QUALITY AND QUANTITY OF RUNOFF AND ATMOSPHERIC DEPOSITION IN URBAN AREAS OF SALT LAKE COUNTY, UTAH, 1980-81

By R. C. Christensen, D. W. Stephens, G. E. Pyper, H. F. McCormack,
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[Plate is in pocket]

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CONVERSION FACTORS AND RELATED INFORMATION

For readers who prefer to use metric units, conversion factors for terms used in this report are listed below:

Multiply	By	To obtain
Acre	0.4047	Hectare
	4,047	Square meter (m^2)
Acre-foot (acre-ft)	0.001233	Cubic hectometer (hm^3)
	1,233	Cubic meter (m^3)
Cubic foot per second (ft^3/s)	0.02832	Cubic meter per second (m^3/s)
Cubic foot per second per square mile $(ft^3)/mi^2$	0.01093	Cubic meter per second per square kilometer $(m^3/s)/km^2$
Foot (ft)	0.3048	Meter (m)
Foot per mile (ft/mi)	0.1894	Meter per kilometer (m/km)
Inch (in.)	25.40	Millimeter (mm)
	0.0254	Meter (m)
Micromho per centimeter at 25°C (µmho/cm)	1.000	Microsiemens per centimeter at 25°C (µs/cm)
Mile (mi)	1.609	Kilometer (km)
Pound (lb)	0.4536	Kilogram (kg)
Pound per acre (lb/acre)	1.121	Kilogram per hectare (kg/ha)
Pound per acre per mile (lb/acre)/mi	1.804	Kilogram per hectare per kilometer (kg/ha)/km
Square mile (mi^2)	2.590	Square kilometer (km^2)
Ton (short)	0.9072	Metric ton (t) or Megagram (Mg)

Chemical concentration and water temperature are given only in metric units. Chemical concentration is given in milligrams per liter (mg/L) or micrograms per liter (µg/L). Milligrams per liter is a unit expressing the solute per unit volume (liter) of water. One thousand micrograms per liter is equivalent to 1 milligram per liter. For concentrations less than 7,000 milligrams per liter, the numerical value is about the same as for concentrations in parts per million. Specific conductance is given in micromhos (µmho) per centimeter at 25 degrees Celsius.

Dustfall concentration is given in milligrams per kilogram or micrograms per kilogram. These terms express concentration on a weight per weight basis and are numerically equivalent to parts per million and parts per billion, respectively.

Water temperature is given in degrees Celsius (°C), which can be converted to degrees Fahrenheit (°F) by the following equation: °F=1.8(°C) +32.

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 mean sea level, is referred to as sea level in this report.

QUALITY AND QUANTITY OF RUNOFF AND ATMOSPHERIC DEPOSITION

IN URBAN AREAS OF SALT LAKE COUNTY, UTAH, 1980-81

by R. C. Christensen, D. W. Stephens, G. E. Pyper,

H. F. McCormack, and J. F. Weigel

ABSTRACT

The water quality in streams in the eastern part of Salt Lake County, Utah, deteriorates from the headwaters in the Wasatch Range to the lower reaches of the streams before they empty into the Jordan River. Urban-storm runoff and atmospheric deposition were investigated as possible nonpoint sources of pollution in 12 basins in cooperation with the Salt Lake County Division of Flood Control and Water Quality. Data were collected during 1980-81 for atmospheric deposition, precipitation, runoff, water-quality, and basin parameters.

The volume and peak discharge of urban-storm runoff to streams and canals varied greatly. The volume of urban runoff for 299 basin storms ranged between 1 and 83 percent of the rainfall, with an area-weighted average of 8 percent. The peak discharge ranged from 1.1 to 17 cubic feet per second per square mile. Records for 11 station storms show that for three canals the volume of urban runoff ranged between 13 and 100 percent of canal discharge, with a median value of 38 percent. Peak discharge of urban runoff in the canals ranged from 2.0 to 31 cubic feet per second and averaged 12 cubic feet per second.

The volume and peak discharge of urban runoff were related to storm and basin characteristics by multiple-regression analysis. For individual basins, variation in volume of runoff was greatly dependent on total rainfall and variation in peak discharge was greatly dependent on rainfall intensity. For all the basins combined, no useful relation for volume of runoff was obtained; however, the variation in peak discharge was greatly dependent on contributing basin area and rainfall intensity.

Wet-deposition quality appeared to be directly related to rainfall intensity and inversely related to total rainfall. Wet-deposition loads generally were considerable for total solids but small for dissolved trace metals. The wet-deposition loads that entered the basins were considerably greater than those leaving in runoff. The imbalance indicates that a large quantity of the wetload remained as soil deposits. Acid rain fell in more than one-half of the storms sampled, most commonly in September and October. Dustfall concentrations reflected the composition of local soils, aerosol salts from the Great Salt Lake, and urban dust. Concentrations of cadmium, copper, lead, and zinc were considerably enriched above soil levels, and they tended to decrease with distance from the southern end of the county. The concentration of chloride also was enriched, but it decreased with distance from the Great Salt Lake at the northern end of the county. Monthly dustfall loads generally were of the same magnitude as total storm-runoff loads for a heavy rainfall.

The quality of storm runoff varied widely throughout the urban areas. Large concentrations of sediment, suspended solids, suspended trace metals,

phosphorus, and oxygen-demanding substances were typical in storm runoff in many urban basins. Storm runoff reduces the concentration of nutrients and some dissolved solids at sites that are affected by discharge from wastewater-treatment plants. Channel slope was of considerable importance in several of the basins in determining the ratio of dissolved to suspended solids in storm runoff.

The water from mountain streams that entered the urban areas was generally of good quality before and during storms. However, considerable degradation occurred as the water flowed through the urban areas. The baseline flow and storm runoff in canals generally was of poorer quality than the water in the mountain streams. The impact of canal discharges to the streams was slight, however, owing to the relatively small discharges in relation to the large flow in the receiving streams.

The quality of storm water in conduits in seven urban basins was very poor, and large loads of dissolved and suspended solids were discharged to the Jordan River. Multiple-regression analysis for the Bells Canyon Conduit and Ninth West Conduit urban basins of storm loads against storm characteristics identified total runoff, peak discharge, and rainfall intensity as positively related variables. When storm-load data were combined for all basins, loads of dissolved cadmium were positively related to the total storm runoff. Except for effective impervious area, basin characteristics generally related poorly to observed storm loads.

INTRODUCTION

In Salt Lake County, Utah (fig. 1), as in other parts of the United States where population is growing rapidly, much concern has arisen over the quality of streamflow. The population of the county increased 61 percent from 1960 to 1980 (U.S. Bureau of the Census, 1963 and 1980), and it is projected to increase at the rate of about 49 percent from 1980 to 2000 (Jensen, 1980). This expected growth must be considered in terms of water pollution because of the degrading effect urban areas can have on water quality.

The water quality in the streams in the eastern part of Salt Lake County deteriorates from their headwaters in the Wasatch Range to the lower reaches of the streams before they empty into the Jordan River. The causes of the degradation of the streamflow include storm runoff from undeveloped lands where the natural cover has been removed, urban runoff, return flow from agricultural lands, municipal and industrial discharges, and atmospheric deposition.

The standards of quality for waters of the State (Utah State Board of Health, 1978) are presently (1983) being exceeded for designated beneficial uses of the major Jordan River tributaries in the urban areas of the county. Some of the stream reaches are designated as "water-quality limited" (Salt Lake County Division of Water Quality and Water Pollution Control, 1979, p. 3). This means that water-quality criteria for designated beneficial uses are not being met nor will be met even with the application of stringent effluent

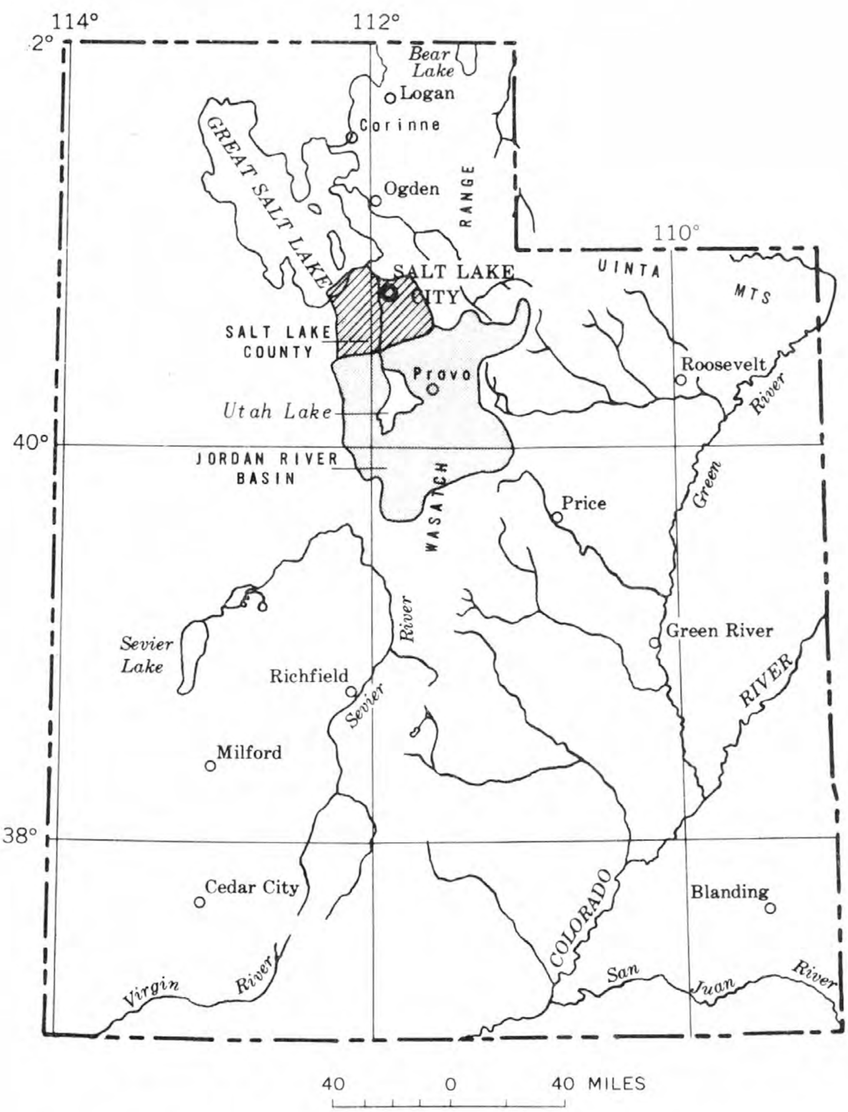

Figure 1.—Map of Utah showing the location of Salt Lake County in the downstream part of the Jordan River Basin.

limitations for point-source discharges from sewage-treatment plants, industrial installations, and other specifically definable sources. It is possible, therefore, that urban runoff and atmospheric deposition are responsible for the "water-quality limited" designation.

Purpose of Study

The implementation of a nationwide program to study the quality of urban runoff and atmospheric deposition is largely the result of the 1972 and 1977 amendments to Public Law 92-500, the Federal Water Pollution Control Act. Subsequently, the U.S. Environmental Protection Agency initiated the Nationwide Urban Runoff Program (NURP) to study urban-storm water. Under NURP, the Salt Lake County Division of Water Quality and Water Pollution Control and its successor the Division of Flood Control and Water Quality carried out an urban-runoff study in its capacity as the designated water-quality planning agency for Salt Lake County. This report describes part of the study that was done by the U.S. Geological Survey at the request of the county.

The objectives of the study by the Geological Survey were: (1) To collect site-specific data for precipitation, atmospheric deposition, quantity and quality of runoff, and basin characteristics; (2) to provide an indication of the effect of atmospheric deposition on water-quality constituents found in urban runoff; (3) to identify the impact of urban runoff on the major tributaries and major canals east of the Jordan River; and (4) to evaluate the quality and quantity of runoff from 12 urban basins.

The study area was essentially the eastern part of Salt Lake County between the Wasatch Range and the Jordan River. (See plate 1.)

The Jordan River, which is the receiving stream for most of the urban runoff in Salt Lake County, was concurrently studied separately to determine the effect of urban runoff on the quality of the river and to investigate four quality problems--(1) toxic substances, (2) dissolved-oxygen depletion, (3) sanitation, and (4) turbidity and suspended sediment. The results of these studies will be given in future reports.

Acknowledgments

The Salt Lake County Commission and the municipal corporations of Salt Lake City, Murray, Sandy, and West Jordan, and the University of Utah provided sites for the installation and operation of hydrologic-monitoring equipment. The U.S. National Weather Service Forecast Office provided information on storms approaching the study area, such as estimated time of occurrence, duration, intensity, and total rainfall.

Previous Investigations

A report on the water resources of Salt Lake County by Hely and others (1971) provides information for the quality and quantity of precipitation and streamflow in the urban area using data collected through September 1968. Hydroscience Incorporated (1976, 1977a,b) provided an evaluation of water quality, a preliminary analysis of the treatment of storm-water runoff, and water-quality impacts of point and nonpoint loads to the Jordan River. WeatherBank, Inc. (1977) provided information for long-term precipitation in the form of isohyetal maps for return periods of 2, 10, and 100 years with durations of 15 and 30 minutes and 1, 6, 12, and 24 hours.

A survey of the chemical composition of snow in the western United States (Feth and others, 1964) reported several analyses for snow in or near the Salt Lake Valley. Eardley (1970) reported chloride concentrations in rainfall in the Salt Lake Valley. Trace metals were monitored in snowfall at 33 sites in the area extending north and south of Salt Lake County by Dustin (1977). The Utah Department of Health has monitored some constituents of air quality, including total particulates, in Salt Lake County since 1963.

A small amount of data for the quality and quantity of urban-storm runoff in storm drains was reported by the Salt Lake County Division of Water Quality and Water Pollution Control (1979). The data came from four sources: (1) W. Jou's investigation of urban-runoff pollution in Salt Lake City, which was made for his Master of Science thesis at the University of Utah in 1973; (2) studies by Templeton, Linke & Alsup, Inc. dealing with storm-sewer masterplans; (3) the section 208 area-wide program of the Salt Lake County Division of Water Quality and Water Pollution Control in 1977; and (4) a water-quality monitoring program of the Salt Lake City and Salt Lake County Health Departments.

PHYSICAL SETTING

The study area consists of the urban areas of Salt Lake Valley (Jordan Valley) in Salt Lake County (pl. 1). The valley covers nearly 500 square miles, with altitudes ranging from about 4,200 feet above sea level at Great Salt Lake on the north to about 5,200 feet where it joins the bordering mountains on the other three sides of the valley (Hely and others, 1971, p. 8). Beyond the urban areas on the east, the Wasatch Range rises to more than 11,000 feet, the Oquirrh Mountains on the west to more than 9,000 feet, and on the south the Traverse Mountains to more than 6,000 feet. At the Jordan Narrows, a gap in the Traverse Mountains, the Jordan River enters the valley and flows north to Great Salt Lake.

The urban areas in the eastern part of the valley are in the drainage basins of seven major perennial tributaries of the Jordan River that head in the Wasatch Range. These are Little Cottonwood, Big Cottonwood, Mill, Parleys, Emigration, Red Butte, and City Creeks.

Three canals (East Jordan, Upper, and Jordan and Salt Lake City) (pl. 1) convey water through the urban areas. They divert water from the Jordan River at the Jordan Narrows and from the creeks draining the Wasatch Range to the urban areas for use for irrigation and by industry. They also serve as open storm drains to convey urban-storm runoff to the nearest creek or storm drain for passage to the Jordan River. Diversions also are made from the canals to the creeks to fulfill water-exchange rights. Diversions from the East Jordan Canal are made to Little and Big Cottonwood Creeks, and water from the East

Jordan Canal is pumped to the head of the Upper Canal. Diversion from the Upper Canal is made to Mill Creek. Diversions from the Jordan and Salt Lake City Canal are made to Little Cottonwood, Big Cottonwood, and Mill Creeks, and the Thirteenth South Conduits.

Many diversions for irrigation, power generation, and domestic use are made from creeks that head in the Wasatch Range. Information on the location of the main diversions and discharge data collected at those sites through September 1965 were reported by Iorns and others (1966a and 1966b). Additional information about the study area concerning the physiographic setting, climate, and geology can be obtained from Hely and others (1971).

DATA COLLECTION

Fifty-three field stations were operated on and near 12 urban basins and 3 canals to collect concurrent data for precipitation, atmospheric deposition, and quantity and quality of streamflow. The location of the stations are shown on plate 1, and descriptive information for each station is given in table 1 or 2. The length of record at each station varied from several years at precipitation and streamflow stations already in operation for other purposes to less than 1 year at the last streamflow station constructed for this study. Records used in this report were collected during 1980-81 and published by Pyper and others (1981) and McCormack and others (1983).

Most of the station numbers used in tables 1 and 2 are part of the U.S. Geological Survey nationwide system of numbering streamflow stations by major river basin and in downstream order. These stations have been given an eight-digit number. The first two digits indicate the major river basin and the last six digits indicate the relative downstream order of the station in the basin. For those stations with 15-digit numbers, the first 6 digits denote the degrees, minutes, and seconds of latitude, the next 7 digits denote degrees, minutes, and seconds of longitude, and the last 2 digits are a sequential number within a 1-second grid. The stations are listed in table 1 by increasing latitude from south to north and in table 2 by downstream order in the study area.

Precipitation

Precipitation data were collected at 21 stations (table 1). The stations were established in a grid so that at least one recording gage was within or close by each small basin, and at least two recording gages and one nonrecording gage were fairly well distributed within the large basins. Three types of 8-inch gages were most commonly used (fig. 2): (1) A nonrecording total-catch storage gage that was measured once daily, (2) a weighing gage with a continuous record on a daily chart, readable to 15-minute intervals, and (3) a tipping-bucket gage with a continuous digital-tape record which was punched at 5-minute intervals. The accuracy of the time of occurrence of recorded precipitation was plus or minus 10 minutes, and the recorded depth was plus or minus 0.01 inch, except for the gage at site 20, which recorded depth to the nearest 0.1 inch. Missing data and time distribution of storage-gage record for a storm were estimated on the basis of records at nearby stations and prevailing direction of the storm.

Table 1.—Precipitation and atmospheric-deposition stations

Site number: Number shown on plate 1.

Station number: See description in text in section on Data Collection.

Precipitation gage: R, recording; NR, nonrecording.

Type of data: P, precipitation; A, atmospheric deposition.

Site number	Station number	Station name and location	Precipitation gage	Type of data
1[1]	10167220	Bells Canyon Conduit at 1000 East and 11000 South.	R	P,A
2	403512111475600	Little Cottonwood Water Treatment Plant near 9000 South and 3200 East.[2]	NR	P
3	403538111543100	Sandy City Public Works near 700 West and 8800 South.	—	A
4	403708111465800	Cottonwood Weir at Big Cottonwood Creek Water Treatment Plant at canyon mouth.[3]	NR	P
5	10167180	Dixie Valley Detention Basin near 3600 West and 6500 South.	R	P,A
6	403813111544000	Interstate 215 at 1050 West[4]	R	P
7	403829111514500	Murray Pumping Plant near Vine Street and 900 East.	R	P
8[1]	10168840	Holladay Drain at 4800 South, at Big Cottonwood Creek.	R	P
9	404024111541300	Murray Sewage Treatment Plant near Jordan River and 4500 South.	R	P
10	404034111463700	Olympus Cove near 4200 East and 4400 South.[5]	R	P
11	404138111474300	Interstate 215 at Mill Creek4	R	P
12	404205111500600	Salt Lake City No. 42 near 3200 South and 1900 East.[6]	NR	P

Table 1.—Precipitation and atmospheric-deposition stations—Continued

Site number	Station number	Station name and location	Precipitation gage	Type of data
13	404216111544200	Suburban Sanitary District No. 1 near 700 West and 3100 South.	R	P
14	404355111500100	Foothill Post Office near 1750 South and 2000 East.[6]	NR	P
15	404356111562400	Administration Building near 1700 South and Redwood Road.	R	P,A
16	404442111523000	Liberty Park near 1200 South and 600 East.	R	P
17[1]	10172370	Eighth South Conduits at Jordan River.	R	P
18	404600111493800	Fort Douglas near 100 South and 2200 East.	R	P,A
19	404600111505000	University of Utah near 100 South and 1500 East.[3]	NR	P
20	404607111530700	Salt Lake Downtown near 200 East and South Temple Street.[3]	R	P
21	404632111551000	Fire Station No. 7 at State Fairgrounds.	R	P,A
22	404636111572800	Salt Lake City, WSO, AP at Salt Lake City International Airport.[3]	R	P

1 Streamflow and water-quality station.
2 Records furnished by Metropolitan Water District.
3 Records furnished by U.S. National Oceanic and Atmospheric Administration.
4 Records furnished by Utah State Department of Transportation and Salt Lake County Division of Flood Control and Water Quality.
5 Records furnished by Lloyd Magar, private citizen.
6 Records furnished by Utah State Climatologist.

Table 2.--Streamflow and water-quality stations

Site number: Number shown on plate 1.

Station number: See description in text in section on Data Collection.

Drainage area: The total drainage area upstream from the station.

Type of data: D, discharge; Q, water quality.

Site number	Station number	Station name	Location	Drainage area (mi^2)	Type of data
23	10167100	East Jordan Canal at Jordan Narrows.	Lat 40°26'44", long 111°55'15", in NW¼SE¼NE¼ sec.26, T.4 S., R.1 W., about 1,100 ft below head, at Jordan Narrows.	—	D,Q
24	10167105	East Jordan Canal at Little Cottonwood Creek (upstream station).	Lat 40°37'18", long 111°51'23", in SW¼NE¼NE¼ sec.29, T.2 S., R.1 E., 150 ft upstream from diversion to Little Cottonwood Creek.	—	D,Q
25	10167106	East Jordan Canal at Little Cottonwood Creek (downstream station).	Lat 40°37'20", long 111°51'19", in NW¼NE¼NE¼ sec.29, T.2 S., R.1 E., 200 ft downstream from diversion to Little Cottonwood Creek.	—	D
26	10167115	East Jordan Canal at pumphouse.	Lat 40°38'17", long 111°49'52", in NE¼NW¼NW¼ sec.22, T.2 S., R.1 E., about 65 ft upstream from 6200 South Street, and about 650 ft east of intersection 2000 East and 6200 South Streets.	—	Q
27	10167122	Upper Canal at 5800 South	Lat 40°38'46", long 111°48'25", in SE¼SE¼NW¼ sec.14, T.2 S., R.1 E., 20 ft upstream from 5800 South Street (Tolcate Lane) bridge.	—	D,Q
28	10167125	Upper Canal at Wilde Rose Lane.	Lat 40°41'22", long 111°49'54", in NW¼NW¼SW¼ sec.34, T.1 S., R.1 E., 500 ft upstream from intersection of Siggard and 2000 East Streets.	—	D,Q
29	10167127	Upper Canal at Mill Creek (upstream station).	Lat 40°41'42", long 111°49'58", in SW¼NW¼NW¼ sec.34, T.1 S., R.1 E., 200 ft upstream from Mill Creek at 2000 East Street.	—	D
30	10167128	Upper Canal at Mill Creek (downstream station).	Lat 40°41'45", long 111°49'59", in NW¼NW¼NW¼ sec.34, T.1 S., R.1 E., 6 ft downstream from culvert at intersection of 2000 East and 3475 South Street and 200 ft north of Mill Creek.	—	D
31	10167130	East Jordan Canal at Middle Fork of Tanner Ditch.	Lat 40°38'29", long 111°49'52", in NE¼SW¼SW¼ sec.15, T.2 S., R.1 E., 100 ft downstream from flume, and about 1,000 ft downstream from 6200 South Street.	—	D
32	10167141	Jordan and Salt Lake City Canal at Little Cottonwood Creek (upstream station).	Lat 40°37'56", long 111°51'41", in SW¼SW¼NE¼ sec.20, T.2 S., R.1 E., 30 ft upstream from concrete flume and diversion to Little Cottonwood Creek.	—	D,Q

See footnotes at end of table, p. 12.

Table 2.—Streamflow and water-quality stations—Continued

Site number	Station number	Station name	Location	Drainage area (mi^2)	Type of data
33	10167142	Jordan and Salt Lake City Canal at Little Cottonwood Creek (downstream station).	Lat 40°37'56", long 111°51'36", in SW¼SW¼NE¼ sec.20 T.2 S., R.1 E., 200 ft downstream from concrete flume and diversion to Little Cottonwood Creek.	--	D
34	10167145	Jordan and Salt Lake City Canal at Big Cottonwood Creek (upstream station).	Lat 40°39'25", long 111°49'46", in NE¼SW¼SW¼ sec.10, T.2 S., R.1 E., 100 ft upstream from bridge at 5340 South Street, and 800 ft upstream from concrete flume and diversion at Big Cottonwood Creek	--	D
35	10167146	Jordan and Salt Lake City Canal at Big Cottonwood Creek (downstream station).	Lat 40°39'30", long 111°49'38", in SW¼NE¼SW¼ sec.10, T.2 S., R.1 E., at Big Cottonwood Creek, 60 ft below diversion.	--	D
36	10167147	Jordan and Salt Lake City Canal at Mill Creek (upstream station).	Lat 40°41'35", long 111°51'19", in SE¼NW¼NW¼ sec.33, T.1 S., R.1 E., 10 ft upstream from concrete flume and diversion to Mill Creek, and 200 ft downstream from 3640 South Street (Murphy Lane).	--	D
37	10167148	Jordan and Salt Lake City Canal at Mill Creek (downstream station).	Lat 40°41'37", long 111°51'18", in SE¼NW¼NW¼ sec.33 T.1 S., R.1 E., downstream from diversion to Mill Creek, and 280 ft downstream from 3640 South Street (Murphy Lane).	--	D
38	10167149	Jordan and Salt Lake City Canal at Zenith Avenue.	Lat 40°41'28", long 111°51'28", in SW¼NW¼NE¼ sec.29, T.1 S., R.1 E., on right bank just south of Zenith Avenue, and 160 ft east of intersection of 1100 East Street and Zenith Avenue.	--	D,Q
1[1]	10167220	Bells Canyon Conduit at 1000 East and 11000 South.	Lat 40°33'07", long 111°51'41", in SW¼SW¼SE¼ sec.17, T.3 S., R.1 E., on north side of 11000 South Street, and about 200 ft east of intersection 1000 East and 11000 South Streets.	0.10	D,Q
39	10167499	Little Cottonwood Creek at canyon mouth (channel only).	Lat 40°34'40", long 111°47'50", in NE¼NE¼NE¼ sec.11, T.3 S., R.1 E., 100 ft downstream from Wasatch Boulevard at canyon mouth.	27.4	D,Q
40	10168000	Little Cottonwood Creek at Jordan River.	Lat 40°39'50", long 111°54'04", in NE¼NE¼NW¼ sec.12, T.2 S., R.1 W., 5 ft downstream from Interstate 15 double concrete culvert, 40 ft upstream from bridge on 360 West and 2,000 ft upstream from mouth at Jordan River.	46	D,Q
41	10168499	Big Cottonwood Creek at canyon mouth (channel only).	Lat 40°37'06", long 111°46'48", in NE¼SW¼NE¼ sec.25, T.2 S., R.1 E., 150 ft upstream from bridge on State Highway 152, and 300 ft upstream from Big Cottonwood Creek Water Treatment Plant at canyon mouth.	50.0	D,Q

See footnotes at end of table, p. 12.

Table 2.--Streamflow and water-quality stations--Continued

Site number	Station number	Name	Location	Drainage area (mi^2)	Type of data
42	10168832	Neffs Creek at Wasatch Boulevard.	Lat 40°40'53", long 111°47'46", in NE¼NE¼NE¼ sec.2, T.2 S., R.1 E., about 150 ft east of Wasatch Boulevard, and 0.4 mi south of intersection of 3900 South Street and Wasatch Boulevard.	---	D,Q
8[2]	10168840	Holladay Drain at 4800 South, at Big Cottonwood Creek.	Lat 40°39'55", long 111°50'22", in SE¼NW¼NE¼ sec.9, T.2 S., R.1 E., at Big Cottonwood Creek and Highland Circle, and 180 ft southeast of intersection of 4800 South and Highland Drive.	8.4	D,Q
43	10169500	Big Cottonwood Creek at Jordan River.	Lat 40°41'51", long 111°54'09", in NE¼NE¼NW¼ sec.1, T.2 S., R.1 W., 250 ft downstream from Interstate 15 concrete culvert, and 3,500 ft upstream from mouth at Jordan River.	78	D,Q
44	10169999	Mill Creek at canyon mouth (channel only).	Lat 40°41'20", 111°46'55", in NW¼NW¼SE¼ sec.36, T.1 S., R.1 E., 1,000 ft upstream from bridge at mouth of canyon, and 0.7 mi east of Wasatch Boulevard.	21.7	D,Q
45	10170250	Mill Creek at Jordan River.	Lat 40°42'31", long 111°54'59", in SE¼NW¼NE¼ sec.26, T.2 S., R.1 W., 80 ft upstream from culvert on 900 West Street.	32	D,Q
46	10170900	Twenty-First South Conduit at Jordan River.	Lat 40°43'38", long 111°55'30", in SE¼SW¼SW¼ sec.14, T.1 S., R.1 W., 250 ft downstream from Surplus Canal diversion, and 400 ft north of 2100 South Street.	1.9	D,Q
47	10171600	Parleys Creek at Suicide Rock (at canyon mouth).	Lat 40°42'35", long 111°47'48", in NE¼NE¼NE¼ sec.26, T.1 S., R.1 E., at mouth of canyon, about 0.1 mi upstream from Interstate Highways 80 and 215 interchange.	50.7	D,Q
48	10172000	Emigration Creek at canyon mouth.	Lat 40°45'01", long 111°48'22", in NE¼SE¼NW¼ sec.11, T.1 S., R.1 E., at Pioneer Monument State Park, 1,000 ft upstream from bridge on Wasatch Drive.	18.4	D,Q
49	10172220	Red Butte Creek below reservoir (at canyon mouth).	Lat 40°46'30", long 111°48'54", in SE¼NE¼SE¼ sec.34, T.1 N., R.1 E., 0.3 mi below spillway of reservoir.	7.95	D,Q
50	10172350	Thirteenth South Conduits at Jordan River.[3]	Lat 40°44'30", long 111°55'01", in SW¼SW¼SE¼ sec.11, T.1 S., R.1 W., at Jordan River, and 160 ft west of intersection of 900 West and 1300 South Streets.	96	D,Q

See footnotes at end of table, p. 12.

Table 2.--Streamflow and water-quality stations--Continued

Site number	Station number	Name	Location	Drainage area (mi^2)	Type of data
17[4]	10172371	Eighth South, South Conduit, at Jordan River.	Lat 40°45'16", long 111°55'18", in NW¼NE¼NW¼ sec.11, T.1 S., R.1 W., at Jordan River at the intersection of 850 South (Indiana Avenue) and 1040 West (Goshen Street).	[5]0.1	D,Q
17[4]	10172372	Eighth South, Middle Conduit, at Jordan River.	do.	2.3	D,Q
17[4]	10172373	Eighth South, North Conduit, at Jordan River.	do.	.8	D,Q
51	10172499	City Creek at Memory Park (channel only at canyon mouth).	Lat 40°47'05", long 111°52'57", in SE¼SE¼SW¼ sec.30, T.1 N., R.1 E., at mouth of canyon and 0.6 mi northeast of Utah State Capitol Building.	17.7	D,Q
52	10172520	North Temple Conduit at Jordan River.	Lat 40°46'18", long 111°55'30", in NE¼SW¼SW¼ sec.35, T.1 N., R.1 W., at North Temple Street bridge and Jordan River.	24.5	D,Q
53	404653111545801	Ninth West Conduit at 536 North.	Lat 40°46'53", long 111°54'58", in SE¼NW¼NE¼ sec.35, T.1 N., R.1 W., on east side of 900 West about 300 ft north of intersection of 500 North and 900 West Streets.	.23	D,Q

1 Precipitation and atmospheric-deposition data also collected at this site.
2 Precipitation data also collected at this site.
3 Station includes the South Conduit and the North Conduit.
4 This site was the location of three streamflow and water-quality stations and one precipitation station.
5 Contributing basin area varied with the rate of runoff.

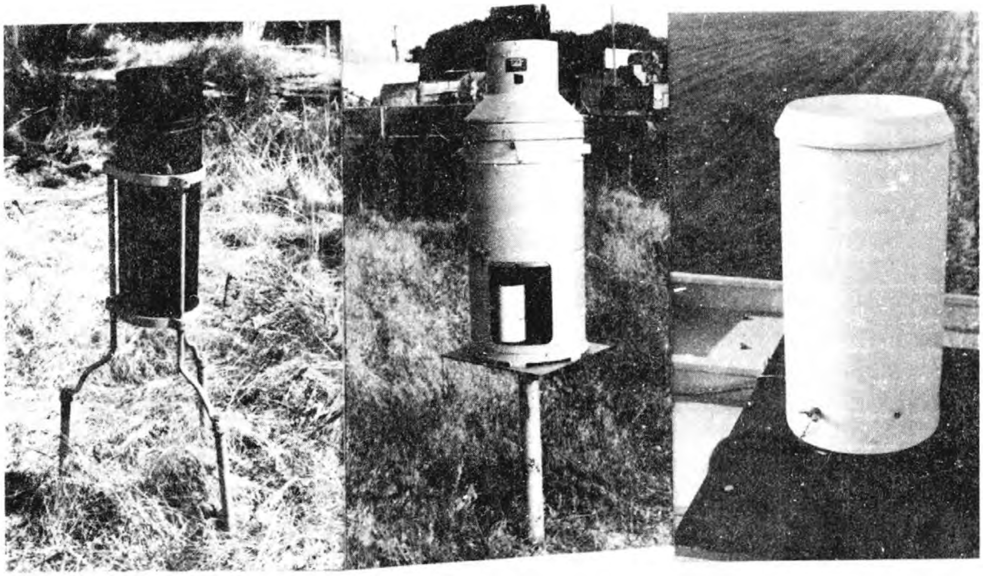

Figure 2.—Three types of gages most commonly used to collect precipitation data. Left, total-catch gage, nonrecording; center, weighing gage, recording; right, tipping-bucket gage, recording.

Atmospheric Deposition

Wet-deposition and dustfall data were collected at six stations (table 1 and pl. 1). Four of the stations were at or near four small urban basins that Salt Lake County plans to use in a study to evaluate the effectiveness of four management practices in improving the quality of urban runoff. Those stations were at sites 1, 3, 5, and 21, which were associated with the Bells Canyon Conduit Basin, Ninetieth South Conduit Overland-Flow Basin, Dixie Valley Detention Basin, and the Ninth West Conduit Basin, respectively. The other two stations (sites 15 and 18) were selected to improve the distribution of data collection in the study area.

Aerochem Metrics Model 301[1] sampler and tipping-bucket rain gage (fig. 3) were used to collect samples. The collector top was 8 feet above the natural ground at sites 3, 18, and 21; 9 feet at site 1; 13 feet at site 5; and 30 feet at site 15. The sampler consists of two high-density polyethylene buckets for wet deposition and dustfall. Under dry conditions, the motor-driven collector lid covers the wet-deposition bucket to prevent dustfall from entering. Under wet conditions, the lid is activated by precipitation on a heated sensor plate, and it moves to cover the dustfall bucket to prevent water from entering it but to allow water to enter the wet-deposition bucket.

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[1]The use of brand names in this report is for identification only and does not imply endorsement by the U.S. Geological Survey.

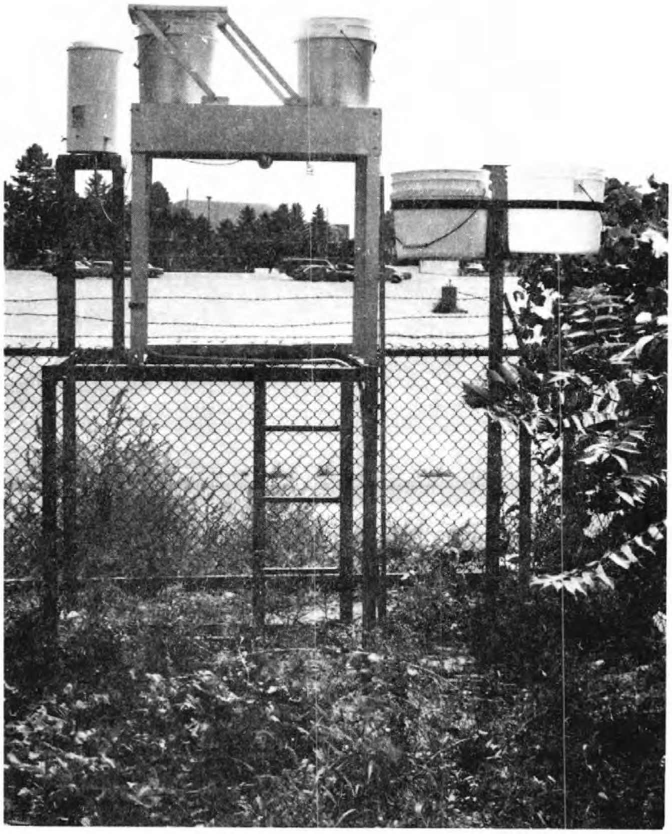

Figure 3.—Atmospheric-deposition station at Fire Station No. 7 at State Fairgrounds.

Wet-deposition samples were collected only for selected storms, and samples were filtered using a 0.45 micron filter. The constituents selected for analysis are shown in table 3. The measurement of pH in a low-ionic strength medium, such as precipitation, required the use of a special probe; therefore, the field analyses were made with an Orion Model 91-62 pH electrode for low-ionic strength. The analyses required considerably greater volume of water than the single collector bucket provided. This necessitated the use at each site of three to four collection buckets, which were manually placed prior to a storm and retrieved after its completion.

Dustfall was collected as a monthly composite and hydrated using an ultrapure, deionized water. Samples were analyzed as whole-water samples without filtration. The constituents selected for analysis are shown in table 4. Chloride was determined separately, however, on a filtered sample taken from the dustfall bucket after hydration. Because of its high solubility, it was assumed that all chloride was dissolved in the deionized water.

Table 3.—Water-quality constituents and properties selected for wet-deposition analysis

Constituent or property	Unit
Alkalinity, total (as $CaCO_3$)	milligrams per liter
Arsenic, dissolved	micrograms per liter
Barium, dissolved	Do.
Beryllium, dissolved	Do.
Boron, dissolved	Do.
Bromide, dissolved	milligrams per liter
Cadmium, dissolved	micrograms per liter
Calcium, dissolved	milligrams per liter
Carbon, organic dissolved	Do.
Chloride, dissolved	Do.
Cobalt, dissolved	micrograms per liter
Copper, dissolved	Do.
Fluoride, dissolved	milligrams per liter
Hardness (as $CaCO_3$)	Do.
Hardness, noncarbonate (as $CaCO_3$)	Do.
Iron, dissolved	micrograms per liter
Iron, total recoverable	Do.
Lead, dissolved	Do.
Lithium, dissolved	Do.
Magnesium, dissolved	milligrams per liter
Manganese, dissolved	micrograms per liter
Molybdenum, dissolved	Do.
Nitrogen, dissolved, NH_4 (as N)	milligrams per liter
Nitrogen, dissolved, NH_4 (as NH_4)	Do.
Nitrogen, dissolved, NO_2 (as N)	Do.
Nitrogen, dissolved, NO_3 (as N)	Do.
pH (units)	--
Phosphorus, dissolved ortho (as P)	milligrams per liter
Potassium, dissolved	Do.
Selenium, dissolved	micrograms per liter
Silica, dissolved	milligrams per liter
Sodium, dissolved	Do.
Solids, dissolved, residue at 180°C	Do.
Solids, total, residue at 105°C	Do.
Specific conductance	micromhos per centimeter at 25°C
Strontium, dissolved	micrograms per liter
Sulfate, dissolved	milligrams per liter
Vanadium, dissolved	micrograms per liter
Zinc, dissolved	Do.

Table 4.--Water-quality constituents and properties selected for dustfall analysis

Constituent or property	Unit
Aluminum, total recoverable	micrograms per kilogram
Antimony, total	Do.
Arsenic, total	Do.
Beryllium, total recoverable	Do.
Cadmium, total recoverable	Do.
Carbon, organic suspended	milligrams per kilogram
Chloride, dissolved	Do.
Chromium, total recoverable	micrograms per kilogram
Copper, total recoverable	Do.
Cyanide, total recoverable	milligrams per kilogram
Iron, total recoverable	micrograms per kilogram
Lead, total recoverable	Do.
Manganese, total recoverable	Do.
Mercury, total recoverable	Do.
Nickel, total recoverable	Do.
Nitrogen, total, NH_4 (as N)	milligrams per kilogram
Nitrogen, total, NO_2 (as N)	Do.
Nitrogen, total, NO_3 (as N)	Do.
Phosphorus, total ortho (as P)	Do.
Selenium, total recoverable	micrograms per kilogram
Silver, total recoverable	Do.
Solids, total, residue at 105°C	milligrams per kilogram
Specific conductance	micromhos per centimeter at 25°C
Zinc, total recoverable	micrograms per kilogram

Analytical methods used for the atmospheric-deposition samples were identical to those used for the runoff samples and appear in Skougstad and others (1979).

Streamflow

Streamflow data collected at 35 stations (pl. 1 and table 2) were used to define inflow to the urban basins from streams in the Wasatch Range, discharge in canals, canal diversions to streams, and streamflow leaving the urban basins. A continuous record, where desired, was obtained with a Fisher-Porter or Stevens digital water-stage recorder. All storm runoff from the urban basins was recorded at intervals of 5 or 15 minutes. At stations where variable backwater conditions existed, a Marsh-McBirney, Inc., Model 250 velocity-modified flowmeter (fig. 4) was used. Discharge measurements were

Figure 4.—Variable-backwater-streamflow-gaging station at Twenty-First South Conduit at Jordan River. Depth and velocity of flow in conduit monitored by Marsh McBirney, Inc., Model 250 velocity-modified flowmeter and recorded as discharge on circular chart and Fisher Porter digital tape.

made at all stations to develop stage-discharge relationships, to check ratings in use, and to calibrate the Marsh-McBirney flowmeters. The accuracy of the discharge records (except for sites 8 and 52) were within plus or minus 10 percent at flows greater than 10 cubic feet per second and could be in error as much as plus or minus 60 percent for flows less than 2 cubic feet per second. The discharge records at sites 8 and 52 were within plus or minus 15 percent at flows greater than 10 cubic feet per second and could be in error as much as plus or minus 60 percent for flows less than 2 cubic feet per second.

Water-Quality Sampling of Streamflow

Water samples were collected at 27 streamflow stations to define the quality of: the inflow to the urban basins from streams in the Wasatch Range, the canal flows, and the streamflow leaving the urban basins. The samples were taken by three methods: (1) Manning automatic-point sampler, (2) manual-sediment samplers (US DH-48 or US DH-59) that provided a depth- and width-integrated sample, and (3) hand dipping. Equipment for methods (1) and (2) are shown in figure 5. Manning samplers were used at outflow stations at all urban basins and at four canal stations. Sampling intervals were generally 7½, 15, and 30 minutes, depending on the shape of the storm-runoff hydrograph. Depth- and width-integrated samples were taken manually at the other stations, and hand-dipped samples were taken of small flows. In addition to samples collected by the Manning samplers at stations where channel cross sections were fairly wide, one to five depth- and width-integrated samples per storm also were taken. Analyses were made for those constituents and properties listed in table 5.

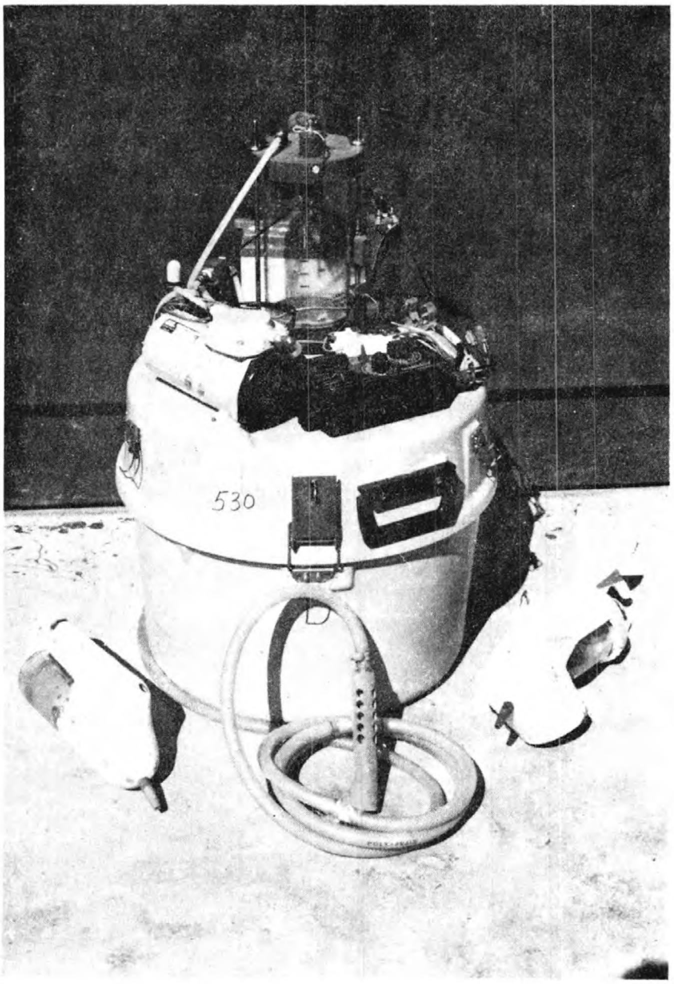

Figure 5.—Three types of samplers used to collect water-quality samples. Center, Manning automatic-point sampler; and manual-sediment samplers: left, US DH-48, used when wading, and right, US DH-59, used from a bridge.

Prior to November 1980, the sampling schedule for each station was to collect one base-flow or baseline sample and three to five discrete samples for selected storms. After November 1980, to reduce cost of analyses, the sampling schedule was reduced to one base-flow or baseline sample and one composite sample per station per storm.

The number of discrete samples chosen to represent the quality of the storm runoff was based on the change in specific conductance of each sample and the stage and time of those samples on the runoff hydrograph. A composite sample was made up of the discharge-weighted volume of each selected sample of the storm runoff as determined by the following formula:

Table 5.--Water-quality constituents and properties selected for streamflow analysis

[An asterisk (*) indicates constituents for which loads and summary statistics were calculated. Constituent or property: Five-day biochemical-oxygen demand, BOD_5, is the quantity of oxygen used to degrade the carbonaceous organic matter in a sample at 20°C in a 5-day period; ultimate biochemical-oxygen demand, BOD_u, is the total amount of oxygen used to completely degrade the carbonaceous organic matter in a sample at 20°C; chemical-oxygen demand, COD, is the total amount of oxygen required to oxidize the chemical and biological material in a sample.]

Constituent or property	Unit
Alkalinity, total (as $CaCO_3$)	milligrams per liter
Aluminum, total	micrograms per liter
Arsenic, total	Do.
Barium, dissolved	Do.
Barium, total	Do.
Beryllium, dissolved	Do.
*Biochemical-oxygen demand, 5-day (BOD_5), nitrification inhibited	milligrams per liter
*Biochemical-oxygen demand, ultimate (BOD_u), nitrification inhibited	Do.
*Cadmium, dissolved	micrograms per liter
*Cadmium, suspended	Do.
*Cadmium, total	Do.
Calcium, dissolved	milligrams per liter
*Carbon, organic dissolved	Do.
*Carbon, organic suspended	Do.
*Chemical-oxygen demand (COD)	Do.
*Chloride, dissolved	Do.
*Chromium, dissolved	micrograms per liter
*Chromium, suspended	Do.
*Chromium, total	Do.
Cobalt, dissolved	Do.
Cobalt, total	Do.
*Copper, dissolved	Do.
*Copper, suspended	Do.
Copper, total	Do.
Cyanide, total	milligrams per liter
Fecal coliform	colonies per 100 milliliters
Fecal streptococcus	Do.
*Fluoride, dissolved	milligrams per liter

Table 5.--Water-quality constituents and properties selected for streamflow analysis--Continued

Constituent or property	Unit
Hardness, noncarbonate (as $CaCO_3$)	milligrams per liter
Hardness, total (as $CaCO_3$)	Do.
*Iron, dissolved	micrograms per liter
*Iron, suspended	Do.
*Iron, total	Do.
*Lead, dissolved	Do.
*Lead, suspended	Do.
*Lead, total	Do.
Lithium, dissolved	Do.
Magnesium, dissolved	milligrams per liter
Manganese, dissolved	micrograms per liter
*Mercury, dissolved	Do.
*Mercury, suspended	Do.
*Mercury, total	Do.
Molybdenum, dissolved	Do.
Nitrogen, ammonia, total (as NH_4)	milligrams per liter
*Nitrogen, dissolved, NH_4 (as N)	Do.
Nitrogen, dissolved, NO_2 (as N)	Do.
*Nitrogen, dissolved, NO_3 (as N)	Do.
Nitrogen, dissolved, NH_4 + organic N (as N)	Do.
*Nitrogen, total, NH_4 + organic N (as N)	Do.
Nitrogen, dissolved organic (as N)	Do.
Nitrogen, dissolved (as N)	Do.
Oxygen, dissolved, field	Do.
pH, field and laboratory (units)	--
*Phosphorus, dissolved (as P)	milligrams per liter
Phosphorus, total (as P)	Do.
Phosphorus, dissolved orthophosphate (as P)	Do.
Potassium, dissolved	Do.
Sediment discharge, total suspended	tons per day
*Sediment, suspended	milligrams per liter
Silica, dissolved	Do.
Silver, total	micrograms per liter
Sodium, dissolved	milligrams per liter
Sodium-adsorption ratio (SAR)	--

Table 5.--Water-quality constituents and properties selected for streamflow analysis--Continued

Constituent or property	Unit
*Solids, dissolved, residue at 180°C	milligrams per liter
Solids, dissolved, sum of constituents	Do.
*Solids, suspended, residue at 105°C	Do.
Specific conductance, field and laboratory	micromhos per centimeter at 25°C
Strontium, dissolved	micrograms per liter
Sulfate, dissolved	milligrams per liter
Turbidity	Nephalometer turbidity units
Vanadium, dissolved	micrograms per liter
*Zinc, dissolved	Do.
*Zinc, suspended	Do.
*Zinc, total	Do.

$$V_i = \frac{q_i t_i}{\Sigma q_i t_i} \times V_t \tag{1}$$

where

V_i = volume of sample to be added to composite,

q_i = instantaneous discharge, in cubic feet per second, at the time of sample collection,

t_i = time interval, in minutes, equal to one-half the time since the previous sample plus one-half the time to the next sample. For the first sample, the time interval was from start of storm runoff to one-half the time to the second sample. For the last sample, the time interval was from one-half the time since the previous sample to the end of the storm runoff, and

V_t = volume of composite sample required by laboratory.

Urban-Basin Characteristics

The characteristics selected to describe each urban basin include physiography, land use, precipitation, and population density. The characteristics are defined below and listed in table 6 for each basin.

Area is the total contributing area of the basin, in square miles, determined from U.S. Geological Survey 7½-minute topographic maps and aerial photographs. If a basin extends into the Wasatch Range, the stated area only includes the contributing area in the valley downstream from the gaging station at the canyon mouth. Any undeveloped mountain area within the drainage basin downstream from the gaging station was considered to be noncontributing. Basin boundaries were determined by outlining drainage divides on the map, then adjusting them for existing storm sewers according to published and unpublished information from city and county agencies. A field determination was made at boundaries where drainage divides could not be determined from the maps.

Effective impervious area is the percentage of the basin, which is directly connected to a sewer pipe or a principal drainage, but which is considered to be impervious to infiltration of rain. Examples are concrete and asphalt roads, paved parking lots, roofs, driveways, and sidewalks. The areas were estimated by Salt Lake County from average values, using zoning maps and field inspection.

Basin slope is the average slope of the basin, in feet per mile. It was computed by Salt Lake County from an average of terrain slopes determined at 20 to 90 points on a grid overlay of the basin, using 7½-minute topographic maps. The number of grid points used generally increased as the basin slope and size increased.

Channel slope is the slope of the main channel, in feet per mile, for the basin as determined from 7½-minute topographic maps. It was defined by Salt Lake County as the difference in altitude, in feet, at points 10 percent and 85 percent of the distance upstream from the gaging station to the divide along the main channel, divided by the distance, in miles, along the channel between the two points. For a basin extending into the Wasatch Range, the divide for the urban basin was considered to be the gaging station at the canyon mouth.

Land use is the percentage of the area of the basin that was mapped in 15 land-use types by Salt Lake County from aerial photographs taken in May 1979 (scale 1:2,400). The land-use types are defined as follows:

1. Agricultural.--Land that is cultivated to grow crops and raise livestock;

2. Low-density residential.--One-half to two dwelling units per acre;

3. Medium-density residential.--Three to eight dwelling units per acre;

4. High-density residential.--More than nine dwelling units per acre;

5. Commercial.--General wholesale and retail buildings and some light industry;

6. Industrial.--Medium to heavy industry with some light industry;

7. Construction.--Natural-land cover removed by construction as of May 1979, when aerial photographs were taken, and revised to 1980-81;

8. Idle land.--Undeveloped urban and forest areas;

9. Wetland.--Land usually saturated with water and having vegetal cover dominated by wetland plant species;

10. Parkland.--Dedicated parks, cemeteries, and school playfields;

11. Institutional.--School, church, and government buildings including parking and other areas close to the buildings;

12. Lakes.--Detention basins, ponds, and lakes that are usually wet;

13. Transportation.--Interstate highways, major State highways, and railroads and switchyards;

14. Stockyards.--Land on which livestock are kept for feeding and marketing, and runoff from the land enters a surface stream; and

15. Zoos.--Land on which animals are kept for public display, and runoff from the land enters a sewage system.

Average annual precipitation is the average annual precipitation, in inches, for the basin for 1931-60, estimated from an isohyetal map of Salt Lake County (approximate scale 1:320,000) prepared by Hely and others (1971, p. 14).

Precipitation intensity is the 10-year, 1-hour precipitation, in inches, for the basin, determined from an isohyetal map of the Salt Lake Valley published by WeatherBank, Inc. (1977). The precipitation value obtained from the isohyetal map, which was prepared from frequency analysis using the partial-duration series, was converted to the annual series and corrected for size of basin when greater than 10 square miles (U.S. Weather Bureau, 1961).

Population density is the population of the basin in persons per square mile. It was computed by Salt Lake County from (1) the estimated number of dwellings in the low-, medium-, and high-density residential areas in the basin and (2) an average of 3.1 persons per dwelling in the county (Jensen, 1980).

Urban-Basin Storm Characteristics

Characteristics for 306 storms are listed in table 24 (at the end of report), where each storm is described by precipitation and runoff characteristics. Those characteristics needing more explanation than given in table 24 are illustrated in figure 6. The separation of the storm-runoff hydrograph in figure 6 into base flow[1] and urban runoff is described in the section "Analysis of hydrograph for basin runoff."

INTERPRETATION OF DATA

Precipitation

Average annual precipitation in the study area is approximately 17 inches, estimated from isohyetal map prepared by Hely and others (1971). About one-half of that precipitation is rainfall, generally from April through October; and the remainder is snowfall, generally from November through March. Both types of precipitation often occur during the transition months of March, April, October, and November.

During 1980-81, the monthly precipitation was generally about average. Based on the characteristics listed in table 24, a maximum precipitation of 1.32 inches occurred May 2, 1981, on the Thirteenth South Conduits Basin; and the average precipitation for 306 storms was 0.33 inch. The maximum rainfall in 1 hour was 0.88 inch, which occurred on September 5, 1981, at the Bells Canyon Conduit Basin. That rainfall intensity slightly exceeded the basin's 10-year, 1-hour value of 0.86 inch (table 6).

According to WeatherBank, Inc. (1977, p. 4), the most likely time for high intensity, short-period rainfall in the Salt Lake Valley is June through August. About 80 percent of this type of rainfall is associated with a southwesterly flow of moist air aloft, and the remainder results from a southeast flow. Intensities normally are least in the central part of the valley (near the Jordan River), and they increase as the storms approach higher terrain.

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[1]Base flow is fair-weather runoff in natural streams and conduits, which includes water from one or more of the following sources: ground water, canal water, irrigation-return flow, sewage-treatment-plant discharge, melting snow, and reservoir water. Baseline flow is discharge in a canal prior to and after urban-storm runoff.

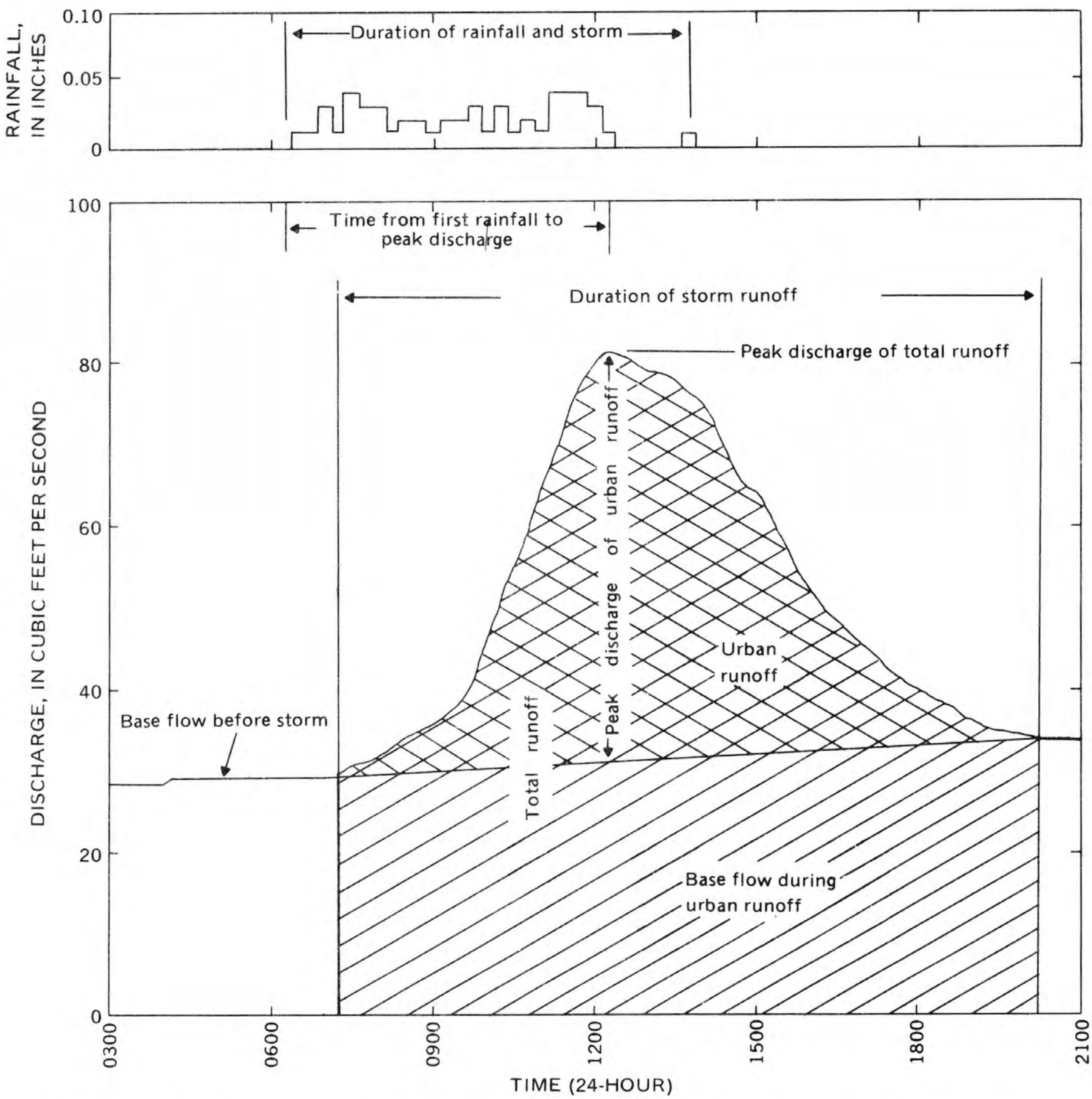

Figure 6.—Definitions of some rainfall and runoff characteristics listed in table 26, using the storm of May 8, 1981, at station Mill Creek at Jordan River.

Area: Does not include area in the Wasatch Range.
Precipitation intensity: Ten year, 1-hour precipitation intensity, in inches.

					Land use,					
Urban basin	Area (mi^2)	Effective impervious area (percent)	Basin slope (ft/mi)	Channel slope (ft/mi)	1 Agricultural	2 Low-density residential	3 Medium-density residential	4 High-density residential	5 Commercial	6 Industrial
Bells Canyon Conduit	0.10	23	275	312	0	0	83.0	0	0	0
Little Cottonwood Creek	14	16	243	60	7.0	5.0	38.0	2.0	3.0	3.0
Holladay Drain	4.0	23	474	264	1.2	6.4	69.4	2.2	3.4	0
Big Cottonwood Creek	17.5	21	274	61	3.7	11.1	57.0	3.4	3.7	4.6
Mill Creek	10	31	272	101	0	3.8	56.4	2.6	9.0	7.7
Twenty-First South Conduit	1.9	47	38	35	0	36.0	0	0	19.0	32.0
Thirteenth South Conduits	13.8	17	344	155	.2	6.5	47.8	2.1	5.8	3.6
Eighth South, South Conduit	[1].1	50	4	1	0	0	0	0	0	0
Eighth South, Middle Conduit	23	44	129	72	0	0	22.4	.1	7.9	0
Eighth South, North Conduit	.8	70	24	9	0	0	16.4	.5	48.0	21.1
North Temple Conduit	3.1	17	684	46	0	16.1	24.0	2.3	.4	5.9
Ninth West Conduit	.23	39	32	11	0	0	52.0	4.0	26.0	0

[1] Contributing basin area varies with the rate of runoff.

characteristics

in percent of basin area											
7 Construction	8 Idle land	9 Wetland	10 Parkland	11 Institutional	12 Lakes	13 Transportation	14 Stockyards	15 Zoos	Average annual precipitation (in.)	Precipitation intensity	Population density (persons/mi^2)
0	0	0	9.0	8.0	0	0	0	0	17.0	0.86	9,100
2.0	20.0	7.0	10.0	2.0	0	1.0	0	0	18.1	.83	4,580
1.5	6.9	0	.2	7.1	0	1.7	0	0	19.0	.95	8,320
2.1	7.3	1.1	1.2	3.4	0	1.0	.4	0	18.5	.83	8,450
1.3	3.9	0	5.1	5.1	0	5.1	0	0	18.0	.92	6,740
0	0	0	2.0	4.0	0	7.0	0	0	15.5	.89	3,930
2.1	15.2	0	9.4	5.0	.2	1.4	0	.7	19.0	.88	5,780
0	0	0	0	0	0	100.0	0	0	15.1	.90	0
0	19.8	0	5.7	44.0	.1	0	0	0	18.1	.97	2,450
0	0	0	2.3	4.7	0	7.0	0	0	16.3	.93	2,010
.4	30.3	0	10.4	9.2	.2	.8	0	0	19.0	.99	3,360
0	5.0	0	4.0	9.0	0	0	0	0	15.4	.94	5,780

During the spring and fall, low pressure systems from the west and northwest frequently stall over the area. These storms can cause steady rain to fall for several hours, and the rainfall intensity is greatly enhanced by the mountain topography.

Quantity of Urban-Storm Runoff

The quantity of urban-storm runoff, in terms of volume and peak discharge, at sites on streams, storm drains, and canals in the study area was first determined directly from analysis of actual runoff hydrographs of selected storms and, secondly, volume of runoff and peak discharge were regressed against precipitation and basin characteristics to identify those characteristics that are closely related to quantity of urban runoff and are useful in predictive regression equations.

Analysis of Hydrograph for Basin Runoff

The recorded hydrograph of runoff at the outflow station at each basin was the composite of all sources of runoff occurring upstream from the station. Using a knowledge of those sources of runoff, therefore, the hydrograph was analyzed to determine the part that defines the urban runoff resulting from a storm. The main difference in the basin hydrographs was that some indicated sustained base flow during nonstorm periods whereas others did not.

Basins not having sustained base flow were Bells Canyon Conduit; Eighth South, South, Middle, and North Conduits; and Ninth West Conduit. The hydrograph shown in figure 7 was typical for these basins. The urban runoff from overland flow was determined from the area under the hydrograph for the period of storm runoff. The runoff after the end of the designated storm runoff was considered to result from rainfall that had infiltrated the soil and then moved laterally in the subsurface at a slower rate than overland flow to the storm drain. No attempt was made to estimate the small amount of base flow that occurred during the latter part of the storm runoff.

Basins having sustained base flow were Little Cottonwood Creek, Holladay Drain, Big Cottonwood Creek, Mill Creek, Twenty-First South Conduit, Thirteenth South Conduits, and North Temple Conduit. The base flow in most of these basins was sustained by nonregulated and regulated inflow from the Wasatch Range, diversions from canals, return flow from irrigation, and ground-water discharge. Exceptions were the Holladay Drain, which received inflow from the Wasatch Range only during the early part of the snowmelt period; Big Cottonwood Creek, which also received discharge from a sewage-treatment plant; Twenty-First South Conduit, which received inflow only from ground-water discharge and discharge from a sewage-treatment plant; and North Temple Conduit, which did not receive discharge from canal diversions or return flow from irrigation.

A hydrograph of storm runoff for the Little Cottonwood Creek Basin, which is typical for basins with sustained base flow is shown in figure 8. Before the storm, the base flow was less than the total inflow from Little Cottonwood Creek and two canals, thus indicating the effect of diversions from Little Cottonwood Creek for irrigation and municipal water supply. During the

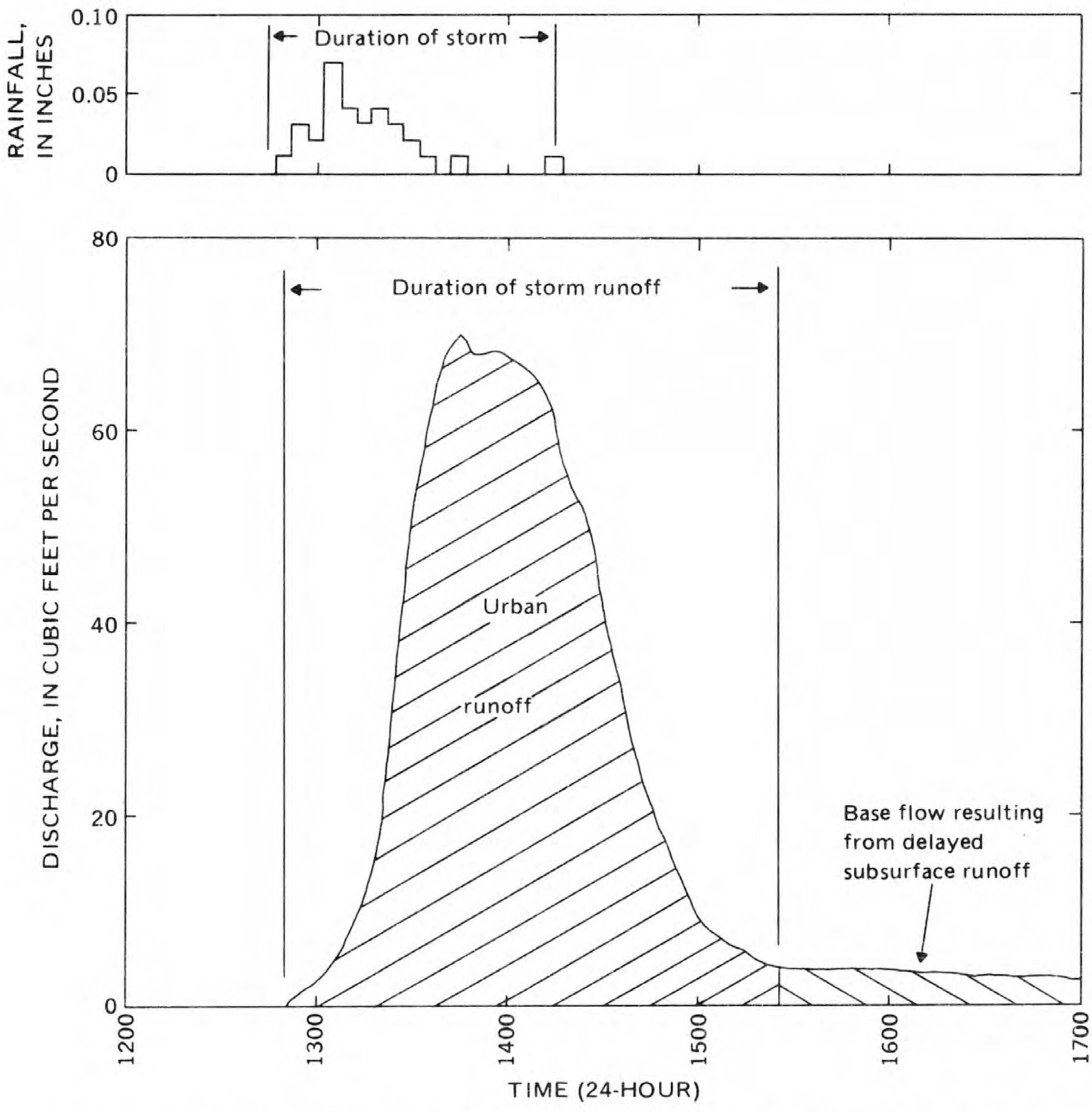

Figure 7.—Typical separation of urban runoff in storm-runoff hydrograph with no base flow before the storm. For storm of September 5, 1981, at station Eighth South, North Conduit, at Jordan River.

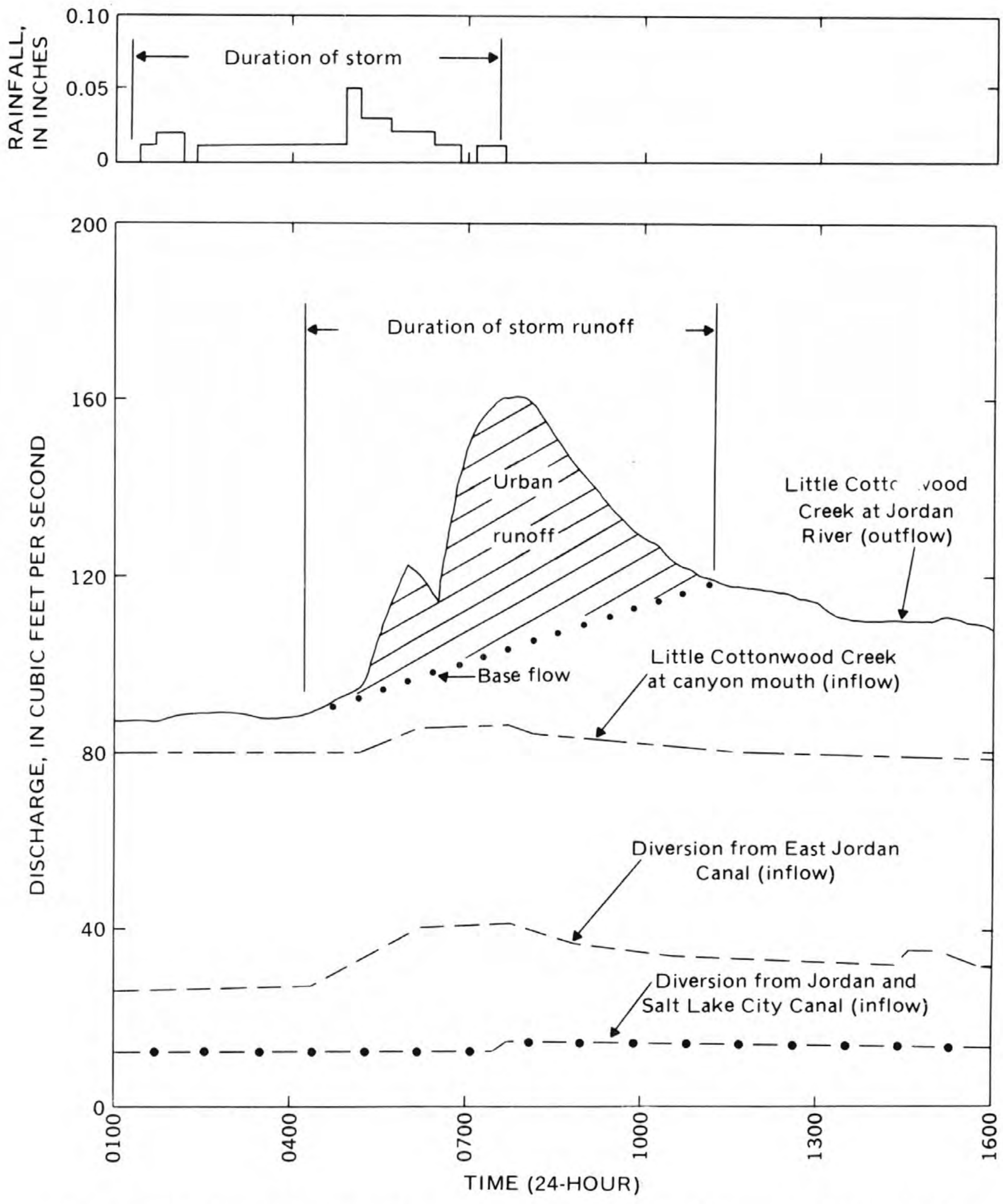

Figure 8.—Hydrographs of outflow and inflow to Little Cottonwood Creek urban basin and typical separation of urban runoff in storm-runoff hydrograph. For the storm of May 21, 1981.

storm, the increases in inflow from the canals were due mostly to urban runoff, which was routed from the urban area through the canals to the natural drainage channel--Little Cottonwood Creek. The inflow in Little Cottonwood Creek increased only a small amount during the storm, thus not significantly affecting the outflow. A similar analysis of storm-runoff data for all the urban basins indicated that for most storms, the inflow from the Wasatch Range (table 7) caused only minor increases in the outflow. The urban runoff from overland flow for selected storms, which is listed in table 24, was shown in figure 8 as the area of the hydrograph above the base flow.

