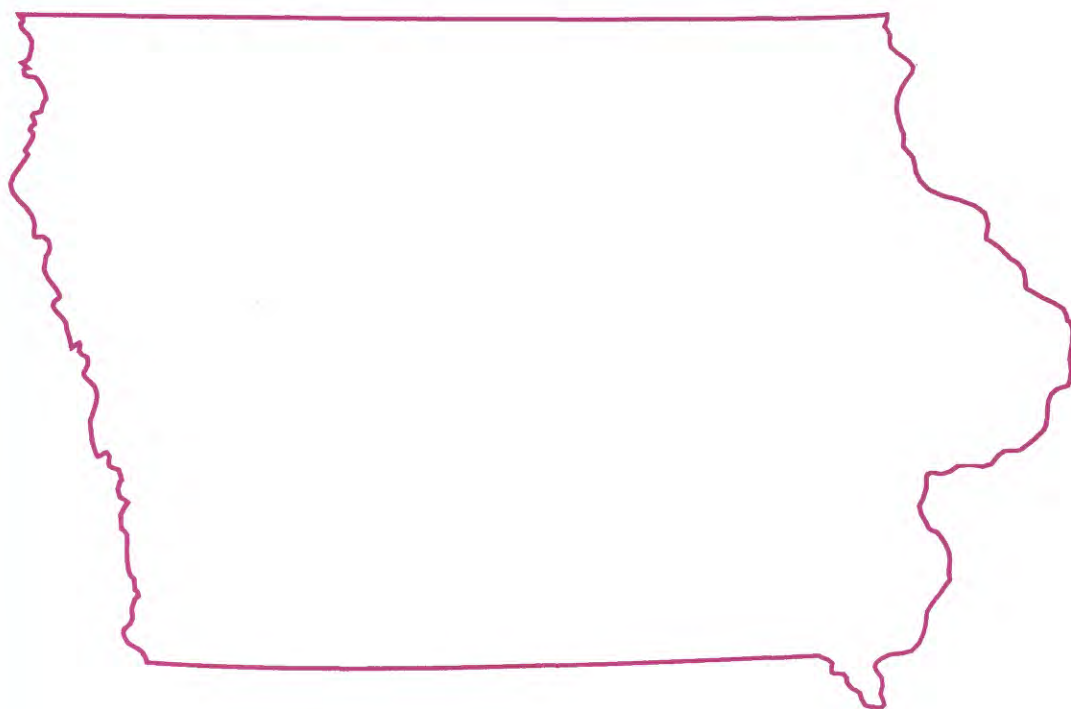




Water Resources Data Iowa Water Year 1994



U.S. GEOLOGICAL SURVEY WATER-DATA REPORT IA-94-1
Prepared in cooperation with the Iowa Department of
Natural Resources (Geological Survey Bureau),
Iowa Department of Transportation and with
Federal agencies

CALENDAR FOR WATER YEAR 1994

1993

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1994

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APRIL							MAY							JUNE						
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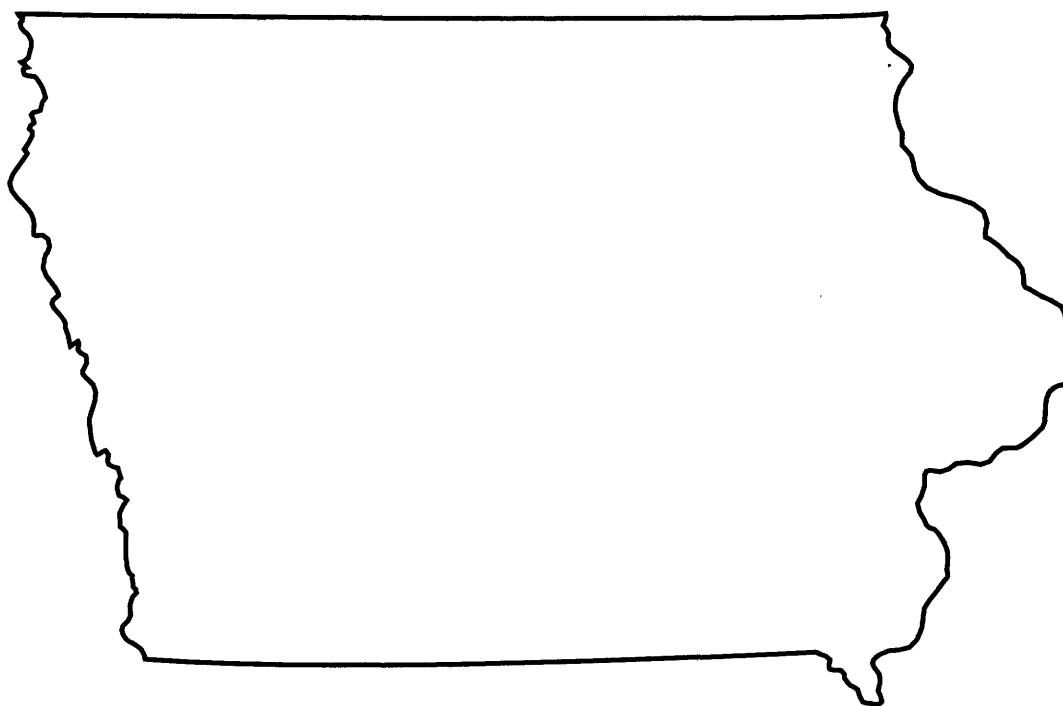
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Water Resources Data Iowa

Water Year 1994

by J.E. May, D. Sneck-Fahrer, J.G. Gorman, R.D. Goodrich,
B.K. Nations, and V.E. Miller



U.S. GEOLOGICAL SURVEY WATER-DATA REPORT IA-94-1

Prepared in cooperation with the Iowa Department of
Natural Resources (Geological Survey Bureau),
Iowa Department of Transportation and with
Federal agencies

DEPARTMENT OF THE INTERIOR
Bruce Babbitt, Secretary

U.S. GEOLOGICAL SURVEY
Gordon P. Eaton, Director

For information on the water program in Iowa write to:

District Chief, Water Resources Division
U.S. Geological Survey
P.O. Box 1230
Iowa City, Iowa 52244

1995

PREFACE

This volume of the annual hydrologic data report of Iowa is one of a series of annual reports that document hydrologic data gathered from the U.S. Geological Survey's surface- and ground-water data-collection networks in each State, Puerto Rico and, the Trust Territories. These records of streamflow, ground-water levels, and quality of water provide the hydrologic information needed by local, State, and Federal agencies, and the private sector for developing and managing our Nation's land and water resources.

This report is the culmination of a concerted effort by dedicated personnel of the U.S. Geological Survey who collected, compiled, analyzed, verified, and organized the data, and who typed, edited, and assembled the report. The authors had primary responsibility for assuring that the information contained herein is accurate, complete, and adheres to Geological Survey policy and established guidelines.

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This report was prepared in cooperation with the State of Iowa and with other agencies under the general supervision of Jayne E. May, Chief Hydrologic Surveillance Section, and Robin G. Middlemis-Brown, District Chief, Iowa.

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Water resources data for Iowa for the 1994 water year consist of records of stage, discharge, and water quality of streams; stage, contents, and water quality of lakes and reservoirs; ground water levels and water quality of ground-water wells. This report contains discharge records for 115 gaging stations; stage or contents for 8 lakes and reservoirs; water quality for 6 stream-gaging stations; sediment records for 11 stream-gaging stations; water levels for 232 observation wells; and chemical analyses for 101 municipal wells. Also included are data for 93 crest-stage partial-record stations. Additional water data were collected at various sites, but are not part of the systematic data-collection program and are published as miscellaneous discharge measurements and miscellaneous water-quality analyses.

14. SUBJECT TERMS

*Iowa, *Hydrologic data, *Surface water, *Ground water, *Water quality, Flow rates,
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Sampling sites, Water levels, Water analyses, Data collection, Ground water levels.

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CONTENTS

	Page
Preface	iii
List of discontinued surface-water discharge or stage-only stations	xvii
List of discontinued surface-water-quality stations	xix
Introduction	1
Cooperation	3
Summary of hydrologic conditions	4
Surface water	4
Sediment	8
Ground water	12
Surface-water quality	18
Ground-water quality	19
Trends assessment network	22
Missouri River and tributary alluvium assessment	23
Special networks and programs	25
Explanation of the records	25
Station identification numbers	25
Downstream order system	25
Latitude-longitude system	26
Numbering system for wells	27
Records of stage and water discharge	27
Data collection and computation	28
Data presentation	29
Identifying estimated daily discharge	32
Accuracy of the records	33
Other records available	33
Records of surface-water quality	33
Classification of records	33
Arrangement of records	33
On-site measurements and sample collection	34
Water temperature and specific conductance	34
Sediment	34
Laboratory measurements	35
Data presentation	35
Remark codes	36
Records of ground-water levels	36
Data collection and computation	37
Data presentation	37
Records of ground-water quality	38
Data presentation	38
Explanation of descriptive headings	39
Access to WATSTORE data	40
Definition of terms	41
Publications on Techniques of Water-Resources Investigations	47
Station records, surface water	50
Crest-stage partial-record stations	218
Miscellaneous water-quality data	231
Station records, ground-water levels	257
Quality of ground-water data	358

