	<.50	120
GUN3	<.30	14.0	241	<.5	314	3.4	.058	<1	.20	3.4	<.10	<.30	55
GUN3	<.30	17.0	228	<.4	301	3.6	.047	<1	.20	3.1	<.10	<.30	51
GUN3	<.30	11.0	262	<.5	788	11.0	.876	<1	.10	4.7	.30	<.30	97
GUN4	2.7	4.9	159	3.0	1,560	13.0	.36	<1	9.4	5.9	79.1	25.0	110
GUN4	2.3	4.6	173	<.8	1,030	7.5	.45	<1	1.3	8.0	40.6	.98	69
GUN4	3.2	4.6	182	<.8	1,080	11.0	.64	<1	2.1	6.4	46.5	.90	83
GUN4	16.0	23.0	373	<.8	1,250	18.0	.18	<1	2.5	9.2	91.7	.80	110
GUN4	3.2	9.0	576	<.8	1,060	37.1	.36	<1	2.1	8.4	66.2	1.9	98
GUN4	2.1	2.5	72	1.0	983	7.9	.24	<1	4.1	7.5	49.9	12.0	88
GUN4	2.7	51.1	603	1.5	1,320	27.9	.23	<1	2.9	8.6	76.9	5.9	110
GUN4	.50	2.9	62	<.4	1,250	7.3	.27	<.9	.43	10.0	52.3	.50	100
GUN4	2.5	3.8	92	.5	887	5.1	.49	<.9	1.5	7.6	28.3	.50	72
GUN4	1.0	3.8	361	.7	1,370	26.2	.36	<.9	.70	9.7	74.5	2.0	95

Table 35. Trace-element concentrations in fish samples collected from the North Fork of the Gunnison River and the Gunnison River during 1992--Continued

Site code	Matrix	Species	Date	Average length	Percent moisture	Aluminum	Arsenic	Barium	Beryllium	Boron	Cadmium
GUN4	Whole body	Flannelmouth sucker	04-11-92	477	64.1	130	<0.3	1.5	<0.02	<2	<0.04
GUN4	Whole body	Flannelmouth sucker	04-11-92	452	64.2	220	.4	2.2	<.02	<2	<.04
GUN4	Whole body	Flannelmouth sucker	04-11-92	453	65.8	200	<.3	2.9	<.02	<2	.07
GUN4	Whole body	Flannelmouth sucker	04-11-92	485	69.1	330	<.3	5.2	<.02	<2	<.04
GUN4	Whole body	Flannelmouth sucker	04-11-92	470	68.4	180	.6	3.5	<.02	<2	<.04
GUN4	Whole body	Flannelmouth sucker	04-11-92	491	68.8	180	.7	4.1	<.02	<2	<.04
GUN4	Whole body	Flannelmouth sucker	04-11-92	513	67.0	210	.5	2.7	<.02	<2	<.04
GUN4	Whole body	Flannelmouth sucker	04-11-92	508	67.1	609	.4	4.3	.04	<2	<.04
GUN4	Whole body	Flannelmouth sucker	04-11-92	448	68.1	329	.4	5.4	<.02	<2	<.04
GUN4	Whole body	Flannelmouth sucker	04-11-92	448	68.1	427	.7	4.0	<.02	<2	<.04
GUN4	Whole body	Speckled dace	04-11-92	60	71.1	350	<1.0	<	<.3	<7	<.50
GUN4	Whole body	Speckled dace	04-11-92	60	76.1	300	3.3	6.9	<.2	<5	<.30
GUN4	Whole body	Speckled dace	04-11-92	123	67.4	150	<.4	5.7	.02	<2	.085
GUN4	Whole body	Speckled dace	04-11-92	82	69.9	16	.4	4.5	<.04	<2	.08
GUN4	Whole body	Speckled dace	04-11-92	82	70.5	20	<.4	4.3	<.06	<2	.10
GUN4	Whole body	Speckled dace	04-11-92	110	75.2	140	<.4	7.9	.02	<2	.14
GUN4	Whole body	Speckled dace	04-11-92	85	68.1	280	<.4	7.7	<.02	<2	.10
GUN4	Whole body	Speckled dace	04-11-92	83	72.1	83	<.5	4.8	<.01	<2	<.02
GUN4	Whole body	Speckled dace	04-11-92	73	70.8	100	<.4	3.9	<.09	<2	.20
GUN4	Whole body	Speckled dace	04-11-92	93	69.0	180	<.4	4.4	.01	<2	.078
GUN4	Whole body	Speckled dace	04-11-92	82	68.5	180	<.4	4.5	<.04	<2	.09
GUN4	Whole body	Speckled dace	04-11-92	65	89.1	54	<.7	5.8	<.1	<4	<.30
GUN4	Liver	Flannelmouth sucker	04-11-92	503	75.5	8	<.4	<10	<.01	<2	.15
GUN4	Liver	Flannelmouth sucker	04-11-92	525	71.2	7	<.3	<10	<.01	<2	.20
GUN4	Liver	Flannelmouth sucker	04-11-92	560	76.1	4	<.4	<10	<.01	<2	.49
GUN6	Whole body	Roundtail chub	04-15-92	380	76.0	345	<.4	5.8	.02	<2	.096
GUN6	Whole body	Roundtail chub	04-15-92	365	75.7	444	<.4	5.6	.02	<2	.16
GUN6	Whole body	Roundtail chub	04-15-92	416	73.2	240	<.4	7.8	.01	<2	.06
GUN6	Whole body	Roundtail chub	04-15-92	390	73.0	210	<.4	5.3	.02	<2	.14
GUN6	Whole body	Roundtail chub	04-15-92	343	74.6	170	.4	6.3	.01	<2	.11
GUN6	Whole body	Roundtail chub	04-15-92	332	78.7	606	<.4	17.7	.03	<2	.19
GUN6	Whole body	Roundtail chub	04-15-92	360	77.5	240	<.4	8.4	<.01	<2	.091
GUN6	Whole body	Roundtail chub	04-15-92	350	79.1	560	<.4	10.1	.02	<2	.21
GUN6	Whole body	Roundtail chub	04-15-92	322	77.8	359	.8	6.6	.02	<2	.17
GUN6	Whole body	Roundtail chub	04-15-92	340	88.1	54	<.4	3.6	<.01	<2	.04

Table 35. Trace-element concentrations in fish samples collected from the North Fork of the Gunnison River and the Gunnison River during 1992--Continued

Site code	Chromium	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Selenium	Strontium	Vanadium	Zinc
GUN4	1.7	2.2	74	3.9	705	15.0	0.20	<0.9	8.5	2.7	20.9	24.0	49
GUN4	2.2	2.2	130	2.0	708	16.0	.12	<1	4.2	3.5	25.5	15.0	39
GUN4	.50	2.1	163	1.0	704	19.7	.27	<1	.30	3.9	25.2	.60	51
GUN4	.90	2.3	401	<.8	845	18.0	.17	<1	.60	10.0	30.7	1.3	43
GUN4	1.8	5.8	105	4.0	824	30.6	.23	<1	10.0	2.4	39.1	24.0	52
GUN4	1.4	4.1	166	2.0	876	33.3	.23	<1	3.4	2.8	41.3	11.0	54
GUN4	1.6	2.0	138	2.8	691	19.3	.31	<1	6.3	2.3	19.7	19.0	37
GUN4	3.0	2.0	217	6.6	901	19.5	.21	<1	20.0	3.5	35.7	38.4	46
GUN4	2.8	4.4	368	<.8	760	13.0	.21	<1	1.5	5.1	12.5	1.5	33
GUN4	.80	2.8	497	1.0	683	20.9	.11	<1	.50	3.7	9.8	2.4	44
GUN4	<5.0	3.0	300	<10	1,220	21.0	.14	<4	<2.0	5.9	121	1.0	140
GUN4	<4.0	2.6	220	<7.0	1,430	27.0	.16	<2	<2.0	6.3	170	.90	200
GUN4	.40	2.4	126	.5	1,090	21.6	.27	<1	.36	12.0	117	.50	110
GUN4	<.50	2.2	63	<1.0	927	11.0	.14	<1	.40	9.5	79.6	<.30	120
GUN4	<.80	2.5	51	<2.0	1,070	8.9	.13	<1	<.50	9.0	83.6	<.30	120
GUN4	.58	3.0	190	.6	1,250	48.1	.27	<1	.58	14.0	155	.70	130
GUN4	<.30	2.9	258	<.9	1,060	26.8	.17	<1	.30	10.0	104	.80	160
GUN4	<.30	2.6	117	<.5	1,260	19.0	.16	<1	<.10	10.0	118	.40	140
GUN4	<2.0	2.9	120	<4.0	1,060	19.0	.099	<1	<.80	9.8	118	<.40	140
GUN4	.55	3.4	171	.4	968	18.0	.12	<1	.34	12.0	81.2	.50	150
GUN4	<.60	2.5	172	<2.0	1,070	15.0	.13	<.9	<.40	9.5	108	.60	129
GUN4	<3.0	2.4	97	<6.0	1,210	17.0	.14	<2	<1.0	8.7	129	<.60	140
GUN4	<.30	11.0	175	<.5	749	9.2	.084	<1	.40	7.5	.33	.40	93
GUN4	<.30	9.0	158	.5	648	8.5	.072	<1	.20	6.4	.40	.30	83
GUN4	<.30	23.0	295	<.5	747	7.4	.12	1	.30	9.9	.47	.94	100
GUN6	3.0	4.8	216	<.5	1,010	11.0	.93	<1	6.2	6.1	49.1	18.0	69
GUN6	3.6	6.8	267	<.4	1,030	11.0	.75	<1	7.7	3.4	46.9	17.0	70
GUN6	1.3	3.0	238	<.4	1,030	21.1	.87	<1	1.9	4.9	83.6	4.5	77
GUN6	2.0	6.0	175	<.4	948	8.5	1.2	<.9	6.0	3.4	52.9	16.0	59
GUN6	2.1	3.3	171	<.4	949	11.0	.86	<1	5.1	5.0	50.2	11.0	71
GUN6	1.6	6.7	409	.9	1,150	8.6	0.75	<1	.85	7.7	84.5	1.4	90
GUN6	1.0	3.9	209	<.4	1,140	9.9	1.1	<1	.55	6.8	53.2	1.3	74
GUN6	2.0	6.4	373	.8	1,300	11.0	1.2	<1	1.1	9.2	62.0	1.6	94
GUN6	1.1	7.3	300	<.4	1,160	9.9	1.3	<.9	1.9	12.0	49.5	5.9	98
GUN6	1.1	1.7	74	<.4	811	5.1	.51	<1	.57	4.2	34.6	.60	92

