STREAMFLOW GAIN-AND-LOSS
MEASUREMENTS AND WATER-QUALITY
DATA OF SALT CREEK AND ITS
TRIBUTARIES NEAR LINCOLN,
NEBRASKA, 1994–95

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U.S. GEOLOGICAL SURVEY

Open-File Report 96–551

Prepared in cooperation with the
CITY OF LINCOLN

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By Ingrid M. Verstraeten

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CONVERSION FACTORS

Multiply	By	To obtain
foot (ft)	0.3048	meter
inch	25.4	millimeter
mile (mi)	1.609	kilometer
square mile (mi ²)	2.590	square kilometer
cubic foot per second (ft ³ /s)	0.02832	cubic meter per second
pound per day (lb/d)	0.4535	kilogram per day
pound per day (lb/d)	0.4535×10^{-3}	ton per day

STREAMFLOW GAIN-AND-LOSS MEASUREMENTS AND WATER-QUALITY DATA OF SALT CREEK AND ITS TRIBUTARIES NEAR LINCOLN, NEBRASKA, 1994–95

By Ingrid M. Verstraeten

Abstract

A 2-year study was completed to document streamflow gain and loss and to estimate loads of selected constituents in a reach of Salt Creek and its tributaries near Lincoln, Nebraska. Four gain-and-loss investigations were conducted in 1994 and 1995 during low to moderate flow at 28 sites along a 13.78-mile reach of Salt Creek and along its tributaries. Water-quality samples were collected from 11 sites (4 sites in June 1994) along Salt Creek in 1994 and from 28 sites along Salt Creek and its tributaries, and the Theresa Street and Northeast Wastewater Treatment Plants in 1995. Analyses of discharge measurements indicate a mean downstream gain in discharge of 30 cubic feet per second along Salt Creek from Pioneers Boulevard, station 06803080, to station 06803523 downstream from the mouth of Stevens Creek, which was primarily contributed by the treatment plants. The mean gain per river mile along this stretch of Salt Creek was 2 cubic feet per second. The mean percent contribution of the wastewater-treatment plants to the flow of Salt Creek was 32 percent.

INTRODUCTION

The study area, which lies in the Salt Creek watershed, is located in Lancaster County, Nebraska, and is approximately 340 square miles (mi^2) in area. Salt Creek, a channelized creek, generally has a high salinity in many parts of its reach. The Dakota Formation, the primary local aquifer, has a high salinity in the study area

(Ellis, 1984). The City of Lincoln's Theresa Street and Northeast Wastewater Treatment Plants, located within the Lincoln city limits (fig. 1), discharge directly into Salt Creek. The discharge of Salt Creek is dominated by wastewater discharge downgradient from the wastewater-treatment plants during moderate- and low-flow conditions and dominated by stormwater runoff during large rain events. Other potential sources influencing the water quality of Salt Creek include agricultural, urban runoff, and other industrial discharges.

In 1994, the City of Lincoln requested that the U.S. Geological Survey (USGS) perform a study as part of the USGS Cooperative Program to support water-quality permitting decisions for the City of Lincoln's wastewater-treatment plants. The purpose of this report is to provide the City of Lincoln with streamflow and baseline water-quality data under moderate- to low-flow conditions. This study augments others done by the City of Lincoln in cooperation with other agencies and private consulting firms on Salt Creek's water-quality and effluent management. A plan was developed to collect discharge measurements and water-quality data during moderate- to low-flow conditions from Salt Creek and its tributaries.

Approach and Methods

Gaging stations were installed at (1) Salt Creek at Pioneers Boulevard, (2) Middle Creek at southwest 40th Street, (3) Haines branch at

EXPLANATION

- 16▲ Sampling site and site location number
- 30★ Wastewater-treatment plant and site location number
- 12◻ Sampling site and gaging station

Figure 1. Location of study area, sampling sites, gaging stations, and wastewater-treatment plants, Lincoln, Nebraska.

southwest 56th Street, and (4) Salt Creek at 70th Street (fig. 1) in July and August 1994, and equipped with electronic data loggers for recording the stages and pressure transducers for sensing the stages. Existing gaging stations at Salt Creek at 27th Street, Little Salt Creek, and Stevens Creek (fig. 1), similarly equipped, also were used in the study.

Thirty sites were selected within the study area on the basis of existing discharge data, location of the wastewater-treatment plants, and location and contribution of flow of the tributaries (table 1). Four gain-and-loss

investigations were conducted in 1994 and 1995 along a 13.78-mi reach of Salt Creek and along its tributaries at these sites. Discharge measurements taken at the 30 sites (fig. 1) generally were made on two or three subsequent days, specifically on June 20, 1994, August 16 and 17, 1994, September 28 and 29, 1994, and August 28, 29, and 30, 1995. However, the investigation that began on June 20, 1994, was discontinued on June 21, 1994, because of rainfall. During the last three gain-and-loss investigations, streamflow was measured during two subsequent days in accordance with procedures described by Rantz

Table 1. Listing of sampling sites on Salt Creek and tributaries near Lincoln, Nebraska, 1994–95

U.S. Geological Survey site identification number	Site location number (fig. 1)	Site name
06803080	1	Salt Creek at Pioneers Boulevard
06803082	13	Beal Slough at 56th Street
06803085	12	Beal Slough at Pioneers Boulevard
06803093	15	Haines Branch at southwest 56th Street
06803097	14	Haines Branch at Van Dorn Street
06803100	2	Salt Creek at South Street
06803170	17	Middle Creek at southwest 40th Street
06803182	16	Middle Creek approximately 0.5 miles upstream from mouth
06803185	3	Salt Creek at O Street
06803190	4	Salt Creek at 14th Street
068031985	19	Antelope Creek at 56th Street
06803405	18	Antelope Creek at Court Street
06803480	22	Oak Creek at Highway 34
06803487	21	Oak Creek at closed bridge south of Air Park Road
06803493	20	Oak Creek at 14th Street
06803495	5	Salt Creek at Fairgrounds
06803496	29	Theresa Street Wastewater Treatment Plant
06803500	6	Salt Creek at 27th Street
068035008	24	Dead Man's Run at 70th Street
06803503	23	Dead Man's Run at Cornhusker Highway
06803505	7	Salt Creek at Superior Street
06803507	27	Little Salt Creek at 14th Street
06803510	26	Little Salt Creek at 27th Street
068035108	25	Little Salt Creek near mouth (marsh)
06803511	8	Salt Creek at (former) landfill near Little Salt Creek
06803513	9	Salt Creek at 70th Street
068035135	30	Northeast Wastewater Treatment Plant
06803514	10	Salt Creek below Northeast Wastewater Treatment Plant
06803523	28	Stevens Creek at Highway 6
06803525	11	Salt Creek below Stevens Creek at Waverly

(1982). The last measurement of the first day, at the Salt Creek at Fairgrounds site, was repeated the second day. Measurements were taken in a downstream direction in accordance with the Lagrangian flow principle.

Continuous records of stage were obtained from electronic data loggers or from digital recorders that punch stage values on paper tapes at selected time intervals. Methods of discharge measurements are described by Rantz (1982). In computing discharge records, results of measurement are plotted against stage values and stage-discharge relation curves are constructed. From these curves, rating tables are developed that indicate discharge at any given stage.

Field measurements were taken at all sites for pH, dissolved oxygen, temperature of air and water, and specific conductance. Water-quality samples were collected from 11 sites along Salt Creek in 1994 (only 4 sites in June 1994) and at all 30 sites in 1995. The water-quality data include nutrients (total and dissolved) and major ions. The results allowed determination of gain-and-loss characteristics under moderate- to low-flow conditions and selected water-quality reductions or contributions by the wastewater-treatment plants, tributaries, and ground water on the water quality of Salt Creek.

Methods for collecting surface-water-quality data are described in Wells and others (1990). Samples were collected using a depth-integrated, equal-width increment method (EWI) that was reduced to a grab sample when the stream width was less than 2 ft. The EWI method, in which samples are collected at centroids of equal-width increments, normally is used in shallow streams where the distribution of discharge in the cross section is not uniform or in streams where the distribution of water discharge in the cross section is unknown. Samples were collected by USGS personnel with a US D-77 cap and nozzle, 5/16-inch nozzle, quart bottle, and wading rod using a US DH-81 adapter. Specific conductance, pH, water temperature, and dissolved oxygen were measured in the field at all sites with portable meters on an aliquot of the composite stream sample in accordance with procedures described by Fishman and Friedman (1989).

Water samples were collected from the sites along Salt Creek on June 20, 1994, August 16 and 17, 1994, and September 28 and 29, 1994. In addition, water samples were collected from all 30 sites along Salt Creek and its tributaries on August 28, 29, and 30, 1995. Quality-assurance samples consisting of one equipment blank and one duplicate were collected at Salt Creek at 27th Street or Salt Creek at Fairgrounds on August 16 and 17, 1994, and September 28 and 29, 1994, and August 28 and 29, 1995. Samples were put in brown polyethylene and glass bottles and chilled with ice. Samples were treated onsite when filtering was not required. The remainder of the samples were filtered and treated at the local USGS laboratory in Lincoln, Nebraska, within 1 hour of sample collection and were kept chilled at 4 degrees Celsius prior to mailing of the samples to the USGS National Water-Quality Laboratory (NWQL) in Arvada, Colorado. Analyses were completed within 7 days of receipt by the Arvada laboratory. Water-quality constituents analyzed included total residue and residue at 180 degrees Celsius, dissolved solids, alkalinity, oil and grease, total and dissolved nutrients, and dissolved major ions. Analyses were done in accordance with standard methods described by Fishman and Friedman (1989).

Stream loads were calculated for nutrients and major ions by multiplying the discharge by the concentration of the constituent and a unit correction factor. Gains and losses of loads also were calculated. Loads were corrected for inputs from the wastewater-treatment plants and tributaries for the samples collected on August 28, 29, and 30, 1995.

Acknowledgments

The author thanks the City of Lincoln and the Lower Platte South Natural Resources District for their assistance in the field with sampling and for permitting access to the sampling sites.

GAIN-AND-LOSS MEASUREMENTS OF SALT CREEK AND ITS TRIBUTARIES

Discharge of Salt Creek is affected by the discharge of its tributaries, which, in turn, are affected by releases from Conestoga, Pawnee, Branched Oak, and Holmes Lakes, among others. The wastewater-treatment plants of the City of Lincoln also may affect the streamflow of Salt Creek. Currently there are no regulatory discharge requirements for these wastewater-treatment plants. The water received by the wastewater-treatment plants is derived from the City of Lincoln Well Field near Ashland, Nebraska. Peak discharge generally occurs around 10:00 a.m. each day. Discharge of both wastewater-treatment plants on the sampling dates are shown in figure 2 (Lyle R. Christensen, City of Lincoln, written commun., 1995).

Three sets of streamflow gain-and-loss measurements were made during 1994 and 1995 at 28 sites along a 13.78-mile reach of Salt Creek and its tributaries (fig. 1). A schematic diagram indicating river miles is shown in figure 3. The Salt Creek reach extends from Pioneers Boulevard to a site downstream from Stevens Creek. The hydrographs for the sampling period for the Salt Creek at Pioneers Boulevard, Haines Branch, Middle Creek, Salt Creek at 27th Street, Little Salt Creek, Salt Creek at 70th Street, and Stevens Creek gaging stations, as well as precipitation at the Lincoln Municipal Airport precipitation station, are shown in figures 4 through 6. Streamflow data for Salt Creek and its tributaries are presented in table 2. A flow-duration graph for Salt Creek at 27th Street is presented in figure 7. In general, measurements were made and samples were collected at flows near or slightly greater than the median. Figure 8 shows the relative contributions of the wastewater-treatment plants and the tributaries to the streamflow of Salt Creek.

Flow measurements at the sampling sites during each sample event are shown in figures 9 through 12. Figure 13 shows the mean flow measurement at the sampling sites of the last three sample events. Measured gains for the total reach ranged from approximately 20 cubic feet per second (ft^3/s) on September 28 and 29, 1994, to $38 \text{ ft}^3/\text{s}$ on August 28, 29, and 30, 1995 (table 3).

The mean gain for the total reach was $30 \text{ ft}^3/\text{s}$ (table 3). This reach gained water with an average of $2 \text{ ft}^3/\text{s}$ per river mile (table 4). A schematic diagram of mean gains and losses of streamflow per segment of Salt Creek is shown in figure 14. Mean gains and losses per segment of Salt Creek as well as per river mile are shown in figure 15.

WATER-QUALITY DATA OF SALT CREEK AND ITS TRIBUTARIES

Water-quality data and constituent load estimates are included in this report in tabular and graphic form (tables 5 through 7 at the back of the report and figures 16 through 20). The method reporting level was used in the load calculations when actual concentrations were less than the detection limit. Concentrations of dissolved solids, specific conductance, total ammonia and organics, total phosphorus, and dissolved chloride concentrations in samples collected from Salt Creek, its tributaries, and the Theresa Street and Northeast Wastewater Treatment Plants on August 28, 29, and 30, 1995, are shown in figures 16 through 20. Concentration of salts increased from a location near Salt Creek at O Street to below Stevens Creek (figs. 16, 17, and 20). Quality-assurance samples revealed that the water-quality results of duplicates were very similar and that blanks remained uncontaminated in the field and laboratory.

The load of selected constituents along the investigated reach of Salt Creek is affected by the load contributed by the tributaries, wastewater-treatment plants, and ground water, as well as the load already present at Salt Creek at Pioneers Boulevard, the most upstream sampling site. Percent contributions of flow and selected constituents detected in water from the wastewater-treatment plants, tributaries, and ground water are presented in table 8. The percentage of the load contributed by the wastewater plants was calculated as the sum of the load of both plants divided by the load of Salt Creek below Stevens Creek, less the load of Salt Creek at Pioneers Boulevard. Percentage of the load contributed by selected constituents from

Figure 2. Discharge of the Theresa Street and Northeast Wastewater Treatment Plants of City of Lincoln, Nebraska, on (A) August 17, 1994, (B) September 29, 1994, and (C) August 30, 1995 (Lyle R. Christensen, City of Lincoln, written commun., 1995).

Figure 3. Streamflow gain-and-loss measurements of Salt Creek and its tributaries from the Pioneers Boulevard gaging station to a site downstream from the mouth of Stevens Creek near Lincoln, Nebraska.

Table 2. Flow measurements of Salt Creek, its tributaries, and the Theresa Street and Northeast Wastewater Treatment Plants, Lincoln, Nebraska, June 20, 1994, August 16–17, 1994, September 28–29, 1994, and August 28–30, 1995

[--, no data]

U.S. Geological Survey site identification number	Site location number (fig. 1)	Discharge, in cubic feet per second				Mean, not including the June 20, 1994, measurement
		June 20, 1994	August 16–17, 1994	September 28–29, 1994	August 28–30, 1995	
06803080	1	34	15	15	13	14
06803082	13	.70	.25	.37	.24	.29
06803085	12	.77	.50	.72	.53	0.58
06803093	15	4.1	1.8	1.4	1.9	1.7
06803097	14	7.4	5.2	3.7	4.6	4.5
06803100	2	46	23	22	21	22
06803170	17	3.9	3.6	1.9	3.2	2.9
06803182	16	6.3	5.2	3.8	3.8	4.3
06803185	3	54	33	29	27	30
06803190	4	56	37	33	32	34
068031985	19	.29	.08	.57	.11	.25
06803405	18	1.9	1.6	2.6	2.0	2.0
06803480	22	77	33	16	18	22
06803487	21	82	35	18	19	24
06803493	20	106	41	23	19	28
06803495	5	170	82	59	55	65
(first day of sampling event)						
06803495	5	--	72	55	48	58
(second day of sampling event)						
06803496	29	--	26	34	22	27
06803500	6	--	103	99	68	90
068035008	24	--	.17	.15	.13	.15
06803503	23	--	1.2	.78	1.3	1.1
06803505	7	--	98	91	85	91
06803507	27	--	1.9	1.2	.60	1.2
06803510	26	--	4.7	3.6	2.5	3.6
068035108	25	--	5.2	4.1	3.0	4.1
06803511	8	--	110	104	100	105
06803513	9	--	120	108	90	106
068035135	30	--	8.0	10	9.0	9.0
06803514	10	--	125	113	110	116
06803523	28	--	4.4	3.6	2.8	3.6
06803525	11	--	136	117	112	122

tributaries was calculated as the sum of loads of all tributaries divided by the load of Salt Creek below Stevens Creek, less the load of Salt Creek at Pioneers Boulevard. Percentage of the load contributed by ground water within the reach was calculated as the load of Salt Creek below Stevens Creek reduced by the loads of the tributaries and Salt Creek at Pioneers Boulevard, divided by load of Salt Creek below Stevens Creek, less the load of Salt Creek at Pioneers Boulevard. Losses due to chemical or physical processes were assumed to be zero in these calculations.

The mean percent contribution of the wastewater-treatment plants to the flow of Salt Creek was 32 percent. Similarly, the relative mean contribution of the tributaries and ground water to the flow of Salt Creek were 41 percent and 26 percent, respectively (table 8). Gains and losses presented in tables 9 and 10 were calculated without considering the contributions of the wastewater-treatment plants and the tributaries because water-quality samples from these sites were not collected in 1994. The contribution of the wastewater-treatment plants and tributaries was considered in the determination of gains and losses of selected constituents along Salt Creek.

SUMMARY

A 2-year study was completed to document streamflow gain and loss and to estimate loads of selected constituents in a reach of Salt Creek and its tributaries near Lincoln, Nebraska. Discharge and water-quality data were collected. Four gain-and-loss investigations were conducted in 1994 and 1995 during moderate- to low-flow conditions at 28 sites along a 13.78-mile reach of Salt Creek and along its tributaries. Water-quality samples were collected from 11 sites (4 sites in June 1994) along Salt Creek in 1994 and from 28 sites along Salt Creek and its tributaries and the Theresa Street and Northeast Wastewater Treatment Plants in 1995.

Flow measurements show a mean downstream gain in discharge of 30 cubic feet per second along Salt Creek from Pioneers Boulevard (station 06803080) to downstream from the

mouth of Stevens Creek (station 06803523). The mean gain per river mile along this stretch of Salt Creek was 2 cubic feet per second. The mean percent contribution of the wastewater-treatment plants to the flow of Salt Creek was 32 percent, and the relative mean contributions of the tributaries and ground water to the flow of Salt Creek were 41 percent and 26 percent, respectively.