The urban runoff ranged from less than 1 percent of total rainfall on the Eighth South, Middle Conduit, and North Temple Conduit Basins to 83 percent on the Eighth South, North Conduit Basin, and averaged 8 percent for 11 of the 12 basins. The average percent of runoff was based on 299 of 306 storms, weighted by the areas of 11 urban basins. The seven storms in the Eighth South, South Conduit Basin, listed in table 24 were not included in the computations of the percentages of runoff because the contributing basin area varied with the rate of runoff. The peak discharge of urban runoff ranged from 1.1 cubic feet per second per square mile on the Ninth West Conduit Basin to 17 cubic feet per second per square mile on the Thirteenth South Conduits Basin.

Analysis of Hydrograph for Canal Discharge

The East Jordan, Upper, and Jordan and Salt Lake City Canals convey water diverted from the Jordan River and from perennial streams issuing from the Wasatch Range, and they also transport local urban-storm runoff. During a storm or when one is anticipated, part of the nonstorm flows generally are diverted to the Jordan River through the natural streams and storm drains upstream from the urban areas in order to provide capacity in the canals for urban runoff. The storm runoff from the urban areas is routed downhill to the canals, then downstream to the nearest major natural stream or storm conduit whereby the urban runoff is diverted to the Jordan River.

An analysis of the hydrograph for canal discharge is shown in figure 9. The urban-runoff characteristics are listed in table 8 for those stations and storms for which water-quality samples were collected. The median urban runoff measured at the three canals was 38 percent of the total canal discharge, and urban runoff reached a peak discharge of 31 cubic feet per second during 11 storms that were studied.

Multiple-Regression Analysis

Multiple-regression analysis was used to relate volume and peak discharge of urban-storm runoff and water-quality-constituent loads of atmospheric deposition and of urban-storm runoff (dependent variables) to selected storm and urban-basin characteristics (independent variables). This analysis identifies the significant independent variables, indicates how they relate to the dependent variables, and develops regression equations that are useful in predicting quantities of the dependent variables for future storm and basin conditions. The following discussion on methodology also applies to regressions made in the sections "Atmospheric deposition and its impact on urban-water quality" and "Quality of urban-storm runoff."

Table 7.—Characteristics of inflow, peak discharge, and base flow to urban basins at canyon-mouth stations

[Storm dates generally correspond with those listed by urban basin in table 24.]

Storm date	Peak discharge (ft^3/s)	Base flow before storm (ft^3/s)	Storm date	Peak discharge (ft^3/s)	Base flow before storm (ft^3/s)
Little Cottonwood Creek at canyon mouth (channel only) (10167599)					
July 1, 1980	536	317	May 10, 1981	97	68
Oct. 10	1.2	1.0	15	80	69
Mar. 26, 1981	2.0	1.8	15	75	71
29	2.6	2.0	15	74	69
Apr. 2	2.9	2.3	20	87	77
May 2	236	227	21	86	80
8	72	70	Sept. 9	1.8	1.1
Big Cottonwood Creek at canyon mouth (channel only) (10168499)					
July 1, 1980	293	190	May 10, 1981	128	98
Aug. 8	53	50	15	113	103
25	80	47	15	119	109
Oct. 26	29	28	15	120	115
Mar. 26, 1981	28	26	20	146	132
29	41	30	21	147	140
Apr. 2	34	30	June 2	462	261
May 2	237	203	Sept. 5	47	30
8	106	103	6	([1])	37
Mill Creek at canyon mouth (channel only) (10169999)					
July 1, 1980	22	17	May 10, 1981	16	12
Aug. 19	11	9.8	15	15	12
25	12	9.2	15	14	13
Oct. 14	9.2	8.3	17	([1])	13
14	9.8	9.2	20	15	13
15	([1])	9.2	21	16	14
26	([1])	8.3	June 2	37	25
Mar. 26, 1981	6.9	6.1	3	30	29
29	7.7	6.1	14	19	18
Apr. 2	7.5	6.4	Sept. 5	13	7.7
May 2	17	14	6	([1])	9.5
8	14	12			

See footnotes at end of table, p. 34.

Table 7.--Characteristics of inflow, peak discharge, and base flow to urban basins at canyon-mouth stations--Continued

Storm date	Peak discharge (ft^3/s)	Base flow before storm (ft^3/s)	Storm date	Peak discharge (ft^3/s)	Base flow before storm (ft^3/s)
Parleys Creek at Suicide Rock (at canyon mouth) (10171600)					
July 1, 1980	25	5.4	May 15, 1981	17	5.8
2	7.6	5.8	15	16	7.6
Aug. 19	4.2	2.7	20	12	10
25	7.6	2.8	21	16	10
Oct. 26	3.2	3.0	21	15	11
Mar. 26, 1981	7.2	2.5	27	69	14
27	4.5	3.0	June 2	30	29
May 2	16	5.1	3	31	29
8	12	5.1	14	26	15
10	13	5.1	Sept. 5	22	1.9
Emigration Creek at canyon mouth (10172000)					
July 1, 1980	22	4.8	May 15, 1981	7.6	2.8
2	9.8	5.5	15	8.4	5.1
Aug. 19	1.6	1.0	20	7.6	5.4
25	1.9	.85	21	11	6.1
Oct. 26	2.4	2.1	21	29	11
Mar. 26, 1981	3.6	2.6	27	3.6	2.8
27	3.8	3.1	June 2	([1])	9.2
May 2	6.4	3.3	3	([1])	10
8	4.8	3.0	14	([1])	6.4
10	5.4	3.0	Sept. 5	1.2	.58
Red Butte Creek below reservoir (at canyon mouth) (10172220)[2]					
July 1, 1980	5.1	1.2	May 15, 1981	4.7	1.0
2	3.7	1.9	15	5.0	2.7
Aug. 19	.07	.04	20	5.8	3.6
25	.01	0	21	8.4	4.0
Oct. 26	.01	0	21	10	6.8
Mar. 26, 1981	3.3	1.9	27	6.8	6.0
27	3.4	2.5	June 2	8.2	3.8
May 2	3.4	1.2	3	5.3	4.8
8	2.6	1.1	14	3.0	2.8
10	2.8	1.0	Sept. 5	([1])	0

See footnotes at end of table, p. 34.

Table 7.--Characteristics of inflow, peak discharge, and base flow to urban basins at canyon-mouth stations--Continued

Storm date	Peak discharge (ft^3/s)	Base flow before storm (ft^3/s)	Storm date	Peak discharge (ft^3/s)	Base flow before storm (ft^3/s)
City Creek at Memory Park (at canyon mouth) (10172499)					
Aug. 19, 1980	0.68	0.63	May 16, 1981	6.2	4.8
25	2.1	.63	16	6.2	4.6
Oct. 12	8.8	1.2	16	5.5	4.8
26	3.0	1.5	17	6.0	4.6
Feb. 17, 1981	3.6	1.6	20	6.2	4.8
26	3.9	1.8	21	17	7.3
Mar. 16	3.8	1.8	21	21	13
20	3.5	1.8	27	23	17
26	5.0	1.9	27	29	23
29	5.0	2.2	28	25	24
Apr. 2	3.1	2.3	June 2	28	14
15	3.9	3.1	13	([1])	8.5
May 2	4.4	3.9	14	([1])	8.5
2	14	11	July 2	25	3.3
3	15	9.8	6	30	2.8
6	12	3.9	9	24	3.0
8	7.9	3.8	Aug. 20	5.5	2.4
10	8.5	3.4	24	3.5	2.7
15	6.0	3.4	Sept. 5	3.1	2.3
15	9.1	3.8	5	9.5	2.5
15	11	4.3	6	3.8	2.8

[1] Streamflow did not exceed base flow throughout the storm.

[2] The station is about 0.7 mi upstream from the urban-basin boundary at the mountain front. The records were considered equivalent to inflow to the urban basin.

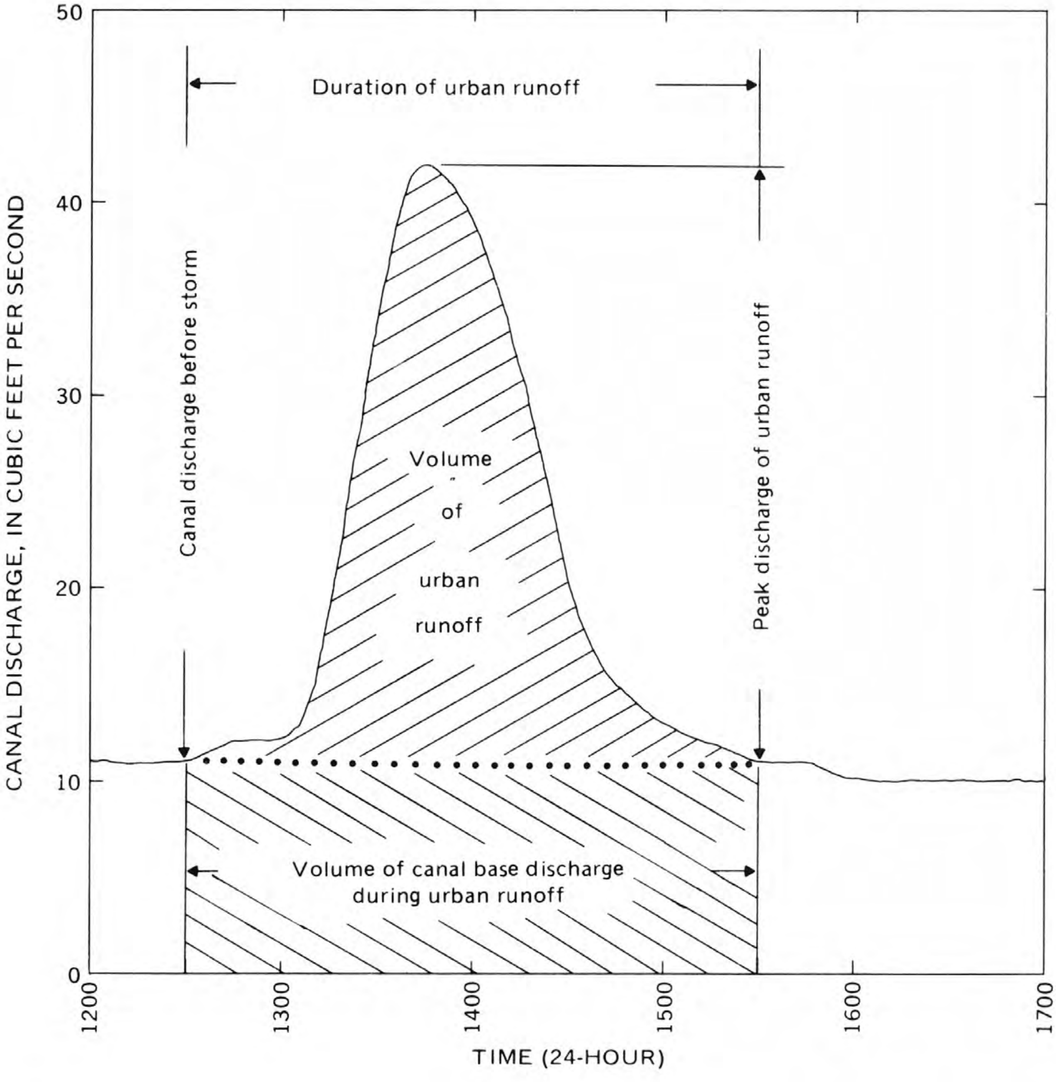

Figure 9.—Typical separation of urban runoff in canal-discharge hydrograph. For the storm of September 5, 1981, at station Upper Canal at Wilde Rose Lane.

Table 8.--Canal discharges and characteristics of urban-storm runoff for basin storms at three stations on East Jordan, Upper, and Jordan and Salt Lake City Canals

Storm date	Canal discharge before storm (ft^3/s)	Volume of base discharge during urban runoff (acre-ft)	Duration of urban runoff (min)	Peak discharge of urban runoff (ft^3/s)	Urban runoff volume (acre-ft)	Urban runoff as percent of total canal discharge during urban runoff
East Jordan Canal at Little Cottonwood Creek (upstream station) (10167105)						
Aug. 19, 1980	52	29	360	25	7.5	21
Upper Canal at Wilde Rose Lane (10167125)						
July 1, 1980	13	4.8	270	27	4.0	45
Aug. 19	6.4	1.3	165	2.1	.2	13
Mar. 26, 1981	0	0	1,845	3.3	3.8	100
May 10	10	2.9	210	15	1.8	38
20	8.7	7.8	615	4.8	1.2	13
Sept. 5	11	2.7	180	31	2.7	50
Jordan and Salt Lake City Canal at Zenith Avenue (10167149)						
July 1, 1980	10	6.2	465	5.4	1.2	16
Oct. 26	0	0	315	2.0	.5	100
May 5, 1981	7.3	2.6	225	12	1.5	37
20	3.8	2.9	555	5.2	1.8	38

The linear-multiple-regression equation used is of the form:

$$Y = a + b_1X_1 + b_2X_2 + \cdots b_nX_n \tag{2}$$

where

Y = the dependent variable,
$X_1 \cdots X_n$ = the independent variables,
$b_1 \cdots b_n$ = the regression coefficients,
a = the regression constant, and
n = the number of independent variables.

Equation 2 was found to be the best regression equation for all dependent variables for most basins. A logarithmic-transform equation, however, provided better results for runoff volume and peak discharge for some basins. The logarithmic-transform equation is of the form:

$$\log Y = \log a + b_1 \log X_1 + b_2 \log X_2 + \cdot \cdot \cdot \quad b_n \log X_n \tag{3}$$

Equation 3 may be written in an equivalent form:

$$Y = aX_1^{b_1} X_2^{b_2} \cdot \cdot \cdot X_n^{b_n} \tag{4}$$

Coefficients and constants for equations 2 through 4 can be calculated by methods outlined by Riggs (1968, p. 9-31). For this report, computer programs based on the Statistical Analysis System, SAS 79, (Barr and others, 1979, p. 237-263, 391-396), were used to calculate coefficients, constants, and statistical tests for equations 2 through 4.

All independent variables used in the regression analysis are listed in table 9. The runoff variables volume of urban runoff and peak discharge of urban runoff, however, are dependent variables relating quantity of urban-storm runoff to storm precipitation and basin characteristics. The variables listed in table 9 include urban-basin characteristics for which values are listed in table 6 and storm characteristics for which values are listed in table 24.

In the initial step of the regression analysis, the "stepwise" and "general linear models" procedures of SAS 79 were used to determine the best models for both the linear- and logarithmic-transformed data. The regression statistics and the correlation and residual plots for each model were used as a guide for the selection of independent variables that reflect the known or assumed physical conditions of the system. The final selection of independent variables was made using the following guidelines:

1. Independent variables were significant at the 95 percent or higher level of confidence as measured by the Student's t-test.

2. The independent variable(s) would account for a minimum of 50-percent variation of the dependent variable and yielded the smallest standard error of estimate compared to other combinations of variables.

3. Two or more independent variables would not describe the same phenomenon; thus, cross correlation between independent variables would be minimized.

Table 9.--Independent variables for urban basins used in regression analysis

Abbreviation	Description	Unit
	Physiographic variables	
TCAREA	Total contributing basin area	square miles
EAREA	Effective impervious area of basin	percent
BSLOPE	Average basin slope	feet per mile
CSLOPE	Main channel slope	Do.
	Land-use variables of basin area	
LUAGRI	Agricultural	percent
LULOWD	Low-density residential	Do.
LUMEDD	Medium-density residential	Do.
LUHIGD	High-density residential	Do.
LUCOMM	Commercial	Do.
LUINDU	Industrial	Do.
LUCONB	Construction, bare surface	Do.
LUIDLE	Idle land	Do.
LUWETL	Wetland	Do.
LUPARK	Parkland	Do.
LUPINT	Institutional	Do.
LUWLKE	Lakes	Do.
LUTRAN	Transportation	Do.
LUSTOC	Stockyards	Do.
LUZOOS	Zoos	Do.
	Long-term precipitation variables	
AVANPR	Average annual precipitation	inches
TENYRR	10-year, 1-hour precipitation intensity	Do.
	Population-density variable	
POPDEN	Population density	persons per square mile

Table 9.--Independent variables for urban basins used in regression analysis--Continued

Abbreviation	Description	Unit
	Storm-precipitation variables	
TRAINA	Total rainfall for the storm, a weighted average depth over the basin based on one to three rain gages.	inches
MAXR5	Maximum 5-minute rainfall rate	inches per hour
MAXR15	Maximum 15-minute rainfall rate	Do.
MAX1H	Maximum 1-hour rainfall rate	Do.
DURRNF	Duration of rainfall for the storm	minutes
NDRDO2	Time from beginning of storm back to a storm with greater than 0.2-in. rainfall.	hours
DERNPD	Depth of rainfall accumulated during previous 24 hours.	inches
DERNP3	Depth of rainfall accumulated during previous 72 hours.	Do.
DERNP7	Depth of rainfall accumulated during previous 168 hours.	Do.
	Runoff variables	
PEAKQ[1]	Peak discharge of urban runoff	cubic feet per second
BFLOW	Base flow for the stream	Do.
TIMBPK	Time from first rainfall to peak discharge	minutes
DURSTO	Duration of storm runoff and sampling period used to calculate constituent load.	Do.
TOTRUN[1]	Urban runoff from the storm, volume expressed in average depth over the basin.	inches

[1] Dependent variables in quantity of regression analysis for urban runoff.

Multiple-Regression Results for Urban-Storm Runoff

The volume and peak discharge of urban-storm runoff were regressed with storm-precipitation variables for individual basins and with variables for storm precipitation, physiography, land use, long-term precipitation, and population density (table 9) for all basins combined. The resulting linear- and logarithmic-transformed regression equations for volume of urban runoff and peak discharge are listed in table 10. For those equations with more than one independent variable, the variables appear in order of decreasing confidence for the coefficients as calculated by the Student's t-test. Provided with each equation in table 10 are the number of storms used to compute the regression coefficients, the percentage of the variation of the dependent variable explained by the independent variable(s) (R-square x 100), the standard error of estimate in percentage of the mean value of the dependent variable, and the mean value of the dependent variable.

The Eighth South, South Conduit Basin is not included in table 10 because rainfall-runoff analysis for this basin indicated that the urban runoff was from a contributing drainage area that varied with the rate of runoff. No meaningful regression equations could be obtained for peak discharge for Holladay Drain and North Temple Conduit Basins, and for volume of runoff for the all-basins-combined data set.

For the individual basin equations in table 10, total rainfall is the most significant precipitation variable relating directly to volume of urban runoff. It appears in the volume-runoff equations for all the basins. Duration of rainfall and the maximum 5-minute rainfall rate (measures of length and intensity of the storm) are the only other precipitation variables that appear, in one equation each, as the second variable with total rainfall. Maximum 1-hour rainfall followed by maximum 15-minute rainfall (a measure of intensity) are the most significant variables relating directly to peak discharge. The maximum 1-hour rainfall variable appears in peak-discharge equations for most of the large basins (10 to 17.5 square miles) with natural main channels of medium slope (60 to 101 feet per mile) and also in the equations for the small basins (0.8 to 1.9 square miles) with storm conduits of small slope (9 to 35 feet per mile). The maximum 15-minute rainfall variable appears in equations for small basins (0.1 to 3.1 square miles) with storm conduits of medium and steep slope (46 to 72 feet per mile and 312 feet per mile). Total rainfall is directly related to peak discharge in four equations.

In the equation for the Twenty-First South Conduit, the time from the beginning of the storm back to the storm with greater than 0.2 inch rainfall (a measure of the antecedent dry period) is inversely related to peak discharge. This indicates the effect of soil moisture on the amount of rainfall that infiltrates into the soil thus decreasing the storm runoff. Three antecedent rainfall variables--depths of rainfall accumulated during the previous 24, 72, and 168 hours--correlated poorly with runoff volume and peak discharge. In the equation for the Thirteenth South Conduits, duration of rainfall is inversely related to peak discharge. It also was inversely related to peak discharge in regressions for most of the other basins, but it was not found to be a significant variable.

Table 10.—Regression equations relating volume of urban runoff and peak discharge to storm-precipitation and basin variables for 11 urban basins and all basins combined

Equation: Abbreviations are explained in table 9.
R-square: Coefficient of determination. It is calculated as the square of the correlation coefficient. When multiplied by 100, it represents the percent variation of the dependent variable that is explained by the independent variable.
SEE: Standard error of estimate. It indicates the variation of the distribution of residuals about the regression line. It is calculated as the mean square deviation of points from the line of regression and expressed as a percentage of the mean for the dependent variable. Graphically, it is defined as having about two-thirds of the data points falling within its limits.
Means: Abbreviations are explained in table 9.

Urban basins and all basins combined	Type of equation	Number of storms	Equation	R-square X 100	SEE	Means	
						TOTRUN (in.)	PEAKQ (ft³/s)
Bells Canyon Conduit	Logarithmic	47	$TOTRUN = 0.187(TRAINA)^{1.13}$	93	30	0.038	—
	do.	47	$PEAKQ = 12.8(MAXR15)^{1.21}$	81	43	—	3.1
Little Cottonwood Creek	do.	16	$TOTRUN = 0.0672(TRAINA)^{1.68}$	69	71	.031	—
	Linear	12	$PEAKQ = -27.3 + 261(MAX1H) + 77.8(TRAINA)$	76	41	—	67
Holladay Drain	do.	29	$TOTRUN = -2.44x10^{-3} + 7.84x10^{-2}(TRAINA)$	77	48	.018	—
	—	—	PEAKQ: No useful regression obtained, R-square <50 percent	—	—	—	—
Big Cottonwood Creek	Logarithmic	18	$TOTRUN = 8.10x10^{-2}(TRAINA)^{1.49}$	77	45	.030	—
	Linear	15	$PEAKQ = -44.5 + 449(MAX1H) + 110(TRAINA)$	80	35	—	80
Mill Creek	do.	23	$TOTRUN = -3.18x10^{-3} + 7.77x10^{-2}(TRAINA)$	91	22	.034	—
	do.	23	$PEAKQ = -9.79 + 183(MAX1H) + 47.3(TRAINA)$	86	23	—	40
Twenty-First South Conduit	do.	21	$TOTRUN = -2.00x10^{-2} + 0.205(TRAINA)$	84	39	.079	—
	Logarithmic	21	$PEAKQ = 181(MAX1H)^{0.931}(NDRDO2)^{-0.172}$	78	34	—	15
Thirteenth South Conduits	Linear	16	$TOTRUN = 1.46x10^{-2} + 0.109(TRAINA)$	92	23	.045	—
	do.	16	$PEAKQ = 39.8 + 233(TRAINA) - 0.143(DURRNF)$	88	23	—	100
Eighth South, Middle Conduit	do.	[1]28	$TOTRUN = 2.23x10^{-3} + 6.60x10^{-2}(TRAINA) + 7.10x10^{-5}(DURRNF)$	57	45	.033	—
	Logarithmic	[1]28	$PEAKQ = 105(MAXR15)^{0.698}$	54	45	—	43
Eighth South, North Conduit	Linear	[1]29	$TOTRUN = -1.69x10^{-2} + 0.369(TRAINA) + 5.20x10^{-2}(MAXR5)$	87	28	.064	—
	do.	[1]29	$PEAKQ = -0.211 + 285(MAX1H)$	78	31	—	32
North Temple Conduit	do.	40	$TOTRUN = 1.16x10^{-3} + 0.161(TRAINA)$	62	51	.040	—
	—	—	PEAKQ: No useful regression obtained, R-square <50 percent	—	—	—	—
Ninth West Conduit	Linear	14	$TOTRUN = -6.23x10^{-3} + 0.140(TRAINA)$	83	40	.035	—
	do.	14	$PEAKQ = -0.302 + 18.3(MAX1H)$	79	40	—	2.3
All basins combined	—	—	TOTRUN: No useful regression obtained, R-square <50 percent	—	—	—	—
	Logarithmic	274	$PEAKQ = 67.2(TCAREA)^{0.637}(MAX1H)^{0.786}$	72	86	—	38

[1] Includes only storms listed in table 24 that occurred in the 1981 calendar year for which all precipitation characteristics are reported.

For the combined data from all basins, only the equation for peak discharge listed in table 10 was obtained. The total contributing basin area and the maximum 1-hour rainfall are the most significant basin and precipitation variables relating directly to peak discharge. Basin variables for land use, long-term precipitation, and population density correlated poorly with peak discharge. The use of the regression equations in table 10 should be within the range of the characteristics listed in tables 6 and 24.

Atmospheric Deposition and Its Impact on Urban-Water Quality

Wet Deposition

Mean concentrations of wet-deposition constituents and an estimate of their variation at each of six sampling stations are presented in table 25 (at the end of report). The large amount of data made it difficult to identify trends of station-to-station variation in mean wet-deposition concentrations, therefore, a simple ranking procedure was used to reduce the data. The constituents were grouped as nutrients, organic carbon, trace metals, and major ions. The mean of each constituent within a group was then ranked by station from the largest to the smallest with the largest value given a rank of six and the smallest a rank of one. The sum of all ranks within a group is presented in table 11 for each station.

Differences in ranking in table 11 may be related to location of the collectors in the Salt Lake Valley or to differences in the height of the collector above the ground. The collectors at Bells Canyon, Fort Douglas, and Fire Station No. 7 were all 8 to 9 feet above the ground, whereas the collector at Dixie Valley Detention Basin was at 13 feet and the collector at the Administration Building was at 30 feet.

Bells Canyon generally had the largest rankings and Fire Station No. 7 generally had the smallest rankings. Bells Canyon is the most southerly of the stations (11000 South Street) and Fire Station No. 7 is the most northerly (200 North Street). Both stations are representative of basins that have similar land use, with little idle land or agriculture. The Fire Station No. 7 station is in a basin in which 26 percent of the land is used for commercial purposes whereas the Bells Canyon station is in a basin that is solely residential.

Variation in wet-deposition concentrations among stations was examined using analysis of variance testing. The concentrations of 16 constituents were tested for six storms to determine if there were any differences among stations. No significant difference was found for any of the constituents at the 95-percent confidence level. The same data were used to determine if there were differences in concentrations among the storms when all data for the six stations were pooled for a particular storm. A significant difference was found among the storms at the 95-percent confidence level for all constituents except dissolved copper, lead, and zinc. The differences appear to be seasonal and are related to storm intensity. Concentrations of the major dissolved constituents typically are greatest during midsummer when total rainfall per storm is least, and concentrations are the most dilute during spring and late fall, when most rain falls.

Table 11.--Results of ranking procedure on means of wet-deposition constituents at six atmospheric-deposition stations

[Values given are the sums of ranks for all constituents within a group. Each constituent with a group was ranked from largest (six) to smallest (one)]

Station name	Constituent group				
	Major ions	Nutrients	Organic carbon	Trace metals	Totals
Bells Canyon Conduit	63	20	5	34	122
Sandy City Public Works	32	22	3	33	90
Dixie Valley Detention Basin	37	15	1	34	87
Administration Building	36	9	6	33	84
Fort Douglas	38	14	4	41	97
Fire Station No. 7	25	2	2	14	63

Comparison of the means for selected constituents obtained during this study with data from other areas is made in table 12. Two of the means reported by Goettle (1978, p. 464) are for industrialized regions of Germany. This would account for the greater concentrations of sulfate than are present in the Salt Lake Valley. Values for heavy metals given in Malmquist (1978, p. 496) are for the urban area of Goteburg, an industrial port city on the west coast of Sweden. The greater concentration of trace metals in the Goteburg rainfall may reflect the industrialization, although sulfate concentrations were not greater than those in Salt Lake Valley.

Acid rain, defined as wet deposition with a pH less than 5.6 (the pH of pure water in equilibrium with atmospheric carbon dioxide), was noted at the six atmospheric-deposition stations. Typically, the anthropogenic sources of the acids are automotive and industrial emissions of nitrous- and sulfurous-oxide gases, which combine with atmospheric water to form strong acids. The general nature of pH at each station is shown by the mean value for pH in table 25. These are true means (Barth, 1975), based on field determinations and calculated using the negative logarithm of the hydrogen-ion concentration for all samples at each site. Although the mean values in table 25 clearly show a trend toward acidity of the rainfall in the Salt Lake Valley, there is considerable variation in the data, with the coefficient of variation greater than 100 percent. The pH values are negative logarithms of the hydrogen-ion concentration, therefore, a pH value of 5 has 10 times the hydrogen-ion content of wet deposition at a pH value 6.

Table 12.--Comparison of means for selected constituents of wet deposition from the literature and for Salt Lake Valley

[Values for Salt Lake Valley are for one to seven storms at two to six sites.]

Constituent or property	Reported means				
	Munich, Germany (Goettle, 1978, p. 464)	Virginia (Goettle, 1978, p. 464)	Germany (Goettle, 1978, p. 464)	Goteburg, Sweden (Malmquist, 1978, p. 496)	Salt Lake Valley
Carbon, organic (mg/L)	--	--	4	--	1.7
Chloride (mg/L)	--	--	--	2.3	1.9
Copper (ug/L)	--	--	--	20	12
Lead (ug/L)	--	--	--	50	13
Nitrate (mg/L as NO_3)	3.6	--	.6	--	1.6
Nitrite (mg/L as NO_2)	.024	--	--	--	.08
Nitrogen, ammonium (mg/L as NH_4)	1.58	--	.6	--	.51
Nitrogen, organic (mg/L as N)	--	.65	--	--	.82
pH (units)	4.95	4.8	4.7	--	4.8
Phosphorus, total (mg/L as P)	.264	.35	.016	.07	.04
Specific conductance (umho/cm at 25°C)	40	--	--	--	30
Sulfate (mg/L)	35	--	40	4.4	5.6
Solids, suspended (mg/L)	16	13	12	--	9.1
Zinc (ug/L)	--	--	--	120	30

The frequency of acid rain at each of the stations is presented in table 13. Acid rain was found in more than one-half of the storms sampled, but it was most common in September and October. Spring storms generally have large pH values. Snowfall was not routinely collected and analyzed, but it is likely that stagnant air resulting from air inversions during the winter could produce acid snowfall in the valley. A composite sample spanning from January 16 to February 2, 1981, collected at site 15 (table 1) had a pH of 5.0.

The relationship of the quality of wet deposition to storm precipitation was investigated for the Bells Canyon Conduit and Ninth West Conduit Basins. Data were used for 11 storms sampled at the Bells Canyon collector and 6 storms sampled at the Fire Station No. 7 collector. Data for all water-quality constituents in table 3 were regressed against the storm-precipitation variables in table 9 except for the variable defining the depth of rainfall accumulated during the previous 24 hours, which was deleted because it had a high proportion of zero values and tended to skew the data. The purpose of the regressions was to indicate cause-and-effect relationships between storm precipitation and the quality of wet deposition.

Regression equations are presented in table 14 for the Bells Canyon collector and for the combined data from the Bells Canyon and Fire Station No. 7 collectors. The concentrations of all constituents were small, especially for the trace metals. As total rainfall increased, it generally resulted in a progressive dilution of the wet deposition within the collector buckets. Studies by Randall and others (1978) have identified a "first flush" where the particulates in the atmosphere are washed out in the early part of a storm. The concentration of constituents in the precipitation also tended to be positively related to intense storms, as indicated by the variable maximum 1-hour-rainfall rate. Relationships between the other storm characteristics and wet-deposition quality were less evident, partly because of the small amount of data available. The other four atmospheric-deposition stations were in areas that reflected several different sets of storm characteristics, thus prohibiting assignment of specified storm characteristics to each collector.

Loads of wet-deposition constituents monitored at each of the six atmospheric-deposition stations are presented in table 26 (at the end of report). In some cases, two or more closely spaced storms are reported as one. Relatively few data are available for the Sandy City Public Works and Dixie Valley Detention Basin stations because of the late installation of the collectors. The data in table 26 indicate that loads generally are greater during summer storms when the concentration of constituents is greatest even though the total rainfall is slight. These thunderstorms usually are preceded by several days or weeks of dry weather with considerable buildup of particulates in the atmosphere.

A summary of wet-deposition loads for the six atmospheric-deposition stations for all storms sampled is presented in table 15. The mean specific conductance for all samples was only 29 micromhos per centimeter at 25°C, and the true mean pH was 5.0, somewhat acidic. Forty percent of the total solids are not dissolved, and they probably represent suspended soil particles.

Table 13.--Occurrence and frequency of acid rain in wet-deposition samples collected at six atmospheric-deposition stations

[Frequency of acid rain: The ratio of acid samples to the number of total samples.]

Station name	Sampling period	Frequency of acid rain	Dates of acid rain
Bells Canyon Conduit	May to November 1981	5/11	May 16, 1981 Sept. 5 Oct. 2 5 10
Sandy City Public Works	September to November 1981	3/6	Oct. 2, 1981 7 28
Dixie Valley Detention Basin	May to November 1981	4/7	Sept. 5, 1981 Oct. 2 7 28
Administration Building	October 1980-November 1981	8/13	Oct. 7, 1980 Nov. 17 Jan. 16, 1981 May 19 Sept. 5 Oct. 2 7 28
Fort Douglas	March to November 1981	5/10	Mar. 26, 1981 May 6 Sept. 5 Oct. 2 7
Fire Station No. 7	September to November 1981	4/6	Sept. 5, 1981 Oct. 2 7 28

Table 14.--Linear-regression equations relating wet-deposition constituents to selected storm-precipitation variables in the Bells Canyon Conduit and Ninth West Conduit Basins

Equation: Abbreviations are explained in table 9.

R-square: Definition is given in table 10.

SEE: Definition is given in table 10.

Constituent	Number of samples	Equation	R-square x 100	SEE	Mean of constituent
		Bells Canyon Conduit and Ninth West Conduit Basins--Combined data			
Ammonia, dissolved (mg/L as N)	17	0.560 - 0.362(TRAINA) + 0.726(DERNP3)	51	46	0.53
Manganese, dissolved (ug/L)	17	6.10 - 10.33(TRAINA) + 16.23(MAX1H) - 4.04×10^{-3}(NDRDO2)	77	35	3.7
		Bells Canyon Conduit Basin			
Manganese, dissolved (ug/L)	11	6.00 - 9.30(TRAINA) + 14.83(MAX1H) - 4.00×10^{-3}(NDRDO2)	75	42	3.63
Zinc, dissolved (ug/L)	11	18.69 + 37.44(TRAINA) - 13.56(MAXR5)	52	45	25.1

Table 15.--Means and coefficients of variation of loads for wet-deposition constituents for six atmospheric-deposition stations combined

Coefficient of variation: The standard deviation of a set of numbers expressed as a percentage of the mean.

Constituent	Number of samples	Mean load [(lb/acre)/in. of rainfall]	Coefficient of variation
Solids, total, residue at 105°C	48	6.19	172
Solids, dissolved, residue at 180°C	51	3.70	233
Chloride, dissolved	53	.519	150
Fluoride, dissolved	47	.0211	116
Nitrogen, ammonia dissolved	48	.158	66
Phosphorus, ortho dissolved	47	.0101	181
Carbon, organic dissolved	45	.649	68
Arsenic, dissolved	47	.0003	100
Barium, dissolved	47	.133	655
Beryllium, dissolved	47	<.0003	0
Boron, dissolved	47	.0042	263
Cadmium, dissolved	50	.0003	42
Cobalt, dissolved	47	<.0008	4
Copper, dissolved	53	.0034	65
Iron, total recoverable	48	.0779	83
Iron, dissolved	49	.0040	72
Lead, dissolved	53	.0035	123
Lithium, dissolved	47	.0013	39
Manganese, dissolved	47	.0013	77
Molybdenum, dissolved	47	<.0028	0
Selenium, dissolved	47	.0001	155
Strontium, dissolved	47	.0037	288
Vanadium, dissolved	47	<.0017	0
Zinc, dissolved	53	.0084	88

Dissolved chloride and organic carbon each constitute about 15 percent of the dissolved-solids load. Most of the trace metals are present in very small quantities, with beryllium, cobalt, molybdenum, and vanadium at the limits of detection. Total recoverable iron, commonly found in large quantities in dustfall loads, generally is less than 0.08 of a pound per acre per inch of rainfall.

The wet-deposition loads for each atmospheric-deposition station were used with the Thiessen weighting procedure (Linsley and others, 1958) and mean basin rainfall for each storm to estimate the loads for each of the hydrologic basins involved in the urban-runoff study (table 27, at the end of report). This procedure was deemed appropriate because the mean annual rainfall for each of the 12 basins had a coefficient of variation of only 9 percent, and the 10-year rainfall intensity had a coefficent of variation of only 6 percent. The wet-deposition loads in a basin generally were considerably greater than the storm-runoff loads from that basin. For many of the trace metals, the total loads were very small and the runoff component probably was insignificant. The wet-deposition load of total solids, however, approached 10 pounds per acre, which could add significantly to the runoff loads. The relative imbalance between loads entering the basin as wet deposition and loads leaving in runoff indicated that a large quantity of the wet-deposition constituents were deposited on the soil and did not appear quickly in the storm runoff.

Dustfall

Atmospheric dustfall collected at six sampling stations in the Salt Lake Valley reflected the composition of local soils, aerosol salts from the Great Salt Lake, and urban dusts (table 28, at the end of report). Concentrations of aluminum and iron were consistently from 25 to 40 percent of total sample weight, reflecting their abundance in the Earth's crust. Chloride ranged from about 25 percent of the total sample weight at the south end of the valley to 50 percent at the north end. Chloride, aluminum, iron, and suspended organic carbon constituted at least 85 percent of the total weight for all constituents.

The extent to which the dustfall deviates from soil composition can be used to express the extent of contributions from Great Salt Lake and urban areas on the atmosphere and the potential impact on the aquatic system through washout during storms. Comparison of the elemental composition of dustfall with the average value for elements in soils as determined by H. J. M. Bowen in 1966 (Rahn, 1976, p. 179) provides enrichment factors that can be used to evaluate the effects of the urban environment on local dry deposition. These factors should be regarded as approximations due to use of a global table of element abundance rather than analyses of local soils.

It is possible to calculate enrichment factors for all elements analyzed in the dustfall samples from the six sampling stations, but only those metals typically present in large concentration in urban runoff are shown in table 16. Chloride also is included because of the proximity of Great Salt Lake. Chromium, iron, and manganese were about equivalent to concentrations found in "average" soil, at least within the limits imposed by this type of comparison.

Table 16.--Ratio of enrichment factors for selected elements in dustfall at six atmospheric-deposition stations to their concentration in average soils

[Average soil composition derived from several data sources by Rahn, 1976, p.179. A value of 1 indicates equivalent concentrations.]

Station name	Elements								
	Alu-minum	Cad-mium	Chlo-ride	Chro-mium	Cop-per	Iron	Lead	Manga-nese	Zinc
Bells Canyon Conduit	0.5	74	513	1.4	43	0.9	188	1.3	52
Sandy City Public Works	.3	56	324	1.1	64	.9	241	1.2	33
Dixie Valley Detention Basin	.4	70	564	1.2	102	1.0	109	1.5	54
Administration Building	.3	30	853	1.1	38	.8	162	1.0	36
Fort Douglas	.3	32	755	1.0	17	.7	54	1.0	22
Fire Station No. 7	.2	22	853	.8	31	.6	136	.7	52

Aluminum was present at about one-quarter to one-half of the concentration in soil. The other trace metals (cadmium, copper, lead, and zinc) were considerably enriched at all the collector sites. The enrichment of lead, ranging from about 50 to 240 times the abundance in soil, was particularly noticeable, and it probably represents the impact of additives to automotive fuels. The enrichment of copper was greatest at the Dixie Valley Detention Basin, the site closest to the Bingham Copper Mine. Chloride concentrations were very large relative to average soils, and they most likely represent aerosols or particulates from the Great Salt Lake or from salt flats near the lake. The chloride enrichment generally decreased with distance from the lake.

The concentration of constituents for dustfall collected at the six atmospheric-deposition stations were ranked in four groups, similar to the ranking procedure used for the wet-deposition constituents. The mean of each constituent within a group was ranked by station, with the smallest concentration of a constituent given the rank of one and the largest six. The individual constituent ranks were then summed in table 17. Bells Canyon had the largest ranking in all groups except major ions, and Fire Station No. 7 had the smallest ranking in all groups except major ions. This agrees with the trend for wet-deposition constituents, which also decreased in a northerly direction.

The relationship of land use within a basin to the quality of dustfall collected in or adjacent to that basin was investigated using regression analysis. The regressions yielded no usable relationships because variations with time at any station were greater than variations between stations. The lack of correlation between quality of dustfall and land use within individual basins is not surprising. The basins selected for the urban study were delimited solely with respect to surface-water runoff, whereas the Salt Lake Valley is a single large basin with no prominent ridges or valleys. Local air currents suspend and transport atmospheric constituents from all basins within the valley, and deposition in a given basin may have little relationship to land use in that basin. Turbulent air currents tend to mix suspended constituents uniformly and move them from basin to basin. An estimate of the number of preceding nonturbulent days may prove to be a useful independent variable in regression analyses of dustfall.

Atmospheric deposition as dustfall was collected as a composite sample on the first Tuesday of each month. The monthly loads for the six atmospheric-deposition stations for the 1981 water year are presented in table 29 (at the end of report), and a summary of mean loads for the combined collectors is given in table 18. Data for the collector at the Administration Building were available for the entire 1981 water year and were used to augment missing data at the other collectors. This was done only for constituents that showed no significant difference in concentrations (analysis of variance testing) during May through September 1981 between the Administration Building and the station in question.

The monthly load of all dustfall constituents was small (table 18). The dustfall was composed primarily of chloride, organic carbon, iron, and

Table 17.--Results of ranking procedure on means of dustfall constituents at six atmospheric-deposition stations

[Values given are the sums of ranks for all constituents within a group. Each constituent with a group was ranked from largest (six) to smallest (one).]

Station name	Constituent group				Totals
	Major ions	Nutrients	Organic carbon	Trace metals	
Bells Canyon Conduit	9	22	6	75	112
Sandy City Public Works	12	13	3	59	87
Dixie Valley Detention Basin	7	20	5	75	107
Administration Building	15	10	4	49	78
Fort Douglas	10	13	2	29	54
Fire Station No. 7	10	6	1	28	45

aluminum The first two of these constituents are the ones seen most commonly in the wet-deposition data (table 15). It is difficult, however, to compare directly the loads of dustfall and of wet deposition due to differences in their methods of collection. During dustfall collection, the collector is always open and material that is deposited can be resuspended by air currents. This type of collection represents a dynamic equilibrium, with deposition and resuspension occurring continually. It gives an accurate indication of the net deposition of particles rather than the gross total deposition. In sampling precipitation, however, the instrument collects discrete storms, with no resuspension of particles back to the atmosphere.

The dustfall loads for each atmospheric-deposition station were used with the Thiessen weighting procedure (Linsley and others, 1958) to estimate the mean and maximum dustfall loads for each of the hydrologic basins involved in the urban-runoff study (table 30, at the end of report). The areal distribution of loads for all basins was small for all constituents except total solids, which varied from a mean of 18.7 pounds per acre per month in the Eighth South, Middle Conduit Basin to 24.5 pounds per acre per month in the Little Cottonwood Creek Basin. The monthly areal loads of any of the constituents generally were of the same order of magnitude as the total storm loads (in pounds per acre) for a heavy rainstorm. The interpretation of the impact of dustfall on storm runoff was complicated by the dynamic nature of dustfall and by the differences in time intervals for the collection of dustfall and wet deposition. Dustfall analysis, however, is useful in explaining and predicting the general quality of wet deposition and identifying possible sources of specific components because the two generally have similar constituents.

Table 18.--Means and coefficients of variation of loads for dustfall constituents and six atmospheric-deposition stations combined

Constituent	Number of samples	Mean load [(lbs/acre)/mo]	Coefficient of variation
Solids, total residue at 105°C	45	19.1	85
Chloride, dissolved	38	.739	132
Nitrogen, nitrate, total (as N)	40	.115	47
Nitrogen, nitrite, total (as N)	45	.0031	103
Nitrogen, NO_2+NO_3, total (as N)	45	.114	46
Nitrogen, ammonia, total (as N)	45	.0713	82
Cyanide, total	38	.0017	77
Phosphorus, ortho total	45	.0299	107
Carbon, organic suspended total	36	.360	49
Aluminum, total recoverable	38	.311	82
Antimony, total	38	.0002	115
Arsenic, total	38	.0008	169
Beryllium, total recoverable	38	.0009	149
Cadmium, total recoverable	45	.0002	74
Chromium, total recoverable	38	.0028	65
Copper, total recoverable	45	.0097	80
Iron, total recoverable	37	.447	84
Lead, total recoverable	45	.0196	128
Manganese, total recoverable	37	.0139	92
Mercury total recoverable	38	<.0001	86
Nickel, total recoverable	38	.0010	63
Selenium, total	38	.0002	196
Silver, total recoverable	38	.0002	151
Vanadium, dissolved	12	.0002	73
Zinc, total recoverable	44	.0251	87

Quality of Urban-Storm Runoff

During the course of the study, a variety of constituents were determined for each of the water samples collected. The initial samples were tested for many substances in order to determine exactly what was present (or absent). This screening, coupled with budget restrictions, resulted in a restructuring of the analytical program. Initially, discrete samples were taken throughout a storm, but only three to five samples usually were selected for chemical analysis to represent the water quality during the entire storm on the basis of specific conductance, stage, and time from beginning of storm runoff. Beginning in March 1981, samples still were collected during the entire storm, but they were composited using a flow-weighting technique (described in the section "Water-quality sampling of streamflow") to produce a single sample of the storm runoff for analysis. This method reduced the analytical costs and produced data that could be used more easily to calculate storm loads.

Although many constituents were determined, interpretation and discussion was limited to those constituents for which there are State water-quality standards (Utah State Board of Health, 1978). (See table 31 at the end of report). Dissolved and total phases of the metals and nutrients were determined to identify the significant phase. Chemical oxygen demand and organic carbon were used to estimate the impact of oxygen-demanding substances. Mean values for pH given throughout this report are true means which have been calculated with logarithms of the hydrogen-ion concentration. Oil and grease were not sampled due to the lack of a method of obtaining a representative sample. Surface sampling produces an overestimate of the "true" concentration and pumped samples result in an underestimate. Oil was in most samples taken from the storm drains, and it made the containers used to obtain dip samples difficult to grasp. Bacterial analyses were run on many samples, primarily at points of inflow to the Jordan River. The results of this sampling will be discussed in planned reports dealing with water quality in the Jordan River.

A "first-flush" effect in concentrations of water-quality constituents has been reported in many urban studies. This is portrayed typically as a peaking of concentration just prior to the peak discharge. Griffin and others (1980, p. 789) reported a first flush generally occurred for suspended but not for soluble constituents in northern Virginia. Bennett and others (1981, p. 121) observed the first-flush effect primarily for particulates in both snowmelt and rainfall runoff in Boulder, Colo.

In the Salt Lake Valley, the greatest concentration of particulate material typically was observed near the peak discharge, but an inverse relationship was evident for dissolved substances. This relationship was observed at the Holladay Drain, which has little base flow (fig. 10), and at the lower reach of Little Cottonwood Creek, which has a significant base flow (fig. 11). The actual peak of the particulate concentration is difficult to place accurately due to a lack of closely spaced samples, but the relative concentration differences indicate it was before or near the peak discharge. The pre- and post-storm concentrations of dissolved substances shown in figures 10 and 11 are considerably greater than those near the peak discharges.

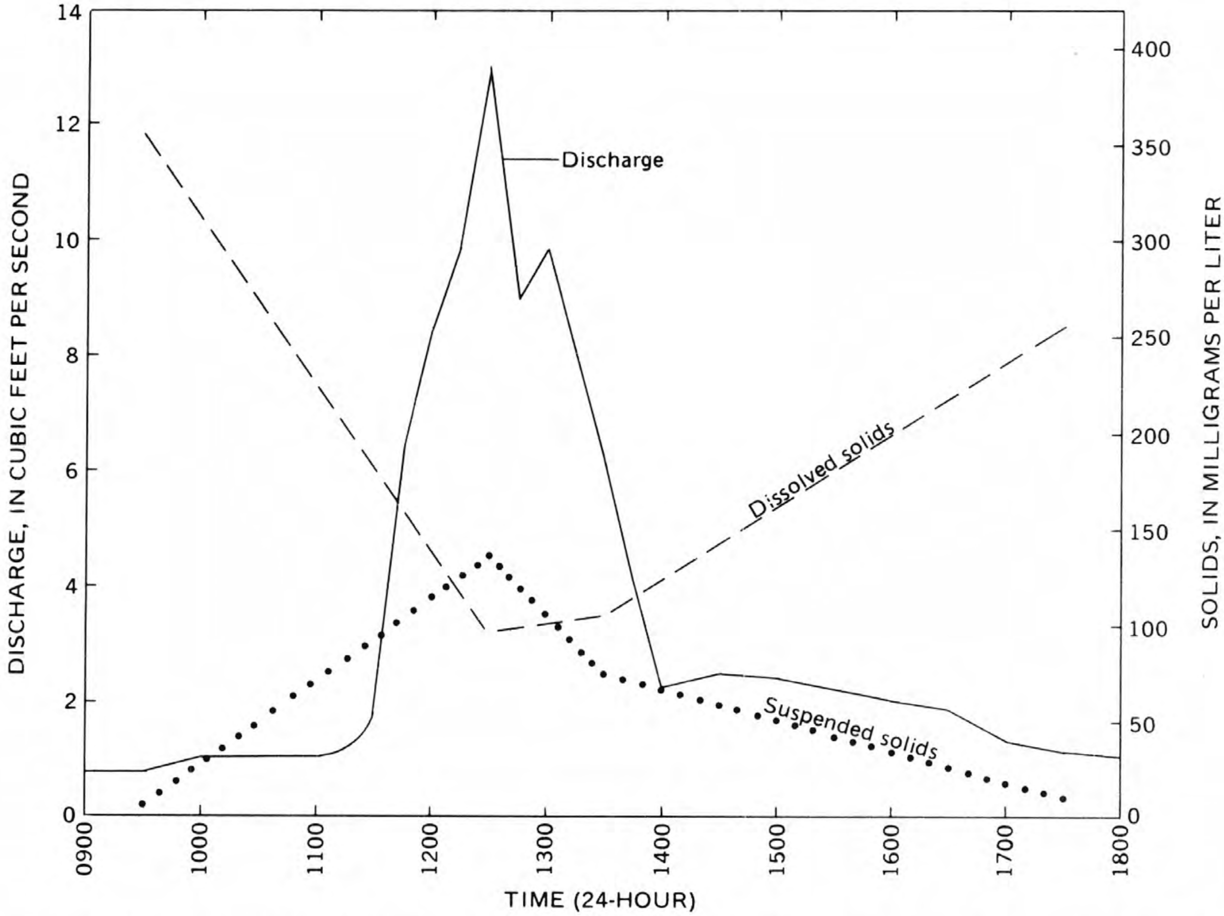

Figure 10.—Relationship of storm discharge to concentrations of dissolved and suspended solids at station Holladay Drain at 4800 South, at Big Cottonwood Creek. The storm date was October 26, 1980.

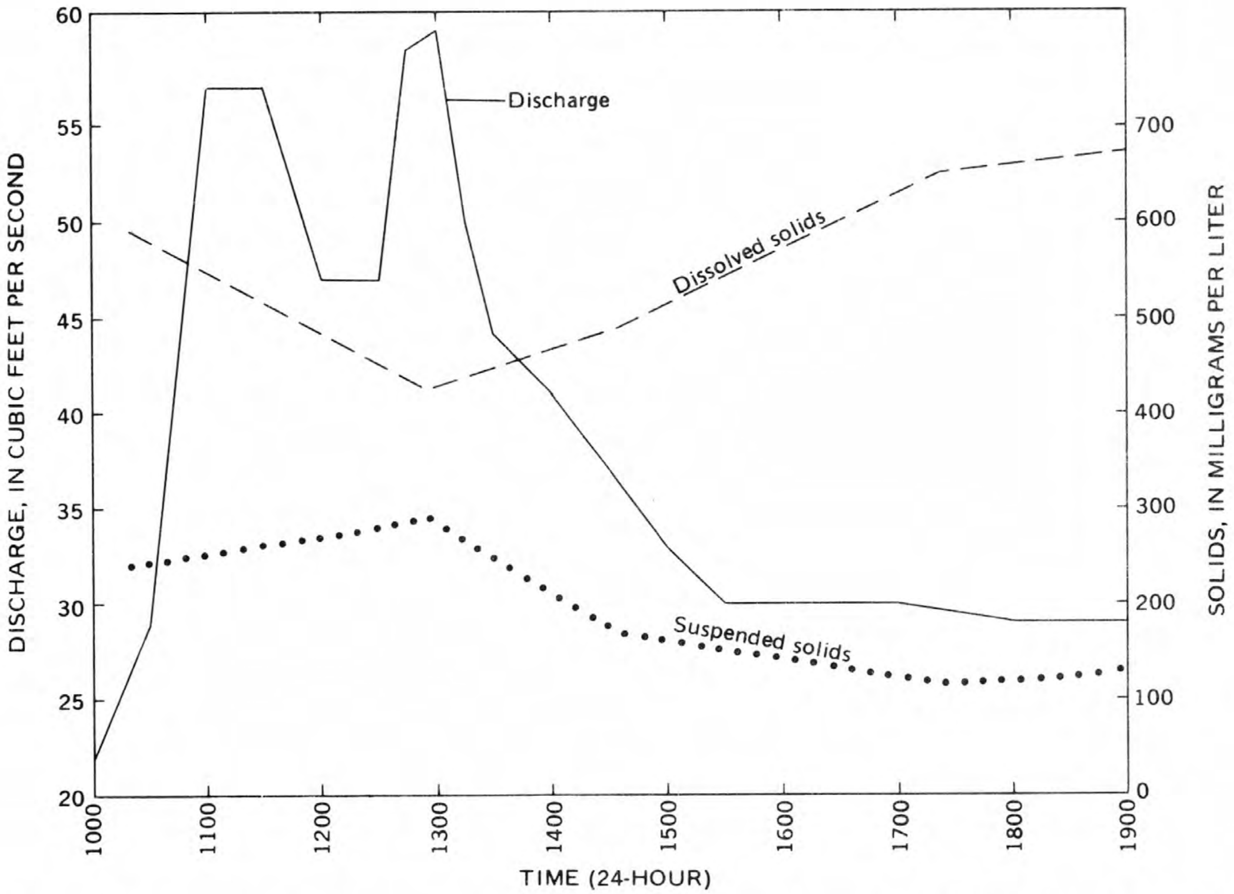

Figure 11.—Relationship of storm discharge to concentration of dissolved and suspended solids at station Little Cottonwood Creek at Jordan River. The storm date was August 25, 1980.

In the eastern part of the Salt Lake Valley, more than one-half of the storm drains and receiving streams have base flow during nonstorm periods. It was necessary, therefore, to determine the quality of the base flow in order to assess the impact of storm runoff. This was not always possible, however, because equipment malfunctions and personnel shortages prevented the calculation of "storm-only" loads for some sites and reduced the data available for regression analysis.

Constituent loads were calculated for the composite samples by multiplying the concentration data by the total runoff for the storm. Loads for storms sampled by the discrete method were calculated using the total discharge for the time period represented by each sample and then summed. These calculations were performed with the LOADS program (Doyle and Lorens, 1982, p. 228-267). Base-flow loads were calculated with concentration data from one sample, which generally was taken just prior to the storm; but in some instances samples were taken after the storm. The base flow during the storm was calculated by methods outlined earlier in the section "Analysis of hydrograph for basin runoff." Urban-runoff loads were calculated as the differential between the measured total load during the storm runoff and the base-flow load, which was projected for the storm-runoff duration. Occasionally the projected base-flow load of a constituent exceeded the total load and a negative urban-runoff load was calculated. This was due to the inherent approximations in the following assumptions that were made to obtain only urban-runoff loads at sites with nonstorm base flow:

1. The water-quality sample of base flow adequately represented the base-flow conditions that would occur in the absence of a storm.

2. Base flow was the mean of pre- and post-storm discharges.

3. Water quality of each constituent during the storm runoff was reasonably represented by the analysis of the composite sample or discrete samples.

4. Discharge throughout the storm was measured adequately.

Instances where negative urban-runoff loads were calculated are footnoted in table 32 (at the end of report). All the regressions of loads against storm and basin characteristics were made by using storm loads, with the base-flow loads subtracted. Constituent loads for urban-storm runoff, total runoff, and at canyon mouths are presented in tables 32, 33, and 34 (at the end of report).

All surface waters in Utah have been classified according to existing water quality and intended use, and standards have been assigned to protect the intended use (Utah State Board of Health, 1978). The standards are organized by type of use into six major classes and various subclasses (table 31). Those subclasses referred to later in this report are 2B, recreation and aesthetics; 3A, cold-water fishery; 3B, warm-water fishery; 3C, non-game fishery; 3D, waterfowl; and 4, agricultural. Storm runoff is temporal, and violations of the intended-use standards by storm runoff are short-lived. The periodic input of suspended materials from storm runoff, however, may result in the accumulation of particles which can produce undesireable long-term problems such as sediment, increased oxygen demand, and large concentrations of trace metals.

Regression analyses relating storm characteristics to constituent loads of storm runoff in urban basins were made only for the Bells Canyon Conduit and Ninth West Conduit Basins because they were the only basins with sufficient data for meaningful regressions. Urban loads for all other basins except the Eighth South, South Conduit Basin, were included in the overall regressions with storm and basin characteristics for the Salt Lake Valley. All regression equations were linear models in the form of equation 2. Semi-logarithmic and logarithmic models were investigated using the largest data set available (Bells Canyon Conduit Basin) but they failed to produce models with larger coefficients of determination (R-square) than did the simple linear models. Regression of trace-metal loads should be viewed with caution because these constituents were often present in concentrations that are very small or near detection level. When converted to loads, the values for such small concentrations were given artificial significance through multiplication, and this significance was passed into the regression equations. The small standard error of estimate noted for trace metals was due to the clustering of many loads near zero, which decreased the variation in the model, and due to rounding of the small numbers, which eliminated some numbers at the 10^{-8} level.

Bells Canyon Conduit Basin

Land use in this basin is primarily residential, and it has the greatest population density (9,100 persons per square mile) of any of the study basins. The overall slope is 275 feet per mile, but the main conveyance channel has a slope of 312 feet per mile. Due to these factors and its small (0.10 square mile) drainage area, runoff was rapid following the start of a storm. The runoff contained considerable sediment, and the ratio of dissolved to suspended solids was 0.7. Analysis of the mean values collected for all base flow (table 19) and all storm runoff (table 20) show that the ratio of dissolved to suspended solids typically was 2.5. This indicates that the dissolved-solid fraction was usually greater than the suspended fraction at other basins which had less slope in the main conveyance channel.

The drainage from Bells Canyon Conduit was discharged to an open field, thus no Utah water-quality standards apply. Standards (Class 3A, table 31) exist for the drainage into the Bells Canyon Conduit Basin, however, which can be used to characterize the quality with respect to limits of pollutants. When this was done for the means of runoff samples from the Bells Canyon Conduit (table 35, at the end of report), dissolved cadmium, total mercury, BOD, and dissolved phosphorus were identified as problem constituents. When viewed as individual occurrences of possible violations, dissolved phosphorus was found in excess of 0.05 milligram per liter (13 times), total mercury in excess of 0.05 microgram per liter (8 times), un-ionized ammonia in excess of 0.02 milligram per liter (1 time), dissolved zinc in excess of 50 micrograms per liter, (4 times), and dissolved copper in excess of 10 micrograms per liter (2 times). Concentrations of oxygen-demanding substances were large, as indicated by a mean 5-day BOD of 13 milligrams per liter, a chemical oxygen demand of 160 milligrams per liter, and a dissolved organic carbon content of 24 milligrams per liter.

Table 19.--Mean concentrations and coefficients of variation of baseline-flow and base-flow constituents and properties combined for urban stations on canals, streams, and storm conduits

Constituent or property	Number of samples	Mean concentration	Coefficient of variation
Specific conductance (umho/cm at 25°C)	76	810	54
pH (units)	73	7.8	4
Oxygen demand, chemical (mg/L)	73	70	329
Oxygen demand, biochemical, carbonaceous, 5 day (BOD_5) (mg/L)	44	5	118
Oxygen demand, biochemical, carbonaceous, ultimate (BOD_u) (mg/L)	45	12	117
Chloride, dissolved (mg/L)	77	89	81
Fluoride, dissolved (mg/L)	25	.5	40
Solids, dissolved, residue at 180°C (mg/L)	73	515	51
Solids, suspended, residue at 105°C (mg/L)	77	94	389
Nitrogen, nitrate dissolved (mg/L as N)	76	.8	123
Nitrogen, ammonia dissolved (mg/L as N)	77	.3	298
Nitrogen, ammonia + organic total (mg/L as N)	77	1.8	117
Phosphorus, total (mg/L)	77	.8	335
Phosphorus, dissolved (mg/L)	77	.3	226
Carbon, organic suspended total (mg/L)	66	1.6	127
Carbon, organic dissolved (mg/L)	73	9	79
Sediment, suspended (mg/L)	27	112	96
Cadmium, total recoverable (ug/L)	23	1.7	147
Cadmium, suspended recoverable (ug/L)	11	<.01	<1
Cadmium, dissolved (ug/L)	77	1.1	49
Chromium, total recoverable (ug/L)	75	11	87
Chromium, suspended recoverable (ug/L)	52	10	74
Chromium, dissolved (ug/L)	52	1.3	247
Copper, total recoverable (ug/L)	75	25	236
Copper, suspended recoverable (ug/L)	54	10	194
Copper, dissolved (ug/L)	74	9	91
Iron, total recoverable (ug/L)	52	860	113
Iron, suspended recoverable (ug/L)	37	890	117
Iron, dissolved (ug/L)	77	44	215
Lead, total recoverable (ug/L)	75	58	376

Table 19.--Mean concentrations and coefficients of variation of baseline-flow and base-flow constituents and properties combined for urban stations on canals, streams, and storm conduits--Continued.

Constituent or property	Number of samples	Mean concentration	Coefficient of variation
Lead, suspended recoverable (ug/L)	49	20	240
Lead, dissolved (ug/L)	74	8	98
Mercury, total recoverable (ug/L)	52	.1	102
Mercury, suspended recoverable (ug/L)	52	.1	106
Mercury, dissolved (ug/L)	52	<.01	504
Zinc, total recoverable (ug/L)	75	107	230
Zinc, suspended recoverable (ug/L)	72	46	171
Zinc, dissolved (ug/L)	77	25	72

Table 20.--Mean concentrations and coefficients of variation of storm-runoff constituents and properties combined for urban stations on canals, streams, and storm conduits

Constituent or property	Number of samples	Mean concentration	Coefficient of variation
Specific conductance (umho/cm at 25°C)	284	700	68
pH (units)	239	7.4	92
Oxygen demand, chemical (mg/L)	237	81	109
Oxygen demand, biochemical, carbonaceous, 5 day (BOD_5) (mg/L)	91	9	103
Oxygen demand, biochemical, carbonaceous, ultimate (BOD_u) (mg/L)	91	23	106
Chloride, dissolved (mg/L)	286	78	102
Fluoride, dissolved (mg/L)	174	.4	49
Solids, dissolved, residue at 180°C (mg/L)	236	450	57
Solids, suspended, residue at 105°C (mg/L)	283	180	246
Nitrogen, nitrate dissolved (mg/L as N)	273	.7	115
Nitrogen, ammonia dissolved (mg/L as N)	274	.3	221
Nitrogen, ammonia + organic total (mg/L as N)	275	2.4	93
Phosphorus, total (mg/L)	276	.6	126
Phosphorus, dissolved (mg/L)	277	.2	185
Carbon, organic suspended total (mg/L)	209	3	133
Carbon, organic dissolved (mg/L)	246	15	92
Sediment, suspended (mg/L)	99	360	140
Cadmium, total recoverable (ug/L)	153	1.2	173
Cadmium, suspended recoverable (ug/L)	55	.4	459
Cadmium, dissolved (ug/L)	286	1.2	96
Chromium, total recoverable (ug/L)	262	20	260
Chromium, suspended recoverable (ug/L)	113	22	194
Chromium, dissolved (ug/L)	113	3	487
Copper, total recoverable (ug/L)	265	46	161
Copper, suspended recoverable (ug/L)	151	36	140
Copper, dissolved (ug/L)	284	11	81
Iron, total recoverable (ug/L)	114	4,900	139
Iron, suspended recoverable (ug/L)	98	5,100	141
Iron, dissolved (ug/L)	283	78	237
Lead, total recoverable (ug/L)	265	220	300

Table 20.--Mean concentrations and coefficients of variation of storm-runoff constituents and properties combined for urban stations on canals, streams, and storm conduits--Continued.

Constituent or property	Number of samples	Mean concentration	Coefficient of variation
Lead, suspended recoverable (ug/L)	132	240	326
Lead, dissolved (ug/L)	285	14	89
Mercury, total recoverable (ug/L)	114	.2	97
Mercury, suspended recoverable (ug/L)	113	.1	102
Mercury, dissolved (ug/L)	113	.01	386
Zinc, total recoverable (ug/L)	266	210	167
Zinc, suspended recoverable (ug/L)	225	130	138
Zinc, dissolved (ug/L)	283	35	174

Ratios of dissolved to suspended trace metals in the Bells Canyon Conduit Basin were not noticeably different from the typical ratios for the combined storm runoff (table 20). The runoff from the Bells Canyon Conduit Basin contained a large concentration of suspended iron, which probably indicates that soil was one of the principal components of the suspended substances in the runoff.

Storm-runoff loads of constituents in pounds per acre typically were small, particularly for the trace metals. The largest loads were associated with chemical oxygen demand, suspended solids, and sediment. The constituents that most likely could be considered as pollutants in the Bells Canyon Conduit Basin were phosphorus, suspended and total solids, and oxygen-demanding substances.

Regression of constituent loads against the storm characteristics associated with those loads are summarized in table 21. The rainfall intensity variables (maximum 1-hour and 15-minute) appeared as the most significant independent variables, and they were directly related to the load in seven of nine equations. Most of these loads were in either the suspended or total phases, with generally poor fits to equations for the dissolved phases. This indicates that the more intense rainstorms produced considerable scouring of the land surface, resulting in considerable amounts of suspended substances in the associated runoff.

Little Cottonwood Creek Basin

Little Cottonwood Creek Basin was the second largest basin in the study area (14 square miles). It has a wide range of land uses, but it is primarily medium-density residential (38 percent) and idle land (20 percent). The effective impervious area is only 16 percent. The two sites monitored in this basin were at the mouth of Little Cottonwood Canyon and near the discharge point of Little Cottonwood Creek to the Jordan River.

Little Cottonwood Creek at canyon mouth.--The water quality of Little Cottonwood Creek as it leaves the canyon typically was good. Mean concentrations for storm samples (table 35) generally exceeded those for base-flow samples (table 36, at the end of report) with two- to three-fold increases for ammonia, chloride, dissolved solids, and most suspended trace metals. Suspended solids increased nearly seven times during storms. Base-flow samples and storm samples at this site were of uniformly better quality than the mean base-flow and storm samples for all sites in the study area (tables 19 and 20). In fact, the storm samples at this site were of better quality than the combined mean of the base-flow samples for the entire area. Little Cottonwood Creek is a domestic water source for Salt Lake City, but the stream also is classified as a cold-water fishery. Comparison of the mean concentrations of storm runoff with the standards in table 31 indicates that only total mercury is a possible problem. The total loads at this site reflect the small concentrations of constituents as the stream enters the basin's urban area.

Table 21.—Regression equations relating constituent loads to storm-precipitation and runoff variables for Bells Canyon Conduit and Ninth West Conduit Basins

Equation: Abbreviations are explained in table 9.
R-square: Definition is given in table 10.
SEE: Definition is given in table 10.

Constituents	Number of storms	Equation	R-square x 100	SEE	Means of constituents (lb/acre)
		Bells Canyon Conduit Basin			
Biochemical-oxygen demand, 5-day (carbonaceous)	12	$-3.39\times10^{-4} + 0.837$(MAX1H)	56	49	0.11
Biochemical-oxygen demand, ultimate (carbonaceous)	12	$1.65\times10^{-2} + 1.47$(MAX1H)	60	41	.21
Cadmium, dissolved	19	$-1.06\times10^{-6} + 3.74\times10^{-5}$(TRAINA)	91	(1)	9.63×10^{-6}
Chromium, total recoverable	21	$3.58\times10^{-5} + 1.76\times10^{-3}$(TOTRUN)	54	92	1.09×10^{-4}
Iron, suspended recoverable	19	$5.90\times10^{-4} + 0.106$(MAXR15)	66	80	4.04×10^{-2}
Iron, total recoverable	21	$3.84\times10^{-4} + 0.107$(MAXR15)	66	81	3.86×10^{-2}
Lead, total recoverable	21	$-1.34\times10^{-4} + 4.15\times10^{-3}$(MAXR15)	57	110	1.35×10^{-3}
Lead, suspended recoverable	20	$-1.94\times10^{-4} + 4.17\times10^{-3}$(MAXR15)	59	105	1.36×10^{-3}
Zinc, suspended recoverable	20	$7.76\times10^{-5} + 2.05\times10^{-3}$(MAXR15)	55	22	1.09×10^{-3}
		Ninth West Conduit Basin			
Solids, dissolved, residue at 180°C	10	$0.385 + 9.54\times10^{-2}$(PEAKQ)	75	18	.63
Solids, suspended, residue at 105°C	10	$-5.26\times10^{-2} + 0.152$(PEAKQ) $+ 0.767$(MAXR5)	99	12	.59
Nitrogen, ammonia dissolved (as N)	9	$2.83\times10^{-4} + 9.45\times10^{-2}$(TOTRUN)	90	29	4.23×10^{-3}
Nitrogen, nitrate dissolved (as N)	9	$1.20\times10^{-3} + 1.27\times10^{-3}$(PEAKQ)	78	31	4.65×10^{-3}
Phosphorus, total (as P)	9	$3.47\times10^{-4} + 4.93\times10^{-2}$(TOTRUN)	91	26	2.43×10^{-3}
Phosphorus, dissolved (as P)	9	$2.65\times10^{-4} + 3.23\times10^{-2}$(TOTRUN)	87	29	1.63×10^{-3}
Carbon, organic suspended total	8	$-1.04\times10^{-3} + 6.56\times10^{-2}$(MAXR15)	97	18	1.67×10^{-2}
Cadmium, dissolved	9	$-1.56\times10^{-6} + 6.76\times10^{-5}$(MAX1H)	90	(1)	8.11×10^{-6}
Chromium, suspended recoverable	8	$8.32\times10^{-6} + 1.62\times10^{-3}$(TOTRUN)	92	(1)	7.26×10^{-5}
Chromium, total recoverable	8	$1.58\times10^{-5} + 2.09\times10^{-3}$(TOTRUN)	97	(1)	9.97×10^{-5}
Copper, total recoverable	10	$2.91\times10^{-5} + 6.44\times10^{-3}$(TOTRUN)	85	35	2.87×10^{-4}
Copper, suspended recoverable	8	$-4.09\times10^{-5} + 7.17\times10^{-5}$(TRAINA)	95	(1)	1.29×10^{-4}
Copper, dissolved	8	$-7.82\times10^{-6} + 3.80\times10^{-4}$(TRAINA)	86	(1)	1.16×10^{-4}
Iron, suspended recoverable	9	$9.53\times10^{-5} + 4.14\times10$(MAXR5)	97	17	1.34×10^{-2}
Iron, total recoverable	10	$4.32\times10^{-4} + 4.35\times10^{-2}$(MAXR5)	95	20	1.51×10^{-2}
Iron, dissolved	9	$7.94\times10^{-5} + 3.30\times10^{-7}$(NDRDO2) $+ 1.21\times10^{-4}$(PEAKQ)	89	23	4.32×10^{-4}
Lead, total recoverable	9	$3.34\times10^{-5} + 1.07\times10^{-2}$(TOTRUN) $+ 2.48\times10^{-3}$(MAXR5)	98	12	1.39×10^{-3}
Lead, suspended recoverable	8	$1.17\times10^{-4} + 2.82\times10^{-3}$(MAXR5)	98	13	1.09×10^{-3}
Lead, dissolved	8	$-4.81\times10^{-5} + 5.72\times10^{-4}$(TRAINA)	88	(1)	1.38×10^{-4}
Zinc, total recoverable	10	$5.72\times10^{-5} + 4.74\times10^{-4}$(PEAKQ)	94	21	1.27×10^{-3}
Zinc, suspended recoverable	9	$3.45\times10^{-5} + 2.31\times10^{-3}$(MAXR5)	94	26	7.73×10^{-4}
Zinc, dissolved	9	$8.84\times10^{-5} + 7.33\times10^{-3}$(TOTRUN)	73	31	3.19×10^{-4}

1 Owing to the small magnitude of the dependent variable, the value for the standard error of estimate is less than 1.

Little Cottonwood Creek at Jordan River.--Mean concentrations of storm runoff at the point of discharge to the Jordan River are given in table 35. Comparison with the mean concentrations of base flow in table 36 indicates the greatest changes in water quality resulting from storms are increases in the suspended and total constituents. The greatest increases are for suspended-solids concentrations (six times greater than the base-flow mean), total chromium (two times), total and suspended copper (four to seven times), suspended, total, and dissolved iron (five times), suspended and total lead (seven times), total and suspended zinc (three to four times), and sediment (two times).

Base-flow concentrations at this site generally are comparable if not slightly less than the average of base-flow concentrations for the study area (table 19). Mean concentrations of storm runoff for this site typically have fewer oxygen-demanding substances and nutrients, but more of the major dissolved ions.

Comparison of the mean concentrations of storm runoff with the Class 3A standards (table 31) indicates that the standards are exceeded for biochemical oxygen demand, dissolved phosphorus, dissolved cadmium, and total mercury.

Storm-runoff loads at this site are variable, although generally considerable. The mean of the suspended-solids load is 2.65 pounds per acre, and the mean of the suspended-sediments load is 5.74 pounds per acre.

Holladay Drain Basin

The Holladay Drain Basin, which is in the drainage basin of Big Cottonwood Creek, is a 4-square-mile area with 78 percent of residential land use (table 6). The basin and channel slopes are 474 and 264 feet per mile and the effective impervious area is 23 percent.

Storm-water quality in the principal storm conduit, Holladay Drain, was generally poor. Comparison of the mean concentrations for storm runoff (table 35) with the mean concentrations for base flow (table 36) showed large increases during storms for oxygen demands, suspended solids, nitrogen, phosphorus, cadmium, suspended copper, iron, lead, zinc, and sediment. The 10- to 20-fold increases in suspended solids and sediment may be a result of increased carrying capacity for suspended materials due to the considerable basin and channel slopes.