Table 35. Trace-element concentrations in fish samples collected from the North Fork of the Gunnison River and the Gunnison River during 1992--Continued

Site code	Matrix	Species	Date	Average length	Percent moisture	Aluminum	Arsenic	Barium	Beryllium	Boron	Cadmium
GUN6	Whole body	Flannelmouth sucker	04-15-92	415	65.8	25	<0.4	1.7	<0.01	<2	0.03
GUN6	Whole body	Flannelmouth sucker	04-15-92	487	67.4	100	<.4	3.6	<.01	<2	.04
GUN6	Whole body	Flannelmouth sucker	04-15-92	355	69.0	110	<.4	6.8	<.01	<2	.03
GUN6	Whole body	Flannelmouth sucker	04-15-92	450	69.6	56	<.4	2.9	<.01	<2	.05
GUN6	Whole body	Flannelmouth sucker	04-15-92	425	63.3	35	<.4	1.2	<.01	<2	.03
GUN6	Whole body	Flannelmouth sucker	04-15-92	356	70.3	471	<.4	13.6	.02	<2	.073
GUN6	Whole body	Flannelmouth sucker	04-15-92	344	74.4	337	<.4	6.8	.01	<2	.05
GUN6	Whole body	Flannelmouth sucker	04-15-92	335	67.4	872	.5	17.5	.05	<2	.086
GUN6	Whole body	Flannelmouth sucker	04-15-92	370	67.0	190	.5	2.9	.02	<2	.11
GUN6	Whole body	Flannelmouth sucker	04-15-92	410	70.4	641	.9	41.7	.03	<2	.03
GUN6	Whole body	Speckled dace	05-26-92	86	69.1	1,150	.8	11.4	.04	<2	.079
GUN6	Whole body	Speckled dace	05-26-92	68	64.3	350	.7	5.7	<.02	<2	<.03
GUN6	Whole body	Speckled dace	05-26-92	78	61.7	15	<.4	4.5	<.01	<2	.05
GUN6	Whole body	Speckled dace	05-26-92	98	64.4	1,780	.7	11.9	.07	3	.085
GUN6	Whole body	Speckled dace	05-26-92	78	62.9	40	<.5	6.6	<.02	<3	.06
GUN6	Whole body	Speckled dace	05-26-92	84	61.7	7	<.4	3.3	<.01	<2	.05
GUN6	Whole body	Speckled dace	05-26-92	81	67.8	602	<.4	9.2	.02	<2	.06
GUN6	Whole body	Speckled dace	05-26-92	68	63.2	19	1.9	4.1	<.02	<2	<.03
GUN6	Whole body	Speckled dace	05-26-92	72	61.2	57	<.4	5.1	<.02	<3	<.03
GUN6	Whole body	Speckled dace	05-26-92	84	65.1	941	<.4	1.0	.03	<3	.08
GUN6	Liver	Flannelmouth sucker	04-15-92	422	61.3	4	<.3	<10	<.01	<2	.03
GUN6	Liver	Flannelmouth sucker	04-15-92	422	56.8	<3	<.3	<10	<.01	<2	<.02
GUN6	Liver	Flannelmouth sucker	04-15-92	400	62.4	<3	<.3	<10	<.01	<2	.04

Table 35. Trace-element concentrations in fish samples collected from the North Fork of the Gunnison River and the Gunnison River during 1992--Continued

Site code	Chromium	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Selenium	Strontium	Vanadium	Zinc
GUN6	0.30	1.8	50	<0.4	567	3.7	0.19	<0.9	<0.10	4.4	8.6	<0.30	28
GUN6	1.2	1.8	104	<.4	867	16.0	.26	<.9	.73	4.0	48.3	1.7	53
GUN6	3.3	17.0	134	<.4	726	6.7	.14	<1	1.3	5.2	16.0	.50	33
GUN6	4.0	15.0	115	<.4	978	14.0	.24	<1	1.7	4.9	58.5	.40	45
GUN6	2.1	9.2	58	<.4	673	7.3	.12	<1	1.4	4.1	28.5	2.4	28
GUN6	3.0	3.2	497	.7	976	21.6	.12	<1	1.6	4.4	35.8	1.8	47
GUN6	4.1	5.1	345	<.4	894	13.0	.16	<.9	1.9	6.4	22.5	1.1	41
GUN6	4.0	3.5	433	<.5	870	16.0	.12	<.9	11.5	3.4	26.3	33.9	30
GUN6	2.6	11.0	93	<.5	760	8.6	.13	<1	9.3	4.1	22.8	30.0	35
GUN6	1.7	2.6	1,010	<.5	910	20.1	.21	<1	1.3	5.9	12.5	5.7	35
GUN6	1.1	3.9	562	1.0	1,240	26.3	.37	<.9	.89	14.1	97.3	2.9	178
GUN6	.50	2.4	199	<.6	1,070	17.0	.22	<1	.40	13.0	91.7	.70	140
GUN6	<.20	2.3	69	<.4	951	8.9	.27	<1	<.10	14.0	93.0	<.30	143
GUN6	1.6	5.0	804	1.5	1,450	28.7	.61	<.9	1.2	17.0	108	4.2	130
GUN6	<.40	2.6	120	<.7	1,300	19.0	.34	<1	.20	14.0	190	<.50	170
GUN6	<.30	2.2	31	<.5	852	6.9	.19	<1	.20	14.0	54.1	<.30	100
GUN6	.70	3.2	291	.5	1,250	22.0	.29	<1	.48	17.0	122	1.5	194
GUN6	<.30	2.5	66	<.5	1,050	9.9	.26	<1	.20	11.0	95.4	<.40	120
GUN6	1.0	3.0	97	<.7	1,040	12.0	.29	<2	.20	11.0	95.4	<.50	130
GUN6	1.0	3.3	479	.7	1,180	17.0	.42	<1	.55	15.0	87.5	2.4	212
GUN6	<.30	8.9	128	<.4	267	2.6	.082	<1	.10	4.6	.20	<.30	47
GUN6	<.30	11.0	117	<.4	245	2.0	.076	<1	.20	4.1	.10	<.30	40
GUN6	<.30	17.0	143	<.5	300	2.4	.061	<1	.20	5.7	.20	<.30	52

Table 36. Trace-element concentrations in fish samples collected from the Uncompahgre River during 1992

Analysis by U.S. Fish and Wildlife Service; sites are listed in table 1 and locations are on plate 1; average length in millimeters; concentrations in micrograms per gram dry weight; <, less than]