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Figure 4. Flow of Salt Creek at Pioneers Boulevard (site 1), Haines Branch (site 15), Middle Creek (site 17), Salt Creek at 27th Street (site 6), Little Salt Creek (site 26), Salt Creek at 70th Street (site 9), and Stevens Creek (site 28) gaging stations and precipitation at the Lincoln Municipal Airport from June 1, 1994, through September 30, 1995, Lancaster County, Nebraska.

Figure 5. Flow at the gaging stations along Salt Creek at Pioneer Boulevard (site 1), Salt Creek at 27th Street (site 6), and Salt Creek at 70th Street (site 9) and precipitation values for the Lincoln Municipal Airport precipitation station from June 1, 1994, through September 30, 1995, Lancster County, Nebraska.

Figure 6. Flow at the Haines Branch (site 15), Middle Creek (site 17), Little Salt Creek (site 26), and Stevens Creek (site 28) gaging stations and precipitation at the Lincoln Municipal Airport from June 1, 1994, through September 30, 1995, Lancaster County, Nebraska.

Figure 7. Flow duration of Salt Creek at 27th Street gaging station 06803500 (site 6), 1949 through 1994.

Figure 8. Flow measurements of Salt Creek, its tributaries, and the Theresa Street and Northeast Wastewater Treatment Plants, Lincoln, Nebraska, June 20, 1994, August 16–17, 1994, September 28–29, 1994, and August 28–30, 1995.

Figure 9. Flow measurements at sampling sites on Salt Creek, its tributaries, and the Theresa Street and Northeast Wastewater Treatment Plants, Lincoln, Nebraska, June 20, 1994.

EXPLANATION

- ▲ Sampling site
- ★ Wastewater-treatment plant
- Sampling site and gaging station
- 3.9 Discharge measurement, in cubic feet per second
- 82/72 Multiple discharge measurements, in cubic feet per second

Figure 10. Flow measurements at sampling sites on Salt Creek, its tributaries, and the Theresa Street and Northeast Wastewater Treatment Plants, Lincoln, Nebraska, August 16–17, 1994.

Figure 11. Flow measurements at sampling sites on Salt Creek, its tributaries, and the Theresa Street and Northeast Wastewater Treatment Plants, Lincoln, Nebraska, September 28–29, 1994.

Figure 12. Flow measurements at sampling sites on Salt Creek, its tributaries, and the Theresa Street and Northeast Wastewater Treatment Plants, Lincoln, Nebraska, August 28–30, 1995.

EXPLANATION

- ▲ Sampling site
- ★ Wastewater-treatment plant
- Sampling site and gaging station
- 3.9 Discharge measurement, in cubic feet per second
- $\frac{92}{58}$ Multiple discharge measurements, in cubic feet per second

Figure 13. Mean flow measurements of Salt Creek, its tributaries, and the Theresa Street and Northeast Wastewater Treatment Plants, Lincoln, Nebraska, June 20, 1994, August 16–17, 1994, September 28–29, 1994, and August 28–30, 1995.

Table 3. Discharge gain-and-loss measurements along Salt Creek near Lincoln, Nebraska, June 20, 1994, August 16–17, 1994, September 28–29, 1994, and August 28–30, 1995

[--, no data]

Stream reach	Discharge, in cubic feet per second ¹				Mean
	June 20, 1994	August 16–17, 1994	September 28–29, 1994	August 28–30, 1995	
1-2	4	2	3	3	3
2-3	2	5	3	2	3
3-4	2	4	4	5	4
4-5	6	2	0	2	2
(first day of sampling event)					
5	--	5	10	-2	4
(second day of sampling event)-6					
6-7	--	-6	-9	16	0
7-8	--	7	9	12	9
8-9	--	10	4	-10	1
9-10	--	-3	-5	11	1
10-11	--	7	0	-1	2
1-11	--	33	20	38	30

¹Numbers are obtained by using original discharge measurement notes and rounding after final computation. Some numbers may be slightly different than previously rounded values in table 2. Positive values indicate gains, and negative values indicate losses.

Table 4. Gains and losses per river mile along Salt Creek near Lincoln, Nebraska, June 20, 1994, August 16–17, 1994, September 28–29, 1994, and August 28–30, 1995

[--, no data]

Salt Creek stream reach	Gains and losses per river mile, in cubic feet per second per mile ¹				Mean
	June 20, 1994	August 16-17, 1994	September 28–29, 1994	August 28–30, 1995	
1-2	2	1	1	2	2
2-3	1	3	2	1	2
3-4	1	2	2	2	2
4-5	9	4	1	4	5
5-6	--	6	13	-3	5
6-7	--	-5	-7	13	0
7-8	--	4	5	7	5
8-9	--	4	2	-4	1
9-10	--	-6	-10	21	2
10-11	--	6	0	-1	2
1-11	--	2	1	3	2

¹Positive values indicate gains, and negative values indicate losses.

Figure 14. Mean gain and loss per stream reach of Salt Creek from the Pioneers Boulevard gaging station to a site downstream from the mouth of Stevens Creek near Lincoln, Nebraska, June 20, 1994, August 16–17, 1994, September 28–29, 1994, and August 28–30, 1995.

Figure 15. Mean gain and loss per river mile of each stream reach of Salt Creek from the Pioneers Boulevard gaging station to a site downstream from the mouth of Stevens Creek near Lincoln, Nebraska, June 20, 1994, August 16-17, 1994, September 28-29, 1994, and August 28-30, 1995.

Table 5. Field measurements and water-quality data from discharge at the Theresa Street and Northeast Wastewater Treatment Plants and from sites on Salt Creek and its tributaries, Lincoln, Nebraska, June 20, 1994, August 16–17, 1994, August 28–29, 1994, September 28–30, 1994, and August 28–30, 1995

[USGS, U.S. Geological Survey; Cr., Creek; Hwy, Highway; Blvd., Boulevard; St., Street; --, no data; °C, degrees Celsius; ft³/s, cubic feet per second; mm/Hg, millimeters of mercury; mg/L, milligrams per liter; µS/cm, microsiemens per centimeter at 25°C; <, less than]

Sample location		Concentrations													
USGS site identification number		Salt Cr. at Pioneers Blvd.	Beal Slough at 56th St.	Beal Slough at Pioneers Blvd.	Haines Branch at southwest 56th St.	Haines Branch at Van Dorn St.	Salt Cr. at South St.	Middle Cr. at southwest 40th St.	Middle Cr. 0.5 mile upstream from mouth						
Site location number	Date sampled	06803080	06803082	06803085	06803093	06803097	06803100	06803170	06803182						
Time sampled		09:10	09:30	09:10	09:30	10:30	11:00	11:15	12:15						
Property of water or chemical constituent		Units of measurement								Detection limits					
Water temperature, field		24	22	23	24.7	24	24	26.5	32						
Air temperature, field		30	29	29	29	30	33	30	34						
Air pressure, field		732	--	--	--	--	732	--	--						
Discharge, instant		34	.7	.77	4.1	7.4	46	3.9	6.3						
Specific conductance at 25°C, field		733	1,045	674	934	5,130	1,710	808	5,410						
Oxygen, dissolved, field		6.8	5.1	6.6	9.1	8.1	8.2	10.3	14.6						
Chemical oxygen demand, high level		28	--	--	--	--	30	--	--						
pH, field		7.5	7.7	7.6	8.2	8	8.2	8.1	8.4						
Residue, total		67	--	--	--	--	81	--	--						
Oil and grease, recoverable		4	--	--	--	--	1	--	--						
Nitrogen, ammonia, dissolved		.02	--	--	--	--	.05	--	--						
Nitrogen, nitrite, dissolved		.02	--	--	--	--	.04	--	--						
Nitrogen, nitrate, dissolved		1.48	--	--	--	--	1.36	--	--						
Nitrite and nitrate, dissolved		1.5	--	--	--	--	1.4	--	--						
Nitrogen, organic, total		.78	--	--	--	--	.85	--	--						
Nitrogen, ammonia and organic, total		.8	--	--	--	--	.9	--	--						
Nitrogen, nitrate, total		1.48	--	--	--	--	1.36	--	--						
Nitrogen, total		2.3	--	--	--	--	2.3	--	--						
Phosphorus, total		.41	--	--	--	--	.41	--	--						
Phosphorus, dissolved		.29	--	--	--	--	.26	--	--						
Carbon, organic, total		8.5	--	--	--	--	10	--	--						
Hardness, total		260	--	--	--	--	290	--	--						
Calcium, dissolved		74	--	--	--	--	80	--	--						
Magnesium, dissolved		18	--	--	--	--	21	--	--						
Sodium, dissolved		53	--	--	--	--	240	--	--						
Sodium absorption ratio		1	--	--	--	--	6	--	--						
Sodium, percent		30	--	--	--	--	64	--	--						
Potassium, dissolved		7.3	--	--	--	--	7.6	--	--						
Chloride, dissolved		42	--	--	--	--	320	--	--						
Sulfate, dissolved		68	--	--	--	--	110	--	--						
Residue, dissolved at 180°C		449	--	--	--	--	982	--	--						
Dissolved solids, sum		418	--	--	--	--	944	--	--						
Specific conductance, lab		722	--	--	--	--	1,730	--	--						
Alkalinity		249	--	--	--	--	265	--	--						

Table 5. Field measurements and water-quality data from discharge at the Theresa Street and Northeast Wastewater Treatment Plants and from sites on Salt Creek and its tributaries, Lincoln, Nebraska, June 20, 1994, August 16-17, 1994, September 28-29, 1994, August 28-30, 1995--Continued

[USGS, U.S. Geological Survey; Cr., Creek; Hwy, Highway; Blvd., Boulevard; St., Street; --, no data; °C, degrees Celsius; ft³/s, cubic feet per second; mm/Hg, millimeters of mercury; mg/L, milligrams per liter; µS/cm, microsiemens per centimeter at 25°C; <, less than]

Sample location		Concentrations											
USGS site identification number		Salt Cr. at O St.	Salt Cr. at 14th St.	Antelope Cr. at 56th St.	Antelope Cr. at Court St.	Oak Cr. at Hwy 34	Oak Cr. at Air Park Road	Oak Cr. at 14th St.	Salt Cr. at Fairgrounds				
Site location number		06803185	06803190	06803195	06803405	06803480	06803487	06803493	06803495				
Date sampled		06/20/94	06/20/94	06/20/94	06/20/94	06/20/94	06/20/94	06/20/94	06/20/94				
Time sampled		12:00	13:00	13:05	14:00	14:40	15:25	16:15	14:00				
Property of water or chemical constituent		Units of measurement								Detection limits			
Water temperature, field		°C								0.5			
Air temperature, field		°C								.5			
Air pressure, field		mm/Hg								1			
Discharge, instant		ft³/s								.01			
Specific conductance at 25°C, field		µS/cm								1			
Oxygen, dissolved, field		mg/L								.1			
Chemical oxygen demand, high level		mg/L								10			
pH, field		Standard units								.1			
Residue, total		mg/L								1			
Oil and grease, recoverable		mg/L								1			
Nitrogen, ammonia, dissolved		mg/L								.015			
Nitrogen, nitrite, dissolved		mg/L								.05			
Nitrogen, nitrate, dissolved		mg/L								.05			
Nitrite and nitrate, dissolved		mg/L								.05			
Nitrogen, organic, total		mg/L								.05			
Nitrogen, ammonia and organic, total		mg/L								.2			
Nitrogen, nitrate, total		mg/L								.05			
Nitrogen, total		mg/L								.2			
Phosphorus, total		mg/L								.01			
Phosphorus, dissolved		mg/L								.01			
Carbon, organic, total		mg/L								.1			
Hardness, total		mg/L								1			
Calcium, dissolved		mg/L								.1			
Magnesium, dissolved		mg/L								.1			
Sodium, dissolved		mg/L								.1			
Sodium absorption ratio		--								--			
Sodium, percent		--								1			
Potassium, dissolved		mg/L								.1			
Chloride, dissolved		mg/L								.1			
Sulfate, dissolved		mg/L								.1			
Residue, dissolved at 180°C		mg/L								1			
Dissolved solids, sum		mg/L								1			
Specific conductance, lab		µS/cm								1			
Alkalinity		mg/L								1			

Table 5. Field measurements and water-quality data from discharge at the Theresa Street and Northeast Wastewater Treatment Plants and from sites on Salt Creek and its tributaries, Lincoln, Nebraska, June 20, 1994, August 16-17, 1994, August 28-29, 1994, September 28-30, 1994, and August 28-30, 1995--Continued

[USGS, U.S. Geological Survey; Cr., Creek; Hwy, Highway; Blvd., Boulevard; St., Street; --, no data; °C, degrees Celsius; ft³/s, cubic feet per second; mm/Hg, millimeters of mercury; mg/L, milligrams per liter; µS/cm, microsiemens per centimeter at 25°C; <, less than]

Sample location		Property of water or chemical constituent		Units of measurement	Detection limits	Concentrations									
USGS site identification number		Site location number		Date sampled		Time sampled		Salt Cr. at Pioneers Blvd.	Beal Slough at 56th St.	Beal Slough at Pioneer Blvd.	Haines Branch at southwest 56th St.	Haines Branch at Van Dorn St.	Salt Cr. at South St.	Middle Cr. at southwest 40th St.	Middle Cr. near mouth
								06803080	06803082	06803085	06803093	06803097	06803100	06803170	06803182
								1	13	12	15	14	2	17	18
								08/16/94	08/16/94	08/16/94	08/16/94	08/16/94	08/16/94	08/16/94	08/16/94
								08:45	07:50	08:30	09:20	09:50	10:45	10:40	11:20

Table 5. Field measurements and water-quality data from discharge at the Theresa Street and Northeast Wastewater Treatment Plants and from sites on Salt Creek and its tributaries, Lincoln, Nebraska, June 20, 1994, August 16–17, 1994, September 28–29, 1994, and August 28–30, 1995--Continued

[USGS, U.S. Geological Survey; Cr., Creek; Hwy, Highway; Blvd., Boulevard; St., Street; --, no data; °C, degrees Celsius; ft³/s, cubic feet per second; mm/Hg, millimeters of mercury; mg/L, milligrams per liter; µS/cm, microsiemens per centimeter at 25°C; <, less than]

Sample location		Salt Cr. at	Salt Cr. at	Antelope Cr.	Antelope Cr.	Oak Cr. at	Oak Cr. at	Oak Cr. at	Salt Cr. at
USGS site identification number	O St.	14th St.	14th St.	at 56th St.	at Court St.	Hwy 34	Park Road	14th St.	Fairgrounds
Site location number	06803185	06803190	06803190	068031985	06803405	06803480	06803487	06803493	06803495
Date sampled	08/16/94	08/16/94	08/16/94	08/16/94	08/16/94	08/16/94	08/16/94	08/16/94	08/16/94
Time sampled	11:45	12:45	13:00	13:35	14:05	15:00	15:55	13:15	
Property of water or chemical constituent		Units of measurement	Detection limits	Concentrations					
Water temperature, field	°C	0.5	23.5	23.5	25.7	25.0	26.0	26.0	26.0
Air temperature, field	°C	.5	28.5	23.5	28.0	29.0	28.0	31.5	28.0
Air pressure, field	mm/Hg	1	729	729	--	--	--	--	729
Discharge, instant	ft ³ /s	.01	33	37	.08	1.6	33	35	41
Specific conductance at 25°C, field	µS/cm	1	5,930	7,650	557	2,600	1,260	1,510	6,070
Oxygen, dissolved, field	mg/L	.1	12.5	16.5	15.5	Saturated	9.01	9.1	13.3
Chemical oxygen demand, high level	mg/L	10	40	54	--	--	--	--	50
pH, field	Standard units	.1	8.3	8.3	8.4	9.2	8.6	8.4	8.8
Residue, total	mg/L	1	30	12	--	--	--	--	24
Oil and grease, recoverable	mg/L	1	<1	<1	--	--	--	--	<1
Nitrogen, ammonia, dissolved	mg/L	.015	.14	.08	--	--	--	--	.05
Nitrogen, nitrite, dissolved	mg/L	.05	.03	.03	--	--	--	--	.02
Nitrogen, nitrate, dissolved	mg/L	.05	.92	.48	--	--	--	--	.54
Nitrite and nitrate, dissolved	mg/L	.05	.95	.51	--	--	--	--	.56
Nitrogen, organic, total	mg/L	.05	.56	.82	--	--	--	--	.85
Nitrogen, ammonia and organic, total	mg/L	.2	.7	.9	--	--	--	--	.9
Nitrogen, nitrate, total	mg/L	.05	.92	.48	--	--	--	--	.54
Nitrogen, total	mg/L	.2	1.7	1.4	--	--	--	--	1.5
Phosphorus, total	mg/L	.01	.24	.24	--	--	--	--	.21
Phosphorus, dissolved	mg/L	.01	.17	.15	--	--	--	--	.14
Carbon, organic, total	mg/L	.1	4.9	7.5	--	--	--	--	7.2
Hardness, total	mg/L	1	390	370	--	--	--	--	310
Calcium, dissolved	mg/L	.1	98	89	--	--	--	--	78
Magnesium, dissolved	mg/L	.1	35	35	--	--	--	--	27
Sodium, dissolved	mg/L	.1	1,100	1,500	--	--	--	--	1,100
Sodium absorption ratio	--	--	24	34	--	--	--	--	27
Sodium, percent	--	1	86	90	--	--	--	--	88
Potassium, dissolved	mg/L	.1	9.7	9.7	--	--	--	--	9.6
Chloride, dissolved	mg/L	.1	1,700	2,200	--	--	--	--	1,800
Sulfate, dissolved	mg/L	.1	260	310	--	--	--	--	250
Residue, dissolved at 180°C	mg/L	1	3,430	4,120	--	--	--	--	3,400
Dissolved solids, sum	mg/L	1	3,370	4,320	--	--	--	--	3,440
Specific conductance, lab	µS/cm	1	6,010	7,790	--	--	--	--	6,140
Alkalinity	mg/L	1	280	283	--	--	--	--	292

Table 5. Field measurements and water-quality data from discharge at the Theresa Street and Northeast Wastewater Treatment Plants and from sites on Salt Creek and its tributaries, Lincoln, Nebraska, June 20, 1994, August 16–17, 1994, September 28–29, 1994, and August 28–30, 1995--Continued

[USGS, U.S. Geological Survey; Cr., Creek; Hwy. Highway; Blvd., Boulevard; St., Street; --, no data; °C, degrees Celsius; ft³/s, cubic feet per second; mm/Hg, millimeters of mercury; mg/L, milligrams per liter; µS/cm, microsiemens per centimeter at 25°C; <, less than]