Mean concentrations during storm runoff for suspended constituents and sediment in the Holladay Drain Basin generally were greater than the means for all sites as a group. The means for most other substances were about equivalent. The mean concentrations during periods of base flow in the Holladay Drain Basin were slightly greater for suspended chromium and suspended copper and less for iron, lead, and sediments than the means for all base-flow samples (table 19).

Comparison of the mean concentrations of storm runoff with the Class 3A standards (table 31) indicated that the standards were exceeded for BOD_5, dissolved phosphorous, dissolved copper, and total mercury. Individual sample violations have been numerous for phosphorus, and several were recorded for dissolved copper.

Comparison of the storm-runoff loads (table 32) with the total loads (table 33) indicated that about one-half of the total load discharged to Big Cottonwood Creek during storms was urban-storm runoff. Thus, storm runoff doubled the load of constituents discharged to the creek. This condition was observed for eight storms where the average ratio of urban runoff to total runoff was about 70 percent.

One storm sample (table 35) was collected from Neffs Creek, a small stream that discharges to the Holladay Drain at Wasatch Boulevard. The discharge was 2.2 cubic feet per second and the water quality was poor. The sample contained a large amount of sediment, which appeared to be suspended bed and soil material as indicated by a large concentration of suspended iron. The sample also contained large concentrations of lead, suspended zinc, and suspended copper. If these concentrations are representative of typical storm conditions, any increase in discharge from this stream could increase the metal loads in the Holladay Drain.

Big Cottonwood Creek Basin

Big Cottonwood Creek Basin, which includes the Holladay Drain Basin, is the largest basin (17.5 square miles) considered in the urban study. It has a wide range of land use, but the largest category is medium-density residential (57 percent). Water-quality data were collected at the mouth of the canyon and at the point of discharge to the Jordan River below the conduit from the Big Cottonwood Wastewater-Treatment Plant.

Big Cottonwood Creek at canyon mouth.--The water quality of Big Cottonwood Creek as it leaves the canyon was similar to that of other streams that drain the Wasatch Range. The quality was good and considerably better than the mean water quality at all sites in the urban areas. Comparison of the mean concentrations for storm runoff (table 35) with the mean concentrations for base flow (table 36) indicated significant increases in sediment with only slight changes in other constituents. Comparison of the mean concentration of storm runoff with the Class 3A standards (table 31) indicated no problems. The total loads (table 34) at this site were also indicative of water of good quality.

Big Cottonwood Creek at Jordan River.--Mean concentrations of base-flow samples (table 36) for Big Cottonwood Creek at the Jordan River indicated the presence of constituents that are typical of sewage effluents. Base-flow concentrations compared to the average base-flow concentrations for the entire study area (table 19) as follows: BOD_5 (2 times), dissolved ammonia (10 times), phosphorus (3 to 7 times), and sediment and organic carbon (slightly more). Storm runoff reduced the concentrations of dissolved solids from that of base-flow conditions, and it diluted concentrations of nitrogen and phosphorus by about 50 percent. Concentrations of sediment and total and suspended metals such as chromium, copper, iron, lead, and zinc, however, were increased 2 to 10 times in the storm runoff. Comparison of the mean concentrations for base flow and storm runoff with the Class 3A standards (table 31) identified BOD_5, ammonia, dissolved phosphorus, and total mercury as problem constituents.

For most suspended constituents, the increase in load during a storm was disproportionate to the increase in flow. Urban runoff never exceeded 45 percent of the total runoff for the storms monitored at this site, but 60 to 90 percent of the total loads of suspended solids and suspended organic carbon generally were contributed by storm runoff (tables 32 and 33). This was particularly noticeable for total metals in the storm of September 5, 1981, when storm-runoff loads accounted for 50 to 90 percent of the total loads but storm runoff was only 45 percent of the total runoff.

Mill Creek Basin

The major land use in Mill Creek Basin is residential (about 63 percent), with an additional 17 percent devoted to commercial and industrial uses. The two sites monitored in the basin were at the canyon mouth and near the discharge point of the creek to the Jordan River.

Mill Creek at canyon mouth.--Mill Creek at canyon mouth is the upstream site where the creek enters the urban area. Water quality at this point was very good even during storms. Comparison of mean concentrations of storm runoff (table 35) with those of base flows (table 36) indicated that sediment, iron, and lead increased in concentration during storms. Comparison of the mean concentrations of storm runoff with Class 3A standards (table 31) identified only total mercury and dissolved cadmium as possible problem constituents. Total loads of dissolved and suspended constituents that entered the basin's urban area were very small in comparison with the total loads at the Jordan River.

Mill Creek at Jordan River.--Mean concentrations of sediment and suspended substances in storm water (table 35) at the discharge of Mill Creek to the Jordan River were considerably greater than the base-flow means (table 36). Concentrations of BOD_5, BOD_u, total and suspended copper, iron, lead, and zinc also were noticeably greater. Mean concentrations of those substances in the dissolved phase, however, were more similar to the base-flow means. The mean concentrations for storm runoff in Mill Creek generally were less than the combined means for the entire study area (table 20).

Comparison of the mean concentrations of storm runoff with the Class 3A standards (table 31) identified only BOD_5 and total mercury as problem constituents. The mean concentration of dissolved phosphorus was below the standard, although half of the individual samples were above the standard.

Urban-runoff loads for Mill Creek at the Jordan River are presented in table 32. Comparison of the storm loads with the total loads indicated that the storm runoff contributes 12 to 33 percent of the total runoff but nearly 100 percent of some suspended constituents. The loads of dissolved substances typically were more proportional to the storm discharge than are those of the suspended substances. For four storms, the storm-runoff loads of dissolved solids represented 12, 20, 7, and 24 percent of the total loads of dissolved solids (table 33). The corresponding storm runoff, however, represented 44, 34, 19, and 43 percent of the total runoff. Loads of suspended solids for those storms were 96, 63, 68, and 95 percent of the total loads.

Canal Sites

East Jordan Canal.--This canal, which receives water from the Jordan River at the Jordan Narrows, crosses Little Cottonwood Creek near 7200 South Street, and at 6200 South the water is pumped through a conduit to the Upper

Canal. Water from the East Jordan Canal may be diverted directly to Little Cottonwood Creek and indirectly to Big Cottonwood Creek through the Upper Canal. The canal-water quality during storms at Little Cottonwood Creek (table 35) was similar to quality at the pumphouse diversion (6200 South Street) to the Upper Canal (table 35). Compared to mean concentrations of storm runoff in Big and Little Cottonwood Creeks, the canal water had greater concentrations of total and dissolved solids and sediment. There would be a significant adverse effect on the stream-water quality only if large amounts of canal water were discharged to the streams during periods of low flow.

Upper Canal at 5800 South.--This upstream sampling site on the Upper Canal is at 5800 South Street, downstream from the pumped diversion of the East Jordan Canal to the Upper Canal. Water in the Upper Canal generally is diverted from Big Cottonwood Creek prior to the middle of July. After that time, considerable water is pumped to the Upper Canal from the East Jordan Canal at 6200 South Street. Comparison of the mean concentrations of storm runoff (table 35) with the means for baseline flow[1] (table 36) showed that the storm-runoff means were equivalent or slightly less than the baseline means. The small amount of data available indicated little storm-water impact on the canal at this site.

Upper Canal at Wilde Rose Lane.--This downstream sampling site is one-third of a mile upstream from the canal diversion to Mill Creek at 2000 East 3500 South. The water quality of storm runoff in the canal (table 35) typically was worse than that of the baseline flow (table 36) as follows: mean concentrations of BOD (2 to 4 times), suspended solids and ammonia (2 times), and total and suspended metals (2 to 10 times). The water-use classification for the canals is agricultural (Class 4) (table 31), but their discharge to streams such as Mill Creek could be evaluated using Class 3A standards. Comparison of the Class 3A standards with storm flow in the canal identified BOD_5, total mercury, and dissolved copper as exceeding the standards. Under baseline conditions, only total mercury exceeded the standards.

The impact of the canal water on Mill Creek, in the upper part of the urban basin, may be addressed by comparison of the mean quality of storm runoff of the canal and the creek (table 35). Canal water typically had greater oxygen demands, chloride, dissolved and suspended solids, nutrients, most trace metals, and sediment. The mean discharge of the canal at Wilde Rose Lane during the summer was less than 10 cubic feet per second, whereas Mill Creek at the canyon mouth typically averaged 10 to 30 cubic feet per second. The potential impact of urban-runoff loads from the Upper Canal on Mill Creek was evaluated using the urban loads for the canal (table 22) and the total loads of Mill Creek at canyon mouth (table 23). It is unlikely that the entire flow of the canal would be discharged to Mill Creek, but the additional loads contributed by the canal would be proportional to the volume

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[1]Baseline flow is discharge in a canal prior to and after local urban-storm runoff.

Table 22.--Total loads of storm-runoff constituents for urban-basin storms at stations at Upper Canal at Wilde Rose Lane and Jordan and Salt Lake City Canal at Zenith Avenue

[Loads are in pounds. Zero indicates a value of zero or less than $1x10^{-6}$. Dash (—) indicates no data.]

Upper Canal at Wilde Rose Lane (10167125)

Storm date	Chemical oxygen demand	Biochemical oxygen demand, 5-day, carbonaceous	Biochemical oxygen demand, ultimate, carbonaceous	Chloride, dissolved	Fluoride, dissolved	Solids residue at 180°C dissolved	Solids residue at 105°C, suspended	Nitrogen, nitrate dissolved as N
May 10, 1981	480	45	130	160	—	1,300	1,500	4.0
20	600	69	100	300	—	2,600	3,900	5.0
Sept. 5	2,400	180	1,400	2,300	—	8,300	5,100	6.1

Storm date	Nitrogen, ammonia dissolved as N	Nitrogen, ammonia + organic, total as N	Phosphorus, total as P	Phosphorus, dissolved as P	Carbon, organic suspended total	Carbon, organic dissolved	Sediment, suspended	Cadmium, total
May 10, 1981	1.2	13	3.1	0.67	28	120	—	—
20	2.2	27	3.5	1.0	12	120	—	—
Sept. 5	1.0	61	12	1.4	130	230	—	—

Storm date	Cadmium, suspended	Cadmium, dissolved	Chromium, total recoverable	Chromium, suspended recoverable	Chromium, dissolved	Copper, total recoverable	Copper, suspended recoverable	Copper, dissolved
May 10, 1981	—	0.013	0.13	0.13	0	0.21	0.16	0.05
20	—	.025	.25	.25	0	.30	.20	.10
Sept. 5	—	.015	.15	.12	.031	.91	.85	.06

Storm date	Iron, total recoverable	Iron, suspended recoverable	Iron, dissolved	Lead, total recoverable	Lead, suspended recoverable	Lead, dissolved	Mercury, total recoverable	Mercury, suspended recoverable
May 10, 1981	41	40	0.80	0.51	0.31	0.20	0	0
20	40	37	2.0	.52	.42	.10	.0025	.0025
Sept. 5	150	150	1.2	4.1	4.0	.09	.0030	.0030

Storm date	Mercury, dissolved	Zinc, total recoverable	Zinc, suspended recoverable	Zinc, dissolved
May 10, 1981	0	0.80	0.54	0.27
20	0	.75	.25	.50
Sept. 5	0	4.9	4.7	.23

Table 22.--Total loads of storm-runoff constituents for urban-basin storms at stations at Upper Canal at Wilde Rose Lane and Jordan and Salt Lake City Canal at Zenith Avenue--Continued

Jordan and Salt Lake City Canal at Zenith Avenue (10167149)

Storm date	Chemical oxygen demand	Biochemical oxygen demand, 5-day, carbonaceous	Biochemical oxygen demand, ultimate, carbonaceous	Chloride, dissolved	Fluoride, dissolved	Solids residue at 180°C dissolved	Solids residue at 105°C, suspended	Nitrogen, nitrate dissolved as N
May 10, 1981	490	54	130	1,800	--	7,300	970	4.6
20	25	28	54	1,100	--	5,600	270	3.2

Storm date	Nitrogen, ammonia dissolved as N	Nitrogen, ammonia + organic, total as N	Phosphorus, total as P	Phosphorus, dissolved as P	Carbon, organic suspended total	Carbon, organic dissolved	Sediment, suspended	Cadmium, total
May 10, 1981	1.2	19	2.4	0.82	27	470	--	--
20	.78	8.7	1.3	.65	6.5	140	--	--

Storm date	Cadmium, suspended	Cadmium, dissolved	Chromium, total recoverable	Chromium, suspended recoverable	Chromium, dissolved	Copper, total recoverable	Copper, suspended recoverable	Copper, dissolved
May 10, 1981	--	0.012	0	0	0	0.09	0.047	0.047
20	--	.013	.13	.13	0	.12	.065	.052

Storm date	Iron, total recoverable	Iron, suspended recoverable	Iron, dissolved	Lead, total recoverable	Lead, suspended recoverable	Lead, dissolved	Mercury, total recoverable	Mercury, suspended recoverable
May 10, 1981	16	16	0.23	0.41	0.22	0.19	0	0
20	8	7	.91	.23	.16	.078	.0026	.00026

Storm date	Mercury, dissolved	Zinc, total recoverable	Zinc, suspended recoverable	Zinc, dissolved
May 10, 1981	0	0.70	0.58	0.12
20	0	.39	.26	.13

Table 23.--Total loads of storm-runoff constituents for urban-basin storms at three canyon-mouth stations

[Loads are in pounds. Zero indicates a value of zero or less than $1x10^{-6}$. Dash (--) indicates no data.]

Little Cottonwood Creek at canyon mouth (channel only) (10167499)

Storm date	Chemical oxygen demand	Biochemical oxygen demand, 5-day, carbonaceous	Biochemical oxygen demand, ultimate, carbonaceous	Chloride, dissolved	Fluoride, dissolved	Solids residue at 180°C dissolved	Solids residue at 105°C, suspended	Nitrogen, nitrate dissolved as N
Oct. 26, 1980	18	--	--	63	0.79	460	13	1.1
Mar. 26, 1981	27	8	14	95	--	920	9	3.6
May 10	1,500	210	440	1,200	--	9,100	2,300	19
20	3,800	430	870	3,500	--	27,000	0	54
Sept. 5	80	3	8	43	--	320	140	1.1

Storm date	Nitrogen, ammonia dissolved as N	Nitrogen, ammonia + organic, total as N	Phosphorus, total as P	Phosphorus, dissolved as P	Carbon, organic suspended total	Carbon, organic dissolved	Sediment, suspended	Cadmium, total
Oct. 26, 1980	0.13	1.4	0.23	0.13	0.53	14	--	0.0026
Mar. 26, 1981	.50	1.8	.22	.09	.91	7	--	--
May 10	7.1	57	5.30	2.6	53	380	--	--
20	32	140	11	5.4	--	760	--	--
Sept. 5	.24	1.5	.16	.05	.93	4	--	--

Storm date	Cadmium, suspended	Cadmium, dissolved	Chromium, total recoverable	Chromium, suspended recoverable	Chromium, dissolved	Copper, total recoverable	Copper, suspended recoverable	Copper, dissolved
Oct. 26, 1980	--	0.002	0.01	--	--	0.018	--	0.026
Mar. 26, 1981	--	.004	.04	0.04	0	.036	0.018	.018
May 10	--	.088	.88	.88	0	2.6	2.0	.62
20	--	.27	2.7	2.7	0	4.1	1.9	2.2
Sept. 5	--	.001	0	0	.0037	.029	.013	.016

Storm date	Iron, total recoverable	Iron, suspended recoverable	Iron, dissolved	Lead, total recoverable	Lead, suspended recoverable	Lead, dissolved	Mercury, total recoverable	Mercury, suspended recoverable
Oct. 26, 1980	--	--	0.08	0.018	--	0.026	--	--
Mar. 26, 1981	2	2	.18	.036	0.03	0	0.0004	0.0004
May 10	78	76	1.8	2.6	1.3	1.2	.0088	.0088
20	43	37	5.4	2.4	1.3	1.1	.027	.027
Sept. 5	3	3	.09	.044	.03	.005	0	0

Storm date	Mercury, dissolved	Zinc, total recoverable	Zinc, suspended recoverable	Zinc, dissolved
Oct. 26, 1980	--	0.15	0.05	0.09
Mar. 26, 1981	0	.22	.04	.18
May 10	0	8.8	4.4	4.4
20	0	16	0	16
Sept. 5	0	.16	.13	.04

Table 23.—Total loads of storm-runoff constituents for urban-basin storms at three canyon-mouth stations--Continued

Big Cottonwood Creek at canyon mouth (channel only) (10168499)

Constituents

Storm date	Chemical oxygen demand	Biochemical oxygen demand, 5-day, carbonaceous	Biochemical oxygen demand, ultimate, carbonaceous	Chloride, dissolved	Fluoride, dissolved	Solids residue at 180°C dissolved	Solids residue at 105°C, suspended	Nitrogen, nitrate dissolved as N
Aug. 19, 1980	3,400	—	—	400	12	10,000	0	3.6
Oct. 26	330	—	—	740	13	14,000	400	8.0
Mar. 26, 1981	330	95	400	1,200	—	9,800	0	14
May 10	3,400	250	590	3,600	—	24,000	2,100	42
20	5,800	360	1,400	2,100	—	37,000	1,100	43
Sept. 5	1,000	52	270	270	—	7,500	1,400	5.2

Storm date	Nitrogen, ammonia dissolved as N	Nitrogen, ammonia + organic, total as N	Phosphorus, total as P	Phosphorus, dissolved as P	Carbon, organic suspended total	Carbon, organic dissolved	Sediment, suspended	Cadmium, total
Aug. 19, 1980	0	18	0.6	0	18	139	—	0
Oct. 26	2.6	80	3.3	2.6	13	114	—	0
Mar. 26, 1981	3.8	32	.9	.4	0	71	—	—
May 10	25.3	140	10	8.4	—	1,300	—	—
20	29	330	14	7.2	—	2,200	—	—
Sept. 5	3.5	43	1.7	.4	52	79	—	—

Storm date	Cadmium, suspended	Cadmium, dissolved	Chromium, total recoverable	Chromium, suspended recoverable	Chromium, dissolved	Copper, total recoverable	Copper, suspended recoverable	Copper, dissolved
Aug. 19, 1980	—	0.060	0.36	—	—	0.48	—	0.60
Oct. 26	0	.067	.13	—	—	.33	—	.67
Mar. 26, 1981	—	.047	.47	0.47	0	.09	0	.09
May 10	—	.21	0	0	0	1.0	.42	.63
20	—	.36	3.6	3.6	0	2.2	1.4	.72
Sept. 5	—	.043	0	0	0	.65	.57	.08

Storm date	Iron, total recoverable	Iron, suspended recoverable	Iron, dissolved	Lead, total recoverable	Lead, suspended recoverable	Lead, dissolved	Mercury, total recoverable	Mercury, suspended recoverable
Aug. 19, 1980	—	—	0.60	0.48	—	0.60	—	—
Oct. 26	—	—	.80	0	—	.67	—	—
Mar. 26, 1981	3	2	.95	0	0	0	0	0
May 10	71	63	8.4	2.1	0	3.4	0	0
20	65	50	14	1.4	0	1.4	.072	.072
Sept. 5	43	43	.52	.96	.87	.08	0	0

Storm date	Mercury, dissolved	Zinc, total recoverable	Zinc, suspended recoverable	Zinc, dissolved
Aug. 19, 1980	—	3.0	2.4	0.60
Oct. 26	—	1.3	.6	.47
Mar. 26, 1981	0	.9	.4	.47
May 10	0	4.2	2.1	1.9
20	0	3.6	0	7.2
Sept. 5	0	1.3	.4	.70

Table 23.--Total loads of storm-runoff constituents for urban-basin storms at three canyon-mouth stations--Continued

Mill Creek at canyon mouth (channel only) (10169999)

Storm date	Chemical oxygen demand	Biochemical oxygen demand, 5-day, carbonaceous	Biochemical oxygen demand, ultimate, carbonaceous	Chloride, dissolved	Fluoride, dissolved	Solids residue at 180°C dissolved	Solids residue at 105°C, suspended	Nitrogen, nitrate dissolved as N
July 1, 1980	—	—	—	410	9.7	—	3,400	9.2
Aug. 25	230	—	—	230	4.1	7,400	750	3.9
Mar. 26, 1981	330	—	—	880	—	19,000	110	8.8
May 10	1,100	—	—	300	—	11,000	2,800	6.4
20	250	—	—	180	—	13,000	960	5.0
Sept. 5	1,300	57	150	200	—	8,100	3,100	7.2

Storm date	Nitrogen, ammonia dissolved as N	Nitrogen, ammonia + organic, total as N	Phosphorus, total as P	Phosphorus, dissolved as P	Carbon, organic suspended total	Carbon, organic dissolved	Sediment, suspended	Cadmium, total
July 1, 1980	0.9	53	10	0.48	—	120	—	0
Aug. 25	0	9	2.5	.83	20	140	—	0
Mar. 26, 1981	7.7	30	1.6	1.1	22	350	—	—
May 10	2.7	47	8.4	2.0	—	180	—	—
20	2.5	34	4.6	1.2	33	360	—	—
Sept. 5	1.5	26	5.2	.66	110	61	—	—

Storm date	Cadmium, suspended	Cadmium, dissolved	Chromium, total recoverable	Chromium, suspended recoverable	Chromium, dissolved	Copper, total recoverable	Copper, suspended recoverable	Copper, dissolved
July 1, 1980	—	0.048	0	—	—	0.82	—	0.48
Aug. 25	—	.020	.14	—	—	.14	—	.20
Mar. 26, 1981	—	.055	1.6	1.6	0	.22	0.11	.11
May 10	—	.033	.33	.33	0	.16	.10	.06
20	—	.041	.41	.41	0	.16	.16	0
Sept. 5	—	.022	.22	.13	.088	.28	.19	.08

Storm date	Iron, total recoverable	Iron, suspended recoverable	Iron, dissolved	Lead, total recoverable	Lead, suspended recoverable	Lead, dissolved	Mercury, total recoverable	Mercury, suspended recoverable
July 1, 1980	—	—	0.48	0.68	—	0.63	—	—
Aug. 25	—	—	.20	.20	—	.20	—	—
Mar. 26, 1981	3	3.3	.55	.77	0.71	.05	0.0055	0.0055
May 10	47	—	.33	.54	.10	.44	.0033	.0033
20	15	—	.41	.25	.16	.08	.0041	.0041
Sept. 5	46	—	.22	.35	.13	.22	0	0

Storm date	Mercury, dissolved	Zinc, total recoverable	Zinc, suspended recoverable	Zinc, dissolved
July 1, 1980	—	3.8	—	0.14
Aug. 25	—	.8	0.83	.08
Mar. 26, 1981	0	5.5	4.9	.33
May 10	0	1.0	.67	.20
20	0	.4	.29	.12
Sept. 5	0	1.1	.88	.17

of canal water added to the creek. During the two May 1981 storms, canal loads typically were less than the total loads in Mill Creek. The most notable exception was for total suspended solids, which was three times greater in the canal for the May 20 storm. During the September 1981 storm, the canal loads contained slightly more trace metals. The three storms resulted from approximately equal amounts of rainfall, and the explanation for these storm-related differences is not known.

Jordan and Salt Lake City Canal.--This canal enters an underground conduit at Zenith Avenue which eventually discharges, at times, an unknown part of its flow to the Thirteenth South storm drains. Water quality during storms (table 35) generally was similar to baseline quality (table 36), but storm-runoff water had slightly more oxygen-demanding substances, more total suspended solids, and more total and suspended metals. The storm water had somewhat less dissolved chloride and dissolved solids. Comparison of the mean concentrations of the storm runoff with the Class 3A standards (table 31) identified only dissolved phosphorus and total mercury as potential problems. The baseline means for the same constituents also exceeded the standards. Urban runoff generally constituted the entire canal discharge during nonirrigation periods (table 8).

Diversion structures exist for the discharge of water from the Jordan and Salt Lake City Canal to Little Cottonwood, Big Cottonwood, and Mill Creeks. Canal discharge of storm runoff to Little Cottonwood Creek during the summer was of poorer quality than that of the storm runoff in the creek (table 35). Total loads in the creek at the canyon mouth (table 23) typically were many times greater than the storm-runoff loads in the canal at Zenith Avenue (table 22). This was due to the large discharge of the creek compared to the canal. As long as the creek discharge remained considerably greater than the canal discharge, addition of canal water to Little Cottonwood Creek did not result in a deterioration in the quality of the creek water.

The impact of discharge from the Jordan and Salt Lake City Canal on Big Cottonwood Creek was assessed by comparison of the mean quality of storm runoff in the canal at the station upstream from Big Cottonwood Creek at Little Cottonwood Creek and at the station on Big Cottonwood Creek at the canyon mouth (table 35). The small amount of data for the canal showed water that is uniformly of poorer quality than the water in the creek, but there were no violations of the Class 3A standards that were applicable for Big Cottonwood Creek (table 31). Owing to the generally large storm runoff in Big Cottonwood Creek, total loads upstream from the canal (table 23) were consistently greater than the canal loads at Zenith Avenue (table 22). It would require considerably more water than is present in the canal to cause a significant increase in loads in Big Cottonwood Creek.

During the summer, when there was little flow in Big Cottonwood Creek below the canyon mouth, the water quality in the creek was affected by water from the Jordan and Salt Lake City Canal which was discharged to Big Cottonwood Creek. Under baseline-flow conditions, the mean quality of the water in the Jordan and Salt Lake City Canal at Zenith Avenue (table 36) was considerably poorer than the mean quality of the water in Big Cottonwood Creek as it left the canyon. The canal water contained more dissolved solids, sediment, oxygen-demanding substances, and most metals. The mean concentrations in baseline-flow samples for the canal, however, exceeded the Class 3A standards only for total mercury and dissolved phosphorus.

Comparison of the mean concentrations in storm runoff in the canal at Zenith Avenue and in Mill Creek (table 35) showed that the canal contained water of much poorer quality with greater oxygen demands and nutrient concentrations. Under baseline conditions, the water in the canal contained much higher concentrations of sediment and suspended substances. Comparison of the storm-runoff loads in the canal at Zenith Avenue (table 22) with the total loads in Mill Creek at the canyon mouth (table 23) indicated that the storm-runoff loads in the canal generally were less for all constituents than the total loads in the creek. This is so because the canal discharge was considerably less than that in Mill Creek. An exception was chloride, which was slightly greater in the canal water. The discharge of poorer quality water during storms from the canal to Mill Creek did not have a serious impact on the water quality in the creek as long as the quantity of canal water remained small in relation to the discharge in the creek.

Twenty-First South Conduit Basin

This basin has the highest percentage of industrial-land use in the study (32 percent) and 47 percent of the area is classed as effective impervious surfaces. The Twenty-First South Conduit carries storm water as well as the discharge from the South Salt Lake Wastewater-Treatment Plant to the Jordan River. A base flow of 2 to 6 cubic feet per second usually discharges from the treatment plant.

The impact of the discharge of the wastewater-treatment plant on the water quality of the base flow was evident when the mean concentrations of constituents of flow in the conduit (table 36) were compared with the corresponding means for samples of all base flow in the study area (table 19). The water in the conduit had considerably greater specific conductance, BOD_5, and nutrients. The mean concentration of nitrate in water in the conduit was four times the mean of the corresponding base flows and phosphorus was five to eight times greater. Means for COD, sediment, and most of the suspended and total metals were less for water in the conduit than for the combined base-flow means. Comparison of the mean concentrations in storm runoff (table 35) with the mean concentrations of base flow for the conduit (table 36) indicated that urban-storm runoff diluted the nitrogen and phosphorus present in large concentrations in the base flows. Storm runoff, however, did increase the mean concentration of iron, lead, zinc, sediment, and oxygen-demanding substances. Comparison of the discharge in the conduit with the Class 3B standards for the Jordan River as the receiving water (table 31) indicated that the mean concentrations in base flow and storm runoff of BOD_5, dissolved phosphorus, dissolved copper, and total mercury exceeded the standards.

The dilution of nutrient concentrations by storm runoff is evident in the compilation of urban-runoff loads (table 32). Sufficient base-flow information necessary to calculate a storm load was available for only three storms. Projection of the base-flow load for the duration of the storm resulted in a load that was in excess of the measured storm load for dissolved phosphorus in all three storms and total phosphorus in two of the storms. Large total loads (table 33) of oxygen-demanding substances, solids, nutrients, and trace metals were discharged to the Jordan River by this conduit.

Thirteenth South Conduits Basin

Two conduits in this basin drain part of Salt Lake City and carry water from Parleys, Emigration, and Red Butte Creeks. The conduits discharge to the Jordan River at Thirteenth South Street.

Parleys Creek at Suicide Rock.--The water quality at this site was affected by storm runoff from Interstate Highway 80, which parallels the creek in Parleys Canyon. Concentrations of most constituents (table 35) increase during storms, and water quality was adversely affected compared to base-flow conditions (table 36). Oxygen-demanding substances increased, as did most suspended substances and sediment. Mean concentrations of all phases of chromium, copper, and zinc exceeded the concentrations in the base flow. Concentrations of total lead, iron, and suspended organic carbon exceeded the base-flow concentrations by 10 times and concentrations of zinc exceeded them by 5 to 15 times. Base-flow concentrations in Parleys Creek (table 36) typically were smaller than those for the mean concentrations of base flow for all urban stations (table 19). Comparison of the mean concentrations of storm runoff with the Class 3C standards (table 31) identified only total mercury as a possible problem. Individual water samples from Parleys Creek have exceeded the phosphorus standard three times, the copper standard once, and the total mercury standard twice. Total loads, expressed as pounds per acre (table 34), were small for most constituents and consisted primarily of dissolved solids.

Emigration Creek at canyon mouth.--The chemical quality of water at this site was good. The only significant differences between mean concentrations for storm runoff (table 35) and base flow (table 36) are for dissolved lead and copper, which were greater in the storm samples, and sediment concentration, which was several times greater in the base-flow samples. Comparison of the mean concentrations of constituents in storm runoff with the means for the storm-runoff data for all urban stations (table 20) showed that the water in Emigration Creek generally was of better quality, resembling the means for typical base flows in the entire urban area. Comparing the storm-runoff means for Emigration Creek to Class 3A standards (table 31) indicated that the only problem was with total mercury. The standard of 0.00005 milligram per liter for total mercury is near the analytical detection limits; thus, care must be used in the interpretation of concentrations near the violation level. Total loads (table 34) calculated for this creek were very small.

Red Butte Creek below reservoir.--The stream above this site flows in a watershed closed to public use, and water quality in the stream was always good. The storm-runoff means in table 35 did not appear to be significantly different from the base-flow means in table 36. Comparison of the Class 3A standards (table 31) with the storm-runoff means indicated that only dissolved copper was a problem. It exceeded the standards on four occasions. The total load contributed by Red Butte Creek to the Thirteenth South Conduits was very small.

Thirteenth South Conduits at Jordan River.--Owing to the method of construction of the Thirteenth South Conduits, some mixing of water can occur during periods of high flow. Data were collected for both conduits, therefore, but basin and storm characteristics were calculated based on a combined flow. Loads were calculated for each storm in each conduit and were summed to provide a total load and a storm-runoff load, from which the base-flow load was subtracted.

Comparison of the mean concentrations of storm runoff (table 35) indicated that the quality of runoff in each conduit was similar. Comparison of the mean concentrations of base flow (table 36) indicated some differences. The North Conduit typically had greater concentrations of sediment and suspended and total phases of most constituents. These differences were believed to be due to the lack of mixing in the junction box near State Street where the combined flows of Red Butte and Emigration Creeks joined from the north with the flow from Parleys Creek from the south. The box was constructed so that at low-flow conditions, flows mixed only slightly before entering the north and south conduits, which then discharged to the Jordan River. In the South Conduit, mean concentrations of base flow were greater than mean concentrations of storm runoff for 19 of 34 constituents. The same was true for the base flows in the north conduit compared to storm runoff. This indicated that storm runoff diluted the concentration of many constituents present in the base flow. The large concentrations of constituents in the base flows was evident when compared to base-flow means for all urban stations (table 19). The water in the Thirteenth South Conduits had considerably more oxygen-demanding substances, suspended and dissolved solids, and trace metals. Mean concentrations of total lead were two to six times greater and total zinc was three to four times greater.

The Thirteenth South Conduits discharged to the Jordan River, thus it was possible to evaluate the discharge using Class 3B standards for aquatic wildlife (table 31). Under mean conditions of base flow, the water in both conduits exceeded standards for BOD_5, dissolved phosphorus, dissolved cadmium, and total mercury. Under storm conditions, standards were exceeded for BOD_5, dissolved phosphorus, dissolved cadmium, total mercury, and total zinc.

Urban-runoff loads in the Thirteenth South Conduits for the discharge from five storms are presented in table 32 after subtracting base-flow loads. Several of the storm loads reported were near zero, reflecting the large concentration of constituents in the base-flow samples. This was most evident for the May 10, 1981 storm.

The total load for the combined Thirteenth South Conduits is presented in table 33. These loads, which represent the actual quantity of material discharged to the Jordan River by the conduits, include a substantial base-flow load and the urban-runoff load. Only a fraction of the total load for the Thirteenth South Conduits was attributed to the combined loads of Parleys, Emigration, and Red Butte Creeks as they left the canyons. Urban runoff and canal discharge that entered these streams and the Thirteenth South Conduits as they passed through Salt Lake City provided most of the total load discharged to the Jordan River.

Eighth South, South Conduit Basin

This basin consists of 0.1 square mile that is all interstate highway (100 percent transporation land use). One-half of the total contributing area is impervious. The overall water quality of storm runoff in this conduit was slightly better than that in the Eighth South, Middle and North Conduits. Trace metals (chromium, copper, lead, and zinc) associated with commercial and industrial land use, were somewhat less concentrated here than in the North and Middle Conduits, as also were concentrations of sediment, solids, and oxygen-demanding substances. Mean concentrations of most constituents in the South Conduit were more similar to the storm-runoff means for all urban stations (table 20) than to the means for the Middle and North Conduits. Comparison of the storm-runoff means with the Class 3A standards (table 31) showed problems for BOD_5, dissolved phosphorus, total mercury, and ammonia. Despite the extensive use of vehicles in the basin, concentrations of metals such as lead, cadmium, and chromium did not exceed the standards.

Storm-runoff loads from the south conduit are presented in table 32. Most loads (particularly for COD, chloride, and dissolved and suspended solids) were large relative to those from the other urban basins. This resulted from the runoff of rainfall from an area where considerable pavement was separated by grassland medians, all of which was well drained to the Eighth South, South Conduit.

Eighth South, Middle Conduit Basin

The Middle Conduit drains 2.3 square miles of the commercial heart of Salt Lake City. It also includes many older neighborhoods (22 percent medium-density population), and it has a relatively high percentage of impervious area (44 percent).

Comparison of the mean concentrations of storm runoff (table 35) with comparative data for all urban-storm samples (table 20) indicated that there were large concentrations of all constituents at this site. Mean concentrations for the Middle Conduit were larger than the means for all storm samples for every constituent except dissolved chromium, suspended copper, and dissolved organic carbon. Suspended solids and sediment concentrations were always large.

Comparison of the storm-runoff means for the Eighth South, Middle Conduit Basin, with the Class 3B standards (table 31) emphasized the poor quality of this storm water. The standards were exceeded for BOD_5 (two times) phosphorus (six times), cadmium, copper, zinc, and total mercury (as much as five times), and ammonia. Every sample analyzed for phosphorus exceeded the standard, and all but one sample exceeded the standard for total mercury.

The urban-runoff loads given in table 32 indicate that solids, sediment, and suspended and total metals were usually greater in spring and September storms. These were storms of considerable runoff but not of greatest rainfall. The loads from the Middle Conduit were typically less than those from the North or South Conduits.

Eighth South, North Conduit Basin

The North Conduit drains 0.8 square mile, which is mostly in commercial (48 percent), industrial (21 percent), and residential (17 percent) use. It has the greatest percentage of impervious area (70 percent) of all the urban basins. Water quality in this basin reflected the commercial and industrial land uses. Mean concentrations in storm runoff (table 35) of all phases of lead were 6 to 10 times the mean concentrations of base flow (table 36) and approximately twice the mean concentrations in storm samples for all urban stations (table 20). Other constituents that exceeded the mean concentrations for all urban stations were total cadmium (two times), all phases of chromium (five times), and total mercury (two times). Concentrations of nutrients, although slightly greater, were not as significant as were the concentrations of trace metals. Ratios of dissolved to suspended constituents were somewhat larger for this site than the means for most storm samples. This probably was due to the small channel slope (9 feet per mile) for this conduit.

Comparison of the storm-runoff means for the Eighth South, North Conduit Basin, with Class 3B standards (table 31) shows that several constituents exceeded the standards. Dissolved phosphorus was 10 times the standard, BOD_5 was more than the standard, total mercury was considerably more than the standard, and zinc and copper exceeded the standards.

Large loads of metals were discharged to the Jordan River during a storm, particularly of total chromium, copper (mean of each was about 2×10^{-3} pounds per acre) and zinc (9×10^{-3} pounds per acre). The only other basin with comparably large loads was the Eighth South, South Conduit. The loads of sediment, suspended solids, and COD that were discharged from the Eighth South, North Conduit Basin were considerably greater than storm discharges from other urban basins.

North Temple Conduit Basin

The major land uses in this basin are residential housing (42 percent), idle land (30 percent), and parkland (10 percent). The two sites monitored in the basin were at the mouth of City Creek canyon and at the discharge of the North Temple Conduit to the Jordan River.

<u>City Creek at Memory Park</u>.--The quality of the base flow of City Creek was good (table 36), and the mean concentrations for most constituents generally were less than the combined means for all base flows in the study area. Comparison of the storm-runoff means (table 35) with base-flow means suggested that suspended solids and sediment were the principal substances of concern in the storm runoff. Concentrations of suspended iron associated with sediment, which originates from hillside erosion near the mouth of the canyon, were 40 times that of the base flow. Concentrations of total and suspended lead, zinc, and copper were also from two to eight times those in the base flow, and they may have resulted from local road drainage into the creek. Total loads (table 34) at this site were small, approaching zero for many of the trace metals; thus the water from City Creek acted as a diluent to other poorer quality water that entered the North Temple Conduit.

<u>North Temple Conduit at Jordan River</u>.--Mean concentrations for storm runoff at the North Temple Conduit as it discharges to the Jordan River were considerably greater (table 35) than the corresponding mean concentrations for

base flow (table 36). Concentrations of oxygen-demanding substances were 5 times as great, suspended solids, sediment, and suspended organic carbon were 10 times as great, and concentrations of suspended and total trace metals vary from 4 times as great for chromium to 1,300 times for suspended iron. The mean concentrations of storm runoff for sediment and total and suspended metals were considerably greater than storm-runoff means for the entire urban area. Mean concentrations of base flow at the North Temple Conduit typically were less than the mean concentrations for all base flows in the study area (table 19) for most constituents, including sediment and metals.

The base-flow concentrations at this site generally were less than the Class 3C standards that are applicable for the Jordan River in this reach (table 31). The mean concentrations during storm runoff, however, exceeded the standards for BOD_5 and dissolved copper. One-half of the storm samples had concentrations of suspended iron in excess of 10,000 micrograms per liter. The source of the iron was suspended soil particles carried in City Creek.

Storm runoff loads and total loads are presented in tables 32 and 33. Storm runoff typically accounted for 80 to 95 percent of the total load of most constituents and 20 to 89 percent of the total discharge. For several of the suspended constituents, nearly 100 percent of the total load was due to the storm runoff alone.

Ninth West Conduit Basin

The Ninth West Conduit Basin drains 0.23 square mile of the northern part of the Salt Lake Valley. The land use primarily is medium-density residential (52 percent), but about one-quarter of the basin is commercial land. The storm runoff from this basin (based on samples obtained from August to November 1981) typically had large concentrations of dissolved organic carbon, with a mean of 51 milligrams per liter (table 35). This was nearly four times the mean concentration found in storm runoff in the other basins. A result of this large organic content was that the BOD_5 and COD averaged three times that observed in storm samples from the other urban basins. The dissolved phase of most constituents exceeded the suspended phase. Ratios of dissolved to suspended constituents were considerably larger than the combined means of storm samples from all urban stations (table 20). Means for sediment and total suspended solids were considerably less than the means for base-flow samples at other sites (table 19). Storm samples from the Ninth West Conduit contained large quantities of fine black sediment, which yielded a tea-colored filtrate. The intensity of color in this filtrate was used as a guide to the degree of dilution needed for BOD testing.

The flows from the Ninth West Conduit discharge to the Oil Drain (pl. 1), which eventually discharges to the Jordan River. Comparison of the State Class 3 water-quality standards (table 31) to the conduit discharge indicated that the BOD_5 consistently exceeded the standard and dissolved phosphorus generally exceeded the standard. These constituents are indicators of organic pollution which could have considerable impact on a receiving water. Concentrations of total mercury exceeded the standard three times, dissolved zinc exceeded the standard twice, dissolved copper exceeded the standard once, and dissolved cadmium always exceeded the Class 3A standard but never exceeded the 3B standard. Concentrations of total lead were large in comparison with other sites, but they never exceeded the standard.

The urban-runoff loads in table 32 indicated that there were considerable variations in runoff and loads during the sampling period. Loads for trace metals typically were small. The mean load (0.63 pound per acre) of dissolved solids was greater than the mean load (0.43 pound per acre) of suspended solids, again indicating that the dissolved phase of most substances exceeded the suspended phase. Loads of dissolved organic carbon also were consistently greater than the loads of suspended organic carbon.

Regressions of the constituent loads for storm runoff against storm-precipitation and runoff characteristics produced many significant relationships (table 21). Runoff-oriented variables, which appeared to be more important than rainfall variables in the load relationships, were the only independent variables in 11 of 22 equations. Rainfall variables were the only independent variables in eight of the equations. Independent variables associated with volume of runoff (total runoff and peak discharge) and rainfall intensity (maximum 5-minute rainfall) appeared to be quite significant in predicting storm-runoff loads in the Ninth West Conduit.

Analysis of Combined Data for Storm Loads

Multiple-regression analysis was applied to the combined data for storm-runoff loads from the urban basins in an effort to identify basin and storm characteristics which could be used to predict storm-runoff loads in the Salt Lake Valley. Storm-runoff loads for the following basins were used in the analysis: Bells Canyon Conduit, Little Cottonwood Creek, Holladay Drain, Big Cottonwood Creek, Mill Creek, Twenty-First South Conduit, Thirteenth South Conduits, Eighth South, Middle and North Conduits, North Temple Conduit, and Ninth West Conduit. A total of 84 storm-load observations were available for analysis.

The load data as dependent variables, were regressed against the basin characteristics (table 6), as the independent variables. Land-use variables for lakes, stockyards, and zoos were deleted owing to the large number of zero values for these variables. Very poor relationships were found for all dependent-variable loads, with R-square x 100 values less than 30 percent for three or four variable equations. The only potentially usable equation, although R-square x 100 was less than 50 percent, was for dissolved solids, with effective impervious area as the independent variable. The form of the relationship is:

$$\text{Dissolved solids} = -1.08 + 7.71(\text{EAREA})$$

where dissolved solids are in pounds per acre and EAREA is the percentage of the basin area that is impervious and connected to the storm-drain system. The relationship had an R-square x 100 of 41 percent with 74 observations.

The impervious aspect of land use was reported by Characklis and others (1978, p. 692) to be an important independent variable in predicting storm loads for areas near Houston, Tex. There was an abrupt increase in total loads for phosphorus, nitrogen, suspended solids, and COD when the impervious area reached 40 to 50 percent in the Houston study. Griffin and others (1980,

p. 787) also noted a significant increase in storm loading as the percentage of impervious area increased within a basin. Urban-runoff loads in Portland, Ore. were found to be less dependent on basin characteristics than on storm characteristics (Miller and McKenzie, 1978, p. 44). Impervious area was noted as a significant variable in the load regressions only for total-suspended and total-dissolved solids in the Portland study.

Storm loads also were regressed against storm characteristics (table 24) for data from the basins. Although the R-square x 100 values were less than 50 percent, several relationships that appeared promising were plotted for verification. This screening produced only one potentially usable relationship:

$$\text{Dissolved cadmium} = 1.46 \times 10^{-6} + 1.95 \times 10^{-4}(\text{TOTRUN})$$

where dissolved cadmium is in pounds per acre and TOTRUN is total urban runoff, in inches, over the basin. The relationship had an R-square x 100 of 45 percent with 74 observations. The appearance of a dissolved constituent in the only usable regression relationship for the entire data base is unexpected. Regressions for the individual basins with sufficient data to be meaningful (Bells Canyon Conduit and Ninth West Conduit) primarily identified total and suspended phases. Although dissolved cadmium appeared in usable equations for both basins, it did not correlate well with total runoff. At both basins, rainfall-related variables produced the most usable relationships with dissolved cadmium.

The independent variables occurring most commonly in the regression equations for Bells Canyon Conduit and Ninth West Conduit were total runoff, peak discharge, and maximum rainfall in 5 minutes, 15 minutes, and 1 hour. The runoff and discharge variables directly influence the suspension and movement of suspended solids in storm drainage and are positively correlated. They have been identified as significant variables in previous urban studies (Jewell and Adrian, 1982, p. 495).

The existence of rainfall intensity as a significant variable in the storm runoff in the Salt Lake Valley indicated its close relationship to the runoff variables. Short storms of intense rainfall tended to move large quantities of suspended material without diluting the concentrations as much as extended storms.

The variable, number of dry days preceding a storm (tables 9 and 24), generally is large in desertlike areas such as the Salt Lake Valley. This allows for the accumulation of considerable material, which is then available for movement by storm runoff into creeks and conduits. The mean number of dry days prior to a storm during this study was 12 (for 306 basin storms), with a maximum dry period of 95 days. The number of dry days preceding a storm, therefore, was expected to be of considerable importance in the regression equations. This variable, however, was found to be significant only in the overall regressions with peak discharge, total runoff, and total rainfall. It appeared in only three statistically insignificant equations: it improved the R-square x 100 value for suspended solids by 4 percent, for sediment by 3 percent, and for dissolved iron by 2 percent. Although the number of dry days preceding a storm would be expected to have a significant influence on storm loads in a dry area such as the Salt Lake Valley, it apparently is masked by more intensely related variables of runoff and rainfall.

SUMMARY

Rainfall, runoff, atmospheric deposition, and water quality for 306 basin storms in 12 urban basins east of the Jordan River were studied to define the impact of urban areas on water resources in the Salt Lake Valley. Results of analyses relating quantity and quality of runoff to urban basin variables were based on 299 storms in 11 of the 12 basins. The 7 storms in the Eighth South, South Conduit Basin, were not used in those analyses because the contributing drainage area varied with the rate of runoff. The average rainfall was near the long-term average for the area, with urban runoff ranging from 1 to 83 percent of total rainfall. The peak discharge ranged from 1.1 cubic feet per second per square mile on the Ninth West Conduit Basin to 17 cubic feet per second per square mile on the Thirteenth South Conduits Basin. Urban runoff ranged between 13 and 100 percent of the total discharge in the east side canals and peak discharges from 2.0 to 31 cubic feet per second with an average of 12 cubic feet per second.

Regression analysis identified total rainfall as the variable that explained the greatest variation in volume of runoff, and the maximum 1-hour and 15-minute rainfall as the variables most closely related to peak discharge. The maximum 1-hour rainfall was an important variable in the equations for the larger basins with natural channels of medium slope and also for the smaller basins with storm conduits of small slope. The maximum 15-minute rainfall was the most important variable in the equations for small basins with storm conduits of medium and steep slope. Depth of rainfall accumulated during the previous 24, 72, and 168 hours correlated poorly with volume of runoff and peak discharge. A useful regression equation relating total contributing basin area and maximum 1-hour rainfall to peak discharge was developed for the combined data from 11 basins.

Concentrations of substances in streams entering the urban areas generally were small under base-flow and storm conditions, but large concentrations of sediment, suspended solids, suspended trace metals, phosphorus, and oxygen-demanding substances were common in the urban-storm runoff. The water quality of the base flow in most of the east-side canals was poorer than that of the streams they intersected; and during storms, the quality of the canal water deteriorated further. The impact of canal discharges to streams, however, was diminished because of the relatively small quantities of canal water that were released to the streams. Storm runoff from areas of industrial and commercial use were of very poor quality and contributed significantly to the pollutant loads in the Jordan River.

Regression analysis of storm-runoff loads against storm characteristics for the Bells Canyon Conduit and the Ninth West Conduit Basins identified total runoff, peak discharge, and maximum 5- and 15-minute and 1-hour rainfall rates as the most significant variables. The only potentially predictive relationships for the combined data for 11 basins were between total runoff and dissolved cadmium and effective impervious area and dissolved solids.

Extended dry periods resulted in suspension in the atmosphere of particulate materials by wind, which were then removed by intense storms of short duration, producing wet deposition with large concentrations of the major dissolved substances. The mean concentrations of substances in wet deposition from the Salt Lake Valley were comparable to, or less than, other areas of the world and appeared to be related to rainfall intensity and antecedent rainfall. Acid rain (pH less than 5.6) appeared in about one-half of the wet-deposition samples, being most common in September and October. The wet-deposition loads in a basin generally were greater than the storm-runoff loads, indicating that a large quantity of the wet-deposition load is deposited on the soil and does not appear quickly in the storm runoff.

Atmospheric-dustfall concentrations of trace metals decreased toward the north part of the valley, except for copper, which decreased with distance from the west part of the valley. Dissolved chloride decreased with distance from the Great Salt Lake. Comparison of the average concentration of dustfall constituents with elements in typical soils indicated considerably less aluminum, nearly equal concentrations of iron, manganese, and chromium, and concentrations of cadmium, copper, lead, zinc, and chloride that were 17 to 853 times greater in the dustfall.

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Storm date	Total rainfall (in.)	Maximum rainfall intensity (in/h) 5-minute	15-minute	1-hour	Duration of rainfall (min.)	Time back to storm >0.02 inch (h)	Precipitation (in.) Previous 24-hours	Previous 3 days	Previous 7 days
				Bells Canyon Conduit					
Mar. 20, 1981	0.11	0.24	0.12	0.06	115	82	0	0	0.26
26	.25	.24	.16	.09	655	133	0	.01	.29
28	.07	.12	.08	.04	220	9	.43	.68	.69
29	.13	.60	.40	.13	30	50	0	.61	.80
29	.17	.24	.16	.11	90	52	.13	.71	.93
Apr. 2	.52	.24	.16	.12	505	71	0	.10	1.26
10	.02	.12	.08	.02	15	187	0	0	.11
19	.13	.24	.12	.07	155	393	.04	.04	.09
May 2	.09	.24	.20	.08	90	710	.04	.04	.10
3	.57	.36	.32	.25	315	720	.14	.14	.20
3	.08	.36	.24	.08	25	3	.59	.73	.79
10	.35	.96	.60	.28	105	59	0	.34	.35
15	.36	1.08	.92	.35	105	102	0	0	.69
15	.49	.36	.28	.20	305	3	.36	.36	.82
16	.83	.24	.20	.16	725	7	.85	.85	1.20
20	.03	.12	.08	.03	50	91	0	.01	1.74
20	.07	.12	.12	.07	50	93	.03	.23	1.77
20	.18	.24	.16	.09	140	96	.10	.10	1.84
20	.07	.24	.16	.04	125	6	.28	.28	2.02
21	.47	.48	.40	.25	340	12	.35	.35	2.09
June 2	.21	.36	.32	.19	125	152	0	.11	.61
12	.12	.24	.20	.11	70	242	0	0	0
14	.05	.24	.20	.05	15	270	.03	.15	.15
14	.03	.24	.12	.03	10	276	.07	.21	.21
July 2	.09	.36	.24	.09	25	708	0	0	.01
10	.11	.96	.44	.11	15	908	0	0	.03
26	.10	.36	.32	.10	40	1,288	0	0	0
Aug. 19	.11	.48	.32	.11	25	1,866	0	0	0
21	.17	1.08	.60	.17	45	1,900	0	.13	.13
Sept. 5	.04	.24	.08	.04	55	2,263	0	0	0
5	.05	.24	.20	.05	15	2,271	.06	.06	.06
5	.89	2.76	2.00	.88	95	2,272	.11	.11	.11
6	.23	.24	.16	.08	255	15	.96	1.00	1.00
24	.11	.84	.36	.11	55	436	0	0	0
Oct. 3	.28	.24	.20	.11	390	646	0	0	0
3	.50	.60	.52	.25	285	8	.28	.28	.28
8	.52	.48	.36	.23	355	88	.02	.02	.87
10	.09	.48	.32	.09	35	53	0	.58	1.16
11	.38	.60	.48	.27	280	65	.01	.45	.94
11	.05	.24	.12	.05	30	7	.51	.51	1.14
13	.15	.24	.20	.14	80	60	.01	.58	1.16
16	.22	.24	.24	.16	160	114	.08	.23	.81
16	.06	.12	.04	.03	160	12	.31	.46	1.04
28	.79	.48	.36	.26	365	296	0	0	0
Nov. 7	.18	.24	.20	.11	155	216	.02	.02	.02
17	.27	.36	.32	.21	105	471	0	0	.06
25	.24	.48	.16	.07	540	168	0	.05	.14

See footnotes at end of table, p. 100.

Runoff characteristics							
Total runoff (in.)	Peak discharge of total runoff (ft3/s)	Urban runoff (in.)	Urban runoff as percent of total rainfall	Peak discharge of urban runoff (ft3/s)	Time from first rainfall to peak discharge (min.)	Duration of storm runoff (min.)	Base flow before storm (ft3/s)
Bells Canyon Conduit--Continued							
0.025	1.3	0.025	23	1.3	60	210	0
.065	2.3	.065	26	2.3	55	715	0
.013	.59	.013	19	.59	125	310	0
.030	8.3	.030	23	8.3	20	95	0
.059	2.7	.059	35	2.7	85	195	0
.094	1.7	.094	18	1.7	155	650	0
.002	.32	.002	10	.32	25	125	0
.024	1.3	.024	18	1.3	40	190	0
.016	2.0	.016	18	2.0	20	200	0
.102	3.8	.102	18	3.8	130	370	0
.011	1.6	.011	14	1.6	25	125	0
.063	7.3	.063	18	7.3	55	175	0
.065	11	.065	18	11	20	225	0
.092	3.8	.092	19	3.8	255	450	0
.149	2.1	.149	18	2.1	125	825	0
.004	.71	.004	13	.71	25	105	0
.013	1.0	.013	19	1.0	35	125	0
.024	1.3	.024	13	1.3	130	240	0
.011	1.8	.011	16	1.8	135	225	0
.070	6.7	.070	15	6.7	245	440	0
.039	4.3	.039	19	4.3	80	235	0
.015	1.7	.015	12	1.7	15	125	0
.008	2.0	.008	16	2.0	15	90	0
.002	.33	.002	7	.33	15	105	0
.010	2.8	.010	11	2.8	30	90	0
.018	7.2	.018	16	7.2	15	55	0
.017	4.1	.017	17	4.1	20	90	0
.012	2.2	.012	11	2.2	25	90	0
.016	5.5	.016	9	5.5	15	120	0
.003	.30	.003	8	.30	20	100	0
.005	.83	.005	10	.83	20	85	0
.115	14	.115	13	14	20	275	0
.018	.48	.018	8	.48	235	520	0
.010	2.5	.010	9	2.5	15	75	0
.035	1.6	.035	12	1.6	160	455	0
.074	5.3	.074	15	5.3	25	365	0
.088	5.1	.088	17	5.1	65	415	0
.011	3.2	.011	12	3.2	10	100	0
.065	5.3	.065	17	5.3	20	415	0
.007	1.5	.007	14	1.5	30	100	0
.022	2.2	.022	15	2.2	25	155	0
.032	2.1	.032	15	2.1	130	260	0
.008	.35	.008	13	.35	25	225	0
.128	4.2	.128	16	4.2	235	400	0
.023	2.1	.023	13	2.1	110	225	0
.047	3.7	.047	17	3.7	95	170	0
.041	.83	.041	17	.83	240	655	0

Storm date	Precipitation characteristics								
	Total rainfall (in.)	Maximum rainfall intensity (in/h)			Duration of rainfall (min.)	Time back to storm >0.02 inch (h)	Precipitation (in.)		
		5-minute	15-minute	1-hour			Previous 24-hours	Previous 3 days	Previous 7 days
Little Cottonwood Creek									
July 1, 1980	0.76	—	—	—	180	1,102	0.03	0.03	0.03
Aug. 19	.25	—	—	—	105	1,162	0	0	0
25	.72	—	—	—	240	138	0	0	.25
Oct. 26	.12	—	—	—	465	235	0	0	0
Mar. 26, 1981	.60	—	0.18	0.15	375	140	0	.01	.06
29	.44	—	.16	.12	495	48	0	.95	1.37
Apr. 2	.55	—	.16	.11	690	86	0	0	1.76
May 2	.82	—	.43	.30	390	713	.10	.10	.15
8	.53	—	.20	.14	420	120	0	.13	1.08
10	.32	—	.22	.17	195	57	.05	.58	.64
15	.20	—	.31	.19	195	100	0	0	.90
15	.62	—	.35	.24	330	2	.36	.36	1.01
15	1.04	—	.26	.21	870	5	.80	.80	1.37
20	.32	—	.12	.08	495	85	0	.09	2.09
21	.36	—	.22	.13	375	12	0	.11	2.20
Sept. 5	.65	—	1.04	.57	255	1,994	.08	.08	.08
Holladay Drain									
July 1, 1980	0.60	—	—	—	185	704	0.03	0.03	0.03
Oct. 26	.22	0.18	0.14	0.13	160	233	0	0	0
Mar. 26, 1981	.54	.30	.18	.15	440	139	0	.07	.52
29	.41	.24	.16	.11	380	53	.02	.83	1.29
Apr. 2	.14	.24	.22	.12	95	76	0	0	1.43
2	.37	.18	.14	.09	365	80	.16	.16	1.30
11	.06	.12	.12	.05	30	203	.08	.08	.13
May 8	.63	.36	.32	.14	325	111	0	.21	1.17
10	.34	.30	.26	.19	165	54	0	.65	.86
15	.22	.29	.29	.20	70	102	0	0	1.00
15	.73	.42	.38	.25	290	3	.26	.26	1.26
15	.65	.30	.28	.23	285	6	1.01	1.01	2.01
16	.25	.18	.14	.11	220	6	1.57	1.79	2.62
20	.11	.24	.14	.08	130	90	0	.05	2.27
20	.17	.18	.14	.08	170	95	.16	.16	2.43
21	.38	.30	.24	.19	195	14	.46	.46	2.73
21	.05	.18	.08	.05	45	9	.60	.94	3.21
21	.05	.18	.10	.04	55	11	.66	.99	3.26
25	.10	.24	.20	.09	85	106	0	0	1.04
26	.08	.18	.14	.06	105	120	.13	.13	1.17
June 2	.26	.42	.30	.21	120	300	.10	.12	.27
3	.24	.43	.26	.20	110	13	.36	.37	.45
14	.12	.18	.12	.10	130	253	.07	.08	.08
14	.09	.12	.08	.06	115	1	.29	.32	.32
14	.05	.12	.06	.03	115	4	.38	.42	.42
July 2	.29	.67	.47	.23	65	436	0	0	0
6	.10	.24	.20	.08	40	102	0	0	.29
Sept. 5	.32	.73	.59	.30	90	1,564	.08	.08	.10
6	.17	.12	.08	.07	220	16	.38	.42	.44

See footnotes at end of table, p. 100

Runoff characteristics							
Total runoff (in.)	Peak discharge of total runoff (ft3/s)	Urban runoff (in.)	Urban runoff as percent of total rainfall	Peak discharge of urban runoff (ft3/s)	Time from first rainfall to peak discharge (min.)	Duration of storm runoff (min.)	Base flow before storm (ft3/s)
Little Cottonwood Creek--Continued							
0.662	370	0.105	14	71	495	1,020	235
.012	24	.003	1	6.5	180	285	16
.028	60	.013	2	36	255	360	18
.007	11	.002	2	5.0	255	540	5.0
.015	27	.010	2	21	285	555	6.9
.033	47	.019	4	36	375	735	8.7
.021	21	.011	2	14	495	840	3.5
.299	334	.090	11	150	240	615	162
.083	123	.030	6	65	315	510	50
.030	79	.007	2	29	225	270	42
.036	110	.007	4	38	225	240	53
.140	206	.054	9	126	330	600	86
.236	177	.081	8	95	255	1,035	72
.120	97	.016	5	21	600	780	62
.104	161	.023	6	57	390	450	88
.063	209	.028	4	152	255	345	43
Holladay Drain—Continued							
0.037	70	0.036	6	69	165	210	1.2
.008	13	.006	3	11	115	185	.89
.047	32	.038	7	29	170	455	1.9
.048	51	.039	10	47	105	380	2.8
.008	22	.006	4	19	95	125	1.2
.031	24	.020	5	20	215	375	4.5
.004	14	.003	5	12	55	85	1.5
.047	41	.037	6	37	80	400	2.5
.027	74	.022	6	70	130	195	2.0
.022	97	.018	8	91	50	110	3.9
.086	109	.072	10	103	240	350	4.4
.082	119	.066	10	111	185	325	6.8
.030	37	.019	8	30	100	250	7.5
.006	11	.002	2	6.6	70	115	4.1
.016	23	.010	6	19	190	230	4.2
.029	49	.020	5	42	125	185	6.5
.005	18	.002	4	10	65	60	7.3
.005	20	.003	6	13	80	65	7.2
.014	36	.009	9	29	65	130	5.2
.017	30	.008	10	21	100	145	10
.018	48	.009	3	40	65	175	5.7
.026	53	.017	7	45	60	160	7.4
.046	87	.025	21	67	50	165	19
.029	51	.011	12	32	60	155	20
.029	64	.012	24	48	45	165	17
.008	40	.005	2	37	25	125	2.6
.008	38	.005	5	32	55	90	3.3
.011	36	.009	3	34	65	150	.75
.012	12	.007	4	10	200	295	1.9

Table 24.--Storm characteristics

Storm date	Precipitation characteristics: Total rainfall (in.)	Maximum rainfall intensity (in/h): 5-minute	Maximum rainfall intensity (in/h): 15-minute	Maximum rainfall intensity (in/h): 1-hour	Duration of rainfall (min.)	Time back to storm >0.02 inch (h)	Precipitation (in.): Previous 24-hours	Precipitation (in.): Previous 3 days	Precipitation (in.): Previous 7 days
Big Cottonwood Creek[1]									
July 1, 1980	0.53	—	—	—	180	705	0.03	0.03	0.03
Aug. 19	.14	—	—	—	105	485	0	0	.02
25	.58	—	—	—	240	137	0	.06	.29
Oct. 26	.27	—	0.13	0.10	465	235	0	0	0
Mar. 26, 1981	.51	—	.18	.13	540	139	0	.07	.34
29	.41	—	.23	.14	390	52	.02	.79	1.12
Apr. 2	.44	—	.19	.10	600	85	0	0	1.29
May 2	.80	—	.31	.28	645	717	.04	.04	.04
8	.61	—	.27	.14	450	117	0	.20	1.05
10	.34	—	.21	.20	165	56	0	.61	.79
15	.19	—	.24	.15	135	101	0	0	.88
15	.71	—	.29	.24	405	2	.19	.19	1.08
15	.96	—	.24	.22	870	4	.91	.91	1.79
20	.31	—	.15	.07	570	86	0	.03	2.04
21	.35	—	.18	.14	420	10	.37	.37	2.41
June 2	.34	—	.39	.19	210	297	.12	.12	.26
Sept. 5	.38	—	.63	.34	270	1,560	.10	.11	.12
6	.18	—	.08	.06	285	15	.42	.49	.50
Mill Creek									
July 1, 1980	0.40	—	0.34	0.24	180	510	0.03	0.03	0.03
Aug. 19	.19	—	.10	.07	480	1,118	0	.01	.03
25	.40	—	.35	.18	450	137	0	0	.24
Oct. 14	.20	—	.10	.08	390	39	.02	.24	.24
14	.77	—	.12	.09	1,200	50	.22	.45	.45
15	.52	—	.12	.07	945	4	.77	.99	1.22
26	.27	—	.10	.09	357	234	0	0	0
Mar. 26, 1981	1.11	—	.11	.09	1,740	230	0	0	.23
29	.53	—	.13	.10	1,505	50	0	.75	1.21
Apr. 2	.32	—	.12	.09	630	78	0	.01	1.28
May 2	.96	—	.29	.26	825	716	.03	.03	.12
8	.54	—	.16	.14	450	113	0	.15	1.14
10	.34	—	.39	.24	120	56	0	.54	.69
15	1.01	—	.29	.22	600	102	0	.01	.87
15	.98	—	.24	.21	855	5	1.01	1.02	1.35
17	.19	—	.07	.05	345	14	.49	2.08	2.41
20	.29	—	.17	.08	480	90	0	.04	2.29
21	.48	—	.19	.16	420	11	.29	.29	2.57
June 2	.28	—	.18	.14	270	152	0	.02	.33
3	.36	—	.38	.28	120	13	.30	.32	.36
14	.45	—	.12	.09	675	252	.08	.08	.08
Sept. 5	.36	—	.43	.30	345	1,992	.11	.11	.14
6	.19	—	.08	.06	345	12	.42	.48	.49

See footnotes at end of table, p. 100.

Runoff characteristics							
Total runoff (in.)	Peak discharge of total runoff (ft3/s)	Urban runoff (in.)	Urban runoff as percent of total rainfall	Peak discharge of urban runoff (ft3/s)	Time from first rainfall to peak discharge (min.)	Duration of storm runoff (min.)	Base flow before storm (ft3/s)
Big Cottonwood Creek[1]—Continued							
0.184	267	0.033	6	71	225	555	139
.028	69	.004	3	10	195	300	59
.063	120	.020	3	58	195	480	57
.034	53	.080	3	19	225	540	33
.056	88	.021	4	45	300	570	36
.046	94	.018	4	54	240	480	34
.043	57	.011	2	23	480	645	30
.333	413	.123	15	223	300	765	143
.121	178	.038	6	82	330	600	90
.075	155	.020	6	66	195	435	75
.035	134	.006	3	40	150	225	84
.123	239	.044	6	123	345	480	99
.273	284	.080	8	152	270	1,005	119
.130	165	.011	4	29	570	615	125
.114	217	.024	7	65	360	435	143
.210	469	.040	12	129	435	375	234
.051	189	.023	6	123	315	300	60
.047	87	.009	5	31	390	480	52
Mill Creek—Continued							
0.107	108	0.046	12	64	315	555	34
.028	27	.005	3	7.0	300	450	19
.050	58	.027	7	30	330	480	24
.038	38	.010	5	18	390	555	18
.111	73	.045	6	53	240	1,290	23
.084	49	.036	7	32	690	1,125	16
.030	26	.006	2	9.0	420	555	15
.176	58	.078	7	39	375	2,025	17
.112	58	.045	8	39	495	1,395	17
.066	36	.022	7	17	465	900	18
.133	105	.079	8	83	315	990	16
.105	82	.043	8	50	360	780	29
.074	71	.025	7	39	270	600	29
.152	118	.069	7	80	630	870	31
.196	125	.079	8	85	345	1,140	42
.055	45	.008	4	9.0	465	525	36
.096	56	.018	6	16	600	780	38
.094	99	.033	7	56	450	570	39
.122	87	.029	10	35	345	705	46
.080	102	.023	6	50	195	450	55
.100	55	.024	5	19	300	840	34
.075	92	.032	9	61	315	555	31
.053	49	.010	5	19	480	555	29

Table 24.--Storm characteristics

Storm date	Precipitation characteristics								
	Total rainfall (in.)	Maximum rainfall intensity (in/h)			Duration of rainfall (min.)	Time back to storm >0.02 inch (h)	Precipitation (in.)		
		5-minute	15-minute	1-hour			Previous 24-hours	Previous 3 days	Previous 7 days
Twenty-First South Conduit									
July 1, 1980	0.51	—	0.44	0.24	240	1,100	0.02	0.02	0.02
Aug. 19	.13	—	.12	.05	420	1,163	0	0	.04
25	.22	—	.10	.08	240	1,312	0	0	.13
Oct. 15	.65	—	.11	.07	1,125	5	.20	.39	.39
16	.57	—	.10	.07	1,020	7	.57	1.27	1.32
26	.31	—	.14	.09	390	230	0	0	0
Mar. 26, 1981	1.23	—	.16	.13	1,815	230	0	.03	.18
29	.38	—	.16	.12	795	54	.08	.86	1.44
May 2	1.30	—	1.12	.62	1,050	805	.02	.02	.10
8	.44	—	.22	.14	285	116	.01	.09	1.42
10	.33	—	.32	.25	75	49	0	.45	.55
15	.71	—	.63	.27	525	102	0	0	.78
15	1.01	—	.24	.21	1,440	6	.72	.72	1.05
20	.25	—	.10	.08	465	72	0	0	1.85
21	.38	—	.22	.16	330	12	.25	.25	2.10
21	.25	—	.10	.08	420	6	.39	.39	2.24
27	.40	—	.25	.18	345	128	.06	.10	.97
June 2	.26	—	.41	.12	180	152	0	0	.49
3	.16	—	.23	.15	60	13	.30	.30	.41
14	.33	—	.18	.09	510	254	.09	.09	.09
Sept. 5	.33	—	.64	.32	75	1,996	.13	.13	.13
Thirteenth South Conduits									
Oct. 26, 1980	0.26	—	0.15	0.11	435	240	0	0	0
Mar. 26, 1981	.59	—	.15	.12	700	140	0	.08	.35
27	.63	—	.08	.07	1,020	3	.66	.70	.93
May 2	1.32	—	.66	.51	840	356	.03	.03	.10
8	.52	—	.22	.13	360	109	0	.18	2.03
10	.35	—	.35	.25	135	48	0	.53	.69
15	.97	—	.23	.19	585	102	0	0	.85
15	.98	—	.27	.24	525	6	1.08	1.08	1.40
20	.34	—	.12	.09	480	72	0	0	2.41
21	.45	—	.15	.13	375	11	.36	.36	2.77
21	.27	—	.09	.06	435	6	.53	.82	3.23
27	.26	—	.13	.09	360	128	.30	.30	1.46
June 2	.33	—	.17	.13	230	151	0	.08	.63
3	.66	—	.70	.48	240	8	.33	.33	.83
14	.49	—	.09	.07	630	252	.08	.08	.08
Sept. 5	.35	—	.50	.31	120	1,936	.13	.13	.13
Eighth South, South Conduit									
July 1, 1980	0.48	—	0.40	0.28	210	792	0	0	0
Aug. 25	.08	—	.20	.05	30	1,268	0	0	.10
Oct. 26	.38	—	.24	.15	375	236	0	0	0
Mar. 26, 1981	.58	.30	.19	.13	710	555	0	.01	.11
Aug. 24	.19	.52	.23	.08	175	1,165	0	0	.20
29	.07	.74	.25	.07	30	127	.01	.01	.23
Sept. 5	.32	.71	.52	.27	45	292	.10	.10	.22

See footnotes at end of table, p. 100.

of urban basins—Continued

Runoff characteristics							
Total runoff (in.)	Peak discharge of total runoff (ft3/s)	Urban runoff (in.)	Urban runoff as percent of total rainfall	Peak discharge of urban runoff (ft3/s)	Time from first rainfall to peak discharge (min.)	Duration of storm runoff (min.)	Base flow before storm (ft3/s)
Twenty-First South Conduit--Continued							
0.126	28	0.080	16	22	210	555	6.2
.060	6.3	.008	6	1.3	135	765	4.4
.035	11	.008	4	5.4	30	360	4.7
.161	18	.086	13	13	345	1,155	3.9
.159	21	.065	11	13	645	945	6.3
.041	15	.016	5	10	255	405	4.7
.461	24	.187	15	14	1,815	2,130	6.2
.264	22	.122	32	14	150	1,410	5.0
.368	37	.246	19	30	300	1,335	5.4
.184	27	.100	23	20	315	900	5.7
.093	26	.047	14	18	135	420	5.8
.259	34	.123	17	22	450	885	4.9
.620	41	.267	26	25	1,170	1,650	18
.092	15	.033	13	7.5	495	600	5.0
.122	28	.052	14	17	345	495	7.8
.108	25	.026	10	11	150	450	14
.183	27	.082	20	19	420	945	6.0
.070	23	.029	11	15	270	375	6.9
.063	24	.034	21	17	105	315	7.0
.081	15	.021	6	8.4	540	690	4.9
.062	20	.034	10	14	105	360	4.0
Thirteenth South Conduits--Continued							
0.019	33	0.008	3	24	375	630	8.7
.076	125	.047	8	104	195	765	14
.088	61	.035	6	35	945	1,110	27
.189	265	.131	10	231	300	945	25
.107	160	.062	12	126	315	735	35
.056	151	.028	8	114	135	420	35
.146	215	.079	8	170	465	810	8
.212	233	.104	11	179	240	1,080	50
.081	73	.021	6	33	555	810	38
.082	139	.033	7	89	315	540	42
.073	104	.018	7	42	165	395	57
.105	134	.026	10	64	405	600	72
.053	92	.008	2	24	230	390	61
.184	251	.060	9	163	240	765	88
.091	111	.039	8	75	510	765	31
.032	155	.021	6	135	75	300	21
Eighth South, South Conduit--Continued							
—	—	[2]1.61	—	36	150	555	0
—	—	[2].041	—	2.7	75	135	0
—	—	[2].103	—	1.4	430	600	0
—	—	[2]1.09	—	14	210	715	0
—	—	[2].076	—	2.6	220	405	0
—	—	[2].208	—	5.0	75	390	0
—	—	[2].492	—	11	70	465	0

Table 24.--Storm characteristics

Storm date	Precipitation characteristics								
	Total rainfall (in.)	Maximum rainfall intensity (in/h)			Duration of rainfall (min.)	Time back to storm >0.02 inch (h)	Precipitation (in.)		
		5-minute	15-minute	1-hour			Previous 24-hours	Previous 3 days	Previous 7 days
				Eighth South, Middle Conduit					
July 1, 1980	0.74	—	—	—	165	730	0	0	0
3	.35	—	—	—	30	753	.72	.72	.72
Aug. 19	.25	—	—	—	210	482	0	0	.09
Sept. 21	.08	—	—	—	30	229	0	0	0
Oct. 26	.21	—	—	—	345	235	0	0	0
Nov. 12	.10	—	—	—	120	634	0	0	.02
Feb. 26, 1981	.08	0.12	0.06	0.05	125	608	0	0	.17
Mar. 16	.14	.17	.14	.09	140	318	0	0	0
20	.27	.31	.31	.20	135	413	0	.12	.30
26	.40	.24	.20	.10	425	136	0	.05	.38
29	.12	.48	.29	.09	30	49	0	1.36	1.46
29	.35	.34	.26	.19	230	52	.12	1.48	1.58
May 2	.05	.12	.07	.04	65	411	0	0	.08
2	.49	.67	.58	.46	75	419	.04	.04	.12
3	.08	.22	.10	.06	90	432	.92	.92	1.00
8	.52	.19	.19	.14	310	113	0	.16	1.17
10	.60	.46	.46	.41	100	58	0	.53	.53
15	.16	.24	.24	.15	65	111	0	0	1.19
15	.28	.70	.49	.17	170	106	.16	.16	1.35
15	.78	.43	.43	.29	255	116	.45	.45	1.11
16	.34	.22	.18	.14	185	2	1.24	1.24	1.90
16	.10	.12	.11	.06	130	2	1.47	1.47	2.13
16	.19	.22	.20	.14	105	10	1.28	1.73	2.39
20	.15	.22	.18	.10	215	71	0	.10	2.34
20	.19	.12	.11	.08	155	76	.18	.18	2.52
21	.46	.31	.25	.20	310	12	.39	.39	2.73
21	.26	.22	.15	.10	220	6	.57	.88	3.22
27	.32	.31	.22	.15	365	129	.14	.15	1.34
June 13	.24	.22	.18	.13	175	251	.05	.05	.05
14	.20	.24	.17	.13	115	259	.36	.40	.40
July 2	.65	1.36	1.30	.58	140	430	0	0	0
6	.07	.18	.15	.08	30	102	0	0	.80
Aug. 24	.18	.19	.13	.09	185	1,268	0	.02	.02
29	.07	—	—	—	60	127	0	0	.19
Sept. 5	.29	.46	.43	.27	90	292	.14	.14	.25

See footnotes at end of table, p. 100.