Site code	Matrix	Species	Date	Average length	Percent moisture	Aluminum	Arsenic	Barium	Beryllium	Boron	Cadmium
UC2	Whole body	Longnose sucker	03-10-92	460	69.5	280	0.9	3.8	0.01	<2	0.13
UC2	Whole body	Longnose sucker	03-10-92	470	64.2	160	.7	2.7	<.01	<2	.31
UC2	Whole body	Longnose sucker	03-10-92	495	74.2	314	1.5	3.6	.01	<2	.87
UC2	Whole body	Longnose sucker	03-10-92	495	69.0	170	.7	2.9	<.01	<2	.36
UC2	Whole body	Longnose sucker	03-10-92	455	69.6	329	<.4	5.9	.01	<2	.19
UC2	Whole body	Longnose sucker	03-10-92	540	75.3	555	<.4	8.9	.02	<2	.65
UC2	Whole body	Longnose sucker	03-10-92	520	70.8	280	.3	4.6	<.01	<2	.33
UC2	Whole body	Longnose sucker	03-10-92	493	75.1	170	.4	2.2	<.01	2	.54
UC2	Whole body	Longnose sucker	03-10-92	540	75.8	423	.4	6.7	.02	<2	.53
UC2	Whole body	Longnose sucker	03-10-92	425	72.1	250	.4	4.6	.01	<2	.20
UC2	Whole body	Mottled sculpin	03-10-92	115	77.8	130	<.3	5.5	<.01	<2	.18
UC2	Whole body	Mottled sculpin	03-10-92	125	76.5	720	<.4	10.1	.03	<2	.54
UC2	Whole body	Mottled sculpin	03-10-92	110	72.1	524	.5	6.5	.02	2	.35
UC2	Whole body	Mottled sculpin	03-10-92	110	76.7	74	.6	4.6	<.01	<2	.18
UC2	Whole body	Mottled sculpin	03-10-92	122	74.5	110	.4	5.7	<.01	2	.10
UC2	Whole body	Mottled sculpin	03-10-92	110	76.5	270	<.4	4.3	<.01	<2	.27
UC2	Whole body	Mottled sculpin	03-10-92	105	76.0	46	<.3	3.1	<.01	<2	.13
UC2	Whole body	Mottled sculpin	03-10-92	100	76.5	120	<.3	3.3	<.01	<2	.26
UC2	Whole body	Mottled sculpin	03-10-92	102	74.9	71	<.3	6.1	<.01	<2	.35
UC2	Whole body	Mottled sculpin	03-10-92	100	76.2	480	1.0	4.4	.02	2	.33
UC2	Whole body	Speckled dace	03-10-92	66	76.6	130	<.5	3.2	<.02	<3	.10
UC2	Whole body	Speckled dace	03-10-92	75	73.9	160	<.4	3.3	<.01	<2	.11
UC2	Whole body	Speckled dace	03-10-92	72	77.7	250	.8	7.5	<.02	<4	.18
UC2	Liver	Longnose sucker	03-10-92	425	78.0	9.8	1.0	.80	<.01	<2	3.92
UC2	Liver	Longnose sucker	03-10-92	400	75.4	10	.6	.20	<.01	<2	1.70
UC2	Liver	Longnose sucker	03-10-92	460	76.1	3.0	<.4	<.10	<.01	<2	1.80
UC10	Whole body	Bluehead sucker	03-10-92	400	68.1	80	1.3	1.5	<.01	<2	.14
UC10	Whole body	Bluehead sucker	03-10-92	420	64.6	87	1.1	2.0	<.01	<2	.06
UC10	Whole body	Bluehead sucker	03-10-92	406	68.6	531	.6	5.6	.02	<2	<.02
UC10	Whole body	Bluehead sucker	03-10-92	407	66.0	433	.94	4.0	.02	<2	.05
UC10	Whole body	Longnose sucker	03-10-92	480	65.2	110	<.3	.83	<.01	<2	.05
UC10	Whole body	Longnose sucker	03-10-92	565	66.7	84	<.4	1.5	<.01	<2	.08
UC10	Whole body	Longnose sucker	03-10-92	480	66.3	200	.7	3.2	<.01	<2	.09
UC10	Whole body	Longnose sucker	03-10-92	492	67.3	110	.6	1.8	<.01	<2	<.02
UC10	Whole body	Longnose sucker	03-10-92	462	66.6	120	.4	2.7	<.01	<2	.03
UC10	Whole body	Longnose sucker	03-10-92	491	67.8	90	.5	2.9	<.01	<2	.05

Table 36. Trace-element concentrations in fish samples collected from the Uncompahgre River during 1992--Continued

Site code	Chromium	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Selenium	Strontium	Vanadium	Zinc
UC2	1.3	4.1	263	<0.4	865	27.5	0.11	<0.9	3.9	2.1	36.3	13.0	63
UC2	1.9	3.5	192	1.0	801	23.4	.19	<.9	1.0	1.7	39.7	1.1	65
UC2	3.2	5.0	367	1.0	858	18.0	.39	<1	1.8	1.9	17.8	1.8	78
UC2	.79	3.5	221	1.0	853	19.3	.15	<1	.83	2.3	33.4	2.6	63
UC2	2.3	3.7	432	.8	1,020	31.2	.16	<1	1.3	2.1	54.8	1.7	66
UC2	1.3	9.3	709	2.0	1,310	52.4	.34	<1	.84	2.4	66.0	2.5	100
UC2	1.7	4.4	406	1.5	1,050	30.9	.24	3.2	.96	2.1	53.1	1.3	77
UC2	2.0	4.9	201	1.0	1,010	22.9	.25	<.9	1.2	2.5	34.1	.80	78
UC2	2.5	3.9	524	1.0	1,160	36.6	.36	<1	3.5	1.8	42.7	8.3	95
UC2	1.5	3.6	232	3.1	1,120	58.1	.16	<1	2.1	1.8	59.1	5.0	75
UC2	<.30	2.7	123	<.4	1,370	16.0	.092	<1	.20	5.4	96.0	.80	81
UC2	.70	5.2	548	1.0	1,530	38.3	.12	<.9	.44	5.0	110	3.2	110
UC2	.40	4.7	386	.6	1,250	26.5	.096	<.9	.36	5.2	88.5	1.9	100
UC2	<.30	3.0	94	<.4	1,320	20.7	.089	<1	.20	4.3	116	.50	120
UC2	<.20	2.0	94	<.4	1,290	38.1	.099	<.9	.20	3.7	101	.50	51
UC2	<.30	3.6	264	<.4	1,160	22.1	.079	<1	.20	4.9	77.9	1.2	120
UC2	<.30	2.1	82	<.4	1,060	11.0	.055	<1	.10	5.5	66.2	.30	82
UC2	.30	2.7	131	<.4	1,120	17.0	.071	<1	.10	4.6	51.4	.90	74
UC2	<.30	2.4	104	<.5	1,180	49.3	.061	<1	<.10	4.3	84.3	1.0	100
UC2	.40	4.2	347	<.4	1,060	16.0	.05	<1	.35	4.1	57.1	1.9	84
UC2	.60	2.0	150	<.7	952	9.7	.058	<2	.40	6.2	81.0	<.50	110
UC2	1.2	2.7	141	.6	1,260	21.0	.078	<1	.40	7.2	86.3	.50	140
UC2	1.0	4.7	213	<.9	2,360	19.0	.13	<2	.69	16.0	205	.60	240
UC2	<.30	40.0	171	<.4	825	7.0	.10	1	.20	6.0	.72	<.30	84
UC2	<.30	22.0	190	<.5	822	6.5	.055	1	.49	5.1	.83	<.40	88
UC2	<.30	45.0	226	<.4	793	7.7	.025	<1	.10	4.6	.20	<.30	140
UC10	<.20	2.7	115	<.4	668	7.6	.13	<.9	.53	2.3	15.9	.50	40
UC10	<.20	2.1	103	<.4	659	9.2	.085	<.9	.70	1.9	20.9	1.7	35
UC10	1.7	3.1	548	.7	1,020	33.7	.12	<1	1.4	2.9	53.3	3.7	50
UC10	1.0	2.4	426	<.5	797	15.0	.097	<1	1.5	1.9	18.5	3.8	36
UC10	.70	2.0	74	<.5	634	5.8	.13	<1	4.4	3.7	13.4	13.0	35
UC10	.50	2.0	113	1.0	694	13.0	.26	<.9	.34	2.9	28.9	.50	35
UC10	2.7	2.7	197	1.0	918	16.0	.19	<.9	1.3	3.0	46.4	.80	50
UC10	.97	2.3	108	<.4	812	12.0	.15	<.9	1.5	3.3	34.1	3.4	50
UC10	1.1	2.1	117	.5	875	11.0	.13	<.9	.90	3.5	47.6	1.7	48
UC10	.91	3.8	95	<.4	1,030	23.8	.23	<.9	2.1	3.2	62.4	7.1	56

Table 36. Trace-element concentrations in fish samples collected from the Uncompahgre River during 1992--Continued

Site code	Matrix	Species	Date	Average length	Percent moisture	Aluminum	Arsenic	Barium	Beryllium	Boron	Cadmium
UC10	Whole body	Speckled dace	03-10-92	85	69.4	34	0.5	2.5	<0.01	<2	0.06
UC10	Whole body	Speckled dace	03-10-92	72	72.8	12	.4	4.9	<.01	<2	.67
UC10	Whole body	Speckled dace	03-10-92	70	73.5	94	.5	2.9	<.02	<3	.10
UC10	Whole body	Speckled dace	03-10-92	94	71.0	28	.4	3.7	<.01	<2	.04
UC10	Whole body	Speckled dace	03-10-92	77	75.8	80	.4	3.3	<.01	<2	.08
UC10	Whole body	Speckled dace	03-10-92	67	74.2	44	.8	4.9	<.02	<3	.43
UC10	Whole body	Speckled dace	03-10-92	60	73.4	63	.9	3.1	<.02	<4	.10
UC10	Whole body	Speckled dace	03-10-92	65	74.2	10	1.0	2.2	<.02	<3	.09
UC10	Whole body	Speckled dace	03-10-92	80	74.7	12	<.3	7.1	<.01	<2	.20
UC10	Whole body	Speckled dace	03-10-92	80	74.9	55	<.4	5.9	<.01	<2	.32
UC10	Liver	Bluehead sucker	03-11-92	410	74.7	18	.5	20	<.01	<2	.66
UC10	Liver	Bluehead sucker	03-11-92	410	70.1	4.0	4.2	<10	<.01	<2	1.50
UC10	Liver	Longnose sucker	03-11-92	445	63.9	5.0	<.4	<10	<.01	<2	.22
UC16	Whole body	Roundtail chub	03-11-92	391	73.0	81	<.4	2.3	<.01	<2	.07
UC16	Whole body	Longnose sucker	03-11-92	525	69.3	361	<.4	2.5	<.01	<2	.05
UC16	Whole body	Longnose sucker	03-11-92	435	71.8	1,240	.6	8.3	.06	<2	<.02
UC16	Whole body	Longnose sucker	03-11-92	517	76.7	200	<.4	2.7	<.01	<2	.04
UC16	Whole body	Longnose sucker	03-11-92	560	69.5	348	<.4	8.4	.02	<2	.03
UC16	Whole body	Longnose sucker	03-11-92	540	77.7	377	<.4	3.1	.02	<2	.13
UC16	Whole body	Longnose sucker	03-11-92	440	77.3	630	.5	7.4	.02	<2	.06
UC16	Whole body	Longnose sucker	03-11-92	550	75.0	795	<.4	4.7	.03	<2	.06
UC16	Whole body	Longnose sucker	03-11-92	442	68.5	446	<.4	3.4	.02	<2	.02
UC16	Whole body	Longnose sucker	03-11-92	425	70.2	360	1.2	2.8	.03	<2	<.02
UC16	Whole body	Longnose sucker	03-11-92	425	69.4	180	.5	3.0	<.01	<2	<.02
UC16	Whole body	Speckled dace	03-11-92	65	69.4	180	<.5	3.0	<.03	<2	<.06
UC16	Whole body	Speckled dace	03-11-92	67	73.8	97	<.6	3.0	<.02	<3	.13
UC16	Whole body	Speckled dace	03-11-92	70	72.1	423	.8	4.5	<.02	<3	.17
UC16	Whole body	Speckled dace	03-11-92	67	73.1	340	<.5	4.6	<.02	<3	.09
UC16	Whole body	Speckled dace	03-11-92	72	71.5	97	<.6	3.0	<.02	<2	.08
UC16	Whole body	Speckled dace	03-11-92	76	72.0	417	.4	5.4	<.02	4	.04
UC16	Whole body	Speckled dace	03-11-92	80	70.5	346	<.5	3.9	<.01	3	.03
UC16	Whole body	Speckled dace	03-11-92	68	70.1	360	3.1	3.5	<.02	<3	<.04
UC16	Whole body	Speckled dace	03-11-92	67	74.1	270	<.6	3.6	<.02	<3	.05
UC16	Whole body	Speckled dace	03-11-92	64	74.0	170	<.5	2.5	<.02	<3	<.04
UC16	Liver	Longnose sucker	03-11-92	500	68.5	13	<.4	<10	<.01	12	.36
UC16	Liver	Longnose sucker	03-11-92	482	61.4	<3.0	.6	<09	<.01	<2	.11
UC16	Liver	Longnose sucker	03-11-92	451	65.2	<3.0	.4	<10	<.01	<2	.02