Sample location	USGS site identification number		Theresa	Dead Man's		Dead Man's		Dead Man's		Dead Man's		Dead Man's	
Site location number	Salt Cr. at Fairgrounds	Street Treatment Plant	Salt Cr. at 27th St.	Run at 70th St.	Run at Cornhusker Hwy	Run at Superior St.	Cr. at N 14th St.	Cr. at N 27th St.					
Date sampled	06803495	06803496	06803500	06803508	06803503	06803505	06803507	06803510					
Time sampled	08/17/94 08:15	08/17/94 10:15	08/17/94 08:45	08/17/94 07:30	08/17/94 08:25	08/17/94 09:15	08/17/94 09:05	08/17/94 09:55					
Property of water or chemical constituent	Units of measurement	Detection limits	Concentrations										
Water temperature, field	°C	0.5	21.5	21.5	20.0	22	20.0	20.5					
Air temperature, field	°C	.5	25	27	21.5	29	21.0	25.0					
Air pressure, field	mm/Hg	1	728	728	--	729	--	--					
Discharge, instant	ft ³ /s	.01	72	98	.17	103	1.9	4.7					
Specific conductance at 25°C, field	µs/cm	1	6,560	5,840	830	6,370	5,180	1,227					
Oxygen, dissolved, field	mg/L	.1	7.8	8.2	5.65	8.7	6.2	10.9					
Chemical oxygen demand, high level	mg/L	10	40	41	--	49	--	--					
pH, field	Standard units	.1	8.2	8	8.8	8.1	7.8	7.8					
Residue, total	mg/L	1	49	20	--	16	--	--					
Oil and grease, recoverable	mg/L	1	<1	<1	--	<1	--	--					
Nitrogen, ammonia, dissolved	mg/L	.015	.18	.88	--	.77	--	--					
Nitrogen, nitrite, dissolved	mg/L	.05	.03	.2	--	.18	--	--					
Nitrogen, nitrate, dissolved	mg/L	.05	.75	2.7	--	2.22	--	--					
Nitrite and nitrate, dissolved	mg/L	.05	.78	2.9	--	2.4	--	--					
Nitrogen, organic, total	mg/L	.05	.62	1.2	--	.93	--	--					
Nitrogen, Ammonia and organic, total	mg/L	.2	.8	2.1	--	1.7	--	--					
Nitrogen, nitrate, total	mg/L	.05	.75	2.7	--	2.22	--	--					
Nitrogen, total	mg/L	.2	1.6	5	--	4.1	--	--					
Phosphorus, total	mg/L	.01	.23	.86	--	.71	--	--					
Phosphorus, dissolved	mg/L	.01	.15	.76	--	.63	--	--					
Carbon, organic, total	mg/L	.1	6.6	8.1	--	5.7	--	--					
Hardness, total	mg/L	1	370	350	--	360	--	--					
Calcium, dissolved	mg/L	.1	94	89	--	94	--	--					
Magnesium, dissolved	mg/L	.1	33	30	--	31	--	--					
Sodium, dissolved	mg/L	.1	1,300	1,100	--	1,200	--	--					
Sodium absorption ratio	--	--	29	26	--	27	--	--					
Sodium, percent	--	1	88	87	--	87	--	--					
Potassium, dissolved	mg/L	.1	11	14	--	13	--	--					
Chloride, dissolved	mg/L	.1	1,900	1,600	--	1,800	--	--					
Sulfate, dissolved	mg/L	.1	260	240	--	260	--	--					
Residue, dissolved at 180°C	mg/L	1	3,510	3,240	--	3,560	--	--					
Dissolved solids, sum	mg/L	1	3,780	3,260	--	3,580	--	--					
Specific conductance, lab	µS/cm	1	6,520	5,810	--	6,330	--	--					
Alkalinity	mg/L	1	305	283	--	291	--	--					

Table 5. Field measurements and water-quality data from discharge at the Theresa Street and Northeast Wastewater Treatment Plants and from sites on Salt Creek and its tributaries, Lincoln, Nebraska, June 20, 1994, August 16-17, 1994, August 28-29, 1994, September 28-30, 1994, and August 28-30, 1995--Continued

[USGS, U.S. Geological Survey; Cr., Creek; Hwy, Highway; Blvd., Boulevard; St., Street; --, no data; °C, degrees Celsius; ft³/s, cubic feet per second; mm/Hg, millimeters of mercury; mg/L, milligrams per liter; µS/cm, microsiemens per centimeter at 25°C; <, less than]

Sample location	USGS site identification number	Little Salt Cr. near mouth	Salt Cr. at landfill	Salt Cr. at 70th St.	Northeast Treatment Plant	Salt Cr. below Northeast Treatment Plant	Stevens Cr. at Hwy 6	Salt Cr. below Stevens Cr. at Waverly	Salt Cr. at 27th St. (blank)	27th St. (duplicate)
Date sampled	Time sampled	068035108	068035111	068065113	068035135	06803514	06803523	06803525	06803500	
		25	8	9	30	10	28	11	6	6
		08/17/94	08/17/94	08/17/94	08/17/94	08/17/94	08/17/94	08/17/94	08/17/94	08/17/94
Property of water or chemical constituent	Units of measurement	11:00	10:15	11:15	10:30	12:00	12:10	14:30	08:55	08:50
		24.5	32	23	--	23.5	22.0	25	--	21.5
		°C	°C	°C	°C	°C	°C	°C	°C	°C
Water temperature, field	°C	24.5	32	23	--	23.5	22.0	25	--	21.5
Air temperature, field	°C	27.5	22	30	--	31	28.0	31	--	27
Air pressure, field	mm/Hg	--	729	730	--	730	--	730	--	728
Discharge, instant	ft ³ /s	5.2	110	120	--	125	4.4	136	--	103
Specific conductance at 25°C, field	µS/cm	1,306	6,700	7,040	--	6,680	914	6,210	--	5,840
Oxygen, dissolved, field	mg/L	19.9	8.8	10.6	--	10.5	7.78	12.7	--	8.2
Chemical oxygen demand, high level	mg/L	--	51	51	120	57	--	64	<10	40
pH, field	Standard units	8.1	8.1	8.1	7.2	8.1	8.8	8.1	--	8
Residue, total	mg/L	--	14	11	9	14	--	14	<1	25
Oil and grease, recoverable	mg/L	--	<1	<1	<1	<1	--	<1	<1	<1
Nitrogen, ammonia, dissolved	mg/L	--	.7	.67	.94	1.2	--	.79	.02	.79
Nitrogen, nitrite, dissolved	mg/L	--	.22	.29	1.1	.35	--	.42	<.01	.18
Nitrogen, nitrate, dissolved	mg/L	--	2.18	2.21	2.2	2.15	--	2.48	--	2.42
Nitrite and nitrate, dissolved	mg/L	--	2.4	2.5	3.3	2.5	--	2.9	<.05	2.6
Nitrogen, organic, total	mg/L	--	.9	1	11	1	--	1.1	--	1.1
Nitrogen, ammonia and organic, total	mg/L	--	1.6	1.7	12	2.2	--	1.9	<.02	1.9
Nitrogen, nitrate, total	mg/L	--	2.18	2.21	2.2	2.15	--	2.48	--	2.42
Nitrogen, total	mg/L	--	4	4.2	15	4.7	--	4.8	--	4.5
Phosphorus, total	mg/L	--	.68	.71	7.6	1.2	--	1.2	.02	.84
Phosphorus, dissolved	mg/L	--	.59	.65	7	1.1	--	1.2	.02	.69
Carbon, organic, total	mg/L	--	5.4	6.3	39	7.8	--	9.9	1.9	6.4
Hardness, total	mg/L	--	360	370	240	390	--	360	--	360
Calcium, dissolved	mg/L	--	93	95	69	100	--	93	<.02	96
Magnesium, dissolved	mg/L	--	32	32	17	35	--	31	<.01	30
Sodium, dissolved	mg/L	--	1,300	1,300	140	1,300	--	1,200	.2	1,100
Sodium absorption ratio	--	--	30	29	4	29	--	28	--	25
Sodium, percent	--	--	88	88	53	87	--	87	--	87
Potassium, dissolved	mg/L	--	15	15	19	16	--	15	.1	14
Chloride, dissolved	mg/L	--	1,800	1,900	130	2,000	--	1,800	<.1	1,700
Sulfate, dissolved	mg/L	--	280	320	130	300	--	290	<.1	240
Residue, dissolved at 180°C	mg/L	--	3,700	3,960	690	3,760	--	3,390	<.1	3,240
Dissolved solids, sum	mg/L	--	3,710	3,850	663	3,940	--	3,620	--	3,360
Specific conductance, lab	µS/cm	--	6,680	7,030	1,190	6,690	--	6,250	3	5,800
Alkalinity	mg/L	--	293	299	237	293	--	292	1.6	282

Table 5. Field measurements and water-quality data from discharge at the Theresa Street and Northeast Wastewater Treatment Plants and from sites on Salt Creek and its tributaries, Lincoln, Nebraska, June 20, 1994, August 16-17, 1994, September 28-29, 1994, and August 28-30, 1995--Continued

[USGS, U.S. Geological Survey; Cr., Creek; Hwy, Highway; Blvd., Boulevard; St., Street; --, no data; °C, degrees Celsius; ft³/s, cubic feet per second; mm/Hg, millimeters of mercury; mg/L, milligrams per liter; µS/cm, microsiemens per centimeter at 25°C; <, less than]

Sample location	Concentrations											
USGS site identification number	Salt Cr. at Pioneers Blvd.	Beal Slough at 56th St.	Beal Slough at Pioneers Blvd.	Haines Branch at southwest 56th St.	Haines Branch at Van Dorn St.	Salt Cr. at South St.	Middle Cr. at southwest 40th St.	Middle Cr. at near mouth				
Site location number	06803080	06803082	06803085	06803093	06803097	06803100	06803170	06803182				
Date sampled	09/28/94 09:00	09/28/94 09:00	09/28/94 09:30	09/28/94 10:25	09/28/94 11:05	09/28/94 10:30	09/28/94 12:10	09/28/94 13:00				
Time sampled												
Property of water or chemical constituent	Units of measurement	Detection limits										
Water temperature, field	°C	0.5	12	12	12	13.5	16	20				
Air temperature, field	°C	.5	13	13	15	16.5	25	29				
Air pressure, field	mm/Hg	1	--	--	--	736	--	--				
Discharge, instant	ft ³ /s	.01	.37	.72	1.4	22	1.9	3.8				
Specific conductance at 25°C, field	µS/cm	1	1,039	516	1,264	1,490	7,780	9,520				
Oxygen, dissolved, field	mg/L	.1	6.9	4.8	5.6	10.8	8.4	15.4				
Chemical oxygen demand, high level	mg/L	10	--	--	--	59	--	--				
pH, field	Standard units	.1	8.2	8.2	8.5	7.9	8.5	8.9				
Residue, total	mg/L	1	--	--	--	30	--	--				
Oil and grease, recoverable	mg/L	1	--	--	--	<1	--	--				
Nitrogen, ammonia, dissolved	mg/L	.015	--	--	--	.49	--	--				
Nitrogen, nitrite, dissolved	mg/L	.05	--	--	--	.05	--	--				
Nitrogen, nitrate, dissolved	mg/L	.05	--	--	--	1.45	--	--				
Nitrite and nitrate, dissolved	mg/L	.05	--	--	--	1.5	--	--				
Nitrogen, organic, total	mg/L	.05	--	--	--	.51	--	--				
Nitrogen, ammonia and organic, total	mg/L	.2	--	--	--	1	--	--				
Nitrogen, nitrate, total	mg/L	.05	--	--	--	1.45	--	--				
Nitrogen, total	mg/L	.2	--	--	--	2.5	--	--				
Phosphorus, total	mg/L	.01	--	--	--	.29	--	--				
Phosphorus, dissolved	mg/L	.01	--	--	--	.24	--	--				
Carbon, organic, total	mg/L	.1	--	--	--	8	--	--				
Hardness, total	mg/L	1	--	--	--	260	--	--				
Calcium, dissolved	mg/L	.1	--	--	--	66	--	--				
Magnesium, dissolved	mg/L	.1	--	--	--	22	--	--				
Sodium, dissolved	mg/L	.1	--	--	--	360	--	--				
Sodium absorption ratio	--	--	--	--	--	10	--	--				
Sodium, percent	--	1	--	--	--	75	--	--				
Potassium, dissolved	mg/L	.1	--	--	--	8.5	--	--				
Chloride, dissolved	mg/L	.1	--	--	--	560	--	--				
Sulfate, dissolved	mg/L	.1	--	--	--	130	--	--				
Residue, dissolved at 180°C	mg/L	1	--	--	--	1,430	--	--				
Dissolved solids, sum	mg/L	1	--	--	--	1,310	--	--				
Specific conductance, lab	µS/cm	1	--	--	--	1,490	--	--				
Alkalinity	mg/L	1	--	--	--	263	--	--				

Table 5. Field measurements and water-quality data from discharge at the Theresa Street and Northeast Wastewater Treatment Plants and from sites on Salt Creek and its tributaries, Lincoln, Nebraska, June 20, 1994, August 16-17, 1994, August 28-29, 1994, September 28-30, 1994, and August 28-30, 1995--Continued

[USGS, U.S. Geological Survey; Cr., Creek; Hwy, Highway; Blvd., Boulevard; St., Street; --, no data; °C, degrees Celsius; ft³/s, cubic feet per second; mm/Hg, millimeters of mercury; mg/L, milligrams per liter; µS/cm, microsiemens per centimeter at 25°C; <, less than]

Sample location			Concentrations									
USGS site identification number	Salt Cr. at O St.	Salt Cr. at 14th St.	Antelope Cr. at 56th St.	Antelope Cr. at Court St.	Oak Cr. at Hwy 34	Oak Cr. at Park Road	Oak Cr. at 14th St.	Salt Cr. at Fairgrounds				
Site location number	06803185	06803190	068031985	06803405	06803480	06803487	06803493	06803495				
Date sampled	09/28/94	09/28/94	09/28/94	09/28/94	09/28/94	09/28/94	09/28/94	09/28/94				
Time sampled	12:00	13:00	13:45	14:35	15:45	16:20	15:05	14:15				
Property of water or chemical constituent			Units of measurement	Detection limits								
Water temperature, field	°C	0.5	16	18	19	23	21	18				
Air temperature, field	°C	.5	22	23	25	27	25	24				
Air pressure, field	mm/Hg	1	736	736	--	--	--	736				
Discharge, instant	ft³/s	.01	29	33	.57	2.6	16	59				
Specific conductance at 25°C, field	µS/cm	1	1,740	8,260	270	2,380	1,820	8,740				
Oxygen, dissolved, field	mg/L	.1	13.8	13.9	9	12.2	14.3	13.6				
Chemical oxygen demand, high level	mg/L	10	210	110	--	--	--	--				
pH, field	Standard units	.1	8.2	8.3	9.1	8.7	8.8	8.3				
Residue, total	mg/L	1	36	12	--	--	--	--				
Oil and grease, recoverable	mg/L	1	--	--	--	--	--	1				
Nitrogen, ammonia, dissolved	mg/L	.015	.39	.44	--	--	--	.38				
Nitrogen, nitrite, dissolved	mg/L	.05	.06	.07	--	--	--	.07				
Nitrogen, nitrate, dissolved	mg/L	.05	1.14	1.13	--	--	--	1.23				
Nitrite and nitrate, dissolved	mg/L	.05	1.2	1.2	--	--	--	1.3				
Nitrogen, organic, total	mg/L	.05	.41	.36	--	--	--	.42				
Nitrogen, ammonia and organic, total	mg/L	.2	.8	.8	--	--	--	.8				
Nitrogen, nitrate, total	mg/L	.05	1.14	1.13	--	--	--	1.23				
Nitrogen, total	mg/L	.2	2	2	--	--	--	2.1				
Phosphorus, total	mg/L	.01	.26	.24	--	--	--	.24				
Phosphorus, dissolved	mg/L	.01	.22	.2	--	--	--	.18				
Carbon, organic, total	mg/L	.1	3.4	6.9	--	--	--	--				
Hardness, total	mg/L	1	360	390	--	--	--	--				
Calcium, dissolved	mg/L	.1	95	97	--	--	--	--				
Magnesium, dissolved	mg/L	.1	29	36	--	--	--	--				
Sodium, dissolved	mg/L	.1	1,100	1,700	--	--	--	--				
Sodium absorption ratio	--	--	25	37	--	--	--	--				
Sodium, percent	--	1	87	90	--	--	--	--				
Potassium, dissolved	mg/L	.1	9.2	11	--	--	--	--				
Chloride, dissolved	mg/L	.1	1,500	2,300	--	--	--	--				
Sulfate, dissolved	mg/L	.1	240	320	--	--	--	--				
Residue, dissolved at 180°C	mg/L	1	3,230	4,690	--	--	--	--				
Dissolved solids, sum	mg/L	1	3,150	4,650	--	--	--	--				
Specific conductance, lab	µS/cm	1	5,820	8,470	--	--	--	--				
Alkalinity	mg/L	1	284	294	--	--	--	--				

Table 5. Field measurements and water-quality data from discharge at the Theresa Street and Northeast Wastewater Treatment Plants and from sites on Salt Creek and its tributaries, Lincoln, Nebraska, June 20, 1994, August 16-17, 1994, September 28-29, 1994, and August 28-30, 1995--Continued

[USGS, U.S. Geological Survey; Cr., Creek; Hwy, Highway; Blvd., Boulevard; St., Street; --, no data; °C, degrees Celsius; ft³/s, cubic feet per second; mm/Hg, millimeters of mercury; mg/L, milligrams per liter; µS/cm, microsiemens per centimeter at 25°C; <, less than]