Runoff characteristics							
Total runoff (in.)	Peak discharge of total runoff (ft3/s)	Urban runoff (in.)	Urban runoff as percent of total rainfall	Peak discharge of urban runoff (ft3/s)	Time from first rainfall to peak discharge (min.)	Duration of storm runoff (min.)	Base flow before storm (ft3/s)
Eighth South, Middle Conduit--Continued							
0.008	40	0.008	1	40	105	240	0
.001	2.6	.001	<1	2.6	105	135	0
.001	1.0	.001	<1	1.0	240	300	0
.001	2.4	.001	1	2.9	75	135	0
.003	4.5	.003	1	4.5	225	285	0
.003	17	.003	3	17	150	105	0
.018	27	.018	22	27	140	155	0
.015	28	.015	11	28	110	195	0
.028	35	.028	10	35	75	220	0
.075	26	.075	19	26	155	455	0
.013	36	.013	11	36	90	105	0
.039	43	.039	11	43	110	230	0
.003	7.8	.003	6	7.8	125	70	0
.007	54	.007	1	54	45	70	0
.008	14	.008	10	14	105	80	0
.064	40	.064	12	40	185	340	0
.035	129	.035	6	129	115	105	0
.024	54	.024	15	54	80	115	0
.037	74	.037	13	74	95	180	.60
.088	73	.088	11	73	100	325	0
.025	17	.025	7	17	120	270	.60
.049	40	.049	49	40	140	280	3.9
.013	21	.013	7	21	150	115	0
.020	18	.020	13	18	125	235	0
.020	18	.020	11	18	200	190	.60
.044	51	.044	10	51	250	310	0
.021	23	.021	8	23	85	265	0
.042	36	.042	13	36	365	240	0
.026	43	.026	11	43	175	195	0
.015	43	.015	8	43	115	105	1.0
.077	79	.077	12	79	135	180	0
.038	68	.038	54	68	60	135	0
.022	20	.022	12	20	120	195	0
.014	29	.014	20	29	60	105	0
.050	86	.050	17	86	105	165	0

Storm date	Total rainfall (in.)	Maximum rainfall intensity (in/h) 5-minute	15-minute	1-hour	Duration of rainfall (min.)	Time back to storm >0.02 inch (h)	Precipitation (in.) Previous 24-hours	Previous 3 days	Previous 7 days
				Eighth South, North Conduit					
May 9, 1980	0.80	—	—	—	135	5	0.40	0.46	0.46
10	.10	—	—	—	45	12	.60	.90	.91
12	.20	—	—	—	165	51	.10	1.05	1.11
16	.20	—	—	—	210	103	0	.32	1.46
17	.10	—	—	—	90	10	.34	.59	1.04
17	.10	—	—	—	75	13	.38	.63	1.08
29	.20	—	—	—	255	86	.05	.05	.37
July 1	.80	—	—	—	195	703	0	.03	.03
Oct. 12	.10	—	—	—	60	743	0	0	0
26	.30	—	—	—	225	236	0	0	0
Feb. 26, 1981	.13	0.12	0.10	0.07	145	611	0	0	0
Mar. 16	.13	.30	.22	.11	140	318	.02	.02	.02
20	.12	.18	.14	.09	135	88	.03	.03	.28
26	.16	.24	.18	.11	110	229	0	.04	.22
28	.06	.06	.06	.05	65	8	.66	1.35	1.39
29	.09	.54	.18	.05	15	49	0	.84	1.45
29	.14	.18	.16	.14	75	52	.13	.92	1.58
Apr. 15	.14	.12	.10	.06	185	393	0	.03	.11
May 3	.04	.06	.06	.04	90	7	1.80	1.80	1.88
8	.42	.30	.24	.17	260	122	.04	.17	2.06
10	.32	.36	.34	.24	100	59	0	.50	.63
15	.18	.30	.24	.17	70	102	0	0	.82
15	.36	.54	.36	.18	185	2	.20	.20	1.02
16	.10	.18	.12	.08	125	2	1.28	1.54	1.90
16	.08	.12	.08	.06	110	10	.96	1.64	2.00
17	.12	.12	.08	.05	255	19	.31	1.70	2.06
20	.08	.18	.12	.08	80	95	0	.15	1.85
20	.12	.12	.10	.07	140	101	.17	.19	2.02
21	.36	.24	.22	.17	265	13	.32	.34	2.17
21	.28	.18	.14	.08	330	6	.43	.69	2.52
27	.16	.24	.18	.11	125	141	.07	.12	1.08
27	.30	.42	.32	.17	175	144	.16	.28	1.13
June 13	.18	.18	.12	.09	200	243	0	0	0
14	.12	.24	.18	.11	80	251	.33	.33	.33
July 6	.21	1.20	.68	.21	35	559	0	0	0
Aug. 20	.09	.48	.18	.06	80	1,065	.02	.02	.02
24	.18	.60	.26	.09	175	1,166	.05	.05	.25
29	.06	.60	.20	.06	30	128	.01	.01	.23
Sept. 5	.32	.78	.54	.31	90	293	.12	.12	.24

See footnotes at end of table, p. 100.

of urban basins—Continued

Runoff characteristics							
Total runoff (in.)	Peak discharge of total runoff (ft3/s)	Urban runoff (in.)	Urban runoff as percent of total rainfall	Peak discharge of urban runoff (ft3/s)	Time from first rainfall to peak discharge (min.)	Duration of storm runoff (min.)	Base flow before storm (ft3/s)
Eighth South, North Conduit--Continued							
0.036	42	0.036	4	42	135	195	0
.004	7.0	.004	4	7.0	75	120	0
.022	19	.022	11	19	90	300	.40
.057	39	.057	28	39	105	360	0
.006	14	.006	6	14	105	90	0
.015	14	.015	15	14	120	195	1.3
.035	57	.035	18	57	255	270	0
.017	35	.017	2	35	225	105	0
.012	19	.012	12	19	120	180	0
.019	20	.019	6	20	270	195	0
.024	15	.024	18	15	140	110	0
.029	17	.029	22	17	140	135	0
.033	18	.033	28	18	75	160	0
.048	30	.048	30	30	125	150	0
.019	11	.019	32	11	80	90	0
.028	26	.028	31	26	45	110	0
.024	31	.024	17	31	75	70	1.5
.060	28	.060	43	28	125	215	0
.015	11	.015	38	11	120	130	0
.155	46	.155	37	46	245	270	0
.085	77	.085	27	77	85	120	0
.079	59	.079	44	59	70	130	0
.136	78	.136	38	78	80	205	1.1
.064	27	.064	64	27	55	180	2.5
.029	18	.029	36	18	125	130	0
.049	12	.049	41	12	260	290	0
.008	8.3	.008	10	8.3	115	85	0
.017	7.9	.017	14	7.9	80	160	0
.152	46	.152	42	46	215	255	0
.114	22	.114	41	22	95	395	0
.043	21	.043	27	21	95	120	0
.103	54	.103	34	54	55	200	0
.051	32	.051	28	32	170	155	0
.049	31	.049	41	31	80	140	.90
.139	65	.139	66	65	45	175	0
.021	12	.021	23	12	50	120	0
.061	22	.061	34	22	130	215	.90
.050	32	.050	83	32	50	125	0
.164	70	.164	51	70	60	155	0

Storm date	Precipitation characteristics: Total rainfall (in.)	Maximum rainfall intensity (in/h): 5-minute	Maximum rainfall intensity (in/h): 15-minute	Maximum rainfall intensity (in/h): 1-hour	Duration of rainfall (min.)	Time back to storm >0.02 inch (h)	Precipitation (in.): Previous 24-hours	Precipitation (in.): Previous 3 days	Precipitation (in.): Previous 7 days
North Temple Conduit									
Aug. 19, 1980	0.24	—	0.20	0.15	135	465	0	0	0.09
25	.20	—	.09	.02	75	143	0	0	.29
Oct. 12	.10	—	.14	.06	60	743	0	0	0
26	.23	—	.15	.07	345	235	0	0	0
Feb. 17, 1981	.09	—	.18	.05	45	400	0	0	.12
26	.30	—	.15	.10	525	203	0	0	.17
Mar. 16	.12	—	.15	.09	150	319	0	0	0
20	.24	—	.27	.16	135	88	0	.12	.30
26	.52	—	.18	.11	720	138	0	.05	.38
29	.43	—	.29	.19	405	73	0	1.41	1.46
Apr. 2	.10	—	.15	.09	60	79	0	.56	1.97
15	.19	—	.24	.16	180	383	0	0	.11
May 2	.05	—	.06	.03	75	411	0	0	.08
2	.78	—	.42	.26	435	419	.04	.04	.12
3	.12	—	.12	.06	210	4	.78	.78	.78
6	.10	—	.27	.07	30	62	0	.31	1.01
8	.51	—	.19	.12	345	49	0	.16	1.17
10	.55	—	.42	.39	105	59	0	.53	1.65
15	.17	—	.21	.13	150	102	0	0	1.19
15	.29	—	.47	.16	285	2	.16	.16	1.35
15	.74	—	.42	.28	270	5	.45	.45	1.64
16	.33	—	.18	.14	195	2	1.24	1.24	1.90
16	.10	—	.09	.04	135	2	1.47	1.47	2.13
16	.19	—	.18	.14	135	15	1.28	1.73	2.59
17	.33	—	.15	.08	300	7	.72	1.96	2.62
20	.33	—	.15	.10	465	69	0	.04	2.34
21	.47	—	.24	.20	360	11	.39	.39	2.73
21	.31	—	.15	.09	435	6	.57	.96	3.30
27	.10	—	.12	.10	135	127	.14	.15	1.34
27	.24	—	.21	.14	210	131	.22	.25	1.44
28	.13	—	.23	.13	60	28	0	.46	1.26
June 2	.37	—	.30	.21	195	151	0	.01	.61
13	.27	—	.21	.14	180	252	.05	.05	.05
14	.25	—	.15	.11	210	3	.29	.34	.34
July 6	.22	—	.61	.22	90	101	0	0	.80
9	.05	—	.06	.03	285	175	0	.14	.94
Aug. 20	.03	—	.09	.02	60	1,167	0	0	0
24	.11	—	.18	.11	75	1,268	0	.02	.02
Sept. 5	.11	—	.17	.07	135	284	0	0	.11
5	.28	—	.42	.26	90	6	.14	.14	.25
6	.11	—	.18	.08	135	15	.38	.41	.43
Ninth West Conduit									
Aug. 24, 1981	0.15	0.24	0.16	0.08	180	323	0	0	0.09
Sept. 5	.03	.12	.04	.02	60	612	0	0	.03
5	.30	.72	.56	.28	150	617	.03	.03	.06
6	.22	.12	.12	.08	355	15	.33	.33	.33
Oct. 3	.23	.12	.12	.10	235	645	0	0	0
3	.45	.36	.24	.20	360	10	.26	.26	.26
4	.04	.12	.08	.04	40	13	.49	.72	.72
8	.76	.48	.36	.28	510	92	0	0	.76
10	.08	.24	.12	.06	90	51	0	.76	1.32
10	.28	1.08	.80	.26	95	56	.08	.84	1.37
11	.34	.60	.32	.09	550	14	.39	.41	1.20
28	.65	.24	.24	.23	325	412	0	0	0
Nov. 17	.39	.48	.40	.21	400	436	0	0	.01
24	.23	.12	.12	.08	280	164	0	.08	.16

[1] Runoff characteristics adjusted to include discharge from Cottonwood Sewage Treatment Plant, which is 0.4 mi downstream from gaging station.

[2] Urban runoff, in inches, is not reliably related to precipitation characteristics because contributing basin area varied with the rate of runoff. Urban runoff in inches may be converted to measured urban runoff in acre-feet by multiplying urban runoff by 5.33.

Runoff characteristics							
Total runoff (in.)	Peak discharge of total runoff (ft3/s)	Urban runoff (in.)	Urban runoff as percent of total rainfall	Peak discharge of urban runoff (ft3/s)	Time from first rainfall to peak discharge (min.)	Duration of storm runoff (min.)	Base flow before storm (ft3/s)
North Temple Conduit--Continued							
0.004	8.2	0.001	<1	5.0	90	150	3.1
.012	24	.008	4	20	90	135	4.5
.005	13	.004	4	11	30	90	1.7
.023	11	.016	7	8.8	240	375	1.4
.027	52	.023	26	49	105	225	1.9
.042	38	.034	11	36	135	540	1.9
.031	57	.023	19	54	120	300	3.1
.041	52	.035	15	50	60	420	1.9
.120	60	.100	19	57	90	735	2.7
.078	77	.057	13	72	165	570	3.9
.010	15	.006	6	11	75	105	4.3
.049	43	.033	17	35	150	255	7.0
.010	16	.004	8	8.6	105	120	7.2
.079	35	.030	4	21	195	450	17
.046	30	.016	13	18	165	300	12
.017	30	.010	10	24	30	135	5.7
.094	54	.069	14	48	105	495	4.3
.052	70	.043	8	66	60	240	5.2
.053	89	.046	27	85	45	225	2.8
.082	114	.066	23	108	75	315	4.6
.173	114	.154	21	107	30	360	3.4
.042	36	.024	7	26	90	240	9.7
.054	64	.041	41	56	105	210	6.8
.021	33	.015	8	27	135	150	4.0
.039	24	.025	8	19	255	315	4.0
.064	33	.048	14	30	75	555	3.4
.141	100	.101	21	87	240	390	10
.114	47	.054	17	31	105	495	18
.053	75	.024	24	47	135	135	27
.145	80	.049	20	46	90	345	32
.071	187	.043	33	131	30	75	52
.176	169	.098	26	132	150	255	42
.146	144	.079	29	114	90	270	35
.121	119	.054	22	89	165	285	32
.054	162	.050	23	158	45	135	2.3
.038	68	.032	64	64	180	195	3.8
.024	31	.020	67	28	45	195	2.3
.013	22	.008	7	15	60	120	6.2
.023	20	.013	12	13	105	180	7.7
.057	134	.051	18	129	30	150	2.3
.023	37	.017	15	32	205	150	3.1
Ninth West Conduit--Continued							
0.008	0.87	0.008	5	0.87	210	300	0
.001	.27	.001	3	.27	210	70	0
.040	4.4	.040	13	4.4	145	345	0
.019	1.0	.019	9	1.0	345	495	0
.014	1.2	.014	6	1.2	120	295	0
.060	3.6	.060	13	3.6	85	460	0
.013	1.6	.013	32	1.6	185	140	0
.117	5.0	.117	15	5.0	145	605	0
.002	.26	.002	2	.26	125	130	0
.058	6.6	.058	21	6.6	55	410	0
.052	2.0	.052	15	2.0	245	755	0
.070	2.9	.070	11	2.9	190	500	0
.025	2.2	.025	6	2.2	130	525	0
.016	.59	.016	7	.59	280	475	0

Table 25.--Mean concentrations and coefficients of variation of wet-deposition constituents and properties at six atmospheric-deposition stations

[See table 1 and plate 1 for number and location of stations.]

Constituent or property	Number of samples	Mean Concentration	Coefficient of variation
Bells Canyon Conduit (site 1)			
pH (units)[1]	11	4.90	157
Specific conductance (umho/cm at 25°C)	6	108	120
Hardness (mg/L as $CaCO_3$)	10	26.7	190
Hardness noncarbonate (mg/L as $CaCO_3$)	10	6.80	241
Calcium, dissolved (mg/L)	11	7.39	195
Magnesium, dissolved (mg/L)	11	1.38	222
Sodium, dissolved (mg/L)	11	2.32	158
Potassium, dissolved (mg/L)	11	.50	150
Alkalinity lab (mg/L as $CaCO_3$)	11	19.2	182
Sulfate, dissolved (mg/L)	11	10.3	126
Chloride, dissolved (mg/L)	11	3.33	173
Fluoride, dissolved (mg/L)	11	.07	108
Bromide, dissolved (mg/L)	11	0	--
Silica, dissolved (mg/L)	11	1.42	201
Solids, residue at 180°C dissolved (mg/L)	11	32.5	200
Solids, residue at 105°C, total (mg/L)	11	43.5	153
Nitrogen, nitrate dissolved (mg/L as N)	10	.41	46
Nitrogen, nitrite dissolved (mg/L as N)	11	.02	63
Nitrogen, ammonia dissolved (mg/L as N)	11	.56	63
Phosphorus, ortho, dissolved (mg/L as P)	10	.02	83
Carbon, organic dissolved (mg/L)	11	2.60	60
Arsenic, dissolved (ug/L)	11	1.18	124
Barium, dissolved (ug/L)	11	29.2	109
Beryllium, dissolved (ug/L)	11	1.00	0
Boron, dissolved (ug/L)	11	34.5	180
Cadmium, dissolved (ug/L)	11	1.36	67
Cobalt, dissolved (ug/L)	11	3.00	<1
Copper, dissolved (ug/L)	11	10.9	27
Iron, total recoverable (ug/L)	11	329	97
Iron, dissolved (ug/L)	11	11.3	25
Lead, dissolved (ug/L)	11	10.7	13
Lithium, dissolved (ug/L)	11	5.63	50
Manganese, dissolved (ug/L)	11	3.63	69

See footnote at end of table, p. 109.

Table 25.--Mean concentrations and coefficients of variation of wet-deposition constituents and properties at six atmospheric-deposition stations--Continued

Constituent or property	Number of samples	Mean Concentration	Coefficient of variation
Bells Canyon Conduit (site 1)--Continued			
Molybdenum, dissolved (ug/L)	11	10.0	<1
Selenium, dissolved (ug/L)	11	.27	171
Strontium, dissolved (ug/L)	11	37.6	204
Vanadium, dissolved (ug/L)	11	6.00	<1
Zinc, dissolved (ug/L)	11	25.1	68
Sandy City Public Works (site 3)			
pH (units)[1]	6	4.90	133
Specific conductance (umho/cm at 25°C)	3	29.00	5
Hardness (mg/L as $CaCO_3$)	4	5.75	71
Hardness noncarbonate (mg/L as $CaCO_3$)	4	.25	200
Calcium, dissolved (mg/L)	6	1.25	92
Magnesium, dissolved (mg/L)	6	.23	129
Sodium, dissolved (mg/L)	6	1.15	151
Potassium, dissolved (mg/L)	6	.13	112
Alkalinity lab (mg/L as $CaCO_3$)	6	6.16	61
Sulfate, dissolved (mg/L)	6	5.00	<1
Chloride, dissolved (mg/L)	6	1.60	105
Fluoride, dissolved (mg/L)	6	.05	109
Bromide, dissolved (mg/L)	6	.01	<1
Silica, dissolved (mg/L)	6	.22	132
Solids, residue at 180°C dissolved (mg/L)	5	5.20	53
Solids, residue at 105°C, total (mg/L)	5	11.8	93
Nitrogen, nitrate dissolved (mg/L as N)	4	.37	66
Nitrogen, nitrite dissolved (mg/L as N)	5	.03	33
Nitrogen, ammonia dissolved (mg/L as N)	5	.98	69
Phosphorus, ortho, dissolved (mg/L as P)	5	.02	61
Carbon, organic dissolved (mg/L)	4	2.12	54
Arsenic, dissolved (ug/L)	6	.83	90
Barium, dissolved (ug/L)	6	12.2	29
Beryllium, dissolved (ug/L)	6	1.00	<1
Boron, dissolved (ug/L)	6	3.33	154

See footnote at end of table, p. 109.

Table 25.--Mean concentrations and coefficients of variation of wet-deposition constituents and properties at six atmospheric-deposition stations--Continued

Constituent or property	Number of samples	Mean Concentration	Coefficient of variation
Sandy City Public Works (site 3)--Continued			
Cadmium, dissolved (ug/L)	6	1.00	<1
Cobalt, dissolved (ug/L)	6	3.00	<1
Copper, dissolved (ug/L)	6	13.3	61
Iron, total recoverable (ug/L)	6	263	72
Iron, dissolved (ug/L)	6	14.7	77
Lead, dissolved (ug/L)	6	10.0	<1
Lithium, dissolved (ug/L)	6	4.16	9
Manganese, dissolved (ug/L)	6	4.66	61
Molybdenum, dissolved (ug/L)	6	10.0	<1
Selenium, dissolved (ug/L)	6	.33	154
Strontium, dissolved (ug/L)	6	6.83	127
Vanadium, dissolved (ug/L)	6	6.00	<1
Zinc, dissolved (ug/L)	6	31.8	106
Dixie Valley Detention Basin (site 5)			
pH (units)[1]	7	4.80	117
Specific conductance (umho/cm at 25°C)	3	42.0	10
Hardness (mg/L as $CaCO_3$)	5	5.40	78
Hardness noncarbonate (mg/L as $CaCO_3$)	5	.40	223
Calcium, dissolved (mg/L)	7	1.38	94
Magnesium, dissolved (mg/L)	7	.13	142
Sodium, dissolved (mg/L)	7	1.05	116
Potassium, dissolved (mg/L)	7	.25	80
Acidity (mg/L as $CaCO_3$)	3	74.3	167
Alkalinity lab (mg/L as $CaCO_3$)	7	6.85	72
Sulfate, dissolved (mg/L)	7	4.57	24
Chloride, dissolved (mg/L)	7	1.35	65
Fluoride, dissolved (mg/L)	7	.12	132
Bromide, dissolved (mg/L)	7	<.01	<1
Silica, dissolved (mg/L)	7	.12	124
Solids, residue at 180°C dissolved (mg/L)	7	7.14	81
Solids, residue at 105°C, total (mg/L)	6	13.7	105
Nitrogen, nitrate dissolved (mg/L as N)	5	.34	68

See footnote at end of table, p. 109.

Table 25.--Mean concentrations and coefficients of variation of wet-deposition constituents and properties at six atmospheric-deposition stations--Continued

Constituent or property	Number of samples	Mean Concentration	Coefficient of variation
Dixie Valley Detention Basin (site 5)--Continued			
Nitrogen, nitrite dissolved (mg/L as N)	7	0.02	62
Nitrogen, ammonia dissolved (mg/L as N)	7	.52	83
Phosphorus, ortho, dissolved (mg/L as P)	7	.05	70
Carbon, organic dissolved (mg/L)	6	2.08	41
Arsenic, dissolved (ug/L)	7	.85	104
Barium, dissolved (ug/L)	7	11.3	37
Beryllium, dissolved (ug/L)	7	1.00	<1
Boron, dissolved (ug/L)	7	28.6	221
Cadmium, dissolved (ug/L)	7	1.00	<1
Cobalt, dissolved (ug/L)	1	3.00	<1
Copper, dissolved (ug/L)	7	11.4	33
Iron, total recoverable (ug/L)	7	373	102
Iron, dissolved (ug/L)	7	15.3	91
Lead, dissolved (ug/L)	7	10.0	<1
Lithium, dissolved (ug/L)	7	4.00	<1
Manganese, dissolved (ug/L)	7	4.42	101
Molybdenum, dissolved (ug/L)	7	10.0	<1
Selenium, dissolved (ug/L)	7	.28	170
Strontium, dissolved (ug/L)	7	6.28	121
Vanadium, dissolved (ug/L)	7	6.00	<1
Zinc, dissolved (ug/L)	7	23.1	47
Administration Building (site 15)			
pH (units)[1]	13	4.70	148
Specific conductance (umho/cm at 25°C)	3	34.00	33
Hardness (mg/L as $CaCO_3$)	12	4.25	53
Hardness noncarbonate (mg/L as $CaCO_3$)	7	2.14	148
Calcium, dissolved (mg/L)	13	1.21	58
Magnesium, dissolved (mg/L)	13	.23	101
Sodium, dissolved (mg/L)	13	1.75	99
Potassium, dissolved (mg/L)	8	.16	80
Acidity (mg/L as $CaCO_3$)	3	3.33	86
Alkalinity lab (mg/L as $CaCO_3$)	8	3.37	94

See footnote at end of table, p. 109.

Table 25.--Mean concentrations and coefficients of variation of wet-deposition constituents and properties at six atmospheric-deposition stations--Continued

Constituent or property	Number of samples	Mean Concentration	Coefficient of variation
Administration Building (site 15)--Continued			
Sulfate, dissolved (mg/L)	13	3.60	50
Chloride, dissolved (mg/L)	13	1.92	52
Fluoride, dissolved (mg/L)	8	.06	82
Bromide, dissolved (mg/L)	8	<.01	<1
Silica, dissolved (mg/L)	8	.12	148
Solids, residue at 180°C dissolved (mg/L)	13	8.38	82
Solids, residue at 105°C, total (mg/L)	11	12.0	79
Nitrogen, nitrate dissolved (mg/L as N)	8	.27	43
Nitrogen, nitrite dissolved (mg/L as N)	9	.02	64
Nitrogen, ammonia dissolved (mg/L as N)	9	.48	37
Phosphorus, ortho, dissolved (mg/L as P)	10	.01	90
Carbon, organic dissolved (mg/L)	9	2.68	98
Arsenic, dissolved (ug/L)	8	.87	73
Barium, dissolved (ug/L)	8	38.6	84
Beryllium, dissolved (ug/L)	8	1.00	<1
Boron, dissolved (ug/L)	8	5.00	151
Cadmium, dissolved (ug/L)	10	1.10	28
Cobalt, dissolved (ug/L)	8	3.00	<1
Copper, dissolved (ug/L)	13	15.5	93
Iron, total recoverable (ug/L)	9	218	49
Iron, dissolved (ug/L)	9	17.8	96
Lead, dissolved (ug/L)	13	20.6	151
Lithium, dissolved (ug/L)	8	4.87	50
Manganese, dissolved (ug/L)	8	4.37	43
Molybdenum, dissolved (ug/L)	8	10.0	<1
Selenium, dissolved (ug/L)	8	.25	185
Strontium, dissolved (ug/L)	8	5.37	97
Vanadium, dissolved (ug/L)	8	6.00	<1
Zinc, dissolved (ug/L)	13	37.8	119

See footnote at end of table, p. 109.

Table 25.--Mean concentrations and coefficients of variation of wet-deposition constituents and properties at six atmospheric-deposition stations--Continued

Constituent or property	Number of samples	Mean Concentration	Coefficient of variation
	Fort Douglas (site 18)		
pH (units)[1]	10	4.60	205
Specific conductance (umho/cm at 25°C)	4	36.5	38
Hardness (mg/L as $CaCO_3$)	7	6.14	50
Hardness noncarbonate (mg/L as $CaCO_3$)	6	1.50	182
Calcium, dissolved (mg/L)	10	1.65	62
Magnesium, dissolved (mg/L)	10	.15	100
Sodium, dissolved (mg/L)	10	.93	66
Potassium, dissolved (mg/L)	9	.44	157
Acidity (mg/L as $CaCO_3$)	2	10.0	70
Alkalinity lab (mg/L as $CaCO_3$)	9	5.77	68
Sulfate, dissolved (mg/L)	10	3.90	47
Chloride, dissolved (mg/L)	10	1.48	86
Fluoride, dissolved (mg/L)	9	.06	106
Bromide, dissolved (mg/L)	9	<.01	<1
Silica, dissolved (mg/L)	9	.12	126
Solids, residue at 180°C dissolved (mg/L)	9	10.6	84
Solids, residue at 105°C, total (mg/L)	9	29.7	143
Nitrogen, nitrate dissolved (mg/L as N)	9	.31	43
Nitrogen, nitrite dissolved (mg/L as N)	10	.01	68
Nitrogen, ammonia dissolved (mg/L as N)	10	.54	59
Phosphorus, ortho, dissolved (mg/L as P)	9	.07	195
Carbon, organic dissolved (mg/L)	9	2.15	58
Arsenic, dissolved (ug/L)	9	.88	87
Barium, dissolved (ug/L)	9	13.9	60
Beryllium, dissolved (ug/L)	9	1.00	<1
Boron, dissolved (ug/L)	9	5.55	130
Cadmium, dissolved (ug/L)	10	1.00	<1
Cobalt, dissolved (ug/L)	9	2.88	11
Copper, dissolved (ug/L)	10	10.7	31
Iron, total recoverable (ug/L)	9	277	54
Iron, dissolved (ug/L)	10	15.3	58
Lead, dissolved (ug/L)	10	9.60	13
Lithium, dissolved (ug/L)	9	4.00	<1
Manganese, dissolved (ug/L)	9	6.77	82
Molybdenum, dissolved (ug/L)	9	10.0	<1

See footnote at end of table, p. 109.

Table 25.--Mean concentrations and coefficients of variation of wet-deposition constituents and properties at six atmospheric-deposition stations--Continued

Constituent or property	Number of samples	Mean Concentration	Coefficient of variation
Fort Douglas (site 18)--Continued			
Selenium, dissolved (ug/L)	9	0.33	150
Strontium, dissolved (ug/L)	9	6.77	77
Vanadium, dissolved (ug/L)	9	6.00	<1
Zinc, dissolved (ug/L)	10	35.4	46
Fire Station No. 7 (site 21)			
pH (units)[1]	6	4.60	174
Specific conductance (umho/cm at 25°C)	3	29.3	40
Hardness (mg/L as $CaCO_3$)	5	3.60	63
Hardness noncarbonate (mg/L as $CaCO_3$)	5	1.60	143
Calcium, dissolved (mg/L)	6	1.12	58
Magnesium, dissolved (mg/L)	6	.11	100
Sodium, dissolved (mg/L)	6	.65	89
Potassium, dissolved (mg/L)	6	.15	55
Alkalinity lab (mg/L as $CaCO_3$)	6	3.16	98
Sulfate, dissolved (mg/L)	6	5.00	<1
Chloride, dissolved (mg/L)	6	.71	68
Fluoride, dissolved (mg/L)	6	.08	90
Bromide, dissolved (mg/L)	6	0	<1
Silica, dissolved (mg/L)	6	.14	60
Solids, residue at 180°C dissolved (mg/L)	6	8.00	50
Solids, residue at 105°C, total (mg/L)	6	10.0	61
Nitrogen, nitrate dissolved (mg/L as N)	5	.51	81
Nitrogen, nitrite dissolved (mg/L as N)	6	.03	21
Nitrogen, ammonia dissolved (mg/L as N)	6	.47	51
Phosphorus, ortho, dissolved (mg/L as P)	6	.03	69
Carbon, organic dissolved (mg/L)	6	2.11	50
Arsenic, dissolved (ug/L)	6	.83	90
Barium, dissolved (ug/L)	6	11.2	35
Beryllium, dissolved (ug/L)	6	1.00	<1
Boron, dissolved (ug/L)	6	1.66	244

See footnote at end of table, p. 109.

Table 25.--Mean concentrations and coefficients of variation of wet-deposition constituents and properties at six atmospheric-deposition stations--Continued

Constituent or property	Number of samples	Mean Concentration	Coefficient of variation
Fire Station No. 7 (site 21)--Continued			
Cadmium, dissolved (ug/L)	6	1.00	<1
Cobalt, dissolved (ug/L)	6	3.00	<1
Copper, dissolved (ug/L)	6	10.00	<1
Iron, total recoverable (ug/L)	6	218	63
Iron, dissolved (ug/L)	6	13.8	44
Lead, dissolved (ug/L)	6	10.0	<1
Lithium, dissolved (ug/L)	6	4.00	<1
Manganese, dissolved (ug/L)	6	3.63	68
Molybdenum, dissolved (ug/L)	6	10.0	<1
Selenium, dissolved (ug/L)	6	.33	154
Strontium, dissolved (ug/L)	6	4.50	96
Vanadium, dissolved (ug/L)	6	6.00	<1
Zinc, dissolved (ug/L)	6	23.3	22

[1] Mean pH calculated as a true mean using the negative logarithm of the hydrogen ion.

Table 26.--Loads of wet-deposition constituents for selected urban-basin storms during the 1981 water year at six atmospheric-deposition stations

[See table 1 and plate 1 for number and location of station. Zero indicates a value of zero or less than 1 x 10^{-6}. Loads are in pounds per acre.]

Constituent	Storms May 16 0715 to 1130	May 19 1900 to May 23 1300	May 23 1120 to June 3 1020	June 3 1520 to June 13 0830	July 2 1330 to July 27 1540	Sept. 5 1200 to 1800
Bells Canyon Conduit (site 1)						
Calcium, dissolved	0.30	0.44	0.41	7.4	1.2	0.24
Magnesium, dissolved	.0083	.017	.047	1.4	2.6	.0055
Sodium, dissolved	.22	.25	.22	2.3	3.0	<.05
Potassium, dissolved	.17	.055	.055	.39	.69	.028
Alkalinity lab (as $CaCO_3$)	.55	.55	1.4	23	26	1.7
Sulfate, dissolved	1.2	.14	1.6	7.4	12	<2
Chloride, dissolved	.25	.74	.25	3.0	5.0	<.03
Fluoride, dissolved	0	0	0	.055	.055	.028
Silica, dissolved	.055	.091	.025	1.4	2.4	<.003
Solids, dissolved, residue at 180°C	.83	.55	1.9	35	53	.28
Solids, total, residue at 105°C	1.4	14	4.7	37	58	1.7
Nitrogen, nitrate dissolved (as N)	.099	.066	.15	.14	.21	.099
Nitrogen, nitrite dissolved (as N)	.0028	0	.0028	0	.0083	.0083
Nitrogen, ammonia dissolved (as N)	.21	.14	.33	.069	.052	.13
Nitrogen, ammonia dissolved (as NH_4)	.28	.18	.41	.088	.066	.16
Phosphorus, ortho dissolved	.0083	.0028	—	.0083	0	.0055
Carbon, organic dissolved	.74	.52	.55	1.2	2.0	.50
Arsenic, dissolved	.0014	0	.00028	.00055	.00055	0
Barium, dissolved	.0028	.0055	.019	.028	.017	.0025
Beryllium, dissolved	<.0003	<.0003	<.0003	<.0003	<.0003	<.0003
Boron, dissolved	.044	0	.044	.0028	.0055	0
Cadmium, dissolved	<.0003	<.0003	.00055	<.0003	<.0003	<.0003
Cobalt, dissolved	.00083	.00083	.00083	.00083	.00083	.00083
Copper, dissolved	<.003	<.003	<.003	<.003	<.003	<.003
Iron, total recoverable	.017	.33	.091	.091	.14	.036
Iron, dissolved	.0050	<.008	.0028	<.003	<.003	<.003
Lead, dissolved	<.003	<.003	.0037	.0030	.0036	<.003
Lithium, dissolved	<.002	.0028	<.002	.0025	.0030	<.002
Manganese, dissolved	.00055	.0022	.0019	.0011	.00028	.00055
Molybdenum, dissolved	<.003	<.003	<.003	<.003	<.003	<.003
Selenium, dissolved	0	0	.00028	0	0	0
Strontium, dissolved	.0014	.0014	.0016	.036	.066	.00055
Vanadium, dissolved	<.002	<.002	<.002	<.002	<.002	<.002
Zinc, dissolved	.0096	.0061	.0094	.0044	.0052	.0036

Table 26.--Loads of wet-deposition constituents for selected urban-basin storms during the 1981 water year at six atmospheric-deposition stations--Continued

Constituent	Storm Sept. 5 1130 to Sept. 8 1200
Sandy City Public Works (site 3)	
Calcium, dissolved	0.52
Magnesium, dissolved	.083
Sodium, dissolved	.14
Potassium, dissolved	0
Alkalinity lab (as $CaCO_3$)	2.5
Sulfate, dissolved	<2
Chloride, dissolved	.11
Fluoride, dissolved	.028
Silica, dissolved	.019
Solids, dissolved, residue at 180°C	2.5
Solids, total, residue at 105°C	5.5
Nitrogen, nitrate dissolved (as N)	.12
Nitrogen, nitrite dissolved (as N)	.014
Nitrogen, ammonia dissolved (as N)	.44
Nitrogen, ammonia dissolved (as NH_4)	.58
Phosphorus, ortho dissolved	<.003
Carbon, organic dissolved	.88
Arsenic, dissolved	.00028
Barium, dissolved	.0044
Beryllium, dissolved	<.0003
Boron, dissolved	0
Cadmium, dissolved	<.0003
Cobalt, dissolved	<.0009
Copper, dissolved	<.003
Iron, total recoverable	.094
Iron, dissolved	<.003
Lead, dissolved	<.003
Lithium, dissolved	<.002
Manganese, dissolved	.0019
Molybdenum, dissolved	<.003
Selenium, dissolved	0
Strontium, dissolved	.0019
Vanadium, dissolved	<.002
Zinc, dissolved	.0066

Table 26.—Loads of wet-deposition constituents for selected urban-basin storms during the 1981 water year at six atmospheric-deposition stations--Continued

Constituent	May 19 2115 to May 20 1900	Sept. 5 1055 to 2130
Dixie Valley Detention Basin (site 5)		
Calcium, dissolved	0.33	0.12
Magnesium, dissolved	.022	0
Sodium, dissolved	.22	<.06
Potassium, dissolved	.055	.028
Alkalinity lab (as $CaCO_3$)	1.9	1.7
Sulfate, dissolved	.055	<2
Chloride, dissolved	.52	.028
Fluoride, dissolved	0	.028
Silica, dissolved	.044	<.003
Solids, dissolved, residue at 180°C	1.7	.55
Solids, total, residue at 105°C	—	.83
Nitrogen, nitrate dissolved (as N)	.077	—
Nitrogen, nitrite dissolved (as N)	0	<.006
Nitrogen, ammonia dissolved (as N)	.13	.10
Nitrogen, ammonia dissolved (as NH_4)	.17	.13
Phosphorus, ortho dissolved	.0083	.0055
Carbon, organic dissolved	.72	.50
Arsenic, dissolved	0	0
Barium, dissolved	.0055	.0025
Beryllium, dissolved	<.0003	<.0003
Boron, dissolved	.047	0
Cadmium, dissolved	<.0003	<.0003
Cobalt, dissolved	<.0009	<.0009
Copper, dissolved	<.003	<.003
Iron, total recoverable	.025	.30
Iron, dissolved	.0028	<.003
Lead, dissolved	<.003	<.003
Lithium, dissolved	<.002	<.002
Manganese, dissolved	.0014	.00028
Molybdenum, dissolved	<.003	<.003
Selenium, dissolved	0	0
Strontium, dissolved	.0016	<.0003
Vanadium, dissolved	<.002	<.002
Zinc, dissolved	.0074	.0028

Table 26.—Loads of wet-deposition constituents for selected urban-basin storms during the 1981 water year at six atmospheric-deposition stations--Continued

Constituent	Storms							
	Oct. 7 0900 to Oct. 26 0900	Oct. 26 0915 to 1830	Nov. 17 1000 to Jan. 6 1100	Jan. 16 1400 to Feb. 2 0900	Mar. 26 1000 to Mar. 27 1000	May 7 0900 to May 11 1000	May 19 2130 to May 21 1050	Sept. 5 0500 to 1630
				Administration Building (site 15)				
Calcium, dissolved	0.47	0.30	0.19	0.14	0.69	0.41	0.14	0.19
Magnesium, dissolved	.25	.11	.055	.11	.083	.061	<.002	.019
Sodium, dissolved	1.8	.91	.36	.36	.61	.36	.19	.033
Potassium, dissolved	—	—	—	—	—	.11	.028	.055
Alkalinity lab (as $CaCO_3$)	—	—	—	—	—	0	1.4	1.1
Sulfate, dissolved	1.3	.36	1.4	.63	.30	.58	.14	<2
Chloride, dissolved	.83	.96	.63	.55	.83	.50	.55	.055
Fluoride, dissolved	—	—	—	—	—	0	0	.028
Silica, dissolved	—	—	—	—	—	.011	.028	<.003
Solids, dissolved, residue at 180°C	3.0	3.3	3.0	2.8	5.8	2.8	.28	.55
Solids, total, residue at 105°C	4.4	—	.82	1.1	—	7.9	.83	2.5
Nitrogen, nitrate dissolved (as N)	—	—	—	—	.099	.063	.033	.10
Nitrogen, nitrite dissolved (as N)	—	—	—	—	.0055	0	0	.0055
Nitrogen, ammonia dissolved (as N)	—	—	—	—	.14	.15	.12	.15
Nitrogen, ammonia dissolved (as NH_4)	—	—	—	—	.18	.19	.16	.19
Phosphorus, ortho dissolved	0	—	0	—	—	0	.014	.0055
Carbon, organic dissolved	—	—	—	—	.47	.44	.52	.72
Arsenic, dissolved	—	—	—	—	—	.00028	.00028	.00028
Barium, dissolved	—	—	—	—	—	.025	.0028	.0058
Beryllium, dissolved	—	—	—	—	—	<.0003	<.0003	<.0003
Boron, dissolved	—	—	—	—	—	0	0	0
Cadmium, dissolved	—	—	—	<.0003	<.0003	<.0003	<.0003	<.0003
Cobalt, dissolved	—	—	—	—	—	<.0009	<.0009	<.0009
Copper, dissolved	.0072	.0030	.0022	.0033	.0011	<.003	<.003	<.003
Iron, total recoverable	—	—	—	—	.047	.066	.016	.066
Iron, dissolved	—	—	—	—	.0028	.0061	<.003	<.003
Lead, dissolved	.010	.0019	.0069	.0022	.00028	<.003	<.003	<.003
Lithium, dissolved	—	—	—	—	—	<.002	[illegible]	<.002
Manganese, dissolved	—	—	—	—	—	.0016	.00055	.0014
Molybdenum, dissolved	—	—	—	—	—	<.003	<.003	<.003
Selenium, dissolved	—	—	—	—	—	0	0	0
Strontium, dissolved	—	—	—	—	—	.0014	.00055	.00055
Vanadium, dissolved	—	—	—	—	—	<.002	<.002	<.002
Zinc, dissolved	.014	.014	.0055	.0083	.0019	.0047	.0061	.0069

Table 26.--Loads of wet-deposition constituents for selected urban-basin storms during the 1981 water year at six atmospheric-deposition stations--Continued

Constituent	Storms: Mar. 26 1145 to Mar. 27 1300	May 6 1800 to May 11 0730	May 19 1900 to May 20 2100	Aug. 4 1000 to Aug. 11 1030	Sept. 5 1000 to Sept. 6 1400
	Fort Douglas (site 18)				
Calcium, dissolved	0.50	0.69	0.36	1.0	0.20
Magnesium, dissolved	.055	.044	.028	.15	.036
Sodium, dissolved	.36	.36	.25	.33	.11
Potassium, dissolved	—	.083	.083	.63	.055
Alkalinity lab (as $CaCO_3$)	—	2.8	1.1	3.0	.28
Sulfate, dissolved	.17	.69	.25	<2	<2
Chloride, dissolved	.47	.39	.96	1.1	.14
Fluoride, dissolved	—	.028	0	0	.055
Silica, dissolved	—	<.003	.050	.11	<.003
Solids, dissolved, residue at 180°C	9.1	3.0	1.4	—	2.8
Solids, total, residue at 105°C	—	13	3.0	.38	2.2
Nitrogen, nitrate dissolved (as N)	.085	.058	.074	.088	.12
Nitrogen, nitrite dissolved (as N)	.0028	.0028	0	0	.0055
Nitrogen, ammonia dissolved (as N)	.091	.14	.20	.33	.13
Nitrogen, ammonia dissolved (as NH_4)	.12	.18	.26	.41	.16
Phosphorus, ortho dissolved	—	.0055	.014	.13	.011
Carbon, organic dissolved	.36	.66	.63	—	1.3
Arsenic, dissolved	—	.00028	0	.00055	.00028
Barium, dissolved	—	.0055	.0028	.0094	.0033
Beryllium, dissolved	—	<.0003	<.0003	<.0003	<.0003
Boron, dissolved	—	0	0	.0028	0
Cadmium, dissolved	.00028	<.0003	<.0003	.00028	<.0003
Cobalt, dissolved	—	<.0009	<.0009	.00055	<.0009
Copper, dissolved	.0019	<.003	<.003	<.003	.0028
Iron, total recoverable	.061	.15	.041	—	.091
Iron, dissolved	.0055	.0041	.0028	.0052	.0030
Lead, dissolved	.0016	<.003	<.003	<.003	<.003
Lithium, dissolved	—	<.002	<.002	<.002	<.002
Manganese, dissolved	—	.0025	.0014	.0052	.0011
Molybdenum, dissolved	—	<.003	<.003	<.003	<.003
Selenium, dissolved	—	0	0	.0028	0
Strontium, dissolved	—	.0019	.0011	.0039	.00083
Vanadium, dissolved	—	<.002	<.002	<.002	<.002
Zinc, dissolved	.016	.016	.011	.010	.0091

Table 26.--Loads of wet-deposition constituents for selected urban-basin storms during the 1981 water year at six atmospheric-deposition stations--Continued

Constituent	Storm: Sept. 5 0630 to Sept. 6 1500
Fire Station No. 7 (site 21)	
Calcium, dissolved	0.28
Magnesium, dissolved	.033
Sodium, dissolved	.055
Potassium, dissolved	.028
Alkalinity lab (as $CaCO_3$)	0
Sulfate, dissolved	<2
Chloride, dissolved	.055
Fluoride, dissolved	.055
Silica, dissolved	.022
Solids, dissolved, residue at 180°C	4.1
Solids, total, residue at 105°C	2.5
Nitrogen, nitrate dissolved (as N)	.14
Nitrogen, nitrite dissolved (as N)	.0083
Nitrogen, ammonia dissolved (as N)	.14
Nitrogen, ammonia dissolved (as NH_4)	.18
Phosphorus, ortho dissolved	.0083
Carbon, organic dissolved	.85
Arsenic, dissolved	.00028
Barium, dissolved	.0044
Beryllium, dissolved	<.0003
Boron, dissolved	0
Cadmium, dissolved	<.0003
Cobalt, dissolved	<.0009
Copper, dissolved	<.003
Iron, total recoverable	.047
Iron, dissolved	.0066
Lead, dissolved	.0028
Lithium, dissolved	<.002
Manganese, dissolved	.0016
Molybdenum, dissolved	<.003
Selenium, dissolved	0
Strontium, dissolved	.00055
Vanadium, dissolved	<.002
Zinc, dissolved	.0080

Table 27.--Basin loads of wet-deposition constituents for selected urban-basin storms during the 1981 water year

[Zero indicates a value of zero or less than $1x10^{-6}$. Dash (--) indicates no data.]

Constituent	May 16 (lb/acre)	May 16 (lb)	May 19 to May 21 (lb/acre)	May 19 to May 21 (lb)	May 23 to June 3 (lb/acre)	May 23 to June 3 (lb)	June 3 to June 13 (lb/acre)	June 3 to June 13 (lb)	July 2 to July 27 (lb/acre)	July 2 to July 27 (lb)	Sept. 5 (lb/acre)	Sept. 5 (lb)
Bells Canyon Conduit												
Calcium, dissolved	0.064	4.1	0.36	23	0.45	29	0.89	57	3.0	190	0.22	14
Magnesium, dissolved	.0017	.11	.014	87	.051	3.2	.17	11	.65	42	.0049	.31
Sodium, dissolved	.046	3.0	.20	13	.24	15	.27	18	.76	48	<.05	<4
Potassium, dissolved	.035	2.2	.045	2.9	.059	3.8	.046	3.0	.17	11	.025	1.6
Alkalinity, lab (as $CaCO_3$)	.12	7.4	.45	29	1.5	95	2.7	180	6.6	420	1.5	94
Sulfate, dissolved	.25	16	.11	7.2	1.8	110	.89	57	3.0	190	<2	<80
Chloride, dissolved	.052	3.3	.61	39	.27	17	.36	23	1.2	79	<.03	<2
Fluoride, dissolved	0	0	0	0	0	0	.0066	.42	.014	.88	.025	1.6
Silica, dissolved	.012	.74	.075	4.8	.027	1.7	.17	11	.61	39	<.003	<.2
Solids, dissolved, residue at 180°C	.17	11	.45	29	2.1	130	4.2	270	13	850	.25	16
Solids, suspended, residue at 105°C	.29	19	11	720	5.1	320	4.5	290	14	920	1.5	94
Nitrogen, nitrate, dissolved (as N)	.021	1.3	.054	3.5	.17	11	.17	1.1	.054	3.4	.088	5.6
Nitrogen, nitrite, dissolved (as N)	.00058	.037	0	0	.0030	.19	0	0	.0021	.13	.0074	.47
Nitrogen, ammonia, dissolved (as N)	.045	2.9	.12	7.5	.36	23	.0083	.53	.013	.84	.11	7.2
Nitrogen, ammonia, dissolved (as NH_4)	.058	3.7	.15	9.7	.45	29	.011	.68	.017	1.1	.14	9.3
Phosphorus, ortho, dissolved	.0017	.11	.0023	.14	--	--	.00095	.063	0	0	.0049	.31
Carbon, organic, dissolved	.16	10	.43	27	.59	38	.14	8.9	.49	31	.44	.28
Arsenic, dissolved	.00029	.019	0	0	.00030	.019	.000066	.0042	.00014	.0088	0	0
Barium, dissolved	.00058	.037	.0045	.29	.021	1.3	.0033	.21	.0041	.26	.0022	.14
Beryllium, dissolved	<.00006	<.004	<.0003	<.02	<.0003	<.02	<.00004	<.003	<.00007	<.005	<.0003	<.02
Boron, dissolved	.0093	.59	0	0	.048	3.0	.00033	.021	.0014	.088	0	0
Cadmium, dissolved	<.00006	<.004	<.0003	<.02	.00059	.038	<.00004	<.003	<.00007	<.005	<.0003	<.02
Cobalt, dissolved	.00017	.011	.00068	.043	.00089	.057	.000099	.0063	.00021	.013	.00074	.047
Copper, dissolved	<.0006	<.04	<.003	<.2	<.003	<.2	<.0004	<.03	<.0007	<.05	<.003	<.2
Iron, total, recoverable	.0035	.22	.27	17	.098	6.8	.011	.70	.035	2.2	.032	2.0
Iron, dissolved	.0010	.067	.0023	.14	.0030	.19	.00033	.021	.00069	.044	.0025	.16
Lead, dissolved	<.0006	<.04	<.003	<.2	.0042	.27	.00036	.023	.00090	.057	<.003	<.2
Lithium, dissolved	<.0003	<.02	.0023	.14	<.002	<.08	.00030	.019	.00076	.048	<.001	<.07
Manganese, dissolved	.00012	.0074	.0018	.12	.0021	.13	.00013	.0085	.000069	.0044	.00049	.031
Molybdenum, dissolved	<.0006	<.04	<.003	<.2	<.003	<.2	<.0004	<.03	<.0007	<.05	<.003	<.2
Selenium, dissolved	0	0	0	0	.00030	.019	0	0	0	0	0	0
Strontium, dissolved	.00029	.019	.0011	.072	.0018	.11	.0043	.27	.017	1.1	.00049	.031
Vanadium, dissolved	<.0004	<.03	<.002	<.09	<.002	<.2	<.0002	<.02	<.0005	<.03	<.002	<.1
Zinc, dissolved	.0020	13	.0050	.32	.010	.65	.00053	.34	.0013	.084	.0032	.20

Constituent	May 16 (lb/acre)	May 16 (lb)	May 19 to May 21 (lb/acre)	May 19 to May 21 (lb)	May 23 to June 3 (lb/acre)	May 23 to June 3 (lb)	June 3 to June 13 (lb/acre)	June 3 to June 13 (lb)	July 2 to July 27 (lb/acre)	July 2 to July 27 (lb)	Sept. 5 (lb/acre)	Sept. 5 (lb)
Little Cottonwood Creek												
Calcium, dissolved	0.073	650	0.30	2,700	0.67	6,000	1.3	12,000	5.9	53,000	0.15	1,300
Magnesium, dissolved	.0020	18	.011	100	.076	680	.25	2,200	1.3	11,000	.0030	27
Sodium, dissolved	.053	470	.17	1,500	.36	3,200	.41	3,700	1.5	13,000	<.04	<400
Potassium, dissolved	.040	360	.037	340	.090	800	.069	620	.34	3,000	.018	160
Alkalinity, lab (as $CaCO_3$)	.13	1,200	.37	3,400	2.2	20,000	4.1	37,000	13	12,000	1.1	9,600
Sulfate, dissolved	.29	2,600	.094	840	2.6	24,000	1.3	12,000	5.9	53,000	<.9	<8,000
Chloride, dissolved	.059	530	.51	4,500	.40	3,600	.55	4,900	2.4	22,000	<.02	<200
Fluoride, dissolved	0	0	0	0	0	0	.0099	89	.027	240	.018	160
Silica, dissolved	.013	120	.062	550	.040	360	.26	2,300	1.2	11,000	<.002	<20
Solids, dissolved, residue at 180°C	.20	1,800	.37	3,400	3.1	28,000	6.3	57,000	26	230,000	.21	1,800
Solids, suspended, residue at 105°C	.33	3,000	9.4	84,000	7.6	68,000	6.7	60,000	28	25,0000	.99	8,900
Nitrogen, nitrate, dissolved (as N)	.024	210	.045	400	.25	2,300	.026	230	.11	940	--	--
Nitrogen, nitrite, dissolved (as N)	.00066	5.9	0	0	.0045	40	0	0	.0040	3.6	<.06	<50
Nitrogen, ammonia, dissolved (as N)	.052	460	.097	870	.54	4,800	.012	110	.026	230	.080	720
Nitrogen, ammonia, dissolved (as NH_4)	.066	590	.13	1,100	.67	6,000	.016	140	.032	290	.10	920
Phosphorus, ortho, dissolved	.0020	18	.0019	17	--	--	.0015	13	0	0	.0036	32
Carbon, organic, dissolved	.18	1,600	.36	3,200	.90	8,000	.21	1,900	.96	8,600	.32	2,900
Arsenic, dissolved	.00033	3.0	0	0	.00045	4.0	.000099	.89	.00027	2.4	0	0
Barium, dissolved	.00066	5.9	.0037	34	.031	280	.0050	44	.0081	72	.0016	14
Beryllium, dissolved	<.00007	<.6	<.0002	<2	<.0005	<4	<.00005	<.5	<.0002	<2	<.0002	<2
Boron, dissolved	.011	95	0	0	.072	640	.00050	4.4	.0027	24	0	0
Cadmium, dissolved	<.00007	<.6	<.0002	<2	.00090	8.0	<.00005	<.5	<.0002	<2	<.0002	<2
Cobalt, dissolved	.0002	1.8	.00056	5.0	.0013	12	.00015	1.3	.00040	3.6	<.0006	<5
Copper, dissolved	<.0007	<6	<.002	<20	<.005	<40	<.0005	<5	<.002	<20	<.002	<20
Iron, total, recoverable	.0040	36	.22	2,000	.15	1,300	.016	150	.069	620	.049	440
Iron, dissolved	.0012	11	<.002	<20	.0045	40	<.0005	<5	<.002	<20	<.002	<20
Lead, dissolved	<.0007	<6	<.002	<20	.0063	56	.00055	4.9	.0018	16	<.002	<20
Lithium, dissolved	<.0003	<3	.0019	17	<.002	<20	.00045	4.0	.0015	13	<.0008	<7
Manganese, dissolved	.00013	1.2	.0015	13	.0031	28	.00020	1.8	.00013	1.2	.00033	3.0
Molybdenum, dissolved	<.0007	<6	<.002	<20	<.005	<40	<.0005	<5	<.002	<20	<.002	<20
Selenium, dissolved	0	0	0	0	.00045	4.0	0	0	0	0	0	0
Strontium, dissolved	.00033	3.0	.00094	8.4	.0027	24	.0064	58	.032	290	<.0004	<3
Vanadium, dissolved	<.00040	<4	<.002	<10	<.003	<30	<.0003	<3	<.0009	<8	<.002	<10
Zinc, dissolved	.0023	21	.0041	37	.015	140	.00079	7.1	.0026	23	.0022	20

Table 27.—Basin loads of wet-deposition constituents for selected urban-basin storms during the 1981 water year—Continued

Constituent	Mar. 26 to Mar. 27 (lb/acre)	Mar. 26 to Mar. 27 (lb)	May 7 to May 11 (lb/acre)	May 7 to May 11 (lb)	May 19 to May 20 (lb/acre)	May 19 to May 20 (lb)	Aug. 2 to Aug. 27 (lb/acre)	Aug. 2 to Aug. 27 (lb)	Sept. 5 to Sept. 6 (lb/acre)	Sept. 5 to Sept. 6 (lb)
Holladay Drain										
Calcium, dissolved	0.27	690	0.67	1,700	0.10	260	0.052	130	0.054	140
Magnesium, dissolved	.030	76	.043	110	.0077	20	.0073	19	.0095	24
Sodium, dissolved	.19	490	.35	890	.069	180	.017	42	.027	69
Potassium, dissolved	—	—	.080	210	.023	59	.032	81	.012	31
Alkalinity, lab (as $CaCO_3$)	—	—	2.7	6,800	.31	790	.15	390	.11	280
Sulfate, dissolved	.089	230	.67	1,700	.069	180	<.07	<200	<.4	<900
Chloride, dissolved	.25	650	.37	1,000	.27	690	.054	140	.033	83
Fluoride, dissolved	—	—	.027	68	0	0	0	0	.012	33
Silica, dissolved	—	—	<.003	<7	.014	36	.0055	14	<.001	<3
Solids, dissolved, residue at 180°C	4.9	13,000	2.9	7,500	.39	990	—	—	.66	1,700
Solids, suspended, residue at 105°C	—	—	13	33,000	.85	2,200	1.9	4,800	.59	1,500
Nitrogen, nitrate, dissolved (as N)	.046	120	.056	140	.021	53	.0044	11	.030	76
Nitrogen, nitrite, dissolved (as N)	.0015	3.8	.0027	6.8	0	0	0	0	.0015	3.8
Nitrogen, ammonia, dissolved (as N)	.049	130	.14	360	.057	150	.017	42	.036	93
Nitrogen, ammonia, dissolved (as NH_4)	.064	160	.18	460	.073	190	.021	53	.047	120
Phosphorus, ortho, dissolved	—	—	.0053	14	.0039	9.9	.0063	16	.0025	6.4
Carbon, organic, dissolved	.19	490	.64	1,600	.18	450	—	—	.30	780
Arsenic, dissolved	—	—	.00027	.68	0	0	.000028	.071	<.00007	<.2
Barium, dissolved	—	—	.0053	14	.00077	2.0	.00047	1.2	.00081	2.1
Beryllium, dissolved	—	—	<.0003	<.7	<.00008	<.2	<.00002	<.04	<.00007	<.2
Boron, dissolved	—	—	0	0	0	0	.00014	.35	0	0
Cadmium, dissolved	.00015	.38	<.0003	<.7	<.00008	<.2	.000014	.035	<.00007	<.2
Cobalt, dissolved	—	—	<.0008	<3	<.0003	<.6	.000028	.070	<.0002	<.6
Copper, dissolved	.0010	2.7	<.003	<7	<.0008	<2	<.0002	<.4	<.0007	<2
Iron, total, recoverable	.033	84	.15	380	.012	30	—	—	.022	56
Iron, dissolved	.0030	7.6	.004	10	.00077	2.0	.00026	.67	<.0008	<2
Lead, dissolved	.00089	2.8	<.003	<7	<.0008	<2	<.0002	<.4	<.0007	<2
Lithium, dissolved	—	—	<.001	<3	<.0004	<.8	<.00006	<.2	<.0003	<.7
Manganese, dissolved	—	—	.0024	6.2	.00039	.99	.00026	.67	.00028	.72
Molybdenum, dissolved	—	—	<.003	<7	<.0008	<2	<.0002	<.4	<.0007	<2
Selenium, dissolved	—	—	0	0	0	0	.00014	.035	0	0
Strontium, dissolved	—	—	.0019	4.8	.00031	.79	.00019	.49	.00022	.56
Vanadium, dissolved	—	—	<.002	<5	<.0005	<2	<.00009	<.3	<.0004	<1
Zinc, dissolved	.0089	23	.016	40	.0032	8.1	.00052	1.3	.0021	5.5

Constituent	Mar. 26 to Mar. 27 (lb/acre)	Mar. 26 to Mar. 27 (lb)	May 7 to May 11 (lb/acre)	May 7 to May 11 (lb)	May 19 to May 20 (lb/acre)	May 19 to May 20 (lb)	Aug. 4 to Aug. 11 (lb/acre)	Aug. 4 to Aug. 11 (lb)	Sept. 5 to Sept. 6 (lb/acre)	Sept. 5 to Sept. 6 (lb)
Big Cottonwood Creek										
Calcium, dissolved	0.30	3,300	0.56	6,200	0.12	1,300	0.021	230	0.036	2,500
Magnesium, dissolved	.034	380	.049	540	.0091	100	.0029	33	.071	400
Sodium, dissolved	.24	2,700	.34	3,800	.082	920	.0067	74	.012	790
Potassium, dissolved	—	—	.090	1,000	.027	310	.013	140	.068	140
Alkalinity, lab (as $CaCO_3$)	—	—	1.6	18,000	.36	4,100	.061	680	.89	10,000
Sulfate, dissolved	.11	1,300	.62	6,900	.082	920	<.03	<400	<.8	<9,000
Chloride, dissolved	.32	3,600	.41	4,600	.32	3,600	.021	240	.068	760
Fluoride, dissolved	—	—	.016	180	0	0	0	0	.022	240
Silica, dissolved	—	—	<.006	<70	.016	180	.0022	25	<.008	<80
Solids, dissolved, residue at 180°C	4.0	45,000	2.8	31,000	.45	[illegible],100	—	—	1.4	16,000
Solids, suspended residue at 105°C	—	—	11	120,000	1.0	11,000	.75	8,500	2.3	26,000
Nitrogen, nitrate, dissolved (as N)	.047	530	.058	650	.025	270	.0018	20	.068	760
Nitrogen, nitrite, dissolved (as N)	.0020	22	.0016	18	0	0	0	0	.0059	66
Nitrogen, ammonia, dissolved (as N)	.058	640	.14	1,600	.067	750	.0066	74	.18	1,800
Nitrogen, ammonia, dissolved (as NH_4)	.075	840	.18	2,000	.086	970	.0083	93	.23	2,600
Phosphorus, ortho, dissolved	—	—	.0032	36	.0045	51	.0025	28	<.004	<40
Carbon, organic, dissolved	.21	2,300	.55	6,200	.21	2,300	—	—	.59	6,600
Arsenic, dissolved	—	—	.00026	3.0	0	0	.000011	.12	.0022	1.7
Barium, dissolved	—	—	.013	140	.00091	10	.00019	2.1	.0022	25
Beryllium, dissolved	—	—	<.0003	<3	<.0001	<1	<.000006	<.07	<.0002	<2
Boron, dissolved	—	—	0	0	0	0	.000055	.62	0	0
Cadmium, dissolved	<.0002	<2	<.0003	<3	<.0001	<1	<.000006	<.07	<.0002	<2
Cobalt, dissolved	—	—	<.0008	<9	<.0003	<4	.000011	.12	<.0005	<6
Copper, dissolved	.00083	9.3	<.003	<30	<.001	<10	<.00006	<.7	<.002	<20
Iron, total, recoverable	.029	320	.11	1,300	.014	150	—	—	.052	580
Iron, dissolved	.0023	26	.0047	53	.00091	10	.00010	1.2	<.002	<20
Lead, dissolved	.00057	6.4	<.003	<30	<.001	<10	<.00006	<.7	<.002	<20
Lithium, dissolved	—	—	<.002	<20	<.0004	<5	<.00003	<.3	<.0007	<7
Manganese, dissolved	—	—	.0021	23	.00045	5.1	.00010	1.2	.00089	10
Molybdenum, dissolved	—	—	<.003	<30	<.001	<10	<.00006	<.7	<.002	<20
Selenium, dissolved	—	—	0	0	0	0	.0000055	.062	0	0
Strontium, dissolved	—	—	.0016	18	.00036	4.1	.000077	.86	.00083	9.3
Vanadium, dissolved	—	—	<.002	<20	<.0006	<7	<.00004	<.4	<.001	<10
Zinc, dissolved	.0056	62	.011	120	.0037	42	.00021	2.3	.0043	48

Table 27.--Basin loads of wet-deposition constituents for selected urban-basin storms during the 1981 water year--Continued

Constituent	Mar. 26 to Mar. 27 (lb/acre)	Mar. 26 to Mar. 27 (lb)	May 7 to May 11 (lb/acre)	May 7 to May 11 (lb)	May 19 to May 20 (lb/acre)	May 19 to May 20 (lb)	Aug. 4 to Aug. 11 (lb/acre)	Aug. 4 to Aug. 11 (lb)	Sept. 5 to Sept. 6 (lb/acre)	Sept. 5 to Sept. 6 (lb)
Mill Creek										
Calcium, dissolved	0.62	4,000	0.53	3,400	0.10	660	0.031	200	0.11	710
Magnesium, dissolved	.071	460	.045	290	.0080	51	.0044	28	.020	130
Sodium, dissolved	.49	3,100	.32	2,100	.072	460	.0099	63	.062	390
Potassium, dissolved	—	—	.083	530	.024	150	.019	120	.031	200
Alkalinity, lab (as $CaCO_3$)	—	—	1.6	10,000	.32	2,000	.091	580	.15	990
Sulfate, dissolved	.23	1,500	.58	3,700	.072	460	<.05	<300	<.8	<5,000
Chloride, dissolved	.65	4,200	.38	2,400	.28	1,800	.032	210	.077	490
Fluoride, dissolved	—	—	.016	100	0	0	0	0	.031	200
Silica, dissolved	—	—	<.006	<40	.014	92	.0033	21	<.002	<10
Solids, dissolved, residue at 180°C	8.7	56,000	2.6	17,000	.40	2,600	—	—	1.5	9,900
Solids, suspended, residue at 105°C	—	—	10	66,000	.88	5,600	1.1	7,200	1.2	7,900
Nitrogen, nitrate, dissolved (as N)	.099	630	.054	340	.022	140	.0026	17	.069	440
Nitrogen, nitrite, dissolved (as N)	.0041	26	.0016	10	0	0	0	0	.0031	20
Nitrogen, ammonia, dissolved (as N)	.12	760	.13	840	.059	380	.0099	63	.071	450
Nitrogen, ammonia, dissolved (as NH_4)	.15	990	.17	1,100	.076	490	.012	79	.091	580
Phosphorus, ortho, dissolved	—	—	.0032	21	.0040	26	.0038	24	.0062	39
Carbon, organic, dissolved	.44	2,800	.53	3,400	.18	1,200	—	—	.72	4,600
Arsenic, dissolved	—	—	.00025	1.6	0	0	.000017	11	.00015	.99
Barium, dissolved	—	—	.011	71	.00080	5.1	.00028	1.8	.0019	12
Beryllium, dissolved	—	—	<.0003	<2	<.00008	<.6	<.000009	<.06	<.0002	<1
Boron, dissolved	—	—	0	0	0	0	.000083	.53	0	0
Cadmium, dissolved	<.0003	<2	<.0003	<2	<.00008	<.6	.0000083	.053	<.0002	<1
Cobalt, dissolved	—	—	<.0008	<5	<.0003	<2	.000017	.11	<.0005	<3
Copper, dissolved	.0018	12	<.003	<20	<.0008	<6	<.00009	<.6	.0015	9.9
Iron, total, recoverable	.061	390	.11	710	.012	77	—	—	.051	330
Iron, dissolved	.0050	32	.0043	28	.00080	5.1	.00016	1.0	.0017	11
Lead, dissolved	.0013	8.2	<.003	<20	<.0008	<6	<.00009	<.6	<.002	<10
Lithium, dissolved	—	—	<.001	<7	<.0004	<2	<.00004	<.3	<.0007	<4
Manganese, dissolved	—	—	.0020	13	.00040	2.6	.00016	1.0	.00062	3.9
Molybdenum, dissolved	—	—	<.003	<20	<.0008	<6	<.00009	<.6	<.002	<10
Selenium, dissolved	—	—	0	0	0	0	.0000083	.053	0	0
Strontium, dissolved	—	—	.0016	10	.00032	2.0	.00012	.74	.00046	3.0
Vanadium, dissolved	—	—	<.002	<10	<.0005	<4	<.00005	<.4	<.001	<6
Zinc, dissolved	.013	80	.011	70	.0033	21	.00031	2.0	.0051	33

Constituent	Oct. 7 to Oct. 26 (lb/acre)	Oct. 7 to Oct. 26 (lb)	Oct. 26 (lb/acre)	Oct. 26 (lb)	Nov. 17 to Jan 6 (lb/acre)	Nov. 17 to Jan 6 (lb)	Jan. 16 to Feb. 2 (lb/acre)	Jan. 16 to Feb. 2 (lb)	Mar. 26 to Mar. 27 (lb/acre)	Mar. 26 to Mar. 27 (lb)	May 7 to May 11 (lb/acre)	May 7 to May 11 (lb)
Twenty-First South Conduit												
Calcium, dissolved	0.69	840	0.094	110	.37	450	0.15	180	.79	960	0.37	450
Magnesium, dissolved	.37	450	.034	42	.11	130	.12	140	.093	110	.043	53
Sodium, dissolved	2.7	3,300	.28	340	.68	830	.38	460	.67	810	.28	340
Potassium, dissolved	—	—	—	—	—	—	—	—	—	—	.080	97
Alkalinity, lab (as $CaCO_3$)	—	—	—	—	—	—	—	—	—	—	.53	640
Sulfate, dissolved	1.9	2,300	.11	130	2.6	3,200	.67	820	.33	400	.47	570
Chloride, dissolved	1.2	1,500	.30	360	1.2	1,500	.58	710	.91	1,100	.36	440
Fluoride, dissolved	—	—	—	—	—	—	—	—	—	—	.0053	6.4
Silica, dissolved	—	—	—	—	—	—	—	—	—	—	<.007	<9
Solids, dissolved, residue at 180°C	4.5	5,500	1.0	1,200	5.8	7,000	2.9	3,500	8.1	9,900	2.2	2,600
Solids, suspended, residue at 105°C	6.5	7,900	—	—	1.6	1,900	1.2	1,400	—	—	7.2	8,700
Nitrogen, nitrate, dissolved (as N)	—	—	—	—	—	—	—	—	.12	140	.048	58
Nitrogen, nitrite, dissolved (as N)	—	—	—	—	—	—	—	—	.0059	7.2	.00053	.64
Nitrogen, ammonia, dissolved (as N)	—	—	—	—	—	—	—	—	.16	190	.11	140
Nitrogen, ammonia, dissolved (as NH_4)	—	—	—	—	—	—	—	—	.20	250	.15	180
Phosphorus, ortho, dissolved	0.0	0.0	—	—	0.0	0.0	—	—	—	—	.0011	1.3
Carbon, organic, dissolved	—	—	—	—	—	—	—	—	.54	660	.38	460
Arsenic, dissolved	—	—	—	—	—	—	—	—	—	—	.00021	.26
Barium, dissolved	—	—	—	—	—	—	—	—	—	—	.015	19
Beryllium, dissolved	—	—	—	—	—	—	—	—	—	—	<.0003	<.3
Boron, dissolved	—	—	—	—	—	—	—	—	—	—	0	0
Cadmium, dissolved	—	—	—	—	—	—	<.0003	<.4	<.0004	<.5	<.0003	<.3
Cobalt, dissolved	—	—	—	—	—	—	—	—	—	—	<.0007	<.8
Copper, dissolved	.011	13	.00094	1.1	.0042	5.1	.0035	4.3	.0016	2.0	<.003	<3
Iron, total, recoverable	—	—	—	—	—	—	—	—	.062	75	.068	83
Iron, dissolved	—	—	—	—	—	—	—	—	.0042	5.1	.0043	5.2
Lead, dissolved	.015	18	.00060	.73	.013	16	.0023	2.8	.00076	.93	<.003	<3
Lithium, dissolved	—	—	—	—	—	—	—	—	—	—	<.0009	<1
Manganese, dissolved	—	—	—	—	—	—	—	—	—	—	.0014	1.7
Molybdenum, dissolved	—	—	—	—	—	—	—	—	—	—	<.003	<3
Selenium, dissolved	—	—	—	—	—	—	—	—	—	—	0	0
Strontium, dissolved	—	—	—	—	—	—	—	—	—	—	.0012	1.4
Vanadium, dissolved	—	—	—	—	—	—	—	—	—	—	<.002	<2
Zinc, dissolved	.020	25	.0043	5.2	.011	13	.0088	11	.0069	8.3	.0058	7.1

Table 27.—Basin loads of wet-deposition constituents for selected urban-basin storms during the 1981 water year—Continued