Table 36. Trace-element concentrations in fish samples collected from the Uncompahgre River during 1992--Continued

Site code	Chromium	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Selenium	Strontium	Vanadium	Zinc
UC10	<0.20	2.1	92	<0.4	1,080	8.5	0.11	<0.9	<0.10	8.7	86.7	<0.30	159
UC10	.30	3.5	75	<.6	1,550	13.0	.10	<1	.30	9.3	152	<.40	193
UC10	<.40	2.0	110	.8	1,180	8.9	.071	<1	1.0	5.1	77.8	<.40	150
UC10	5.0	2.0	96	<.4	927	9.6	.15	<1	.20	6.2	70.8	<.30	130
UC10	<.30	2.0	84	<.6	1,030	8.6	.056	<1	.20	4.5	82.3	<.40	110
UC10	<.40	2.0	77	<.7	970	14.0	.082	<1	.20	6.0	78.5	<.50	180
UC10	<.50	2.0	84	<.9	1,350	12.0	.068	<2	.30	7.1	105	<.60	120
UC10	<.40	2.0	48	<.7	954	6.1	.058	<2	<.20	4.6	73.5	<.50	96
UC10	.50	2.5	68	.6	1,400	17.0	.11	<1	.30	8.4	133	<.40	180
UC10	.40	2.8	92	.7	1,400	16.0	.18	<1	.30	11.0	138	<.40	202
UC10	<.30	9.2	314	<.4	693	6.6	.063	1	.30	10.0	1.4	.60	58
UC10	<.30	9.3	219	<.4	670	6.4	.037	1	.37	4.7	.84	.70	56
UC10	<.20	3.9	150	<.4	312	1.8	.019	<1	.40	5.8	.30	<.30	36
UC16	4.3	4.1	102	<.5	949	5.5	.63	<1	3.9	4.8	56.3	5.6	63
UC16	2.1	4.1	260	1.6	930	11.0	.16	<1	1.0	4.1	44.2	1.4	45
UC16	2.2	2.8	824	.7	1,170	17.0	.11	<1	3.6	4.7	19.1	10.0	40
UC16	1.4	3.0	170	1.4	1,090	11.0	.33	<1	1.0	5.4	45.4	.91	57
UC16	1.8	5.1	280	2.3	1,050	14.0	.22	<.9	1.1	4.3	69.1	1.6	56
UC16	2.6	4.0	240	<.4	1,200	13.0	.43	<1	4.4	3.8	44.7	11.0	50
UC16	1.9	4.0	479	3.3	1,620	31.7	.51	<1	1.1	4.1	123	2.7	82
UC16	2.0	4.2	464	<.4	1,230	21.6	.39	<1	4.7	3.3	36.6	13.0	62
UC16	1.0	2.5	371	.7	863	11.0	.11	<.9	.58	4.8	18.5	1.9	34
UC16	.84	2.3	258	<.5	796	6.4	.083	<1	2.3	7.1	11.5	6.9	38
UC16	1.2	2.7	132	<.4	774	7.4	.076	<1	3.5	4.4	30.1	8.3	39
UC16	<.70	2.0	133	<1.0	1,100	15.0	.30	<1	<.30	7.9	129	.60	87
UC16	.50	2.0	110	<.8	1,270	11.0	.20	<2	.30	6.8	179	.60	130
UC16	.60	2.0	242	.9	1,230	16.0	.11	<1	.40	7.3	130	1.0	140
UC16	.70	2.0	213	.8	1,290	15.0	.11	<1	.40	8.0	141	1.0	140
UC16	.50	2.0	110	<.6	1,070	11.0	.12	<1	<.10	6.9	128	.60	120
UC16	<0.30	3.0	343	.7	1,170	17.0	.081	<1	.44	8.9	115	1.7	110
UC16	<.30	2.6	194	.6	1,240	17.0	.14	<1	.53	9.1	171	1.0	171
UC16	<.50	3.0	234	<.8	1,120	13.0	.13	<2	.30	7.0	121	1.0	140
UC16	.60	2.0	186	<.7	1,240	14.0	.10	<2	<.20	8.2	125	.90	110
UC16	<.50	2.0	120	<.8	1,110	8.1	.13	<2	<.20	6.8	95.7	.70	110
UC16	<.30	12.0	108	<.4	575	4.5	.024	<1	<.10	6.2	.45	<.30	54
UC16	<.20	6.0	190	<.4	326	1.7	.01	<.9	<.10	3.8	.20	<.30	32
UC16	<.30	8.3	68	<.4	465	3.3	.018	<1	<.10	6.0	.30	<.30	44

Table 37. Trace-element concentrations in fish samples collected from the Colorado River during 1992

[Analysis by U.S. Fish and Wildlife Service; sites are listed in table 2 and locations are on plate 2; average length in millimeters; concentrations in micrograms per gram dry weight; <, less than]

Site code	Matrix	Species	Date	Average length	Percent moisture	Aluminum	Arsenic	Barium	Beryllium	Boron	Cadmium
COL1	Whole body	Roundtail chub	05-07-92	420	79.1	393	<0.3	8.6	0.02	<2	0.08
COL1	Whole body	Roundtail chub	05-07-92	362	80.4	220	<.3	10.1	.01	<2	.12
COL1	Whole body	Roundtail chub	05-07-92	426	77.6	18	<.3	3.2	<.01	<2	.08
COL1	Whole body	Roundtail chub	05-07-92	357	77.1	355	<.3	7.9	.02	<2	.06
COL1	Whole body	Roundtail chub	05-07-92	405	74.7	27	<.3	6.4	.01	<2	.12
COL1	Whole body	Roundtail chub	05-07-92	426	71.2	38	<.3	2.1	.03	<2	.22
COL1	Whole body	Roundtail chub	05-07-92	446	72.1	230	<.3	6.9	.01	<2	.08
COL1	Whole body	Roundtail chub	05-07-92	429	77.1	34	<.3	8.7	.01	<2	.15
COL1	Whole body	Roundtail chub	05-07-92	372	67.5	38	.9	6.6	<.01	<2	.08
COL1	Whole body	Roundtail chub	05-07-92	374	73.8	28	<.3	3.5	.01	<2	.11
COL1	Whole body	Flannelmouth sucker	03-03-92	475	68.9	250	.6	5.6	.02	<2	<.02
COL1	Whole body	Flannelmouth sucker	03-03-92	535	71.1	230	<.3	5.0	<.01	<2	.06
COL1	Whole body	Flannelmouth sucker	03-03-92	470	72.8	83	.7	1.8	<.01	<2	<.02
COL1	Whole body	Flannelmouth sucker	03-03-92	455	72.7	160	.6	3.7	<.01	<2	<.02
COL1	Whole body	Flannelmouth sucker	03-03-92	525	69.6	200	.5	4.8	.02	<2	<.02
COL1	Whole body	Flannelmouth sucker	03-03-92	510	68.1	430	.5	12.3	.02	<2	<.02
COL1	Whole body	Flannelmouth sucker	03-03-92	485	74.2	495	.7	9.2	.02	<2	<.02
COL1	Whole body	Flannelmouth sucker	03-03-92	487	66.2	180	.5	2.3	.02	<2	<.02
COL1	Whole body	Flannelmouth sucker	03-03-92	515	70.7	491	.6	18.6	.03	<2	<.02
COL1	Whole body	Flannelmouth sucker	03-03-92	480	73.7	507	<.3	17.9	.02	<2	.09
COL1	Whole body	Speckled dace	05-07-92	67	67.6	37	<.4	5.6	<.01	<2	.10
COL1	Whole body	Speckled dace	05-07-92	69	68.3	130	<.4	5.8	<.01	<2	.07
COL1	Whole body	Speckled dace	05-07-92	71	66.2	100	<.3	5.5	<.01	<2	.05
COL1	Whole body	Speckled dace	05-07-92	103	63.4	82	<.3	6.2	<.01	4	.08
COL1	Whole body	Speckled dace	05-07-92	82	63.5	96	<.3	7.0	<.01	<2	.05
COL1	Whole body	Speckled dace	05-07-92	89	67.0	40	<.3	10.0	<.01	<2	.06
COL1	Whole body	Speckled dace	05-07-92	89	67.6	24	<.3	6.9	<.01	<2	.05
COL1	Whole body	Speckled dace	05-07-92	72	67.2	99	.7	7.0	<.01	<2	.05
COL1	Whole body	Speckled dace	05-07-92	81	66.7	24	<.3	9.3	<.10	<5	<.20
COL1	Whole body	Speckled dace	05-07-92	88	68.4	98	<.3	8.8	<.06	<2	<.10
COL1	Liver	Flannelmouth sucker	03-03-92	445	71.1	6	<.4	<10	<.01	<2	.32
COL1	Liver	Flannelmouth sucker	03-03-92	470	65.0	10	<.4	.10	<.01	2	.34
COL1	Liver	Flannelmouth sucker	03-03-92	505	74.6	<3	<.3	<10	<.01	2	.25