Precipitation water-quality data	363
Index	367

ILLUSTRATIONS

Figure 1. Precipitation record in the National Weather Service's designated climatological districts for water year 1994..	4
Figure 2. Annual runoff, in acre-feet, for period of record at three index stations.	6
Figure 3. Location of active, continuous-record gaging stations in Iowa.	7
Figure 4. Location of active, crest-stage gaging stations in Iowa.	9
Figure 5. Location of active and discontinued sediment and surface-water-quality stations in Iowa.....	10
Figure 6. Comparison of annual sediment discharge for water year 1994 with mean, previous maximum, and previous minimum annual sediment discharges for periods of record at four long-term daily sediment stations in Iowa ...	12
Figure 7. Location of recording and nonrecording wells in the ground-water-level observation network in Iowa, water year 1994.....	13
Figure 8. Monthly water-level measurements made during water year 1994 compared to percentile distribution of monthly water levels for a specific month for period of record for three index wells completed in glacial drift ..	15
Figure 9. Location of wells in the trends assessment network of the ground-water-quality monitoring program	20
Figure 10. Location of wells in the Missouri River and tributary alluvium assessment	21
Figure 11. Latitude-longitude well number.....	26
Figure 12. Local well-numbering system for well	27

TABLES

Table 1. Monthly and annual precipitation during the 1994 water year as a percentage of normal precipitation (1961-90).....	5
Table 2. Historical high water level measured during the 1994 water year in wells completed in unconsolidated aquifers	14
Table 3. Historical low water level measured during the 1994 water year in wells completed in unconsolidated aquifers.....	16
Table 4. Historical high water level measured during the 1994 water year in wells completed in bedrock aquifers	17
Table 5. Historical low water level measured during the 1994 water year in wells completed in bedrock aquifers	18
Table 6. Summary of nitrogen species and herbicides detected in samples from the trends assessment project of the ground-water-quality monitoring network, water year 1994	22
Table 7. Summary of nitrogen species and herbicides detected in samples from the Missouri River and tributary alluvium assessment project of the ground-water-quality monitoring network, water year 1994	24

SURFACE-WATER STATIONS, IN DOWNSTREAM ORDER, FOR WHICH RECORDS
ARE PUBLISHED IN THIS VOLUME

[Letter after station name designates types of data: (d) discharge, (c) chemical, (b) biological, (m) microbiological,
(s) sediment, (t) temperature, (e) elevations, gage heights, or contents, (p) precipitation]

	Station number	Page
UPPER MISSISSIPPI RIVER BASIN		
Mississippi River:		
UPPER IOWA RIVER BASIN		
Upper Iowa River near Dorchester (d).....	05388250	50
Bloody Run Creek near Marquette (dts).....	05389400	51
Mississippi River at McGregor (dts).....	05389500	55
Sny Magill Creek near Clayton (dts)	05411400	59
TURKEY RIVER BASIN		
Big Spring near Elkader (d)	05411950	63
Roberts Creek:		
Silver Creek:		
Silver Creek near Luana (d).....	05412060	64
Roberts Creek above Saint Olaf (d).....	05412100	65
Turkey River at Garber (d).....	05412500	66
MAQUOKETA RIVER BASIN		
Maquoketa River:		
Maquoketa River near Maquoketa (d).....	05418500	67
Mississippi River at Clinton (d).....	05420500	68
WAPSIPINICON RIVER BASIN		
Wapsipinicon River at Independence (d).....	05421000	69
Wapsipinicon River near De Witt (d).....	05422000	70
CROW CREEK BASIN		
Crow Creek at Bettendorf (d).....	05422470	71
IOWA RIVER BASIN		
Iowa River:		
East Branch Iowa River near Klemme (d).....	05449000	72
Iowa River near Rowan (d).....	05449500	73
Iowa River at Marshalltown (dts).....	05451500	74
Timber Creek near Marshalltown (d).....	05451700	78
Richland Creek near Haven (d).....	05451900	79
Salt Creek near Elberon (d).....	05452000	80
Walnut Creek near Hartwick (d).....	05452200	81
Big Bear Creek at Ladora (d).....	05453000	82
Iowa River at Marengo (d).....	05453100	83
Coralville Lake near Coralville (e).....	05453510	84
Iowa River below Coralville Dam near Coralville (d).....	05453520	85
Iowa River:		
Rapid Creek near Iowa City (d).....	05454000	86
Clear Creek near Coralville (d).....	05454300	87
Iowa River at Iowa City (d).....	05454500	88
South Branch Ralston Creek at Iowa City (d).....	05455010	89
Old Mans Creek near Iowa City (d).....	05455100	90
English River at Kalona (d).....	05455500	91
Iowa River near Lone Tree (d).....	05455700	92
Cedar River at Charles City (d).....	05457700	93
Little Cedar River near Ionia (d).....	05458000	94
Cedar River at Janesville (d).....	05458500	95
West Fork Cedar River at Finchford (d).....	05458900	96
Winnebago River at Mason City (d).....	05459500	97
Willow Creek:		
Clear Creek:		
Clear Lake at Clear Lake (e).....	05460000	98

SURFACE-WATER STATIONS, IN DOWNSTREAM ORDER, FOR WHICH RECORDS
ARE PUBLISHED IN THIS VOLUME

	Station number	Page
UPPER MISSISSIPPI RIVER BASIN--Continued		
IOWA RIVER BASIN--Continued		
Cedar River:		
Shell Rock River at Shell Rock (d).....	05462000	99
Beaver Creek at New Hartford (d).....	05463000	100
Cedar River at Cedar Falls (c).....	05463050	101
Black Hawk Creek at Hudson (d).....	05463500	103
Cedar River at Waterloo (d).....	05464000	104
Cedar River at Cedar Rapids (d).....	05464500	105
Cedar River near Conesville (d).....	05465000	106
Iowa River at Wapello (dcmts).....	05465500	107
SKUNK RIVER BASIN		
South Skunk River (head of Skunk River) near Ames (d).....	05470000	112
Squaw Creek at Ames (d).....	05470500	113
South Skunk River below Squaw Creek near Ames (d).....	05471000	114
South Skunk River at Colfax (dts).....	05471050	115
Indian Creek near Mingo (d).....	05471200	118
South Skunk River near Oskaloosa (d).....	05471500	119
North Skunk River near Sigourney (d).....	05472500	120
Cedar Creek near Oakland Mills (d).....	05473400	121
Skunk River at Augusta (dcmts).....	05474000	122
Mississippi River at Keokuk (d).....	05474500	127
DES MOINES RIVER BASIN		
Des Moines River at Estherville (d).....	05476500	128
Des Moines River at Humboldt (d).....	05476750	129
East Fork Des Moines River at Dakota City (d)....	05479000	130
Des Moines River at Fort Dodge (d).....	05480500	131
Boone River near Webster City (d).....	05481000	132
Des Moines River near Stratford (d).....	05481300	133
Saylorville Lake near Saylorville (e).....	05481630	134
Des Moines River near Saylorville (dts).....	05481650	135
Beaver Creek near Grimes (d).....	05481950	139
North Raccoon River (head of Raccoon River):		
North Raccoon River near Newell (d).....	05482135	140
North Raccoon River near Sac City (d).....	05482300	141
North Raccoon River near Jefferson (d).....	05482500	142
South Raccoon River:		
Hazelbrush Creek near Maple River(dcts).....	05483343	143
Middle Raccoon River near Bayard (d).....	05483450	147
Lake Panorama at Panora (e).....	05483470	148
Middle Raccoon River at Panora (d).....	05483600	149
South Raccoon River at Redfield (d).....	05484000	150
Raccoon River at Van Meter (dcmt).....	05484500	151
Walnut Creek at Des Moines (d).....	05484800	154
Des Moines River below Raccoon River at Des Moines (d).....	05485500	155
Fourmile Creek at Des Moines (d).....	05485640	156
North River near Norwalk (d).....	05486000	157
Middle River near Indianola (d).....	05486490	158
South River near Ackworth (d).....	05487470	159
Des Moines River near Runnells (d).....	05487500	160
White Breast Creek near Dallas (d).....	05487980	161
Lake Red Rock near Pella (e).....	05488100	162
Des Moines River near Pella (d).....	05488110	163
English Creek near Knoxville (d).....	05488200	164