Constituent	May 19 to May 21 (lb/acre)	May 19 to May 21 (lb)	Sept. 5 (lb/acre)	Sept. 5 (lb)
Twenty-First South Conduit—Continued				
Calcium, dissolved	0.87	110	0.064	77
Magnesium, dissolved	<.0007	<.9	.0064	7.7
Sodium, dissolved	.12	150	.027	33
Potassium, dissolved	.017	21	.018	22
Alkalinity, lab (as $CaCO_3$)	.87	1,100	.36	440
Sulfate, dissolved	.087	110	<.5	<600
Chloride, dissolved	.35	420	.018	22
Fluoride, dissolved	0	0	.0091	11
Silica, dissolved	.017	21	<.001	<2
Solids, dissolved, residue at 180°C	.17	210	.18	220
Solids, suspended, residue at 105°C	.52	630	.82	990
Nitrogen, nitrate, dissolved (as N)	.021	25	.035	42
Nitrogen, nitrite, dissolved (as N)	0	0	.0018	2.2
Nitrogen, ammonia, dissolved (as N)	.078	95	.048	59
Nitrogen, ammonia, dissolved (as NH_4)	.10	120	.062	75
Phosphorus, ortho, dissolved	.0087	11	.0018	2.2
Carbon, organic, dissolved	.33	400	.24	290
Arsenic, dissolved	.00017	.21	.000091	.11
Barium, dissolved	.0017	2.1	.0019	2.3
Beryllium, dissolved	<.0002	<.3	<.0001	<.2
Boron, dissolved	0	0	0	0
Cadmium, dissolved	<.0002	<.3	<.0001	<.2
Cobalt, dissolved	<.0006	<.7	<.0003	<.4
Copper, dissolved	<.002	<3	<.001	<2
Iron, total, recoverable	.010	13	.022	27
Iron, dissolved	<.002	<3	<.001	<2
Lead, dissolved	<.002	<3	<.001	<2
Lithium, dissolved	<.002	<3	<.0004	<.5
Manganese, dissolved	.00035	.42	.00045	.55
Molybdenum, dissolved	<.002	<3	<.001	<2
Selenium, dissolved	0	0	0	0
Strontium, dissolved	.00035	.42	.00018	.22
Vanadium, dissolved	<.001	<2	<.0006	<.7
Zinc, dissolved	.0038	4.6	.0023	2.8

Constituent	Mar. 26 to Mar. 27 (lb/acre)	Mar. 26 to Mar. 27 (lb)	May 7 to May 11 (lb/acre)	May 7 to May 11 (lb)	May 19 to May 20 (lb/acre)	May 19 to May 20 (lb)	Sept. 5 to Sept. 6 (lb/acre)	Sept. 5 to Sept. 6 (lb)
Thirteenth South Conduits								
Calcium, dissolved	0.62	5,500	0.57	5,000	0.12	1,100	0.13	1,100
Magnesium, dissolved	.070	620	.039	340	<.01	<90	.023	200
Sodium, dissolved	.46	4,100	.30	2,700	.084	740	.069	610
Potassium, dissolved	—	—	.072	640	.028	250	.034	300
Alkalinity, lab (as $CaCO_3$)	—	—	2.2	19,000	.37	3,300	.17	1,500
Sulfate, dissolved	.22	1,900	.58	5,100	.084	740	<.9	<8,000
Chloride, dissolved	.61	5,400	.34	3,000	.33	2,900	.086	760
Fluoride, dissolved	—	—	.022	190	0	0	.035	310
Silica, dissolved	—	—	<.003	<30	.017	150	<.002	<20
Solids, dissolved, residue at 180°C	11	9,500	2.6	23,000	.47	4,100	1.8	15,000
Solids, suspended, residue at 105°C	—	—	11	96,000	1.0	9,100	1.4	12,000
Nitrogen, nitrate, dissolved (as N)	.11	930	.050	440	.025	220	.078	690
Nitrogen, nitrite, dissolved (as N)	.0037	32	.0022	19	0	0	.0035	31
Nitrogen, ammonia, dissolved (as N)	.12	1,000	.12	1,100	.069	610	.080	710
Nitrogen, ammonia, dissolved (as NH_4)	.15	1,300	.16	1,400	.089	790	.10	910
Phosphorus, ortho, dissolved	—	—	.0043	38	.0047	41	.0069	61
Carbon, organic, dissolved	.45	4,000	.55	4,800	.22	1,900	.81	7,100
Arsenic, dissolved	—	—	.00023	2.1	0	0	.00017	1.5
Barium, dissolved	—	—	.0060	53	.00094	8.3	.0021	19
Beryllium, dissolved	—	—	<.0003	<3	<.0001	<.9	<.0002	<12
Boron, dissolved	—	—	0	0	0	0	0	0
Cadmium, dissolved	<.0004	<3	<.0003	<.3	<.0001	<.9	<.0002	<2
Cobalt, dissolved	—	—	<.0007	<.7	<.0003	<3	<.0006	<5
Copper, dissolved	.0023	20	<.003	<30	<.001	<9	<.002	<20
Iron, total, recoverable	.073	640	.13	1,100	.014	120	.057	500
Iron, dissolved	.0065	57	.0036	32	<.001	<9	<.002	<20
Lead, dissolved	.0019	17	<.003	<30	<.001	<9	<.002	<20
Lithium, dissolved	—	—	<.001	<9	<.0004	<4	<.0007	<7
Manganese, dissolved	—	—	.0021	18	.00047	4.1	.00070	6.2
Molybdenum, dissolved	—	—	<.003	<30	<.001	<9	<.002	<20
Selenium, dissolved	—	—	0	0	0	0	0	0
Strontium, dissolved	—	—	.0016	14	.00037	3.3	.00052	4.6
Vanadium, dissolved	—	—	<.002	<20	<.0006	<5	<.001	<10
Zinc, dissolved	.019	170	.013	120	.0038	34	.0057	50

Table 27.—Basin loads of wet-deposition constituents for selected urban-basin storms during the 1981 water year—Continued

Constituent	Sept. 5 to Sept. 6 (lbs/acre)	Sept. 5 to Sept. 6 (lbs)
Eighth South, South Conduit		
Calcium, dissolved	0.14	8.7
Magnesium, dissolved	.016	1.0
Sodium, dissolved	.027	1.7
Potassium, dissolved	.014	.87
Alkalinity, lab (as $CaCO_3$)	0	0
Sulfate, dissolved	<.7	<50
Chloride, dissolved	.027	1.7
Fluoride, dissolved	.027	1.7
Silica, dissolved	<.02	<.7
Solids, dissolved, residue at 180°C	2.0	130
Solids, suspended, residue at 105°C	1.2	79
Nitrogen, nitrate, dissolved (as N)	.068	4.4
Nitrogen, nitrite, dissolved (as N)	.0041	26
Nitrogen, ammonia, dissolved (as N)	.071	4.5
Nitrogen, ammonia, dissolved (as NH_4)	.092	5.9
Phosphorus, ortho, dissolved	.0041	.26
Carbon, organic, dissolved	.42	27
Arsenic, dissolved	.00014	.0087
Barium, dissolved	.0022	.14
Beryllium, dissolved	<.0002	<.009
Boron, dissolved	0	0
Cadmium, dissolved	<.0002	<.009
Cobalt, dissolved	<.0005	<.03
Copper, dissolved	<.002	<.09
Iron, total, recoverable	.023	1.5
Iron, dissolved	<.004	<.3
Lead, dissolved	<.002	<.09
Lithium, dissolved	<.0006	<.04
Manganese, dissolved	.00082	.052
Molybdenum, dissolved	<.002	<.09
Selenium, dissolved	0	0
Strontium, dissolved	.00027	.017
Vanadium, dissolved	<.0009	<.06
Zinc, dissolved	.0040	.25

Constituent	Mar. 26 to Mar. 27 (lbs/acre)	(lbs)	May 7 to May 11 (lbs/acre)	(lbs)	May 19 to May 20 (lbs/acre)	(lbs)	Aug. 4 to Aug. 11 (lbs/acre)	(lbs)	Sept. 5 to Sept. 6 (lbs/acre)	(lbs)
Eighth South, Middle Conduit										
Calcium, dissolved	0.21	310	0.41	600	13	19,000	0.063	92	0.12	180
Magnesium, dissolved	.024	35	.026	38	1.0	1,500	.088	13	.023	33
Sodium, dissolved	.15	230	.21	310	9.2	13,000	.020	29	.069	100
Potassium, dissolved	—	—	.049	72	3.1	4,500	.038	56	.035	51
Alkalinity, lab (as $CaCO_3$)	—	—	1.6	2,400	41	60,000	.18	270	.17	260
Sulfate, dissolved	.071	100	.41	600	9.2	13,000	<.09	<120	<.9	<1,300
Chloride, dissolved	.20	300	.23	330	36	52,000	.064	95	.087	130
Fluoride, dissolved	—	—	.016	24	0	0	0	0	.035	51
Silica, dissolved	—	—	.0016	2.4	1.8	2,700	.0066	9.7	<.002	<3
Solids, dissolved, residue at 180°C	3.9	75	1.8	2,600	.51	75,000	—	—	1.7	2,600
Solids, suspended, residue at 105°C	—	—	7.8	11,000	110	160,000	2.3	3,300	1.4	2,000
Nitrogen, nitrate, dissolved (as N)	.037	54	.034	50	2.8	4,000	.0053	7.8	.078	110
Nitrogen, nitrite, dissolved (as N)	.0012	1.7	.0016	2.4	0	0	0	0	.0035	5.1
Nitrogen, ammonia, dissolved (as N)	.039	58	.084	124	7.5	11,000	.020	29	.080	120
Nitrogen, ammonia, dissolved (as NH_4)	.051	75	.11	160	9.7	14,000	.025	36	.10	150
Phosphorus, ortho, dissolved	—	—	.0032	4.8	.51	750	.0076	11	.0069	10
Carbon, organic, dissolved	.15	230	.39	570	23	34,000	—	—	.82	1,200
Arsenic, dissolved	—	—	.00016	.24	0	0	.000033	.049	.00017	26
Barium, dissolved	—	—	.0032	4.8	.10	150	.00056	.83	.0021	3.1
Beryllium, dissolved	—	—	<.0002	<.3	<.01	<20	<.00002	<.03	<.0002	<.3
Boron, dissolved	—	—	0	0	0	0	.00017	.24	0	0
Cadmium, dissolved	.00012	.17	<.0002	<.3	<.01	<20	.000017	.024	<.0002	<.3
Cobalt, dissolved	—	—	<.0005	<.8	<.04	<50	.000033	.049	<.0006	<.8
Copper, dissolved	.00083	1.2	<.002	<3	<.1	<200	<.0002	<.3	.0017	2.6
Iron, total, recoverable	.026	38	.091	130	1.5	2,200	—	—	.057	84
Iron, dissolved	.0024	3.5	.0024	3.6	.10	150	.00031	.46	.0019	2.8
Lead, dissolved	.00071	1.0	<.002	<3	<.1	<200	<.0002	<.3	<.002	<3
Lithium, dissolved	—	—	<.0007	<1	<.05	<60	<.00007	<.1	<.0007	<1
Manganese, dissolved	—	—	.0015	2.2	.051	75	.00031	.46	.00069	1.0
Molybdenum, dissolved	—	—	<.002	<3	<.1	<200	<.0002	<.3	<.002	<3
Selenium, dissolved	—	—	0	0	0	0	.000017	.024	0	0
Strontium, dissolved	—	—	.0011	1.7	.041	60	.00023	.34	.00052	.77
Vanadium, dissolved	—	—	<.001	<2	<.07	<90	<.0001	<.2	<.001	<2
Zinc, dissolved	.0071	10	.0096	14	.42	610	.00063	.92	.0057	8.4

Table 27.—Basin loads of wet-deposition constituents for selected urban-basin storms during the 1981 water year—Continued

Constituent	Sept. 5 to Sept. 6 (lbs/acre)	(lbs)
Eighth South, North Conduit		
Calcium, dissolved	0.17	85
Magnesium, dissolved	.020	10
Sodium, dissolved	.033	17
Potassium, dissolved	.017	8.5
Alkalinity, lab (as $CaCO_3$)	0	0
Sulfate, dissolved	<.9	<500
Chloride, dissolved	.033	17
Fluoride, dissolved	.033	17
Silica, dissolved	.013	6.8
Solids, dissolved, residue at 180°C	2.5	1,300
Solids, suspended, residue at 105°C	1.5	760
Nitrogen, nitrate, dissolved (as N)	.083	42
Nitrogen, nitrite, dissolved (as N)	.0050	2.5
Nitrogen, ammonia, dissolved (as N)	.086	44
Nitrogen, ammonia, dissolved (as NH_4)	.11	57
Phosphorus, ortho, dissolved	.0050	2.5
Carbon, organic, dissolved	.51	260
Arsenic, dissolved	.00017	.085
Barium, dissolved	.0026	1.4
Beryllium, dissolved	<.0002	<.09
Boron, dissolved	0	0
Cadmium, dissolved	<.0002	<.009
Cobalt, dissolved	<.0005	<.3
Copper, dissolved	<.002	<.9
Iron, total, recoverable	.028	14
Iron, dissolved	.0040	2.0
Lead, dissolved	.0017	.85
Lithium, dissolved	<.0007	<.4
Manganese, dissolved	.00099	.51
Molybdenum, dissolved	<.002	<.9
Selenium, dissolved	0	0
Strontium, dissolved	.00033	.17
Vanadium, dissolved	<.001	<.6
Zinc, dissolved	.0048	2.4

Constituent	Mar. 26 to Mar. 27 (lbs/acre)	(lbs)	May 7 to May 11 (lbs/acre)	(lbs)	May 19 to May 20 (lbs/acre)	(lbs)	Aug. 4 to Aug. 11 (lbs/acre)	(lbs)	Sept. 5 to Sept. 6 (lbs/acre)	(lbs)
North Temple Conduit										
Calcium, dissolved	0.37	740	.41	820	0.12	230	0.073	150	0.11	230
Magnesium, dissolved	.041	82	.026	52	.0091	18	.010	20	.018	35
Sodium, dissolved	.27	530	.21	430	.082	160	.023	46	.047	93
Potassium, dissolved	—	—	.050	98	.027	54	.044	88	.023	47
Alkalinity, lab (as $CaCO_3$)	—	—	1.7	3,300	.36	720	.21	420	.094	190
Sulfate, dissolved	.12	250	.41	820	.082	160	<.1	<200	<.70	<1,400
Chloride, dissolved	.35	700	.23	460	.32	630	.075	150	.056	110
Fluoride, dissolved	—	—	.017	33	0	0	0	0	.028	56
Silica, dissolved	—	—	<.002	<4	.016	32	.0077	15	<.005	<10
Solids, dissolved, residue at 180°C	6.8	14,000	1.8	3,600	.45	900	—	—	1.6	3,200
Solids, suspended, residue at 105°C	—	—	7.9	16,000	1.0	2,000	2.6	5,200	1.2	2,300
Nitrogen, nitrate, dissolved (as N)	.064	130	.035	69	.025	49	.0062	12	.066	130
Nitrogen, nitrite, dissolved (as N)	.0021	4.1	.0017	3.3	0	0	0	0	.0033	6.4
Nitrogen, ammonia, dissolved (as N)	.068	140	.086	170	.067	130	.023	46	.067	130
Nitrogen, ammonia, dissolved (as NH_4)	.089	180	.11	220	.086	170	.029	57	.087	170
Phosphorus, ortho, dissolved	—	—	.0033	6.6	.0045	9.0	.0089	18	.0052	10
Carbon, organic, dissolved	.27	530	.40	790	.21	410	—	—	.59	1,200
Arsenic, dissolved	—	—	.00017	3.3	0	0	.000039	.076	.00014	.28
Barium, dissolved	—	—	.0033	6.6	.00091	1.8	.00066	1.3	.0019	3.7
Beryllium, dissolved	—	—	<.0002	<.4	<.0001	<.2	<.00002	<.04	<.0002	<.3
Boron, dissolved	—	—	0	0	0	0	.00019	.38	0	0
Cadmium, dissolved	.00021	.41	<.0002	<.4	<.0001	<.2	.000019	.038	<.0002	<.3
Cobalt, dissolved	—	—	<.0005	<1	<.0003	<.6	.000039	.076	<.0005	<.9
Copper, dissolved	.0014	2.9	<.002	<4	<.001	<2	<.0002	<.4	.002	<3
Iron, total, recoverable	.045	90	.093	180	.014	27	—	—	.039	77
Iron, dissolved	.0041	8.2	.0025	4.9	.00091	1.8	.00037	.73	.0021	4.3
Lead, dissolved	.0012	2.5	<.002	<4	<.001	<2	<.0002	<.4	<.002	<3
Lithium, dissolved	—	—	<.0007	<2	<.0004	<.8	<.00008	<.2	<.0006	<2
Manganese, dissolved	—	—	.0015	3.0	.00045	.90	.00037	.73	.00065	1.3
Molybdenum, dissolved	—	—	<.002	<4	<.001	<2	<.0002	<.4	<.002	<3
Selenium, dissolved	—	—	0	0	0	0	.000019	.038	0	0
Strontium, dissolved	—	—	.0012	2.3	.00036	.72	.00027	.54	.00038	.74
Vanadium, dissolved	—	—	<.001	<2	<.0006	<2	.0002	<.3	<.0009	<2
Zinc, dissolved	.012	25	.0097	19	.0037	7.4	.00073	1.5	.0044	8.8

Table 27.—Basin loads of wet-deposition constituents for selected urban-basin storms during the 1981 water year—Continued

Constituent	Sept. 5 to Sept. 6 (lbs/acre)	Sept. 5 to Sept. 6 (lbs)
Ninth West Conduit		
Calcium, dissolved	0.14	21
Magnesium, dissolved	.017	2.5
Sodium, dissolved	.027	4.2
Potassium, dissolved	.014	2.1
Alkalinity, lab (as $CaCO_3$)	0	0
Sulfate, dissolved	<.8	<200
Chloride, dissolved	.029	4.2
Fluoride, dissolved	.029	4.2
Silica, dissolved	.011	1.7
Solids, dissolved, residue at 180°C	2.1	320
Solids, suspended, residue at 105°C	1.3	190
Nitrogen, nitrate, dissolved (as N)	.072	11
Nitrogen, nitrite, dissolved (as N)	.0043	.63
Nitrogen, ammonia, dissolved (as N)	.074	11
Nitrogen, ammonia, dissolved (as NH_4)	.096	.14
Phosphorus, ortho, dissolved	.0043	.63
Carbon, organic, dissolved	.44	65
Arsenic, dissolved	.00014	.021
Barium, dissolved	.0023	.34
Beryllium, dissolved	<.0002	<.03
Boron, dissolved	0	0
Cadmium, dissolved	<.0002	<.03
Cobalt, dissolved	<.0005	<.07
Copper, dissolved	<.002	<.3
Iron, total, recoverable	.024	3.6
Iron, dissolved	.0034	.51
Lead, dissolved	.0014	.21
Lithium, dissolved	<.0006	<.09
Manganese, dissolved	.00086	.13
Molybdenum, dissolved	<.002	<.3
Selenium, dissolved	0	0
Strontium, dissolved	.00029	.042
Vanadium, dissolved	<.0009	<.2
Zinc, dissolved	.0042	.61

Table 28.--Mean concentrations and coefficients of variation of dustfall constituents and properties at six atmospheric-deposition stations

[See table 1 and plate 1 for number and location of stations.]

Constituent or property	Number of samples	Mean Concentration	Coefficient of variation
Bells Canyon Conduit (site 1)			
Specific conductance (umho/cm at 25°C)	4	31	40
Solids, residue at 105°C, total (mg)	6	60	94
Chloride, dissolved (mg/kg)	6	51,300	94
Nitrogen, nitrate total (mg/kg as N)	5	10,600	64
Nitrogen, nitrite total (mg/kg as N)	6	719	126
Nitrogen, ammonia total (mg/kg as N)	6	12,900	114
Phosphorus, ortho, total (mg/kg as P)	6	3,150	93
Carbon, organic suspended total (mg/kg)	5	51,300	138
Cyanide, total (mg/kg)	6	357	127
Aluminum, total recoverable (ug/kg)	6	34,600,000	66
Antimony, total (ug/kg)	6	12,900	223
Arsenic, total (ug/kg)	6	52,500	84
Beryllium, total recoverable (ug/kg)	6	304,000	160
Cadmium, total recoverable (ug/kg)	6	37,500	117
Chromium, total recoverable (ug/kg)	6	278,000	90
Copper, total recoverable (ug/kg)	6	868,000	93
Iron, total recoverable (ug/kg)	6	35,700,000	79
Lead, total recoverable (ug/kg)	6	1,880,000	90
Manganese, total recoverable (ug/kg)	6	1,120,000	97
Mercury, total recoverable (ug/kg)	6	3,450	131
Nickel, total recoverable (ug/kg)	6	67,000	40
Selenium, total (ug/kg)	6	30,400	160
Silver, total recoverable (ug/kg)	6	31,400	153
Zinc, total recoverable (ug/kg)	6	2,620,000	90
Sandy City Public Works (site 3)			
Specific conductance (umho/cm at 25°C)	4	43	52
Solids, residue at 105°C, total (mg)	6	150	134
Chloride, dissolved (mg/kg)	6	32,400	106
Nitrogen, nitrate total (mg/kg as N)	5	6,720	139
Nitrogen, nitrite total (mg/kg as N)	6	522	136

Table 28.--Mean concentrations and coefficients of variation of dustfall constituents and properties at six atmospheric-deposition stations--Continued

Constituent or property	Number of samples	Mean Concentration	Coefficient of variation
Sandy City Public Works (site 3)--Continued			
Nitrogen, ammonia total (mg/kg as N)	6	8,830	122
Phosphorus, ortho, total (mg/kg as P)	6	1,550	60
Carbon, organic suspended total (mg/kg)	5	27,900	77
Cyanide, total (mg/kg)	6	270	129
Aluminum, total recoverable (ug/kg)	6	22,600,000	74
Antimony, total (ug/kg)	6	17,300	141
Arsenic, total (ug/kg)	6	100,000	94
Beryllium, total recoverable (ug/kg)	6	239,000	155
Cadmium, total recoverable (ug/kg)	6	28,100	121
Chromium, total recoverable (ug/kg)	6	313,000	104
Copper, total recoverable (ug/kg)	6	1,290,000	134
Iron, total recoverable (ug/kg)	5	3,400,000	81
Lead, total recoverable (ug/kg)	6	2,410,000	100
Manganese, total recoverable (ug/kg)	5	1,010,000	71
Mercury, total recoverable (ug/kg)	6	2,520	139
Nickel, total recoverable (ug/kg)	6	49,000	45
Selenium, total (ug/kg)	6	25,100	144
Silver, total recoverable (ug/kg)	6	24,800	147
Zinc, total recoverable (ug/kg)	5	1,650,000	100
Dixie Valley Detention Basin (site 5)			
Specific conductance (umho/cm at 25°C)	3	34	40
Solids, residue at 105°C, total (mg)	5	53	82
Chloride, dissolved (mg/kg)	5	56,400	73
Nitrogen, nitrate total (mg/kg as N)	4	9,900	63
Nitrogen, nitrite total (mg/kg as N)	5	548	121
Nitrogen, ammonia total (mg/kg as N)	5	10,700	80
Phosphorus, ortho, total (mg/kg as P)	5	3,510	51
Carbon, organic suspended total (mg/kg)	5	41,600	109
Cyanide, total (mg/kg)	5	284	113
Aluminum, total recoverable (ug/kg)	5	27,400,000	73

Table 28.--Mean concentrations and coefficients of variation of dustfall constituents and properties at six atmospheric-deposition stations--Continued

Constituent or property	Number of samples	Mean Concentration	Coefficient of variation
Dixie Valley Detention Basin (site 5)--Continued			
Antimony, total (ug/kg)	5	9,090	223
Arsenic, total (ug/kg)	5	67,500	81
Beryllium, total recoverable (ug/kg)	5	245,000	144
Cadmium, total recoverable (ug/kg)	5	35,100	79
Chromium, total recoverable (ug/kg)	5	230,000	79
Copper, total recoverable (ug/kg)	5	2,040,000	135
Iron, total recoverable (ug/kg)	5	35,900,000	65
Lead, total recoverable (ug/kg)	5	1,090,000	83
Manganese, total recoverable (ug/kg)	5	1,270,000	97
Mercury, total recoverable (ug/kg)	5	3,980	85
Nickel, total recoverable (ug/kg)	5	72,900	49
Selenium, total (ug/kg)	5	26,500	127
Silver, total recoverable (ug/kg)	5	57,200	172
Zinc, total recoverable (ug/kg)	5	2,700,000	121
Administration Building (site 15)			
Specific conductance (umho/cm at 25°C)	11	71	66
Solids, residue at 105°C, total (mg)	14	120	60
Chloride, dissolved (mg/kg)	8	85,300	189
Nitrogen, nitrate total (mg/kg as N)	14	8,040	64
Nitrogen, nitrite total (mg/kg as N)	14	280	155
Nitrogen, ammonia total (mg/kg as N)	14	6,190	100
Phosphorus, ortho, total (mg/kg as P)	14	12,300	104
Carbon, organic suspended total (mg/kg)	8	33,200	120
Cyanide, total (mg/kg)	8	150	144
Aluminum, total recoverable (ug/kg)	8	18,000,000	70
Antimony, total (ug/kg)	8	18,700	103
Arsenic, total (ug/kg)	8	46,900	70
Beryllium, total recoverable (ug/kg)	8	120,000	191
Cadmium, total recoverable (ug/kg)	14	14,900	107
Chromium, total recoverable (ug/kg)	8	226,000	60

Table 28.--Mean concentrations and coefficients of variation of dustfall constituents and properties at six atmospheric-deposition stations--Continued

Constituent or property	Number of samples	Mean Concentration	Coefficient of variation
Administration Building (site 15)--Continued			
Copper, total recoverable (ug/kg)	14	757,000	64
Iron, total recoverable (ug/kg)	8	30,100,000	73
Lead, total recoverable (ug/kg)	14	1,620,000	105
Manganese, total recoverable (ug/kg)	8	850,000	75
Mercury, total recoverable (ug/kg)	8	2,390	84
Nickel, total recoverable (ug/kg)	8	81,800	79
Selenium, total (ug/kg)	8	23,900	134
Silver, total recoverable (ug/kg)	8	13,100	172
Zinc, total recoverable (ug/kg)	14	1,810,000	69
Fort Douglas (site 18)			
Specific conductance (umho/cm at 25°C)	6	28	25
Solids, residue at 105°C, total (mg)	9	79	64
Chloride, dissolved (mg/kg)	8	75,500	181
Nitrogen, nitrate total (mg/kg as N)	8	7,510	71
Nitrogen, nitrite total (mg/kg as N)	9	228	167
Nitrogen, ammonia total (mg/kg as N)	9	624	120
Phosphorus, ortho, total (mg/kg as P)	9	5,210	136
Carbon, organic suspended total (mg/kg)	8	26,600	70
Cyanide, total (mg/kg)	8	147	133
Aluminum, total recoverable (ug/kg)	8	19,100,000	48
Antimony, total (ug/kg)	8	5,780	233
Arsenic, total (ug/kg)	8	36,600	73
Beryllium, total recoverable (ug/kg)	8	111,000	187
Cadmium, total recoverable (ug/kg)	9	15,600	124
Chromium, total recoverable (ug/kg)	8	198,000	82
Copper, total recoverable (ug/kg)	9	336,000	61
Iron, total recoverable (ug/kg)	8	25,900,000	60
Lead, total recoverable (ug/kg)	9	543,000	63
Manganese, total recoverable (ug/kg)	8	886,000	56
Mercury, total recoverable (ug/kg)	8	1,640	113

Table 28.--Mean concentrations and coefficients of variation of dustfall constituents and properties at six atmospheric-deposition stations--Continued

Constituent or property	Number of samples	Mean Concentration	Coefficient of variation
Fort Douglas (site 18)--Continued			
Nickel, total recoverable (ug/kg)	8	64,400	49
Selenium, total (ug/kg)	8	11,100	187
Silver, total recoverable (ug/kg)	8	11,900	170
Zinc, total recoverable (ug/kg)	9	1,090,000	82
Fire Station No. 7 (site 21)			
Specific conductance (umho/cm at 25°C)	3	40	40
Solids, residue at 105°C, total (mg)	5	70	52
Chloride, dissolved (mg/kg)	5	85,300	117
Nitrogen, nitrate total (mg/kg as N)	4	6,480	56
Nitrogen, nitrite total (mg/kg as N)	5	309	107
Nitrogen, ammonia total (mg/kg as N)	5	2,660	42
Phosphorus, ortho, total (mg/kg as P)	5	1,120	47
Carbon, organic suspended total (mg/kg)	5	26,300	64
Cyanide, total (mg/kg)	5	143	82
Aluminum, total recoverable (ug/kg)	5	14,000,000	33
Antimony, total (ug/kg)	5	14,300	82
Arsenic, total (ug/kg)	5	35,800	47
Beryllium, total recoverable (ug/kg)	5	106,000	137
Cadmium, total recoverable (ug/kg)	5	10,600	137
Chromium, total recoverable (ug/kg)	5	159,000	38
Copper, total recoverable (ug/kg)	5	610,000	103
Iron, total recoverable (ug/kg)	5	22,800,000	37
Lead, total recoverable (ug/kg)	5	1,360,000	42
Manganese, total recoverable (ug/kg)	5	581,000	57
Mercury, total recoverable (ug/kg)	5	1,220	110
Nickel, total recoverable (ug/kg)	5	52,300	29
Selenium, total (ug/kg)	5	10,600	137
Silver, total recoverable (ug/kg)	5	27,700	178
Zinc, total recoverable (ug/kg)	5	2,620,000	127

Table 29.—Loads of dustfall constituents for 1981 water year at six atmospheric-deposition stations.

[See table 1 and plate 1 for number and location of stations. Zero indicates a value of zero or less than $1x10^{-6}$. Dash (—) indicates no data. Loads are in pounds per acre per month.]

Constituents	Months										
	Oct.	Nov.-Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.
Bells Canyon Conduit (site 1)											
Chloride, dissolved	—	—	—	—	—	0.28	0.71	0.54	0.22	0.082	0.75
Solids, residue at 105°C, total	18	24	21	10	24	23	22	32	13	16	18
Nitrogen, nitrate total (as N)	.0075	.34	.22	.084	.098	.12	.10	.23	.10	.12	.14
Nitrogen, nitrite total (as N)	0	.00096	.0021	.012	.0010	.0020	.0019	0	.0027	0	.0082
Nitrogen, ammonia total (as N)	.0047	.37	.18	.092	.036	.039	.037	.039	.082	.044	.082
Phosphorus, ortho, total	.0089	.0086	.0094	.0051	.0072	.0059	.015	.025	.022	.0082	.044
Carbon, organic suspended total	—	—	—	—	—	.83	.25	.37	.25	.27	.27
Aluminum, total recoverable	—	—	—	—	—	.22	.25	1.0	.36	.26	.27
Antimony, total	—	—	—	—	—	—	—	.00019	0	0	0
Arsenic, total	—	—	—	—	—	.0079	.00077	.0015	.00027	.00055	.00055
Beryllium, total recoverable	—	—	—	—	—	0	0	0	0	0	0
Cadmium, total recoverable	.00020	.00019	.00010	.00010	.00021	0	.00019	.00019	.00027	0	.00027
Chromium, total recoverable	—	—	—	—	—	.0018	.0064	.0044	.0019	.0033	.0022
Copper, total recoverable	—	—	—	—	—	—	—	.012	.0074	.0044	.0052
Iron, total recoverable	—	—	—	—	—	.39	.44	.66	.36	.38	.30
Lead, total recoverable	.021	.034	.0032	.0092	.021	.019	.018	.037	.013	.011	.014
Manganese, total recoverable	—	—	—	—	—	.012	.012	.023	.011	.011	.0082
Mercury, total recoverable	—	—	—	—	—	.000098	.000039	.000019	.000027	0	0
Nickel, total recoverable	—	—	—	—	—	.0014	.0014	.00097	.00082	.00082	.0014
Selenium, total	—	—	—	—	—	0	0	0	0	0	0
Silver, total recoverable	—	—	—	—	—	0	.0019	.00019	0	0	0
Zinc, total recoverable	.025	.034	.021	.024	.021	.024	.025	.064	.014	.014	.016
Sandy City Public Works (site 3)											
Chloride, dissolved	—	—	—	—	—	0.27	0.71	0.81	0.16	0.055	0.93
Solids, residue at 105°C, total	18	24	21	10	24	23	22	110	30	26	32
Nitrogen, nitrate total (as N)	.0075	.34	.22	.084	.098	.12	.10	0	.096	.088	.12
Nitrogen, nitrite total (as N)	0	.00096	.0021	.012	.0010	.0020	.0019	0	.0027	0	.0055
Nitrogen, ammonia total (as N)	.0047	.37	.18	.092	.036	.039	.037	.0019	.10	.055	.071
Phosphorus, ortho, total	.0089	.0086	.0095	.0051	.0072	.0059	.015	.11	.022	.025	.055
Carbon, organic suspended total	—	—	—	—	—	.82	.25	.27	.16	.46	.57
Aluminum, total recoverable	—	—	—	—	—	.22	.25	1.5	.47	.27	.36
Antimony, total	—	—	—	—	—	.00020	.00019	.00097	.00027	.00027	.00027
Arsenic, total	—	—	—	—	—	.00079	.00077	.0093	.00055	.0011	.0011
Beryllium, total recoverable	—	—	—	—	—	0	0	0	0	0	0
Cadmium, total recoverable	.00020	.00019	.00010	.00010	.00021	0	.00019	.00077	.00027	0	.00027
Chromium, total recoverable	—	—	—	—	—	.0018	.0064	.0097	.0019	.0033	.0016
Copper, total recoverable	.012	.017	.012	.0082	.011	.014	.014	.052	.0079	.0085	.0077
Iron, total recoverable	—	—	—	—	—	.39	.44	2.5	.60	.66	.60
Lead, total recoverable	.021	.034	.0032	.0092	.021	.019	.018	.17	.026	.020	.019
Manganese, total recoverable	—	—	—	—	—	.012	.012	.085	.019	.019	.019
Mercury, total recoverable	—	—	—	—	—	.000098	.000039	.000019	.000027	0	0
Nickel, total recoverable	—	—	—	—	—	.0014	.0014	.0023	.00082	.0011	.0019
Selenium, total	—	—	—	—	—	0	0	.00077	0	0	0
Silver, total recoverable	—	—	—	—	—	0	.00019	.00058	0	0	0
Zinc, total recoverable	.025	.034	.021	.024	.021	.024	.025	.13	.025	.019	.027
Dixie Valley Detention Basin (site 5)											
Chloride, dissolved	—	—	—	—	—	0.28	0.71	0.48	0.41	0.27	1.5
Solids, residue at 105°C, total	18	24	21	10	24	23	22	33	8.2	28	28
Nitrogen, nitrate total (as N)	.0075	.34	.22	.084	.098	.12	.10	.14	.093	.12	.16
Nitrogen, nitrite total (as N)	0	.00096	.0021	.012	.0010	.0020	.0019	0	0	0	.0082
Nitrogen, ammonia total (as N)	.0047	.37	.18	.092	.036	.039	.037	.043	.079	.068	.093
Phosphorus, ortho, total	.0089	.0086	.0095	.0051	.0072	.0059	.015	.021	.014	.071	.077
Carbon, organic suspended total	—	—	—	—	—	.83	.25	.27	.16	.52	.52
Aluminum, total recoverable	—	—	—	—	—	.22	.25	.29	.21	.30	.41
Antimony, total	—	—	—	—	—	.00020	.00019	.00039	0	0	0
Arsenic, total	—	—	—	—	—	.00079	.00077	.0016	.00027	.00082	.00082
Beryllium, total recoverable	—	—	—	—	—	0	0	0	0	0	0
Cadmium, total recoverable	.00020	.00019	.00010	.00010	.00021	0	.00019	.00019	.00027	.00027	.00027
Chromium, total recoverable	—	—	—	—	—	.0018	.0064	.0058	.0019	.0033	.0022
Copper, total recoverable	.012	.017	.011	.0082	.011	.014	.014	.014	.0085	.0093	.0012
Iron, total recoverable	—	—	—	—	—	.39	.44	.50	.27	.63	.52
Lead, total recoverable	—	—	—	—	—	—	—	—	.0069	.010	.013
Manganese, total recoverable	—	—	—	—	—	.012	.012	.015	.0082	.019	.019
Mercury, total recoverable	—	—	—	—	—	.000098	.000039	.000019	.000055	0	.000027
Nickel, total recoverable	—	—	—	—	—	.0014	.0014	.00097	.0011	.0014	.0016
Selenium, total	—	—	—	—	—	0	0	0	0	0	.00027
Silver, total recoverable	—	—	—	—	—	0	.00019	0	0	.00027	0
Zinc, total recoverable	.025	.034	.021	.024	.021	.024	.025	.029	.0082	.011	.049

Table 29.—Loads of dustfall constituents for 1981 water year at six atmospheric-deposition stations—Continued

Constituents	Months										
	Oct.	Nov.-Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.
Administration Building (site 15)											
Chloride, dissolved	—	—	—	—	—	0.28	0.71	0.48	0.38	0.82	.71
Solids, residue at 105°C, total	18	24	21	10	24	23	22	33	15	21	23
Nitrogen, nitrate total (as N)	.0075	.34	.22	.084	.098	.12	.10	.14	.088	.093	.13
Nitrogen, nitrite total (as N)	0	.00096	.0021	.012	.0010	.0020	.0019	0	.0027	0	.0055
Nitrogen, ammonia total (as N)	.0047	.37	.18	.092	.036	.039	.037	.043	.079	.044	.069
Phosphorus, ortho, total	.0089	.0086	.0095	.0051	.0072	.0059	.015	.021	.069	.0082	.041
Carbon, organic suspended total	—	—	—	—	—	.83	.25	.27	.25	.49	.27
Aluminum, total recoverable	—	—	—	—	—	.22	.25	.29	.25	.27	.33
Antimony, total	—	—	—	—	—	.00020	.00019	.00039	0	.00027	.00027
Arsenic, total	—	—	—	—	—	.00079	.00077	.0012	.00027	.00055	.00082
Beryllium, total recoverable	—	—	—	—	—	0	0	0	0	0	0
Cadmium, total recoverable	.00020	.00019	.00010	.00010	.00021	0	.00019	.00019	.00027	0	.00027
Chromium, total recoverable	—	—	—	—	—	.0018	.0064	.0058	.0022	.0038	.0044
Copper, total recoverable	.012	.017	.012	.0082	.011	.014	.014	.014	.0096	.0074	.012
Iron, total recoverable	—	—	—	—	—	.39	.44	.50	.36	.52	.49
Lead, total recoverable	.021	.034	.0032	.0092	.021	.019	.018	.021	.019	.018	.021
Manganese, total recoverable	—	—	—	—	—	.012	.012	.015	.011	.011	.014
Mercury, total recoverable	—	—	—	—	—	.000098	.000039	.000019	.000027	0	.000027
Nickel, total recoverable	—	—	—	—	—	.0014	.0014	.00097	.0014	.00082	.0022
Selenium, total	—	—	—	—	—	0	0	0	0	.00027	.0019
Silver, total recoverable	—	—	—	—	—	0	.00019	0	0	0	0
Zinc, total recoverable	.025	.034	.021	.024	.021	.024	.025	.029	.022	.022	.030
Fort Douglas (site 18)											
Chloride, dissolved	—	—	—	—	—	0.16	0.60	0.21	0.36	0.14	.82
Solids, residue at 105°C, total	18	24	21	10	15	25	15	29	8.8	15	25
Nitrogen, nitrate total (as N)	.0075	.34	.22	.084	.10	.13	.11	.14	.063	.074	.090
Nitrogen, nitrite total (as N)	0	.00096	.0021	.012	.0010	0	0	0	0	0	.0055
Nitrogen, ammonia total (as N)	.0047	.37	.18	.092	.018	.031	.025	.033	.16	.036	.055
Phosphorus, ortho, total	.0089	.0086	.0095	.0051	.0072	.0079	.0082	.025	.16	.0082	.038
Carbon, organic suspended total	—	—	—	—	—	.59	.39	.41	.19	.19	.33
Aluminum, total recoverable	—	—	—	—	—	.24	.20	.44	.15	.25	.44
Antimony, total	—	—	—	—	—	.00020	0	0	0	0	0
Arsenic, total	—	—	—	—	—	.00039	.00041	.00058	.00027	.00055	.00055
Beryllium, total recoverable	—	—	—	—	—	0	0	0	0	0	0
Cadmium, total recoverable	.00020	.00019	.00010	.00010	.00010	0	.00021	0	.00027	0	0
Chromium, total recoverable	—	—	—	—	—	.0012	.0064	.0041	.0011	.0033	<.0003
Copper, total recoverable	—	—	—	—	.0041	.0053	.0035	.0042	.0041	.0036	.0038
Iron, total recoverable	—	—	—	—	—	.31	.23	.46	.21	.36	.47
Lead, total recoverable	—	—	—	—	.0059	.0057	.0060	.0062	.0066	.0071	.0065
Manganese, total recoverable	—	—	—	—	—	.014	.0082	.017	.0082	.011	.014
Mercury, total recoverable	—	—	—	—	—	.000039	.000021	.000039	0	0	0
Nickel, total recoverable	—	—	—	—	—	.0012	.00082	.00077	.00082	.00027	.0025
Selenium, total	—	—	—	—	—	0	0	0	0	0	0
Silver, total recoverable	—	—	—	—	—	0	0	.00019	0	0	0
Zinc, total recoverable	—	—	—	—	.0082	.012	.0062	.0097	.011	.019	.014
Fire Station No. 7 (site 21)											
Chloride, dissolved	—	—	—	—	—	0.28	0.71	0.48	0.33	0.14	4.1
Solids, residue at 105°C, total	18	24	21	10	24	23	22	33	16	26	33
Nitrogen, nitrate total (as N)	.0076	.34	.22	.084	.098	.12	.10	.14	.082	.11	.16
Nitrogen, nitrite total (as N)	0	.00096	.0021	.012	.0010	.0020	.0019	0	0	0	.0082
Nitrogen, ammonia total (as N)	—	—	—	—	—	—	—	—	.055	.038	.047
Phosphorus, ortho, total	.0089	.0086	.0095	.0051	.0072	.0059	.015	.021	.0055	.025	.049
Carbon, organic suspended total	—	—	—	—	—	.83	.25	.27	.19	.38	.79
Aluminum, total recoverable	—	—	—	—	—	.22	.25	.29	.18	.25	.41
Antimony, total	—	—	—	—	—	.00020	.00019	.00039	0	.00027	.00027
Arsenic, total	—	—	—	—	—	.00079	.00077	.0012	.00027	.00082	.00082
Beryllium, total recoverable	—	—	—	—	—	0	0	0	0	0	0
Cadmium, total recoverable	.00020	.00019	.00010	.00010	.00021	0	.00019	.00019	0	0	0
Chromium, total recoverable	—	—	—	—	—	.0018	.0064	.0058	.0016	.0033	.0046
Copper, total recoverable	.012	.017	.012	.0082	.011	.014	.014	.014	.0055	.0066	.0071
Iron, total recoverable	—	—	—	—	—	.39	.44	.50	.27	.47	.60
Lead, total recoverable	.021	.034	.0032	.0092	.021	.019	.018	.021	.018	.023	.033
Manganese, total recoverable	—	—	—	—	—	.012	.012	.015	.0082	.014	.016
Mercury, total recoverable	—	—	—	—	—	.000098	.000039	.000019	0	0	.000027
Nickel, total recoverable	—	—	—	—	—	.0014	.0014	.00097	.00082	.00082	.0025
Selenium, total	—	—	—	—	—	0	0	0	0	0	0
Silver, total recoverable	—	—	—	—	—	0	.00019	0	0	0	0
Zinc, total recoverable	.025	.034	.021	.024	.021	.024	.025	.029	.014	.022	.038

Table 30.--Means, maximums, and coefficients of variation of basin loads of dustfall constituents for the 1981 water year

[Zero indicates a value of zero or less than 1x10^{-6}. Dash indicates no data.]

Constituent	Basin loads Mean [(lb/acre)/mo]	Maximum [(lb/acre)/mo]	Mean (lb/mo)	Maximum (lb/mo)	Coefficient of variation
Bells Canyon Conduit					
Chloride, dissolved	0.598	1.8	38.3	110	102
Solids, residue at 105°C, total	20.2	32	1,290	1,200	30
Nitrogen, nitrate total (as N)	.142	.34	9.07	22	63
Nitrogen, nitrite total (as N)	.00284	.012	.182	.79	137
Nitrogen, ammonia total (as N)	.0917	.37	5.87	24	114
Phosphorus, ortho, total	.0145	.044	.930	2.8	81
Carbon, organic suspended total	.373	.83	23.9	53	61
Aluminum, total recoverable	.379	1.0	25.4	66	78
Antimony, total	.0000972	.00020	.00622	.013	110
Arsenic, total	.000746	.00015	.0477	.099	58
Beryllium, total recoverable	0	0	0	0	—
Cadmium, total recoverable	.000158	.00027	.0101	.018	60
Chromium, total recoverable	.00333	.0064	.213	.4	54
Copper, total recoverable	.0106	.017	.676	1.1	37
Iron, total recoverable	.423	.66	27.0	42	29
Lead, total recoverable	.0180	.037	1.15	2.4	55
Manganese, total recoverable	.0128	.023	.818	1.5	41
Mercury, total recoverable	.0000306	.000098	.00196	.0063	119
Nickel, total recoverable	.00112	.0014	.0716	.088	25
Selenium, total	0	0	0	0	—
Silver, total recoverable	.0000644	.00019	.00412	.012	155
Zinc, total recoverable	.0254	.064	1.63	4	55
Little Cottonwood Creek					
Chloride, dissolved	0.556	1.4	4,980	13,000	88
Solids, residue at 105°C, total	24.5	62	219,000	560,000	54
Nitrogen, nitrate total (as N)	.131	.34	1,170	3,000	64
Nitrogen, nitrite total (as N)	.00273	.012	24.5	110	138
Nitrogen, ammonia total (as N)	.0912	.37	817	3,400	115
Phosphorus, ortho, total	.0191	.060	171	540	98
Carbon, organic suspended total	.397	.83	3,550	740	56
Aluminum, total recoverable	.440	1.2	3,940	11,000	85
Antimony, total	.0000205	.00051	1.84	4.6	76
Arsenic, total	.00135	.0046	12.1	41	119
Beryllium, total recoverable	0	0	0	0	—
Cadmium, total recoverable	.000180	.00042	1.62	3.8	68
Chromium, total recoverable	.00365	.0066	32.1	59	62
Copper, total recoverable	.0124	.028	111	250	50
Iron, total recoverable	.603	1.4	5,400	13,000	64
Lead, total recoverable	.0239	.090	214	810	97
Manganese, total recoverable	.0188	.048	169	430	75
Mercury, total recoverable	.000031	.000098	.278	.88	117
Nickel, total recoverable	.00127	.0016	11.4	14	24
Selenium, total	.0000538	.0003	.482	2.8	233
Silver, total recoverable	.0000908	.00034	.814	3.0	157
Zinc, total recoverable	.0289	.090	259	800	72

Table 30.--Means, maximums, and coefficients of variation of basin loads of dustfall constituents for the 1981 water year--Continued

Constituent	Basin loads: Mean [(lb/acre)/mo]	Basin loads: Maximum [(lb/acre)/mo]	Basin loads: Mean (lb/mo)	Basin loads: Maximum (lb/mo)	Coefficient of variation
Holladay Drain					
Chloride, dissolved	0.389	0.83	996	2,100	71
Solids, residue at 105°C, total	19.6	35	50,200	90,000	38
Nitrogen, nitrate total (as N)	.122	.34	312	860	72
Nitrogen, nitrite total (as N)	.00204	.012	5.22	32	185
Nitrogen, ammonia total (as N)	.0914	.37	234	960	120
Phosphorus, ortho, total	.0251	.14	65.8	370	161
Carbon, organic suspended total	.356	.61	911	1,600	42
Aluminum, total recoverable	.305	.53	780	140	47
Antimony, total	.0000592	.00020	.152	.50	120
Arsenic, total	.000603	.0013	1.54	3.3	58
Beryllium, total recoverable	0	0	0	0	—
Cadmium, total recoverable	.000116	.00027	.296	.70	79
Chromium, total recoverable	.00282	.0064	7.23	16	82
Copper, total recoverable	.00769	.017	19.7	44	56
Iron, total recoverable	.382	.63	979	1,600	39
Lead, total recoverable	.0119	.034	30.4	86	76
Manganese, total recoverable	.0133	.023	34.0	58	39
Mercury, total recoverable	.0000176	.000044	.0449	.11	113
Nickel, total recoverable	.00109	.0024	2.79	6.2	65
Selenium, total	.0000103	.000062	.0264	.16	245
Silver, total recoverable	.0000399	.00022	.102	.57	227
Zinc, total recoverable	.0180	.034	46.1	86	43
Big Cottonwood Creek					
Chloride, dissolved	0.459	0.94	5,140	11,000	69
Solids, residue at 105°C, total	24.1	61	270,000	680,000	54
Nitrogen, nitrate total (as N)	.123	.34	1,380	3,800	70
Nitrogen, nitrite total (as N)	.00244	.012	27.3	140	150
Nitrogen, ammonia total (as N)	.0908	.37	1,020	4,200	117
Phosphorus, ortho, total	.0229	.072	256	800	106
Carbon, organic suspended total	.391	.76	4,380	8,500	49
Aluminum, total recoverable	.386	.91	4,330	10,000	68
Antimony, total	.000209	.00048	2.34	5.4	66
Arsenic, total	.00126	.0043	14.1	48	117
Beryllium, total recoverable	0	0	0	0	--
Cadmium, total recoverable	.000164	.00037	1.84	4.1	66
Chromium, total recoverable	.00360	.0067	40.3	75	66
Copper, total recoverable	.0115	.026	129	290	50
Iron, total recoverable	.582	1.3	6,520	15,000	62
Lead, total recoverable	.0217	.078	243	880	94
Manganese, total recoverable	.0184	.045	206	500	70
Mercury, total recoverable	.0000273	.000081	.305	.90	106
Nickel, total recoverable	.00129	.0021	14.4	23	36
Selenium, total	.000125	.00038	1.40	4.3	140
Silver, total recoverable	.0000740	.00031	.829	3.5	172
Zinc, total recoverable	.0262	.068	294	770	56

Table 30.—Means, maximums, and coefficients of variation of basin loads of dustfall constituents for the 1981 water year—Continued

Constituent	Basin loads Mean [(lb/acre)/mo]	Basin loads Maximum [(lb/acre)/mo]	Basin loads Mean (lb/mo)	Basin loads Maximum (lb/mo)	Coefficient of variation
Mill Creek					
Chloride, dissolved	0.403	0.78	2,570	5,000	64
Solids, residue at 105°C, total	19.6	30	125,000	190,000	31
Nitrogen, nitrate total (as N)	.125	.34	800	2,200	69
Nitrogen, nitrite total (as N)	.00220	.012	14.1	79	168
Nitrogen, ammonia total (as N)	.0912	.37	584	2,400	118
Phosphorus, ortho, total	.0231	.12	148	800	153
Carbon, organic suspended total	.365	.67	2,340	4,300	44
Aluminum, total recoverable	.280	.40	1,790	2,600	33
Antimony, total	.0000985	.00019	.631	1.3	67
Arsenic, total	.000553	.00078	3.59	5.0	30
Beryllium, total recoverable	0	0	0	0	—
Cadmium, total recoverable	.000125	.00027	.800	1.8	69
Chromium, total recoverable	.00318	.0064	20.4	41	64
Copper, total recoverable	.00871	.017	55.7	110	41
Iron, total recoverable	.379	.48	243	3,000	24
Lead, total recoverable	.0130	.034	83.2	220	61
Manganese, total recoverable	.0122	.017	77.9	110	24
Mercury, total recoverable	.0000229	.000059	.147	.38	94
Nickel, total recoverable	.00116	.0024	7.41	15	56
Selenium, total	.0000128	.00067	.818	4.3	210
Silver, total recoverable	.0000322	.00012	.206	.80	165
Zinc, total recoverable	.0196	.034	125	220	32
Twenty-First South Conduit					
Chloride, dissolved	0.426	0.74	519	900	58
Solids, residue at 105°C, total	20.7	32	25,100	39,000	28
Nitrogen, nitrate total (as N)	.128	.34	155	410	67
Nitrogen, nitrite total (as N)	.00244	.012	2.97	15	148
Nitrogen, ammonia total (as N)	.0908	.37	110	450	116
Phosphorus, ortho, total	.0201	.090	24.4	110	127
Carbon, organic suspended total	.383	.77	465	930	52
Aluminum, total recoverable	.273	.36	332	440	21
Antimony, total	.000174	.00029	.211	.35	56
Arsenic, total	.000660	.0010	.803	1.2	37
Beryllium, total recoverable	0	0	0	0	—
Cadmium, total recoverable	.000145	.00027	.117	.33	59
Chromium, total recoverable	.00372	.0064	4.53	1.8	50
Copper, total recoverable	.0106	.017	12.9	21	27
Iron, total recoverable	.424	.49	515	600	17
Lead, total recoverable	.0163	.034	19.9	41	45
Manganese, total recoverable	.0123	.016	15.0	19	18
Mercury, total recoverable	.0000305	.000084	.0371	.10	93
Nickel, total recoverable	.00127	.0023	1.55	2.8	42
Selenium, total	.000274	.0014	.333	1.8	210
Silver, total recoverable	.0000322	.00014	.0392	.18	182
Zinc, total recoverable	.0229	.034	27.9	41	19

Table 30.—Means, maximums, and coefficients of variation of basin loads of dustfall constituents for the 1981 water year—Continued

Constituent	Basin loads Mean [(lb/acre)/mo]	Basin loads Maximum [(lb/acre)/mo]	Basin loads Mean (lb/mo)	Basin loads Maximum (lb/mo)	Coefficient of variation
	Thirteenth South Conduits				
Chloride, dissolved	0.396	0.88	3,500	780	74
Solids, residue at 105°C, total	18.9	29	167,000	2,600	34
Nitrogen, nitrate total (as N)	.123	.34	1,090	3,000	71
Nitrogen, nitrite total (as N)	.00204	.012	18.0	110	186
Nitrogen, ammonia total (as N)	.0913	.37	807	3,300	119
Phosphorus, ortho, total	.0251	.15	222	1,300	167
Carbon, organic suspended total	.354	.61	3,130	540	42
Aluminum, total recoverable	.285	.43	251	3,800	41
Antimony, total	.0000478	.00020	.422	1.7	154
Arsenic, total	.000481	.00063	4.25	5.5	27
Beryllium, total recoverable	0	0	0	0	—
Cadmium, total recoverable	.000110	.00027	.975	2.4	86
Chromium, total recoverable	.00282	.0064	24.9	56	79
Copper, total recoverable	.00142	.017	65.5	150	59
Iron, total recoverable	.349	.47	308	4,200	30
Lead, total recoverable	.0108	.034	95.1	300	81
Manganese, total recoverable	.0127	.017	107	150	29
Mercury, total recoverable	.0000178	.000044	.157	.39	109
Nickel, total recoverable	.00108	.0024	9.52	22	68
Selenium, total	.0000219	.00012	.193	1.0	210
Silver, total recoverable	.0000322	.00018	.284	1.6	222
Zinc, total recoverable	.0173	.034	153	300	46
	Eighth South, South Conduit				
Chloride, dissolved	0.895	3.4	57.3	220	141
Solids, residue at 105°C, total	22.5	33	1,440	2,100	29
Nitrogen, nitrate total (as N)	.132	.34	8.44	22	65
Nitrogen, nitrite total (as N)	.00259	.012	.166	.79	150
Nitrogen, ammonia total (as N)	.0868	.37	5.55	24	121
Phosphorus, ortho, total	.0154	.048	.984	3.1	80
Carbon, organic suspended total	.441	.83	28.2	53	59
Aluminum, total recoverable	.267	.40	17.1	25	26
Antimony, total	.000221	.00039	.0141	.025	58
Arsenic, total	.000764	.0012	.0489	.074	37
Beryllium, total recoverable	0	0	0	0	—
Cadmium, total recoverable	.000118	.00021	.00756	.013	69
Chromium, total recoverable	.00395	.0064	.253	.41	50
Copper, total recoverable	.0111	.017	.711	1.1	31
Iron, total recoverable	.448	.58	28.7	37	22
Lead, total recoverable	.0196	.034	1.25	2.2	43
Manganese, total recoverable	.0128	.016	.818	1.0	21
Mercury, total recoverable	.0000315	.000098	.00202	.0063	113
Nickel, total recoverable	.00131	.0024	.0839	.15	45
Selenium, total	.0000731	.00038	.00468	.025	210
Silver, total recoverable	.0000322	.00019	.00206	.012	245
Zinc, total recoverable	.0250	.037	1.60	2.4	24

Table 30.--Means, maximums, and coefficients of variation of basin loads of dustfall constituents for the 1981 water year--Continued

Constituent	Basin loads Mean [(lb/acre)/mo]	Basin loads Maximum [(lb/acre)/mo]	Basin loads Mean (lb/mo)	Basin loads Maximum (lb/mo)	Coefficient of variation
Eighth South, Middle Conduit					
Chloride, dissolved	0.380	0.82	560	1,200	72
Solids, residue at 105°C, total	18.7	29	27,500	42,000	36
Nitrogen, nitrate total (as N)	.123	.34	180	490	72
Nitrogen, nitrite total (as N)	.00199	.012	2.93	18	191
Nitrogen, ammonia total (as N)	.0915	.37	135	550	120
Phosphorus, ortho, total	.0258	.16	37.9	230	172
Carbon, organic suspended total	.350	.59	515	870	43
Aluminum, total recoverable	.286	.44	421	650	44
Antimony, total	.0000328	.00020	.0482	.29	245
Arsenic, total	.000459	.00058	.676	.85	26
Beryllium, total recoverable	0	0	0	0	—
Cadmium, total recoverable	.000107	.00027	.158	.40	93
Chromium, total recoverable	.00271	.0064	3.99	9.4	85
Copper, total recoverable	.00706	.017	10.4	25	65
Iron, total recoverable	.340	.47	501	680	32
Lead, total recoverable	.0101	.034	14.8	49	90
Manganese, total recoverable	.0120	.017	17.7	26	30
Mercury, total recoverable	.0000164	.000039	.0242	.058	117
Nickel, total recoverable	.00106	.0025	1.55	3.6	71
Selenium, total	0	0	0	0	—
Silver, total recoverable	.0000322	.00019	.0474	.28	245
Zinc, total recoverable	.0166	.034	24.5	49	51
Eighth South, North Conduit					
Chloride, dissolved	1.01	4.1	516	2,100	152
Solids, residue at 105°C, total	22.8	33	11,700	17,000	30
Nitrogen, nitrate total (as N)	.133	.34	67.9	170	64
Nitrogen, nitrite total (as N)	.00259	.012	1.33	6.3	154
Nitrogen, ammonia total (as N)	.0858	.37	43.9	190	123
Phosphorus, ortho, total	.0147	.049	7.51	25	90
Carbon, organic suspended total	.453	.83	232	420	63
Aluminum, total recoverable	.267	.41	137	210	30
Antimony, total	.000221	.00039	.113	.20	58
Arsenic, total	.000773	.0012	.396	.59	37
Beryllium, total recoverable	0	0	0	0	—
Cadmium, total recoverable	.000108	.00021	.0554	.10	86
Chromium, total recoverable	.00392	.0064	2.01	3.3	51
Copper, total recoverable	.0109	.017	5.60	8.8	33
Iron, total recoverable	.447	.60	229	310	25
Lead, total recoverable	.0199	.034	10.2	17	44
Manganese, total recoverable	.0129	.016	6.59	8.4	23
Mercury, total recoverable	.0000306	.000098	.0157	.050	119
Nickel, total recoverable	.00130	.0025	.666	1.3	48
Selenium, total	0	0	0	0	—
Silver, total recoverable	.0000322	.00019	.0165	.099	245
Zinc, total recoverable	.0250	.038	12.8	20	27

Table 30.--Means, maximums, and coefficients of variation of basin loads of dustfall constituents for the 1981 water year--Continued

Constituent	Basin loads Mean [(lb/acre)/mo]	Maximum [(lb/acre)/mo]	Mean (lb/mo)	Maximum (lb/mo)	Coefficient of variation
North Temple Conduit					
Chloride, dissolved	0.587	1.9	1,160	3,800	114
Solids, residue at 105°C, total	20.0	30	39,800	60,000	31
Nitrogen, nitrate total (as N)	.126	.34	250	660	69
Nitrogen, nitrite total (as N)	.00219	.012	4.35	24	175
Nitrogen, ammonia total (as N)	.0896	.37	178	740	120
Phosphorus, ortho, total	.0221	.11	43.8	210	135
Carbon, organic suspended total	.384	.67	761	130	44
Aluminum, total recoverable	.280	.43	555	850	38
Antimony, total	.0000948	.00020	.188	.39	69
Arsenic, total	.000563	.00077	1.12	1.5	30
Beryllium, total recoverable	0	0	0	0	—
Cadmium, total recoverable	.000108	.00020	.214	.40	76
Chromium, total recoverable	.00311	.0064	6.17	13	66
Copper, total recoverable	.00834	.017	16.5	34	46
Iron, total recoverable	.375	.51	745	1,000	28
Lead, total recoverable	.0133	.034	26.4	66	60
Manganese, total recoverable	.0123	.017	24.4	33	26
Mercury, total recoverable	.0000211	.000059	.019	.12	108
Nickel, total recoverable	.00114	.0025	2.26	4.9	62
Selenium, total	0	0	0	0	—
Silver, total recoverable	.0000322	.00013	.0639	.26	168
Zinc, total recoverable	.0194	.034	38.5	66	34
Ninth West Conduit					
Chloride, dissolved	1.01	4.1	148	600	152
Solids, residue at 105°C, total	22.8	33	3,360	4,900	30
Nitrogen, nitrate total (as N)	.133	.34	19.5	49	64
Nitrogen, nitrite total (as N)	.00259	.012	.382	1.8	154
Nitrogen, ammonia total (as N)	.0858	.37	12.6	55	123
Phosphorus, ortho, total	.0147	.049	2.16	7.3	90
Carbon, organic suspended total	.453	.83	66.7	120	63
Aluminum, total recoverable	.267	.41	39.3	60	30
Antimony, total	.000221	.00039	.0325	.057	58
Arsenic, total	.000773	.0012	.114	.18	37
Beryllium, total recoverable	0	0	0	0	—
Cadmium, total recoverable	.000108	.00021	.0159	.030	86
Chromium, total recoverable	.00392	.0064	.577	.94	51
Copper, total recoverable	.0109	.017	1.61	2.5	33
Iron, total recoverable	.447	.60	65.8	89	25
Lead, total recoverable	.0199	.034	2.93	4.9	44
Manganese, total recoverable	.0129	.016	1.89	2.4	23
Mercury, total recoverable	.0000306	.000098	.00451	.014	119
Nickel, total recoverable	.00130	.0025	.191	.36	48
Selenium, total	0	0	0	0	—
Silver, total recoverable	.0000322	.00019	.00474	.028	245
Zinc, total recoverable	.0250	.038	3.68	5.6	27

Table 31.--Utah State water-quality standards and water-use classification

Water-quality standards: Water-use classes for Industry (5) and Special (6) categories will be determined on a case-by-case basis.

	Water-Quality		
Constituent	Domestic Source		
	1A	1B	1C
Bacteriological (No.of colonies/100 mL)			
(30-day geometric mean)			
Maximum total coliforms	1	50	5,000
Maximum fecal coliforms	*	*	2,000
Physical			
Total dissolved gases (percent saturation)	*	*	*
Minimum DO (mg/L)	*	*	5.5
Maximum temperature	*	*	*
Maximum temperature change	*	*	*
pH	6.5-9.0	6.5-9.0	6.5-9.0
Turbidity increase (NTU)[1]	*	*	*
Chemical (maximum, mg/L)			
Arsenic, dissolved	.05	.05	.05
Barium, dissolved	1	1	1
Cadmium, dissolved	.010	.010	.010
Chromium, dissolved	.05	.05	.05
Copper, dissolved	*	*	*
Cyanide	*	*	*
Iron, dissolved	*	*	*
Lead, dissolved	.05	.05	.05
Mercury, total	.002	.002	.002
Phenol	*	*	*
Selenium, dissolved	.01	.01	.01
Silver, dissolved	.05	.05	.05
Zinc, dissolved	*	*	*
Ammonia as nitrogen (un-ionized)	*	*	*
Chlorine	*	*	*
Fluoride, dissolved[3]	1.4-2.4	1.4-2.4	1.4-2.4
Nitrate as nitrogen	10	10	10
Boron, dissolved	*	*	*
Hydrogen sulfide	*	*	*
Dissolved solids[4]	*	*	*
Radiological (maximum, pCi/L)[5]			
Gross alpha	15	15	15
Radium 226, 228 combined	5	5	5
Strontium 90	8	8	8
Tritium	20,000	20,000	20,000
Pesticides (maximum, ug/L)			
Endrin	.2	.2	.2
Lindane	4	4	4
Methoxychlor	100	100	100
Toxaphene	5	5	5
2, 4-D herbicide	100	100	100
2, 4, 5-TP herbicide	10	10	10
Pollution indicators			
Gross beta (pCi/L)[5]	50	50	50
Biochemical-oxygen demand (BOD_5) (mg/L)	*	*	5
Nitrate as nitrogen (mg/L)			*
Phosphate as phosphorus (mg/L)	*	*	*

See footnotes at end of table, p. 139.

for waters of Salt Lake County (Utah State Board of Health, 1978)

Standards

Water-Use Classes						
Recreation and Aesthetics		Aquatic Wildlife				Agriculture
2A	2B	3A	3B	3C	3D	4
1,000	5,000	*	*	*	*	*
200	2,000	*	*	*	*	*
*	*	<110	<110	*	*	*
5.5	5.5	6.0	5.5	5.0	5.5	*
*	*	20.0°C	27.0°C	27.0°C	*	*
*	*	2.0°C	4.0°C	4.0°C	*	*
6.5-9.0	6.5-9.0	6.5-9.0	6.5-9.0	6.5-9.0	6.5-9.0	6.5-9.0
10	10	10	10	15	15	*
*	*	*	*	*	*	.1
*	*	*	*	*	*	*
*	*	[2].0004	[2].004	[2].004	*	.01
*	*	.10	.10	.1	.10	.10
*	*	.01	.01	.01	*	.2
*	*	.005	.005	.005	*	*
*	*	1.0	1.0	1.0	1.0	*
*	*	.05	.05	.05	*	.1
*	*	.00005	.00005	.0005	.00005	*
*	*	.01	.01	.01	*	*
*	*	.05	.05	.05	*	.05
*	*	.01	.01	.01	*	*
*	*	.05	.05	.05	*	*
*	*	.02	.02	*	*	*
*	*	.002	.01	.2	*	*
*	*	*	*	*	*	*
*	*	*	*	*	*	.75
*	*	.002	.002	.02	*	*
*	*	*	*	*	*	1,200
*	*	15	15	15	15	15
*	*	*	*	*	*	*
*	*	*	*	*	*	*
*	*	*	*	*	*	*
*	*	.004	.004	.004	.004	*
*	*	.01	.01	.01	.01	*
*	*	.03	.03	.03	.03	*
*	*	.005	.005	.005	.005	*
*	*	*	*	*	*	*
*	*	*	*	*	*	*
*	*	50	50	30	50	50
5	5	5	5	5	5	5
4	4	4	4	4	*	*
.05	.05	.05	.05	*	*	*

Table 31.--Utah State water-quality standards and water-use classifications for waters of Salt Lake County--Continued

Water-use classification

Stream segment[6], reservoir, or lake	Use classes
South Fork of Dry Creek, from Draper Irrigation Company diversion to headwaters.	1C,3A
Bells Canyon Creek, from Lower Bells Canyon Reservoir to headwaters.	1C,3A
Little Cottonwood Creek, from Metropolitan Water Treatment Plant to headwaters.	1C,3A
Little Cottonwood Creek, from confluence with Jordan River to Metropolitan Water Treatment Plant.	3A,4
Big Cottonwood Creek, from Big Cottonwood Water Treatment Plant to headwaters.	1C,3A
Big Cottonwood Creek, from confluence with the Jordan River to Big Cottonwood Water Treatment Plant.	2B,3A,4
Mill Creek, from confluence with Jordan River to headwaters	3A,4
Parleys Creek, from Mountain Dell Reservoir to headwaters	1C,3A
Parleys Creek, from 1300 East Street to Mountain Dell Reservoir	2B,3C
Emigration Creek, from Foothill Boulevard to headwaters	3A
Red Butte Creek, from reservoir to headwaters	1C,3A
City Creek, from City Creek Water Treatment Plant to headwaters	1C,3A
City Creek, from Memory Park to City Creek Water Treatment Plant	2B,3A
Jordan River, from Jordan Narrows diversion to Utah Lake	2B,3B,4
Jordan River, from confluence with Little Cottonwood Creek to Jordan Narrows diversion.	2B,3A,4
Jordan River, from North Temple Street to confluence with Little Cottonwood Creek.	2B,3B,4
Jordan River, from Farmington Bay to North Temple Street	2B,3C

See footnotes at end of table, p. 139.

Table 31.—Utah State water-quality standards and water-use classifications for waters of Salt Lake County—Continued

Water-use classification

Stream segment[6], reservoir, or lake	Use classes
All permanent streams on east slope of Oquirrh Mountains (Coon, Barneys, Bingham, and Butterfield Creeks)	3A,4
All irrigation canals and ditches, except as otherwise designated	4
Surplus Canal	3C[7],4
Mountain Dell Reservoir	1C
Lake Mary	1C,3A
Farmington Bay Waterfowl Management Area	3C,3D
Great Salt Lake	6

* Insufficient evidence to warrant the establishment of numerical standard. Limits assigned on case-by-case basis.

1 Nephalometer turbidity unit (NTU)--A measurement of suspended particles in a liquid utilizing an instrument which measures light scatter at a 90° to the source. When formazin is used as a standard, values are expressed as formazin turbidity units (FTU). For Classes 2A, 2B, 3A, and 3B at background levels of 100 NTUs or greater, a 10 percent increase limit will be used instead of the numeric values listed. For Class 3D at background levels of 150 NTUs or greater, a 10 percent increase limit will be used instead of the numeric value listed. Short term variances may be considered on a case-by-case basis.

2 Limit shall be increased threefold if $CaCO_3$ hardness in water exceeds 150 mg/L.

3 Maximum concentration varies according to the daily maximum mean air temperature

Temperature (°C)	Concentration (mg/L)
12.0 and below	2.4
12.1 to 14.6	2.2
14.7 to 17.6	2.0
17.7 to 21.4	1.8
21.5 to 26.2	1.6
26.3 to 32.5	1.4

4 Dissolved-solids limit may be adjusted on a case-by-case basis.

5 Picocurie per liter (pCi/L) is one trillionth ($1x10^{-12}$) of the amount of radioactivity represented by a curie (Ci). A curie is the amount of radioactivity that yields $3.7x10^{10}$ radioactive disintegrations per second. A picocurie yields 2.22 disintegrations per minute.

6 Stream segment described includes all tributaries of that segment.

7 Surplus Canal water-quality standards for:

Chlorine	0.05
Hydrogen sulfide	.01
Gross beta	*

Table 32.--Total rainfall, urban runoff, and loads of storm-runoff constituents (excluding base-flow loads) for selected storms and 12 urban basins

[Loads for basins with baseflow have had the baseflow-load subtracted; loads are in pounds per acre. Zero indicates a value of zero or less than $1x10^{-6}$. Dash (—) indicates no data.]