Table 37. Trace-element concentrations in fish samples collected from the Colorado River during 1992--Continued

Site code	Chromium	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Selenium	Strontium	Vanadium	Zinc
COL1	1.6	2.8	291	<0.4	1,190	15.0	0.942	<1	3.1	2.2	55.8	9.8	73
COL1	1.1	3.7	232	<.4	1,210	17.0	.90	<1	.83	3.7	47.3	2.9	80
COL1	.87	3.5	79	<.4	985	4.8	.99	<1	.39	5.3	22.3	.80	56
COL1	2.0	3.5	263	<.4	1,080	11.0	.801	<.9	3.3	4.1	38.0	10.0	75
COL1	2.1	3.1	72	<.5	1,010	6.2	.55	<1	5.6	2.7	49.1	15.0	78
COL1	1.7	8.3	51	<.4	675	2.6	.983	<1	9.7	4.1	8.3	31.4	48
COL1	4.3	2.7	249	<.4	785	18.0	.824	<.9	2.1	2.5	14.2	1.5	58
COL1	2.5	2.5	86	<.5	1,250	8.3	1.44	<1	5.9	3.3	72.7	19.0	100
COL1	2.1	2.4	71	<.4	1,010	8.2	1.16	<.9	3.2	5.1	53.1	7.3	66
COL1	2.8	3.5	63	<.4	858	5.1	.43	<1	4.0	4.1	26.2	9.3	74
COL1	2.6	4.8	122	.7	717	19.0	.16	<1	9.6	.63	28.4	28.0	42
COL1	5.6	3.0	222	<.4	811	22.2	.24	<1	2.2	1.9	24.1	.88	51
COL1	2.3	2.4	54	1.0	654	7.2	.28	<1	11.9	1.0	8.9	32.0	40
COL1	1.4	3.0	159	.7	827	16.0	.18	<1	.73	1.6	20.5	.60	49
COL1	2.8	3.9	97	<.5	873	21.7	.22	<1	10.0	.60	38.9	28.0	45
COL1	3.7	2.5	354	2.2	867	18.0	.21	<1	4.9	.50	27.4	14.0	53
COL1	1.7	2.9	401	3.0	1,030	26.5	.28	<1	3.9	.92	37.4	14.0	55
COL1	2.7	6.5	86	.6	702	11.0	.18	<1	13.7	.50	15.9	38.9	42
COL1	2.7	3.9	436	3.2	908	26.9	.36	<1	5.8	1.7	28.0	20.0	45
COL1	2.7	3.4	461	.9	943	19.8	.28	<1	1.9	1.8	24.1	3.1	55
COL1	.50	3.0	69	<.5	963	11.0	.097	<1	.20	8.6	71.8	<.40	120
COL1	.40	2.2	126	<.5	776	10.0	.10	<1	.20	5.0	56.6	.60	100
COL1	.40	3.1	129	.7	955	13.0	.10	<1	.20	8.4	69.5	.40	97
COL1	.50	2.4	121	<.4	897	15.0	.31	<1	.20	9.3	68.9	.30	120
COL1	<.30	2.4	121	<.5	934	16.0	.14	<1	<.10	11.0	66.0	<.40	110
COL1	.30	2.2	128	<.5	1,220	14.0	.23	<1	.20	9.6	129	<.30	150
COL1	.30	2.9	72	<.5	1,050	21.0	.15	<1	.10	2.3	78.1	<.30	140
COL1	<.10	2.3	109	<.4	1,070	19.4	.12	<.9	.20	7.4	76.0	.30	143
COL1	<2.0	2.0	78	<5.0	1,100	11.0	.20	<2	<1.0	7.3	91.6	<.70	200
COL1	<.80	2.6	108	<2.0	1,140	15.0	.20	<1	<.50	8.4	116	.30	169
COL1	<.30	19.0	254	<.4	345	3.2	.022	<1	<.10	2.5	.29	.40	44
COL1	<.30	23.0	200	.5	313	2.4	.024	<1	.10	2.1	.20	.40	50
COL1	<.30	27.0	355	<.5	713	8.1	.063	<1	<.10	2.6	.20	.40	83

Table 37. Trace-element concentrations in fish samples collected from the Colorado River during 1992

Site code	Matrix	Species	Date	Average length	Percent moisture	Aluminum	Arsenic	Barium	Beryllium	Boron	Cadmium
COL4	Whole body	Roundtail chub	03-04-92	380	79.7	120	0.7	3.3	<0.01	<2	0.08
COL4	Whole body	Roundtail chub	03-04-92	280	78.7	326	.8	4.2	.01	<2	<.02
COL4	Whole body	Roundtail chub	03-04-92	390	76.6	140	.6	5.7	<.01	<2	.05
COL4	Whole body	Roundtail chub	03-04-92	355	81.4	54	.7	2.3	.02	<2	.09
COL4	Whole body	Roundtail chub	03-04-92	367	75.1	120	.8	10.5	<.01	<2	.06
COL4	Whole body	Roundtail chub	03-04-92	370	72.2	20	.6	2.2	<.01	<2	.07
COL4	Whole body	Roundtail chub	03-04-92	400	70.6	910	.7	12.5	.04	<2	.07
COL4	Whole body	Roundtail chub	03-04-92	330	75.4	56	.6	3.7	.02	<2	.15
COL4	Whole body	Roundtail chub	03-04-92	325	75.1	170	.5	4.5	.03	<2	.16
COL4	Whole body	Roundtail chub	03-04-92	290	78.4	170	.6	3.6	.02	<2	.09
COL4	Whole body	Flannelmouth sucker	03-04-92	514	69.0	324	.5	6.3	.02	<2	.03
COL4	Whole body	Flannelmouth sucker	03-04-92	462	70.3	485	<.3	6.8	.02	<2	.03
COL4	Whole body	Flannelmouth sucker	03-04-92	530	71.7	803	.5	8.4	.03	<2	.05
COL4	Whole body	Flannelmouth sucker	03-04-92	515	68.7	384	.6	24.9	.03	<2	.15
COL4	Whole body	Flannelmouth sucker	03-04-92	545	70.8	594	<.3	10.6	.02	<2	.08
COL4	Whole body	Flannelmouth sucker	03-04-92	520	71.6	270	.4	7.9	.01	<2	.07
COL4	Whole body	Flannelmouth sucker	03-04-92	465	69.1	527	1.2	15.6	.03	<2	.06
COL4	Whole body	Flannelmouth sucker	03-04-92	496	70.6	422	.9	4.4	.04	<2	.11
COL4	Whole body	Flannelmouth sucker	03-04-92	460	67.6	485	.9	9.7	.04	<2	.10
COL4	Whole body	Flannelmouth sucker	03-04-92	435	72.7	632	.9	11.5	.04	<2	.09
COL4	Whole body	Speckled dace	03-04-92	83	70.4	240	.6	9.7	<.01	<2	.05
COL4	Whole body	Speckled dace	03-04-92	103	73.1	553	.5	14.5	.02	<2	.08
COL4	Whole body	Speckled dace	03-04-92	85	69.2	382	.6	16.1	.01	<2	.08
COL4	Whole body	Speckled dace	03-04-92	90	74.3	76	.3	11.0	<.01	<2	.06
COL4	Whole body	Speckled dace	03-04-92	100	71.5	150	.4	11.1	<.01	<2	.06
COL4	Whole body	Speckled dace	03-04-92	86	69.9	369	.5	14.1	<.01	<2	.06
COL4	Whole body	Speckled dace	03-04-92	86	71.0	22	.6	12.0	<.02	<3	.09
COL4	Whole body	Speckled dace	03-04-92	77	71.2	16	.8	9.7	<.02	<3	.06
COL4	Whole body	Speckled dace	03-04-92	82	69.4	170	.5	6.6	<.01	<2	.06
COL4	Whole body	Speckled dace	03-04-92	78	70.6	320	.5	11.0	<.01	<2	.06
COL4	Liver	Flannelmouth sucker	03-04-92	570	73.5	6	<.4	<10	<.01	2	.74
COL4	Liver	Flannelmouth sucker	03-04-92	420	65.4	9.9	<.3	20	<.01	2	<.02
COL4	Liver	Flannelmouth sucker	03-04-92	435	65.9	13	<.4	<10	<.01	<2	.03

Table 37. Trace-element concentrations in fish samples collected from the Colorado River during 1992--Continued