SURFACE-WATER STATIONS, IN DOWNSTREAM ORDER, FOR WHICH RECORDS
ARE PUBLISHED IN THIS VOLUME

	Station number	Page
UPPER MISSISSIPPI RIVER BASIN--Continued		
DES MOINES RIVER BASIN--Continued		
Des Moines River near Tracy (d).....	05488500	165
Cedar Creek near Bussey (d).....	05489000	166
Des Moines River at Ottumwa (d).....	05489500	167
Des Moines River at Keosauqua (d).....	05490500	169
MISSOURI RIVER BASIN		
Missouri River:		
BIG SIOUX RIVER BASIN		
Big Sioux River:		
Rock River near Rock Valley (d).....	06483500	170
Big Sioux River at Akron (d).....	06485500	171
Missouri River at Sioux City (dts).....	06486000	172
PERRY CREEK BASIN		
Perry Creek at 38th Street, Sioux City (d).....	06600000	176
FLOYD RIVER BASIN		
Floyd River at Alton (d).....	06600100	177
West Branch Floyd River near Struble (d).....	06600300	178
Floyd River at James (d).....	06600500	179
Missouri River at Decatur, Nebraska (d).....	06602020	180
MONONA-HARRISON DITCH BASIN		
West Fork ditch (head of Monona-Harrison ditch) at Hornick (d).....	06602020	181
Monona-Harrison ditch near Turin (d).....	06602400	182
LITTLE SIOUX RIVER BASIN		
Little Sioux River:		
Milford Creek:		
Spirit Lake near Orleans (e).....	06604000	183
West Okoboji Lake at Lakeside Laboratory near Milford (e).....	06604200	184
Ocheyedan River near Spencer (d).....	06605000	185
Little Sioux River at Linn Grove (d).....	06605850	186
Little Sioux River at Correctionville (d).....	06606600	187
Maple River at Mapleton (d).....	06607200	188
Little Sioux River near Turin (d).....	06607500	189
SOLDIER RIVER BASIN		
Soldier River at Pisgah (d).....	06608500	190
BOYER RIVER BASIN		
Boyer River at Logan (d).....	06609500	191
Missouri River at Omaha, Nebraska (dts).....	06610000	192
Missouri River at Nebraska City, Nebraska (dts).....	06807000	196
NISHNABOTNA RIVER BASIN		
West Nishnabotna River at Hancock (d).....	06807410	200
West Nishnabotna River at Randolph (d).....	06808500	201
East Nishnabotna River near Atlantic (d).....	06809210	202
East Nishnabotna River at Red Oak (d).....	06809500	203
Nishnabotna River above Hamburg (d).....	06810000	204
Missouri River at Rulo, Nebraska (d).....	06813500	205
NODAWAY RIVER BASIN		
Nodaway River at Clarinda (d).....	06817000	206
PLATTE RIVER BASIN (Iowa-Missouri)		
One Hundred and Two River:		
East Fork One Hundred and Two River near Bedford (d).....	06819185	207

SURFACE-WATER STATIONS, IN DOWNSTREAM ORDER, FOR WHICH RECORDS
ARE PUBLISHED IN THIS VOLUME

	Station number	Page
MISSOURI RIVER BASIN--Continued		
GRAND RIVER BASIN		
Grand River:		
Thompson River:		
Elk Creek near Decatur City (dcmts).....	.06897950	208
Thompson River at Davis City (d).....	.06898000	211
CHARITON RIVER BASIN		
Chariton River near Chariton (d).....	.06903400	212
South Fork Chariton River near Promise City (d).....	.06903700	213
Rathbun Lake near Rathbun (e).....	.06903880	214
Chariton River near Rathbun (d).....	.06903900	215
Chariton River near Moulton (d).....	.06904010	217

ADAMS COUNTY

405731094480801 Local number, 71-34-07 DCCD	257
410247094324801 Local number, 72-32-09 CBCC	257
410248094324801 Local number, 72-32-09 CCBB	257
410317094324801 Local number, 72-32-09 BBCC	258
410548094452101 Local number, 73-34-27 BCBB	258

AUDUBON COUNTY

413044094565601 Local number, 78-36-35 ADCC1	258
413843094541701 Local number, 79-35-15 DCDD	259
413958094544501 Local number, 79-35-10 CABB	259
415023094593801 Local number, 81-36-12 CBCA	260

BENTON COUNTY

415211092164101 Local number, 82-12-31 DAAD1	260
415211092164102 Local number, 82-12-31 DAAD2	261
420319091540102 Local number, 84-09-28 DBCC2	262
420731092083801 Local number, 85-11-33 CCBC1	262
420731092083803 Local number, 85-11-33 CCBC3	263

BUENA VISTA COUNTY

424023095571401 Local number, 91-35-26 BCCC	263
425233094545001 Local number, 93-35-13 ADAA	264

CALHOUN COUNTY

422812094383501 Local number, 88-33-01 BACD	264
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CARROLL COUNTY

415658094462601 Local number, 82-34-02 ABBB	264
420230094455101 Local number, 84-34-35 DAAA	265
420233094475901 Local number, 83-35-34 BCDC	265
420643094403701 Local number, 84-33-03 CADA	265
420705094394501 Local number, 84-33-02 BDBA	266
421058094582701 Local number, 85-35-07 CCCC	266

CASS COUNTY

411117095091901 Local number, 74-37-30 BBBB1	267
411117095091902 Local number, 74-37-30 BBBB2	267
411900094530101 Local number, 75-35-07 BBAB	268
412832095033501 Local number, 77-37-13 BBBB	268

CERRO GORDO COUNTY

430757093131801 Local number, 96-20-17 DAAD	269
430806093164501 Local number, 96-21-13 BCCB	269

CHEROKEE COUNTY

423833095365701 Local number, 90-40-06 BDCD	270
424039095342801 Local number, 91-40-21 CDDD1	270
424039095342802 Local number, 91-40-21 CDDD2	270
424132095480211 Local number, 91-42-16 DDDD11	271
424348095231601 Local number, 91-39-01 ADAD1	271
424348095231602 Local number, 91-39-01 ADAD2	271
424459095322411 Local number, 92-40-26 CCDD11	272
424523095313101 Local number, 92-40-26 ADDD1	272
424523095313102 Local number, 92-40-26 ADDD2	272
424523095313103 Local number, 92-40-26 ADDD3	273
424802095331201 Local number, 92-40-10 BDDD	273

CLAY COUNTY

431316095135201 Local number, 97-37-17 ADDA1	274
431316095135202 Local number, 97-37-17 ADDA2	274

CLAYTON COUNTY

424023091291201 Local number, 91-05-30 BBBB	275
424057091320001 Local number, 91-06-22 ACAC	275
425433091285001 Local number, 94-05-31 DACC1	276
425433091285002 Local number, 94-05-31 DACC2	276
425940091194701 Local number, 95-04-32 DDDD	277
430156091182901 Local number, 95-04-22 BCBD	277

CRAWFORD COUNTY

415512095313801 Local number, 82-40-17 ABBC	278
415514095312001 Local number, 82-40-17 AABB	278
420147095161301 Local number, 83-38-04 DABC	279
420608095111701 Local number, 84-37-08 BCCB	279
421005095342801 Local number, 85-41-13 CCCC	279
421031095225601 Local number, 85-39-16 ADDD1	280
421031095225602 Local number, 85-39-16 ADDD2	280
421106095125501 Local number, 85-38-12 DCBA	281

DELAWARE COUNTY

422029091144302 Local number, 87-03-18 CBCD2	281
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FLOYD COUNTY

430200092435301 Local number, 95-16-22 BCA1	282
430200092435303 Local number, 95-16-22 BCA3	282
430200092435304 Local number, 95-16-22 BCA4	282
430200092435305 Local number, 95-16-22 BCA5	283
430200092435306 Local number, 95-16-22 BCA6	283

FRANKLIN COUNTY

423332093034302 Local number, 90-19-35 CDCC	283
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FREMONT COUNTY

404946095344801 Local number, 70-41-32 AABB1	284
404946095344802 Local number, 70-41-32 AABB2	284

GREENE COUNTY

415448094163401 Local number, 82-29-18 CBAA	285
415449094155601 Local number, 82-29-18 DBAA	285
415449094161501 Local number, 82-29-18 CAAA1	286
415449094173201 Local number, 82-30-13 CABA	286
415608094260701 Local number, 82-31-10 AAAA	287
420116094363001 Local number, 83-32-08 BBBC	287
420146094272301 Local number, 83-31-04 ADDB	287
420149094344701 Local number, 83-32-04 ACCC	288
420507094141901 Local number, 84-29-16 CBAB	288

GRUNDY COUNTY

422605092560001 Local number, 88-18-15 DBBB	289
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GUTHRIE COUNTY

413223094150801 Local number, 78-30-24 CAAB	289
413248094314301 Local number, 78-32-21 AAAA	290
414110094260501 Local number, 79-31-23 BBBB	290
414652094293301 Local number, 81-31-32 CBCC	290
414728094385301 Local number, 81-33-26 DDDD	291
414728094392401 Local number, 81-33-35 ABBC	291

GUTHRIE COUNTY--Continued

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HARDIN COUNTY

423310093032802 Local number, 89-19-02 BDAC2 292

HARRISON COUNTY

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413523095483101 Local number, 78-43-05 ACDD 293