Bells Canyon Conduit

Storm date	Total rainfall (in.)	Urban runoff (in.)	Chemical oxygen demand	Biochemical oxygen demand, 5-day, carbonaceous	Biochemical oxygen demand, ultimate, carbonaceous	Chloride, dissolved	Fluoride, dissolved	Solids residue at 180°C, dissolved
Mar. 26, 1981	0.25	0.065	0.53	0.13	0.21	0.06	—	0.80
Apr. 10	.02	.002	.12	—	—	.01	—	.11
May 3	.08	.011	4.0	—	—	.17	—	3.7
16	.83	.149	.85	.13	.22	.13	—	.85
20	.07	.013	.36	.047	.17	.02	—	.27
June 2	.21	.039	.54	.088	.20	.03	—	.38
12	.12	.008	.64	—	—	.08	—	.48
July 10	.11	.018	.46	—	—	.02	—	2.6
26	.10	.017	1.3	—	—	.05	—	1.1
Aug. 19	.11	.012	1.3	—	—	.03	—	.86
21	.17	.016	.70	—	—	.02	—	.41
Sept. 5	.04	.003	.35	.005	.017	.02	—	.33
5	.89	.115	2.2	—	—	.06	—	1.6
24	.11	.010	.80	.12	.26	.04	—	.47
Oct. 3	.28	.035	.88	.18	.32	.12	—	.71
8	.52	.088	1.8	.15	.31	.03	—	.73
10	.09	.011	.55	.012	.034	.01	—	.20
11	.38	.065	.68	—	—	.09	—	.29
13	.15	.022	.46	.094	.17	.02	—	.27
28	.79	.128	2.0	.27	.48	.06	—	.77
Nov. 25	.24	.041	.24	.055	.092	.02	—	.27

Storm date	Solids residue at 105°C suspended	Nitrogen, nitrate dissolved as N	Nitrogen, ammonia dissolved as N	Nitrogen, ammonia + organic, total as N	Phosphorus, total as P	Phosphorus, dissolved as P	Carbon, organic suspended total	Carbon, organic dissolved
Mar. 26, 1981	0.98	0.0098	0.012	0.018	0.0032	0.0013	0.023	0.14
Apr. 10	—	—	—	—	—	—	—	—
May 3	9.5	.026	.045	.20	.016	.0064	.22	.64
16	.41	.019	.017	.048	.0038	.0020	—	.171
20	.30	.0017	.0029	.0096	.0014	.00052	.021	.059
June 2	.57	.0051	.0060	.017	.0027	.00092	.076	.081
12	.52	.0026	.0048	.019	.0029	.0015	.023	.14
July 10	1.2	—	—	—	—	—	.013	.072
26	2.0	—	—	—	—	—	—	—
Aug. 19	1.4	—	—	—	—	—	—	—
21	1.2	.0025	.0033	.012	.0019	.00066	.025	.13
Sept. 5	.14	.0013	.0024	.0083	.0005	.00030	.005	.076
5	9.6	.0086	.0025	.055	.014	.0036	.16	.25
24	1.2	.0035	.0047	.018	.0005	.00026	.021	.13
Oct. 3	.63	.0040	.0088	.018	.0028	.0020	.017	.22
8	1.1	.0066	.0095	.021	.0031	.0025	.041	.17
10	.51	.0029	.0020	.0060	.0008	.00034	.010	.11
11	1.2	.0044	.0062	.013	.0021	.00091	.029	.059
13	.28	.011	.0083	.013	.0005	.00047	.009	.089
28	.80	.0068	.013	.033	.0039	.0042	.062	.25
Nov. 25	.11	.0040	.0052	.0072	.0008	.00057	.006	.056

Storm date	Sediment, suspended	Cadmium, total	Cadmium, suspended	Cadmium, dissolved	Chromium, total recoverable	Chromium, suspended recoverable	Chromium, dissolved	Copper, total recoverable
Mar. 26, 1981	—	—	—	0	0.00015	0.00015	0	0.00030
Apr. 10	—	—	—	—	.000006	—	—	.00002
May 3	—	—	—	0	.00024	.00024	0	.0019
16	—	—	—	.000034	.00034	.00034	0	.00038
20	0.5	—	—	.000009	.000087	.000087	0	.00014
June 2	2.2	—	—	.000009	.00018	.00018	0	.00026
12	—	—	—	0	.000068	.000031	.000037	.00014
July 10	1.9	—	—	—	.00013	.000097	.000030	.00042
26	5.2	—	—	.000004	.000081	.000060	.000020	.00060
Aug. 19	2.3	—	—	.000003	.000055	.000055	0	.00028
21	—	—	—	.000004	.000037	.000033	.000004	.00021
Sept. 5	.3	—	—	.000001	0	0	0	.00004
5	—	—	—	.000028	.00028	.00025	.000028	.0017
24	2.0	—	—	.000002	.000024	.000014	.000009	.00005
Oct. 3	.6	—	—	.000008	0	0	.000080	.00030
8	.9	—	—	.000019	0	0	.000019	.00033
10	.7	—	—	.000003	.000026	—	.000003	.00014
11	—	—	—	.000015	.00015	—	.000015	.00030
13	.2	—	—	.000005	.000052	—	.000005	.00013
28	1.7	—	—	.000030	.00030	.00027	.000030	.0012
Nov. 25	0	—	—	.000009	.000094	—	.000009	.00008

Table 32.—Total rainfall, urban runoff, and loads of storm-runoff constituents (excluding base-flow loads) for selected storms and 12 urban basins—Continued

Bells Canyon Conduit—Continued

Storm date	Copper, suspended recoverable	Copper, dissolved	Iron, total recoverable	Iron, suspended recoverable	Iron, dissolved	Lead, total recoverable	Lead, suspended recoverable	Lead, dissolved
Mar. 26, 1981	0.00024	0.000060	0.029	0.027	0.00090	0.00090	0.00087	0.000030
Apr. 10	—	—	.001	—	—	.00008	—	—
May 3	.0016	.00028	.14	.14	.0016	.0066	.0061	.00059
16	.00024	.00014	.022	.022	.00068	.00061	.00048	.00014
20	.00009	.000052	.012	.012	.00035	.00037	.00034	.000035
June 2	.00018	.000073	.036	—	.00009	.00084	.00075	.000092
12	.00011	.000034	.013	.013	.00024	.00081	.00078	.000020
July 10	.00040	.000021	.026	.025	.00034	.00076	.00076	0
26	.00056	.000024	.052	.052	.00089	.0018	.0018	.000024
Aug. 19	.00025	.000019	.030	.030	.0012	.00138	.0014	.000025
21	.00015	.000059	.024	.024	.00013	.00066	.00063	.000029
Sept. 5	.00002	.000015	.003	.003	.00013	.00011	.00010	.000009
5	.0015	.00011	.224	.22	.00089	.0089	.0089	.00011
24	.00001	.000035	.028	.028	.00013	.00038	.00038	.000009
Oct. 3	.00020	.000096	.012	.012	.00034	.00040	.00037	.000032
8	.00021	.00012	.033	.033	.00048	.00075	.00068	.000077
10	.00012	.000016	.012	.012	.00007	.00044	.00044	.000005
11	.00026	.000045	.041	.041	.00065	.00065	.00064	.000015
13	.00008	.000047	.008	.008	.00011	.00028	.00026	.000021
28	.00006	.0011	.057	.057	.00083	.0014	.0014	.000060
Nov. 25	.00002	.000057	.004	.004	.00023	.00021	.00019	.000019

Storm date	Mercury, total recoverable	Mercury, suspended recoverable	Mercury, dissolved	Zinc, total recoverable	Zinc, suspended recoverable	Zinc, dissolved
Mar. 26, 1981	0.000002	0.000002	0	0.00060	0.00045	0.00015
Apr. 10	0	—	—	.00007	—	—
May 3	.000007	.000007	0	.0042	.0035	.00071
16	0	0	0	.0010	.00068	.00020
20	.000002	.000002	0	.00026	.0017	.00009
June 2	.000002	.000002	0	.0010	.00082	.00018
12	0	0	0	.00051	.00027	.00024
July 10	0	0	0	.00072	.00059	.00013
26	.000002	.000002	0	.0016	.00097	.00064
Aug. 19	.000001	.000001	0	.00094	.00088	.00006
21	.000001	.000001	0	.00063	.00059	.00004
Sept. 5	0	0	0	.00012	.00008	.00004
5	.000003	.000003	0	.0047	.0044	.00017
24	0	0	0	.00092	.00087	.00006
Oct. 3	0	0	.000001	.00056	.00032	.00022
8	0	0	0	.00097	.00058	.00046
10	0	0	0	.00044	.00039	.00005
11	0	0	0	.00091	.00076	.00015
13	.000001	.000001	0	.00036	.00021	.00018
28	.000003	.000003	0	.0021	0	.0030
Nov. 25	.000001	—	.000001	.00028	.00019	.00008

Table 32.—Total rainfall, urban runoff, and loads of storm-runoff constituents (excluding base-flow loads) for selected storms and 12 urban basins—Continued

Little Cottonwood Creek

Storm date	Total rainfall (in.)	Urban runoff (in.)	Chemical oxygen demand	Biochemical oxygen demand, 5-day, carbonaceous	Biochemical oxygen demand, ultimate, carbonaceous	Chloride, dissolved	Fluoride, dissolved	Solids residue at $180^{\circ}C$, dissolved
Aug. 25, 1980	0.72	0.013	(1)	—	—	(1)	(1)	(1)
Oct. 26	.12	.002	0.07	—	—	(1)	.0003	(1)
Mar. 26, 1981	.60	.010	.15	0.032	0.062	0.06	—	0.45
May 10	.32	.007	.13	.024	.053	.11	—	.54
20	.32	.023	.29	.10	.15	.26	—	.97
Sept. 5	.65	.028	1.2	(1)	.050	.82	—	2.1

Storm date	Solids residue at $105^{\circ}C$ suspended	Nitrogen, nitrate dissolved as N	Nitrogen, ammonia dissolved as N	Nitrogen, ammonia + organic, total as N	Phosphorus, total as P	Phosphorus, dissolved as P	Carbon, dissolved suspended total	Carbon, organic dissolved
Aug. 25, 1980	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Oct. 26	0.06	(1)	(1)	0.0007	(1)	0	0.002	0.020
Mar. 26, 1981	.01	0.0022	0.0006	.0037	0.0018	.00015	.015	.017
May 10	.67	.0008	.0008	.0027	.0010	.00019	(1)	—
20	1.1	.018	.0007	.0069	.0025	.00063	.019	—
Sept. 5	11.	.0034	.0008	.031	.0093	.00003	.023	.017

Storm date	Sediment, suspended	Cadmium, total	Cadmium, suspended	Cadmium, dissolved	Chromium, total recoverable	Chromium, suspended recoverable	Chromium, dissolved	Copper, total recoverable
Aug. 25, 1980	—	—	0	—	(1)	—	—	(1)
Oct. 26	—	—	0	0	0.000009	—	—	—
Mar. 26, 1981	—	—	—	(1)	.00013	0.00013	0	0.00019
May 10	0.7	—	—	.000002	(1)	(1)	0	.00014
20	—	—	—	.000002	.000020	.000020	0	.00020
Sept. 5	11	—	—	.000005	.00014	.000099	.000016	.0012

Storm date	Copper, suspended recoverable	Copper, dissolved	Iron, total recoverable	Iron, suspended recoverable	Iron, dissolved	Lead, total recoverable	Lead, suspended recoverable	Lead, dissolved
Aug. 25, 1980	0.00003	(1)	—	—	(1)	0.00004	—	(1)
Oct. 26	0	0.000012	—	—	0.00013	—	—	0.000004
Mar. 26, 1981	.00018	.000012	0.024	0.024	.00010	.00070	0.00070	.000004
May 10	.00013	.000012	.014	.014	.00003	.00028	.00027	.000017
20	.00019	.000012	.025	.025	(1)	.00044	.00038	.000059
Sept. 5	.0012	(1)	.18	.18	.00051	.0061	.0061	.000039

Storm date	Mercury, total recoverable	Mercury, suspended recoverable	Mercury, dissolved	Zinc, total recoverable	Zinc, suspended recoverable	Zinc, dissolved
Aug. 25, 1980	—	—	—	(1)	(1)	(1)
Oct. 26	—	—	—	0.00021	0.00016	0.00006
Mar. 26, 1981	0.000001	—	0.000001	.00085	.00086	(1)
May 10	0	0	0	.00052	.00043	.00009
20	—	—	0	.00012	.00061	(1)
Sept. 5	.000004	.000004	0	.0052	.0052	(1)

See footnotes at end of table, p. 152.

Table 32.--Total rainfall, urban runoff, and loads of storm-runoff constituents (excluding base-flow loads) for selected storms and 12 urban basins--Continued

Holladay Drain

Storm date	Total rainfall (in.)	Urban runoff (in.)	Chemical oxygen demand	Biochemical oxygen demand, 5-day, carbonaceous	Biochemical oxygen demand, ultimate, carbonaceous	Chloride, dissolved	Fluoride, dissolved	Solids residue at 180°C, dissolved
July 1, 1980	0.60	0.036	—	—	—	0.01	0.0002	—
Oct. 26	.22	.006	0.01	—	—	0	0	0.02
Mar. 26, 1981	.54	.038	.34	0.049	0.078	.10	—	.61
29	.41	.039	.32	.033	.051	.10	—	.77
May 10	.34	.022	.19	.017	.039	.02	—	.21
20	.11	.002	.02	.002	.012	0	—	.05
Sept. 5	.32	.009	.25	.019	.067	.06	—	.29
6	.17	.007	.09	.011	.035	.10	—	.49

Storm date	Solids residue at 105°C suspended	Nitrogen, nitrate dissolved as N	Nitrogen, ammonia dissolved as N	Nitrogen, ammonia + organic, total as N	Phosphorus, total as P	Phosphorus, dissolved as P	Carbon, dissolved suspended total	Carbon, organic dissolved
July 1, 1980	0.53	0.0001	0.0001	0.0029	0.0007	0.00002	—	0.017
Oct. 26	.02	.0001	.0001	.0002	0	.00004	0	.003
Mar. 26, 1981	.17	.0025	.0015	.0052	.0020	.00052	.010	.062
29	1.4	.0014	.0008	.0047	.0025	.00031	.021	.039
May 10	.82	.0010	.0008	.0051	.0016	.00033	.016	.025
20	.05	.0002	.0001	.0008	.0001	.00003	.001	.003
Sept. 5	1.2	.0001	.0002	.0057	.0016	.00012	.027	.014
6	.06	.0007	.0002	.0029	.0003	.00008	.004	.015

Storm date	Sediment, suspended	Cadmium, total	Cadmium, suspended	Cadmium, dissolved	Chromium, total recoverable	Chromium, suspended recoverable	Chromium, dissolved	Copper, total recoverable
July 1, 1980	—	0	—	0	—	—	—	0.00006
Oct. 26	0	0	—	0	0	—	—	.00001
Mar. 26, 1981	—	—	—	.000005	.00015	.00015	0	.00019
29	—	—	—	.000005	.00016	.00016	0	.00021
May 10	1.5	—	—	0	.000030	.000030	0	.00012
20	.1	—	—	.000001	.000012	.000009	.000003	.00001
Sept. 5	1.3	—	—	.000001	.000037	.000036	.000001	.00012
6	.2	—	—	.000001	0	0	0	.00002

Storm date	Copper, suspended recoverable	Copper, dissolved	Iron, total recoverable	Iron, suspended recoverable	Iron, dissolved	Lead, total recoverable	Lead, suspended recoverable	Lead, dissolved
July 1, 1980	—	0.000010	—	—	0.00005	0.00038	—	0.000010
Oct. 26	0	0	—	—	.00003	.00003	—	0
Mar. 26, 1981	.00016	.000031	0.021	0.021	.00031	.0011	0.0011	0
29	.00017	.000042	.034	.034	.00047	.0010	.0010	.000010
May 10	.00010	.000012	.019	.019	.00012	.00069	.00063	.000063
20	.00001	.000002	.001	.001	.00004	.00004	.00004	.000005
Sept. 5	.00012	0	.021	.021	.00016	.00073	.00073	.000004
6	.00002	0	.002	.002	.00003	.00007	.00007	.000003

Storm date	Mercury, total recoverable	Mercury, suspended recoverable	Mercury, dissolved	Zinc, total recoverable	Zinc, suspended recoverable	Zinc, dissolved
July 1, 1980	—	—	—	0.00026	—	0.00001
Oct. 26	—	—	—	.00002	—	.
Mar. 26, 1981	0.000001	0.000001	0	.0014	0.0013	.00016
29	.000001	.000001	0	.00089	.00079	.00010
May 10	0	0	0	.00051	.00045	.00006
20	0	0	0	.00005	.00001	.00005
Sept. 5	0	0	0	.00074	.00068	.00006
6	0	0	0	.00033	.00009	.00024

Table 32.—Total rainfall, urban runoff, and loads of storm-runoff constituents (excluding base-flow loads) for selected storms and 12 urban basins—Continued

Big Cottonwood Creek

Storm date	Total rainfall (in.)	Urban runoff (in.)	Chemical oxygen demand	Biochemical oxygen demand, 5-day, carbonaceous	Biochemical oxygen demand, ultimate, carbonaceous	Chloride, dissolved	Fluoride, dissolved	Solids residue at 180°C, dissolved
Aug. 19, 1980	0.14	0.004	0.06	—	—	([1])	0	0.12
Oct. 26	.27	.008	.08	—	—	([1])	([1])	([1])
Mar. 26, 1981	.51	.021	.10	0.052	0.057	0.10	—	.91
May 20	.31	.011	—	.23	([1])	.08	—	.10
Sept. 5	.38	.023	.86	.097	.25	.35	—	.95

Storm date	Solids residue at 105°C suspended	Nitrogen, nitrate dissolved as N	Nitrogen, ammonia dissolved as N	Nitrogen, ammonia + organic, total as N	Phosphorus, total as P	Phosphorus, dissolved as P	Carbon, dissolved suspended total	Carbon, organic dissolved
Aug. 19, 1980	0.04	0.0001	0.0002	0.0012	0.0004	0.00010	—	0.058
Oct. 26	.07	([1])	.0002	([1])	([1])	([1])	([1])	([1])
Mar. 26, 1981	.37	.0067	.0049	.0091	([1])	([1])	0.013	.011
May 20	2.2	.0013	([1])	.021	.0042	([1])	.081	([1])
Sept. 5	6.9	.0059	.035	([1])	.014	.0055	.065	.070

Storm date	Sediment, suspended	Cadmium, total	Cadmium, suspended	Cadmium, dissolved	Chromium, total recoverable	Chromium, suspended recoverable	Chromium, dissolved	Copper, total recoverable
Aug. 19, 1980	—	0	0	([1])	([1])	—	—	0.00003
Oct. 26	—	0	0	([1])	0	—	—	([1])
Mar. 26, 1981	—	—	—	0.000004	.000040	0.000040	0	.00014
May 20	—	—	—	.000001	.00028	.00028	0	.00053
Sept. 5	7.3	—	—	.000004	.00014	.00020	([1])	.00081

Storm date	Copper, suspended recoverable	Copper, dissolved	Iron, total recoverable	Iron, suspended recoverable	Iron, dissolved	Lead, total recoverable	Lead, suspended recoverable	Lead, dissolved
Aug. 19, 1980	—	0.000001	—	—	0.00005	([1])	—	0.000001
Oct. 26	0.00001	([1])	—	—	.00010	.00004	—	0
Mar. 26, 1981	.00014	.000008	0.009	0.009	.00008	.00038	0.00038	0
May 20	.00058	([1])	.096	.097	([1])	.00094	.00088	.000056
Sept. 5	.00080	.000010	.150	.17	.00032	.0019	.0019	.000035

Storm date	Mercury, total recoverable	Mercury, suspended recoverable	Mercury, dissolved	Zinc, total recoverable	Zinc, suspended recoverable	Zinc, dissolved
Aug. 19, 1980	—	—	—	0.00016	0.00005	0.00012
Oct. 26	—	—	—	.0024	.0017	.00064
Mar. 26, 1981	—	—	0.000001	.00059	.00055	.00004
May 20	0	0	0	.0055	.0055	.00001
Sept. 5	.000002	.000002	0	.0024	.0022	.00022

See footnotes at end of table, p. 152.

Table 32.—Total rainfall, urban runoff, and loads of storm-runoff constituents (excluding base-flow loads) for selected storms and 12 urban basins—Continued

Mill Creek

Storm date	Total rainfall (in.)	Urban runoff (in.)	Chemical oxygen demand	Biochemical oxygen demand, 5-day, carbonaceous	Biochemical oxygen demand, ultimate, carbonaceous	Chloride, dissolved	Fluoride, dissolved	Solids residue at 180°C, dissolved
Mar. 26, 1981	1.11	0.078	0.66	0.11	0.24	2.0	—	2.1
May 10	.34	.025	.60	.12	.19	.14	—	1.2
20	.29	.018	.41	.040	.060	.03	—	.61
Sept. 5	.36	.032	.63	.10	.29	.75	—	2.6

Storm date	Solids residue at 105°C suspended	Nitrogen, nitrate dissolved as N	Nitrogen, ammonia dissolved as N	Nitrogen, ammonia + organic, total as N	Phosphorus, total as P	Phosphorus, dissolved as P	Carbon, dissolved suspended total	Carbon, organic dissolved
Mar. 26, 1981	8.2	0.069	0.0095	0.021	0.0071	0.0018	0.059	0.086
May 10	.85	.0039	.0014	([1])	.0024	.00040	.040	.15
20	.81	.0009	([1])	.0088	.0023	.00074	.009	.12
Sept. 5	5.4	.0028	([1])	.032	.0064	.00022	.10	.092

Storm date	Sediment, suspended	Cadmium, total	Cadmium, suspended	Cadmium, dissolved	Chromium, total recoverable	Chromium, suspended recoverable	Chromium, dissolved	Copper, total recoverable
Mar. 26, 1981	—	—	—	0.000017	0.0010	0.0010	0	0.00065
May 10	0.9	—	—	.000005	.000054	.000054	0	.00015
20	—	—	—	.000004	.000041	.000041	0	.00012
Sept. 5	6.7	—	—	.000007	.00025	.00026	([1])	.00075

Storm date	Copper, suspended recoverable	Copper, dissolved	Iron, total recoverable	Iron, suspended recoverable	Iron, dissolved	Lead, total recoverable	Lead, suspended recoverable	Lead, dissolved
Mar. 26, 1981	0.00053	0.000117	0.068	0.075	0.00017	0.0020	0.0019	([1])
May 10	.00012	.000029	.014	.014	.00011	.00059	.00049	0.000099
20	.00011	.000008	.017	.017	([1])	.00041	.00035	.000060
Sept. 5	.00077	([1])	.10	.10	.00028	.0021	.0019	.000065

Storm date	Mercury, total recoverable	Mercury, suspended recoverable	Mercury, dissolved	Zinc, total recoverable	Zinc, suspended recoverable	Zinc, dissolved
Mar. 26, 1981	0.000002	0.000002	0	0.026	0.0256	0.00064
May 10	.000002	.000002	0	.00071	.00024	.00047
20	([1])	([1])	0	.00074	.00026	.00048
Sept. 5	.000002	.000002	0	.0023	.0023	.00014

See footnotes at end of table, p. 152.

Table 32.—Total rainfall, urban runoff, and loads of storm-runoff constituents (excluding base-flow loads) for selected storms and 12 urban basins—Continued

Twenty-First South Conduit

Storm date	Total rainfall (in.)	Urban runoff (in.)	Chemical oxygen demand	Biochemical oxygen demand, 5-day, carbonaceous	Biochemical oxygen demand, ultimate, carbonaceous	Chloride, dissolved	Fluoride, dissolved	Solids residue at 180°C, dissolved
Mar. 26, 1981	1.23	0.187	1.8	0.062	0.014	([1])	—	([1])
May 20	.25	.033	.64	.17	.37	0.62	—	2.8
Sept. 5	.33	.034	.87	.10	.25	.25	—	1.9

Storm date	Solids residue at 105°C suspended	Nitrogen, nitrate dissolved as N	Nitrogen, ammonia dissolved as N	Nitrogen, ammonia + organic, total as N	Phosphorus, total as P	Phosphorus, dissolved as P	Carbon, dissolved suspended total	Carbon, organic dissolved
Mar. 26, 1981	0.60	0.0098	0.0081	0.012	([1])	([1])	0.090	0.14
May 20	.64	([1])	.0029	.014	([1])	([1])	.008	.18
Sept. 5	2.6	.0044	([1])	.020	0.0007	([1])	.070	.097

Storm date	Sediment, suspended	Cadmium, total	Cadmium, suspended	Cadmium, dissolved	Chromium, total recoverable	Chromium, suspended recoverable	Chromium, dissolved	Copper, total recoverable
Mar. 26, 1981	—	—	—	0.000013	0.00026	0.00037	([1])	0.0014
May 20	2.4	—	—	.000006	.00012	([1])	0.00027	.00035
Sept. 5	4.0	—	—	.000008	.00016	.00021	([1])	.00054

Storm date	Copper, suspended recoverable	Copper, dissolved	Iron, total recoverable	Iron, suspended recoverable	Iron, dissolved	Lead, total recoverable	Lead, suspended recoverable	Lead, dissolved
Mar. 26, 1981	0.0016	([1])	0.085	0.086	0.00026	0.0076	0.0077	0.000052
May 20	.00029	0.000061	.018	.018	([1])	.0013	.0015	([1])
Sept. 5	.00056	([1])	.060	.059	.00047	.0046	.0045	.00013

Storm date	Mercury, total recoverable	Mercury, suspended recoverable	Mercury, dissolved	Zinc, total recoverable	Zinc, suspended recoverable	Zinc, dissolved
Mar. 26, 1981	0.000001	0	0.000001	0.0092	0.0079	0.0013
May 20	([1])	([1])	0	.0015	.00057	.00098
Sept. 5	.000001	.000001	0	.0033	.0027	.00055

See footnotes at end of table, p. 152.

Table 32.—Total rainfall, urban runoff, and loads of storm-runoff constituents (excluding base-flow loads) for selected storms and 12 urban basins—Continued

Thirteenth South Conduits

Storm date	Total rainfall (in.)	Urban runoff (in.)	Chemical oxygen demand	Biochemical oxygen demand, 5-day, carbonaceous	Biochemical oxygen demand, ultimate, carbonaceous	Chloride, dissolved	Fluoride, dissolved	Solids residue at 180°C, dissolved
Oct. 26, 1980	0.26	0.008	0.49	—	—	(1)	0.0005	(1)
Mar. 26, 1981	.59	.047	1.1	0.14	0.23	0.13	—	0.46
May 10	.35	.028	.64	(1)	(1)	.09	—	.58
20	.34	.021	.45	.080	.16	(1)	—	(1)
Sept. 5	.35	.021	.37	.12	.33	(1)	—	.04

Storm date	Solids residue at 105°C suspended	Nitrogen, nitrate dissolved as N	Nitrogen, ammonia dissolved as N	Nitrogen, ammonia + organic, total as N	Phosphorus, total as P	Phosphorus, dissolved as P	Carbon, dissolved suspended total	Carbon, organic dissolved
Oct. 26, 1980	0.21	0.0002	0.0004	0.0055	0.0015	0.00060	0.006	0.12
Mar. 26, 1981	4.5	.0076	.0050	.025	.0059	.0013	.052	.092
May 10	3.9	.0003	(1)	.014	.0027	.00029	.15	.74
20	1.5	.0039	.0024	.0098	.0024	.00042	.023	.088
Sept. 5	2.7	.0004	.0014	.029	.0057	.00039	.092	.063

Storm date	Sediment, suspended	Cadmium, total	Cadmium, suspended	Cadmium, dissolved	Chromium, total recoverable	Chromium, suspended recoverable	Chromium, dissolved	Copper, total recoverable
Oct. 26, 1980	—	0.000007	0	0.000007	0.000039	—	—	0.00012
Mar. 26, 1981	—	—	—	.000009	.00022	0.00022	0	.00058
May 10	4.5	—	—	.000060	.00014	.00014	0	.00025
20	2.4	—	—	.000004	.00017	.00020	—	.00019
Sept. 5	4.3	—	—	.000005	.00015	.00015	.000001	.00053

Storm date	Copper, suspended recoverable	Copper, dissolved	Iron, total recoverable	Iron, suspended recoverable	Iron, dissolved	Lead, total recoverable	Lead, suspended recoverable	Lead, dissolved
Oct. 26, 1980	0.00002	0.000095	—	—	0.00035	0.00059	0.00047	0.00013
Mar. 26, 1981	.00048	.000099	0.057	0.058	.00044	.0028	.0028	(1)
May 10	.00025	(1)	.085	(1)	(1)	.0014	.0013	.00012
20	.00012	.000073	.033	.034	.00025	.00075	.00071	.000033
Sept. 5	.00055	.000027	.078	.078	.00074	.0026	.0026	.000057

Storm date	Mercury, total recoverable	Mercury, suspended recoverable	Mercury, dissolved	Zinc, total recoverable	Zinc, suspended recoverable	Zinc, dissolved
Oct. 26, 1980	—	—	—	0.00068	0.00023	0.00046
Mar. 26, 1981	0	0	0	.0013	.00086	.00042
May 10	0	(1)	0	.00070	(1)	(1)
20	.000001	.000001	0	.0011	.00053	.00056
Sept. 5	.000001	.000001	0	.0022	.0022	.00010

See footnotes at end of table, p. 152.

Table 32.—Total rainfall, urban runoff, and loads of storm-runoff constituents (excluding base-flow loads) for selected storms and 12 urban basins—Continued

Eighth South, South Conduit

Storm date	Total rainfall (in.)	Urban runoff (in.)	Chemical oxygen demand	Biochemical oxygen demand, 5-day, carbonaceous	Biochemical oxygen demand, ultimate, carbonaceous	Chloride, dissolved	Fluoride, dissolved	Solids residue at 180°C, dissolved
July 1, 1980	0.48	[2]1.61	—	—	—	220	0.87	—
Aug. 25	.08	[2].041	0.60	—	—	2.4	.0047	10
Oct. 26	.38	[2].103	6.1	—	—	14	.049	77
Mar. 26, 1981	.58	[2]1.09	20	4.0	6.5	110	—	270
Aug. 24	.19	[2].076	1.2	—	—	3.3	—	16
29	.07	[2].208	3.4	.31	.56	3.6	—	35
Sept. 5	.32	[2].492	16	—	—	8.5	—	43

Storm date	Solids residue at 105°C suspended	Nitrogen, nitrate dissolved as N	Nitrogen, ammonia dissolved as N	Nitrogen, ammonia + organic, total as N	Phosphorus, total as P	Phosphorus, dissolved as P	Carbon, dissolved suspended total	Carbon, organic dissolved
July 1, 1980	590	1.5	0.61	9.2	1.2	0.22	—	56
Aug. 25	.84	—	—	.033	.013	.014	0.023	.18
Oct. 26	4.7	.038	.042	.25	.058	.045	.16	1.9
Mar. 26, 1981	38	.21	.12	.35	.16	.070	1.0	3.5
Aug. 24	.71	—	—	—	—	—	—	—
29	1.6	.094	.015	.061	.0080	.0047	.028	.43
Sept. 5	21	.073	.018	.28	.059	.010	.48	1.9

Storm date	Sediment, suspended	Cadmium, total	Cadmium, suspended	Cadmium, dissolved	Chromium, total recoverable	Chromium, suspended recoverable	Chromium, dissolved	Copper, total recoverable
July 1, 1980	—	0.0067	—	0.0022	0.013	—	—	0.21
Aug. 25	—	0	0	.000009	.00012	—	—	.00021
Oct. 26	—	.00011	0	.00011	.00092	—	—	.0019
Mar. 26, 1981	—	—	—	.00025	.0050	0.0050	0	.010
Aug. 24	—	—	—	.000017	.00035	.00035	0	.00042
29	—	—	—	.000047	0	0	.000094	.00094
Sept. 5	30	—	—	.00011	.0022	.0013	.00089	.0056

Storm date	Copper, suspended recoverable	Copper, dissolved	Iron, total recoverable	Iron, suspended recoverable	Iron, dissolved	Lead, total recoverable	Lead, suspended recoverable	Lead, dissolved
July 1, 1980	—	0.022	—	—	0.24	1.2	—	0.071
Aug. 25	0.00011	.000094	—	—	.00038	.00053	—	.000094
Oct. 26	.00064	.0011	—	—	.0026	.0066	—	.0010
Mar. 26, 1981	.0075	.0025	0.81	0.81	.0075	.033	0.033	.00025
Aug. 24	.00033	.000087	.038	.038	.00021	.00094	.00059	.00035
29	.00085	.000094	.037	.036	.00099	.0052	.0047	.00028
Sept. 5	.0054	.00022	.59	.58	.0059	.028	.027	.0013

Storm date	Mercury, total recoverable	Mercury, suspended recoverable	Mercury, dissolved	Zinc, total recoverable	Zinc, suspended recoverable	Zinc, dissolved
July 1, 1980	—	—	—	1.0	—	0.052
Aug. 25	—	—	—	.00094	0.00066	.00033
Oct. 26	—	—	—	.013	.010	.0027
Mar. 26, 1981	0.000050	0.000050	0	.055	.045	.010
Aug. 24	.000002	.000002	0	.0017	.00087	.00094
29	0	0	0	.0047	.0028	.0021
Sept. 5	.000011	.000011	0	.040	.031	.0086

See footnotes at end of table, p. 152.

Table 32.—Total rainfall, urban runoff, and loads of storm-runoff constituents (excluding base-flow loads) for selected storms and 12 urban basins—Continued

Eighth South, Middle Conduit

Storm date	Total rainfall (in.)	Urban runoff (in.)	Chemical oxygen demand	Biochemical oxygen demand, 5-day, carbonaceous	Biochemical oxygen demand, ultimate, carbonaceous	Chloride, dissolved	Fluoride, dissolved	Solids residue at 180°C, dissolved
July 1, 1980	0.74	0.008	—	—	—	0.02	0.0001	—
Aug. 19	.25	.001	0.01	—	—	.07	.0002	0.34
Oct. 26	.21	.003	.28	—	—	.05	.0005	.33
Mar. 26, 1981	.40	.075	1.5	0.16	0.22	.98	—	5.3
May 10	.60	.035	1.2	.055	.14	.15	—	1.0
20	.15	.020	.18	.036	.10	.36	—	2.4
Aug. 24	.18	.022	1.0	—	—	.27	—	2.1
29	.07	.014	.55	.065	.11	.23	—	1.8
Sept. 5	.29	.050	5.0	.27	.75	.36	—	2.7

Storm date	Solids residue at 105°C suspended	Nitrogen, nitrate dissolved as N	Nitrogen, ammonia dissolved as N	Nitrogen, ammonia + organic, total as N	Phosphorus, total as P	Phosphorus, dissolved as P	Carbon, dissolved suspended total	Carbon, organic dissolved
July 1, 1980	1.4	0	0	0.0039	0.0017	0.00004	—	0.004
Aug. 19	.01	0	.0001	.0007	.0004	.00027	0.001	.005
Oct. 26	.07	.0017	.0003	.0080	.0008	.00016	.003	.050
Mar. 26, 1981	3.1	.024	.0076	.032	.0081	.0022	.068	.17
May 10	1.7	.0059	.0015	.022	.0077	.00096	.20	.059
20	.22	.013	.0060	.013	.0038	.0032	—	.087
Aug. 24	1.2	—	—	—	—	—	—	—
29	1.2	.0046	.0018	.014	.0030	.00078	.006	.042
Sept. 5	12	.0027	.0030	.093	.023	.00091	.45	.18

Storm date	Sediment, suspended	Cadmium, total	Cadmium, suspended	Cadmium, dissolved	Chromium, total recoverable	Chromium, suspended recoverable	Chromium, dissolved	Copper, total recoverable
July 1, 1980	0	0	—	0	0.000010	—	—	0.00017
Aug. 19	—	0	—	0	.000005	—	—	.00001
Oct. 26	—	.000002	0	.000002	.000034	—	—	.00007
Mar. 26, 1981	—	—	—	.000017	.00051	0.00051	0	.00068
May 10	12	—	—	0	.00024	.00024	0	.00096
20	.2	—	—	.000005	.000046	.000041	.000005	.00006
Aug. 24	1.4	—	—	.000005	.00020	.00020	0	.00025
29	—	—	—	.000003	.00013	.00011	.000020	.00024
Sept. 5	17	—	—	.000011	.00091	.00090	.000011	.0024

Storm date	Copper, suspended recoverable	Copper, dissolved	Iron, total recoverable	Iron, suspended recoverable	Iron, dissolved	Lead, total recoverable	Lead, suspended recoverable	Lead, dissolved
July 1, 1980	—	0	—	—	0.00021	0.00092	—	0.000010
Aug. 19	—	.000004	—	—	.00001	.00001	—	.000004
Oct. 26	0	.000089	—	—	.00030	.00041	0.00034	.000078
Mar. 26, 1981	.00054	.00014	0.073	0.073	.00034	.0036	.0036	.000034
May 10	.00096	.000040	.10	—	—	.0060	.0058	.00021
20	.00002	.000046	.006	.006	.00009	.00027	.00022	.000046
Aug. 24	.00020	.000050	.034	.033	.0010	.0020	.0018	.00013
29	.00023	.000013	.025	.025	.00030	.0015	.0015	.000023
Sept. 5	—	—	.30	.30	.0018	.017	.017	.00014

Storm date	Mercury, total recoverable	Mercury, suspended recoverable	Mercury, dissolved	Zinc, total recoverable	Zinc, suspended recoverable	Zinc, dissolved
July 1, 1980	—	—	—	0.00078	—	0
Aug. 19	—	—	—	.00004	0.00003	0
Oct. 26	—	—	—	.00037	.00011	.00025
Mar. 26, 1981	0.000003	0.000003	0	.0041	.0034	.00068
May 10	.000002	.000002	0	.0037	—	—
20	.000001	.000001	0	.00037	.00018	.00018
Aug. 24	.000001	.000001	0	.0037	.0031	.00060
29	.000001	.000001	0	.0012	.0011	.00007
Sept. 5	.000009	.000009	0	.016	.015	.00059

Table 32.—Total rainfall, urban runoff, and loads of storm-runoff constituents (excluding base-flow loads) for selected storms and 12 urban basins—Continued

Eighth South, North Conduit

Storm date	Total rainfall (in.)	Urban runoff (in.)	Chemical oxygen demand	Biochemical oxygen demand, 5-day, carbonaceous	Biochemical oxygen demand, ultimate, carbonaceous	Chloride, dissolved	Fluoride, dissolved	Solids residue at 180°C, dissolved
July 1, 1980	0.80	0.017	—	—	—	0.01	0.0003	—
Oct. 26	.30	.019	0.90	—	—	.10	.0038	1.0
Mar. 26, 1981	.16	.048	3.6	0.15	0.28	1.3	—	5.8
May 10	.32	.085	.46	.10	.25	2.3	—	11
20	.08	.008	.12	.025	.061	.30	—	1.7
Aug. 24	.18	.061	3.3	—	—	.61	—	6.6
29	.06	.050	3.3	.48	.81	.47	—	3.4
Sept. 5	.32	.164	11	.97	2.3	1.0	—	7.5

Storm date	Solids residue at 105°C suspended	Nitrogen, nitrate dissolved as N	Nitrogen, ammonia dissolved as N	Nitrogen, ammonia + organic, total as N	Phosphorus, total as P	Phosphorus, dissolved as P	Carbon, dissolved suspended total	Carbon, organic dissolved
July 1, 1980	0.19	0	0	0.0026	0.0005	0.00001	—	—
Oct. 26	.33	.0058	.0015	.033	.0046	.0020	0.012	0.20
Mar. 26, 1981	4.9	.0038	.0074	.028	.019	.0034	.044	.14
May 10	.62	.035	.017	.042	.016	.013	—	.27
20	.07	.0031	.0033	.0061	.0019	.0016	—	.057
Aug. 24	3.6	—	—	—	—	—	—	—
29	4.0	.013	.015	.063	.010	.0030	.024	.37
Sept. 5	15	.0078	.010	.20	.041	.0048	.82	.82

Storm date	Sediment, suspended	Cadmium, total	Cadmium, suspended	Cadmium, dissolved	Chromium, total recoverable	Chromium, suspended recoverable	Chromium, dissolved	Copper, total recoverable
July 1, 1980	0.2	0	—	0	0.00011	—	—	0.00009
Oct. 26	—	.000013	—	.000013	.00027	—	—	.00029
Mar. 26, 1981	—	—	—	.000011	.00088	0.00088	0	.0035
May 10	.8	—	—	.000019	.00019	.000039	.00015	.00039
20	.1	—	—	.000004	.000076	.000042	.000034	.00005
Aug. 24	4.1	—	—	.000014	.0028	.0028	.000069	.0018
29	—	—	—	.000011	.0034	.0031	.000354	.0022
Sept. 5	26	—	—	.000037	.012	.012	.00045	.0093

Storm date	Copper, suspended recoverable	Copper, dissolved	Iron, total recoverable	Iron, suspended recoverable	Iron, dissolved	Lead, total recoverable	Lead, suspended recoverable	Lead, dissolved
July 1, 1980	—	0.000010	—	—	0.00012	0.00055	—	0.000020
Oct. 26	0	.00051	—	—	.0047	.0012	0.0010	.00015
Mar. 26, 1981	.0034	.000088	0.12	0.12	.0016	.011	.010	.000066
May 10	.00023	.00015	.016	.015	.00039	.00071	.00068	.000039
20	0	.000076	.002	.002	.00011	.00009	.00007	.000023
Aug. 24	.0018	.000056	.12	.094	.030	.0097	.0092	.00060
29	.0021	.000069	.10	.099	.0037	.0089	.0086	.00040
Sept. 5	.0093	.000074	.45	.45	.0086	.031	.030	.00052

Storm date	Mercury, total recoverable	Mercury, suspended recoverable	Mercury, dissolved	Zinc, total recoverable	Zinc, suspended recoverable	Zinc, dissolved
July 1, 1980	—	—	—	0.00040	—	0.00004
Oct. 26	—	—	—	.0019	0.00077	.0012
Mar. 26, 1981	0.000004	0.000002	0.000002	.0082	.0079	.00033
May 10	.000002	.000002	0	.0013	.00039	.00097
20	.000001	.000001	0	.00030	.00008	.00023
Aug. 24	.000006	.000006	0	.012	.0069	.0051
29	.000002	.000002	0	.0087	.0077	.0011
Sept. 5	.000019	.000019	0	.037	.035	.0018

Table 32.—Total rainfall, urban runoff, and loads of storm-runoff constituents (excluding base-flow loads) for selected storms and 12 urban basins--Continued

North Temple Conduit

Storm date	Total rainfall (in.)	Urban runoff (in.)	Chemical oxygen demand	Biochemical oxygen demand, 5-day, carbonaceous	Biochemical oxygen demand, ultimate, carbonaceous	Chloride, dissolved	Fluoride, dissolved	Solids residue at 180°C, dissolved
Aug. 19, 1980	0.24	0.001	0.14	—	—	0.04	0.0001	0.19
Mar. 26, 1981	.52	.100	1.4	0.23	0.33	.53	--	1.5
May 20	.33	.048	3.0	.14	.37	.11	—	1.5
Sept. 5	.28	.051	1.7	—	—	.20	—	2.0

Storm date	Solids residue at 105°C suspended	Nitrogen, nitrate dissolved as N	Nitrogen, ammonia dissolved as N	Nitrogen, ammonia + organic, total as N	Phosphorus, total as P	Phosphorus, dissolved as P	Carbon, dissolved suspended total	Carbon, organic dissolved
Aug. 19, 1980	0.17	([1])	0	0.0021	0.0002	0.00007	0.002	0.040
Mar. 26, 1981	4.5	0.013	.0090	.021	.0084	.0025	.080	.21
May 20	7.8	.0084	.0020	.016	.044	.00091	—	.11
Sept. 5	11	—	—	([1])	—	.00072	—	—

Storm date	Sediment, suspended	Cadmium, total	Cadmium, suspended	Cadmium, dissolved	Chromium, total recoverable	Chromium, suspended recoverable	Chromium, dissolved	Copper, total recoverable
Aug. 19, 1980	—	([1])	0	([1])	0.000012	—	—	0.00004
Mar. 26, 1981	—	—	—	0.000050	.00078	0.00078	0	.00114
May 20	—	—	—	([1])	.00098	.00098	0	.0016
Sept. 5	0.7	—	—	.000011	.00052	.00050	.000009	.0017

Storm date	Copper, suspended recoverable	Copper, dissolved	Iron, total recoverable	Iron, suspended recoverable	Iron, dissolved	Lead, total recoverable	Lead, suspended recoverable	Lead, dissolved
Aug. 19, 1980	0	0.000033	—	—	0.00006	0.00004	—	0.000003
Mar. 26, 1981	.00093	.00021	0.063	0.061	.0024	.0052	0.0049	.00031
May 20	.0016	.000051	.57	.57	.00011	.0039	.0039	.000029
Sept. 5	.0017	.000023	.28	.28	.00098	.0076	.0075	.000069

Storm date	Mercury, total recoverable	Mercury, suspended recoverable	Mercury, dissolved	Zinc, total recoverable	Zinc, suspended recoverable	Zinc, dissolved
Aug. 19, 1980	—	—	—	0.00007	0.00005	0.00001
Mar. 26, 1981	0.000002	0.000002	0	.0040	.0032	.00078
May 20	.000012	.000012	0	.0052	.0052	([1])
Sept. 5	.000005	.000005	0	.0072	.0071	.00007

See footnotes at end of table, p. 152.

Table 32.—Total rainfall, urban runoff, and loads of storm-runoff constituents (excluding base-flow loads) for selected storms and 12 urban basins—Continued

Ninth West Conduit

Storm date	Total rainfall (in.)	Urban runoff (in.)	Chemical oxygen demand	Biochemical oxygen demand, 5-day, carbonaceous	Biochemical oxygen demand, ultimate, carbonaceous	Chloride, dissolved	Fluoride, dissolved	Solids residue at 180°C, dissolved
Aug. 24, 1981	0.15	0.008	0.68	0.10	0.27	0.03	—	0.53
Sept. 6	.22	.019	.40	—	—	.09	—	.47
Oct. 3	.23	.014	.82	—	—	.03	—	.55
3	.45	.060	1.5	.19	.33	.18	—	.90
4	.04	.013	3.3	—	—	.04	—	.47
8	.76	.117	2.7	—	—	.08	—	.69
10	.28	.058	1.7	.21	.45	.06	—	1.0
28	.65	.070	1.2	.30	.49	.11	—	.79
Nov. 17	.39	.025	.78	.21	.31	.06	—	.57
24	.23	.016	.29	.080	.12	.02	—	.30

Storm date	Solids residue at 105°C suspended	Nitrogen, nitrate dissolved as N	Nitrogen, ammonia dissolved as N	Nitrogen, ammonia + organic, total as N	Phosphorus, total as P	Phosphorus, dissolved as P	Carbon, dissolved suspended total	Carbon, organic dissolved
Aug. 24, 1981	0.26	0.0035	0.0025	0.014	0.0011	0.00064	0.007	0.15
Sept. 6	.28	—	—	—	—	—	—	—
Oct. 3	.22	.0032	.0004	.012	.0015	.0015	.006	.20
3	.72	.0038	.0042	.018	.0039	.0026	.016	.19
4	.31	.0015	.0005	.0064	.0010	.00064	.003	.67
8	1.2	.0098	.011	.035	.0066	.0042	—	—
10	1.8	.0090	.0070	.028	.0025	.0013	.051	.25
28	.45	.0046	.0076	.019	.0029	.0025	.021	.25
Nov. 17	.64	.0046	.0037	.011	.0018	.00095	.022	.15
24	.13	.0019	.0014	.0044	.0006	.00033	.006	.066

Storm date	Sediment, suspended	Cadmium, total	Cadmium, suspended	Cadmium, dissolved	Chromium, total recoverable	Chromium, suspended recoverable	Chromium, dissolved	Copper, total recoverable
Aug. 24, 1981	0.5	—	—	0.000002	0.000039	0.000039	0	0.00010
Sept. 6	.1	—	—	.000004	.000043	.000043	0	.00011
Oct. 3	.2	—	—	.000003	.000032	.000016	.000016	.00016
3	.3	—	—	.000014	.00014	.000068	.000068	.00031
4	—	—	—	.000003	.000061	.000046	.000015	.00011
8	—	—	—	—	.00027	.00021	.000053	.00080
10	1.8	—	—	.000013	.00013	—	.000013	.00062
28	.1	—	—	.000016	.00016	.00013	.000032	.00037
Nov. 17	1.3	—	—	.000014	.000092	—	.000005	.00023
24	.1	—	—	.000004	.000037	.000029	.000007	.00007

Storm date	Copper, suspended recoverable	Copper, dissolved	Iron, total recoverable	Iron, suspended recoverable	Iron, dissolved	Lead, total recoverable	Lead, suspended recoverable	Lead, dissolved
Aug. 24, 1981	0.00004	0.000058	0.009	0.009	0.00029	0.00097	0.00091	0.000056
Sept. 6	.00004	.000068	.003	.003	.00016	.00051	.00047	.000026
Oct. 3	.00007	.000089	.006	.005	.00044	.00057	.00044	.00012
3	.00018	.00014	.015	.015	.00058	.0014	.0012	.00016
4	—	—	.006	.005	.00025	—	—	—
8	—	—	.027	—	—	.0027	—	—
10	.00047	.00014	.046	.045	.00086	.0033	.0032	.00014
28	.00011	.00025	.016	.015	.00070	.0013	.00095	.00035
Nov. 17	.00010	.00013	.019	.019	.00034	.0015	.0013	.00016
24	.00002	.000048	.004	.004	.00026	.00033	.00025	.000077

Storm date	Mercury, total recoverable	Mercury, suspended recoverable	Mercury, dissolved	Zinc, total recoverable	Zinc, suspended recoverable	Zinc, dissolved
Aug. 24, 1981	0	0	0	0.00081	0.00060	0.00021
Sept. 6	0	0	0	.00051	.00034	.00018
Oct. 3	0	0	0	.00067	.00038	.00030
3	0	0	0	.0015	.0011	.00039
4	0	0	0	.00058	.00034	.00024
8	.000005	0	.000013	.0029	—	—
10	.000003	.000003	0	.0030	.0026	.00046
28	.000002	.000002	0	.0014	.00064	.00078
Nov. 17	0	0	0	.00092	.00069	.00023
24	0	—	0	.00033	.00026	.00008

[1] Estimated base-flow load exceeded storm-runoff load.

[2] Urban runoff in inches for Eighth South, South Conduit basin is not reliably related to total rainfall in inches because contributing basin area varied with the rate of runoff. Urban runoff in inches may be converted to measured urban runoff in acre-feet by multiplying urban runoff by factor of 5.33.

Table 33.—Total rainfall and runoff and loads of storm-runoff constituents (including base-flow loads) for selected storms and urban basins that have sustained base flow

[Loads are in pounds per acre. Zero indicates a value of zero or less than $1x10^{-6}$. Dash (—) indicates no data.]

Little Cottonwood Creek

Storm date	Total rainfall (in.)	Total runoff (in.)	Chemical oxygen demand	Biochemical oxygen demand, 5-day, carbonaceous	Biochemical oxygen demand, ultimate, carbonaceous	Chloride, dissolved	Fluoride, dissolved	Solids residue at 180°C, dissolved
July 1, 1980	0.76	0.662	—	—	—	1.9	0.10	—
Aug. 25	.72	.028	0.04	—	—	.05	.0002	0.22
Oct. 26	.12	.007	.08	—	—	.19	.0007	.90
Mar. 26, 1981	.60	.015	.20	0.034	0.066	.29	—	1.5
May 10	.32	.030	.30	.039	.079	.79	—	3.6
20	.32	.120	.68	.15	.23	1.8	—	10
Sept. 5	.65	.063	2.1	.082	.32	2.7	—	9.5

Storm date	Solids residue at 105°C suspended	Nitrogen, nitrate dissolved as N	Nitrogen, ammonia dissolved as N	Nitrogen, ammonia + organic, total as N	Phosphorus, total as P	Phosphorus, dissolved as P	Carbon, organic suspended total	Carbon, organic dissolved
July 1, 1980	8.1	0.028	0	0.14	0.025	0	—	1.1
Aug. 25	.11	.0002	0	.0010	.0002	.00003	0.002	.006
Oct. 26	.06	.0017	.0001	.0028	.0002	.00017	.003	.034
Mar. 26, 1981	.01	.0035	.0008	.0048	.0018	.00018	.015	.024
May 10	1.0	.0032	.0014	.0079	.0016	.00050	—	.050
20	1.7	.028	.0024	.025	.0041	.0012	.032	.19
Sept. 5	11	.0035	.0010	.065	.012	.00057	.062	.14

Storm date	Sediment, suspended	Cadmium, total	Cadmium, suspended	Cadmium, dissolved	Chromium, total recoverable	Chromium, suspended recoverable	Chromium, dissolved	Copper, total recoverable
July 1, 1980	—	—	—	0.00015	—	—	—	—
Aug. 25	—	0	0	0	0	—	—	0.00003
Oct. 26	—	—	—	.000007	.000015	—	—	—
Mar. 26, 1981	—	—	—	0	.00015	0.00014	0	.00020
May 10	1.5	—	—	.000007	0	0	0	.00019
20	—	—	—	.000029	.00029	.00029	0	.00053
Sept. 5	13	—	—	.000014	.00014	.000099	.000042	.0014

Storm date	Copper, suspended recoverable	Copper, dissolved	Iron, total recoverable	Iron, suspended recoverable	Iron, dissolved	Lead, total recoverable	Lead, suspended recoverable	Lead, dissolved
July 1, 1980	—	0.0015	—	—	0.0054	—	—	0.0015
Aug. 25	0.00003	0	—	—	0	0.00010	—	0
Oct. 26	—	.000030	—	—	.00021	—	—	.000019
Mar. 26, 1981	.00018	.000015	0.024	0.024	.00015	.00070	0.00070	.000004
May 10	.00016	.000029	.021	.021	.00014	.00046	.00035	.00011
20	.00035	.00018	.041	.041	.00029	.00086	.00080	.000059
Sept. 5	.0014	.000057	.20	.20	.00066	.0066	.0066	.000057

Storm date	Mercury, total recoverable	Mercury, suspended recoverable	Mercury, dissolved	Zinc, total recoverable	Zinc, suspended recoverable	Zinc, dissolved
July 1, 1980	—	—	—	—	—	0.0024
Aug. 25	—	—	—	0.00013	0.00013	0
Oct. 26	—	—	—	.00032	.00019	.00013
Mar. 26, 1981	0.000001	0	0.000001	.00096	.00092	.00004
May 10	.000001	.000001	0	.00086	.00072	.00014
20	.000003	.000003	0	.0012	.00088	.00088
Sept. 5	.000004	.000004	0	.0059	.0057	.00025

Table 33.--Total rainfall and runoff and loads of storm-runoff constituents (including base-flow loads) for selected storms and urban basins that have sustained base flow--Continued

Holladay Drain

Storm date	Total rainfall (in.)	Total runoff (in.)	Chemical oxygen demand	Biochemical oxygen demand, 5-day, carbonaceous	Biochemical oxygen demand, ultimate, carbonaceous	Chloride, dissolved	Fluoride, dissolved	Solids residue at 180°C, dissolved
July 1, 1980	0.60	0.037	—	—	—	0.02	0.0005	—
Oct. 26	.22	.008	0.03	—	—	0	0	0.03
Mar. 26, 1981	.54	.047	.72	0.10	0.16	.22	—	1.3
29	.41	.048	.67	.068	.11	.21	—	1.6
May 10	.34	.027	.40	.035	.082	.04	—	.45
20	.11	.006	.05	.004	.025	0	—	.11
Sept. 5	.32	.011	.52	.039	.14	.12	—	.62
6	.17	.012	.18	.023	.074	.22	—	1.0

Storm date	Solids residue at 105°C suspended	Nitrogen, nitrate dissolved as N	Nitrogen, ammonia dissolved as N	Nitrogen, ammonia + organic, total as N	Phosphorus, total as P	Phosphorus, dissolved as P	Carbon, organic suspended total	Carbon, organic dissolved
July 1, 1980	1.1	0.0003	0.0002	0.0061	0.0015	0.00004	—	0.036
Oct. 26	.04	.0001	.0001	.0005	.0001	.00008	0.001	.005
Mar. 26, 1981	.36	.0053	.0032	.011	.0041	.0011	.021	.13
29	3.0	.0029	.0017	.0098	.0053	.00066	.044	.081
May 10	1.7	.0020	.0018	.011	.0034	.00069	.035	.052
20	.11	.0003	.0002	.0016	.0003	.00006	.002	.007
Sept. 5	2.6	.0002	.0004	.012	.0034	.00026	.057	.029
6	.12	.0015	.0004	.0061	.0006	.00016	.008	.032

Storm date	Sediment, suspended	Cadmium, total	Cadmium, suspended	Cadmium, dissolved	Chromium, total recoverable	Chromium, suspended recoverable	Chromium, dissolved	Copper, total recoverable
July 1, 1980	—	0	—	0	—	—	—	0.00013
Oct. 26	0	0	—	0	0	—	—	.00002
Mar. 26, 1981	—	—	—	.000011	.00033	0.00033	0	.00039
29	—	—	—	.000011	.00033	.00033	0	.00044
May 10	3.1	—	—	0	.000063	.000063	0	.00024
20	.2	—	—	.000001	.000025	.000019	.000006	.00002
Sept. 5	2.8	—	—	.000003	.000078	.000075	.000003	.00026
6	.4	—	—	.000003	0	0	0	.00003

Storm date	Copper, suspended recoverable	Copper, dissolved	Iron, total recoverable	Iron, suspended recoverable	Iron, dissolved	Lead, total recoverable	Lead, suspended recoverable	Lead, dissolved
July 1, 1980	—	0.000021	—	—	0.00010	0.00080	—	0.000021
Oct. 26	0	0	—	—	.00006	.00006	—	0
Mar. 26, 1981	.00033	.000065	0.045	0.044	.00065	.0023	0.0023	0
29	.00035	.000088	.072	.070	.00099	.0022	.0022	.000022
May 10	.00022	.000025	.041	.041	.00025	.0014	.0013	.00013
20	.00002	.000005	.003	.003	.00007	.00009	.00008	.000010
Sept. 5	.00026	0	.044	.044	.00034	.0015	.0015	.000008
6	.00003	0	.004	.004	.00007	.00014	.00014	.000005

Storm date	Mercury, total recoverable	Mercury, suspended recoverable	Mercury, dissolved	Zinc, total recoverable	Zinc, suspended recoverable	Zinc, dissolved
July 1, 1980	—	—	—	0.00055	—	0.00002
Oct. 26	—	—	—	.00004	—	—
Mar. 26, 1981	0.000001	0.000001	0	.0030	0.0027	.00033
29	.000001	.000001	0	.0019	.0016	.00022
May 10	.000001	.000001	0	.0011	.00094	.00013
20	0	0	0	.00011	.00001	.00010
Sept. 5	.000001	.000001	0	.0016	.0014	.00012
6	0	0	0	.00069	.00018	.00050

Table 33.—Total rainfall and runoff and loads of storm-runoff constituents (including base-flow loads) for selected storms and urban basins that have sustained base flow—Continued

Big Cottonwood Creek

Storm date	Total rainfall (in.)	Total runoff (in.)	Chemical oxygen demand	Biochemical oxygen demand, 5-day, carbonaceous	Biochemical oxygen demand, ultimate, carbonaceous	Chloride, dissolved	Fluoride, dissolved	Solids residue at 180°C, dissolved
July 1, 1980	0.53	0.184	—	—	—	1.2	0.040	—
Aug. 19	.14	.028	0.21	—	—	.72	.0026	3.5
25	.58	.063	.08	—	—	.09	0	.46
Oct. 10	.27	.034	.41	—	—	.51	.0017	2.9
Mar. 26, 1981	.51	.056	.28	0.12	0.19	.55	—	3.9
May 20	.31	.130	1.4	.44	.71	1.1	—	7.0
Sept. 5	.38	.051	1.2	.17	.37	1.3	—	5.5

Storm date	Solids residue at 105°C suspended	Nitrogen, nitrate dissolved as N	Nitrogen, ammonia dissolved as N	Nitrogen, ammonia + organic, total as N	Phosphorus, total as P	Phosphorus, dissolved as P	Carbon, organic suspended total	Carbon, organic dissolved
July 1, 1980	11	0.019	0.0037	0.082	0.018	0.00041	—	0.45
Aug. 19	.31	.0048	.0002	.0087	.0011	.00015	—	.097
25	.24	.0008	.0001	.0045	.0005	.00004	.004	.012
Oct. 10	.22	.0056	.040	.064	.020	.020	.023	.056
Mar. 26, 1981	.50	.013	.021	.032	.0084	.0064	.013	.077
May 20	2.7	.011	.041	.10	.057	.015	.14	.20
Sept. 5	7.0	.0067	.035	.025	.020	.010	.087	.11

Storm date	Sediment, suspended	Cadmium, total	Cadmium, suspended	Cadmium, dissolved	Chromium, total recoverable	Chromium, suspended recoverable	Chromium, dissolved	Copper, total recoverable
July 1, 1980	—	0.000041	—	0.000041	0.00049	—	—	0.0027
Aug. 19	—	0	0	.000005	.000026	—	—	.00008
25	—	0	—	—	.000000	—	—	.00004
Oct. 10	—	.000006	—	.000006	.000017	—	—	.00010
Mar. 26, 1981	—	—	—	.000009	.000095	0.000095	0	.00017
May 20	—	—	—	.000027	.00055	.00055	0	.00077
Sept. 5	8.5	—	—	.000010	.00021	.00020	0	.00094

Storm date	Copper, suspended recoverable	Copper, dissolved	Iron, total recoverable	Iron, suspended recoverable	Iron, dissolved	Lead, total recoverable	Lead, suspended recoverable	Lead, dissolved
July 1, 1980	—	0.00041	—	—	0.0030	0.011	—	0.00041
Aug. 19	—	.000051	—	—	.00011	.00009	—	.000051
25	—	.000000	—	—	.00004	.00013	—	.000000
Oct. 10	0.00001	.000099	—	—	.00023	.00010	—	.000058
Mar. 26, 1981	.00015	.000019	0.012	0.012	.00019	.00038	0.00038	0
May 20	.00071	.000055	.11	.11	.00055	.0012	.0011	.00011
Sept. 5	.00089	.000042	.17	.17	.00038	.0021	.0021	.000042

Storm date	Mercury, total recoverable	Mercury, suspended recoverable	Mercury, dissolved	Zinc, total recoverable	Zinc, suspended recoverable	Zinc, dissolved
July 1, 1980	—	—	—	0.0098	—	0.00065
Aug. 19	—	—	—	.00036	0.00020	.00016
25	—	—	—	.00021	.00021	.00000
Oct. 10	—	—	—	.0032	.0023	.00093
Mar. 26, 1981	0	0	0.000001	.0011	.0010	.00009
May 20	.000005	.000005	0	.0063	.0057	.00055
Sept. 5	.000002	.000002	0	.0028	.0025	.00029

Table 33.—Total rainfall and runoff and loads of storm-runoff constituents (including base-flow loads) for selected storms and urban basins that have sustained base flow—Continued

Mill Creek

Storm date	Total rainfall (in.)	Total runoff (in.)	Chemical oxygen demand	Biochemical oxygen demand, 5-day, carbonaceous	Biochemical oxygen demand, ultimate, carbonaceous	Chloride, dissolved	Fluoride, dissolved	Solids residue at 180°C, dissolved
Mar. 26, 1981	1.11	0.176	1.3	0.16	0.33	3.3	—	17
May 10	.34	.074	.80	.14	.24	.53	—	6.0
20	.29	.096	.64	.079	.13	.64	—	8.5
Sept. 5	.36	.075	1.9	.17	.52	2.4	—	11

Storm date	Solids residue at 105° suspended	Nitrogen, nitrate dissolved as N	Nitrogen, ammonia dissolved as N	Nitrogen, ammonia + organic, total as N	Phosphorus, total as P	Phosphorus, dissolved as P	Carbon, organic suspended total	Carbon, organic dissolved
Mar. 26, 1981	8.4	0.12	0.011	0.035	0.0079	0.0021	0.066	0.26
May 10	1.4	.022	.0026	.018	.0038	.00091	.040	.22
20	1.2	.024	.0009	.026	.0035	.0011	.018	.26
Sept. 5	5.7	.017	.0012	.059	.010	.00052	.14	.19

Storm date	Sediment, suspended	Cadmium, total	Cadmium, suspended	Cadmium, dissolved	Chromium, total recoverable	Chromium, suspended recoverable	Chromium, dissolved	Copper, total recoverable
Mar. 26, 1981	—	—	—	0.000041	0.0012	0.0012	0	0.00075
May 10	2.2	—	—	.000018	.00018	.00018	0	.00026
20	—	—	—	.000022	.00022	.00022	0	.00026
Sept. 5	9.6	—	—	.000017	.00035	.00033	.000017	.0010

Storm date	Copper, suspended recoverable	Copper, dissolved	Iron, total recoverable	Iron, suspended recoverable	Iron, dissolved	Lead, total recoverable	Lead, suspended recoverable	Lead, dissolved
Mar. 26, 1981	0.00058	0.00017	0.075	0.075	0.00041	0.0021	0.0019	0.00012
May 10	.00020	.000055	.029	.029	.00036	.00082	.00053	.00029
20	.00022	.000044	.026	.026	.00022	.00057	.00044	.00013
Sept. 5	.00098	.000070	.14	.14	.00047	.0026	.0024	.00010

Storm date	Mercury, total recoverable	Mercury, suspended recoverable	Mercury, dissolved	Zinc, total recoverable	Zinc, suspended recoverable	Zinc, dissolved
Mar. 26, 1981	0.000004	0.000004	0	0.029	0.028	0.00083
May 10	.000002	.000002	0	.0011	.00036	.00073
20	.000002	.000002	0	.0011	.00044	.00066
Sept. 5	.000002	.000002	0	.0033	.0030	.00042

Table 33.—Total rainfall and runoff and loads of storm-runoff constituents (including base-flow loads) for selected storms and urban basins that have sustained base flow—Continued

Twenty-First South Conduit

Storm date	Total rainfall (in.)	Total runoff (in.)	Chemical oxygen demand	Biochemical oxygen demand, 5-day, carbonaceous	Biochemical oxygen demand, ultimate, carbonaceous	Chloride, dissolved	Fluoride, dissolved	Solids residue at 180°C, dissolved
July 1, 1980	0.51	0.126	—	—	—	0.15	0.0013	—
Aug. 19	.13	.060	0.56	—	—	1.8	.0084	12
25	.22	.035	.04	—	—	.07	.0003	.43
Oct. 26	.31	.041	.03	—	—	.07	.0003	.57
Mar. 26, 1981	1.23	.461	2.5	.24	.46	2.8	—	19
May 10	.33	.093	2.9	.40	.80	1.3	—	9.2
20	.25	.092	1.4	.31	.69	3.3	—	20
Sept. 5	.33	.062	1.6	.17	.45	1.1	—	7.2

Storm date	Solids residue at 105°C suspended	Nitrogen, nitrate dissolved as N	Nitrogen, ammonia dissolved as N	Nitrogen, ammonia + organic, total as N	Phosphorus, total as P	Phosphorus, dissolved as P	Carbon, organic suspended total	Carbon, organic dissolved
July 1, 1980	—	0.0025	0.0001	0.0064	0.0024	0.00077	—	0.067
Aug. 19	0.15	.0000	.0028	.0265	.029	.026	0.029	.21
25	—	.0023	.0001	.0012	.0010	.00097	.001	.010
Oct. 26	—	.0026	.0000	.0014	.0013	.00084	.001	.013
Mar. 26, 1981	.85	.12	.011	.056	.049	.029	.12	.34
May 10	4.8	.049	.0033	.055	.021	.0091	.095	.44
20	.91	.051	.0093	.051	.022	.016	.040	.40
Sept. 5	3.0	.026	.0010	.037	.014	.0095	.081	.20

Storm date	Sediment, suspended	Cadmium, total	Cadmium, suspended	Cadmium, dissolved	Chromium, total recoverable	Chromium, suspended recoverable	Chromium, dissolved	Copper, total recoverable
July 1, 1980	—	0.000010	—	0	0.000020	—	—	0.00010
Aug. 19	—	.000014	0	.000014	.00018	—	—	.00067
25	—	0	—	0	.000010	—	—	.00002
Oct. 26	—	—	—	0	—	—	—	—
Mar. 26, 1981	—	—	—	.000035	.00070	.00070	0	.0035
May 10	—	—	—	0	.00044	.00044	0	.0018
20	2.4	—	—	.000022	.00044	.00018	.00027	.00095
Sept. 5	4.1	—	—	.000014	.00029	.00024	.000043	.00086

Storm date	Copper, suspended recoverable	Copper, dissolved	Iron, total recoverable	Iron, suspended recoverable	Iron, dissolved	Lead, total recoverable	Lead, suspended recoverable	Lead, dissolved
July 1, 1980	—	0.000020	—	—	0.00011	0.00062	—	0.00010
Aug. 19	0.00042	.00025	—	—	.00056	.00021	—	.00014
25	.00001	.000010	—	—	.00002	.00005	—	.000010
Oct. 26	—	.000020	—	—	.00003	—	—	.000010
Mar. 26, 1981	.0029	.00063	.092	.092	.00070	.0081	.0081	.00014
May 10	.0016	.00018	.076	—	—	.0084	.0080	.00053
20	.00051	.00044	.021	.021	.00044	.0015	.0015	0
Sept. 5	.00073	.00013	.065	.063	.00079	.0048	.0046	.00016

Storm date	Mercury, total recoverable	Mercury, suspended recoverable	Mercury, dissolved	Zinc, total recoverable	Zinc, suspended recoverable	Zinc, dissolved
July 1, 1980	—	—	—	0.00095	—	0.00014
Aug. 19	—	—	—	.0011	0.00084	.00025
25	—	—	—	.00007	.00005	.00002
Oct. 26	—	—	—	—	—	.00003
Mar. 26, 1981	0.000004	0	0.000004	.011	.0088	.0018
May 10	.000007	.000007	0	.0062	—	—
20	.000004	.000004	0	.0027	.00089	.0018
Sept. 5	.000001	.000001	0	.0040	.0032	.00082

Table 33.--Total rainfall and runoff and loads of storm-runoff constituents (including base-flow loads) for selected storms and urban basins that have sustained base flow--Continued

Thirteenth South Conduits

Storm date	Total rainfall (in.)	Total runoff (in.)	Chemical oxygen demand	Biochemical oxygen demand, 5-day, carbonaceous	Biochemical oxygen demand, ultimate, carbonaceous	Chloride, dissolved	Fluoride, dissolved	Solids residue at 180°C, dissolved
Oct. 26, 1980	0.26	0.019	0.52	—	—	0.14	0.0011	1.2
Mar. 26, 1981	.59	.076	1.2	0.18	0.29	.67	—	4.4
May 10	.35	.056	1.4	.11	.21	.49	—	3.0
May 20	.34	.081	.67	.087	.18	.70	—	6.6
Sept. 5	.35	.032	1.3	.12	.33	.45	—	2.5

Storm date	Solids residue at 105°C suspended	Nitrogen, nitrate dissolved as N	Nitrogen, ammonia dissolved as N	Nitrogen, ammonia + organic, total as N	Phosphorus, total as P	Phosphorus, dissolved as P	Carbon, organic suspended total	Carbon, organic dissolved
Oct. 26, 1980	0.24	0.0052	0.0012	0.010	0.0019	0.00085	0.007	0.14
Mar. 26, 1981	4.6	.017	.0053	.031	.0065	.0017	.056	.13
May 10	4.8	.0057	.0015	.033	.0063	.0014	.23	.87
May 20	1.8	.014	.0038	.020	.0035	.00090	.030	.14
Sept. 5	2.9	.0017	.0018	.035	.0060	.00044	.10	.094

Storm date	Sediment, suspended	Cadmium, total	Cadmium, suspended	Cadmium, dissolved	Chromium, total recoverable	Chromium, suspended recoverable	Chromium, dissolved	Copper, total recoverable
Oct. 26, 1980	—	0.000009	0	0.000009	0.000053	—	—	0.00014
Mar. 26, 1981	—	—	—	.000016	.00036	0.00036	0	.00061
May 10	7.1	—	—	.000060	.00023	.00023	0	.00054
May 20	2.8	—	—	.000019	.00032	.00032	0	.00029
Sept. 5	4.8	—	—	.000008	.00015	.00015	.000008	.00058

Storm date	Copper, suspended recoverable	Copper, dissolved	Iron, total recoverable	Iron, suspended recoverable	Iron, dissolved	Lead, total recoverable	Lead, suspended recoverable	Lead, dissolved
Oct. 26, 1980	0.00002	0.00012	—	—	0.00039	0.00062	0.00047	0.00015
Mar. 26, 1981	.00050	.00011	0.058	0.058	.00051	.0028	.0028	.000031
May 10	.00048	.000059	.11	.011	.00013	.0030	.0027	.00026
May 20	.00019	.00010	.039	.038	.00051	.00084	.00076	.000077
Sept. 5	.00055	.000027	.082	.082	.00078	.0027	.0026	.000057

Storm date	Mercury, total recoverable	Mercury, suspended recoverable	Mercury, dissolved	Zinc, total recoverable	Zinc, suspended recoverable	Zinc, dissolved
Oct. 26, 1980	—	—	—	0.00077	0.00028	0.00048
Mar. 26, 1981	0.000002	0.000002	0	.0027	.0022	.00047
May 10	.000002	.000002	0	.0022	.00035	.00009
May 20	.000003	.000003	0	.0015	.00064	.00090
Sept. 5	.000001	.000001	0	.0025	.0023	.00017

Table 33.—Total rainfall and runoff and loads of storm-runoff constituents (including base-flow loads) for selected storms and urban basins that have sustained base flow—Continued

North Temple Conduit

Storm date	Total rainfall (in.)	Total runoff (in.)	Chemical oxygen demand	Biochemical oxygen demand, 5-day, carbonaceous	Biochemical oxygen demand, ultimate, carbonaceous	Chloride, dissolved	Fluoride, dissolved	Solids residue at 180°C, dissolved
Aug. 19, 1980	0.24	0.004	0.15	—	—	0.12	0.0004	0.76
25	.20	.012	.10	—	—	.69	.0018	3.1
Mar. 26, 1981	.52	.120	1.5	0.23	0.33	.77	—	3.2
May 10	.55	.052	1.4	.063	.14	.08	—	.98
20	.33	.064	3.1	.15	.38	.22	—	2.5
Aug. 24	.11	.013	.33	.071	.13	.09	—	.94
Sept. 5	.11	.023	.76	—	—	.11	—	1.3
5	.28	.057	1.8	—	—	.25	—	2.4

Storm date	Solids residue at 105°C suspended	Nitrogen, nitrate dissolved as N	Nitrogen, ammonia dissolved as N	Nitrogen, ammonia + organic, total as N	Phosphorus, total as P	Phosphorus, dissolved as P	Carbon, organic suspended total	Carbon, organic dissolved
Aug. 19, 1980	0.17	0.0027	0	0.0029	0.0002	0.00011	0.002	0.068
25	.22	.0054	.0042	.013	.0054	.0045	.009	.042
Mar. 26, 1981	4.5	.015	.0091	.025	.0085	.0027	.080	.22
May 10	6.6	.0030	.0034	.019	.010	.0016	.12	.14
20	7.8	.0095	.0020	.019	.044	.0010	—	.15
Aug. 24	.14	.0029	.0012	.0064	.0007	.00044	—	.068
Sept. 5	.22	—	—	—	—	.00053	—	—
5	11	—	—	—	—	.00078	—	—

Storm date	Sediment, suspended	Cadmium, total	Cadmium, suspended	Cadmium, dissolved	Chromium, total recoverable	Chromium, suspended recoverable	Chromium, dissolved	Copper, total recoverable
Aug. 19, 1980	—	0	0	0.000001	0.000019	—	—	0.00005
25	—	.000006	.000003	.000003	.000033	—	—	.00015
Mar. 26, 1981	—	—	—	.000055	.00083	0.00083	0	.0012
May 10	9.3	—	—	.00020	.00024	.00024	0	.00056
20	—	—	—	0	.0010	.0010	0	.0016
Aug. 24	.3	—	—	.000003	0	0	0	.00014
Sept. 5	7.9	—	—	.000006	0	0	.000018	.00029
5	.8	—	—	.000013	.00052	.00050	.000013	.0017

Storm date	Copper, suspended recoverable	Copper, dissolved	Iron, total recoverable	Iron, suspended recoverable	Iron, dissolved	Lead, total recoverable	Lead, suspended recoverable	Lead, dissolved
Aug. 19, 1980	0	0.000042	—	—	0.00007	0.00004	—	0.000012
25	.00012	.000030	—	—	.00007	.00026	—	.000030
Mar. 26, 1981	.00094	.00022	0.063	0.061	.0025	.0052	0.0049	.00033
May 10	.00051	.000048	.13	.13	.00036	.0043	.0041	.00024
20	.0016	.000058	.57	.57	.00015	.0039	.0039	.000029
Aug. 24	.00006	.000074	.005	.005	.00010	.00068	.00061	.000068
Sept. 5	.00076	.000018	.025	.025	.00026	.0010	.00088	.000094
5	.0017	.000039	.28	.28	.0010	.0076	.0075	.000078

Storm date	Mercury, total recoverable	Mercury, suspended recoverable	Mercury, dissolved	Zinc, total recoverable	Zinc, suspended recoverable	Zinc, dissolved
Aug. 19, 1980	—	—	—	0.00007	0.00005	0.00002
25	—	—	—	.00024	.00021	.00003
Mar. 26, 1981	0.000003	0.000003	0	.0041	.0033	.00083
May 10	.000002	.000002	0	.0028	.0024	.00036
20	.000013	.000013	0	.0052	.0052	.00000
Aug. 24	0	0	0	.00044	.00030	.00012
Sept. 5	.000001	.000001	0	.0010	.00082	.00018
5	.000005	.000005	0	.0072	.0071	.00009

Table 34.--Total loads of storm-runoff constituents entering urban basins at canyon-mouth stations

[Loads are in pounds per acre. Zero indicates a value of zero or less than $1x10^{-6}$. Dash (—) indicates no data.]