Sample location	USGS site identification number	Theresa St. Treatment Plant	Salt Cr. at Fairgrounds	Detection limits	Units of measurement	Property of water or chemical constituent	Concentrations									
							Salt Cr. at 27th St.	Dead Man's Run at 70th St.	Dead Man's Run at Cornhusker Hwy	Salt Cr. at Superior St.	Little Salt Cr. at N 14th St.	Little Salt Cr. at N 27th St.				
Date sampled	06803495	06803496	06803500	06803508	06803503	06803510										
Time sampled	09/29/94 08:30	09/29/94 09:30	09/29/94 10:00	09/29/94 09:30	09/29/94 08:40	09/29/94 12:30										
	5	29	6	24	23	7										
Water temperature, field	13.5	22	18	15	14	16										
Air temperature, field	.5	7.6	18	18	18	19										
Air pressure, field	--	--	730	--	--	--										
Discharge, instant	.01	55	99	.15	.78	1.2										
Specific conductance at 25°C, field	1	8,940	5,630	751	841	5,690										
Oxygen, dissolved, field	.1	8.1	7.6	11.9	9.5	13.6										
Chemical oxygen demand, high level	10	140	72	--	--	--										
pH, field	.1	8.1	7.5	8.5	7.7	8.4										
Residue, total	1	46	13	--	--	--										
Oil and grease, recoverable	1	1	<1	--	--	<1										
Nitrogen, ammonia, dissolved	.015	.32	2.5	--	--	1.9										
Nitrogen, nitrite, dissolved	.05	.06	.2	--	--	.19										
Nitrogen, nitrate, dissolved	.05	.94	4.9	--	--	3.91										
Nitrite and nitrate, dissolved	.05	1	5.1	--	--	4.1										
Nitrogen, organic, total	.05	.48	1.4	--	--	.9										
Nitrogen, ammonia and organic, total	.2	.8	3.9	--	--	2.8										
Nitrogen, nitrate, total	.05	.94	4.9	--	--	3.91										
Nitrogen, total	.2	1.8	9	--	--	6.9										
Phosphorus, total	.01	.23	2.1	--	--	1.6										
Phosphorus, dissolved	.01	.17	2.2	--	--	1.6										
Carbon, organic, total	.1	3.5	9.6	--	--	15										
Hardness, total	1	380	360	--	--	380										
Calcium, dissolved	.1	97	95	--	--	100										
Magnesium, dissolved	.1	33	29	--	--	32										
Sodium, dissolved	.1	1,500	1,100	--	--	1,300										
Sodium absorption ratio	--	34	25	--	--	29										
Sodium, percent	1	89	87	--	--	88										
Potassium, dissolved	.1	11	8.2	--	--	7.8										
Chloride, dissolved	.1	2,100	1,600	--	--	1,800										
Sulfate, dissolved	.1	300	240	--	--	270										
Residue, dissolved at 180°C	1	4,380	3,740	--	--	3,250										
Dissolved solids, sum	1	4,250	3,260	--	--	3,710										
Specific conductance, lab	1	7,660	5,890	--	--	6,730										
Alkalinity	1	333	271	--	--	300										

Table 5. Field measurements and water-quality data from discharge at the Theresa Street and Northeast Wastewater Treatment Plants and from sites on Salt Creek and its tributaries, Lincoln, Nebraska, June 20, 1994, August 16-17, 1994, August 28-29, 1994, September 28-30, 1994, and August 28-30, 1995--Continued

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Sample location	USGS site identification number	Little Salt Cr. near mouth	Salt Cr. at landfill	Salt Cr. at 70th St.	Northeast Treatment Plant	Salt Cr. below Northeast Treatment Plant	Stevens Cr. at Hwy 6	Salt Cr. below Stevens Cr. at Waverly	Salt Cr. at Fairgrounds (blank)	Salt Cr. at Fairgrounds (duplicate)
	Site location number	68035108	06803511	06806513	068035135	06803514	6803523	06803525	06803495	0683495
	Date sampled	09/29/94	09/29/94	09/29/94	09/29/94	09/29/94	09/29/94	09/29/94	09/29/94	09/29/94
	Time sampled	11:15	11:30	13:15	14:00	14:00	10:00	16:20	08:32	08:31
Concentrations										
Property of water or chemical constituent										
Units of measurement										
Detection limits										
Water temperature, field	°C	18	17.5	20.5	24	20.5	14	22	--	--
Air temperature, field	°C	19	21	23	--	24	19	25	--	--
Air pressure, field	mm/Hg	--	730	733	--	730	--	--	--	--
Discharge, instant	ft ³ /s	4.1	104	108	--	113	3.6	117	--	--
Specific conductance at 25°C, field	µS/cm	15,820	7,420	8,410	767	7,680	544	7,220	--	--
Oxygen, dissolved, field	mg/L	13.3	9	9.9	--	8.7	9.4	10	--	--
Chemical oxygen demand, high level	mg/L	10	96	120	110	210	--	110	<10	--
pH, field	Standard units	8.4	7.8	8.1	7.7	7.9	8.2	8.1	--	--
Residue, total	mg/L	1	40	15	10	22	--	28	1	--
Oil and grease, recoverable	mg/L	1	2	1	5	1	--	2	<1	--
Nitrogen, ammonia, dissolved	mg/L	--	1.4	1.3	8.4	1.4	--	1.6	<0.1	.31
Nitrogen, nitrite, dissolved	mg/L	--	.23	.28	1	.43	--	.59	<0.1	.06
Nitrogen, nitrate, dissolved	mg/L	--	3.57	3.02	4.8	3.17	--	3.41	--	--
Nitrite and nitrate, dissolved	mg/L	--	3.8	3.3	5.8	3.6	--	4	<0.05	1
Nitrogen, organic, total	mg/L	--	1.1	.7	2.6	1.2	--	.9	--	--
Nitrogen, ammonia and organic, total	mg/L	--	2.5	2	11	2.6	--	2.5	<2	.8
Nitrogen, nitrate, total	mg/L	--	3.57	3.02	4.8	3.17	--	3.41	--	--
Nitrogen, total	mg/L	--	6.3	5.3	17	6.2	--	6.5	--	--
Phosphorus, total	mg/L	--	1.5	1.2	9.8	1.8	--	2	<0.1	.22
Phosphorus, dissolved	mg/L	--	1.3	1.1	9.8	1.6	--	2	<0.1	.19
Carbon, organic, total	mg/L	--	9.7	16	12	61	--	25	1.8	--
Hardness, total	mg/L	--	390	420	230	410	--	360	--	--
Calcium, dissolved	mg/L	--	100	110	65	110	--	92	.1	--
Magnesium, dissolved	mg/L	--	34	35	16	34	--	31	<0.1	--
Sodium, dissolved	mg/L	--	1,500	1,700	140	1,600	--	1,400	<2	--
Sodium absorption ratio	--	--	33	36	4	34	--	32	--	--
Sodium, percent	--	--	89	90	55	89	--	89	--	--
Potassium, dissolved	mg/L	--	16	17	18	17	--	8	<1	--
Chloride, dissolved	mg/L	--	2,100	2,400	140	2,200	--	2,000	<1	--
Sulfate, dissolved	mg/L	--	330	370	120	350	--	330	<1	--
Residue, dissolved at 180°C	mg/L	--	4,370	4,890	736	4,640	--	4,130	<1.0	--
Dissolved solids, sum	mg/L	--	4,280	4,840	676	4,510	--	4,070	--	--
Specific conductance, lab	µS/cm	--	7,600	8,320	1,210	7,940	--	7,280	2	--
Alkalinity	mg/L	--	300	325	234	309	--	319	1.9	--

Table 5. Field measurements and water-quality data from discharge at the Theresa Street and Northeast Wastewater Treatment Plants and from sites on Salt Creek and its tributaries, Lincoln, Nebraska, June 20, 1994, August 16-17, 1994, September 28-29, 1994, and August 28-30, 1995--Continued

[USGS, U.S. Geological Survey; Cr., Creek; Hwy, Highway; Blvd., Boulevard; St., Street; --, no data; °C, degrees Celsius; ft³/s, cubic feet per second; mm/Hg, millimeters of mercury; mg/L, milligrams per liter; µS/cm, microsiemens per centimeter at 25°C; <, less than]

Sample location	USGS site identification number	Date sampled	Time sampled	Property of water or chemical constituent	Units of measurement	Detection limits	Concentrations							
							Salt Cr. at Pioneers Blvd.	Beal Slough at 56th St.	Beal Slough at Pioneers Blvd.	Haines Branch at southwest 56th St.	Haines Branch at Van Dorn St.	Salt Cr. at South St.	Middle Cr. at southwest 40th St.	Middle Cr. near mouth
Water temperature, field				°C		0.5	24.5	25	23	30.5	22	23.5	28.5	21
Air temperature, field				°C		.5	26	32	24.5	27	24.5	24	26	25
Air pressure, field				mm/Hg		1	727	729	730	729	730	729	729	730
Discharge, instant				ft ³ /s		.01	13	.24	.53	1.9	4.6	21	3.2	3.8
Specific conductance at 25°C, field				µS/cm		1	1,220	1,090	771	1,250	1,190	5,600	913	792
Oxygen, dissolved, field				mg/L		.1	5.7	7.9	5.4	9	5.3	6.8	6.1	7.4
Chemical oxygen demand, high level				mg/L		10	97	20	14	19	68	32	15	74
pH, field				Standard units		.1	8.2	7.9	7.5	8.5	7.9	8	8.2	8
Residue, total				mg/L		1	94	6	<1	232	25	72	41	7
Oil and grease, recoverable				mg/L		1	--	<1	<1	<1	1	1	<1	1
Nitrogen, ammonia, dissolved				mg/L		.015	.03	.03	.04	.1	.17	.02	.1	.3
Nitrogen, nitrite, dissolved				mg/L		.05	--	--	--	--	--	--	--	--
Nitrogen, nitrate, dissolved				mg/L		.05	--	--	--	--	--	--	--	--
Nitrite and nitrate, dissolved				mg/L		.05	1.1	.18	1.6	.4	.34	.79	.84	.34
Nitrogen, organic, total				mg/L		.05	.26	.37	.37	.54	.48	.29	.37	.67
Nitrogen, ammonia and organic, total				mg/L		.2	.5	.5	.5	1.2	.6	.7	.7	.9
Nitrogen, nitrate, total				mg/L		.05	--	--	--	--	--	--	--	--
Nitrogen, total				mg/L		.2	--	--	--	--	--	--	--	--
Phosphorus, total				mg/L		.01	.35	.34	.19	.45	.2	.34	.33	.28
Phosphorus, dissolved				mg/L		.01	.33	.3	.18	.21	.16	.26	.25	.21
Carbon, organic, total				mg/L		.1	33	7.4	7.9	7.3	9	7.4	6.1	5.8
Hardness, total				mg/L		1	310	420	290	290	390	340	250	360
Calcium, dissolved				mg/L		.1	88	110	79	80	90	90	70	90
Magnesium, dissolved				mg/L		.1	22	36	23	23	41	28	18	34
Sodium, dissolved				mg/L		.1	130	65	48	150	1,600	530	100	1,500
Sodium absorption ratio				--		--	3	1	1	4	35	13	3	34
Sodium, percent				--		1	48	25	26	52	90	77	46	90
Potassium, dissolved				mg/L		.1	6.3	9	8.6	6.2	9.7	7.1	7.2	10
Chloride, dissolved				mg/L		.1	160	65	32	180	2,300	750	72	2,200
Sulfate, dissolved				mg/L		.1	100	210	110	86	370	180	55	290
Residue dissolved at 180°C				mg/L		1	696	720	485	734	4,620	1,770	546	4,510
Dissolved solids, sum				mg/L		1	679	665	451	698	4,600	1,760	522	4,340
Specific conductance, lab				µS/cm		1	1,140	1,050	747	1,210	7,660	3,140	880	7,550
Alkalinity				mg/L		1	280	282	239	285	320	289	326	358

Table 5. Field measurements and water-quality data from discharge at the Theresa Street and Northeast Wastewater Treatment Plants and from sites on Salt Creek and its tributaries, Lincoln, Nebraska, June 20, 1994, August 16-17, 1994, September 28-29, 1994, and August 28-30, 1995--Continued

[USGS, U.S. Geological Survey; Cr., Creek; Hwy, Highway; Blvd., Boulevard; St., Street; --, no data; °C, degrees Celsius; ft³/s, cubic feet per second; mm/Hg, millimeters of mercury; mg/L, milligrams per liter; µS/cm, microsiemens per centimeter at 25°C; <, less than]

Sample location	Salt Cr. at O St.	Salt Cr. at 14th St.	Antelope Cr. at 56th St.	Antelope Cr. at Court St.	Oak Cr. at Hwy 34	Oak Cr. at Air Park Road	Oak Cr. at 14th St.	Salt Cr. at Fairgrounds
USGS site identification number	06803185	06803190	068031985	06803405	06803480	06803487	06803493	06803495
Site location number	3	4	19	18	22	21	20	5
Date sampled	08/29/95	08/29/95	08/28/95	08/29/95	08/28/95	08/29/95	08/29/95	08/30/95
Time sampled	10:30	13:40	18:20	13:00	20:45	06:30	13:30	14:30
Property of water or chemical constituent	Units of measurement	Detection limits	Concentrations					
Water temperature, field	°C	0.5	25	27.5	29.5	28.5	29	31
Air temperature, field	°C	.5	25.5	34	32	26	36	37
Air pressure, field	mm/Hg	1	730	729	730	729	729	--
Discharge, instant	ft ³ /s	.01	27	.11	2	18	19	55
Specific conductance at 25°C, field	µS/cm	1	6,540	676	2,150	1,770	5,870	7,890
Oxygen, dissolved, field	mg/L	.1	8.9	8.1	19.9	6.8	12.2	11.8
Chemical oxygen demand, high level	mg/L	10	57	17	29	22	24	72
pH, field	Standard units	.1	8.2	8.3	8.8	8.6	8.6	8.7
Residue, total	mg/L	1	70	1	2	22	41	56
Oil and grease, recoverable	mg/L	1	1	1	1	1	1	1
Nitrogen, ammonia, dissolved	mg/L	.015	.14	.06	1.4	.02	.1	.09
Nitrogen, nitrite, dissolved	mg/L	.05	--	--	--	--	--	--
Nitrogen, nitrate, dissolved	mg/L	.05	--	--	--	--	--	--
Nitrite and nitrate, dissolved	mg/L	.05	.69	.28	3.5	.05	.37	.52
Nitrogen, organic, total	mg/L	.05	.36	.48	8.2	.24	.52	.48
Nitrogen, ammonia and organic, total	mg/L	.2	.8	.6	8.4	.7	1.1	1.1
Nitrogen, nitrate, total	mg/L	.05	--	--	--	--	--	--
Nitrogen, total	mg/L	.2	--	--	--	--	--	--
Phosphorus, total	mg/L	.01	.34	.22	.36	.16	.4	.37
Phosphorus, dissolved	mg/L	.01	.24	.21	.32	.09	.3	.25
Carbon, organic, total	mg/L	.1	5.3	11	11	5.4	6.7	6.6
Hardness, total	mg/L	1	390	250	290	270	330	350
Calcium, dissolved	mg/L	.1	100	66	80	71	83	87
Magnesium, dissolved	mg/L	.1	35	20	21	23	29	33
Sodium, dissolved	mg/L	.1	1,200	47	320	340	1,100	1,500
Sodium absorption ratio	--	--	26	1	8	9	26	35
Sodium, percent	--	1	87	29	70	73	88	90
Potassium, dissolved	mg/L	.1	9.1	10	12	9.6	11	12
Chloride, dissolved	mg/L	.1	1,800	25	470	480	1,600	2,200
Sulfate, dissolved	mg/L	.1	290	87	180	130	230	320
Residue dissolved at 180°C	mg/L	1	3,710	433	1,300	1,270	3,320	4,540
Dissolved solids, sum	mg/L	1	3,620	398	1,210	1,220	3,260	4,350
Specific conductance, lab	µS/cm	1	6,270	659	2,180	2,210	5,640	7,540
Alkalinity	mg/L	1	306	236	189	278	344	330

Table 5. Field measurements and water-quality data from discharge at the Theresa Street and Northeast Wastewater Treatment Plants and from sites on Salt Creek and its tributaries, Lincoln, Nebraska, June 20, 1994, August 16-17, 1994, August 28-29, 1994, September 28-30, 1994, and August 28-30, 1995--Continued

[USGS, U.S. Geological Survey; Cr., Creek; Hwy, Highway; Blvd., Boulevard; St., Street; --, no data; °C, degrees Celsius; ft³/s, cubic feet per second; mm/Hg, millimeters of mercury; mg/L, milligrams per liter; µS/cm, microsiemens per centimeter at 25°C; <, less than]

Sample location	Theresa				Dead Man's				Little Salt			
	Salt Cr. at Fairgrounds	Street Treatment Plant	Salt Cr. at 27th St.	Run at Cornhusker Hwy	Salt Cr. at Superior St.	Cr. at N 14th St.	Little Salt Cr. at N 27th St.		Salt Cr. at Superior St.	Cr. at N 14th St.	Little Salt Cr. at N 27th St.	
USGS site identification number	06803495	06803496	06803500	06803508	06803505	06803507	06803510		06803505	06803507	06803510	
Site location number	5	29	6	24	7	27	26		7	27	26	
Date sampled	08/30/95	08/30/95	08/30/95	08/29/95	08/30/95	08/30/95	08/30/95		08/30/95	08/30/95	08/30/95	
Time sampled	06:00	06:20	07:30	13:50	09:00	16:00	08:40		09:00	16:00	08:40	
Property of water or chemical constituent	Units of measurement				Concentrations							
	Detection limits											
Water temperature, field	22	24	23.5	30	22.5	28.5	23		22.5	28.5	23	
Air temperature, field	26	21	27	34	23.5	36	28		23.5	36	28	
Air pressure, field	724	727	727	730	726	--	727		726	--	727	
Discharge, instant	48	15	68	13	85	.6	2.5		85	.6	2.5	
Specific conductance at 25°C, field	8,840	1,360	7,700	613	7,860	8,490	17,960		7,860	8,490	17,960	
Oxygen, dissolved, field	.1	5.6	6.4	16.2	5.8	12.4	3.8		5.8	12.4	3.8	
Chemical oxygen demand, high level	10	84	73	29	78	46	260		78	46	260	
pH, field	.1	8	7.9	9.5	8	8.3	7.9		8	8.3	7.9	
Residue, total	1	33	32	13	38	57	26		38	57	26	
Oil and grease, recoverable	1	1	1	1	2	1	1		2	1	1	
Nitrogen, ammonia, dissolved	.015	.29	1.6	.03	1.5	.33	.74		1.5	.33	.74	
Nitrogen, nitrite, dissolved	.05	--	--	--	--	--	--		--	--	--	
Nitrogen, nitrate, dissolved	.05	--	--	--	--	--	--		--	--	--	
Nitrite and nitrate, dissolved	.05	.62	2.7	<.05	2.7	.36	.074		2.7	.36	.074	
Nitrogen, organic, total	.05	.81	2.3	.7	2.2	.74	.91		2.2	.74	.91	
Nitrogen, ammonia and organic, total	.2	1.1	3	.9	2.8	1.1	1.3		2.8	1.1	1.3	
Nitrogen, nitrate, total	.05	--	--	--	--	--	--		--	--	--	
Nitrogen, total	.2	--	--	--	--	--	--		--	--	--	
Phosphorus, total	.01	.32	1.1	.07	1.1	.3	.13		1.1	.3	.13	
Phosphorus, dissolved	.01	.22	.85	.05	.86	.22	.02		.86	.22	.02	
Carbon, organic, total	.1	15	15	14	7.2	11	13		7.2	11	13	
Hardness, total	1	390	370	170	370	360	530		370	360	530	
Calcium, dissolved	.1	94	93	31	94	90	120		94	90	120	
Magnesium, dissolved	.1	37	34	22	34	32	56		34	32	56	
Sodium, dissolved	.1	1,800	1,500	71	1,500	1,700	3,900		1,500	1,700	3,900	
Sodium absorption ratio	--	40	34	2	34	39	74		34	39	74	
Sodium, percent	1	91	90	47	90	91	94		90	91	94	
Potassium, dissolved	.1	13	15	7.9	15	17	27		15	17	27	
Chloride, dissolved	.1	2,600	2,100	51	2,200	2,300	5,500		2,200	2,300	5,500	
Sulfate, dissolved	.1	360	330	87	340	630	1,200		340	630	1,200	
Residue, dissolved at 180°C	1	5,060	4,370	407	4,520	5,020	11,300		4,520	5,020	11,300	
Dissolved solids, sum	1	5,100	4,260	368	4,380	4,970	11,100		4,380	4,970	11,100	
Specific conductance, lab	1	8,610	7,210	606	7,540	8,040	17,000		7,540	8,040	17,000	
Alkalinity	1	327	296	164	299	339	426		299	339	426	