413524095490601 Local number, 78-43-05 BCDD 293

413838095462001 Local number, 79-42-19 AADB 294

414149095422401 Local number, 80-42-35 BDCC 295

414213095431602 Local number, 80-42-34 ABBB2 295

414517095453401 Local number, 80-42-08 ACCC 296

414700095373001 Local number, 81-41-33 CAAA 296

414955096000601 Local number, 81-44-18 AADA 297

415148095545001 Local number, 81-44-01 ABAB 297

HENRY COUNTY

405010091424901 Local number, 70-07-30 BCDD 297

410852091394301 Local number, 73-07-09 AABD 298

HUMBOLDT COUNTY

424039094103601 Local number, 91-28-20 CAAA 298

424736094244701 Local number, 92-30-08 CDAA 299

424736094244702 Local number, 92-30-08 CDAA 299

IDA COUNTY

422215095390811 Local number, 87-41-05 CCCC11 299

423107095383201 Local number, 89-41-13 CCCC 300

423131095442601 Local number, 89-41-18 CB BB 300

IOWA COUNTY

414709091515801 Local number, 81-09-35 BCAA 300

414816092053401 Local number, 81-11-23 DCCC 301

JACKSON COUNTY

420842090165701 Local number, 85-06-29 ACAD1 301

420842090165702 Local number, 85-06-29 ACAD2 302

420842090165703 Local number, 85-06-29 ACAD3 302

420842090165704 Local number, 85-06-29 ACAD4 303

JASPER COUNTY

414147093035401 Local number, 80-19-33 ACAC 304

414210092592001 Local number, 80-18-31 ABBB 304

JOHNSON COUNTY

413925091324001 Local number, 79-06-09 DDBC 305

414107091322901 Local number, 79-06-04 AAAA 305

414132091345501 Local number, 80-06-31 ADAC1 306

414132091345502 Local number, 80-06-31 ADBC1 306

414132091345503 Local number, 80-06-31 ADBD1 306

414221091361101 Local number, 80-07-25 DBAC1 307

414221091361102 Local number, 80-07-25 DBAC2 307

414221091361103 Local number, 80-07-25 DBAD1 307

414315091252001 Local number, 80-05-22 CBCB1 308

414315091252002 Local number, 80-05-22 CBCB2 308

414853091425101 Local number, 81-07-19 BCBB1 309

JONES COUNTY

415808091160501 Local number, 83-04-25 CBBB309

KEOKUK COUNTY

412030092121601 Local number, 76-12-35 DBDC310

LINN COUNTY

415343091360101 Local number, 82-07-25 AAAB310

415422091422601 Local number, 82-07-18 CDCD311

415509091461801 Local number, 82-08-20 ACBB311

415725091410101 Local number, 83-07-32 ACDC312

415834091351601 Local number, 83-06-30 ABBA313

420300091325801 Local number, 84-06-33 ABBA313

420320091472201 Local number, 84-08-28 CBDD314

420508091395811 Local Number, 84-07-16 DBBB314

420526091370701 Local number, 84-07-13 BCBB315

420730091490401 Local number, 85-08-31 DDCD1315

420730091490402 Local number, 85-08-31 DDCD2316

421149091403301 Local Number, 85-07-04 CCCC316

LYON COUNTY

431713096140501 Local number, 98-46-24 CCCC1316

431713096140502 Local number, 98-46-24 CCCC2317

431812096302701 Local number, 98-48-16 DDAD317

432140095595301 Local number, 99-44-26 DDDD318

432553096105701 Local number, 99-45-05 ABAC318

432601096335511 Local number, 100-48-31 CCCC11319

432834096102701 Local number, 100-45-21 BBBB1319

432834096102702 Local number, 100-45-21 BBBB2320

MADISON COUNTY

411727093483001 Local number, 75-26-23 AAAC320

MAHASKA COUNTY

411912092273601 Local number, 75-14-10 BAAC320

411914092274701 Local number, 75-14-10 BABC321

412002092470301 Local number, 75-17-02 BAAB321

412020092471002 Local number, 76-17-35 CADB321

412023092471201 Local number, 76-17-35 CADB322

MARION COUNTY

411323093142601 Local number, 74-21-11 DBCB1322

411328093143503 Local number, 74-21-11 CAAD3323

411329093142902 Local number, 74-21-11 DBBB2323

MARSHALL COUNTY

415640093062101 Local number, 82-19-06 ACCB324

420355092534701 Local number, 84-18-24 CDCA324

421120093003001 Local number, 85-19-12 ADCD325

MILLS COUNTY

405641095365101 Local number, 71-42-24 AAAA325

405813095433201 Local number, 71-42-07 BBCD325

405911095302301 Local number, 71-41-04 AADA1326

405911095302302 Local number, 71-41-04 AADA2326

MITCHELL COUNTY

432156092484101 Local number, 95-17-23 DAA326

432156092484102 Local number, 95-17-23 DAA327

432156092484103 Local number, 95-17-23 DAA327

432156092484104 Local number, 95-17-23 DAA	327
432156092484105 Local number, 95-17-23 DAA	328
MONONA COUNTY	
415456095414101 Local number, 82-42-14 ADCA	328
420004095451501 Local number, 83-42-17 ACDD	328
420004095454801 Local number, 83-42-17 CABB	329
420139095155701 Local number, 83-43-04 CBCB	329
420730095510701 Local number, 84-43-04 ABAA	330
421006095580301 Local number, 85-44-16 DCDD	330
421018095582001 Local number, 85-44-16 CDAA	331
421018095591301 Local number, 85-44-17 DCAA	331
MONTGOMERY COUNTY	
405403095004401 Local number, 71-36-32 DCCD	332
405841095012702 Local number, 71-36-06 DADA2	332
410057095075101 Local number, 72-37-29 BABA	333
410103095594501 Local number, 72-36-04 CDDD	333
410134095141601 Local number, 72-38-20 ACAA1	334
410134095141602 Local number, 72-38-20 ACAA2	334
MUSCATINE COUNTY	
412120091080401 Local number, 76-02-30 CBAA1	335
O'BRIEN COUNTY	
425610095250611 Local number, 94-39-26 BADB11	335
425808095480311 Local number, 94-42-09 DDDD11	336
430930095350401 Local number, 96-40-05 DDDA1	336
OSCEOLA COUNTY	
431613095251801 Local number, 98-39-26 CDCC	337
431620095250501 Local number, 98-39-26 CDAD1	337
431620095250511 Local number, 98-39-26 CDAD11	337
431620095482402 Local number, 98-42-33 AABB2	338
432129095315001 Local number, 99-40-26 DCDD1	338
432129095315002 Local number, 99-40-26 DCDD2	339
432129095315003 Local number, 99-40-26 DCDD3	339
432828095283611 Local number, 100-39-17 DCCB11	339
PAGE COUNTY	
403446095010701 Local number, 67-36-30 DCCD	340
404257095150801 Local number, 68-38-07 CCAA	340
PALO ALTO COUNTY	
430246094421201 Local number, 95-33-14 ACDD	341
430246094421202 Local number, 95-33-14 ACDD	341
430246094421203 Local number, 95-33-14 ACDD	341
430246094421204 Local number, 95-33-14 ACDD	342
431047094415201 Local number, 97-33-36 BCBB	342
431047094415202 Local number, 97-33-36 BCBB	342
431047094415203 Local number, 97-33-36 BCBB	343
PLYMOUTH COUNTY	
424552096141301 Local number, 96-46-23 DDC	343
424833096324701 Local number, 92-48-06 DDDA	343
424850096074801 Local number, 92-45-02 CBCB	344
425249096125001 Local number, 93-46-12 DDDD	344
POCAHONTAS COUNTY	

425329094272501 Local number, 93-31-12 BABB	345
425329094272502 Local number, 93-31-12 BABB	345
POCAHONTAS COUNTY--Continue	
425329094272503 Local number, 93-31-12 BABB	345
POTTAWATTAMIE COUNTY	
411024095095501 Local number, 74-38-36 BAAA1	346
411024095095502 Local number, 74-38-36 BAAA2	346
411359095171901 Local number, 74-39-01 CCCC	347
SAC COUNTY	
422500095084801 Local number, 88-37-22 CCCC	347
422850095171501 Local number, 89-38-36 CBCC	348
SCOTT COUNTY	
413544090212901 Local number, 78-05-03 AADA	348
SHELBY COUNTY	
413255095070401 Local number, 78-37-17 DDDD	349
413359095182701 Local number, 78-39-11 CCBC	349
413442095193101 Local number, 78-39-10 BBBA	350
413953095302601 Local number, 79-40-09 DBCA	350
414211095161701 Local number, 80-38-33 AABB	350
414624095252301 Local number, 80-39-06 AADC	351
414856095160101 Local number, 81-38-21 ADAD	351
SIOUX COUNTY	
430140095573101 Local number, 95-43-07 AAAA	352
430913096033201 Local number, 96-44-08 ADAA	352
431200096221601 Local number, 97-47-23 CCCD	352
STORY COUNTY	
420137093361501 Local number, 83-24-02 DABC	353
VAN BUREN COUNTY	
404150091483001 Local number, 68-08-08 CDD	353
WASHINGTON COUNTY	
411300091320701 Local number, 74-06-15 BDAC	354
412037091564701 Local number, 76-09-31 CBBC	354
412750091495201 Local number, 77-09-24 AADA	355
421829091304701 Local number, 75-06-14 ABBB	355
WEBSTER COUNTY	
421837094083601 Local number, 87-28-29 CCCD	356
423018094214701 Local number, 89-30-23 CCBB	356
WOODBURY COUNTY	
422058095573701 Local number, 87-44-15 CBBB	357
422830096000511 Local number, 88-44-16 BAAB11	357
422910096135811 Local number, 89-46-36 BBDC11	357

DISCONTINUED SURFACE-WATER DISCHARGE OR STAGE-ONLY STATIONS

The following continuous-record surface-water discharge or stage-only stations (gaging stations) in Iowa have been discontinued. Daily streamflow or stage records were collected and published for the period of record, expressed in water years, shown for each station. Those stations with an asterisk (*) after the station number are currently operated as crest-stage partial-record stations. Discontinued project stations with less than 3 years of record have not been included. Information regarding these stations may be obtained from the District Office at the address given on the back side of the title page of this report.