Little Cottonwood Creek at canyon mouth (channel only) (10167499)

Constituents

Storm date	Chemical oxygen demand	Biochemical oxygen demand, 5-day, carbonaceous	Biochemical oxygen demand, ultimate, carbonaceous	Chloride, dissolved	Fluoride, dissolved	Solids residue at 180°C dissolved	Solids residue at 105°C, suspended	Nitrogen, nitrate dissolved as N
Oct. 26, 1980	0	—	—	0	0	0.03	0	0.0001
Mar. 26, 1981	0	0	0.001	.01	—	.05	0	.0002
May 10	.09	.012	.025	.07	—	.52	.13	.0011
20	.22	.025	.049	.20	—	1.5	0	.0031
Sept. 5	0	0	0	0	—	.02	.01	.0001

Storm date	Nitrogen, ammonia dissolved as N	Nitrogen, ammonia + organic, total as N	Phosphorus, total as P	Phosphorus, dissolved as P	Carbon, organic suspended total	Carbon, organic dissolved	Sediment, suspended	Cadmium, total
Oct. 26, 1980	0	0.0001	0	0.00001	0	0.001	—	0
Mar. 26, 1981	0	.0001	0	.00001	0	0	—	—
May 10	.0004	.0033	.0003	.00015	.003	.022	0.1	—
20	.0019	.0080	.0006	.00031	—	.043	—	—
Sept. 5	0	.0001	0	0	0	0	0	—

Storm date	Cadmium, suspended	Cadmium, dissolved	Chromium, total recoverable	Chromium, suspended recoverable	Chromium, dissolved	Copper, total recoverable	Copper, suspended recoverable	Copper, dissolved
Oct. 26, 1980	—	0	0.000001	—	—	0	—	0.000002
Mar. 26, 1981	—	0	.000003	0.000003	0	0	0	.000001
May 10	—	.000005	.000050	.000050	0	.00015	.00012	.000035
20	—	.000015	.00015	.00015	0	.00023	.00011	.00012
Sept. 5	—	0	0	0	0	0	0	.000001

Storm date	Iron, total recoverable	Iron, suspended recoverable	Iron, dissolved	Lead, total recoverable	Lead, suspended recoverable	Lead, dissolved	Mercury, total recoverable	Mercury, suspended recoverable
Oct. 26, 1980	—	—	0	0	—	0.000002	—	—
Mar. 26, 1981	0	0	.00001	0	0	0	0	0
May 10	.004	.004	.00010	.00015	.00008	.000071	.000001	.000001
20	.002	.002	.00031	.00014	.00008	.000062	.000002	.000002
Sept. 5	0	0	.00001	0	0	0	0	0

Storm date	Mercury, dissolved	Zinc, total recoverable	Zinc, suspended recoverable	Zinc, dissolved
Oct. 26, 1980	—	0.00001	0	0.00001
Mar. 26, 1981	0	.00001	0	.00001
May 10	0	.00050	.00025	.00025
20	0	.00093	0	.00093
Sept. 5	0	.00001	.00001	0

Table 34.--Total loads of storm-runoff constituents entering urban basins at canyon-mouth stations--Continued

Big Cottonwood Creek at canyon mouth (channel only) (10168499)

Constituents

Storm date	Chemical oxygen demand	Biochemical oxygen demand, 5-day, carbonaceous	Biochemical oxygen demand, ultimate, carbonaceous	Chloride, dissolved	Fluoride, dissolved	Solids residue at 180°C dissolved	Solids residue at 105°C, suspended	Nitrogen. nitrate dissolved as N
Aug. 19, 1980	0.11	—	—	0.01	0.0004	0.32	0	0.0001
Oct. 26	.01	—	—	.02	.0004	.44	.01	.0003
Mar. 26, 1981	.01	0.003	0.013	.04	—	.31	0	.0004
May 10	.11	.008	.018	.11	—	.75	.07	.0013
20	.18	.011	.043	.07	—	1.2	.03	.0014
Sept. 5	.03	.002	.009	.01	—	.24	.05	.0002

Storm date	Nitrogen, ammonia dissolved as N	Nitrogen, ammonia + organic, total as N	Phosphorus, total as P	Phosphorus, dissolved as P	Carbon, organic suspended total	Carbon, organic dissolved	Sediment. suspended	Cadmium. total
Aug. 19, 1980	0	0.0006	0	0	0.001	0.004	—	0
Oct. 26	.0001	.0025	.0001	.00008	0	.004	—	0
Mar. 26, 1981	.0001	.0010	0	.00001	0	.002	—	—
May 10	.0008	.0044	.0003	.00026	—	.040	0.1	—
20	.0009	.0105	.0005	.00023	—	.070	—	—
Sept. 5	.0001	.0013	.0001	.00001	.002	.002	0	—

Storm date	Cadmium, suspended	Cadmium, dissolved	Chromium, total recoverable	Chromium, suspended recoverable	Chromium, dissolved	Copper, total recoverable	Copper, suspended recoverable	Copper, dissolved
Aug. 19, 1980	—	0.000002	0.000011	—	—	0.00002	—	0.000019
Oct. 26	0	.000002	.000004	—	—	.00001	—	.000021
Mar. 26, 1981	—	.000001	.000015	0.000015	0	0	0	.000003
May 10	—	.000007	0	0	0	.00003	.00001	.000020
20	—	.000011	.00011	.00011	0	.00007	.00005	.000023
Sept. 5	—	.000001	0	0	0	.00002	.00002	.000003

Storm date	Iron, total recoverable	Iron, suspended recoverable	Iron, dissolved	Lead, total recoverable	Lead, suspended recoverable	Lead, dissolved	Mercury, total recoverable	Mercury, suspended recoverable
Aug. 19, 1980	—	—	0.00002	0.00002	—	0.000019	—	—
Oct. 26	—	—	.00003	0	—	.000021	—	—
Mar. 26, 1981	0	0	.00003	0	0	0	0	0
May 10	.002	.002	.00026	.00007	0	.00017	0	0
20	.002	.002	.00045	.00005	0	.000045	.000002	.000002
Sept. 5	.001	.001	.00002	.00003	.00003	.000003	0	0

Storm date	Mercury, dissolved	Zinc, total recoverable	Zinc, suspended recoverable	Zinc, dissolved
Aug. 19, 1980	—	0.00010	0.00008	0.00002
Oct. 26	—	.00004	.00002	.00001
Mar. 26, 1981	0	.00003	.00001	.00001
May 10	0	.00013	.00007	.00006
20	0	.00011	0	.00023
Sept. 5	0	.00004	.00001	.00002

Table 34.--Total loads of storm-runoff constituents entering urban basins at canyon-mouth stations--Continued

Mill Creek at canyon mouth (channel only) (10169999)

Constituents

Storm date	Chemical oxygen demand	Biochemical oxygen demand, 5-day, carbonaceous	Biochemical oxygen demand, ultimate, carbonaceous	Chloride, dissolved	Fluoride, dissolved	Solids residue at 180°C dissolved	Solids residue at 105°C, suspended	Nitrogen, nitrate dissolved as N
July 1, 1980	—	—	—	0.03	0.0007	—	0.25	0.0007
Aug. 25	0.02	—	—	.02	.0003	0.53	.05	.0003
Mar. 26, 1981	.02	—	—	.06	—	1.4	.01	.0006
May 10	.08	—	—	.02	—	.77	.21	.0005
20	.02	—	—	.01	—	.98	.07	.0004
Sept. 5	.09	0.004	0.011	.01	—	.59	.22	.0005

Storm date	Nitrogen, ammonia dissolved as N	Nitrogen, ammonia + organic, total as N	Phosphorus, total as P	Phosphorus, dissolved as P	Carbon, organic suspended total	Carbon, organic dissolved	Sediment, suspended	Cadmium, total
July 1, 1980	0.0001	0.0039	0.0007	0.00004	—	0.008	—	0
Aug. 25	0	.0007	.0002	.00006	0.002	.010	—	0
Mar. 26, 1981	.0006	.0022	.0001	.00008	.002	.025	—	—
May 10	.0002	.0034	.0006	.00015	—	.013	0.3	—
20	.0002	.0025	.0003	.00009	.002	.026	—	—
Sept. 5	.0001	.0019	.0004	.00005	.008	.004	.3	—

Storm date	Cadmium, suspended	Cadmium, dissolved	Chromium, total recoverable	Chromium, suspended recoverable	Chromium, dissolved	Copper, total recoverable	Copper, suspended recoverable	Copper, dissolved
July 1, 1980	—	0.000004	0	—	—	0.00006	—	0.000035
Aug. 25	—	.000002	.000011	—	—	.00001	—	.000015
Mar. 26, 1981	—	.000004	.00012	0.00012	0	.00002	0.00001	.000008
May 10	—	.000002	.000024	.000024	0	.00001	.00001	.000005
20	—	.000003	.000030	.000030	0	.00001	.00001	0
Sept. 5	—	.000002	.000016	.000010	.000006	.00002	.00001	.000006

Storm date	Iron, total recoverable	Iron, suspended recoverable	Iron, dissolved	Lead, total recoverable	Lead, suspended recoverable	Lead, dissolved	Mercury, total recoverable	Mercury, suspended recoverable
July 1, 1980	—	—	0.00004	0.00005	—	0.000046	—	—
Aug. 25	—	—	.00002	.00002	—	.000015	—	—
Mar. 26, 1981	0	0	.00004	.00006	0.00005	.000004	0	0
May 10	.003	—	.00002	.00004	.00001	.000032	0	0
20	.001	—	.00003	.00002	.00001	.000006	0	0
Sept. 5	.003	—	.00002	.00003	.00001	.000016	0	0

Storm date	Mercury, dissolved	Zinc, total recoverable	Zinc, suspended recoverable	Zinc, dissolved
July 1, 1980	—	0.00028	—	0.00001
Aug. 25	—	.00006	0.00006	.00001
Mar. 26, 1981	0	.00040	.00036	.00002
May 10	0	.00007	.00005	.00001
20	0	.00003	.00002	.00001
Sept. 5	0	.00008	.00006	.00001

Parleys Creek at Suicide Rock (at canyon mouth) (10171600)

Constituents

Storm date	Chemical oxygen demand	Biochemical oxygen demand, 5-day, carbonaceous	Biochemical oxygen demand, ultimate, carbonaceous	Chloride, dissolved	Fluoride, dissolved	Solids residue at 180°C dissolved	Solids residue at 105°C, suspended	Nitrogen, nitrate dissolved as N
Aug. 19, 1980	0.01	—	—	0.01	0	0.05	0	0.0001
25	.01	—	—	.01	0	.05	.01	.0001
Oct. 26	0	—	—	.02	0	.10	0	.0002
Mar. 26, 1981	.02	0.001	0.002	.03	—	.14	.08	.0003
May 30	.03	.003	.006	.06	—	.41	.05	.0007
Sept. 5	.02	.001	.002	.01	—	.07	.10	.0002

Storm date	Nitrogen, ammonia dissolved as N	Nitrogen, ammonia + organic, total as N	Phosphorus, total as P	Phosphorus, dissolved as P	Carbon, organic suspended total	Carbon, organic dissolved	Sediment, suspended	Cadmium, total
Aug. 19, 1980	0	0.0001	0	0.00001	0	0.002	—	0
25	0	.0001	0	.00001	0	.001	—	0
Oct. 26	0	.0002	0	.00001	0	0	—	0
Mar. 26, 1981	.0001	.0003	.0001	.00001	.001	.002	—	—
May 30	.0001	.0007	.0001	.00004	—	.011	—	—
Sept. 5	0	0	.0001	.00001	.001	.001	0.1	—

Storm date	Cadmium, suspended	Cadmium, dissolved	Chromium, total recoverable	Chromium, suspended recoverable	Chromium, dissolved	Copper, total recoverable	Copper, suspended recoverable	Copper, dissolved
Aug. 19, 1980	—	0	0.000001	—	—	0	—	0.000001
25	0	0	.000002	—	—	0	—	.000001
Oct. 26	0	0	.000001	—	—	0	0	.000002
Mar. 26, 1981	—	0	.000011	0.000011	0	.00001	.00001	.000001
May 30	—	.000001	.000011	.000010	.000001	.00001	.00001	.000002
Sept. 5	—	0	.000004	.000004	0	.00001	.00001	.000001

Storm date	Iron, total recoverable	Iron, suspended recoverable	Iron, dissolved	Lead, total recoverable	Lead, suspended recoverable	Lead, dissolved	Mercury, total recoverable	Mercury, suspended recoverable
Aug. 19, 1980	—	—	0	0.00001	0.00001	0.000001	—	—
25	—	—	0	.00002	—	.000001	—	—
Oct. 26	—	—	0	0	—	.000002	—	—
Mar. 26, 1981	0.001	0.001	.00001	.00008	.00007	.000006	0	0
May 30	.001	.001	.00001	.00002	.00001	.000009	0	0
Sept. 5	.002	.002	0	.00004	.00004	.000001	0	0

Storm date	Mercury, dissolved	Zinc, total recoverable	Zinc, suspended recoverable	Zinc, dissolved
Aug. 19, 1980	—	0.00001	0.00001	0
25	—	.00003	.00002	0
Oct. 26	—	0	0	0
Mar. 26, 1981	0	.00005	.00004	0.00001
May 30	0	.00003	.00002	0.00001
Sept. 5	0	.00005	.00004	0

Table 34.—Total loads of storm-runoff constituents entering urban basins at canyon-mouth stations—Continued

Emigration Creek at canyon mouth (10172000)

Constituents

Storm date	Chemical oxygen demand	Biochemical oxygen demand, 5-day, carbonaceous	Biochemical oxygen demand, ultimate, carbonaceous	Chloride, dissolved	Fluoride, dissolved	Solids residue at 180°C dissolved	Solids residue at 105°C, suspended	Nitrogen, nitrate dissolved as N
July 1, 1980	—	—	—	0.02	0.0002	—	0.06	0
Aug. 19	0	—	—	.01	0	0.06	0	0
25	0	—	—	.01	0	.05	0	0
Mar. 26, 1981	.01	—	—	.06	—	.35	.03	.0002
May 20	.06	0.004	0.009	.11	—	.79	.02	.0004
Sept. 5	0	0	0	0	—	.04	0	0

Storm date	Nitrogen, ammonia dissolved as N	Nitrogen, ammonia + organic, total as N	Phosphorus, total as P	Phosphorus, dissolved as P	Carbon, organic suspended total	Carbon, organic dissolved	Sediment, suspended	Cadmium, total
July 1, 1980	0.0002	0.0009	0.0001	0.00007	—	0.005	—	0
Aug. 19	0	0	0	0	0	.001	—	0
25	0	.0001	0	.00001	0	0	—	0
Mar. 26, 1981	.0001	.0003	0	.00002	0	.003	—	—
May 20	.0002	.0017	.0004	.00011	—	.086	—	—
Sept. 5	0	0	0	0	0	0	0	—

Storm date	Cadmium, suspended	Cadmium, dissolved	Chromium, total recoverable	Chromium, suspended recoverable	Chromium, dissolved	Copper, total recoverable	Copper, suspended recoverable	Copper, dissolved
July 1, 1980	—	0.000001	0	—	—	0.00001	—	0.000005
Aug. 19	—	0	.000001	—	—	0	—	.000001
25	—	0	.000001	—	—	0	—	.000001
Mar. 26, 1981	—	.000001	.000014	0.000014	0	.00001	0	.000001
May 20	—	.000002	.000036	.000036	0	.00001	.00001	.000004
Sept. 5	—	0	.000001	.000001	0	0	0	0

Storm date	Iron, total recoverable	Iron, suspended recoverable	Iron, dissolved	Lead, total recoverable	Lead, suspended recoverable	Lead, dissolved	Mercury, total recoverable	Mercury, suspended recoverable
July 1, 1980	—	—	0.00001	0.00001	—	0.000013	—	—
Aug. 19	—	—	0	0	—	.000001	—	—
25	—	—	0	0	—	.000001	—	—
Mar. 26, 1981	0	0	.00001	0	0	0	0	0
May 20	.004	—	.00002	.00001	0	.000007	0	0
Sept. 5	0	—	0	0	0	.000001	0	0

Storm date	Mercury, dissolved	Zinc, total recoverable	Zinc, suspended recoverable	Zinc, dissolved
July 1, 1980	—	0.00003	—	0
Aug. 19	—	0	0	0
25	—	0	0	0
Mar. 26, 1981	0	.00001	.00001	0
May 20	0	.00005	.00005	.00001
Sept. 5	0	0	0	0

Table 34.--Total loads of storm-runoff constituents entering urban basins at canyon-mouth stations--Continued

Red Butte Creek below reservoir (at canyon mouth) (10172220)

Constituents

Storm date	Chemical oxygen demand	Biochemical oxygen demand, 5-day, carbonaceous	Biochemical oxygen demand, ultimate, carbonaceous	Chloride, dissolved	Fluoride, dissolved	Solids residue at 180°C dissolved	Solids residue at 105°C, suspended	Nitrogen, nitrate dissolved as N
July 1, 1980	—	—	—	0.01	0.0002	—	0.01	0
Aug. 19	0	—	—	0	0	0.01	0	0
Mar. 26, 1981	.02	0.004	0.008	.02	—	.63	.01	.0002
May 19	.07	.007	.014	.01	—	1.3	.10	.0001
20	.06	.010	.015	.02	—	1.1	.04	0

Storm date	Nitrogen, ammonia dissolved as N	Nitrogen, ammonia + organic, total as N	Phosphorus, total as P	Phosphorus, dissolved as P	Carbon, organic suspended total	Carbon, organic dissolved	Sediment, suspended	Cadmium, total
July 1, 1980	0	0.0007	0	0.00001	—	0.003	—	0
Aug. 19	0	0	0	0	0	0	—	0
Mar. 26, 1981	.0001	.0008	.0001	.00005	0	.005	—	—
May 19	.0004	.0021	.0002	.00008	—	.046	—	—
20	.0001	.0011	.0002	.00024	—	.015	—	—

Storm date	Cadmium, suspended	Cadmium, dissolved	Chromium, total recoverable	Chromium, suspended recoverable	Chromium, dissolved	Copper, total recoverable	Copper, suspended recoverable	Copper, dissolved
July 1, 1980	—	0.000001	0	—	—	0.00004	—	0.000013
Aug. 19	—	0	0	—	—	0	—	0
Mar. 26, 1981	—	.000002	.000017	.000017	0	.00002	0	.000017
May 19	—	.000004	.000038	.000038	0	.00017	.00009	.000084
20	—	.000003	.000031	.000031	0	.00013	.00007	.000061

Storm date	Iron, total recoverable	Iron, suspended recoverable	Iron, dissolved	Lead, total recoverable	Lead, suspended recoverable	Lead, dissolved	Mercury, total recoverable	Mercury, suspended recoverable
July 1, 1980	—	—	0.00001	0.00001	—	0.000029	—	—
Aug. 19	—	—	0	0	—	0	—	—
Mar. 26, 1981	0	0	.00024	0	0	.000002	0	0
May 19	.001	—	.00004	.00001	0	.000023	0	0
20	.001	—	.00003	.00001	0	.000012	0	0

Storm date	Mercury, dissolved	Zinc, total recoverable	Zinc, suspended recoverable	Zinc, dissolved
July 1, 1980	—	0.00002	—	0
Aug. 19	—	0	0	0
Mar. 26, 1981	0	.00003	.00002	.00001
May 19	0	.00004	.00003	.00001
20	0	0	0	.00002

Table 34.--Total loads of storm-runoff constituents entering urban basins at canyon-mouth stations--Continued

City Creek at Memory Park (channel only at canyon mouth) (10172499)

Constituents

Storm date	Chemical oxygen demand	Biochemical oxygen demand, 5-day, carbonaceous	Biochemical oxygen demand, ultimate, carbonaceous	Chloride, dissolved	Fluoride, dissolved	Solids residue at $180^{\circ}C$ dissolved	Solids residue at $105^{\circ}C$, suspended	Nitrogen, nitrate dissolved as N
Aug. 25, 1980	0	—	—	0	0	0.01	0.01	0
Oct. 26	0	—	—	0	0	.70	0	0
Mar. 26, 1981	.02	—	—	.02	—	.17	.06	.0003
May 20	.01	0.004	0.005	.02	—	.24	.01	.0002

Storm date	Nitrogen, ammonia dissolved as N	Nitrogen, ammonia + organic, total as N	Phosphorus, total as P	Phosphorus, dissolved as P	Carbon, organic suspended total	Carbon, organic dissolved	Sediment, suspended	Cadmium, total
Aug. 25, 1980	0	0.0001	0	0	0	0.001	—	0
Oct. 26	0	.0001	0	.00001	0	.001	—	0
Mar. 26, 1981	.0002	.0006	.0001	.00002	.001	.003	—	—
May 20	.0001	.0007	.0001	.00003	0	.013	—	—

Storm date	Cadmium, suspended	Cadmium, dissolved	Chromium, total recoverable	Chromium, suspended recoverable	Chromium, dissolved	Copper, total recoverable	Copper, suspended recoverable	Copper, dissolved
Aug. 25, 1980	—	0	0.000001	—	—	0	—	0.000001
Oct. 26	—	0	0	—	—	0	—	0
Mar. 26, 1981	—	.000001	.000008	0.000008	0	.00001	0.00001	.000003
May 20	—	.000001	.000009	.000009	0	0	0	0

Storm date	Iron, total recoverable	Iron, suspended recoverable	Iron, dissolved	Lead, total recoverable	Lead, suspended recoverable	Lead, dissolved	Mercury, total recoverable	Mercury, suspended recoverable
Aug. 25, 1980	—	—	0	0	—	0.000001	—	—
Oct. 26	—	—	0	0	—	0	—	—
Mar. 26, 1981	0.001	0.001	.00002	.00003	0.00003	.000002	0	0
May 20	0	—	.00001	.00001	0	.000006	0	0

Storm date	Mercury, dissolved	Zinc, total recoverable	Zinc, suspended recoverable	Zinc, dissolved
Aug. 25, 1980	—	0	0	0
Oct. 26	—	0	0	0
Mar. 26, 1981	0	.00004	.00004	0
May 20	0	.00001	0	.00002

Table 35.--Mean concentrations and coefficients of variation of storm-runoff constituents and properties at urban stations on canals, streams, and storm conduits

[Zero indicates a value of zero or less than 1 x 10^{-6}. Dash (--) indicates no data.]

Constituent or property	Number of samples	Mean concentration	Coefficient of variation
East Jordan Canal at Little Cottonwood Creek (upstream station) (10167105)			
Specific conductance (umho/cm at 25°C)	2	1,300	2.70
pH (units)[1]	2	8.1	50
Oxygen demand, chemical (mg/L)	2	53	16
Oxygen demand, biochemical, carbonaceous, 5 day (BOD_5) (mg/L)	0	--	--
Oxygen demand, biochemical, carbonaceous, ultimate, (BOD_u) (mg/L)	0	--	--
Chloride, dissolved (mg/L)	2	195	3
Fluoride, dissolved (mg/L)	2	.60	23
Solids, dissolved, residue at 180°C (mg/L)	2	835	3
Solids, suspended, residue at 105°C (mg/L)	2	118	9
Nitrogen, nitrate dissolved (mg/L as N)	2	.01	141
Nitrogen, ammonia dissolved (mg/L as N)	2	.02	47
Nitrogen, ammonia + organic total (mg/L as N)	2	2.50	11
Phosphorus, total (mg/L)	2	.28	2
Phosphorus, dissolved (mg/L)	2	.03	84
Carbon, organic suspended total (mg/L)	2	3.70	30
Carbon, organic dissolved (mg/L)	2	12.1	45
Sediment, suspended (mg/L)	0	--	--
Cadmium, total recoverable (ug/L)	2	.50	141
Cadmium, suspended recoverable (ug/L)	1	<.01	--
Cadmium, dissolved (ug/L)	2	1.50	47
Chromium, total recoverable (ug/L)	2	6.50	141
Chromium, suspended recoverable (ug/L)	0	--	--
Chromium, dissolved (ug/L)	0	--	--
Copper, total recoverable (ug/L)	2	10	28
Copper, suspended recoverable (ug/L)	0	--	--
Copper, dissolved (ug/L)	2	10	<1
Iron, total recoverable (ug/L)	0	--	--
Iron, suspended recoverable (ug/L)	0	--	--
Iron, dissolved (ug/L)	2	22	12
Lead, total recoverable (ug/L)	2	15	24

See footnote at end of table, p. 200.

Table 35.--Mean concentrations and coefficients of variation of storm-runoff constituents and properties at urban stations on canals, streams, and storm conduits--Continued

Constituent or property	Number of samples	Mean concentration	Coefficient of variation
East Jordan Canal at Little Cottonwood Creek (upstream station) (10167105)--Continued			
Lead, suspended recoverable (ug/L)	0	--	--
Lead, dissolved (ug/L)	2	10	<1
Mercury, total recoverable (ug/L)	0	--	--
Mercury, suspended recoverable (ug/L)	0	--	--
Mercury, dissolved (ug/L)	0	--	--
Zinc, total recoverable (ug/L)	2	45	47
Zinc, suspended recoverable (ug/L)	2	45	47
Zinc, dissolved (ug/L)	2	5	<1
East Jordan Canal at pumphouse (10167115)			
Specific conductance (umho/cm at 25°C)	5	1,222	25
pH (units)[1]	2	8.5	32
Oxygen demand, chemical (mg/L)	2	104	8
Oxygen demand, biochemical, carbonaceous, 5 day (BOD_5) (mg/L)	2	7	13
Oxygen demand, biochemical, carbonaceous, ultimate, (BOD_u) (mg/L)	2	29	39
Chloride, dissolved (mg/L)	2	230	6
Fluoride, dissolved (mg/L)	0	--	--
Solids, dissolved, residue at 180°C (mg/L)	2	711	15
Solids, suspended, residue at 105°C (mg/L)	2	113	108
Nitrogen, nitrate dissolved (mg/L as N)	2	.06	141
Nitrogen, ammonia dissolved (mg/L as N)	2	4.3	133
Nitrogen, ammonia + organic total (mg/L as N)	2	4.10	17
Phosphorus, total (mg/L)	2	.4	7
Phosphorus, dissolved (mg/L)	2	.04	20
Carbon, organic suspended total (mg/L)	2	4	3
Carbon, organic dissolved (mg/L)	2	9	10
Sediment, suspended (mg/L)	2	295	17
Cadmium, total recoverable (ug/L)	0	--	--
Cadmium, suspended recoverable (ug/L)	0	--	--
Cadmium, dissolved (ug/L)	2	1	<1

See footnote at end of table, p. 200.

Table 35.--Mean concentrations and coefficients of variation of storm-runoff constituents and properties at urban stations on canals, streams, and storm conduits--Continued

Constituent or property	Number of samples	Mean concentration	Coefficient of variation
East Jordan Canal at pumphouse (10167115)--Continued			
Chromium, total recoverable (ug/L)	2	10	<1
Chromium, suspended recoverable (ug/L)	2	8	17
Chromium, dissolved (ug/L)	2	2	70
Copper, total recoverable (ug/L)	2	19	57
Copper, suspended recoverable (ug/L)	1	24	--
Copper, dissolved (ug/L)	1	2	--
Iron, total recoverable (ug/L)	2	3,600	74
Iron, suspended recoverable (ug/L)	0	--	--
Iron, dissolved (ug/L)	2	10	<1
Lead, total recoverable (ug/L)	2	39	71
Lead, suspended recoverable (ug/L)	1	56	--
Lead, dissolved (ug/L)	1	2	--
Mercury, total recoverable (ug/L)	2	.10	<1
Mercury, suspended recoverable (ug/L)	2	.10	<1
Mercury, dissolved (ug/L)	2	<.01	--
Zinc, total recoverable (ug/L)	2	70	40
Zinc, suspended recoverable (ug/L)	2	60	47
Zinc, dissolved (ug/L)	2	8	28
Upper Canal at 5800 South (10167122)			
Specific conductance (umho/cm at 25°C)	5	758	72
pH (units)[1]	4	8.1	61
Oxygen demand, chemical (mg/L)	3	46	8
Oxygen demand, biochemical, carbonaceous, 5 day (BOD_5) (mg/L)	0	--	--
Oxygen demand, biochemical, carbonaceous ultimate, (BOD_u) (mg/L)	0	--	--
Chloride, dissolved (mg/L)	5	108	89
Fluoride, dissolved (mg/L)	5	.46	45
Solids, dissolved, residue at 180°C (mg/L)	3	683	15
Solids, suspended, residue at 105°C (mg/L)	5	55	84
Nitrogen, nitrate dissolved (mg/L as N)	5	.06	128

See footnote at end of table, p. 200.

Table 35.--Mean concentrations and coefficients of variation of storm-runoff constituents and properties at urban stations on canals, streams, and storm conduits--Continued

Constituent or property	Number of samples	Mean concentration	Coefficient of variation
Upper Canal at 5800 South (10167122)--Continued			
Nitrogen, ammonia dissolved (mg/L as N)	5	0.16	119
Nitrogen, ammonia + organic total (mg/L as N)	5	1.4	55
Phosphorus, total (mg/L)	5	.30	75
Phosphorus, dissolved (mg/L)	5	.03	92
Carbon, organic suspended total (mg/L)	3	3.4	22
Carbon, organic dissolved (mg/L)	4	8	25
Sediment, suspended (mg/L)	1	80	--
Cadmium, total recoverable (ug/L)	4	<.01	<1
Cadmium, suspended recoverable (ug/L)	2	<.01	<1
Cadmium, dissolved (ug/L)	5	1.20	37
Chromium, total recoverable (ug/L)	4	12	42
Chromium, suspended recoverable (ug/L)	0	--	--
Chromium, dissolved (ug/L)	0	--	--
Copper, total recoverable (ug/L)	4	17	29
Copper, suspended recoverable (ug/L)	0	--	--
Copper, dissolved (ug/L)	5	10	<1
Iron, total recoverable (ug/L)	0	--	--
Iron, suspended recoverable (ug/L)	0	--	--
Iron, dissolved (ug/L)	5	21	16
Lead, total recoverable (ug/L)	4	33	33
Lead, suspended recoverable (ug/L)	0	--	
Lead, dissolved (ug/L)	5	12	40
Mercury, total recoverable (ug/L)	0	--	--
Mercury, suspended recoverable (ug/L)	0	--	--
Mercury, dissolved (ug/L)	0	--	--
Zinc, total recoverable (ug/L)	4	80	39
Zinc, suspended recoverable (ug/L)	3	83	42
Zinc, dissolved (ug/L)	5	8	46
Upper Canal at Wilde Rose Lane (10167125)			
Specific conductance (umho/cm at 25°C)	15	570	76
pH (units)[1]	11	7.7	108
Oxygen demand, chemical (mg/L)	12	67	63

See footnote at end of table, p. 200.

Table 35.--Mean concentrations and coefficients of variation of storm-runoff constituents and properties at urban stations on canals, streams, and storm conduits--Continued

Constituent or property	Number of samples	Mean concentration	Coefficient of variation
Upper Canal at Wilde Rose Lane (10167125)--Continued			
Oxygen demand, biochemical, carbonaceous, 5 day (BOD_5) (mg/L)	4	6.40	66
Oxygen demand, biochemical, carbonaceous ultimate, (BOD_u) (mg/L)	4	32	135
Chloride, dissolved (mg/L)	14	90	95
Fluoride, dissolved (mg/L)	10	.44	51
Solids, dissolved, residue at 180°C (mg/L)	12	460	66
Solids, suspended, residue at 105°C (mg/L)	14	120	68
Nitrogen, nitrate dissolved (mg/L as N)	13	.27	91
Nitrogen, ammonia dissolved (mg/L as N)	13	.10	164
Nitrogen, ammonia + organic total (mg/L as N)	13	2	48
Phosphorus, total (mg/L)	14	.33	55
Phosphorus, dissolved (mg/L)	13	.05	68
Carbon, organic suspended total (mg/L)	11	3.7	61
Carbon, organic dissolved (mg/L)	13	13	52
Sediment, suspended (mg/L)	4	369	82
Cadmium, total recoverable (ug/L)	9	1	100
Cadmium, suspended recoverable (ug/L)	4	<.01	<1
Cadmium, dissolved (ug/L)	14	1.14	31
Chromium, total recoverable (ug/L)	13	13	43
Chromium, suspended recoverable (ug/L)	4	12	45
Chromium, dissolved (ug/L)	4	.50	200
Copper, total recoverable (ug/L)	13	24	69
Copper, suspended recoverable (ug/L)	6	16	131
Copper, dissolved (ug/L)	14	11	65
Iron, total recoverable (ug/L)	4	4,350	83
Iron, suspended recoverable (ug/L)	4	4,250	85
Iron, dissolved (ug/L)	14	140	235
Lead, total recoverable (ug/L)	13	90	106
Lead, suspended recoverable (ug/L)	6	70	143
Lead, dissolved (ug/L)	14	11	56
Mercury, total recoverable (ug/L)	4	.08	127
Mercury, suspended recoverable (ug/L)	4	.08	127
Mercury, dissolved (ug/L)	4	.03	200
Zinc, total recoverable (ug/L)	13	117	80
Zinc, suspended recoverable (ug/L)	12	80	113
Zinc, dissolved (ug/L)	4	22	75

See footnote at end of table, p. 200.

Table 35.--Mean concentrations and coefficients of variation of storm-runoff constituents and properties at urban stations on canals, streams, and storm conduits--Continued

Constituent or property	Number of samples	Mean concentration	Coefficient of variation
Jordan and Salt Lake City Canal at Little Cottonwood Creek (upstream station) (10167141)			
Specific conductance (umho/cm at 25°C)	2	1,405	2
pH (units)[1]	2	8.1	40
Oxygen demand, chemical (mg/L)	2	31	50
Oxygen demand, biochemical, carbonaceous, 5 day (BOD_5) (mg/L)	0	--	--
Oxygen demand, biochemical, carbonaceous ultimate, (BOD_u) (mg/L)	0	--	--
Chloride, dissolved (mg/L)	2	220	6
Fluoride, dissolved (mg/L)	2	.70	<1
Solids, dissolved, residue at 180°C (mg/L)	2	891	<1
Solids, suspended, residue at 105°C (mg/L)	2	60	67
Nitrogen, nitrate dissolved (mg/L)	2	.3	141
Nitrogen, ammonia dissolved (mg/L)	2	.04	141
Nitrogen, ammonia + organic total (mg/L as N)	2	1.9	34
Phosphorus, total (mg/L)	2	.23	9
Phosphorus, dissolved (mg/L)	2	.03	84
Carbon, organic suspended total (mg/L)	2	3	86
Carbon, organic dissolved (mg/L)	2	14	26
Sediment, suspended (mg/L)	0	--	--
Cadmium, total recoverable (ug/L)	2	<.01	<1
Cadmium, suspended recoverable (ug/L)	0	--	--
Cadmium, dissolved (ug/L)	2	1	<1
Chromium, total recoverable (ug/L)	2	8.5	24
Chromium, suspended recoverable (ug/L)	0	--	--
Chromium, dissolved (ug/L)	0	--	--
Copper, total recoverable (ug/L)	2	8.5	8
Copper, suspended recoverable (ug/L)	0	--	--
Copper, dissolved (ug/L)	2	10	<1
Iron, total recoverable (ug/L)	0	--	--
Iron, suspended recoverable (ug/L)	0	--	--
Iron, dissolved (ug/L)	2	16	53
Lead, total recoverable (ug/L)	2	9.5	37
Lead, suspended recoverable (ug/L)	0	--	--
Lead, dissolved (ug/L)	2	10	<1
Mercury, total recoverable (ug/L)	0	--	--
Mercury, suspended recoverable (ug/L)	0	--	--

See footnote at end of table, p. 200.

Table 35.--Mean concentrations and coefficients of variation of storm-runoff constituents and properties at urban stations on canals, streams, and storm conduits--Continued

Constituent or property	Number of samples	Mean concentration	Coefficient of variation
Jordan and Salt Lake City Canal at Little Cottonwood Creek (upstream station) (10167141)--Continued			
Mercury, dissolved (ug/L)	0	--	--
Zinc, total recoverable (ug/L)	2	30	<1
Zinc, suspended recoverable (ug/L)	2	25	28
Zinc, dissolved (ug/L)	2	6.5	54
Jordan and Salt Lake City Canal at Zenith Avenue (10167149)			
Specific conductance (umho/cm at 25°C)	9	830	48
pH (units)[1]	7	7.4	113
Oxygen demand, chemical (mg/L)	6	96	80
Oxygen demand, biochemical, carbonaceous, 5 day (BOD_5) (mg/L)	4	4	32
Oxygen demand, biochemical, carbonaceous, ultimate, (BOD_u) (mg/L)	4	32	90
Chloride, dissolved (mg/L)	9	120	63
Fluoride, dissolved (mg/L)	6	.4	50
Solids, dissolved, residue at 180°C (mg/L)	6	505	60
Solids, suspended, residue at 105°C (mg/L)	9	93	109
Nitrogen, nitrate dissolved (mg/L as N)	9	.4	107
Nitrogen, ammonia dissolved (mg/L as N)	9	.11	88
Nitrogen, ammonia + organic total (mg/L as N)	9	1.8	34
Phosphorus, total (mg/L)	9	.22	36
Phosphorus, dissolved (mg/L)	9	.06	47
Carbon, organic suspended total (mg/L)	6	3	61
Carbon, organic dissolved (mg/L)	8	22	64
Sediment, suspended (mg/L)	4	165	65
Cadmium, total recoverable (ug/L)	3	1	<1
Cadmium, suspended recoverable (ug/L)	0	--	--
Cadmium, dissolved (ug/L)	9	1	<1
Chromium, total recoverable (ug/L)	6	5	109
Chromium, suspended recoverable (ug/L)	3	6	88
Chromium, dissolved (ug/L)	3	.7	173
Copper, total recoverable (ug/L)	6	18	57
Copper, suspended recoverable (ug/L)	3	7	67

See footnote at end of table, p. 200.

Table 35.--Mean concentrations and coefficients of variation of storm-runoff constituents and properties at urban stations on canals, streams, and storm conduits--Continued

Constituent or property	Number of samples	Mean concentration	Coefficient of variation
Jordan and Salt Lake City Canal at Zenith Avenue (10167149)--Continued			
Copper, dissolved (ug/L)	9	10	71
Iron, total recoverable (ug/L)	3	1,400	57
Iron, suspended recoverable (ug/L)	3	1,380	60
Iron, dissolved (ug/L)	9	67	103
Lead, total recoverable (ug/L)	6	70	102
Lead, suspended recoverable (ug/L)	3	15	22
Lead, dissolved (ug/L)	9	30	96
Mercury, total recoverable (ug/L)	3	.07	173
Mercury, suspended recoverable (ug/L)	3	.07	173
Mercury, dissolved (ug/L)	3	<.01	<1
Zinc, total recoverable (ug/L)	6	87	56
Zinc, suspended recoverable (ug/L)	4	48	65
Zinc, dissolved (ug/L)	9	25	101
Bells Canyon Conduit at 1000 East and 11000 South (10167220)			
Specific conductance (umho/cm at 25°C)	19	150	80
pH (units)[1]	20	6.7	259
Oxygen demand, chemical (mg/L)	12	27	103
Oxygen demand, biochemical, carbonaceous, 5 day (BOD_5) (mg/L)	21	160	86
Oxygen demand, biochemical, carbonaceous ultimate, (BOD_u) (mg/L)	12	13	104
Chloride, dissolved (mg/L)	21	8.20	91
Fluoride, dissolved (mg/L)	--	--	--
Solids, dissolved, residue at 180°C (mg/L)	21	141	110
Solids, suspended, residue at 105°C (mg/L)	20	193	91
Nitrogen, nitrate dissolved (mg/L as N)	17	.8	72
Nitrogen, ammonia dissolved (mg/N as N)	17	1	78
Nitrogen, ammonia + organic total (mg/L as N)	17	3	95
Phosphorus, total (mg/L)	17	.32	72
Phosphorus, dissolved (mg/L)	17	.16	71
Carbon, organic suspended total (mg/L)	18	24	102

See footnote at end table, p. 200.

Table 35.--Mean concentrations and coefficients of variation of storm-runoff constituents and properties at urban stations on canals, streams, and storm conduits--Continued

Constituent or property	Number of samples	Mean concentration	Coefficient of variation
Bells Canyon Conduit at 1000 East and 11000 South (10167220)--Continued			
Carbon, organic dissolved (mg/L)	17	4.40	67
Sediment, suspended (mg/L)	13	355	113
Cadmium, total recoverable (ug/L)	--	--	--
Cadmium, suspended recoverable (ug/L)	19	.84	44
Cadmium, dissolved (ug/L)	--	--	--
Chromium, total recoverable (ug/L)	21	11	63
Chromium, suspended recoverable (ug/L)	16	10	68
Chromium, dissolved (ug/L)	20	2.3	150
Copper, total recoverable (ug/L)	21	46	77
Copper, suspended recoverable (ug/L)	20	37	100
Copper, dissolved (ug/L)	20	10	81
Iron, total recoverable (ug/L)	21	4,530	82
Iron, suspended recoverable (ug/L)	19	4,650	84
Iron, dissolved (ug/L)	20	75	130
Lead, total recoverable (ug/L)	21	154	89
Lead, suspended recoverable (ug/L)	20	150	93
Lead, dissolved (ug/L)	20	5.7	97
Mercury, total recoverable (ug/L)	21	.14	84
Mercury, suspended recoverable (ug/L)	19	.14	88
Mercury, dissolved (ug/L)	20	.01	307
Zinc, total recoverable (ug/L)	21	142	78
Zinc, suspended recoverable (ug/L)	20	111	92
Zinc, dissolved (ug/L)	20	33	112
Little Cottonwood Creek at canyon mouth (channel only) (10167499)			
Specific conductance (umho/cm at 25°C)	7	365	76
pH (units)[1]	7	7.5	72
Oxygen demand, chemical (mg/L)	6	28	63
Oxygen demand, biochemical, carbonaceous, 5 day (BOD_5) (mg/L)	4	2	17
Oxygen demand, biochemical, carbonaceous, ultimate, (BOD_u) (mg/L)	4	4	23

See footnote at end of table, p. 200.

Table 35.--Mean concentrations and coefficients of variation of storm-runoff constituents and properties at urban stations on canals, streams, and storm conduits--Continued

Constituent or property	Number of samples	Mean concentration	Coefficient of variation
Little Cottonwood Creek at canyon mouth (channel only) (10167499)--Continued			
Chloride, dissolved (mg/L)	7	36	105
Fluoride, dissolved (mg/L)	3	.33	17
Solids, dissolved, residue at 180°C (mg/L)	6	255	71
Solids, suspended, residue at 105°C (mg/L)	7	42	95
Nitrogen, nitrate dissolved (mg/L as N)	7	.5	61
Nitrogen, ammonia dissolved (mg/L as N)	7	.08	60
Nitrogen, ammonia + organic total (mg/L as N)	7	.84	65
Phosphorus, total (mg/L)	7	.11	92
Phosphorus, dissolved (mg/L)	7	.03	34
Carbon, organic suspended total (mg/L)	5	1.5	99
Carbon, organic dissolved (mg/L)	6	5.2	71
Sediment, suspended (mg/L)	3	32	89
Cadmium, total recoverable (ug/L)	2	.50	141
Cadmium, suspended recoverable (ug/L)	1	<.01	<1
Cadmium, dissolved (ug/L)	7	1	<1
Chromium, total recoverable (ug/L)	6	9	50
Chromium, suspended recoverable (ug/L)	4	7.50	66
Chromium, dissolved (ug/L)	4	.50	200
Copper, total recoverable (ug/L)	6	19	45
Copper, suspended recoverable (ug/L)	4	10	84
Copper, dissolved (ug/L)	7	8	26
Iron, total recoverable (ug/L)	4	890	90
Iron, suspended recoverable (ug/L)	4	965	93
Iron, dissolved (ug/L)	7	28	46
Lead, total recoverable (ug/L)	6	37	103
Lead, suspended recoverable (ug/L)	4	12	58
Lead, dissolved (ug/L)	7	7.3	68
Mercury, total recoverable (ug/L)	4	.08	66
Mercury, suspended recoverable (ug/L)	4	.08	66
Mercury, dissolved (ug/L)	4	<.01	<1
Zinc, total recoverable (ug/L)	6	80	26
Zinc, suspended recoverable (ug/L)	6	48	74
Zinc, dissolved (ug/L)	7	40	61

Table 35.--Mean concentrations and coefficients of variation of storm-runoff constituents and properties at urban stations on canals, streams, and storm conduits--Continued

Constituent or property	Number of samples	Mean concentration	Coefficient of variation
Little Cottonwood Creek at Jordan River (10168000)			
Specific conductance (umho/cm at 25°C)	12	810	43
pH (units)[1]	11	8.0	45
Oxygen demand, chemical (mg/L)	11	67	57
Oxygen demand, biochemical, carbonaceous, 5 day (BOD_5) (mg/L)	4	6.4	30
Oxygen demand, biochemical, carbonaceous, ultimate, (BOD_u) (mg/L)	4	15	45
Chloride, dissolved (mg/L)	12	117	43
Fluoride, dissolved (mg/L)	8	.54	24
Solids, dissolved, residue at 180°C (mg/L)	11	530	21
Solids, suspended, residue at 105°C (mg/L)	12	175	124
Nitrogen, nitrate dissolved (mg/L as N)	12	.48	65
Nitrogen, ammonia dissolved (mg/L as N)	12	.12	104
Nitrogen, ammonia + organic total (mg/L as N)	12	1.9	53
Phosphorus, total (mg/L)	12	.37	61
Phosphorus, dissolved (mg/L)	12	.06	46
Carbon, organic suspended total (mg/L)	10	2.80	52
Carbon, organic dissolved (mg/L)	11	12	54
Sediment, suspended (mg/L)	3	380	119
Cadmium, total recoverable (ug/L)	7	1.43	79
Cadmium, suspended recoverable (ug/L)	4	1	81
Cadmium, dissolved (ug/L)	13	1.2	82
Chromium, total recoverable (ug/L)	12	13	80
Chromium, suspended recoverable (ug/L)	5	11.4	145
Chromium, dissolved (ug/L)	5	.60	223
Copper, total recoverable (ug/L)	11	45	65
Copper, suspended recoverable (ug/L)	8	37	89
Copper, dissolved (ug/L)	13	9.2	46
Iron, total recoverable (ug/L)	5	5,200	103
Iron, suspended recoverable (ug/L)	5	5,200	103
Iron, dissolved (ug/L)	13	120	248
Lead, total recoverable (ug/L)	11	140	100
Lead, suspended recoverable (ug/L)	5	150	128
Lead, dissolved (ug/L)	13	8.08	51
Mercury, total recoverable (ug/L)	5	.16	55
Mercury, suspended recoverable (ug/L)	5	.12	91
Mercury, dissolved (ug/L)	5	.04	223

See footnote at end of table, p. 200.

Table 35.--Mean concentrations and coefficients of variation of storm-runoff constituents and properties at urban stations on canals, streams, and storm conduits--Continued

Constituent or property	Number of samples	Mean concentration	Coefficient of variation
Little Cottonwood Creek at Jordan River (10168000)--Continued			
Zinc, total recoverable (ug/L)	12	185	66
Zinc, suspended recoverable (ug/L)	12	160	79
Zinc, dissolved (ug/L)	13	24	72
Big Cottonwood Creek at canyon mouth (channel only) (10168499)			
Specific conductance (umho/cm at 25°C)	7	250	41
pH (units)[1]	7	7.7	79
Oxygen demand, chemical (mg/L)	6	20	99
Oxygen demand, biochemical, carbonaceous, 5 day (BOD_5) (mg/L)	5	1.4	28
Oxygen demand, biochemical, carbonaceous, ultimate, (BOD_u) (mg/L)	5	5	45
Chloride, dissolved (mg/L)	7	11	67
Fluoride, dissolved (mg/L)	2	.20	<1
Solids, dissolved, residue at 180°C (mg/L)	6	150	27
Solids, suspended, residue at 105°C (mg/L)	7	8.9	138
Nitrogen, nitrate dissolved (mg/L as N)	7	.16	63
Nitrogen, ammonia dissolved (mg/L as N)	7	.07	72
Nitrogen, ammonia + organic total (mg/L as N)	7	.70	33
Phosphorus, total (mg/L)	7	.03	47
Phosphorus, dissolved (mg/L)	7	.02	80
Carbon, organic suspended total (mg/L)	4	.42	125
Carbon, organic dissolved (mg/L)	6	3.8	57
Sediment, suspended (mg/L)	2	22	75
Cadmium, total recoverable (ug/L)	1	<.01	--
Cadmium, suspended recoverable (ug/L)	0	--	--
Cadmium, dissolved (ug/L)	7	1.14	33
Chromium, total recoverable (ug/L)	6	4	114
Chromium, suspended recoverable (ug/L)	5	4	136
Chromium, dissolved (ug/L)	5	< .01	<1
Copper, total recoverable (ug/L)	6	7.2	60
Copper, suspended recoverable (ug/L)	5	5.20	97

See footnote at end of table, p. 200.

Table 35.--Mean concentrations and coefficients of variation of storm-runoff constituents and properties at urban stations on canals, streams, and storm conduits--Continued

Constituent or property	Number of samples	Mean concentration	Coefficient of variation
Big Cottonwood Creek at canyon mouth (channel only) (10168499)--Continued			
Copper, dissolved (ug/L)	7	4.1	98
Iron, total recoverable (ug/L)	5	374	97
Iron, suspended recoverable (ug/L)	5	346	107
Iron, dissolved (ug/L)	7	25	50
Lead, total recoverable (ug/L)	6	7.8	99
Lead, suspended recoverable (ug/L)	5	4	223
Lead, dissolved (ug/L)	7	9.3	110
Mercury, total recoverable (ug/L)	5	.04	223
Mercury, suspended recoverable (ug/L)	5	.04	223
Mercury, dissolved (ug/L)	5	<.01	<1
Zinc, total recoverable (ug/L)	6	23	64
Zinc, suspended recoverable (ug/L)	6	12	126
Zinc, dissolved (ug/L)	7	15	37
Neffs Creek at Wasatch Boulevard (10168832)			
Specific conductance (umho/cm at 25°C)	0	--	--
pH (units)[1]	1	8.1	--
Oxygen demand, chemical (mg/L)	1	430	--
Oxygen demand, biochemical, carbonaceous, 5 day (BOD_5) (mg/L)	0	--	--
Oxygen demand, biochemical, carbonaceous, ultimate, (BOD_u) (mg/L)	0	--	--
Chloride, dissolved (mg/L)	1	8.20	--
Fluoride, dissolved (mg/L)	0	--	--
Solids, dissolved, residue at 180°C (mg/L)	1	123	--
Solids, suspended, residue at 105°C (mg/L)	1	1,840	--
Nitrogen, nitrate dissolved (mg/L as N)	1	1.30	--
Nitrogen, ammonia dissolved (mg/L as N)	1	.52	--
Nitrogen, ammonia + organic total (mg/L as N)	1	11	--
Phosphorus, total (mg/L)	1	.31	--
Phosphorus, dissolved (mg/L)	1	.35	--
Carbon, organic suspended total (mg/L)	1	4	--

See footnote at end of table, p. 200.

Table 35.--Mean concentrations and coefficients of variation of storm-runoff constituents and properties at urban stations on canals, streams, and storm conduits--Continued

Constituent or property	Number of samples	Mean concentration	Coefficient of variation
Neffs Creek at Wasatch Boulevard (10168832)--Continued			
Carbon, organic dissolved (mg/L)	1	21	--
Sediment, suspended (mg/L)	1	3,280	--
Cadmium, total recoverable (ug/L)	0	--	--
Cadmium, suspended recoverable (ug/)	0	--	--
Cadmium, dissolved (ug/L)	1	1	--
Chromium, total recoverable (ug/L)	1	60	--
Chromium, suspended recoverable (ug/L)	1	58	--
Chromium, dissolved (ug/L)	1	2	--
Copper, total recoverable (ug/L)	1	200	--
Copper, suspended recoverable (ug/L)	1	190	--
Copper, dissolved (ug/L)	1	8	--
Iron, total recoverable (ug/L)	1	45,000	--
Iron, suspended recoverable (ug/L)	1	45,000	--
Iron, dissolved (ug/L)	1	220	--
Lead, total recoverable (ug/L)	1	8,800	--
Lead, suspended recoverable (ug/L)	1	8,800	--
Lead, dissolved (ug/L)	1	8	--
Mercury, total recoverable (ug/L)	1	.30	--
Mercury, suspended recoverable (ug/L)	1	.30	--
Mercury, dissolved (ug/L)	1	<.01	--
Zinc, total recoverable (ug/L)	1	720	--
Zinc, suspended recoverable (ug/L)	1	700	--
Zinc, dissolved (ug/L)	1	16	--
Holladay Drain at 4800 South, at Big Cottonwood Creek (10168840)			
Specific conductance (umho/cm at 25°C)	24	387	78
pH (units)[1]	19	7.5	108
Oxygen demand, chemical (mg/L)	25	105	106
Oxygen demand, biochemical, carbonaceous, 5 day (BOD_5) (mg/L)	9	11.2	77
Oxygen demand, biochemical, carbonaceous, ultimate, (BOD_u) (mg/L)	9	29	90

See footnote at end of table, p. 200.

Table 35.--Mean concentrations and coefficients of variation of storm-runoff constituents and properties at urban stations on canals, streams, and storm conduits--Continued

Constituent or property	Number of samples	Mean concentration	Coefficient of variation
Holladay Drain at 4800 South, at Big Cottonwood Creek (10168840)--Continued			
Chloride, dissolved (mg/L)	28	55	111
Fluoride, dissolved (mg/L)	19	.35	48
Solids, dissolved, residue at 180°C (mg/L)	25	325	64
Solids, suspended, residue at 105°C (mg/L)	28	300	114
Nitrogen, nitrate dissolved (mg/L as N)	28	.36	101
Nitrogen, ammonia dissolved (mg/L)	28	.15	111
Nitrogen, ammonia + organic total (mg/L as N)	28	2.8	92
Phosphorus, total (mg/L)	28	.59	87
Phosphorus, dissolved (mg/L)	28	.10	60
Carbon, organic suspended total (mg/L)	25	4.2	105
Carbon, organic dissolved (mg/L)	26	18	104
Sediment, suspended (mg/L)	9	676	95
Cadmium, total recoverable (ug/L)	18	.89	127
Cadmium, suspended recoverable (ug/L)	6	.33	244
Cadmium, dissolved (ug/L)	28	1	38
Chromium, total recoverable (ug/L)	25	21	98
Chromium, suspended recoverable (ug/L)	9	17	75
Chromium, dissolved (ug/L)	9	.78	211
Copper, total recoverable (ug/L)	27	50	121
Copper, suspended recoverable (ug/L)	17	45	127
Copper, dissolved (ug/L)	27	10.4	53
Iron, total recoverable (ug/L)	9	5,220	92
Iron, suspended recoverable (ug/L)	9	5,165	94
Iron, dissolved (ug/L)	28	90	93
Lead, total recoverable (ug/L)	27	272	140
Lead, suspended recoverable (ug/L)	14	337	117
Lead, dissolved (ug/L)	27	12	69
Mercury, total recoverable (ug/L)	9	.11	70
Mercury, suspended recoverable (ug/L)	9	.11	70
Mercury, dissolved (ug/L)	9	<.01	<1
Zinc, total recoverable (ug/L)	27	236	102
Zinc, suspended recoverable (ug/L)	25	170	124
Zinc, dissolved (ug/L)	28	41	128

Table 35.--Mean concentrations and coefficients of variation of storm-runoff constituents and properties at urban stations on canals, streams, and storm conduits--Continued

Constituent or property	Number of samples	Mean concentration	Coefficient of variation
Big Cottonwood Creek at Jordan River (10169500)			
Specific conductance (umho/cm at 25°C)	11	756	36
pH (units)[1]	9	7.7	52
Oxygen demand, chemical (mg/L)	9	60	53
Oxygen demand, biochemical, carbonaceous, 5 day (BOD_5) (mg/L)	3	15	11
Oxygen demand, biochemical, carbonaceous, ultimate, (BOD_u) (mg/L)	3	27	29
Chloride, dissolved (mg/L)	11	85	51
Fluoride, dissolved (mg/L)	8	.45	54
Solids, dissolved, residue at 180°C (mg/L)	9	490	27
Solids, suspended, residue at 105°C (mg/L)	11	160	123
Nitrogen, nitrate dissolved (mg/L as N)	11	.78	36
Nitrogen, ammonia dissolved (mg/L as N)	11	1.5	145
Nitrogen, ammonia + organic total (mg/L as N)	11	3.5	83
Phosphorus, total (mg/L)	11	1	106
Phosphorus, dissolved (mg/L)	11	.59	174
Carbon, organic suspended total (mg/L)	7	4.2	52
Carbon, organic dissolved (mg/L)	10	11	31
Sediment, suspended (mg/L)	3	317	136
Cadmium, total recoverable (ug/L)	8	.75	94
Cadmium, suspended recoverable (ug/L	4	<.01	<1
Cadmium, dissolved (ug/L)	12	1.1	26
Chromium, total recoverable (ug/L)	11	9.5	73
Chromium, suspended recoverable (ug/L)	4	12.25	76
Chromium, dissolved (ug/L)	4	2.8	176
Copper, total recoverable (ug/L)	11	32	80
Copper, suspended recoverable (ug/L)	5	27	124
Copper, dissolved (ug/L)	12	8.2	54
Iron, total recoverable (ug/L)	4	5,650	124
Iron, suspended recoverable (ug/L)	4	5,650	124
Iron, dissolved (ug/L)	12	27	63
Lead, total recoverable (ug/L)	11	85	100
Lead, suspended recoverable (ug/L)	4	76	109
Lead, dissolved (ug/L)	12	7.6	51
Mercury, total recoverable (ug/L)	4	.10	118
Mercury, suspended recoverable (ug/L)	4	.10	115
Mercury, dissolved (ug/L)	4	.03	200

See footnote at end of table, p. 200.

Table 35.--Mean concentrations and coefficients of variation of storm-runoff constituents and properties at urban stations on canals, streams, and storm conduits--Continued

Constituent or property	Number of samples	Mean concentration	Coefficient of variation
Big Cottonwood Creek at Jordan River (10169500)--Continued			
Zinc, total recoverable (ug/L)	11	183	83
Zinc, suspended recoverable (ug/L)	10	147	84
Zinc, dissolved (ug/L)	12	28	150
Mill Creek at canyon mouth (channel only) (10169999)			
Specific conductance (umho/cm at 25°C)	9	515	10
pH (units)[1]	7	8.0	28
Oxygen demand, chemical (mg/L)	7	22	91
Oxygen demand, biochemical, carbonaceous 5 day (BOD_5), (mg/L)	1	2.60	--
Oxygen demand, biochemical, carbonaceous, ultimate, (BOD_u) (mg/L)	1	6.80	--
Chloride, dissolved (mg/L)	9	9.6	32
Fluoride, dissolved (mg/L)	4	.20	<1
Solids, dissolved, residue at 180°C (mg/L)	7	346	6
Solids, suspended, residue at 105°C (mg/L)	8	48	98
Nitrogen, nitrate dissolved (mg/L)	9	.18	42
Nitrogen, ammonia dissolved (mg/L)	9	.06	98
Nitrogen, ammonia + organic total (mg/L as N)	9	.76	53
Phosphorus, total (mg/L)	9	.15	52
Phosphorus, dissolved (mg/L)	9	.04	46
Carbon, organic suspended total (mg/L)	5	1.60	116
Carbon, organic dissolved (mg/L)	8	4.6	53
Sediment, suspended (mg/L)	3	120	61
Cadmium, total recoverable (ug/L)	3	<.01	<1
Cadmium, suspended recoverable (ug/L)	1	<.01	--
Cadmium, dissolved (ug/L)	9	1.7	99
Chromium, total recoverable (ug/L)	8	11	80
Chromium, suspended recoverable (ug/L)	5	13	72
Chromium, dissolved (ug/L)	5	.80	223
Copper, total recoverable (ug/L)	8	7.3	69
Copper, suspended recoverable (ug/L)	5	3.60	93

See footnote at end of table, p. 200.

Table 35.--Mean concentrations and coefficients of variation of storm-runoff constituents and properties at urban stations on canals, streams, and storm conduits--Continued

Constituent or property	Number of samples	Mean concentration	Coefficient of variation
Mill Creek at canyon mouth (channel only) (10169999)--Continued			
Copper, dissolved (ug/L)	9	5.8	72
Iron, total recoverable (ug/L)	5	886	94
Iron, suspended recoverable (ug/L)	1	60	--
Iron, dissolved (ug/L)	9	11	26
Lead, total recoverable (ug/L)	8	11	45
Lead, suspended recoverable (ug/L)	5	5.60	78
Lead, dissolved (ug/L)	9	11	89
Mercury, total recoverable (ug/L)	5	.08	55
Mercury, suspended recoverable (ug/L)	5	.08	55
Mercury, dissolved (ug/L)	5	<.01	<1
Zinc, total recoverable (ug/L)	8	45	68
Zinc, suspended recoverable (ug/L)	6	34	92
Zinc, dissolved (ug/L)	9	9.4	101
Mill Creek at Jordan River (10170250)			
Specific conductance (umho/cm at 25°C)	13	810	29
pH (units)[1]	12	7.5	126
Oxygen demand, chemical (mg/L)	12	43	70
Oxygen demand, biochemical, carbonaceous, 5 day (BOD_5) (mg/L)	5	5.4	59
Oxygen demand, biochemical, carbonaceous, ultimate, (BOD_u) (mg/L)	5	12	86
Chloride, dissolved (mg/L)	14	72	65
Fluoride, dissolved (mg/L)	9	.42	45
Solids, dissolved, residue at 180°C (mg/L)	12	525	28
Solids, suspended, residue at 105°C (mg/L)	14	105	95
Nitrogen, nitrate dissolved (mg/L)	14	1.7	47
Nitrogen, ammonia dissolved (mg/L)	14	.11	92
Nitrogen, ammonia + organic total (mg/L as N)	14	1.7	54
Phosphorus, total (mg/L)	14	.24	70
Phosphorus, dissolved (mg/L)	14	.04	58
Carbon, organic suspended total (mg/L)	12	2.5	89

See footnote at end of table, p. 200.

Table 35.--Mean concentrations and coefficients of variation of storm-runoff constituents and properties at urban stations on canals, streams, and storm conduits--Continued

Constituent or property	Number of samples	Mean concentration	Coefficient of variation
Mill Creek at Jordan River (10170250)--Continued			
Carbon, organic dissolved (mg/L)	13	9.8	36
Sediment, suspended (mg/L)	5	182	113
Cadmium, total recoverable (ug/L)	8	.50	106
Cadmium, suspended recoverable (ug/L)	3	<.01	<1
Cadmium, dissolved (ug/L)	14	1.1	31
Chromium, total recoverable (ug/L)	13	10	80
Chromium, suspended recoverable (ug/L)	5	16	55
Chromium, dissolved (ug/L)	5	.20	223
Copper, total recoverable (ug/L)	13	22	69
Copper, suspended recoverable (ug/L)	6	16	124
Copper, dissolved (ug/L)	14	7.9	51
Iron, total recoverable (ug/L)	5	2,590	113
Iron, suspended recoverable (ug/L)	5	2,590	114
Iron, dissolved (ug/L)	14	20	44
Lead, total recoverable (ug/L)	13	57	84
Lead, suspended recoverable (ug/L)	5	48	111
Lead, dissolved (ug/L)	14	9.6	40
Mercury, total recoverable (ug/L)	5	.12	37
Mercury, suspended recoverable (ug/L)	5	.12	37
Mercury, dissolved (ug/L)	5	<.01	<1
Zinc, total recoverable (ug/L)	13	126	142
Zinc, suspended recoverable (ug/L)	11	125	154
Zinc, dissolved (ug/L)	14	18	68
Twenty-First South Conduit at Jordan River (10170900)			
Specific conductance (umho/cm at 25°C)	13	1,030	32
pH (units)[1]	10	7.5	80
Oxygen demand, chemical (mg/L)	9	70	44
Oxygen demand, biochemical, carbonaeous, 5 day (BOD_5) (mg/L)	4	13	36
Oxygen demand, biochemical, carbonaceous, ultimate, (BOD_u) (mg/L)	4	28	36

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Table 35.--Mean concentrations and coefficients of variation of storm-runoff constituents and properties at urban stations on canals, streams, and storm conduits--Continued

Constituent or property	Number of samples	Mean concentration	Coefficient of variation
Twenty-First South Conduit at Jordan River (10170900)--Continued			
Chloride, dissolved (mg/L)	13	106	31
Fluoride, dissolved (mg/L)	9	.56	24
Solids, dissolved, residue at 180°C (mg/L)	8	705	27
Solids, suspended, residue at 105°C (mg/L)	12	60	123
Nitrogen, nitrate dissolved (mg/L as N)	12	2.6	61
Nitrogen, ammonia dissolved (mg/L as N)	13	.20	100
Nitrogen, ammonia + organic total (mg/L as N)	13	2.4	19
Phosphorus, total (mg/L)	13	1.5	43
Phosphorus, dissolved (mg/L)	13	1.1	60
Carbon, organic suspended total (mg/L)	9	2.6	59
Carbon, organic dissolved (mg/L)	11	19	35
Sediment, suspended (mg/L)	4	133	79
Cadmium, total recoverable (ug/L)	6	1.3	61
Cadmium, suspended recoverable (ug/L)	2	<.01	<1
Cadmium, dissolved (ug/L)	13	.9	30
Chromium, total recoverable (ug/L)	10	17	35
Chromium, suspended recoverable (ug/L)	4	16	34
Chromium, dissolved (ug/L)	4	3.8	151
Copper, total recoverable (ug/L)	10	50	48
Copper, suspended recoverable (ug/L)	7	42	65
Copper, dissolved (ug/L)	13	23	88
Iron, total recoverable (ug/L)	4	2,860	52
Iron, suspended recoverable (ug/L)	3	2,640	65
Iron, dissolved (ug/L)	12	38	34
Lead, total recoverable (ug/L)	10	174	80
Lead, suspended recoverable (ug/L)	5	213	61
Lead, dissolved (ug/L)	13	21	84
Mercury, total recoverable (ug/L)	4	.18	54
Mercury, suspended recoverable (ug/L	4	.15	86
Mercury, dissolved (ug/L)	4	.03	200
Zinc, total recoverable (ug/L)	10	206	75
Zinc, suspended recoverable (ug/L)	6	123	71
Zinc, dissolved (ug/L)	12	45	47

See footnote at end of table, p. 200.

Table 35.--Mean concentrations and coefficients of variation of storm-runoff constituents and properties at urban stations on canals, streams, and storm conduits--Continued

Constituent or property	Number of samples	Mean concentration	Coefficient of variation
Parleys Creek at Suicide Rock (at canyon mouth) (10171600)			
Specific conductance (umho/cm at 25°C)	10	738	14
pH (units)[1]	10	7.9	43
Oxygen demand, chemical (mg/L)	9	34	77
Oxygen demand, biochemical, carbonaceous, 5 day (BOD_5) (mg/L)	3	3.8	26
Oxygen demand, biochemical, carbonaceous, ultimate, (BOD_u) (mg/L)	3	7.9	45
Chloride, dissolved (mg/L)	10	77	16
Fluoride, dissolved (mg/L)	7	.14	37
Solids, dissolved, residue at 180°C (mg/L)	9	419	12
Solids, suspended, residue at 105°C (mg/L)	10	91	180
Nitrogen, nitrate dissolved (mg/L as N)	10	.84	17
Nitrogen, ammonia dissolved (mg/L as N)	10	.04	168
Nitrogen, ammonia + organic total (mg/L as N)	10	.73	48
Phosphorus, total (mg/L)	10	.13	84
Phosphorus, dissolved (mg/L)	10	.04	49
Carbon, organic suspended total (mg/L)	7	1.8	115
Carbon, organic dissolved (mg/L)	8	7.6	53
Sediment, suspended (mg/L)	2	319	131
Cadmium, total recoverable (ug/L)	6	.33	154
Cadmium, suspended recoverable (ug/L	3	<.01	<1
Cadmium, dissolved (ug/L)	10	1.20	35
Chromium, total recoverable (ug/L)	9	12	75
Chromium, suspended recoverable (ug/L)	3	19	54
Chromium, dissolved (ug/L)	3	.67	86
Copper, total recoverable (ug/L)	9	19	81
Copper, suspended recoverable (ug/L)	4	21	104
Copper, dissolved (ug/L)	10	8.50	44
Iron, total recoverable (ug/L)	3	4,800	112
Iron, suspended recoverable (ug/L)	3	4,800	112
Iron, dissolved (ug/L)	10	13	32
Lead, total recoverable (ug/L)	9	82	111
Lead, suspended recoverable (ug/L)	4	135	71
Lead, dissolved (ug/L)	10	13	73
Mercury, total recoverable (ug/L)	3	.10	<1
Mercury, suspended recoverable (ug/L)	3	.10	<1
Mercury, dissolved (ug/L)	3	<.01	<1

See footnote at end of table, p. 200.

Table 35.--Mean concentrations and coefficients of variation of storm-runoff constituents and properties at urban stations on canals, streams, and storm conduits--Continued

Constituent or property	Number of samples	Mean concentration	Coefficient of variation
Parleys Creek at Suicide Rock (at canyon mouth) (10171600)--Continued			
Zinc, total recoverable (ug/L)	9	94	88
Zinc, suspended recoverable (ug/L)	9	75	102
Zinc, dissolved (ug/L)	10	20	55
Emigration Creek at canyon mouth (10172000)			
Specific conductance (umho/cm at 25°C)	9	750	16
pH (units)[1]	8	7.8	52
Oxygen demand, chemical (mg/L)	7	17	79
Oxygen demand, biochemical, carbonaceous, 5 day (BOD_5) (mg/L)	2	1.60	70
Oxygen demand, biochemical, carbonaceous, ultimate, (BOD_u) (mg/L)	2	4.10	24
Chloride, dissolved (mg/L)	9	64	21
Fluoride, dissolved (mg/L)	6	.23	34
Solids, dissolved, residue at 180°C (mg/L)	7	487	11
Solids, suspended, residue at 105°C (mg/L)	9	27	128
Nitrogen, nitrate dissolved (mg/L as N)	9	.26	51
Nitrogen, ammonia dissolved (mg/L as N)	9	.08	143
Nitrogen, ammonia + organic total (mg/L as N)	9	.75	76
Phosphorus, total (mg/L)	9	.12	92
Phosphorus, dissolved (mg/L)	9	.05	78
Carbon, organic suspended total (mg/L)	6	.22	53
Carbon, organic dissolved (mg/L)	8	12	129
Sediment, suspended (mg/L)	3	40	40
Cadmium, total recoverable (ug/L)	5	.20	223
Cadmium, suspended recoverable (ug/L)	1	<.01	---
Cadmium, dissolved (ug/L)	9	1	<1
Chromium, total recoverable (ug/L)	8	8.9	85
Chromium, suspended recoverable (ug/L)	3	16	38
Chromium, dissolved (ug/L)	3	.33	173
Copper, total recoverable (ug/L)	8	10	48
Copper, suspended recoverable (ug/L)	3	4.7	49

See footnote at end of table, p. 200.

Table 35.--Mean concentrations and coefficients of variation of storm-runoff constituents and properties at urban stations on canals, streams, and storm conduits--Continued

Constituent or property	Number of samples	Mean concentration	Coefficient of variation
Emigration Creek at canyon mouth (10172000)--Continued			
Copper, dissolved (ug/L)	9	7.6	49
Iron, total recoverable (ug/L)	3	970	111
Iron, suspended recoverable (ug/L)	1	540	--
Iron, dissolved (ug/L)	9	11	21
Lead, total recoverable (ug/L)	8	11	57
Lead, suspended recoverable (ug/L)	3	2.3	137
Lead, dissolved (ug/L)	9	12	69
Mercury, total recoverable (ug/L)	3	.07	86
Mercury, suspended recoverable (ug/L	3	.07	86
Mercury, dissolved (ug/L)	3	<.01	<1
Zinc, total recoverable (ug/L)	8	36	38
Zinc, suspended recoverable (ug/L)	6	20	44
Zinc, dissolved (ug/L)	9	11	64
Red Butte Creek below reservoir (at canyon mouth) (10172220)			
Specific conductance (umho/cm at 25^{o} C)	8	600	12
pH (units)[1]	7	8.0	49
Oxygen demand, chemical (mg/L)	6	11	47
Oxygen demand, biochemical, carbonaceous, 5 day (BOD_5) (mg/L)	2	2.80	20
Oxygen demand, biochemical, carbonaceous ultimate, (BOD_u) (mg/L)	2	4.80	<1
Chloride, dissolved (mg/L)	8	15	33
Fluoride, dissolved (mg/L)	6	.18	41
Solids, dissolved, residue at 180^{o}C (mg/L)	6	390	9
Solids, suspended, residue at 105^{o}C (mg/L)	8	7.3	98
Nitrogen, nitrate dissolved (mg/L)	8	.05	106
Nitrogen, ammonia dissolved (mg/L)	8	.03	90
Nitrogen, ammonia + organic total (mg/L as N)	8	.67	75
Phosphorus, total (mg/L)	8	.08	93
Phosphorus, dissolved (mg/L)	8	.04	56
Carbon, organic suspended total (mg/L)	5	.56	154

See footnote at end of table, p. 200.