Table 6. Loads of selected constituents from discharge at the Theresa Street and Northeast Wastewater Treatment Plants and from sites on Salt Creek and its tributaries, Lincoln, Nebraska, June 20, 1994, August 16-17, 1994, September 28-29, 1994, and August 28-30, 1995

[USGS, U.S. Geological Survey; Cr., Creek; Blvd., Boulevard; St., Street; Hwy, Highway; kg/d, kilograms per day; ton/d, tons per day; °C, degrees Celsius; --, no data]

Sample location		Salt Cr. at Pioneers Blvd.		Salt Cr. at South St.		Salt Cr. at O St.		Salt Cr. at 14th St.		Salt Cr. at Fairgrounds	
USGS site identification number		06803080		06803100		06803185		06803190		06803495	
Site location number		1		2		3		4		5	
Date sampled		06/20/94		06/20/94		06/20/94		06/20/94		06/20/94	
Time sampled		09:10		11:00		12:00		13:00		14:00	
Chemical constituent		Units of measurement		Detection limits		Loads					
Nitrogen, ammonia, dissolved		kg/d		.01		1.7		5.6		12	
Nitrogen, nitrite, dissolved		kg/d		.01		1.7		4.5		5.3	
Nitrogen, nitrate, dissolved		kg/d		.01		120		150		170	
Nitrite and nitrate, dissolved		kg/d		.01		120		160		170	
Nitrogen, organic, total		kg/d		.01		65		96		81	
Nitrogen, ammonia and organic, total		kg/d		.01		67		100		93	
Nitrogen, nitrate, total		kg/d		.01		120		150		170	
Nitrogen, total		kg/d		.01		190		260		260	
Phosphorus, total		kg/d		.01		34		46		40	
Phosphorus, dissolved		kg/d		.01		24		29		30	
Carbon, organic, total		kg/d		.01		710		1,100		1,100	
Hardness, total		ton/d		.001		22		33		45	
Calcium, dissolved		ton/d		.001		6.2		9		12	
Magnesium, dissolved		ton/d		.001		1.5		2.4		3.6	
Sodium, dissolved		ton/d		.001		4.4		27		98	
Potassium, dissolved		ton/d		.001		.61		.86		1.2	
Chloride, dissolved		ton/d		.001		3.5		36		130	
Sulfate, dissolved		ton/d		.001		5.7		12		25	
Dissolved solids, sum		ton/d		.001		35		110		300	
Alkalinity		ton/d		.001		21		22		23	

Table 6. Loads of selected constituents from discharge at the Theresa Street and Northeast Wastewater Treatment Plants and from sites on Salt Creek and its tributaries, Lincoln, Nebraska, June 20, 1994, August 16-17, 1994, September 28-29, 1994, and August 28-30, 1995--Continued

[USGS, U.S. Geological Survey; Cr., Creek; Blvd., Boulevard; St., Street; Hwy, Highway; kg/d, kilograms per day; ton/d, tons per day; °C, degrees Celsius; --, no data]

Sample location	Salt Cr. at					Theresa Street				
	Pioneers Blvd.	South St.	O St.	14 th St.	Fairgrounds	Fairgrounds	Fairgrounds	Fairgrounds	Plant	Treatment Plant
USGS site identification number	06803080	06803100	06803185	06803190	06803495	06803495	06803495	06803495	06803496	
Site location number	1	2	3	4	5	5	5	5	29	
Date sampled	08/16/94	08/16/94	08/16/94	08/16/94	08/16/94	08/16/94	08/16/94	08/17/94	08/17/94	
Time sampled	08:45	10:45	11:45	12:45	13:15	13:15	13:15	08:15	10:15	
Chemical constituent	Units of measurement		Detection limits		Loads					
	kg/d		0.01		ton/d					
Nitrogen, ammonia, dissolved	2.2	3.9	11	7.2	32	10	4	5.3	230	54
Nitrogen, nitrite, dissolved	.54	1.1	2.4	2.7	43	110	110	130	1,100	1,100
Nitrogen, nitrate, dissolved	59	48	74	43	46	110	110	140	1,100	1,100
Nitrite and nitrate, dissolved	59	50	77	46	74	170	170	110	150	150
Nitrogen, organic, total	36	41	45	81	81	180	180	140	390	390
Nitrogen, ammonia and organic, total	38	45	57	43	43	110	130	280	1,500	1,500
Nitrogen, nitrate, total	59	48	74	130	130	300	42	41	320	320
Nitrogen, total	97	96	140	22	22	28	26	26	300	300
Phosphorus, total	0	16	19	14	14	1,400	65	17	810	810
Phosphorus, dissolved	14	11	14	14	14	62	16	17	20	20
Carbon, organic, total	340	330	400	680	680	5.4	5.8	5.8	1.4	1.4
Hardness, total	17	18	31	33	33	220	230	230	15	15
Calcium, dissolved	4.7	4.8	7.9	8.1	8.1	1.9	1.9	1.9	2	2
Magnesium, dissolved	1.1	1.4	2.8	3.2	3.2	360	330	330	18	18
Sodium, dissolved	5	25	89	140	140	50	46	46	11	11
Potassium, dissolved	.37	.38	.78	.88	.88	620	670	670	67	67
Chloride, dissolved	5.9	35	140	200	200	59	54	54	15	15
Sulfate, dissolved	4.5	8.4	21	28	28	360	330	330	18	18
Residue, dissolved at 180°C	31	84	280	370	370	620	670	670	67	67
Dissolved solids, sum	30	85	270	390	390	620	670	670	67	67
Alkalinity	14	15	23	26	26	59	54	54	15	15

Table 6. Loads of selected constituents from discharge at the Theresa Street and Northeast Wastewater Treatment Plants and from sites on Salt Creek and its tributaries, Lincoln, Nebraska, June 20, 1994, August 16-17, 1994, September 28-29, 1994, and August 28-30, 1995--Continued

[USGS, U.S. Geological Survey; Cr., Creek; Blvd., Boulevard; St., Street; Hwy, Highway; kg/d, kilograms per day; ton/d, tons per day; °C, degrees Celsius; --, no data]

Sample location		Salt Cr. at 27th St.	Salt Cr. at Superior St.	Salt Cr. at landfill	Salt Cr. at 70th St.	Northeast Treatment Plant	Salt Cr. below Northeast Treatment Plant	Salt Cr. below Stevens Cr. at Waverly
USGS site identification number		06803500	06803505	06803511	06803513	068035135	06803514	06803525
Site location number		6	7	8	9	30	10	11
Date sampled		08/17/94	08/17/94	08/17/94	08/17/94	08/17/94	08/17/94	08/17/94
Time sampled		08:45	09:15	10:15	11:15	10:30	12:00	14:30
Chemical constituent		Units of measurement	Detection limits	Loads				
Nitrogen, ammonia, dissolved		kg/d	0.01	220	190	200	19	250
Nitrogen, nitrite, dissolved		kg/d	.01	50	45	84	22	130
Nitrogen, nitrate, dissolved		kg/d	.01	680	560	640	44	790
Nitrite and nitrate, dissolved		kg/d	.01	730	600	730	66	920
Nitrogen, organic, total		kg/d	.01	300	230	290	220	350
Nitrogen, ammonia and organic, total		kg/d	.01	530	430	500	240	600
Nitrogen, nitrate, total		kg/d	.01	680	560	640	44	790
Nitrogen, total		kg/d	.01	1,300	1,000	1,200	300	1,500
Phosphorus, total		kg/d	.01	220	180	210	150	380
Phosphorus, dissolved		kg/d	.01	190	160	190	140	380
Carbon, organic, total		kg/d	.01	2,000	1,400	1,800	780	3,100
Hardness, total		ton/d	.001	88	91	110	48	110
Calcium, dissolved		ton/d	.001	22	24	28	1.4	30
Magnesium, dissolved		ton/d	.001	7.6	7.8	9.3	.34	9.9
Sodium, dissolved		ton/d	.001	280	300	380	2.8	380
Potassium, dissolved		ton/d	.001	3.5	3.4	4.4	.38	4.8
Chloride, dissolved		ton/d	.001	400	450	550	2.6	570
Sulfate, dissolved		ton/d	.001	60	66	93	92	92
Residue, dissolved at 180°C		ton/d	.001	820	900	1,000	14	1,100
Dissolved solids, sum		ton/d	.001	820	900	1,100	14	1,200
Alkalinity		ton/d	.001	71	73	87	4.7	93

Table 6. Loads of selected constituents from discharge at the Theresa Street and Northeast Wastewater Treatment Plants and from sites on Salt Creek and its tributaries, Lincoln, Nebraska, June 20, 1994, August 16-17, 1994, September 28-29, 1994, and August 28-30, 1995--Continued

[USGS, U.S. Geological Survey; Cr., Creek; Blvd., Boulevard; St., Street; Hwy, Highway; kg/d, kilograms per day; ton/d, tons per day; °C, degrees Celsius; ---, no data]

Sample location		Salt Cr. at Pioneers Blvd.	Salt Cr. at South St.	Salt Cr. at O St.	Salt Cr. at 14th St.	Salt Cr. at Fairgrounds	Salt Cr. at Fairgrounds	Theresa Street Treatment Plant	
USGS site identification number		06803080	06803100	06803185	06803190	06803495	06803495	06803496	
Site location number		1	2	3	4	5	5	29	
Date sampled		09/28/94	09/28/94	09/28/94	09/28/94	09/28/94	09/28/94	09/29/94	
Time sampled		09:00	10:30	12:00	13:00	14:15	08:30	09:30	
Chemical constituent	Units of measurement	Detection limits	Loads						
Nitrogen, ammonia, dissolved	kg/d	0.01	29	26	28	36	55	43	620
Nitrogen, nitrite, dissolved	kg/d	.01	2.6	2.7	4.3	5.7	10	8.1	36
Nitrogen, nitrate, dissolved	kg/d	.01	64	78	81	91	180	130	1,500
Nitrite and nitrate, dissolved	kg/d	.01	66	81	85	97	190	135	1,500
Nitrogen, organic, total	kg/d	.01	18	27	29	29	61	65	180
Nitrogen, ammonia and organic, total	kg/d	.01	48	54	57	65	120	110	790
Nitrogen, nitrate, total	kg/d	.01	64	78	81	91	180	130	1,500
Nitrogen, total	kg/d	.01	110	130	140	160	300	240	2,300
Phosphorus, total	kg/d	.01	14	16	18	19	35	31	480
Phosphorus, dissolved	kg/d	.01	11	13	16	16	26	23	500
Carbon, organic, total	kg/d	.01	210	430	240	560	--	470	3,900
Hardness, total	ton/d	.001	9.2	14	26	31	--	51	20
Calcium, dissolved	ton/d	.001	2.7	3.6	6.7	7.8	--	13	5.5
Magnesium, dissolved	ton/d	.001	.62	1.2	2.1	2.9	--	4.4	1.4
Sodium, dissolved	ton/d	.001	2.1	19	78	140	--	200	15
Potassium, dissolved	ton/d	.001	.28	.46	.65	.89	--	1.5	2
Chloride, dissolved	ton/d	.001	2.1	30	110	190	--	280	18
Sulfate, dissolved	ton/d	.001	2.4	7	17	26	--	40	9.8
Residue, dissolved at 180°C	ton/d	.001	17	77	230	380	--	590	73
Dissolved solids, sum	ton/d	.001	16	71	220	380	--	570	74
Alkalinity	ton/d	.001	9	14	20	24	--	45	24

Table 6. Loads of selected constituents from discharge at the Theresa Street and Northeast Wastewater Treatment Plants and from sites on Salt Creek and its tributaries, Lincoln, Nebraska, June 20, 1994, August 16-17, 1994, September 28-29, 1994, and August 28-30, 1995--Continued

[USGS, U.S. Geological Survey; Cr., Creek; Blvd., Boulevard; St., Street; Hwy, Highway; kg/d, kilograms per day; ton/d, tons per day; °C, degrees Celsius; --, no data]

Sample location		Units of measurement		Detection limits		Loads							
USGS site identification number		Chemical constituent		Units of measurement		Detection limits		Loads					
Site location number	Date sampled	Time sampled	Chemical constituent	Units of measurement	Detection limits	Salt Cr. at 27th St.	Salt Cr. at Superior St.	Salt Cr. at landfill	Salt Cr. at 70th St.	Northeast Treatment Plant	Salt Cr. below Treatment Plant	Salt Cr. below Stevens Cr.	
06803500	09/29/94	10:00	Nitrogen, ammonia, dissolved	kg/d	0.01	610	430	360	340	190	390	430	
6	09/29/94	10:00	Nitrogen, nitrite, dissolved	kg/d	.01	48	43	59	74	23	120	160	
			Nitrogen, nitrate, dissolved	kg/d	.01	1,200	880	910	800	110	880	920	
			Nitrite and nitrate, dissolved	kg/d	.01	1,200	920	970	870	130	1,000	1,100	
			Nitrogen, organic, total	kg/d	.01	340	200	280	180	60	330	240	
			Nitrogen, ammonia and organic, total	kg/d	.01	940	630	640	530	250	720	670	
			Nitrogen, nitrate, total	kg/d	.01	1,200	880	910	800	110	880	920	
			Nitrogen, total	kg/d	.01	2,200	1,600	1,600	1,400	390	1,700	1,700	
			Phosphorus, total	kg/d	.01	510	360	380	320	230	500	540	
			Phosphorus, dissolved	kg/d	.01	530	360	330	290	230	440	540	
			Carbon, organic, total	kg/d	.01	2,300	3,400	2,500	4,200	280	17,000	6,700	
			Hardness, total	ton/d	.001	87	86	99	110	5.3	110	97	
			Calcium, dissolved	ton/d	.001	23	23	25	29	1.5	30	25	
			Magnesium, dissolved	ton/d	.001	7	7.2	8.7	9.2	.37	9.4	8.3	
			Sodium, dissolved	ton/d	.001	27	290	380	450	3.2	440	380	
			Potassium, dissolved	ton/d	.001	2	1.8	4.1	4.5	.41	4.7	2.2	
			Chloride, dissolved	ton/d	.001	390	410	530	630	3.2	610	540	
			Sulfate, dissolved	ton/d	.001	58	61	84	98	2.8	97	89	
			Residue dissolved at 180°C	ton/d	.001	910	730	1,100	1,300	17	1,300	1,100	
			Dissolved solids, sum	ton/d	.001	790	840	1,100	1,300	16	1,200	1,100	
			Alkalinity	ton/d	.001	66	68	76	86	5	85	86	

Table 6. Loads of selected constituents from discharge at the Theresa Street and Northeast Wastewater Treatment Plants and from sites on Salt Creek and its tributaries, Lincoln, Nebraska, June 20, 1994, August 16-17, 1994, September 28-29, 1994, and August 28-30, 1995--Continued

[USGS, U.S. Geological Survey; Cr., Creek; Blvd., Boulevard; St., Street; Hwy, Highway; kg/d, kilograms per day; ton/d, tons per day; °C, degrees Celsius; --, no data]

Sample location	USGS site identification number	Site location number	Date sampled	Time sampled	Chemical constituent	Units of measurement	Detection limits	Loads							
								Salt Cr. at Pioneers Blvd.	Beal Slough at 56th St.	Beal Slough at Pioneers Blvd.	Haines Branch at southwest 56th St.	Haines Branch at Van Dorn St.	Salt Cr. at South St.	Middle Cr. at southwest 40th St.	Middle Cr. near mouth
						kg/d	0.01	0.9	1.8	--	.46	1.9	1	.78	--
Nitrogen, ammonia, dissolved						kg/d	.01	32	11	2.1	1.9	3.8	41	6.6	3.2
Nitrite and nitrate, dissolved						kg/d	.01	15	29	.65	5.6	6.8	36	5.5	8.4
Nitrogen, ammonia and organic, total						kg/d	.01	10	20	.25	2.1	2.3	17	2.6	2.6
Phosphorus, total						kg/d	.01	9.7	18	.23	.98	1.8	13	2	2
Phosphorus, dissolved						kg/d	.01	970	430	10	34	100	380	48	54
Carbon, organic, total						ton/d	.001	9.1	25	.38	1.3	4.4	17	2	3.3
Hardness, total						ton/d	.001	2.6	6.5	.1	.37	1	4.6	.55	.84
Calcium, dissolved						ton/d	.001	.65	2.1	.03	.11	.46	1.4	.14	.32
Magnesium, dissolved						ton/d	.001	3.8	3.8	.062	.7	18	27	.78	14
Sodium, dissolved						ton/d	.001	.18	.53	.011	.029	.11	.36	.056	.093
Potassium, dissolved						ton/d	.001	4.7	3.8	.042	.84	26	39	.56	20
Chloride, dissolved						ton/d	.001	2.9	12	.14	.4	4.2	9.2	.43	2.7
Sulfate, dissolved						ton/d	.001	20	42	.63	3.4	52	91	4.3	42
Residue, dissolved at 180°C						ton/d	.001	20	39	.58	3.2	52	90	4.1	40
Dissolved solids, sum						ton/d	.001	8.2	17	.31	1.3	3.6	15	2.6	3.3
Alkalinity						ton/d	.001								

Table 6. Loads of selected constituents from discharge at the Theresa Street and Northeast Wastewater Treatment Plants and from sites on Salt Creek and its tributaries, Lincoln, Nebraska, June 20, 1994, August 16-17, 1994, September 28-29, 1994, and August 28-30, 1995--Continued