[Letters after station name designate type of data collected: (d) discharge, (e) elevation (stage only)]

Station Name	Station Number	Drainage area (square miles)	Period of record
Upper Iowa River at Decorah, Ia. (d)	05387500	511	1952-83
Upper Iowa River near Decorah, Ia. (d)	05388000	568	1913-14; 1919-27; 1933-51
Paint Creek at Waterville, Ia. (d)	05388500	42.8	1952-73
Yellow River at Ion, Ia. (d)	05389000	221	1934-51
Mississippi River at Clayton, Ia. (d)	05411500	9,200	1930-36
Turkey River at Spillville, Ia. (d)	05411600	177	1957-73; 1978-91
Turkey River at Elkader, Ia. (d)	05412000	891	1932-42
Unnamed Creek near Luana, Ia. (d)	05412070	1.15	1986-92
Little Maquoketa River near Durango, Ia. (d)	05414500*	130	1934-82
Maquoketa River near Manchester, Ia. (d)	05417000	305	1933-73
Maquoketa River near Delhi, Ia. (d)	05417500	347	1933-40
Bear Creek near Monmouth, Ia. (d)	05417700	61.3	1957-76
Maquoketa River above North Fork Maquoketa River near Maquoketa, Ia. (d)	05418000	938	1913-14
North Fork Maquoketa River at Fulton, Ia. (d)	05418450	516	1977-91
Wapsipinicon River at Stone City, Ia. (d)	05421500	1,324	1903-14
Crow Creek at Eldridge, Ia. (d)	05422420	2.20	1977-82
Crow Creek at Mt. Joy, Ia. (d)	05422450	6.90	1977-82
Pine Creek at Muscatine, Ia. (d)	05448150	38.9	1975-82
Eagle Lake inlet near Britt, Ia. (e)	05448285	3.83	1975-80
Eagle Lake outlet near Britt, Ia. (e)	05448290	11.3	1975-80
West Branch (West Fork) Iowa River near Klemme, Ia. (d)	05448500	112	1948-58
Iowa River near Iowa Falls, Ia. (d)	05450000	665	1911-14
Upper Pine Lake at Eldora, Ia. (e)	05450500	14.9	1936-70
Lower Pine Lake at Eldora, Ia. (e)	05451000	15.9	1936-70
Iowa River near Belle Plaine, Ia. (d)	05452500	2,455	1939-59
Lake Macbride near Solon, Ia. (e)	05453500	27.0	1936-71
Ralston Creek at Iowa City, Ia. (d)	05455000	3.01	1924-87
Cedar River at Mitchell, Ia. (d)	05457500	826	1933-42
Shell Rock River near Northwood, Ia. (d)	05459000	300	1945-86
Shell Rock River at Marble Rock (Greene), Ia. (d)	05460500	1,318	1933-53
Shell Rock River at Greene, Ia. (d)	05461000	1,357	1933-42
Shell Rock River near Clarksville, Ia. (d)	05461500	1,626	1915-27; 1932-34
Fourmile Creek near Lincoln, Ia. (d)	05464130	13.78	1962-67; 1969-74
Half Mile Creek near Gladbrook, Ia. (d)	05464133	1.33	1962-67; 1969-74
Fourmile Creek near Traer, Ia. (d)	05464137	19.51	1962-74; 1975-80
Prairie Creek at Fairfax, Ia. (d)	05464640	178	1966-82
Lake Keomah near Oskaloosa, Ia. (e)	05472000	3.06	1936-71
Skunk River at Coppock, Ia. (d)	05473000	2,916	1913-44
Big Creek near Mount Pleasant, Ia. (d)	05473500	106	1955-79
East Fork Des Moines River near Burt, Ia. (d)	05478000	462	1971-74
East Fork Des Moines River near Hardy, Ia. (d)	05478500	1,268	1940-54
Des Moines River near Fort Dodge, Ia. (d)	05479500	3,753	1911-13
Lizard Creek near Clare, Ia. (d)	05480000	257	1940-82
Des Moines River near Boone, Ia. (d)	05481500	5,511	1920-68
Des Moines River at Des Moines, Ia. (d)	05482000	6,245	1905-06; 1915-61
Storm Lake at Storm Lake, Ia. (e)	05482140	28.3	1970-75
Big Cedar Creek near Varina, Ia. (d)	05482170	80.0	1960-91
East Fork Hardin Creek near Churdan, Ia. (d)	05483000	24.0	1953-91
Springbrook Lake near Guthrie Center, Ia. (d)	05483500	5.18	1936-71
Raccoon River at Des Moines, Ia. (d)	05485000	3,590	1902-03
Lake Ahquabi near Indianola, Ia. (e)	05487000	4.93	1936-71
White Breast Creek near Knoxville, Ia. (d)	05488000	380	1945-62
Muchakinock Creek near Eddyville, Ia. (d)	05489190	70.2	1975-79
Lake Wapello near Drakesville, Ia. (e)	05490000	7.75	1936-71
Sugar Creek near Keokuk, Ia. (d)	05491000	105	1922-31; 1958-73
Fox River at Bloomfield, Ia. (d)	05494300	87.7	1957-73
Fox River at Cantril, Ia. (d)	05494500	161	1940-51
Rock River at Rock Rapids, Ia. (d)	06483270	788	1959-74
Dry Creek at Hawarden, Ia. (d)	06484000	48.4	1948-69
West Fork ditch at Holly Springs, Ia. (d)	06602000	399	1939-69
Loon Creek near Orleans, Ia. (d)	06603920	31	1971-74
Spirit Lake outlet at Orleans, Ia. (e)	06604100	75.6	1971-74
Milford Creek at Milford, Ia. (d)	06604400	146	1971-74
Little Sioux River at Spencer, Ia. (d)	06605100	990	1936-42
Little Sioux River at Gillett Grove, Ia. (d)	06605600	1,334	1958-73
Little Sioux River near Kennebeck, Ia. (d)	06606700	2,738	1939-69
Odebolt Creek near Arthur, Ia. (d)	06607000	39.3	1957-75
Maple River at Turin, Ia. (d)	06607300	725	1939-41
Little Sioux River near Blencoe (Turin), Ia. (d)	06607510	4,470	1939-42

DISCONTINUED SURFACE-WATER DISCHARGE OR STAGE-ONLY STATIONS--Continued

Station Name	Station Number	Drainage area (square miles)	Period of record
Steer Creek near Magnolia, Ia. (d)	06609200	9.26	1963-69
Thompson Creek near Woodbine, Ia. (d)	06609590	6.97	1963-69
Willow Creek near Logan, Ia. (d)	06609600	129	1972-75
Indian Creek at Council Bluffs, Ia. (d)	06610500	7.99	1954-76
Mosquito Creek near Earling, Ia. (d)	06610520	32.0	1965-79
Waubonsie Creek near Bartlett, Ia. (d)	06806000	30.4	1946-69
West Nishnabotna River at Harlan, Ia. (d)	06807320	316	1977-82
West Nishnabotna River at (near) White Cloud, Ia. (d)	06807500	967	1918-24
Mule Creek near Malvern, Ia. (d)	06808000	10.6	1954-69
Spring Valley Creek near Tabor, Ia. (d)	06808200	7.6	1955-64
Davids Creek near Hamlin, Ia. (d)	06809000	26.0	1952-73
Tarkio river at Blanchard, Ia. (d)	06812000	200	1934-40
Tarkio River at Stanton, Ia. (d)	06811840	49.3	1958-91
West Nodaway River at Villisca, Ia. (d)	06816500	342	1918-25
Platte River near Diagonal, Ia. (d)	06818750	217	1969-91
Weldon River near Leon, Ia. (d)	06898400	104	1959-91
Honey Creek near Russell, Ia. (d)	06903500	13.2	1952-62
Chariton River near Centerville, Ia. (d)	06904000	708	1938-59

DISCONTINUED SURFACE-WATER-QUALITY STATIONS

The following water-quality stations have been discontinued in Iowa. Continuous daily records of water temperature or sediment and monthly or periodic samples of chemical quality were collected and published for the period of record shown for each station.

[Type of record: Chem.--chemical quality, Temp.--water temperature, Sed--sediment]