Site code	Chromium	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Selenium	Strontium	Vanadium	Zinc
COL4	1.2	4.9	155	<0.4	891	13.0	1.84	<1	0.64	6.4	13.9	0.40	64
COL4	2.2	10.0	310	<.5	916	12.0	.33	<1	1.1	4.6	14.3	.90	72
COL4	1.3	3.2	122	<.4	864	8.3	1.06	<1	1.7	4.7	39.7	3.7	74
COL4	2.7	1.7	45	<.4	763	4.7	.44	<.9	7.2	3.8	25.5	17.0	63
COL4	3.2	5.6	128	.7	934	16.0	.69	<1	1.7	4.5	89.1	.80	66
COL4	2.2	2.0	74	<.4	731	3.0	.876	<.9	1.8	5.0	24.2	2.9	61
COL4	2.4	3.7	555	.7	1,200	18.0	1.02	<1	2.1	4.1	67.1	5.6	92
COL4	3.3	5.3	79	<.4	857	4.8	.62	<.9	5.7	4.2	23.9	14.0	68
COL4	3.7	3.1	92	<.5	968	9.0	.68	<1	8.5	4.4	37.7	19.0	79
COL4	1.8	3.3	118	<.4	982	7.2	.26	<.9	5.0	3.8	23.0	14.0	78
COL4	1.3	2.2	323	.9	764	19.0	.32	<1	.93	2.0	15.0	1.8	35
COL4	1.3	4.0	387	.5	787	18.0	.18	<1	.62	3.4	10.3	1.2	35
COL4	2.1	2.4	616	1.3	930	20.7	.31	<.9	1.1	2.7	21.1	1.8	57
COL4	1.8	2.4	215	<.4	808	18.0	.33	<1	5.3	2.0	23.4	14.0	36
COL4	4.8	8.1	447	1.5	1,090	29.7	.64	<1	1.8	2.5	47.0	2.1	50
COL4	1.8	2.4	240	1.7	934	23.6	.35	<1	1.1	2.0	27.8	1.7	50
COL4	2.0	3.1	403	<.4	820	19.5	.22	<1	5.2	3.5	15.6	15.0	40
COL4	1.7	3.6	236	<.4	789	19.0	.31	<1	6.3	3.2	15.7	18.0	39
COL4	2.3	2.4	316	<.4	776	18.0	.21	<1	7.8	2.0	16.3	21.0	45
COL4	3.3	2.8	449	<.4	921	22.7	.15	<1	7.6	1.8	18.6	20.0	41
COL4	<.20	2.6	158	.6	1,130	18.0	--	<1	<.10	5.8	101	.40	136
COL4	<.20	2.2	295	.8	1,240	20.3	.33	<.9	<.10	4.6	147	.95	127
COL4	.40	2.8	257	1.7	1,180	26.5	.25	<1	.20	4.3	113	.70	175
COL4	.40	2.7	110	.6	1,230	21.0	.34	<1	.42	4.5	109	<.40	176
COL4	.40	2.8	173	1.9	1,320	44.4	.25	<1	.20	6.0	125	<.40	195
COL4	0.60	3.0	239	.6	1,280	25.2	.25	<1	.20	3.6	123	.80	170
COL4	.40	2.3	69	.8	1,170	15.0	.18	<2	.59	3.9	153	<.50	178
COL4	<.40	2.3	62	1.0	1,200	17.0	.15	<2	1.1	4.7	143	<.50	169
COL4	<.30	2.5	185	<.5	964	11.0	.19	<1	<.10	4.7	85.9	<.40	129
COL4	<.30	2.5	207	.7	1,060	20.0	.26	<1	<.10	5.0	106	.60	174
COL4	<.30	33.0	293	<.5	710	7.4	.16	<1	.49	3.7	.37	1.9	92
COL4	<.30	22.0	108	<.5	414	3.8	.028	<1	<.10	3.0	.32	<.30	65
COL4	<.30	8.4	117	<.4	322	3.6	.020	<1	.10	2.5	.20	<.30	47

Table 37. Trace-element concentrations in fish samples collected from the Colorado River during 1992--Continued

Site code	Matrix	Species	Date	Average length	Percent moisture	Aluminum	Arsenic	Barium	Beryllium	Boron	Cadmium
COL6	Whole body	Roundtail chub	03-04-92	333	74.8	130	<0.4	2.8	<0.01	<2	0.06
COL6	Whole body	Roundtail chub	03-04-92	385	72.8	33	<.4	4.3	<.01	<2	.11
COL6	Whole body	Roundtail chub	03-04-92	272	78.4	428	<.4	4.5	.01	<2	.05
COL6	Whole body	Roundtail chub	03-04-92	360	75.8	140	<.4	5.0	.01	<2	.12
COL6	Whole body	Roundtail chub	03-04-92	302	75.7	62	<.4	2.3	<.01	<2	.03
COL6	Whole body	Roundtail chub	03-04-92	360	74.7	743	<.4	5.6	.02	<2	<.02
COL6	Whole body	Roundtail chub	03-04-92	289	79.1	280	<.4	4.9	<.01	<2	.08
COL6	Whole body	Roundtail chub	03-04-92	273	76.6	170	.8	3.3	<.01	<2	<.02
COL6	Whole body	Roundtail chub	03-04-92	271	72.8	130	<.4	.85	.03	<2	.25
COL6	Whole body	Roundtail chub	03-04-92	320	76.6	441	<.4	6.8	.02	<2	.04
COL6	Whole body	Flannelmouth sucker	03-04-92	560	70.7	595	<.4	6.4	.04	<2	.19
COL6	Whole body	Flannelmouth sucker	03-04-92	530	72.2	716	<.4	8.7	.03	<2	.03
COL6	Whole body	Flannelmouth sucker	03-04-92	470	70.4	489	<.4	7.8	.03	<2	.04
COL6	Whole body	Flannelmouth sucker	03-04-92	525	75.2	571	<.4	13.9	.02	<2	<.02
COL6	Whole body	Flannelmouth sucker	03-04-92	478	68.4	621	.8	20.5	.03	<2	<.02
COL6	Whole body	Flannelmouth sucker	03-04-92	520	69.7	442	<.4	10.1	.02	<2	.05
COL6	Whole body	Flannelmouth sucker	03-04-92	462	69.9	826	<.4	19.6	.04	<2	<.02
COL6	Whole body	Flannelmouth sucker	03-04-92	466	73.5	872	<.4	9.0	.03	<2	<.02
COL6	Whole body	Flannelmouth sucker	03-04-92	490	69.4	472	<.4	9.7	.03	<2	.18
COL6	Whole body	Flannelmouth sucker	03-04-92	470	67.6	946	.5	10.4	.03	<2	<.02
COL6	Whole body	Speckled dace	03-04-92	87	71.8	659	<.4	13.0	.02	<3	<.03
COL6	Whole body	Speckled dace	03-04-92	63	71.0	240	.8	9.1	<.02	<4	<.04
COL6	Whole body	Speckled dace	03-04-92	85	67.7	120	<.4	8.5	<.02	<3	<.03
COL6	Whole body	Speckled dace	03-04-92	70	70.0	472	.7	17.5	.02	<3	<.03
COL6	Whole body	Speckled dace	03-04-92	75	70.1	68	<.5	10.0	<.02	<3	<.03
COL6	Whole body	Speckled dace	03-04-92	66	70.5	13	<.5	6.9	<.02	<3	<.03
COL6	Whole body	Speckled dace	03-04-92	92	69.2	667	<.4	12.1	.02	<2	.07
COL6	Whole body	Speckled dace	03-04-92	90	69.3	170	.7	9.92	<.01	<2	.03
COL6	Whole body	Speckled dace	03-04-92	77	71.6	140	<.4	11.0	<.01	<2	<.03
COL6	Whole body	Speckled dace	03-04-92	85	69.3	1,550	<.4	24.3	.05	<2	.04
COL6	Liver	Flannelmouth sucker	03-04-92	550	73.5	<3	1.4	<.10	<.01	<2	.41
COL6	Liver	Flannelmouth sucker	03-04-92	440	69.6	5	<.4	<.09	<.01	<2	.09
COL6	Liver	Flannelmouth sucker	03-04-92	475	66.8	19	.9	<.10	<.01	<2	.18

Table 37. Trace-element concentrations in fish samples collected from the Colorado River during 1992--Continued