[USGS, U.S. Geological Survey; Cr., Creek; Blvd., Boulevard; St., Street; Hwy, Highway; kg/d, kilograms per day; ton/d, tons per day; °C, degrees Celsius; --, no data]

Sample location		Units of measurement		Detection limits		Loads							
USGS site identification number		kg/d		ton/d									
Date sampled													
Time sampled													
Chemical constituent													
Nitrogen, ammonia, dissolved		kg/d		ton/d									
Nitrite and nitrate, dissolved		kg/d		ton/d									
Nitrogen, ammonia and organic, total		kg/d		ton/d									
Phosphorus, total		kg/d		ton/d									
Phosphorus, dissolved		kg/d		ton/d									
Carbon, organic, total		kg/d		ton/d									
Hardness, total		kg/d		ton/d									
Calcium, dissolved		kg/d		ton/d									
Magnesium, dissolved		kg/d		ton/d									
Sodium, dissolved		kg/d		ton/d									
Potassium, dissolved		kg/d		ton/d									
Chloride, dissolved		kg/d		ton/d									
Sulfate, dissolved		kg/d		ton/d									
Residue, dissolved at 180°C		kg/d		ton/d									
Dissolved solids, sum		kg/d		ton/d									
Alkalinity		kg/d		ton/d									

USGS, U.S. Geological Survey; Cr., Creek; Blvd., Boulevard; St., Street; Hwy, Highway; kg/d, kilograms per day; ton/d, tons per day; °C, degrees Celsius; --, no data]

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NEAR LINCOLN, NEBRASKA, 1994-95**

Table 6. Loads of selected constituents from discharge at the Theresa Street and Northeast Wastewater Treatment Plants and from sites on Salt Creek and its tributaries, Lincoln, Nebraska, June 20, 1994, August 16-17, 1994, September 28-29, 1994, and August 28-30, 1995--Continued

[USGS, U.S. Geological Survey; Cr., Creek; Blvd., Boulevard; St., Street; Hwy, Highway; kg/d, kilograms per day; ton/d, tons per day; °C, degrees Celsius; --, no data]

Sample location	USGS site identification number	Little Salt Cr. near mouth	Salt Cr. at landfill	Salt Cr. at 70th St.	Northeast Treatment Plant	Salt Cr. below Northeast Treatment Plant	Stevens Cr. at Hwy 6	Salt Cr. below Stevens Cr. at Waverly
Site location number	068035108	25	8	9	30	10	28	11
Date sampled	08/30/95	08/30/95	08/30/95	08/30/95	08/30/95	08/30/95	08/30/95	08/30/95
Time sampled	11:30	11:30	11:30	14:00	14:55	14:40	14:00	15:50
Chemical constituent	Units of measurement	Detection limits	Loads					
			kg/d	ton/d	kg/d	ton/d	kg/d	ton/d
Nitrogen, ammonia, dissolved	kg/d	0.01	.2	300	240	0	.21	470
Nitrite and nitrate, dissolved	kg/d	.01	0	690	730	6.8	12	850
Nitrogen, ammonia and organic, total	kg/d	.01	16	490	470	350	4.9	850
Phosphorus, total	kg/d	.01	2.3	230	240	47	2.6	330
Phosphorus, dissolved	kg/d	.01	.36	230	220	9.5	2.2	330
Carbon, organic, total	kg/d	.01	100	1,900	2,200	860	97	4,100
Hardness, total	ton/d	.001	2.9	89	78	4.7	1.9	93
Calcium, dissolved	ton/d	.001	.56	22	19	1.3	.55	23
Magnesium, dissolved	ton/d	.001	.37	8.7	7.3	.35	.15	8.8
Sodium, dissolved	ton/d	.001	31	400	360	2.9	.32	380
Potassium, dissolved	ton/d	.001	.095	4	3.6	.37	.033	4.4
Chloride, dissolved	ton/d	.001	42	590	530	2.7	.097	550
Sulfate, dissolved	ton/d	.001	9.5	91	80	3.1	.41	90
Residue, dissolved at 180°C	ton/d	.001	85	1,200	1,000	15	3.1	1,200
Dissolved solids, sum	ton/d	.001	85	1,200	1,000	13	2.9	1,100
Alkalinity	ton/d	.001	2.4	74	67	4.1	2.1	79

Table 7. Mean field measurements and water-quality concentrations of selected constituents from discharge at the Theresa Street and Northeast Wastewater Treatment Plants and from sites on Salt Creek and its tributaries, Lincoln, Nebraska, 1994-95

[USGS, U.S. Geological Survey; Blvd., Boulevard; St., Street; Cr., Creek; --, no data; °C, degrees Celsius; ft³/s, cubic feet per second; mm/Hg, millimeters of mercury; mg/L, milligrams per liter; µS/cm, microsiemens per centimeter at 25°C; <, less than]

Property of water or chemical constituent	Units of measurement	Detection limits	Sample location						Concentrations	Theresa Street Treatment Plant
			Salt Cr. at Ploneers Blvd.	Salt Cr. at South St.	Salt Cr. at O St.	Salt Cr. at 14th St.	Salt Cr. at Fairgrounds	Salt Cr. at Fairgrounds		
USGS site identification number			06803080	06803100	06803185	06803190	06803495	06803495	06803496	
Site location number			1	2	3	4	5 (First day)	5 (Second day)	29	
Water temperature, field	°C	0.5	21	20.5	24	26.5	26.5	19	--	
Air temperature, field	°C	.5	22.5	24.5	28	28.5	33	22	--	
Discharge, instant	ft ³ /s	.01	19	28	36	39	92	58	--	
Specific conductance at 25°C, field	µS/cm	1	833	2,835	4,583	7,768	6,825	8,113	--	
Oxygen, dissolved, field	mg/L	.1	6.9	8.7	11.6	14.3	12.9	7.2	--	
Chemical oxygen demand, high level	mg/L	10	40	40	90	90	70	70	70	
pH, field		.1	8	8.1	8.2	8.4	8.4	8.1	7.3	
Residue, total	mg/L	1	60	59	46	25	113	43	10	
Oil and grease, recoverable	mg/L	1	1	1	0	1	0	1	0	
Nitrogen, ammonia, dissolved	mg/L	.015	.22	.16	.19	.18	.17	.26	3.2	
Nitrogen, nitrite, dissolved	mg/L	.05	.05	.05	.05	.05	.05	.05	.52	
Nitrogen, nitrate, dissolved	mg/L	.05	1.45	1.2	1.1	.9	.9	.85	14.5	
Nitrite and nitrate, dissolved	mg/L	.05	1.4	1.15	1.05	.9	.85	.8	10	
Nitrogen, organic, total	mg/L	.05	.65	.7	.55	.65	.7	.55	1.9	
Nitrogen, ammonia and organic, total	mg/L	.2	.8	.8	.8	.8	1	1	7.5	
Nitrogen, nitrate, total	mg/L	.05	1.45	1.2	1.1	.9	.9	.85	14.5	
Nitrogen, total	mg/L	.2	2.4	1.6	2	1.8	1.8	1.8	21.5	
Phosphorus, total	mg/L	.01	.29	.33	.29	.28	.29	.26	3.29	
Phosphorus, dissolved	mg/L	.01	.3	.24	.22	.19	.2	.18	3.27	
Carbon, organic, total	mg/L	.1	13.4	7.8	5.4	10.5	4.8	7.4	22.8	
Hardness, total	mg/L	1	283	303	370	383	255	380	230	
Calcium, dissolved	mg/L	.1	81	80.3	96.5	94.8	66.3	95	65.5	
Magnesium, dissolved	mg/L	.1	19.5	24	31.5	35.5	21.8	34.3	16.3	
Sodium, dissolved	mg/L	.1	83.3	395	1,035	1,525	860	1,533	170	
Sodium absorption ratio	--	--	2	10	23	34	20	34	5	
Sodium, percent	--	1	37	73	86	89	65	89	59	
Potassium, dissolved	mg/L	.1	7	7.5	9.3	10.7	7.9	11.7	21.7	
Chloride, dissolved	mg/L	.1	92.3	562	1,500	2,200	1,300	2,200	200	
Sulfate, dissolved	mg/L	.1	79	142	245	315	190	307	123	
Residue, dissolved at 180°C	mg/L	1	546	1,421	3,173	4,378	2,628	4,317	809	
Dissolved solids, calculated	mg/L	1	524	1,381	3,093	4,363	2,588	4,377	771	
Specific conductance, lab	µS/cm	1	903	2,233	5,553	7,713	4,563	7,597	1,387	
Alkalinity	mg/L	1	260	273	287	295	232	322	210	

Table 7. Mean field measurements and water-quality concentrations of selected constituents from discharge at the Theresa Street and Northeast Wastewater Treatment Plants and from sites on Salt Creek and its tributaries, Lincoln, Nebraska, 1994-95--Continued

[USGS, U.S. Geological Survey; Blvd., Boulevard; St., Street; Cr., Creek; --, no data; °C, degrees Celsius; ft³/s, cubic feet per second; mm/Hg, millimeters of mercury; mg/L, milligrams per liter; µS/cm, microsiemens per centimeter at 25°C; <, less than]

Sample location	Salt Cr. at 27th St.	Salt Cr. at Superior St.	Salt Cr. at landfill	Salt Cr. at 70th St.	Northeast Treatment Plant	Salt Cr. below Northeast Treatment Plant	Salt Cr. below Stevens Cr. at Waverly
USGS site identification number	06803500	06803505	06803511	06803513	06803515	06803514	06803525
Site location number	6	7	8	9	30	10	11
Property of water or chemical constituent	Units of measurement	Detection limits	Concentrations				
Water temperature, field	°C	0.5	21	21	25	23.5	24.5
Air temperature, field	°C	.5	24	24	23	27	27.5
Discharge, instant	ft ³ /s	.01	90	91	105	106	122
Specific conductance at 25°C, field	µS/cm	1	6,390	7,390	7,353	7,800	6,890
Oxygen, dissolved, field	mg/L	.1	7.4	8	8.6	10.3	10.5
Chemical oxygen demand, high level	mg/L	10	60	70	74	90	90
pH, field	Standard units	.1	7.8	8	8	8.1	8
Residue, total	mg/L	1	22	28	29	13	23
Oil and grease, recoverable	mg/L	1	0	1	1	1	1
Nitrogen, ammonia, dissolved	mg/L	.015	1.66	1.39	1.1	1.02	1.47
Nitrogen, nitrite, dissolved	mg/L	.05	.2	.2	.25	.3	.5
Nitrogen, nitrate, dissolved	mg/L	.05	3.8	3.05	2.9	2.6	2.95
Nitrite and nitrate, dissolved	mg/L	.05	3.55	3.05	3	3.05	3.35
Nitrogen, organic, total	mg/L	.05	1.3	.9	1	.85	1
Nitrogen, ammonia and organic, total	mg/L	.2	3	2.4	2	2	2.6
Nitrogen, nitrate, total	mg/L	.05	3.8	3.05	2.9	2.6	2.95
Nitrogen, total	mg/L	.2	7	5.6	5.2	4.8	5.6
Phosphorus, total	mg/L	.01	1.35	1.14	1.04	1	1.47
Phosphorus, dissolved	mg/L	.01	1.27	1.03	.94	.92	1.47
Carbon, organic, total	mg/L	.1	10.9	9.3	7.5	10.8	16.6
Hardness, total	mg/L	1	360	370	370	380	353
Calcium, dissolved	mg/L	.1	92.5	96	93.7	97	90
Magnesium, dissolved	mg/L	.1	31	32.3	33.7	33.3	31.3
Sodium, dissolved	mg/L	.1	1,233	1,333	1,467	1,533	1,333
Sodium absorption ratio	--	--	28	30	33	34	31
Sodium, percent	--	1	88	88	89	89	89
Potassium, dissolved	mg/L	.1	12.4	11.9	15.7	16	13
Chloride, dissolved	mg/L	.1	1,767	1,933	2,100	2,233	1,933
Sulfate, dissolved	mg/L	.1	270	290	327	350	317
Residue, dissolved at 180°C	mg/L	1	3,783	3,777	4,290	4,520	3,930
Dissolved solids, calculated	mg/L	1	3,593	3,890	4,230	4,460	3,913
Specific conductance, lab	µS/cm	1	6,303	6,867	7,440	7,723	6,900
Alkalinity	mg/L	1	283	297	298	308	300

Figure 16. Dissolved solids in surface-water samples from Salt Creek, its tributaries, and the Theresa Street and Northeast Wastewater Treatment Plants, Lincoln, Nebraska, August 28–30, 1995.

Figure 18. Total ammonia and organic nitrogen in surface-water samples from Salt Creek, its tributaries, and the Theresa Street and Northeast Wastewater Treatment Plants, Lincoln, Nebraska, August 28–30, 1995.

Figure 19. Total phosphorus in surface-water samples from Salt Creek, its tributaries, and the Theresa Street and Northeast Wastewater Treatment Plants, Lincoln, Nebraska, August 28–30, 1995.

Figure 20. Dissolved chloride in surface-water samples from Salt Creek, its tributaries, the Theresa Street and Northeast Wastewater Treatment Plants, Lincoln, Nebraska, August 28–30, 1995.

Table 8. Percent contributions of flow and selected constituents detected in samples from the Theresa Street and Northeast Wastewater Treatment Plants, Salt Creek, and its tributaries, Lincoln, Nebraska, June 20, 1994, August 16–17, 1994, September 28–29, 1994, and August 28–30, 1995

[--, no data]

Discharge or constituent	Percent contribution											
	Wastewater-treatment plants				Tributaries				Ground water			
	Aug. 1994	Sept. 1994	Aug. 1995	Mean	Aug. 1994	Sept. 94	Aug. 1995	Mean	Aug. 1994	Sept. 1994	Aug. 1995	Mean
Discharge	26	42	29	32	49	40	35	41	25	18	36	26
Ammonia and organic nitrogen, total	--	--	96	--	--	--	15	--	--	--	-11	--
Phosphorus, total	--	--	26	--	--	--	9	--	--	--	65	--
Organic carbon, total	--	--	62	--	--	--	29	--	--	--	9	--
Dissolved solids, sum	--	--	5	--	--	--	31	--	--	--	64	--
Dissolved sodium	--	--	3	--	--	--	32	--	--	--	65	--
Dissolved potassium	--	--	32	--	--	--	22	--	--	--	46	--
Dissolved chloride	--	--	2	--	--	--	26	--	--	--	72	--

Table 9. Reductions or increases in concentrations or measurements of selected constituents from discharge at the Theresa Street and Northeast Wastewater Treatment Plants and from sites on Salt Creek and its tributaries, Lincoln, Nebraska, June 20, 1994, August 16-17, 1994, September 28-29, 1994, and August 28-30, 1995

[ft³/s, cubic feet per second; --, no data; mi, mile; mg/L, milligrams per liter; °C, degrees Celsius; µS/cm, microsiemens per centimeter at 25°C; <, less than]

Property of water or chemical constituent	Units of measurement	Site location number or stream reach					Concentrations				
		1-2	12	14	2-3	16	3-4	4-5	June 20, 1994		
Discharge, instantaneous	ft ³ /s	3.8	0.77	7.4	1.7	6.3	2	6.1			
Discharge per river mile	ft ³ /s/mi	2	--	--	1.1	--	1.1	9			
Oxygen, dissolved, field	mg/L	1.4	6.6	8.1	2.9	15	.8	-3			
Chemical oxygen demand, high level	mg/L	2	--	--	9	--	15	-8			
pH, field	Standard units	.7	7.6	8	0	8.4	.01	.09			
Residue, total	mg/L	14	--	--	-35	--	5	270			
Oil and grease, recoverable	mg/L	-3	--	--	-1	--	1	-1			
Nitrogen, ammonia, dissolved	mg/L	.03	--	--	.04	--	-0.01	.08			
Nitrogen, nitrite, dissolved	mg/L	.02	--	--	0	--	0	.01			
Nitrogen, nitrate, dissolved	mg/L	-12	--	--	-1	--	-2	-11			
Nitrite and nitrate, dissolved	mg/L	-1	--	--	-1	--	-2	-1			
Nitrogen, organic, total	mg/L	.07	--	--	-24	--	.21	.02			
Nitrogen, ammonia and organic, total	mg/L	.1	--	--	-2	--	.2	.1			
Nitrogen, nitrate, total	mg/L	-12	--	--	-1	--	-2	-11			
Nitrogen, total	mg/L	0	--	--	-3	--	0	0			
Phosphorus, total	mg/L	0	--	--	-11	--	.02	.01			
Phosphorus, dissolved	mg/L	-0.03	--	--	-0.03	--	-0.03	.02			
Carbon, organic, total	mg/L	1.5	--	--	-2	--	.4	-3.1			
Hardness, total	mg/L	30	--	--	50	--	30	-10			
Calcium, dissolved	mg/L	6	--	--	13	--	6	1			
Magnesium, dissolved	mg/L	3	--	--	6	--	3	-3			
Sodium, dissolved	mg/L	190	--	--	500	--	360	-260			
Sodium absorption ratio	--	5	--	--	11	--	8	-6			
Sodium, percent	--	34	--	--	18	--	4	-3			
Potassium, dissolved	mg/L	.3	--	--	1.6	--	.7	.1			
Chloride, dissolved	mg/L	280	--	--	680	--	500	-300			
Sulfate, dissolved	mg/L	42	--	--	80	--	40	-40			
Residue, dissolved at 180°C	mg/L	530	--	--	1,300	--	830	-580			
Dissolved solids, sum	mg/L	530	--	--	1,300	--	910	-580			
Specific conductance, lab	µS/cm	1,000	680	5,100	2,400	5,400	1,400	-980			
Alkalinity	mg/L	16	--	--	11	--	8	22			

Table 9. Reductions or increases in concentrations or measurements of selected constituents from discharge at the Theresa Street and Northeast Wastewater Treatment Plants and from sites on Salt Creek and its tributaries, Lincoln, Nebraska, June 20, 1994, August 16-17, 1994, September 28-29, 1994, and August 28-30, 1995--Continued

[ft³/s, cubic feet per second; --, no data; mi, mile; mg/L, milligrams per liter; °C, degrees Celsius; µS/cm, microsiemens per centimeter at 25°C; <, less than]