Station name	Station number	Drainage area (mi ²)	Type of record	Period of record
Upper Iowa River at Decorah, Ia.	05387500	511	Sed., Temp.	1963-83
Upper Iowa River near Dorchester, Ia.	05388250	770	Sed., Temp.	1975-81
Paint Creek at Waterville, Ia.	05388500	42.8	Temp.	1952-56
			Sed.	1952-57
Unnamed Creek near Luana	05412070	1.15	Chem.	1986-92
Turkey River at Garber, Ia.	05412500	1,545	Temp., Sed.*	1957-62
Mississippi River at Dubuque, Ia.	05414700	1,600	Chem.	1969-73
Maquoketa River near Maquoketa, Ia.	05418500	1,553	Chem., Temp., Sed.	1978-82
Mississippi River at Clinton, Ia.	05420500	85,600	Chem.	1973-87
Wapsipinicon River at Independence, Ia.	05421000	1,048	Chem.*	1968-70
			Temp., Sed.*	1967-70
Crow Creek at Bettendorf, Ia.	05422470	17.8	Chem., Temp., Sed.	1978-82
Iowa River near Rowan, Ia.	05449500	429	Temp., Sed.*	1957-62
Cedar River near Gilbertville, Ia.	05464020	5,234	Chem.	1971; 1975-81
Iowa River at Iowa City, Ia.	05454500	3,271	Chem., Temp., Sed.	1952-1987
Ralston Creek at Iowa City, Ia.	05455000	3.01	Chem., Temp., Sed.	1906-1907; 1944-88
Fourmile Creek near Lincoln, Ia.	05464130	13.78	Chem., Temp., Sed.	1969-74
Half Mile Creek near Gladbrook, Ia.	05464133	1.33	Chem., Temp., Sed.	1969-74
Fourmile Creek near Traer, Ia.	05464137	19.51	Chem., Temp., Sed.	1969-74
Cedar River near Palo, Ia.	05464450	6,380	Chem.	1975-79
Cedar River at Cedar Rapids, Ia.	05464500	6,640	Chem.*	1906-07; 1944-54
			Temp.*	1944-54
			Sed.	1943-54
Cedar River near Bertram, Ia.	05464760	6,955	Chem.	1975-81
Mississippi River at Burlington, Ia.	05469720	4,000	Chem.	1969-73
South Skunk River at Colfax, Ia.	05471050	803	Chem., Temp., Sed.	1989-93
Mississippi River at Keokuk, Ia.	05474500	119,000	Chem.	1974-87
Des Moines River at Fort Dodge, Ia.	05480500	4,190	Chem.	1972-73
Des Moines River at Des Moines, Ia.	05482000	6,245	Chem.	1954-55
			Temp., Sed.	1954-61
East Fork Hardin Creek near Churdan, Ia.	05483000	24.0	Temp., Sed.*	1952-57
Middle Fork Raccoon River near Bayard, Ia.	05483450	375	Chem., Temp., Sed.	1979-85
Middle Fork Raccoon River at Panora, Ia.	05483600	440	Chem., Temp., Sed.	1979-85
Raccoon River at Des Moines, Ia.	05485000	3,590	Chem., Temp.	1945-47
Des Moines River below Raccoon River at Des Moines, Ia.	05485500	9,770	Chem.*	1944-45
			Temp., Sed.	1944-47
Des Moines River below Des Moines, Ia.	05485520	9,901	Chem.	1971; 1975-81
Middle River near Indianola, Ia.	05486490	503	Temp., Sed.	1962-67
White Breast Creek near Dallas, Ia.	05487980	342	Chem.	1968-73
			Temp., Sed.	1967-73
Big Sioux River at Sioux City, Ia.	06485950	9,410	Chem.	1969-73
Missouri River at Sioux City, Ia.	06486000	314,600	Chem.	1972-86
Floyd River at James, Ia.	06600500	882	Temp., Sed.	1968-73
Floyd River at Sioux City, Ia.	06600520	921	Chem.	1969-73
Missouri River at Decatur, Neb.	06601200	316,160	Chem.	1974-81
Little Sioux River at Correctionville, Ia.	06606600	2,500	Chem.*	1954-55
			Temp.*	1951-62
			Sed.	1950-62
Little Sioux River near Kennebec, Ia.	06606700	2,738	Temp.	1950-55
			Sed.	1950-57
Little Sioux River at River Sioux, Ia.	06607513	3,600	Chem.	1969-73
Soldier River near Mondamin, Ia.	06608505	440	Chem.	1970-73
Steer Creek near Magnolia, Ia.	06609200	9.26	Temp., Sed.	1963-69
Thompson Creek near Woodbine, Ia.	06609590	6.97	Temp., Sed.	1963-69
Willow Creek near Logan, Ia.	06609600	129	Chem., Temp.	1972-75
			Sed.	1971-75
Missouri River at Omaha, Nebr.	06610000	322,800	Chem.	1969-86
Mule Creek near Malvern, Ia.	06808000	10.6	Temp.	1958-69
			Sed.	1954-69
Davids Creek near Hamlin, Ia.	06809000	26.0	Temp.*	1952-53; 1965-68
Nishnabotne River above Hamburg, Ia.	06810000	2,806	Chem.	1979-83
			Temp., Sed.	1979-81
Nodaway River near Clarinda	06817000	762	Chem., Temp., Sed.	1976-92
East Nishnabotna River at Red Oak, Ia.	06809500	894	Temp., Sed.	1962-73
Platte River near Diagonal, Ia.	06818750	217	Chem.	1969-73
Thompson River at Davis City, Ia.	06898000	701	Chem.	1967-73
			Temp., Sed.	1968-73
Weldon River near Leon, Ia.	06898400	104	Chem.	1968-73
Chariton River near Chariton, Ia.	06903400	182	Temp., Sed.	1969-73
Honey Creek near Russell, Ia.	06903500	13.2	Sed.	1952-62
Chariton River near Rathbun, Ia.	06903900	551	Temp., Sed.*	1962-69

* Periodic data is available subsequent to the period of daily record.

WATER RESOURCES DATA - IOWA, 1994

INTRODUCTION

The Water Resources Division of the U.S. Geological Survey, in cooperation with State agencies, obtains a large amount of data pertaining to the water resources of Iowa each water year. These data, accumulated during many water years, constitute a valuable data base for developing an improved understanding of the water resources of the State. To make these data readily available to interested parties outside of the Geological Survey, the data are published annually in this report series entitled "Water Resources Data - Iowa."

This report contains records for water discharge at 115 gaging stations, stage or contents for 8 lakes and reservoirs, water quality records for 6 gaging stations, sediment records for 11 gaging stations, and water levels for 232 observation wells. Also included are data for 93 crest-stage partial-record stations and water-quality data from 101 municipal wells. Additional water data were collected at various sites not involved in the systematic data-collection program and are published as miscellaneous measurements and analyses. These data represent that part of the National Water Data System operated by the U.S. Geological Survey and cooperating local, State, and Federal agencies in Iowa.

Records of discharge and stage of streams, and contents or stage of lakes and reservoirs were first published in a series of U.S. Geological Survey water-supply papers entitled, "Surface Water Supply of the United States." Through September 30, 1960, these water-supply papers were in an annual series and then in a 5-year series for 1961-65 and 1966-70. Records of chemical quality, water temperatures, and suspended-sediment were published from 1941 to 1970 in an annual series of water-supply papers entitled, "Quality of Surface Waters of the United States." Records of ground-water levels were published from 1935 to 1974 in a series of water-supply papers entitled, "Ground-Water Levels in the United States." Water-supply papers may be consulted in the libraries of the principal cities in the United States or may be purchased from Books and Open-File Reports Section, Federal Center, Box 25425, Denver, Colorado 80225.

For water years 1961 through 1970, streamflow data were released by the Geological Survey in annual reports on a State-boundary basis. Water-quality records for water years 1964 through 1970 were similarly released either in separate reports in conjunction with streamflow records.

Beginning with the 1971 water year, water data for streamflow, water quality, and ground water are published in official Survey reports on a State-boundary basis. These official Survey reports carry an identification number consisting of the two-letter State abbreviation, the last two digits of the water year, and the volume number. For example, this report is identified as "U.S. Geological Survey Water-Data Report IA-94-1." These water-data reports are for sale, in paper copy or in microfiche, by the National Technical Information Service, U.S. Department of Commerce, Springfield, Virginia 22161. Beginning with the 1990 water year, all water-data reports will also be available on Compact Disc - Read Only Memory (CD-ROM). All data reports published for the current water year for the entire Nation, including Puerto Rico and the Trust Territories, will be reproduced on a single CD-ROM disc.

Additional information, including current prices, for ordering specific reports may be obtained from the District Chief at the address given on the back of the title page or by telephone, (319) 337-4191. A limited number of CD-ROM discs will be available for sale by the Books and Open-File Reports Section, U.S. Geological Survey, Federal Center, Box 25425, Denver, Colorado 80225.

COOPERATION

The U.S. Geological Survey and organizations in the State of Iowa have had cooperative agreements for the systematic collection of streamflow records since 1914, for ground-water levels since 1935, and for water-quality records since 1943. Organizations that assisted in collecting data through cooperative agreements with the U.S. Geological Survey in Iowa during water year 1994 are:

Iowa Department of Natural Resources (Geological Survey Bureau),
Donald L. Koch, Bureau Chief and State Geologist

Iowa Department of Transportation, Highway Division, Highway
Research Board, Robert Humphrey, Director, and Vernon J.
Marks, Research Engineer

Iowa State University, Department of Agricultural Engineering and
Biosystems Engineering, James Gilley, Chairperson

Iowa State University, Department of Contracts and Grants, Richard
E. Hasbrook, Contracts and Grants Officer

Iowa State University, Iowa State Water Resources Research
Institute, Dennis Keeney, Director

University of Iowa, College of Engineering, Robert G. Hering,
Dean, Institute of Hydraulic Research, Robert Ettema,
Acting Director

University of Iowa, Department of Preventive Medicine and Environmental
Health, Robert B. Wallace, Department Head

University of Iowa, Hygienic Laboratory, W.J. Hausler, Jr., Director

City of Cedar Rapids, Donald Canney, Mayor

City of Des Moines, John Dorrian, Mayor

City of Fort Dodge, Michael D. McCarville, Mayor.

Assistance in the form of funds or services was given by the U.S. Army Corps of Engineers in collecting streamflow records for 84 stream gaging stations. Assistance was also furnished by NOAA-National Weather Service, U.S. Department of Commerce.