Table 35.--Mean concentrations and coefficients of variation of storm-runoff constituents and properties at urban stations on canals, streams, and storm conduits--Continued

Constituent or property	Number of samples	Mean concentration	Coefficient of variation
Red Butte Creek below reservoir (at canyon mouth) (10172220)--Continued			
Carbon, organic dissolved (mg/L)	7	5.2	43
Sediment, suspended (mg/L)	0	---	---
Cadmium, total recoverable (ug/L)	5	.40	136
Cadmium, suspended recoverable (ug/L)	0	---	---
Cadmium, dissolved (ug/L)	8	1.1	31
Chromium, total recoverable (ug/L)	7	5.1	81
Chromium, suspended recoverable (ug/L)	2	10	<1
Chromium, dissolved (ug/L)	2	<.01	<1
Copper, total recoverable (ug/L)	7	27	84
Copper, suspended recoverable (ug/L)	2	12	141
Copper, dissolved (ug/L)	8	13	38
Iron, total recoverable (ug/L)	2	265	18
Iron, suspended recoverable (ug/L)	1	90	---
Iron, dissolved (ug/L)	8	36	122
Lead, total recoverable (ug/L)	7	5.3	67
Lead, suspended recoverable (ug/L)	2	<.01	<1
Lead, dissolved (ug/L)	8	16	103
Mercury, total recoverable (ug/L)	2	.05	141
Mercury, suspended recoverable (ug/L)	2	.05	141
Mercury, dissolved (ug/L)	2	.05	141
Zinc, total recoverable (ug/L)	7	47	91
Zinc, suspended recoverable (ug/L)	4	38	164
Zinc, dissolved (ug/L)	8	7.50	103
Thirteenth South, South Conduit, at Jordan River (10172350)			
Specific conductance (umho/cm at 25^{o}C)	13	724	53
pH (units)[1]	12	7.7	84
Oxygen demand, chemical (mg/L)	11	112	71
Oxygen demand, biochemical, carbonaceous, 5 day (BOD_5) (mg/L)	4	9.10	44
Oxygen demand, biochemical, carbonaceous ultimate, (BOD_u) (mg/L)	4	22	83

See footnote at end of table, p. 200.

Table 35.--Mean concentrations and coefficients of variation of storm-runoff constituents and properties at urban stations on canals, streams, and storm conduits--Continued

Constituent or property	Number of samples	Mean concentration	Coefficient of variation
Thirteenth South, South Conduit, at Jordan River (10172350)--Continued			
Chloride, dissolved (mg/L)	13	74	80
Fluoride, dissolved (mg/L)	9	.36	50
Solids, dissolved, residue at 180°C (mg/L)	11	427	51
Solids, suspended, residue at 105°C (mg/L)	13	150	112
Nitrogen, nitrate dissolved (mg/L as N)	13	.92	101
Nitrogen, ammonia dissolved (mg/L as N)	13	.16	99
Nitrogen, ammonia + organic total (mg/L as N)	13	2.5	64
Phosphorus, total (mg/L)	13	.40	70
Phosphorus, dissolved (mg/L)	13	.09	57
Carbon, organic suspended total (mg/L)	11	2.9	49
Carbon, organic dissolved (mg/L)	11	19	58
Sediment, suspended (mg/L)	4	150	105
Cadmium, total recoverable (ug/L)	8	1.50	61
Cadmium, suspended recoverable (ug/L)	3	.67	86
Cadmium, dissolved (ug/L)	13	1.2	35
Chromium, total recoverable (ug/L)	12	15	59
Chromium, suspended recoverable (ug/L)	4	17	55
Chromium, dissolved (ug/L)	4	.25	200
Copper, total recoverable (ug/L)	12	45	71
Copper, suspended recoverable (ug/L)	8	35	99
Copper, dissolved (ug/L)	13	14	69
Iron, total recoverable (ug/L)	4	3,550	76
Iron, suspended recoverable (ug/L)	4	3,520	75
Iron, dissolved (ug/L)	13	69	87
Lead, total recoverable (ug/L)	12	170	73
Lead, suspended recoverable (ug/L)	7	134	66
Lead, dissolved (ug/L)	13	18	76
Mercury, total recoverable (ug/L)	4	.08	66
Mercury, suspended recoverable (ug/L)	4	.05	115
Mercury, dissolved (ug/L)	4	.03	200
Zinc, total recoverable (ug/L)	12	205	62
Zinc, suspended recoverable (ug/L)	11	135	95
Zinc, dissolved (ug/L)	13	56	114

Table 35.--Mean concentrations and coefficients of variation of storm-runoff constituents and properties at urban stations on canals, streams, and storm conduits--Continued

Constituent or property	Number of samples	Mean concentration	Coefficient of variation
Thirteenth South, North Conduit, at Jordan River (10172350)			
Specific conductance (umho/cm at 25°C)	12	665	46
pH (units)[1]	11	7.6	112
Oxygen demand, chemical (mg/L)	10	84	59
Oxygen demand, biochemical, carbonaceous, 5 day (BOD_5) (mg/L)	4	10	50
Oxygen demand, biochemical, carbonaceous, ultimate, (BOD_u) (mg/L)	4	22	60
Chloride, dissolved (mg/L)	12	59	66
Fluoride, dissolved (mg/L)	8	.26	45
Solids, dissolved, residue at 180°C (mg/L)	10	377	37
Solids, suspended, residue at 105°C (mg/L)	12	224	99
Nitrogen, nitrate dissolved (mg/L as N)	12	.81	65
Nitrogen, ammonia dissolved (mg/L as N)	12	.13	88
Nitrogen, ammonia + organic total (mg/L as N)	12	2.5	44
Phosphorus, total (mg/L)	12	.41	60
Phosphorus, dissolved (mg/L)	12	.08	59
Carbon, organic suspended total (mg/L)	10	5.9	130
Carbon, organic dissolved (mg/L)	10	23	106
Sediment, suspended (mg/L)	6	313	108
Cadmium, total recoverable (ug/L)	7	1.3	37
Cadmium, suspended recoverable (ug/L)	3	<.01	<1
Cadmium, dissolved (ug/L)	12	1.9	90
Chromium, total recoverable (ug/L)	11	13	53
Chromium, suspended recoverable (ug/L)	4	20	2
Chromium, dissolved (ug/L)	4	.25	200
Copper, total recoverable (ug/L)	11	33	70
Copper, suspended recoverable (ug/L)	6	25	107
Copper, dissolved (ug/L)	12	10	54
Iron, total recoverable (ug/L)	4	7,350	65
Iron, suspended recoverable (ug/L)	3	6,130	83
Iron, dissolved (ug/L)	11	100	168
Lead, total recoverable (ug/L)	11	147	84
Lead, suspended recoverable (ug/L)	6	150	91
Lead, dissolved (ug/L)	12	18	88
Mercury, total recoverable (ug/L)	4	.20	<1
Mercury, suspended recoverable (ug/L)	4	.20	<1
Mercury, dissolved (ug/L)	4	<.01	<1

See footnote at end of table, p. 200.

Table 35.--Mean concentrations and coefficients of variation of storm-runoff constituents and properties at urban stations on canals, streams, and storm conduits--Continued

Constituent or property	Number of samples	Mean concentration	Coefficient of variation
Thirteenth South, North Conduit, at Jordan River (10172350)--Continued			
Zinc, total recoverable (ug/L)	11	143	68
Zinc, suspended recoverable (ug/L)	9	97	102
Zinc, dissolved (ug/L)	11	33	104
Eighth South, South Conduit, at Jordan River (10172371)			
Specific conductance (umho/cm at 25°C)	20	1,249	68
pH (units)[1]	14	7.7	77
Oxygen demand, chemical (mg/L)	14	56	53
Oxygen demand, biochemical, carbonaceous, 5 day (BOD_5) (mg/L)	4	8.30	64
Oxygen demand, biochemical, carbonaceous, ultimate, (BOD_u) (mg/L)	4	17	41
Chloride, dissolved (mg/L)	19	193	82
Fluoride, dissolved (mg/L)	13	.50	23
Solids, dissolved, residue at 180°C (mg/L)	14	833	28
Solids, suspended, residue at 105°C (mg/L)	19	100	114
Nitrogen, nitrate dissolved (mg/L)	17	.92	93
Nitrogen, ammonia dissolved (mg/L)	17	.47	141
Nitrogen, ammonia + organic total (mg/L as N)	18	2.8	47
Phosphorus, total (mg/L)	18	.80	61
Phosphorus, dissolved (mg/L)	18	.50	89
Carbon, organic suspended total (mg/L)	13	1.8	68
Carbon, organic dissolved (mg/L)	17	16	38
Sediment, suspended (mg/L)	5	135	92
Cadmium, total recoverable (ug/L)	13	1.4	100
Cadmium, suspended recoverable (ug/L)	4	<.01	<1
Cadmium, dissolved (ug/L)	19	1	<1
Chromium, total recoverable (ug/L)	19	8.3	86
Chromium, suspended recoverable (ug/L)	6	8.7	114
Chromium, dissolved (ug/L)	6	2.50	133
Copper, total recoverable (ug/L)	19	36	113
Copper, suspended recoverable (ug/L)	10	15	101

See footnote at end of table, p. 200.

Table 35.--Mean concentrations and coefficients of variation of storm-runoff constituents and properties at urban stations on canals, streams, and storm conduits--Continued

Constituent or property	Number of samples	Mean concentration	Coefficient of variation
Eighth South, South Conduit, at Jordan River (10172371)--Continued			
Copper, dissolved (ug/L)	19	8.5	39
Iron, total recoverable (ug/L)	6	2,020	97
Iron, suspended recoverable (ug/L)	6	2,000	97
Iron, dissolved (ug/L)	19	51	84
Lead, total recoverable (ug/L)	19	163	140
Lead, suspended recoverable (ug/L)	6	87	102
Lead, dissolved (ug/L)	19	16	69
Mercury, total recoverable (ug/L)	6	.08	90
Mercury, suspended recoverable (ug/L)	6	.08	90
Mercury, dissolved (ug/L)	6	.01	<1
Zinc, total recoverable (ug/L)	19	193	97
Zinc, suspended recoverable (ug/L)	14	76	96
Zinc, dissolved (ug/L)	19	37	79
Eighth South, Middle Conduit, at Jordan River (10172372)			
Specific conductance (umho/cm at 25°C)	19	825	72
pH (units)[1]	15	7.6	108
Oxygen demand, chemical (mg/L)	15	112	96
Oxygen demand, biochemical, carbonaceous,5 day (BOD_5) (mg/L)	7	12	63
Oxygen demand, biochemical, carbonaceous, ultimate, (BOD_u) (mg/L)	7	27	68
Chloride, dissolved (mg/L)	18	95	85
Fluoride, dissolved (mg/L)	10	.41	42
Solids, dissolved, residue at 180°C (mg/L)	15	476	55
Solids, suspended, residue at 105°C (mg/L)	18	515	287
Nitrogen, nitrate dissolved (mg/L as N)	17	1.1	84
Nitrogen, ammonia dissolved (mg/L as N)	17	.43	98
Nitrogen, ammonia + organic total (mg/L as N)	17	4.0	89
Phosphorus, total (mg/L)	17	1.20	137
Phosphorus, dissolved (mg/L)	17	.33	78
Carbon, organic suspended total (mg/L)	13	7.6	157

See footnote at end of table, p. 200.

Table 35.--Mean concentrations and coefficients of variation of storm-runoff constituents and properties at urban stations on canals, streams, and storm conduits--Continued

Constituent or property	Number of samples	Mean concentration	Coefficient of variation
Eighth South, Middle Conduit, at Jordan River (10172372)--Continued			
Carbon, organic dissolved (mg/L)	16	14	31
Sediment, suspended (mg/L)	9	647	108
Cadmium, total recoverable (ug/L)	10	3.80	163
Cadmium, suspended recoverable (ug/L)	4	3.50	200
Cadmium, dissolved (ug/L)	18	1.2	67
Chromium, total recoverable (ug/L)	18	24	79
Chromium, suspended recoverable (ug/L)	8	29	84
Chromium, dissolved (ug/L)	8	1.9	154
Copper, total recoverable (ug/L)	18	84	200
Copper, suspended recoverable (ug/L)	10	30	129
Copper, dissolved (ug/L)	17	13	80
Iron, total recoverable (ug/L)	8	7,700	109
Iron, suspended recoverable (ug/L)	7	6,900	127
Iron, dissolved (ug/L)	17	119	176
Lead, total recoverable (ug/L)	18	475	200
Lead, suspended recoverable (ug/L)	10	364	125
Lead, dissolved (ug/L)	18	15	72
Mercury, total recoverable (ug/L)	8	.28	86
Mercury, suspended recoverable (ug/L)	8	.28	86
Mercury, dissolved (ug/L)	8	<.01	<1
Zinc, total recoverable (ug/L)	18	463	173
Zinc, suspended recoverable (ug/L)	14	233	150
Zinc, dissolved (ug/L)	17	55	85
Eighth South, North Conduit, at Jordan River (10172373)			
Specific conductance (umho/cm at 25°C)	20	655	69
pH (units)[1]	14	7.3	111
Oxygen demand, chemical (mg/L)	15	120	94
Oxygen demand, biochemical, carbonaceous, 5 day (BOD_5) (mg/L)	7	15	92
Oxygen demand, biochemical, carbonaceous, ultimate, (BOD_u) (mg/L)	7	31	79

See footnote at end of table, p. 200.

Table 35.--Mean concentrations and coefficients of variation of storm-runoff constituents and properties at urban stations on canals, streams, and storm conduits--Continued

Constituent or property	Number of samples	Mean concentration	Coefficient of variation
Eighth South, North Conduit, at Jordan River (10172373)--Continued			
Chloride, dissolved (mg/L)	19	87	77
Fluoride, dissolved (mg/L)	11	.45	25
Solids, dissolved, residue at 180°C (mg/L)	15	531	57
Solids, suspended, residue at 105°C (mg/L)	19	245	135
Nitrogen, nitrate dissolved (mg/L as N)	18	.72	118
Nitrogen, ammonia dissolved (mg/L as N)	18	.37	118
Nitrogen, ammonia + organic total (mg/L as N)	18	4.4	68
Phosphorus, total (mg/L)	18	1	46
Phosphorus, dissolved (mg/L)	18	.50	91
Carbon, organic suspended total (mg/L)	12	4.4	138
Carbon, organic dissolved (mg/L)	14	16	39
Sediment, suspended (mg/L)	9	200	112
Cadmium, total recoverable (ug/L)	11	2.6	115
Cadmium, suspended recoverable (ug/L)	5	<.01	<1
Cadmium, dissolved (ug/L)	19	1.00	33
Chromium, total recoverable (ug/L)	17	118	151
Chromium, suspended recoverable (ug/L)	8	114	111
Chromium, dissolved (ug/L)	8	27	188
Copper, total recoverable (ug/L)	19	132	99
Copper, suspended recoverable (ug/L)	12	99	105
Copper, dissolved (ug/L)	19	15	99
Iron, total recoverable (ug/L)	8	6,120	80
Iron, suspended recoverable (ug/L)	7	5,710	90
Iron, dissolved (ug/L)	18	290	171
Lead, total recoverable (ug/L)	19	550	132
Lead, suspended recoverable (ug/L)	10	395	97
Lead, dissolved (ug/L)	19	20	86
Mercury, total recoverable (ug/L)	8	.26	64
Mercury, suspended recoverable (ug/L)	8	.24	67
Mercury, dissolved (ug/L)	8	.03	282
Zinc, total recoverable (ug/L)	19	680	107
Zinc, suspended recoverable (ug/L)	14	290	109
Zinc, dissolved (ug/L)	18	120	159

See footnote at end of table, p. 200.

Table 35.--Mean concentrations and coefficients of variation of storm-runoff constituents and properties at urban stations on canals, streams, and storm conduits--Continued

Constituent or property	Number of samples	Mean concentration	Coefficient of variation
City Creek at Memory Park (channel only at canyon mouth) (10172499)			
Specific conductance (umho/cm at 25°C)	13	440	20
pH (units)[1]	11	7.9	78
Oxygen demand, chemical (mg/L)	11	30	75
Oxygen demand, biochemical, carbonaceous, 5 day (BOD_5) (mg/L)	2	3.60	15
Oxygen demand, biochemical, carbonaceous ultimate, (BOD_u) (mg/L)	2	8.20	48
Chloride, dissolved (mg/L)	13	27	46
Fluoride, dissolved (mg/L)	10	.25	57
Solids, dissolved, residue at 180°C (mg/L)	11	254	22
Solids, suspended, residue at 105°C (mg/L)	13	56	118
Nitrogen, nitrate dissolved (mg/L as N)	13	.32	46
Nitrogen, ammonia dissolved (mg/L as N)	13	.07	101
Nitrogen, ammonia + organic total (mg/L as N)	13	.97	56
Phosphorus, total (mg/L)	13	.17	91
Phosphorus, dissolved (mg/L)	13	.05	78
Carbon, organic suspended total (mg/L)	11	.89	84
Carbon, organic dissolved (mg/L)	12	9.5	50
Sediment, suspended (mg/L)	1	376	--
Cadmium, total recoverable (ug/L)	9	.67	167
Cadmium, suspended recoverable (ug/L)	1	<.01	--
Cadmium, dissolved (ug/L)	13	1.00	<1
Chromium, total recoverable (ug/L)	12	6.9	69
Chromium, suspended recoverable (ug/L)	3	6.7	86
Chromium, dissolved (ug/L)	3	<.01	<1
Copper, total recoverable (ug/L)	12	15	73
Copper, suspended recoverable (ug/L)	5	10	60
Copper, dissolved (ug/L)	13	10	73
Iron, total recoverable (ug/L)	3	3,250	130
Iron, suspended recoverable (ug/L)	2	4,750	99
Iron, dissolved (ug/L)	13	34	164
Lead, total recoverable (ug/L)	12	34	141
Lead, suspended recoverable (ug/L)	5	45	146
Lead, dissolved (ug/L)	13	10	50
Mercury, total recoverable (ug/L)	3	.07	86
Mercury, suspended recoverable (ug/L)	3	.03	173
Mercury, dissolved (ug/L)	3	.03	173

See footnote at end of table, p. 200.

Table 35.--Mean concentrations and coefficients of variation of storm-runoff constituents and properties at urban stations on canals, streams, and storm conduits--Continued

Constituent or property	Number of samples	Mean concentration	Coefficient of variation
City Creek at Memory Park (channel only at canyon mouth) (10172499)--Continued			
Zinc, total recoverable (ug/L)	12	58	77
Zinc, suspended recoverable (ug/L)	11	45	91
Zinc, dissolved (ug/L)	13	13	92
North Temple Conduit at Jordan River (10172520)			
Specific conductance (umho/cm at 25°C)	12	648	75
pH (units)[1]	11	7.8	53
Oxygen demand, chemical (mg/L)	10	103	51
Oxygen demand, biochemical, carbonaceous, 5 day (BOD_5) (mg/L)	4	11	61
Oxygen demand, biochemical, carbonaceous, ultimate, (BOD_u) (mg/L)	4	22	57
Chloride, dissolved (mg/L)	13	68	117
Fluoride, dissolved (mg/L)	7	.37	43
Solids, dissolved, residue at 180°C (mg/L)	10	439	80
Solids, suspended, residue at 105°C (mg/L)	13	303	99
Nitrogen, nitrate dissolved (mg/L as N)	11	1.1	80
Nitrogen, ammonia dissolved (mg/L as N)	11	.30	131
Nitrogen, ammonia + organic total (mg/L as N)	11	2.70	81
Phosphorus, total (mg/L)	11	1.1	81
Phosphorus, dissolved (mg/L)	13	.29	152
Carbon, organic suspended total (mg/L)	6	3.8	79
Carbon, organic dissolved (mg/L)	8	18	87
Sediment, suspended (mg/L)	7	478	104
Cadmium, total recoverable (ug/L)	6	2	104
Cadmium, suspended recoverable (ug/L)	3	.33	173
Cadmium, dissolved (ug/L)	13	2.3	192
Chromium, total recoverable (ug/L)	12	21	92
Chromium, suspended recoverable (ug/L)	6	27	99
Chromium, dissolved (ug/L)	6	.67	181
Copper, total recoverable (ug/L)	12	93	125
Copper, suspended recoverable (ug/L)	8	64	80

See footnote at end of table, p. 200.

Table 35.--Mean concentrations and coefficients of variation of storm-runoff constituents and properties at urban stations on canals, streams, and storm conduits--Continued

Constituent or property	Number of samples	Mean concentration	Coefficient of variation
North Temple Conduit at Jordan River (10172[illegible]20)--Continued			
Copper, dissolved (ug/L)	13	11	81
Iron, total recoverable (ug/L)	6	13,300	110
Iron, suspended recoverable (ug/L)	6	13,300	110
Iron, dissolved (ug/L)	13	53	86
Lead, total recoverable (ug/L)	12	410	166
Lead, suspended recoverable (ug/L)	6	283	57
Lead, dissolved (ug/L)	13	17	68
Mercury, total recoverable (ug/L)	6	.30	105
Mercury, suspended recoverable (ug/L)	6	.30	105
Mercury, dissolved (ug/L)	6	<.01	<1
Zinc, total recoverable (ug/L)	12	309	120
Zinc, suspended recoverable (ug/L)	10	177	89
Zinc, dissolved (ug/L)	13	25	73
Ninth West Conduit at 536 North (404653111545801)			
Specific conductance (umho/cm at 25°C)	11	130	43
pH (units)[1]	11	7.30	72
Oxygen demand, chemical (mg/L)	7	48	88
Oxygen demand, biochemical, carbonaceous, 5 day (BOD_5) (mg/L)	11	227	133
Oxygen demand, biochemical, carbonaceous, ultimate, (BOD^u) (mg/L)	4	24	64
Chloride, dissolved (mg/L)	11	9.5	57
Fluoride, dissolved (mg/L)	--	--	--
Solids, dissolved, residue at 180°C (mg/L)	11	106	66
Solids, suspended, residue at 105°C (mg/L)	11	75	51
Nitrogen, nitrate dissolved (mg/L as N)	10	.68	66
Nitrogen, ammonia dissolved (mg/L as N)	10	.48	68
Nitrogen, ammonia + organic total (mg/L as N)	10	2.3	84
Phosphorus, total (mg/L)	10	.29	47
Phosphorus, dissolved (mg/L)	10	.19	61
Carbon, organic suspended total (mg/L)	9	52	130

See footnote at end of table, p. 200.

Table 35.--Mean concentrations and coefficients of variation of storm-runoff constituents and properties at urban stations on canals, streams, and storm conduits--Continued

Constituent or property	Number of samples	Mean concentration	Coefficient of variation
Ninth West Conduit at 536 North (404653111545801)--Continued			
Carbon, organic dissolved (mg/L)	9	2.3	51
Sediment, suspended (mg/L)	9	91	103
Cadmium, total recoverable (ug/L)	--	--	--
Cadmium, suspended recoverable (ug/L)	10	1.40	60
Cadmium, dissolved (ug/L)	--	--	--
Chromium, total recoverable (ug/L)	11	13	36
Chromium, suspended recoverable (ug/L)	8	10	52
Chromium, dissolved (ug/L)	11	2.2	88
Copper, total recoverable (ug/L)	11	35	36
Copper, suspended recoverable (ug/L)	9	17	55
Copper, dissolved (ug/L)	9	18	50
Iron, total recoverable (ug/L)	11	2,075	67
Iron, suspended recoverable (ug/L)	11	2,120	66
Iron, dissolved (ug/L)	10	75	54
Lead, total recoverable (ug/L)	10	188	72
Lead, suspended recoverable (ug/L)	9	176	76
Lead, dissolved (ug/L)	9	20	59
Mercury, total recoverable (ug/L)	11	.10	77
Mercury, suspended recoverable (ug/L)	10	.07	117
Mercury, dissolved (ug/L)	11	.06	235
Zinc, total recoverable (ug/L)	11	173	55
Zinc, suspended recoverable (ug/L)	10	126	62
Zinc, dissolved (ug/L)	10	54	54

[1]Mean pH calculated as a true mean using the negative logarithm of the hydrogen ion.

Table 36.--Mean concentrations and coefficients of variation of baseline-flow and base-flow constituents and properties at urban stations on canals, streams, and storm conduits

[Zero indicates a value of zero or less than $1x10^{-6}$. Dash (--) indicates no data.]

Constituent or property	Number of samples	Mean concentration	Coefficient of variation
Upper Canal at 5800 South (10167122)			
Specific conductance (umho/cm at 25°C)	1	1,340	--
pH (units)[1]	1	7.4	--
Oxygen demand, chemical (mg/L)	1	45	--
Oxygen demand, biochemical carbonaceous 5 day (BOD_5) (mg/L)	0	--	--
Oxygen demand, biochemical carbonaceous ultimate (BOD_u) (mg/L)	0	--	--
Chloride, dissolved (mg/L)	1	220	--
Fluoride, dissolved (mg/L)	1	.70	--
Solids, dissolved, residue at 180°C (mg/L)	1	840	--
Solids, suspended, residue at 105°C (mg/L)	1	79	--
Nitrogen, nitrate dissolved (mg/L as N)	1	.06	--
Nitrogen, ammonia dissolved (mg/L as N)	1	.02	--
Nitrogen, ammonia + organic total (mg/L as N)	1	2.3	--
Phosphorus, total (mg/L)	1	.24	--
Phosphorus, dissolved (mg/L)	1	.01	--
Carbon, organic suspended total (mg/L)	1	5.4	--
Carbon, organic dissolved (mg/L)	0	--	--
Sediment, suspended (mg/L)	0	--	--
Cadmium, total recoverable (ug/L)	1	<.01	--
Cadmium, suspended recoverable (ug/L)	1	<.01	--
Cadmium, dissolved (ug/L)	1	2.0	--
Chromium, total recoverable (ug/L)	1	10	--
Chromium, suspended recoverable (ug/L)	0	--	--
Chromium, dissolved (ug/L)	0	--	--
Copper, total recoverable (ug/L)	1	9.0	--
Copper, suspended recoverable (ug/L)	0	--	--
Copper, dissolved (ug/L)	1	10	--
Iron, total recoverable (ug/L)	0	--	--
Iron, suspended recoverable (ug/L)	0	--	--
Iron, dissolved (ug/L)	1	240	--
Lead, total recoverable (ug/L)	1	12	--

See footnote at end of table, p. 223.

Table 36.--Mean concentrations and coefficients of variation of baseline-flow and base-flow constituents and properties at urban stations on canals, streams, and storm conduits--Continued

Constituent or property	Number of samples	Mean concentration	Coefficient of variation
Upper Canal at 5800 South (10167122)--Continued			
Lead, suspended recoverable (ug/L)	0	---	---
Lead, dissolved (ug/L)	1	10	---
Mercury, total recoverable (ug/L)	0	---	---
Mercury, suspended recoverable (ug/L)	0	---	---
Mercury, dissolved (ug/L)	0	---	---
Zinc, total recoverable (ug/L)	1	50	---
Zinc, suspended recoverable (ug/L)	1	20	---
Zinc, dissolved (ug/L)	1	28	---
Upper Canal at Wilde Rose Lane (10167125)			
Specific conductance (umho/cm at 25°C)	2	790	113
pH (units)[1]	3	7.7	96
Oxygen demand, chemical	3	47	116
Oxygen demand, biochemical (mg/L) carbonaceous 5 day (BOD_5) (mg/L)	2	3.0	56
Oxygen demand, biochemical carbonaceous ultimate (BOD_u) (mg/L)	2	5.3	45
Chloride, dissolved (mg/L)	3	91	150
Fluoride, dissolved (mg/L)	0	---	---
Solids, dissolved, residue at 180°C (mg/L)	3	380	123
Solids, suspended, residue at 105°C (mg/L)	3	59	95
Nitrogen, nitrate dissolved (mg/L as N)	3	.18	44
Nitrogen, ammonia dissolved (mg/L as N)	3	.10	33
Nitrogen, ammonia + organic total (mg/L as N)	3	.79	25
Phosphorus, total (mg/L)	3	.16	84
Phosphorus, dissolved (mg/L)	3	.03	33
Carbon, organic suspended total (mg/L)	2	2.6	102
Carbon, organic dissolved (mg/L)	3	6.0	41
Sediment, suspended (mg/L)	1	280	---
Cadmium, total recoverable (ug/L)	0	---	---
Cadmium, suspended recoverable (ug/L)	0	---	---
Cadmium, dissolved (ug/L)	3	1.0	<1

See footnote at end of table, p. 223.

Table 36.--Mean concentrations and coefficients of variation of baseline-flow and base-flow constituents and properties at urban stations on canals, streams, and storm conduits--Continued

Constituent or property	Number of samples	Mean concentration	Coefficient of variation
Upper Canal at Wilde Rose Lane (10167125)--Continued			
Chromium, total recoverable (ug/L)	3	13	43
Chromium, suspended recoverable (ug/L)	3	12	32
Chromium, dissolved (ug/L)	3	1.0	173
Copper, total recoverable (ug/L)	3	12	30
Copper, suspended recoverable (ug/L)	3	8.0	54
Copper, dissolved (ug/L)	3	4.0	86
Iron, total recoverable (ug/L)	3	1,600	62
Iron, suspended recoverable (ug/L)	3	1,500	67
Iron, dissolved (ug/L)	3	48	62
Lead, total recoverable (ug/L)	3	14	37
Lead, suspended recoverable (ug/L)	3	7.3	41
Lead, dissolved (ug/L)	3	6.7	34
Mercury, total recoverable (ug/L)	3	.10	100
Mercury, suspended recoverable (ug/L)	3	.10	100
Mercury, dissolved (ug/L)	3	<.01	<1
Zinc, total recoverable (ug/L)	3	43	48
Zinc, suspended recoverable (ug/L)	3	20	86
Zinc, dissolved (ug/L)	3	26	24
Jordan and Salt Lake City Canal at Zenith Avenue (10167149)			
Specific conductance (umho/cm at 25°C)	4	890	65
pH (units)[1]	4	8.0	53
Oxygen demand, chemical (mg/L)	4	35	51
Oxygen demand, biochemical carbonaceous 5 day (BOD_5) (mg/L)	2	3.2	26
Oxygen demand, biochemical carbonaceous ultimate (BOD_u) (mg/L)	2	6.3	33
Chloride, dissolved (mg/L)	4	170	32
Fluoride, dissolved (mg/L)	2	.70	<1
Solids, dissolved, residue at 180°C (mg/L)	4	720	24
Solids, suspended, residue at 105°C (mg/L)	4	49	53
Nitrogen, nitrate dissolved (mg/L as N)	4	.18	91

See footnote at end of table, p. 223.

Table 36.--Mean concentrations and coefficients of variation of baseline-flow and base-flow constituents and properties at urban stations on canals, streams, and storm conduits--Continued

Constituent or property	Number of samples	Mean concentration	Coefficient of variation
Jordan and Salt Lake City Canal at Zenith Avenue (10167149)--Contitnued			
Nitrogen, ammonia dissolved (mg/L as N)	4	0.06	102
Nitrogen, ammonia + organic total (mg/L as N)	4	1.6	38
Phosphorus, total (mg/L)	4	.15	50
Phosphorus, dissolved (mg/L)	4	.05	69
Carbon, organic suspended total (mg/L)	3	.40	108
Carbon, organic dissolved (mg/L)	4	15	38
Sediment, suspended (mg/L)	1	160	--
Cadmium, total recoverable (ug/L)	2	.50	141
Cadmium, suspended recoverable (ug/L)	1	<.01	--
Cadmium, dissolved (ug/L)	4	1.0	<1
Chromium, total recoverable (ug/L)	4	8.0	66
Chromium, suspended recoverable (ug/L)	2	5.0	141
Chromium, dissolved (ug/L)	2	<.01	<1
Copper, total recoverable (ug/L)	4	11	29
Copper, suspended recoverable (ug/L)	2	4.5	47
Copper, dissolved (ug/L)	4	7.0	54
Iron, total recoverable (ug/L)	2	740	49
Iron, suspended recoverable (ug/L)	2	720	51
Iron, dissolved (ug/L)	4	39	121
Lead, total recoverable (ug/L)	4	21	71
Lead, suspended recoverable (ug/L)	2	7.5	66
Lead, dissolved (ug/L)	4	7.0	54
Mercury, total recoverable (ug/L)	2	.15	47
Mercury, suspended recoverable (ug/L)	2	.15	47
Mercury, dissolved (ug/L)	2	.01	<1
Zinc, total recoverable (ug/L)	4	45	66
Zinc, suspended recoverable (ug/L)	4	20	91
Zinc, dissolved (ug/L)	4	32	72
Little Cottonwood Creek at canyon mouth (channel only) (10167499)			
Specific conductance (umho/cm at 25°C)	5	300	35
pH (units)[1]	5	7.5	45
Oxygen demand, chemical (mg/L)	5	10	51

See footnote at end of table, p. 223.

Table 36.--Mean concentrations and coefficients of variation of baseline-flow and base-flow constituents and properties at urban stations on canals, streams, and storm conduits--Continued

Constituent or property	Number of samples	Mean concentration	Coefficient of variation
Little Cottonwood Creek at canyon mouth (channel only) (10167499)--Continued			
Oxygen demand, biochemical carbonaceous 5 day (BOD_5) (mg/L)	3	1.9	16
Oxygen demand, biochemical carbonaceous ultimate (BOD_u) (mg/L)	3	4.3	2
Chloride, dissolved (mg/L)	5	20	28
Fluoride, dissolved (mg/L)	2	.30	<1
Solids, dissolved, residue at 180°C (mg/L)	5	160	16
Solids, suspended, residue at 105°C (mg/L)	5	5.8	58
Nitrogen, nitrate dissolved (mg/L as N)	5	.41	55
Nitrogen, ammonia dissolved (mg/L as N)	5	.05	67
Nitrogen, ammonia + organic total (mg/L as N)	5	.41	24
Phosphorus, total (mg/L)	5	.03	117
Phosphorus, dissolved (mg/L)	5	.02	100
Carbon, organic suspended total (mg/L)	4	.15	86
Carbon, organic dissolved (mg/L)	5	3.6	54
Sediment, suspended (mg/L)	1	1.0	--
Cadmium, total recoverable (ug/L)	2	1.0	<1
Cadmium, suspended recoverable (ug/L)	0	--	--
Cadmium, dissolved (ug/L)	5	1.0	0
Chromium, total recoverable (ug/L)	5	6.8	124
Chromium, suspended recoverable (ug/L)	3	10	100
Chromium, dissolved (ug/L)	3	<.01	<1
Copper, total recoverable (ug/L)	5	9.8	57
Copper, suspended recoverable (ug/L)	3	4.0	129
Copper, dissolved (ug/L)	5	7.6	43
Iron, total recoverable (ug/L)	3	350	107
Iron, suspended recoverable (ug/L)	3	320	117
Iron, dissolved (ug/L)	5	32	26
Lead, total recoverable (ug/L)	5	10	55
Lead, suspended recoverable (ug/L)	3	8.7	63
Lead, dissolved (ug/L)	5	5.2	88
Mercury, total recoverable (ug/L)	3	.07	86

See footnote at end of table, p. 223.

Table 36.--Mean concentrations and coefficients of variation of baseline-flow and base-flow constituents and properties at urban stations on canals, streams, and storm conduits--Continued

Constituent or property	Number of samples	Mean concentration	Coefficient of variation
Little Cottonwood Creek at canyon mouth (channel only) (10167499)--Continued			
Mercury, suspended recoverable (ug/L)	3	0.07	86
Mercury, dissolved (ug/L)	3	<.01	<1
Zinc, total recoverable (ug/L)	5	60	20
Zinc, suspended recoverable (ug/L)	5	17	54
Zinc, dissolved (ug/L)	5	43	23
Little Cottonwood Creek at Jordan River (10168000)			
Specific conductance (umho/cm at 25°C)	8	935	40
pH (units)[1]	8	7.9	43
Oxygen demand, chemical (mg/L)	7	35	84
Oxygen demand, biochemical carbonaceous 5 day (BOD_5) (mg/L)	4	4.0	103
Oxygen demand, biochemical carbonaceous ultimate (BOD_u) (mg/L)	4	10	131
Chloride, dissolved (mg/L)	8	130	49
Fluoride, dissolved (mg/L)	4	.48	43
Solids, dissolved, residue at 180°C (mg/L)	7	660	25
Solids, suspended, residue at 105°C (mg/L)	8	30	89
Nitrogen, nitrate dissolved (mg/L as N)	8	.57	69
Nitrogen, ammonia dissolved (mg/L as N)	8	.10	114
Nitrogen, ammonia + organic total (mg/L as N)	8	1.5	68
Phosphorus, total (mg/L)	8	.15	67
Phosphorus, dissolved (mg/L)	8	.05	69
Carbon, organic suspended total (mg/L)	7	1.8	90
Carbon, organic dissolved (mg/L)	7	9.6	36
Sediment, suspended (mg/L)	2	190	26
Cadmium, total recoverable (ug/L)	3	2.3	98
Cadmium, suspended recoverable (ug/L)	1	<.01	—
Cadmium, dissolved (ug/L)	8	1.5	94
Chromium, total recoverable (ug/L)	7	7.4	52
Chromium, suspended recoverable (ug/L)	4	7.5	66
Chromium, dissolved (ug/L)	4	.75	200
Copper, total recoverable (ug/L)	7	10	51
Copper, suspended recoverable (ug/L)	5	5.6	86

See footnote at end of table, p. 223.

Table 36.--Mean concentrations and coefficients of variation of baseline-flow and base-flow constituents and properties at urban stations on canals, streams, and storm conduits--Continued

Constituent or property	Number of samples	Mean concentration	Coefficient of variation
Little Cottonwood Creek at Jordan River (10168000)--Continued			
Copper, dissolved (ug/L)	8	7.6	47
Iron, total recoverable (ug/L)	4	110	64
Iron, suspended recoverable (ug/L)	4	1,100	66
Iron, dissolved (ug/L)	8	23	56
Lead, total recoverable (ug/L)	7	19	105
Lead, suspended recoverable (ug/L)	4	22	112
Lead, dissolved (ug/L)	8	7.3	80
Mercury, total recoverable (ug/L)	4	.10	81
Mercury, suspended recoverable (ug/L)	4	.10	81
Mercury, dissolved (ug/L)	4	.01	<1
Zinc, total recoverable (ug/L)	7	64	15
Zinc, suspended recoverable (ug/L)	7	37	43
Zinc, dissolved (ug/L)	8	29	59
Big Cottonwood Creek at canyon mouth (channel only) (10168499)			
Specific conductance (umho/cm at 25°C)	4	335	38
pH (units)[1]	4	7.7	112
Oxygen demand, chemical (mg/L)	4	12	51
Oxygen demand, biochemical carbonaceous 5 day (BOD_5) (mg/L)	3	1.3	22
Oxygen demand, biochemical carbonaceous ultimate (BOD_u) (mg/L)	3	3.5	25
Chloride, dissolved (mg/L)	4	11	66
Fluoride, dissolved (mg/L)	1	.20	--
Solids, dissolved, residue at 180°C (mg/L)	4	180	29
Solids, suspended, residue at 105°C (mg/L)	4	5.5	101
Nitrogen, nitrate dissolved (mg/L as N)	4	.12	76
Nitrogen, ammonia dissolved (mg/L as N)	4	.03	38
Nitrogen, ammonia + organic total (mg/L as N)	4	.70	50
Phosphorus, total (mg/L)	4	.03	60
Phosphorus, dissolved (mg/L)	4	.02	85
Carbon, organic suspended total (mg/L)	4	.25	69

See footnote at end of table, p. 223.

Table 36.--Mean concentrations and coefficients of variation of baseline-flow and base-flow constituents and properties at urban stations on canals, streams, and storm conduits--Continued

Constituent or property	Number of samples	Mean concentration	Coefficient of variation
Big Cottonwood Creek at canyon mouth (channel only) (10168499)--Continued			
Carbon, organic dissolved (mg/L)	4	2.0	32
Sediment, suspended (mg/L)	1	3.0	--
Cadmium, total recoverable (ug/L)	1	<.01	--
Cadmium, suspended recoverable (ug/L)	1	<.01	--
Cadmium, dissolved (ug/L)	4	1.0	<1
Chromium, total recoverable (ug/L)	4	5.5	95
Chromium, suspended recoverable (ug/L)	3	6.7	86
Chromium, dissolved (ug/L)	3	<.01	<1
Copper, total recoverable (ug/L)	4	6.0	36
Copper, suspended recoverable (ug/L)	3	2.0	100
Copper, dissolved (ug/L)	4	10	114
Iron, total recoverable (ug/L)	3	490	127
Iron, suspended recoverable (ug/L)	2	100	60
Iron, dissolved (ug/L)	4	18	81
Lead, total recoverable (ug/L)	4	6.3	85
Lead, suspended recoverable (ug/L)	3	3.0	88
Lead, dissolved (ug/L)	4	7.0	36
Mercury, total recoverable (ug/L)	3	.07	86
Mercury, suspended recoverable (ug/L)	3	.07	86
Mercury, dissolved (ug/L)	3	<.01	<1
Zinc, total recoverable (ug/L)	4	23	22
Zinc, suspended recoverable (ug/L)	4	10	81
Zinc, dissolved (ug/L)	4	15	72
Holladay Drain at 4800 South at Big Cottonwood Creek (10168840)			
Specific conductance (umho/cm at 25°C)	4	436	60
pH (units)[1]	2	7.9	91
Oxygen demand, chemical (mg/L)	3	38	128
Oxygen demand, biochemical carbonaceous 5 day (BOD_5) (mg/L)	2	1.6	35
Oxygen demand, biochemical carbonaceous ultimate (BOD_u) (mg/L)	2	3.4	49

See footnote at end of table, p. 223.

Table 36.--Mean concentrations and coefficients of variation of baseline-flow and base-flow constituents and properties at urban stations on canals, streams, and storm conduits--Continued

Constituent or property	Number of samples	Mean concentration	Coefficient of variation
Holladay Drain at 4800 South at Big Cottonwood Creek (10168840)--Continued			
Chloride, dissolved (mg/L)	4	43	166
Fluoride, dissolved (mg/L)	2	.40	70
Solids, dissolved, residue at 180°C (mg/L)	3	380	69
Solids, suspended, residue at 105°C (mg/L)	4	16	55
Nitrogen, nitrate dissolved (mg/L as N)	4	.15	76
Nitrogen, ammonia dissolved (mg/L as N)	4	.03	69
Nitrogen, ammonia + organic total (mg/L as N)	4	1.5	109
Phosphorus, total (mg/L)	4	.44	178
Phosphorus, dissolved (mg/L)	4	.03	76
Carbon, organic suspended total (mg/L)	3	1.9	150
Carbon, organic dissolved (mg/L)	4	12	98
Sediment, suspended (mg/L)	2	59	93
Cadmium, total recoverable (ug/L)	2	.50	141
Cadmium, suspended recoverable (ug/L)	1	<.01	--
Cadmium, dissolved (ug/L)	4	1.0	<1
Chromium, total recoverable (ug/L)	4	24	78
Chromium, suspended recoverable (ug/L)	2	25	28
Chromium, dissolved (ug/L)	2	<.01	<1
Copper, total recoverable (ug/L)	4	50	173
Copper, suspended recoverable (ug/L)	2	2.5	28
Copper, dissolved (ug/L)	4	6.0	76
Iron, total recoverable (ug/L)	2	220	66
Iron, suspended recoverable (ug/L)	2	180	55
Iron, dissolved (ug/L)	4	36	93
Lead, total recoverable (ug/L)	4	33	157
Lead, suspended recoverable (ug/L)	2	<.01	<1
Lead, dissolved (ug/L)	4	6.8	63
Mercury, total recoverable (ug/L)	2	.10	<1
Mercury, suspended recoverable (ug/L)	2	.10	<1
Mercury, dissolved (ug/L)	2	<.01	<1
Zinc, total recoverable (ug/L)	4	130	92
Zinc, suspended recoverable (ug/L)	3	140	94
Zinc, dissolved (ug/L)	4	11	55

See footnote at end of table, p. 223.

Table 36.--Mean concentrations and coefficients of variation of baseline-flow and base-flow constituents and properties at urban stations on canals, streams, and storm conduits--Continued

Constituent or property	Number of samples	Mean concentration	Coefficient of variation
Big Cottonwood Creek at Jordan River (10169500)			
Specific conductance (umho/cm at 25°C)	4	960	46
pH (units)[1]	4	7.5	50
Oxygen demand, chemical (mg/L)	4	52	24
Oxygen demand, biochemical carbonaceous 5 day (BOD_5) (mg/L)	3	11	25
Oxygen demand, biochemical carbonaceous ultimate (BOD_u) (mg/L)	3	30	48
Chloride, dissolved (mg/L)	4	108	53
Fluoride, dissolved (mg/L)	1	.60	--
Solids, dissolved, residue at 180°C (mg/L)	4	530	36
Solids, suspended, residue at 105°C (mg/L)	4	21	24
Nitrogen, nitrate dissolved (mg/L as N)	4	.74	80
Nitrogen, ammonia dissolved (mg/L as N)	4	3.0	93
Nitrogen, ammonia + organic total (mg/L as N)	4	5.9	70
Phosphorus, total (mg/L)	4	2.3	68
Phosphorus, dissolved (mg/L)	4	1.9	75
Carbon, organic suspended total (mg/L)	4	2.5	73
Carbon, organic dissolved (mg/L)	4	11	32
Sediment, suspended (mg/L)	1	190	--
Cadmium, total recoverable (ug/L)	1	1.0	--
Cadmium, suspended recoverable (ug/L)	1	<.01	--
Cadmium, dissolved (ug/L)	4	1.3	40
Chromium, total recoverable (ug/L)	4	8.3	42
Chromium, suspended recoverable (ug/L)	3	6.7	86
Chromium, dissolved (ug/L)	3	5.3	173
Copper, total recoverable (ug/L)	4	13	55
Copper, suspended recoverable (ug/L)	4	5.8	113
Copper, dissolved (ug/L)	4	9.3	121
Iron, total recoverable (ug/L)	3	1,300	93
Iron, suspended recoverable (ug/L)	2	590	2
Iron, dissolved (ug/L)	4	21	40
Lead, total recoverable (ug/L)	4	12	90
Lead, suspended recoverable (ug/L)	3	11	117
Lead, dissolved (ug/L)	4	3.0	140
Mercury, total recoverable (ug/L)	3	.13	86

See footnote at end of table, p. 223.

Table 36.--Mean concentrations and coefficients of variation of baseline-flow and base-flow constituents and properties at urban stations on canals, streams, and storm conduits--Continued

Constituent or property	Number of samples	Mean concentration	Coefficient of variation
Big Cottonwood Creek at Jordan River (10169500)--Continued			
Mercury, suspended recoverable (ug/L)	3	0.13	86
Mercury, dissolved (ug/L)	3	<.01	<1
Zinc, total recoverable (ug/L)	4	83	58
Zinc, suspended recoverable (ug/L)	4	60	63
Zinc, dissolved (ug/L)	4	23	82
Mill Creek at canyon mouth (channel only) (10169999)			
Specific conductance (umho/cm at 25°C)	4	580	7
pH (units)[1]	3	8.1	86
Oxygen demand, chemical (mg/L)	3	11	66
Oxygen demand, biochemical carbonaceous 5 day (BOD_5) (mg/L)	1	2.2	--
Oxygen demand, biochemical carbonaceous ultimate (BOD_u) (mg/L)	2	3.3	12
Chloride, dissolved (mg/L)	3	8.2	52
Fluoride, dissolved (mg/L)	0	--	--
Solids, dissolved, residue at 180°C (mg/L)	3	370	9
Solids, suspended, residue at 105°C (mg/L)	3	10	122
Nitrogen, nitrate dissolved (mg/L as N)	3	.07	96
Nitrogen, ammonia dissolved (mg/L as N)	3	.07	75
Nitrogen, ammonia + organic total (mg/L as N)	3	.52	49
Phosphorus, total (mg/L)	3	.05	32
Phosphorus, dissolved (mg/L)	3	.03	<1
Carbon, organic suspended total (mg/L)	3	.50	40
Carbon, organic dissolved (mg/L)	3	3.1	49
Sediment, suspended (mg/L)	1	31	--
Cadmium, total recoverable (ug/L)	0	--	--
Cadmium, suspended recoverable (ug/L)	0	--	--
Cadmium, dissolved (ug/L)	3	1.0	<1
Chromium, total recoverable (ug/L)	3	10	100
Chromium, suspended recoverable (ug/L)	3	10	100
Chromium, dissolved (ug/L)	3	<.01	<1
Copper, total recoverable (ug/L)	3	4.3	13
Copper, suspended recoverable (ug/L)	3	1.7	173

See footnote at end of table, p. 223.

Table 36.--Mean concentrations and coefficients of variation of baseline-flow and base-flow constituents and properties at urban stations on canals, streams, and storm conduits--Continued

Constituent or property	Number of samples	Mean concentration	Coefficient of variation
Mill Creek at canyon mouth (channel only) (10169999)--Continued			
Copper, dissolved (ug/L)	3	4.0	86
Iron, total recoverable (ug/L)	3	230	87
Iron, suspended recoverable (ug/L)	1	30	—
Iron, dissolved (ug/L)	3	10	<1
Lead, total recoverable (ug/L)	3	5.0	69
Lead, suspended recoverable (ug/L)	3	2.3	107
Lead, dissolved (ug/L)	3	3.7	68
Mercury, total recoverable (ug/L)	3	.03	173
Mercury, suspended recoverable (ug/L)	3	.03	173
Mercury, dissolved (ug/L)	3	<.01	<1
Zinc, total recoverable (ug/L)	3	30	<1
Zinc, suspended recoverable (ug/L)	3	20	<1
Zinc, dissolved (ug/L)	3	8.0	43
Mill Creek at Jordan River (10170250)			
Specific conductance (umho/cm at 25°C)	3	650	94
pH (units)[1]	3	7.7	6
Oxygen demand, chemical (mg/L)	3	57	110
Oxygen demand, biochemical carbonaceous 5 day (BOD_5) (mg/L)	3	3.5	89
Oxygen demand, biochemical carbonaceous ultimate (BOD_u) (mg/L)	3	10	111
Chloride, dissolved (mg/L)	3	84	90
Fluoride, dissolved (mg/L)	0	—	—
Solids, dissolved, residue at 180°C (mg/L)	3	600	38
Solids, suspended, residue at 105°C (mg/L)	3	26	58
Nitrogen, nitrate dissolved (mg/L as N)	3	1.70	30
Nitrogen, ammonia dissolved (mg/L as N)	3	.11	48
Nitrogen, ammonia + organic total (mg/L as N)	3	2.3	67
Phosphorus, total (mg/L)	3	.18	109
Phosphorus, dissolved (mg/L)	3	.03	57
Carbon, organic suspended total (mg/L)	2	2.0	120

See footnote at end of table, p. 223.

Table 36.--Mean concentrations and coefficients of variation of baseline-flow and base-flow constituents and properties at urban stations on canals, streams, and storm conduits--Continued

Constituent or property	Number of samples	Mean concentration	Coefficient of variation
Mill Creek at Jordan River (10170250)--Continued			
Carbon, organic dissolved (mg/L)	3	7.7	28
Sediment, suspended (mg/L)	3	150	86
Cadmium, total recoverable (ug/L)	0	--	--
Cadmium, suspended recoverable (ug/L)	0	--	--
Cadmium, dissolved (ug/L)	3	1.0	<1
Chromium, total recoverable (ug/L)	3	10	<1
Chromium, suspended recoverable (ug/L)	3	9.0	19
Chromium, dissolved (ug/L)	3	1.0	173
Copper, total recoverable (ug/L)	3	14	100
Copper, suspended recoverable (ug/L)	3	9.7	103
Copper, dissolved (ug/L)	3	4.3	93
Iron, total recoverable (ug/L)	3	1,600	96
Iron, suspended recoverable (ug/L)	2	2,200	66
Iron, dissolved (ug/L)	3	16	33
Lead, total recoverable (ug/L)	3	24	107
Lead, suspended recoverable (ug/L)	3	17	158
Lead, dissolved (ug/L)	3	9.0	61
Mercury, total recoverable (ug/L)	3	.03	173
Mercury, suspended recoverable (ug/L)	3	.03	173
Mercury, dissolved (ug/L)	3	<.01	<1
Zinc, total recoverable (ug/L)	3	87	59
Zinc, suspended recoverable (ug/L)	3	67	82
Zinc, dissolved (ug/L)	3	19	53
Twenty-First South Conduit at Jordan River (10170900)			
Specific conductance (umho/cm at 25°C)	5	1,290	15
pH (units)[1]	5	7.6	29
Oxygen demand, chemical (mg/L)	5	56	55
Oxygen demand, biochemical carbonaceous 5 day (BOD_5) (mg/L)	3	9.3	16
Oxygen demand, biochemical carbonaceous ultimate (BOD_u) (mg/L)	3	23	24

See footnote at end of table, p. 223.

Table 36.--Mean concentrations and coefficients of variation of baseline-flow and base-flow constituents and properties at urban stations on canals, streams, and storm conduits--Continued

Constituent or property	Number of samples	Mean concentration	Coefficient of variation
Twenty-First South Conduit at Jordan River (10170900)--Continued			
Chloride, dissolved (mg/L)	5	140	14
Fluoride, dissolved (mg/L)	2	.50	<1
Solids, dissolved, residue at 180°C (mg/L)	5	890	14
Solids, suspended, residue at 105°C (mg/L)	5	22	106
Nitrogen, nitrate dissolved (mg/L as N)	5	3.3	29
Nitrogen, ammonia dissolved (mg/L as N)	5	.23	55
Nitrogen, ammonia + organic total (mg/L as N)	5	2.3	21
Phosphorus, total (mg/L)	5	6.6	132
Phosphorus, dissolved (mg/L)	5	1.7	10
Carbon, organic suspended total (mg/L)	5	1.5	24
Carbon, organic dissolved (mg/L)	5	14	31
Sediment, suspended (mg/L)	1	16	--
Cadmium, total recoverable (ug/L)	1	1.0	--
Cadmium, suspended recoverable (ug/L)	1	<.01	--
Cadmium, dissolved (ug/L)	5	1.2	37
Chromium, total recoverable (ug/L)	4	19	7
Chromium, suspended recoverable (ug/L)	3	13	57
Chromium, dissolved (ug/L)	3	6.7	114
Copper, total recoverable (ug/L)	4	58	42
Copper, suspended recoverable (ug/L)	4	27	83
Copper, dissolved (ug/L)	5	29	30
Iron, total recoverable (ug/L)	3	410	66
Iron, suspended recoverable (ug/L)	3	380	69
Iron, dissolved (ug/L)	5	35	30
Lead, total recoverable (ug/L)	4	19	25
Lead, suspended recoverable (ug/L)	3	14	51
Lead, dissolved (ug/L)	5	7.4	37
Mercury, total recoverable (ug/L)	3	.23	98
Mercury, suspended recoverable (ug/L)	3	.20	132
Mercury, dissolved (ug/L)	3	.03	173
Zinc, total recoverable (ug/L)	4	73	36
Zinc, suspended recoverable (ug/L)	4	38	63
Zinc, dissolved (ug/L)	5	45	57

See footnote at end of table, p. 223.

Table 36.--Mean concentrations and coefficients of variation of baseline-flow and base-flow constituents and properties at urban stations on canals, streams, and storm conduits--Continued

Constituent or property	Number of samples	Mean concentration	Coefficient of variation
Parleys Creek at Suicide Rock (at canyon mouth) (10171600)			
Specific conductance (umho/cm at 25°C)	3	820	25
pH (units)[1]	3	7.5	39
Oxygen demand, chemical (mg/L)	3	21	62
Oxygen demand, biochemical carbonaceous 5 day (BOD_5) (mg/L)	3	1.9	48
Oxygen demand, biochemical carbonaceous ultimate (BOD_u) (mg/L)	3	4.2	80
Chloride, dissolved (mg/L)	3	80	25
Fluoride, dissolved (mg/L)	0	--	--
Solids, dissolved, residue at 180°C (mg/L)	3	480	20
Solids, suspended, residue at 105°C (mg/L)	3	27	156
Nitrogen, nitrate dissolved (mg/L as N)	3	.79	34
Nitrogen, ammonia dissolved (mg/L as N)	3	.06	81
Nitrogen, ammonia + organic total (mg/L as N)	3	.64	35
Phosphorus, total (mg/L)	3	.05	40
Phosphorus, dissolved (mg/L)	3	.03	45
Carbon, organic suspended total (mg/L)	2	.15	47
Carbon, organic dissolved (mg/L)	3	5.8	48
Sediment, suspended (mg/L)	1	46	--
Cadmium, total recoverable (ug/L)	0	--	--
Cadmium, suspended recoverable (ug/L)	0	--	--
Cadmium, dissolved (ug/L)	3	1.0	<1
Chromium, total recoverable (ug/L)	3	6.7	86
Chromium, suspended recoverable (ug/L)	3	6.7	86
Chromium, dissolved (ug/L)	3	.67	173
Copper, total recoverable (ug/L)	3	6.3	50
Copper, suspended recoverable (ug/L)	2	2.0	70
Copper, dissolved (ug/L)	2	5.5	90
Iron, total recoverable (ug/L)	3	450	124
Iron, suspended recoverable (ug/L)	1	10	--
Iron, dissolved (ug/L)	3	23	98
Lead, total recoverable (ug/L)	3	8.0	76
Lead, suspended recoverable (ug/L)	2	.50	141
Lead, dissolved (ug/L)	2	13	96
Mercury, total recoverable (ug/L)	3	.10	<1
Mercury, suspended recoverable (ug/L)	3	.10	<1

See footnote at end of table, p. 223.

Table 36.--Mean concentrations and coefficients of variation of baseline-flow and base-flow constituents and properties at urban stations on canals, streams, and storm conduits--Continued

Constituent or property	Number of samples	Mean concentration	Coefficient of variation
Parleys Creek at Suicide Rock (at canyon mouth) (10171600)--Continued			
Mercury, dissolved (ug/L)	3	<0.01	<1
Zinc, total recoverable (ug/L)	3	20	86
Zinc, suspended recoverable (ug/L)	3	4.3	118
Zinc, dissolved (ug/L)	3	18	56
Emigration Creek at canyon mouth (10172000)			
Specific conductance (umho/cm at 25°C)	3	813	11
pH (units)[1]	3	7.9	39
Oxygen demand, chemical (mg/L)	3	22	55
Oxygen demand, biochemical carbonaceous 5 day (BOD_5) (mg/L)	3	1.3	22
Oxygen demand, biochemical carbonaceous ultimate (BOD_u) (mg/L)	3	7.1	59
Chloride, dissolved (mg/L)	3	68	36
Fluoride, dissolved (mg/L)	0	---	---
Solids, dissolved, residue at 180°C (mg/L)	3	500	5
Solids, suspended, residue at 105°C (mg/L)	3	40	114
Nitrogen, nitrate dissolved (mg/L as N)	3	.19	8
Nitrogen, ammonia dissolved (mg/L as N)	3	.07	57
Nitrogen, ammonia + organic total (mg/L as N)	3	.59	43
Phosphorus, total (mg/L)	3	.10	73
Phosphorus, dissolved (mg/L)	3	.04	35
Carbon, organic suspended total (mg/L)	3	.60	101
Carbon, organic dissolved (mg/L)	3	5.1	44
Sediment, suspended (mg/L)	2	120	54
Cadmium, total recoverable (ug/L)	0	---	---
Cadmium, suspended recoverable (ug/L)	0	---	---
Cadmium, dissolved (ug/L)	3	1.0	<1
Chromium, total recoverable (ug/L)	3	10	100
Chromium, suspended recoverable (ug/L)	3	10	100
Chromium, dissolved (ug/L)	3	1.0	173
Copper, total recoverable (ug/L)	3	5.7	56
Copper, suspended recoverable (ug/L)	3	3.0	120

See footnote at end of report, p. 223.

Table 36.--Mean concentrations and coefficients of variation of baseline-flow and base-flow constituents and properties at urban stations on canals, streams, and storm conduits--Continued

Constituent or property	Number of samples	Mean concentration	Coefficient of variation
Emigration Creek at canyon mouth (10172000)--Continued			
Copper, dissolved (ug/L)	3	3.3	91
Iron, total recoverable (ug/L)	3	880	91
Iron, suspended recoverable (ug/L)	1	320	--
Iron, dissolved (ug/L)	3	10	<1
Lead, total recoverable (ug/L)	3	7.0	107
Lead, suspended recoverable (ug/L)	3	4.3	173
Lead, dissolved (ug/L)	3	2.7	114
Mercury, total recoverable (ug/L)	3	.10	100
Mercury, suspended recoverable (ug/L)	3	.07	86
Mercury, dissolved (ug/L)	3	.03	173
Zinc, total recoverable (ug/L)	3	37	41
Zinc, suspended recoverable (ug/L)	3	27	43
Zinc, dissolved (ug/L)	3	13	58
Red Butte Creek below reservoir (at canyon mouth) (10172220)			
Specific conductance (umho/cm at 25°C)	1	540	--
pH (units)[1]	1	8.3	--
Oxygen demand, chemical (mg/L)	1	18	--
Oxygen demand, biochemical carbonaceous 5 day (BOD_5) (mg/L)	1	1.8	--
Oxygen demand, biochemical carbonaceous ultimate (BOD_u) (mg/L)	1	3.6	--
Chloride, dissolved (mg/L)	1	3.7	--
Fluoride, dissolved (mg/L)	0	--	--
Solids, dissolved, residue at 180°C (mg/L)	1	330	--
Solids, suspended, residue at 105°C (mg/L)	1	26	--
Nitrogen, nitrate dissolved (mg/L as N)	1	.03	--
Nitrogen, ammonia dissolved (mg/L as N)	1	.11	--
Nitrogen, ammonia + organic total (mg/L as N)	1	.55	--
Phosphorus, total (mg/L)	1	.06	--
Phosphorus, dissolved (mg/L)	1	.02	--
Carbon, organic suspended total (mg/L)	0	--	--

See footnote at end of table, p. 223.

Table 36.--Mean concentrations and coefficients of variation of baseline-flow and base-flow constituents and properties at urban stations on canals, streams, and storm conduits--Continued

Constituent or property	Number of samples	Mean concentration	Coefficient of variation
Red Butte Creek below reservoir (at canyon mouth) (10172220)--Continued			
Carbon, organic dissolved (mg/L)	1	12	--
Sediment, suspended (mg/L)	0	--	--
Cadmium, total recoverable (ug/L)	0	--	--
Cadmium, suspended recoverable (ug/L)	0	--	--
Cadmium, dissolved (ug/L)	1	1.0	--
Chromium, total recoverable (ug/L)	1	10	--
Chromium, suspended recoverable (ug/L)	1	10	--
Chromium, dissolved (ug/L)	1	<.01	--
Copper, total recoverable (ug/L)	1	45	--
Copper, suspended recoverable (ug/L)	1	23	--
Copper, dissolved (ug/L)	1	22	--
Iron, total recoverable (ug/L)	1	240	--
Iron, suspended recoverable (ug/L)	0	--	--
Iron, dissolved (ug/L)	1	10	--
Lead, total recoverable (ug/L)	1	3.0	--
Lead, suspended recoverable (ug/L)	1	<.01	--
Lead, dissolved (ug/L)	1	6.0	--
Mercury, total recoverable (ug/L)	1	.10	--
Mercury, suspended recoverable (ug/L)	1	.10	--
Mercury, dissolved (ug/L)	1	<.01	--
Zinc, total recoverable (ug/L)	1	10	--
Zinc, suspended recoverable (ug/L)	1	7.0	--
Zinc, dissolved (ug/L)	1	3.0	--
Thirteenth South, South Conduit at Jordan River (10172350)			
Specific conductance (umho/cm at 25°C)	6	915	31
pH (units)[1]	5	7.7	96
Oxygen demand, chemical (mg/L)	5	210	181
Oxygen demand, biochemical carbonaceous 5 day (BOD_5) (mg/L)	3	13	86
Oxygen demand, biochemical carbonaceous ultimate (BOD_u) (mg/L)	3	24	89

See footnote at end of table, p. 223.

Table 36.--Mean concentrations and coefficients of variation of baseline-flow and base-flow constituents and properties at urban stations on canals, streams, and storm conduits--Continued

Constituent or property	Number of samples	Mean concentration	Coefficient of variation
Thirteenth South, South Conduit at Jordan River (10172350)--Continued			
Chloride, dissolved (mg/L)	6	110	61
Fluoride, dissolved (mg/L)	2	.55	12
Solids, dissolved, residue at 180°C (mg/L)	5	650	32
Solids, suspended, residue at 105°C (mg/L)	6	170	186
Nitrogen, nitrate dissolved (mg/L as N)	6	.84	79
Nitrogen, ammonia dissolved (mg/L as N)	6	.14	78
Nitrogen, ammonia + organic total (mg/L as N)	6	2.6	89
Phosphorus, total (mg/L)	6	.31	130
Phosphorus, dissolved (mg/L)	6	.08	84
Carbon, organic suspended total (mg/L)	5	2.8	73
Carbon, organic dissolved (mg/L)	5	9.6	75
Sediment, suspended (mg/L)	2	91	122
Cadmium, total recoverable (ug/L)	2	5.0	113
Cadmium, suspended recoverable (ug/L)	1	<.01	—
Cadmium, dissolved (ug/L)	6	1.0	63
Chromium, total recoverable (ug/L)	6	18	89
Chromium, suspended recoverable (ug/L)	4	11	100
Chromium, dissolved (ug/L)	4	2.5	132
Copper, total recoverable (ug/L)	6	33	123
Copper, suspended recoverable (ug/L)	3	16	140
Copper, dissolved (ug/L)	5	6.6	63
Iron, total recoverable (ug/L)	4	1,100	115
Iron, suspended recoverable (ug/L)	3	1,400	95
Iron, dissolved (ug/L)	6	91	174
Lead, total recoverable (ug/L)	6	120	140
Lead, suspended recoverable (ug/L)	3	73	173
Lead, dissolved (ug/L)	5	16	98
Mercury, total recoverable (ug/L)	4	.33	80
Mercury, suspended recoverable (ug/L)	4	.33	80
Mercury, dissolved (ug/L)	4	.01	<1
Zinc, total recoverable (ug/L)	6	300	178
Zinc, suspended recoverable (ug/L)	5	60	120
Zinc, dissolved (ug/L)	6	34	71

See footnote at end of table, p. 223.

Table 36.--Mean concentrations and coefficients of variation of baseline-flow and base-flow constituents and properties at urban stations on canals, streams, and storm conduits--Continued

Constituent or property	Number of samples	Mean concentration	Coefficient of variation
Thirteenth South, North Conduit at Jordan River (10172350)			
Specific conductance (umho/cm at 25°C)	7	860	37
pH (units)[1]	6	7.6	95
Oxygen demand, chemical (mg/L)	6	340	210
Oxygen demand, biochemical carbonaceous 5 day (BOD_5) (mg/L)	2	14	131
Oxygen demand, biochemical carbonaceous ultimate (BOD_u) (mg/L)	2	33	131
Chloride, dissolved (mg/L)	7	96	67
Fluoride, dissolved (mg/L)	3	.40	25
Solids, dissolved, residue at 180°C (mg/L)	6	540	36
Solids, suspended, residue at 105°C (mg/L)	7	650	167
Nitrogen, nitrate dissolved (mg/L as N)	7	.65	54
Nitrogen, ammonia dissolved (mg/L as N)	7	.10	133
Nitrogen, ammonia + organic total (mg/L as N)	7	3.8	109
Phosphorus, total (mg/L)	7	.82	133
Phosphorus, dissolved (mg/L)	7	.06	95
Carbon, organic suspended total (mg/L)	6	3.7	107
Carbon, organic dissolved (mg/L)	6	14	106
Sediment, suspended (mg/L)	3	210	93
Cadmium, total recoverable (ug/L)	3	3.3	124
Cadmium, suspended recoverable (ug/L)	1	<.01	--
Cadmium, dissolved (ug/L)	7	.86	44
Chromium, total recoverable (ug/L)	7	18	80
Chromium, suspended recoverable (ug/L)	4	10	81
Chromium, dissolved (ug/L)	4	.50	200
Copper, total recoverable (ug/L)	7	96	174
Copper, suspended recoverable (ug/L)	4	42	144
Copper, dissolved (ug/L)	6	7.8	64
Iron, total recoverable (ug/L)	4	1,500	116
Iron, suspended recoverable (ug/L)	4	1,400	116
Iron, dissolved (ug/L)	7	140	181
Lead, total recoverable (ug/L)	7	360	180
Lead, suspended recoverable (ug/L)	3	63	160
Lead, dissolved (ug/L)	6	16	102
Mercury, total recoverable (ug/L)	4	.13	76
Mercury, suspended recoverable (ug/L)	4	.13	76

See footnote at end of table, p. 223.

Table 36.--Mean concentrations and coefficients of variation of baseline-flow and base-flow constituents and properties at urban stations on canals, streams, and storm conduits--Continued

Constituent or property	Number of samples	Mean concentration	Coefficient of variation
Thirteenth South, North Conduit at Jordan River (10172350)--Continued			
Mercury, dissolved (ug/L)	4	<0.01	<1
Zinc, total recoverable (ug/L)	7	390	143
Zinc, suspended recoverable (ug/L)	6	170	117
Zinc, dissolved (ug/L)	7	18	70
City Creek at Memory Park (channel only at canyon mouth) (10172499)			
Specific conductance (umho/cm at 25°C)	3	500	13
pH (units)[1]	4	8.0	59
Oxygen demand, chemical (mg/L)	4	28	89
Oxygen demand, biochemical carbonaceous 5 day (BOD_5) (mg/L)	1	2.8	--
Oxygen demand, biochemical carbonaceous ultimate (BOD_u) (mg/L)	1	3.8	--
Chloride, dissolved (mg/L)	4	37	54
Fluoride, dissolved (mg/L)	2	.20	<1
Solids, dissolved, residue at 180°C (mg/L)	4	310	22
Solids, suspended, residue at 105°C (mg/L)	4	9.5	109
Nitrogen, nitrate dissolved (mg/L as N)	3	.56	82
Nitrogen, ammonia dissolved (mg/L as N)	4	.04	154
Nitrogen, ammonia + organic total (mg/L as N)	4	.86	35
Phosphorus, total (mg/L)	4	.06	95
Phosphorus, dissolved (mg/L)	4	.03	51
Carbon, organic suspended total (mg/L)	4	.23	66
Carbon, organic dissolved (mg/L)	4	7.5	65
Sediment, suspended (mg/L)	1	21	--
Cadmium, total recoverable (ug/L)	2	1.5	141
Cadmium, suspended recoverable (ug/L)	0	--	--
Cadmium, dissolved (ug/L)	4	1.0	<1
Chromium, total recoverable (ug/L)	4	5.5	76
Chromium, suspended recoverable (ug/L)	2	5.0	141
Chromium, dissolved (ug/L)	2	.50	141
Copper, total recoverable (ug/L)	4	6.5	52
Copper, suspended recoverable (ug/L)	2	1.5	141

See footnote at end of table, p. 223.

Table 36.--Mean concentrations and coefficients of variation of baseline-flow and base-flow constituents and properties at urban stations on canals, streams, and storm conduits--Continued

Constituent or property	Number of samples	Mean concentration	Coefficient of variation
City Creek at Memory Park (channel only at canyon mouth) (10172499)--Continued			
Copper, dissolved (ug/L)	4	6.8	58
Iron, total recoverable (ug/L)	2	90	31
Iron, suspended recoverable (ug/L)	1	100	--
Iron, dissolved (ug/L)	4	12	36
Lead, total recoverable (ug/L)	4	14	94
Lead, suspended recoverable (ug/L)	2	6.0	141
Lead, dissolved (ug/L)	4	7.0	49
Mercury, total recoverable (ug/L)	2	.10	141
Mercury, suspended recoverable (ug/L)	2	.10	141
Mercury, dissolved (ug/L)	2	<.01	<1
Zinc, total recoverable (ug/L)	4	30	90
Zinc, suspended recoverable (ug/L)	4	13	120
Zinc, dissolved (ug/L)	4	23	62
North Temple Conduit at Jordan River (10172520)			
Specific conductance (umho/cm at 25°C)	4	660	39
pH (units)[1]	4	8.0	71
Oxygen demand, chemical (mg/L)	4	21	132
Oxygen demand, biochemical carbonaceous 5 day (BOD_5) (mg/L)	2	2.3	55
Oxygen demand, biochemical carbonaceous ultimate (BOD_u) (mg/L)	2	6.0	66
Chloride, dissolved (mg/L)	4	50	63
Fluoride, dissolved (mg/L)	1	.30	--
Solids, dissolved, residue at 180°C (mg/L)	4	390	43
Solids, suspended, residue at 105°C (mg/L)	4	25	176
Nitrogen, nitrate dissolved (mg/L as N)	4	1.5	139
Nitrogen, ammonia dissolved (mg/L as N)	4	.05	160
Nitrogen, ammonia + organic total (mg/L as N)	4	.83	3
Phosphorus, total (mg/L)	4	.06	74
Phosphorus, dissolved (mg/L)	4	.04	22
Carbon, organic suspended total (mg/L)	3	.30	120

See footnote at end of table, p. 223.

Table 36.--Mean concentrations and coefficients of variation of baseline-flow and base-flow constituents and properties at urban stations on canals, streams, and storm conduits--Continued

Constituent or property	Number of samples	Mean concentration	Coefficient of variation
North Temple Conduit at Jordan River (10172520)--Continued			
Carbon, organic dissolved (mg/L)	4	12	108
Sediment, suspended (mg/L)	1	33	--
Cadmium, total recoverable (ug/L)	1	1.0	--
Cadmium, suspended recoverable (ug/L)	1	<.01	--
Cadmium, dissolved (ug/L)	4	1.3	40
Chromium, total recoverable (ug/L)	4	6.8	69
Chromium, suspended recoverable (ug/L)	3	6.8	86
Chromium, dissolved (ug/L)	3	1.0	173
Copper, total recoverable (ug/L)	4	8.0	77
Copper, suspended recoverable (ug/L)	3	3.3	69
Copper, dissolved (ug/L)	4	6.3	78
Iron, total recoverable (ug/L)	3	410	144
Iron, suspended recoverable (ug/L)	1	10	--
Iron, dissolved (ug/L)	4	10	<1
Lead, total recoverable (ug/L)	4	9.3	115
Lead, suspended recoverable (ug/L)	3	8.3	110
Lead, dissolved (ug/L)	4	5.0	83
Mercury, total recoverable (ug/L)	3	.10	100
Mercury, suspended recoverable (ug/L)	3	.10	100
Mercury, dissolved (ug/L)	3	<.01	<1
Zinc, total recoverable (ug/L)	4	25	51
Zinc, suspended recoverable (ug/L)	4	15	86
Zinc, dissolved (ug/L)	4	11	15

[1]Mean pH calculated as a true mean using the negative logarithm of the hydrogen ion.

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