Property of water or chemical constituent	Units of measurement	Site location number or stream reach										Concentrations				
		1-2	12	14	2-3	16	3-4	4-5	18	20	5-6	August 16-17, 1994				
Discharge, instantaneous	ft ³ /s	2.3	0.50	5.2	4.8	5.2	4	2.6	1.6	41	5					
Discharge per river mile	ft ³ /s/mi	1.2	--	--	3.1	--	2.1	4	--	--	6.3					
Oxygen, dissolved, field	mg/L	2.2	8.2	8.1	3.4	14	4	-2.1	Saturated	13	.4					
Chemical oxygen demand, high level	mg/L	10	--	--	7	--	14	-4	--	--	1					
pH, field	Standard units	.1	8.2	7.5	0	8.2	0	.2	9.2	8.8	-2					
Residue, total	mg/L	17	--	--	-22	--	-18	12	--	--	-29					
Oil and grease, recoverable	mg/L	0	--	--	0	--	0	0	--	--	0					
Nitrogen, ammonia, dissolved	mg/L	.03	--	--	.07	--	-0.06	-0.03	--	--	.7					
Nitrogen, nitrite, dissolved	mg/L	.01	--	--	.01	--	0	-0.01	--	--	.17					
Nitrogen, nitrate, dissolved	mg/L	-23	--	--	.06	--	-44	.06	--	--	2					
Nitrite and nitrate, dissolved	mg/L	-22	--	--	.07	--	-44	.05	--	--	2.12					
Nitrogen, organic, total	mg/L	.07	--	--	-17	--	.26	.03	--	--	.58					
Nitrogen, ammonia and organic, total	mg/L	.1	--	--	-1	--	.2	0	--	--	1.3					
Nitrogen, nitrate, total	mg/L	-23	--	--	.06	--	-44	.06	--	--	1.95					
Nitrogen, total	mg/L	-1	--	--	0	--	-3	.1	--	--	3.4					
Phosphorus, total	mg/L	.28	--	--	-0.04	--	0	-0.03	--	--	.63					
Phosphorus, dissolved	mg/L	-0.06	--	--	-0.03	--	-0.02	-0.01	--	--	.61					
Carbon, organic, total	mg/L	-4	--	--	-1	--	2.6	-3	--	--	1.5					
Hardness, total	mg/L	10	--	--	70	--	-20	-60	--	--	-20					
Calcium, dissolved	mg/L	-3	--	--	13	--	-9	-11	--	--	-5					
Magnesium, dissolved	mg/L	4	--	--	10	--	0	-8	--	--	-3					
Sodium, dissolved	mg/L	360	--	--	650	--	400	-400	--	--	-200					
Sodium absorption ratio	--	9	--	--	13	--	10	-7	--	--	-3					
Sodium, percent	--	36	--	--	11	--	4	-2	--	--	-1					
Potassium, dissolved	mg/L	0	--	--	2.9	--	0	-1	--	--	3					
Chloride, dissolved	mg/L	510	--	--	1,100	--	500	-400	--	--	-300					
Sulfate, dissolved	mg/L	67	--	--	110	--	50	-60	--	--	-20					
Residue, dissolved at 180°C	mg/L	930	--	--	1,900	--	690	-720	--	--	-270					
Dissolved solids, sum	mg/L	940	--	--	1,900	--	950	-880	--	--	-520					
Specific conductance, lab	µS/cm	1,600	820	7,200	3,400	4,400	1,800	-1,700	2,600	3,400	-710					
Alkalinity	mg/L	9	--	--	6	--	3	9	--	--	-22					

Table 9. Reductions or increases in concentrations or measurements of selected constituents from discharge at the Theresa Street and Northeast Wastewater Treatment Plants and from sites on Salt Creek and its tributaries, Lincoln, Nebraska, June 20, 1994, August 16-17, 1994, September 28-29, 1994, and August 28-30, 1995--Continued

[ft³/s, cubic feet per second; --, no data; mi, mile; mg/L, milligrams per liter; °C, degrees Celsius; µS/cm, microsiemens per centimeter at 25°C; <, less than]

Site location number or stream reach	29	6-7	23	7-8	25	8-9	30	9-10	28	10-11
Property of water or chemical constituent	Units of measurement	Concentrations August 16-17, 1994								
Discharge, instantaneous	ft ³ /s	26	-6.2	1.2	6.8	5.2	10	-3	4.4	6.6
Discharge per river mile	ft ³ /s/mi	--	-4.9	--	4	--	4.2	-5.8	--	5.7
Oxygen, dissolved, field	mg/L	--	.5	8.9	.1	19.9	1.8	-1	8.8	2.2
Chemical oxygen demand, high level	mg/L	--	8	--	2	--	0	6	--	7
pH, field	Standard units	7	.1	7.9	0	8.1	0	7.2	7.8	0
Residue, total	mg/L	--	-4	--	-2	--	-3	3	--	0
Oil and grease, recoverable	mg/L	--	0	--	0	--	0	0	--	0
Nitrogen, ammonia, dissolved	mg/L	--	-11	--	-0.7	--	-0.3	.53	--	-41
Nitrogen, nitrite, dissolved	mg/L	--	-0.2	--	.04	--	.07	.06	--	.07
Nitrogen, nitrate, dissolved	mg/L	--	-48	--	-0.4	--	.03	-0.06	--	.33
Nitrite and nitrate, dissolved	mg/L	--	-5	--	0	--	.1	0	--	.4
Nitrogen, organic, total	mg/L	--	-2.7	--	-0.3	--	.1	0	--	.1
Nitrogen, ammonia and organic, total	mg/L	--	-4	--	-1	--	.1	.5	--	-3
Nitrogen, nitrate, total	mg/L	--	-48	--	-0.4	--	.03	-0.06	--	.33
Nitrogen, total	mg/L	--	-9	--	-1	--	.2	.5	--	.1
Phosphorus, total	mg/L	--	-15	--	-0.3	--	.03	.49	--	0
Phosphorus, dissolved	mg/L	--	-13	--	-0.4	--	.06	.45	--	.1
Carbon, organic, total	mg/L	--	-2.4	--	-3	--	.9	1.5	--	2.1
Hardness, total	mg/L	--	10	--	0	--	10	20	--	-30
Calcium, dissolved	mg/L	--	5	--	-1	--	2	-5	--	-7
Magnesium, dissolved	mg/L	--	1	--	1	--	0	3	--	-4
Sodium, dissolved	mg/L	--	100	--	100	--	0	0	--	-100
Sodium absorption ratio	--	--	1	--	3	--	-1	-0	--	-1
Sodium, percent	--	--	0	--	1	--	0	-1	--	0
Potassium, dissolved	mg/L	--	-1	--	2	--	0	1	--	-1
Chloride, dissolved	mg/L	--	200	--	0	--	100	100	--	-200
Sulfate, dissolved	mg/L	--	20	--	20	--	40	-20	--	-10
Residue, dissolved at 180°C	mg/L	--	320	--	140	--	260	-200	--	-370
Dissolved solids, sum	mg/L	--	320	--	130	--	140	-90	--	-320
Specific conductance, lab	µS/cm	--	520	820	350	1,300	350	-340	910	-440
Alkalinity	mg/L	--	8	--	2	--	6	-6	--	-1

Table 9. Reductions or increases in concentrations or measurements of selected constituents from discharge at the Theresa Street and Northeast Wastewater Treatment Plants and from sites on Salt Creek and its tributaries, Lincoln, Nebraska, June 20, 1994, August 16-17, 1994, September 28-29, 1994, and August 28-30, 1995--Continued

[ft³/s, cubic feet per second; --, no data; mi, mile; mg/L, milligrams per liter; °C, degrees Celsius; µS/cm, microsiemens per centimeter at 25°C; <, less than]

Site location number or stream reach Property of water or chemical constituent	Units of measurement	September 28-29, 1994									
		1-2	12	14	2-3	16	3-4	4-5	18	20	5-6
Discharge, instantaneous	ft ³ /s	2.6	0.72	3.7	3.2	3.8	4	.8	2.6	23	10
Discharge per river mile	ft ³ /s/mi	1.4	--	--	2.1	--	2.1	1.2	--	--	13
Oxygen, dissolved, field	mg/L	2.6	4.8	4.9	3	15	.1	-3	12.2	14.6	-5
Chemical oxygen demand, high level	mg/L	44	--	--	150	--	-100	-13	--	--	-25
pH, field	Standard units	-2	8.2	8	.3	8.9	.1	0	8.7	8.9	-6
Residue, total	mg/L	-14	--	--	6	--	-24	34	--	--	-33
Oil and grease, recoverable	mg/L	0	--	--	0	--	0	0	--	--	-1
Nitrogen, ammonia, dissolved	mg/L	-31	--	--	-1	--	.05	-0.06	--	--	2.2
Nitrogen, nitrite, dissolved	mg/L	-02	--	--	.01	--	.01	0	--	--	.14
Nitrogen, nitrate, dissolved	mg/L	-28	--	--	-31	--	-01	.1	--	--	4
Nitrite and nitrate, dissolved	mg/L	-3	--	--	-3	--	0	.1	--	--	4.1
Nitrogen, organic, total	mg/L	.01	--	--	-1	--	-05	.06	--	--	.92
Nitrogen, ammonia and organic, total	mg/L	-3	--	--	-2	--	0	0	--	--	3.1
Nitrogen, nitrate, total	mg/L	-28	--	--	-31	--	-01	.1	--	--	4
Nitrogen, total	mg/L	-6	--	--	-5	--	0	.1	--	--	7.2
Phosphorus, total	mg/L	-1	--	--	-03	--	-02	0	--	--	1.9
Phosphorus, dissolved	mg/L	-06	--	--	-02	--	-02	-02	--	--	2
Carbon, organic, total	mg/L	2.3	--	--	-4.6	--	3.5	-6.9	--	--	6.1
Hardness, total	mg/L	10	--	--	100	--	30	-390	--	--	-20
Calcium, dissolved	mg/L	-8	--	--	29	--	2	-97	--	--	-2
Magnesium, dissolved	mg/L	5	--	--	7	--	7	-36	--	--	-4
Sodium, dissolved	mg/L	300	--	--	740	--	600	-1,700	--	--	-400
Sodium absorption ratio	--	8	--	--	15	--	12	-37	--	--	-9
Sodium, percent	--	43	--	--	12	--	3	-90	--	--	-2
Potassium, dissolved	mg/L	.9	--	--	.7	--	1.8	-11	--	--	-2.8
Chloride, dissolved	mg/L	500	--	--	940	--	800	-2,300	--	--	-500
Sulfate, dissolved	mg/L	65	--	--	110	--	80	-320	--	--	-60
Residue, dissolved at 180°C	mg/L	960	--	--	1,800	--	1,500	-4,700	--	--	-640
Dissolved solids, sum	mg/L	880	--	--	1,800	--	1,500	-4,700	--	--	-990
Specific conductance, lab	µS/cm	720	520	8,500	4,300	9,500	2,700	-8,500	2,400	4,600	-1,800
Alkalinity	mg/L	17	--	--	21	--	10	-290	--	--	-62

Table 9. Reductions or increases in concentrations or measurements of selected constituents from discharge at the Theresa Street and Northeast Wastewater Treatment Plants and from sites on Salt Creek and its tributaries, Lincoln, Nebraska, June 20, 1994, August 16-17, 1994, September 28-29, 1994, and August 28-30, 1995--Continued

[ft³/s, cubic feet per second; --, no data; mi, mile; mg/L, milligrams per liter; °C, degrees Celsius; µS/cm, microsiemens per centimeter at 25°C; <, less than]

Site location number or stream reach Property of water or chemical constituent	29	6-7	23	7-8	25	8-9	30	9-10	28	10-11
Units of measurement										
September 28-29, 1994										
Discharge, instantaneous	34	-8.8	0.78	8.9	4.1	4	10	-5	3.6	.4
Discharge per river mile	--	-7	--	5.3	--	1.7	--	-9.6	--	.4
Oxygen, dissolved, field	--	1.9	9.5	-5	13.3	.9	--	-1.2	9.4	1.3
Chemical oxygen demand, high level	--	24	--	0	--	24	--	90	--	-100
pH, field	7.6	.5	7.7	-2	8.4	.3	7.7	-2	8.2	.2
Residue, total	--	16	--	11	--	-25	--	7	--	6
Oil and grease, recoverable	--	0	--	2	--	-1	--	0	--	1
Nitrogen, ammonia, dissolved	--	-6	--	-5	--	-1	--	.1	--	.2
Nitrogen, nitrite, dissolved	--	-0.1	--	.04	--	.05	--	.15	--	.16
Nitrogen, nitrate, dissolved	--	-99	--	-34	--	-55	--	.15	--	.24
Nitrite and nitrate, dissolved	--	-1	--	-3	--	-5	--	.4	--	.3
Nitrogen, organic, total	--	-5	--	.2	--	-4	--	.5	--	-3
Nitrogen, ammonia and organic, total	--	-1.1	--	-3	--	-5	--	.6	--	-1
Nitrogen, nitrate, total	--	-99	--	-34	--	-55	--	.15	--	.24
Nitrogen, total	--	-2.1	--	-6	--	-1	--	.9	--	.3
Phosphorus, total	--	-5	--	-1	--	-3	--	.6	--	.2
Phosphorus, dissolved	--	-6	--	-3	--	-2	--	.5	--	.4
Carbon, organic, total	--	5.4	--	-5.3	--	6.3	--	45	--	-36
Hardness, total	--	20	--	10	--	30	--	-10	--	-50
Calcium, dissolved	--	5	--	0	--	10	--	0	--	-18
Magnesium, dissolved	--	3	--	2	--	1	--	-1	--	-3
Sodium, dissolved	--	200	--	200	--	200	--	-100	--	-200
Sodium absorption ratio	--	4	--	4	--	3	--	-2	--	-2
Sodium, percent	--	1	--	1	--	0	--	0	--	0
Potassium, dissolved	--	-4	--	8.2	--	1	--	0	--	-9
Chloride, dissolved	--	200	--	300	--	300	--	-200	--	-200
Sulfate, dissolved	--	30	--	60	--	40	--	-20	--	-20
Residue, dissolved at 180°C	--	-490	--	1,100	--	520	--	-250	--	-510
Dissolved solids, sum	--	450	--	570	--	560	--	-330	--	-440
Specific conductance, lab	744	840	840	870	16,000	720	770	-380	540	-660
Alkalinity	--	29	--	0	--	25	--	-16	--	10

Table 9. Reductions or increases in concentrations or measurements of selected constituents from discharge at the Theresa Street and Northeast Wastewater Treatment Plants and from sites on Salt Creek and its tributaries, Lincoln, Nebraska, June 20, 1994, August 16-17, 1994, September 28-29, 1994, and August 28-30, 1995--Continued

[ft³/s, cubic feet per second; --, no data; mi, mile; mg/L, milligrams per liter; °C, degrees Celsius; µS/cm, microsiemens per centimeter at 25°C; <, less than]

Site location number or stream reach Property of water or chemical constituent	Units of measurement	August 28-30, 1995										
		Concentrations										
		1-2	12	14	2-3	16	3-4	4-5	18	20	5-6	
Discharge, instantaneous	ft ³ /s	2.9	0.53	4.6	2.2	3.8	5	2	2	19	-2	-2
Discharge per river mile	ft ³ /s/mi	1.5			1.4		2.4	3.9			-2.5	-2.5
Oxygen, dissolved, field	mg/L	1.1	5.4	5.3	2.1	7.4	5.8	-2.9	20	12	-6.6	-6.6
Chemical oxygen demand, high level	mg/L	-65	14	68	25	74	73	-58	29	51	-46	-46
pH, field	Standard units	-17	7.5	7.9	.17	8	.72	-25	8.8	8.6	-7.7	-7.7
Residue, total	mg/L	-22	<1	25	-2	7	-45	31	2	41	-3	-3
Oil and grease, recoverable	mg/L	1	<1	1	0	1	0	0	1	1	-1	-1
Nitrogen, ammonia, dissolved	mg/L	-22	.04	.17	-.18	.3	-.01	-1.54	1.4	.1	1.31	1.31
Nitrite and nitrate, dissolved	mg/L	-2.3	1.6	.34	-.44	.34	.01	-4.1	3.5	.37	2.1	2.1
Nitrogen, organic, total	mg/L	-82	.37	.48	-.6	.67	.02	-8.6	8.2	.52	-7.51	-7.51
Nitrogen, ammonia and organic, total	mg/L	-9	.5	.6	-.8	.9	-.1	-9.1	8.4	1.1	-7.2	-7.2
Phosphorus, total	mg/L	-4	.19	.2	-.28	.28	-.03	-.7	.36	.4	.02	.02
Phosphorus, dissolved	mg/L	-41	.18	.16	-.23	.21	-.03	-.58	.32	.3	-.09	-.09
Carbon, organic, total	mg/L	-42.5	7.9	9	-7.9	5.8	14	-30	11	6.7	-12	-12
Hardness, total	mg/L	-650	290	390	-310	360	10	-670	290	330	-260	-260
Calcium, dissolved	mg/L	-170	79	90	-80	90	-6	-170	80	83	-69	-69
Magnesium, dissolved	mg/L	-58	23	41	-27	34	6	-58	21	29	-20	-20
Sodium, dissolved	mg/L	-1,200	48	1,600	-830	1,500	600	-1,700	320	1,100	-470	-470
Sodium absorption ratio	--	-26	1	35	-21	34	13	-38	8	26	-11	-11
Sodium, percent	--	-87	26	90	-80	90	4	-160	70	88	-60	-60
Potassium, dissolved	mg/L	-17.5	8.6	9.7	-8	10	2.9	-23	12	11	-18	-18
Chloride, dissolved	mg/L	-1,700	32	2,300	-1,200	2,200	1,000	-2,700	470	1,600	-690	-690
Sulfate, dissolved	mg/L	-400	110	370	-180	290	110	-490	180	230	-160	-160
Residue, dissolved at 180°C	mg/L	-4,000	490	4,600	-2,600	4,500	1,800	-5,600	1,300	3,300	-1,500	-1,500
Dissolved solids, sum	mg/L	-4,000	450	4,600	-2,500	4,300	1,700	-5,500	1,200	3,300	-1,500	-1,500
Specific conductance, lab	µS/cm	-6,400	750	7,700	-4,420	7,600	2,800	-9,300	2,200	5,600	-2,800	-2,800
Alkalinity	mg/L	-550	240	320	-340	360	11	-520	189	340	-210	-210

Table 9. Reductions or increases in concentrations or measurements of selected constituents from discharge at the Theresa Street and Northeast Wastewater Treatment Plants and from sites on Salt Creek and its tributaries, Lincoln, Nebraska, June 20, 1994, August 16-17, 1994, September 28-29, 1994, and August 28-30, 1995-Continued

[ft³/s, cubic feet per second; --, no data; mi, mile; mg/L, milligrams per liter; °C, degrees Celsius; µS/cm, microsiemens per centimeter at 25°C; <, less than]