The following organizations aided in collecting records:

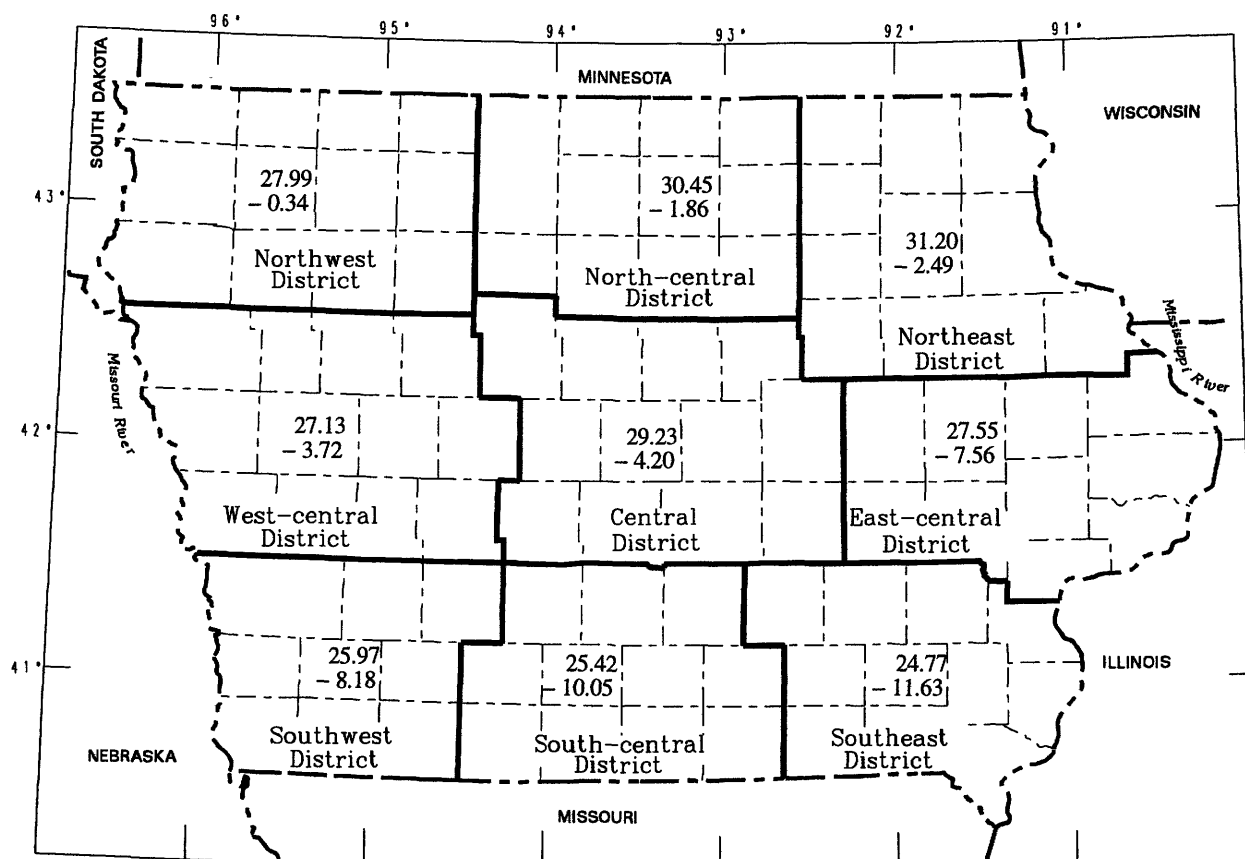
Carroll County Soil and Water Conservation District; City of Charles City; City of Clear Lake; City of Denison; City of Des Moines Water Works; City of Iowa City; City of Marshalltown; City of Sioux City; City of Waterloo; City of Waterloo Sewage Treatment Plant; Union Electric Company, Keokuk; University of Iowa; and West Central Iowa Rural Water Association, Manning.

Organizations that supplied data are acknowledged in the station descriptions.

SUMMARY OF HYDROLOGIC CONDITIONS

Surface Water

Water year 1994 (October 1, 1993 to September 30, 1994) was the 24th coolest and the 28th driest for 122 years of record. Precipitation recorded for the state averaged 27.89 inches which was 5.22 inches below normal. All climatological districts in the state recorded below normal precipitation with precipitation ranging from 0.34 inches below normal in the Northwest climatological district to 11.63 inches below normal in the Southwest climatological district (fig.1). State-wide average precipitation of 27.89 inches was 84 percent of the normal 33.11 inches for 1961-90 (table 1). Temperatures were above normal during December, March through June, and September. Below normal temperatures were recorded for the remaining months of the year. [In this summary of hydrologic conditions, all data and statistics pertaining to precipitation and temperature in Iowa were provided by Harry Hillaker, State Climatologist, Iowa Department of Agriculture and Land Stewardship, (oral and written commun., 1994)].



EXPLANATION

27.99 PRECIPITATION DURING WATER YEAR 1994--In inches

-0.34 PRECIPITATION DEVIATION FROM LONG-TERM AVERAGE (1961-90)--In inches

Figure 1. Precipitation record in the National Weather Service's designated climatological districts for water year 1994 (source: Harry Hillaker, State Climatologist, Iowa Department of Agriculture and Land Stewardship, written commun., 1995).

Table 1. Monthly and annual precipitation during the 1994 water year as a percentage of normal precipitation (1961-90)

[Source: Harry Hillaker, State Climatologist, Iowa Department of Agriculture and Land Stewardship, written commun., 1995]

National Weather Service Climatological District	1993			1994									Annual
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	
Northwest	60	117	123	218	70	3	111	51	183	84	85	115	99
North Central	45	66	79	169	91	5	92	64	150	131	93	99	94
Northeast	65	50	46	172	139	8	78	49	142	135	105	106	93
West Central	62	70	79	144	85	3	69	38	125	102	134	120	88
Central	63	60	53	152	126	6	67	61	136	84	98	130	87
East Central	29	54	61	92	196	24	55	55	140	89	92	78	78
Southwest	76	49	64	70	91	6	72	37	175	81	67	66	76
South Central	52	54	53	71	164	7	72	62	126	74	72	64	72
Southeast	28	61	35	63	201	20	86	60	118	63	76	55	68
Statewide	53	63	63	124	132	9	77	53	144	94	93	94	84

Average precipitation state wide during the month of October was 53 percent of normal, with all climatological districts reporting below normal precipitation. Despite below normal precipitation state-wide the mean monthly discharge for all three index stations in the district was in excessive range. The three index stations are 05464500 Cedar River at Cedar Rapids, 05480500 Des Moines River at Fort Dodge, and 06810000 Nishnabotna River above Hamburg (fig. 2, 3).

During November and December the state-wide average precipitation was 63 percent of normal. Precipitation was below normal for all climatological districts during the period with the exception of the Northwest district. This area of the state recorded precipitation that was 117 percent above normal for the month of November and 123 percent above normal for December. Discharge in most streams throughout the state continued to decline during November and December. However, despite continued decline in stream flow, mean monthly discharge for all three index stations was in the excessive range during this period, with exception of the Des Moines River at Fort Dodge during November when the mean monthly discharge was in the normal range.

Recorded state-wide precipitation rebounded during the month of January. Average precipitation during the month was 124 percent of normal but precipitation amounts varied greatly with the Northwest climatological district reporting average precipitation 218 percent of normal while the Southeast district reported average precipitation 63 percent of normal. Precipitation during January came in the form of snow, with a snowpack of 15-20 inches on the Floyd River Basin, in the Northwest district. Temperatures for January were below normal so precipitation had little impact on river discharge throughout the state. Monthly mean discharge for the index stations was in the excessive range for the month of January.

February precipitation averaged 132 percent of normal state wide. Breakdown of precipitation by climatological districts indicated that precipitation varied over the state with the Southeast district recording precipitation amounts 201 percent of normal while the Northwest district average precipitation was 70 percent of normal. Temperatures experienced during February averaged below normal with exception of a warming period the week of February 14-21, when temperatures were 15-20 degrees above normal. Many streams throughout the state experienced ice breakup as a result of this warming trend. By month's end temperatures dropped below average and snow ranging