Site code	Chro-mium	Cop-per	iron	Lead	Mag-ne-sium	Man-ga-nese	Mer-cury	Mo-lyb-de-num	Nickel	Sele-nium	Stron-tium	Vana-dium	Zinc
COL6	1.8	3.0	90	<0.4	968	6.5	0.67	<0.9	6.4	4.6	39.7	20.0	71
COL6	3.0	1.9	33	<.4	859	4.5	1.5	<1	11.6	4.1	52.6	31.4	62
COL6	1.3	4.2	304	<.4	1,020	11.0	.30	<.9	.64	5.6	20.2	.88	92
COL6	2.3	3.4	67	<.4	1,010	7.7	.34	<1	10.9	3.1	57.9	33.1	58
COL6	2.0	2.5	90	<.4	915	4.9	.41	<.9	.97	5.6	25.0	<.30	67
COL6	1.8	5.2	446	<.4	1,030	19.0	.78	<1	1.3	6.2	43.3	3.3	64
COL6	2.0	3.3	249	<.4	1,040	8.1	.911	<1	1.3	6.9	31.7	2.0	110
COL6	.90	3.6	135	<.4	948	9.2	.26	<1	2.1	4.3	26.7	6.5	69
COL6	5.8	5.7	49	<.5	706	3.2	.17	<1	21.5	3.4	9.6	40.6	49
COL6	2.1	4.1	280	<.4	1,030	14.0	.47	<.9	4.3	3.7	23.9	11.0	72
COL6	4.1	2.9	260	<.4	875	24.5	.44	<1	17.9	1.9	27.2	47.8	46
COL6	1.7	3.2	436	<.4	940	22.9	.36	<1	4.0	2.8	31.4	12.0	46
COL6	1.7	2.3	282	<.4	807	14.0	.16	<1	7.8	2.9	16.0	24.0	36
COL6	1.8	3.0	425	<.4	814	21.0	.42	<.9	1.9	2.9	19.1	4.8	39
COL6	1.2	2.5	489	<.4	838	22.5	.17	<1	1.5	3.8	14.5	4.1	42
COL6	1.3	2.8	301	<.4	760	20.4	.31	<1	2.4	2.8	17.9	6.8	44
COL6	2.3	2.5	599	.7	857	19.7	.27	<1	2.5	3.5	20.9	6.3	38
COL6	1.6	3.0	560	<.4	1,010	23.5	.32	<1	3.3	3.4	32.7	10.0	44
COL6	2.9	2.8	193	<.4	714	11.0	.26	<.9	17.1	2.0	7.5	51.3	30
COL6	1.7	2.6	632	<.4	855	20.4	.30	<1	2.0	2.2	16.5	6.3	40
COL6	<.40	2.0	340	1.0	1,390	29.0	.35	<2	.30	6.4	165	1.0	180
COL6	<.50	3.0	190	<.9	1,230	16.0	.26	<2	<.20	9.1	133	<.60	140
COL6	<.40	3.0	130	<.7	909	18.0	.39	<2	<.20	7.9	112	<.50	190
COL6	1.0	3.0	350	.9	1,260	24.0	.14	<1	<.20	3.8	116	1.0	150
COL6	<.40	2.0	79	<.7	1,130	21.0	.25	<2	.20	6.4	119	<.50	160
COL6	<0.30	3.0	51	<.6	1,100	14.0	.19	<1	<.20	6.7	116	<.40	130
COL6	.30	2.7	387	1.0	1,210	22.4	.32	<1	.34	7.8	120	1.1	190
COL6	.30	2.0	120	.5	1,200	17.0	.26	<1	<.10	8.1	141	.50	110
COL6	<.30	3.0	140	<.6	1,290	15.0	.36	<1	<.10	7.6	157	.40	200
COL6	1.0	3.4	1,010	2.0	1,340	36.7	.44	<1	.67	10.3	125	2.8	180
COL6	<.30	14.0	162	<.5	722	6.5	.11	<1	<.10	4.6	.20	.70	69
COL6	<.30	14.0	286	<.4	336	2.9	.019	<.9	<.10	3.2	.30	<.30	40
COL6	<.30	16.0	570	<.4	409	4.6	.056	<1	<.10	4.8	.30	.50	63

Table 37. Trace-element concentrations in fish samples collected from the Colorado River during 1992--Continued

Site code	Matrix	Species	Date	Average length	Percent moisture	Aluminum	Arsenic	Barium	Beryllium	Boron	Cadmium
COL8	Whole body	Roundtail chub	03-05-92	370	76.9	77	0.4	6.0	<0.01	<2	0.03
COL8	Whole body	Roundtail chub	03-05-92	360	80.7	190	<.3	8.5	<.01	<2	.06
COL8	Whole body	Roundtail chub	03-05-92	375	76.8	68	.5	4.0	<.01	<2	.03
COL8	Whole body	Roundtail chub	03-05-92	395	78.5	88	<.3	7.6	<.01	<2	.05
COL8	Whole body	Roundtail chub	03-05-92	365	77.6	94	.3	4.5	<.01	<2	<.02
COL8	Whole body	Roundtail chub	03-05-92	335	79.2	150	.5	4.8	<.01	<2	.04
COL8	Whole body	Roundtail chub	03-05-92	270	80.7	250	<.4	3.4	.01	<2	.05
COL8	Whole body	Roundtail chub	03-05-92	266	80.8	24	<.3	1.2	<.01	<2	<.02
COL8	Whole body	Roundtail chub	03-05-92	255	82.1	89	<.3	2.2	<.01	<2	.05
COL8	Whole body	Roundtail chub	03-05-92	240	77.7	75	<.4	5.3	<.01	<2	<.02
COL8	Whole body	Flannelmouth sucker	03-05-92	545	67.5	393	.7	11.8	.03	<2	.07
COL8	Whole body	Flannelmouth sucker	03-05-92	525	69.4	603	.8	6.9	.03	<2	<.02
COL8	Whole body	Flannelmouth sucker	03-05-92	525	73.1	381	<.4	6.2	.02	<2	.04
COL8	Whole body	Flannelmouth sucker	03-05-92	520	64.3	341	<.3	4.4	.02	<2	<.02
COL8	Whole body	Flannelmouth sucker	03-05-92	480	70.7	563	.9	7.5	.04	<2	.04
COL8	Whole body	Flannelmouth sucker	03-05-92	540	67.0	587	1.2	7.5	.03	<2	<.02
COL8	Whole body	Flannelmouth sucker	03-05-92	565	69.8	210	1.1	5.8	<.01	<2	<.02
COL8	Whole body	Flannelmouth sucker	03-05-92	460	71.4	270	1.0	4.8	.01	<2	<.02
COL8	Whole body	Flannelmouth sucker	03-05-92	534	64.8	200	.8	3.5	<.01	<2	<.02
COL8	Whole body	Flannelmouth sucker	03-05-92	447	68.9	291	.95	6.8	.01	<2	.08
COL8	Whole body	Speckled dace	03-05-92	112	65.5	98	.5	7.9	<.01	<2	.13
COL8	Whole body	Speckled dace	03-05-92	105	68.1	416	<.4	10.5	.02	<2	.05
COL8	Whole body	Speckled dace	03-05-92	101	68.1	400	<.3	10.0	.02	<2	.07
COL8	Whole body	Speckled dace	03-05-92	100	65.0	624	<.3	8.1	<.01	<2	.10
COL8	Whole body	Speckled dace	03-05-92	95	60.9	100	<.3	6.1	.01	<2	.07
COL8	Whole body	Speckled dace	03-05-92	88	64.2	36	<.4	4.1	<.01	<2	.05
COL8	Whole body	Speckled dace	03-05-92	90	69.2	280	<.3	9.0	<.01	<2	.06
COL8	Whole body	Speckled dace	03-05-92	70	59.4	95	<.6	7.2	<.01	<2	.04
COL8	Whole body	Speckled dace	03-05-92	72	67.9	240	<.5	6.0	<.02	<3	.05
COL8	Whole body	Speckled dace	03-05-92	80	62.9	83	<.4	4.7	<.01	<2	.09
COL8	Liver	Flannelmouth sucker	03-05-92	480	64.7	6	.7	<10	<.01	3	.17
COL8	Liver	Flannelmouth sucker	03-05-92	575	68.9	9	<.4	.10	<.01	2	.42
COL8	Liver	Flannelmouth sucker	03-05-92	580	71.2	15	<.4	.10	<.01	<2	.96

Table 37. Trace-element concentrations in fish samples collected from the Colorado River during 1992--Continued

Site code	Chromium	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Selenium	Strontium	Vanadium	Zinc
COL8	1.1	2.0	87	<0.4	1,290	6.8	0.83	<0.9	1.2	5.0	89.0	2.7	74
COL8	.79	3.0	170	<.4	1,270	8.3	.96	<1	.45	7.2	74.4	1.1	86
COL8	.79	3.3	98	<.4	1,060	5.5	.45	<.9	1.2	4.5	54.3	2.7	64
COL8	.94	3.1	130	<.4	1,170	6.7	1.1	<1	.43	4.8	82.0	.60	110
COL8	1.2	2.0	130	<.4	1,090	7.9	.40	<1	1.9	3.8	59.2	.70	73
COL8	.85	7.2	130	.4	1,130	6.2	.60	<1	.58	4.7	45.5	4.2	74
COL8	1.4	2.8	230	<.4	1,130	5.4	.46	<1	1.1	7.9	28.1	1.7	81
COL8	1.1	3.4	70	<.4	936	2.4	.33	<1	2.2	4.7	15.4	3.7	61
COL8	.78	3.3	150	<.4	1,080	3.2	.37	<1	2.2	7.5	28.3	4.3	93
COL8	1.1	2.9	110	<.4	1,390	8.3	.25	<1	.75	4.7	115	1.3	120
COL8	2.0	2.7	260	<.4	756	13.0	.24	<.9	8.8	2.5	21.8	23.0	34
COL8	1.4	6.2	434	1.6	1,160	19.9	.27	<1	.86	3.6	61.9	1.7	41
COL8	2.9	4.5	290	1.0	989	12.0	.31	<1	1.6	3.7	36.6	.95	42
COL8	1.2	2.9	250	1.0	738	9.9	.23	<.9	.79	2.9	24.0	.89	35
COL8	2.8	3.0	320	<.4	895	14.0	.19	<1	11.0	2.6	28.7	28.0	36
COL8	1.0	2.0	403	1.0	845	14.0	.25	<1	.88	3.7	24.3	2.1	43
COL8	2.2	2.0	160	<.4	929	12.0	.099	<1	2.5	4.2	53.0	4.6	36
COL8	1.1	2.0	210	<.4	828	11.0	.16	<1	2.3	4.0	21.9	6.4	39
COL8	1.3	3.0	140	.9	834	13.0	.26	<1	.86	3.6	45.6	.50	36
COL8	1.1	2.0	260	.5	659	9.2	.52	<.9	.59	2.4	15.2	.95	33
COL8	<.20	2.8	181	<.4	1,150	20.7	.36	<.9	.10	7.0	137	.30	110
COL8	.50	2.4	258	.5	1,140	19.0	.23	<1	.39	5.2	137	.92	180
COL8	.40	2.2	254	<.4	1,190	17.0	.27	<1	.20	6.7	143	.80	140
COL8	.40	3.0	367	<.6	1,020	14.0	.30	<.9	.20	8.1	65.8	1.1	120
COL8	.40	2.1	125	<.3	914	13.0	.27	<1	.20	6.2	95.3	<.30	130
COL8	.30	2.0	66	.5	912	11.0	.18	<1	<.10	6.4	78.9	<.30	110
COL8	.70	2.3	204	.7	1,350	15.0	.23	<1	.10	7.2	175	.60	140
COL8	.40	2.2	101	<.4	1,090	13.0	.21	<.9	<.10	6.6	136	.30	140
COL8	.40	2.6	166	<.6	1,060	14.0	.18	<1	.30	7.6	95.8	.60	140
COL8	<.30	2.4	84	<.4	905	12.0	.14	<1	.20	6.4	82.0	<.30	110
COL8	<.30	11.0	123	.4	310	2.8	.048	<1	<.10	2.9	.30	.40	36
COL8	<.30	11.0	286	.6	698	7.0	.08	<1	.10	4.9	.34	.40	62
COL8	<.30	11.0	159	<.4	665	5.8	.12	<1	.30	5.8	.43	.50	68