Site location number or stream reach Property of water or chemical constituent	29	6-7	23	7-8	25	8-9	30	9-10	28	10-11
Units of measurement	August 28-30, 1995									
Discharge, instantaneous	22	16	1.3	12	3	-10	9	11	2.8	-0.8
Discharge per river mile		13		7.1		-4.2		21		-7
Oxygen, dissolved, field	7.4	-6	20	2.3	20	2.2	7.3	-10.4	7.9	1.7
Chemical oxygen demand, high level	35	5	19	-78	250	85	120	-205	21	82
pH, field	7.6	.05	9.1	.16	8.8	.05	7.4	-7.3	8	-57
Residue, total	2	6	2	-6	44	-19	1	-14	17	27
Oil and grease, recoverable	1	1	1	-1	1	0	1	-2	1	2
Nitrogen, ammonia, dissolved	<.015	-.14	.04	-.33	.03	-.1	<.015	.7	.03	-.13
Nitrite and nitrate, dissolved	<.05	-.3	.3	.1	<.05	.5	.33	-1.13	1.7	-1.1
Nitrogen, organic, total	9	-.57	.47	-.66	.46	-.2	3.4	-2.3	.3	-.5
Nitrogen, ammonia and organic, total	9.1	-.8	.6	-.3	2.2	.1	17	-15.7	.7	-1
Phosphorus, total	.76	-.08	.08	-.49	.32	.17	2.3	-2.2	.37	-.37
Phosphorus, dissolved	.72	-.05	.06	.02	.05	.07	.46	-.48	.32	-.1
Carbon, organic, total	15	-18	10	-13.7	14	2.5	42	29	14	-80
Hardness, total	240	-220	220	-410	400	-10	230	-230	280	-290
Calcium, dissolved	68	-53	54	-83	77	-2	65	-63	79	-82
Magnesium, dissolved	17	-20	20	-50	51	-2	17	-18	21	-21
Sodium, dissolved	170	-67	67	-4,200	4,300	0	140	-240	46	-150
Sodium absorption ratio	5	-2	2	-90	93	0	4	-6	1	-3
Sodium, percent	59	-39	39	-95	96	0	55	-56	26	-26
Potassium, dissolved	20	-10	10	-12	13	0	18	-15	4.8	-7.8
Chloride, dissolved	190	47	53	-5,600	5,800	0	130	-330	14	-210
Sulfate, dissolved	130	-130	140	-1,300	1,300	-10	150	-140	59	-99
Residue, dissolved at 180°C	810	-340	490	-11,000	12,000	-90	730	-820	440	-790
Dissolved solids, sum	704	-320	440	-11,000	12,000	-10	640	-930	420	-770
Specific conductance, lab	1,400	-380	710	-17,000	18,000	-220	1,100	-1,300	680	-1,220
Alkalinity	180	-160	160	-330	328	-1	200	-200	310	-320

Table 10. Gains and losses of selected loads from discharge at the Theresa Street and Northeast Wastewater Treatment Plants and from sites on Salt Creek and its tributaries, Lincoln, Nebraska, June 20, 1994, August 16-17, 1994, August 28-29, 1994, September 28-30, 1994, and August 28-30, 1995

[kg/d, kilograms per day; ton/d, tons per day; --, no data; °C, degrees Celsius]

Site location number or stream reach	Units of measurement		August 16-17, 1994										Loads							
Property of water or chemical constituent	1-2	12	14	2-3	16	3-4	4-5	18	20	5-6										
Nitrogen, ammonia, dissolved	kg/d	1.8	--	7.4	--	-4.1	2.8	--	--	200										
Nitrogen, nitrite, dissolved	kg/d	.59	--	1.3	--	.29	1.3	--	--	49										
Nitrogen, nitrate, dissolved	kg/d	-10	--	26	--	-31	65	--	--	930										
Nitrite and nitrate, dissolved	kg/d	-9.7	--	.27	--	-31	66	--	--	980										
Nitrogen, organic, total	kg/d	5.5	--	4.1	--	29	96	--	--	45										
Nitrogen, ammonia and organic, total	kg/d	7.3	--	12	--	25	99	--	--	250										
Nitrogen, nitrate, total	kg/d	-10	--	26	--	-31	65	--	--	930										
Nitrogen, total	kg/d	-1.2	--	42	--	-11	170	--	--	-1,200										
Phosphorus, total	kg/d	16	--	3.6	--	2.3	20	--	--	280										
Phosphorus, dissolved	kg/d	-2.7	--	2.5	--	-15	15	--	--	270										
Carbon, organic, total	kg/d	-7.1	--	64	--	280	770	--	--	-360										
Hardness, total	ton/d	1.3	--	13	--	2	29	--	--	-45										
Calcium, dissolved	ton/d	.046	--	3.1	--	.14	7.6	--	--	-11										
Magnesium, dissolved	ton/d	.28	--	1.4	--	.34	2.2	--	--	-4.4										
Sodium, dissolved	ton/d	20	--	63	--	47	85	--	--	-210										
Potassium, dissolved	ton/d	.017	--	.4	--	.095	1	--	--	.037										
Chloride, dissolved	ton/d	29	--	100	--	62	160	--	--	-320										
Sulfate, dissolved	ton/d	4	--	13	--	7.1	22	--	--	-35										
Residue, dissolved at 180°C	ton/d	54	--	190	--	96	310	--	--	-550										
Dissolved solids, sum	ton/d	55	--	190	--	110	300	--	--	-600										
Alkalinity	ton/d	1.2	--	7.2	--	3	33	--	--	-38										

Table 10. Gains and losses of selected loads from discharge at the Theresa Street and Northeast Wastewater Treatment Plants and from sites on Salt Creek and its tributaries, Lincoln, Nebraska, June 20, 1994, August 16-17, 1994, September 28-29, 1994, and August 28-30, 1995--Continued

[kg/d, kilograms per day; ton/d, tons per day; --, no data; °C, degrees Celsius]

Site location number or stream reach	Units of measurement	29	6-7	23	7-8	25	8-9	30	9-10	28	10-11
Property of water or chemical constituent											
August 16-17, 1994											
Nitrogen, ammonia, dissolved	kg/d	--	-10	--	-28	--	-2.2	--	3.3	--	-180
Nitrogen, nitrite, dissolved	kg/d	--	-3.7	--	-5	--	15	--	24	--	-62
Nitrogen, nitrate, dissolved	kg/d	--	-380	--	-120	--	38	--	46	--	-600
Nitrite and nitrate, dissolved	kg/d	--	-390	--	-130	--	53	--	70	--	-660
Nitrogen, organic, total	kg/d	--	150	--	-68	--	12	--	45	--	-70
Nitrogen, ammonia and organic, total	kg/d	--	140	--	-100	--	10	--	57	--	-250
Nitrogen, nitrate, total	kg/d	--	-390	--	-120	--	38	--	46	--	-600
Nitrogen, total	kg/d	--	-200	--	-230	--	63	--	130	--	-920
Phosphorus, total	kg/d	--	-100	--	-38	--	7.4	--	20	--	-54
Phosphorus, dissolved	kg/d	--	-110	--	-33	--	2.9	--	28	--	-49
Carbon, organic, total	kg/d	--	1,200	--	-600	--	43	--	350	--	-1,100
Hardness, total	ton/d	--	68	--	2.5	--	7.9	--	9.1	--	-100
Calcium, dissolved	ton/d	--	17	--	1.3	--	1.8	--	2.2	--	-26
Magnesium, dissolved	ton/d	--	6.2	--	0.25	--	1	--	.55	--	-8.9
Sodium, dissolved	ton/d	--	260	--	25	--	54	--	22	--	-380
Potassium, dissolved	ton/d	--	1.6	--	-25	--	.83	--	.26	--	-4.0
Chloride, dissolved	ton/d	--	390	--	50	--	40	--	60	--	-550
Sulfate, dissolved	ton/d	--	49	--	5	--	11	--	16	--	-91
Residue, dissolved at 180°C	ton/d	--	750	--	81	--	120	--	140	--	-1,100
Dissolved solids, sum	ton/d	--	750	--	81	--	110	--	100	--	-1,100
Alkalinity	ton/d	--	56	--	2	--	7	--	6.8	--	-82

Table 10. Gains and losses of selected loads from discharge at the Theresa Street and Northeast Wastewater Treatment Plants and from sites on Salt Creek and its tributaries, Lincoln, Nebraska, June 20, 1994, August 16-17, 1994, September 28-29, 1994, and August 28-30, 1995--Continued

[kg/d, kilograms per day; ton/d, tons per day; --, no data; °C, degrees Celsius]

Property of water or chemical constituent	Units of measurement	Site location number or stream reach										September 28-29, 1994					Loads				
		1-2	12	14	2-3	16	3-4	4-5	18	20	5-6										
Nitrogen, ammonia, dissolved	kg/d	-3	--	--	1.3	--	7.9	19	--	--	560										
Nitrogen, nitrite, dissolved	kg/d	0.12	--	--	1.6	--	1.4	4.5	--	--	40										
Nitrogen, nitrate, dissolved	kg/d	15	--	--	2.8	--	10	86	--	--	1,100										
Nitrite and nitrate, dissolved	kg/d	15	--	--	4.4	--	12	91	--	--	1,100										
Nitrogen, organic, total	kg/d	9.1	--	--	1.6	--	-.02	32	--	--	270										
Nitrogen, ammonia and organic, total	kg/d	6.1	--	--	2.9	--	7.8	51	--	--	840										
Nitrogen, nitrate, total	kg/d	15	--	--	2.8	--	10	86	--	--	1,060										
Nitrogen, total	kg/d	21	--	--	7.3	--	20	140	--	--	1,900										
Phosphorus, total	kg/d	1.3	--	--	2.8	--	.93	15	--	--	480										
Phosphorus, dissolved	kg/d	1.9	--	--	2.7	--	.54	9.8	--	--	510										
Carbon, organic, total	kg/d	220	--	--	-190	--	316	--	--	--	1,900										
Hardness, total	ton/d	4.8	--	--	12	--	5.9	--	--	--	36										
Calcium, dissolved	ton/d	.84	--	--	3.2	--	1.1	--	--	--	10										
Magnesium, dissolved	ton/d	.56	--	--	.8	--	.85	--	--	--	2.6										
Sodium, dissolved	ton/d	17	--	--	59	--	59	--	--	--	65										
Potassium, dissolved	ton/d	.18	--	--	.2	--	.24	--	--	--	.51										
Chloride, dissolved	ton/d	28	--	--	76	--	79	--	--	--	100										
Sulfate, dissolved	ton/d	4.6	--	--	10	--	8.8	--	--	--	18										
Residue, dissolved at 180°C	ton/d	60	--	--	150	--	150	--	--	--	320										
Dissolved solids, sum	ton/d	55	--	--	150	--	150	--	--	--	220										
Alkalinity	ton/d	5.1	--	--	6	--	3.6	--	--	--	21										

Table 10. Gains and losses of selected loads from discharge at the Theresa Street and Northeast Wastewater Treatment Plants and from sites on Salt Creek and its tributaries, Lincoln, Nebraska, June 20, 1994, August 16-17, 1994, September 28-29, 1994, and August 28-30, 1995--Continued

[kg/d, kilograms per day; ton/d, tons per day; --, no data; °C, degrees Celsius]

Property of water or chemical constituent	Units of measurement	Site location number or stream reach										Loads			
		29	6-7	23	7-8	25	8-9	30	9-10	28	10-11	September 28-29, 1994			
Nitrogen, ammonia, dissolved	kg/d	--	-190	--	-250	--	-13	--	44	--	44	--	--	--	44
Nitrogen, nitrite, dissolved	kg/d	--	7	--	10	--	15	--	45	--	45	--	--	--	40
Nitrogen, nitrate, dissolved	kg/d	--	-600	--	-280	--	-110	--	78	--	78	--	--	--	41
Nitrite and nitrate, dissolved	kg/d	--	-590	--	-270	--	-95	--	120	--	120	--	--	--	81
Nitrogen, organic, total	kg/d	--	24	--	-59	--	-95	--	150	--	150	--	--	--	-90
Nitrogen, ammonia and organic, total	kg/d	--	-160	--	-310	--	-110	--	190	--	190	--	--	--	-46
Nitrogen, nitrate, total	kg/d	--	-600	--	-280	--	-110	--	78	--	78	--	--	--	41
Nitrogen, total	kg/d	--	-770	--	-580	--	-200	--	310	--	310	--	--	--	35
Phosphorus, total	kg/d	--	-120	--	-130	--	-65	--	180	--	180	--	--	--	41
Phosphorus, dissolved	kg/d	--	-140	--	-200	--	-40	--	150	--	150	--	--	--	96
Carbon organic, total	kg/d	--	-550	--	143	--	1,800	--	13,000	--	13,000	--	--	--	-10,000
Hardness, total	ton/d	--	66	--	12	--	12	--	2.3	--	2.3	--	--	--	-16
Calcium, dissolved	ton/d	--	17	--	2.4	--	3.6	--	1.3	--	1.3	--	--	--	-5.7
Magnesium, dissolved	ton/d	--	5.8	--	1.6	--	0.6	--	.15	--	.15	--	--	--	-1.1
Sodium, dissolved	ton/d	--	280	--	120	--	68	--	-6.9	--	-6.9	--	--	--	-66
Potassium, dissolved	ton/d	--	-21	--	2.1	--	.42	--	.21	--	.21	--	--	--	-2.5
Chloride, dissolved	ton/d	--	390	--	150	--	100	--	-26	--	-26	--	--	--	-70
Sulfate, dissolved	ton/d	--	51	--	26	--	14	--	-1	--	-1	--	--	--	-8
Residue, dissolved 180°C	ton/d	--	66	--	210	--	180	--	-9.3	--	-9.3	--	--	--	-170
Dissolved solids, sum	ton/d	--	760	--	300	--	190	--	-32	--	-32	--	--	--	-150
Alkalinity	ton/d	--	44	--	11	--	9.5	--	-48	--	-48	--	--	--	.42

Table 10. Gains and losses of selected loads from discharge at the Theresa Street and Northeast Wastewater Treatment Plants and from sites on Salt Creek and its tributaries, Lincoln, Nebraska, June 20, 1994, August 16-17, 1994, September 28-29, 1994, and August 28-30, 1995--Continued

[kg/d, kilograms per day; ton/d, tons per day; --, no data; °C, degrees Celsius]

Site location number or stream reach	1-2	12	14	2-3	16	3-4	4-5	18	20	5-6
Property of water or chemical constituent	Units of measurement									
	Loads									
	August 28-30, 1995									
Nitrogen, ammonia, dissolved	-1.8	--	1.9	8.2	--	0.77	-9.4	6.9	4.7	230
Nitrite and nitrate, dissolved	2.4	2.1	3.8	1.8	3.2	8.4	-18	17	17	380
Nitrogen, ammonia and organic, total	14	.65	6.8	8.5	8.4	1.1	1.8	41	51	-98
Phosphorus, total	4.7	.25	2.3	2.4	2.6	1.4	5.5	1.8	19	110
Phosphorus, dissolved	1.6	.23	1.8	.54	1.9	.33	1.9	1.6	14	79
Carbon, organic, total	-700	10	100	-84	54	1,100	-940	54	310	320
Hardness, total	3.6	.38	4.4	5	3.3	5.1	-.49	1.4	15	3.4
Calcium, dissolved	.93	.1	1	1.1	.84	.64	.21	.39	3.9	.94
Magnesium, dissolved	.3	.03	.46	.56	.32	.85	-.17	.1	1.3	.44
Sodium, dissolved	5.3	.062	18	38	14	59	10	1.6	51	29
Potassium, dissolved	.06	.011	.11	.14	.093	.32	.12	.059	.5	-.059
Chloride, dissolved	7.9	.042	26	60	20	97	3.6	2.3	74	34
Sulfate, dissolved	2	.14	4.2	7.2	2.7	12	.66	.88	11	5.9
Residue, dissolved at 180°C	18	.63	52	110	42	180	23	6.4	150	91
Dissolved solids, sum	18	.58	52	110	40	170	16	5.9	150	74
Alkalinity	2.7	.31	3.6	2	3.3	4.2	3.1	.92	16	1.5

Table 10. Gains and losses of selected loads from discharge at the Theresa Street and Northeast Wastewater Treatment Plants and from sites on Salt Creek and its tributaries, Lincoln, Nebraska, June 20, 1994, August 16-17, 1994, September 28-29, 1994, and August 28-30, 1995--Continued

[kg/d, kilograms per day; ton/d, tons per day; --, no data; °C, degrees Celsius]

Site location number or stream reach	Units of measurement		Loads									
Property of water or chemical constituent	29	6-7	23	7-8	25	8-9	30	9-10	28	10-11		
August 28-30, 1995												
Nitrogen, ammonia, dissolved	kg/d	0	46	0.13	-16	.22	-52	0	240	.21	-14	
Nitrite and nitrate, dissolved	kg/d	0	110	.95	130	0	43	6.8	-75	12	170	
Nitrogen, ammonia and organic, total	kg/d	470	81	1.9	-100	16	-27	350	90	4.9	-62	
Phosphorus, total	kg/d	39	46	.25	-1.3	2.3	15	47	28	2.6	6.2	
Phosphorus, dissolved	kg/d	37	37	.19	51	.36	-7.2	9.5	29	2.2	65	
Carbon, organic, total	kg/d	770	-1,030	32	250	100	370	860	19,000	97	-18,000	
Hardness, total	ton/d	12	15	.7	9.1	2.9	-11	4.7	11	1.9	-2.1	
Calcium, dissolved	ton/d	3.5	3.9	.17	1.6	.56	-2.6	1.3	3	.55	-.72	
Magnesium, dissolved	ton/d	.87	1.4	.064	1.2	.37	-1.3	.35	.84	.15	.089	
Sodium, dissolved	ton/d	8.7	62	.21	52	31	-39	2.9	41	.32	-17	
Potassium, dissolved	ton/d	1	.59	.032	.74	.095	-.39	.37	1.1	.033	-.72	
Chloride, dissolved	ton/d	9.8	110	.17	93	42	-59	2.7	50	.097	-.39	
Sulfate, dissolved	ton/d	6.7	15	.45	11	9.5	-11	3.1	15	.41	-.87	
Residue, dissolved at 180°C	ton/d	42	210	1.6	160	85	-140	15	170	3.1	-65	
Dissolved solids, sum	ton/d	36	200	1.4	170	85	-120	13	120	2.9	-66	
Alkalinity	ton/d	9.4	12	.51	9.8	2.4	-7.6	4.1	8.1	2.1	-1.9	