Table 38. Concentrations of organochlorine pesticides and total PCB's in whole-body fish samples collected during 1991

[Analysis by U.S. Fish and Wildlife Service; sites in the Uncompahgre Project area are listed in table 1 and locations are on plate 1; sites in the Grand Valley are listed in table 2 and locations are on plate 2; average length in millimeters; concentrations in micrograms per gram wet weight; <, less than]

Site code	Species	Date	Average length	Number in sample	Percent moisture	alpha-BHC	beta-BHC	delta-BHC	gamma-BHC	alpha-Chlordane	gamma-Chlordane	Dieldrin
					UNCOMPAHGRE PROJECT AREA							
HCC1	White sucker	07-17-91	323	2	75.8	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.02
DRY1	Flannelmouth sucker	07-17-91	427	3	71.2	<.01	<.01	<.01	<.01	<.01	.02	.09
LZA1	Sucker -composite	07-17-91	275	3	75.8	<.01	<.01	<.01	<.01	<.01	<.01	.02
RB1	White sucker	07-17-91	420	1	79.0	<.01	<.01	<.01	<.01	.02	<.01	.02
					GRAND VALLEY							
SC	Flannelmouth sucker	03-28-91	440	3	77.2	<.01	<.01	<.01	<.01	.02	.02	<.01
BSW1	Flannelmouth sucker	03-28-91	251	5	74.4	<.01	<.01	<.01	<.01	<.01	<.01	<.01

Site code	o,p' DDD	p,p' DDD	o,p' DDE	p,p' DDE	o,p' DDT	p,p' DDT	Endrin	HCB	Heptachlor epoxide	Mirex	cis-Nonachlor	trans-Nonachlor	Oxychlordane	Toxaphene	PCB's (total)
							UNCOMPAHGRE PROJECT AREA--Continued								
HCC1	<0.01	0.01	<0.01	0.06	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	<0.01	0.01	<0.01	<0.01	<0.01
DRY1	<.01	.08	.02	.63	.06	.14	<.01	.01	.02	<.01	<.01	.03	.01	.82	<.01
LZA1	<.01	<.01	<.01	.02	<.01	<.01	<.01	<.01	<.01	<.01	<.01	.01	<.01	<.01	<.01
RB1	<.01	.04	<.01	.41	<.01	.06	<.01	<.01	<.01	<.01	<.01	.02	<.01	<.01	<.01
							GRAND VALLEY--Continued								
SC	<.01	.02	<.01	.17	<.01	.03	<.01	<.01	<.01	<.01	.02	.04	<.01	<.01	<.01
BSW1	<.01	.02	<.01	.14	<.01	<.01	<.01	<.01	<.01	<.01	<.01	.02	<.01	<.01	<.01

Table 39. Concentrations of polycyclic aromatic hydrocarbons in fish-bile samples collected during 1991

[Analysis by U.S. Fish and Wildlife Service; sites in the Uncompahgre Project area are listed in table 1 and locations are on plate 1; sites in the Grand Valley are listed in table 2 and locations are on plate 2; average length in millimeters; concentrations in micrograms per gram wet weight; --, no data]

Site code	Species	Date	Average length	Number in sample	Percent moisture	Acenaphthene	Acenaphthylene	Anthracene	a-Benzo anthracene	b-Benzo fluoranthracene
				UNCOMPAHGRE PROJECT AREA						
HCC1	Brown trout	07-17-91	--	2	87.1	0.009	0.011	0.021	0.018	0.007
HCC1	White sucker	07-17-91	268	4	87.7	.002	.002	.002	.002	.001
SP1	White sucker	07-17-91	363	2	83.8	.079	.038	.052	.024	.008
SP4	White sucker	07-31-91	313	4	86.9	.016	.005	.002	.004	.002
DRY1	Flannelmouth sucker	07-17-91	455	2	86.9	.002	.002	.002	.001	.001
GUN2	Flannelmouth sucker	07-16-91	--	4	84.1	.002	.002	.002	.001	.001
CR	Channel catfish	06-27-91	543	2	90.5	.003	.002	.001	.002	.001
NFK2	White sucker	07-16-91	420	3	87.3	.007	.003	.001	.002	.001
NFK3	White sucker	07-16-91	298	4	86.8	6.143	1.388	.190	.148	.037
CMG1	White sucker	07-18-91	--	3	88.0	.005	.001	.001	.002	.000
RB1	White sucker	07-18-91	--	4	84.0	.003	.004	.004	.001	.002
				GRAND VALLEY						
HR	Channel catfish	05-16-91	--	3	89.3	.002	.003	.001	.001	.001
COL1	Flannelmouth sucker	07-25-91	320	4	85.0	.063	.020	.054	.028	.019
COL4	Bluehead sucker	07-25-91	400	2	83.6	.004	.004	.002	.004	.001

Site code	k-Benzo-fluoranthracene	a-Benzo-pyrene	e-Benzo-pyrene	Benzo-perylene	Biphenyl	Chrysene	Dibenzo-anthracene	2,6-Dimethyl-naphthalene	Fluorene	Fluoro-anthracene	Indeno-pyrene
					UNCOMPAHGRE PROJECT AREA--Continued						
HCC1	0.008	0.006	0.004	0.005	0.048	0.000	0.011	0.017	0.022	0.015	0.006
HCC1	.001	.001	.000	.001	.004	.001	.001	.003	.001	.001	.001
SP1	.005	.011	.009	.011	.125	.013	.020	.039	.053	.020	.012
SP4	.003	.004	.004	.006	.009	.005	.006	.010	.006	.005	.002
DRY1	.001	.001	.000	.001	.008	.002	.001	.008	.003	.001	.001
GUN2	.001	.001	.001	.001	.005	.001	.001	.008	.003	.002	.001
CR	.001	.000	.001	.001	.003	.001	.001	.002	.002	.001	.001

Table 39. Concentrations of polycyclic aromatic hydrocarbons in fish-bile samples collected during 1991--Continued

Site code	k-Benzo-fluor-anthra-cene	a-Benzo-pyrene	e-Benzo-pyrene	Benzo-per-ylene	Bi-phenyl	Chrysene	Di-benzo-anthra-cene	2,6-Dimethyl-naph-thalene	Fluorene	Fluoro-anthra-cene	Indeno-pyrene
NFK2	.003	.001	.001	.003	.005	.006	.002	.006	.003	.004	.002
NFK3	.024	.018	.049	.065	3.279	.153	.096	6.552	8.362	.239	.079
CMG1	.001	.001	.002	.001	.005	.002	.001	.004	.002	.001	.001
RB1	.002	.002	.002	.003	.011	.002	.002	.008	.005	.006	.002
					GRAND VALLEY--Continued						
HR	.001	.001	.001	.002	.007	.001	.001	.005	.003	.002	.002
COL1	.011	.027	.015	.018	.053	.018	.031	.032	.044	.022	.012
COL4	.002	.001	.001	.001	.025	.004	.002	.015	.002	.005	.002

Site code	1-Methyl-naph-thalene	2-Methyl-naph-thalene	1-Methyl-phenan	Naph-thalene	Pery-lene	Phenan	Pyrene	2,3,4-tri-methyl-naph-thalene
				UNCOMPAHGRE PROJECT AREA--Continued				
HCC1	0.067	0.062	0.015	0.116	0.014	0.028	0.026	0.047
HCC1	.007	.004	.002	.013	.001	.003	.003	.002
SP1	.114	.147	.027	.266	.188	.049	.038	.023
SP4	.023	.030	.005	.051	.033	.014	.008	.007
DRY1	.023	.010	.002	.020	.011	.004	.002	.004
GUN2	.012	.009	.001	.017	.002	.004	.002	.001
CR	.006	.013	.003	.017	.002	.004	.003	.003
NFK2	.007	.017	.002	.025	.013	.007	.002	.009
NFK3	27.218	12.953	.133	6.088	.282	.445	.621	6.284
CMG1	.010	.008	.003	.018	.001	.006	.002	.004
RB1	.009	.021	.003	.034	.003	.007	.005	.008
				GRAND VALLEY--Continued				
HR	.022	.009	.001	.020	.002	.003	.003	.006
COL1	.215	.240	.035	.259	.028	.051	.026	.055
COL4	.215	.023	.004	.039	.005	.014	.009	.010