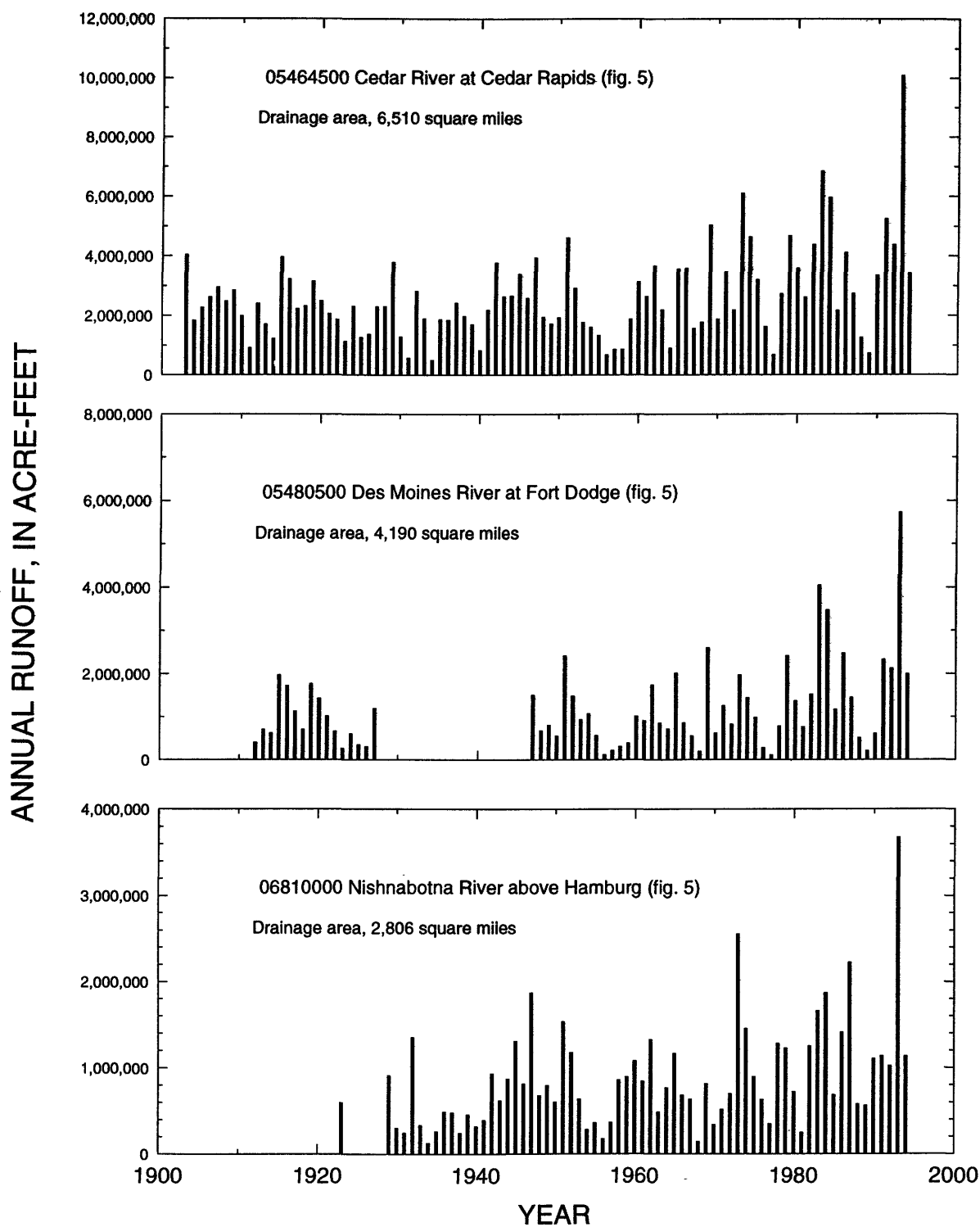
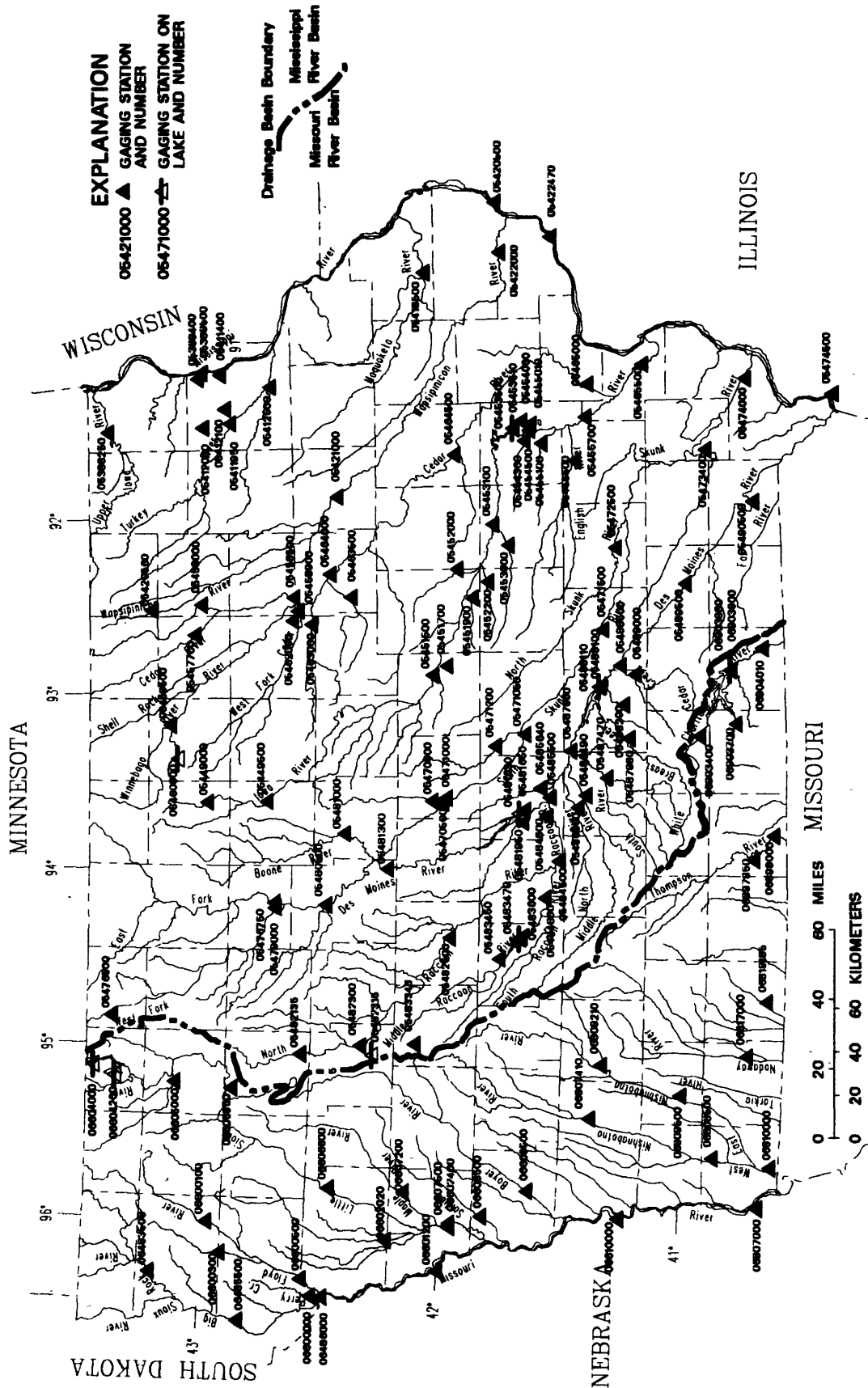


Figure 2. Annual runoff, in acre-feet, for period of record at three index stations.



▲ Figure 3. -- Location of active, continuous-record gaging stations in Iowa.

from 4-8 inches, covered the entire state. Discharge in many streams responded to variations in temperatures experienced in February. Flows increased significantly during the warming trend during February 14-21 but by month's end discharge in most streams was receding. Mean monthly discharge at the three index stations was in the excessive range for February.

Average precipitation for the state during March was 9 percent of normal, making March 1994 the second driest in 122 years of record. Review of the nine climatological districts in the state indicate the East Central district average precipitation was 24 percent of normal, the Southeast district 20 percent of normal, and the remaining seven districts average precipitation ranged from 8 percent of normal to 3 percent of normal. Many streams experienced significant rises during the first week of March as a result of runoff from melting snowpack. After depletion of snow cover, discharge in most streams had dropped by month's end. The three index stations all had mean monthly discharges in the normal range.

State-wide precipitation for the months of April and May averaged 77 percent of normal for April and 53 percent of normal for May. May of 1994 was tenth driest in 122 years of records and March, April, May of 1994 were the sixth driest for this period in 122 years of year of record. Dry conditions resulted in monthly mean discharge in the normal range at the three index stations.

Precipitation for June ranged from 183 percent of normal in the Northwest climatological district to 118 percent of normal in the Southeast district with the state-wide average precipitation 144 percent of normal. Rainfall amounts resulted in small rises on some streams and rivers recorded during the middle of the month and again by month's end. Monthly mean discharge was in the normal range at the Cedar River at Cedar Rapids, and at the Nishnabotna River above Hamburg. Index station Des Moines River at Fort Dodge had mean monthly discharge in the excessive range for June.

The average temperature for the month of July was the tenth coolest in 122 years of record. Precipitation during the month varied widely with the Northeast climatological district receiving an average precipitation 135 percent of normal while the Southeast district average precipitation was 63 percent of normal. The statewide average precipitation was 94 percent of normal. Monthly mean discharge at index station Des Moines River at Fort Dodge was in the excessive range while monthly mean discharge at index stations Cedar River at Cedar Rapids and Nishnabotna River above Hamburg was in the normal range.

State-wide average precipitation for August and September was 93 percent and 94 percent of normal respectively. Temperatures during this period averaged below normal statewide during August while during September the state-wide average temperature was above normal. Monthly mean discharge at index station Cedar River at Cedar Rapids and Des Moines River at Fort Dodge was in the excessive range for August and in the normal range for the Nishnabotna River above Hamburg. September mean monthly flow was in the excessive range for the Cedar River at Cedar Rapids while index stations Des Moines River at Fort Dodge and Nishnabotna River above Hamburg recorded mean monthly discharge in the normal range.

The location of active, continuous-record gaging stations is shown in figure 3 and the location of active, crest-stage gaging stations is shown in figure 4.

Suspended Sediment

Daily suspended-sediment data (hereafter referred to as sediment discharge in this report) were collected at 11 streamflow-gaging stations across Iowa during the 1994 water year. Four of these stations have 16 years or more of record. These stations are (1) 05389500 Mississippi River at McGregor, (2) 05465500 Iowa River at Wapello, (3) 05474000 Skunk River at Augusta, and (4) 05481650 Des Moines River near Saylorville. Three stations on the Missouri River, (1) 06486000 Missouri River at Sioux City, Iowa, (2) 06610000 Missouri River at Omaha, Nebraska, and (3) 06807000 Missouri River at Nebraska City, Nebraska have 8 years of record. The remaining stations have 3-6 years of record. The location of active and discontinued sediment and surface-water-quality stations is shown in figure 5.

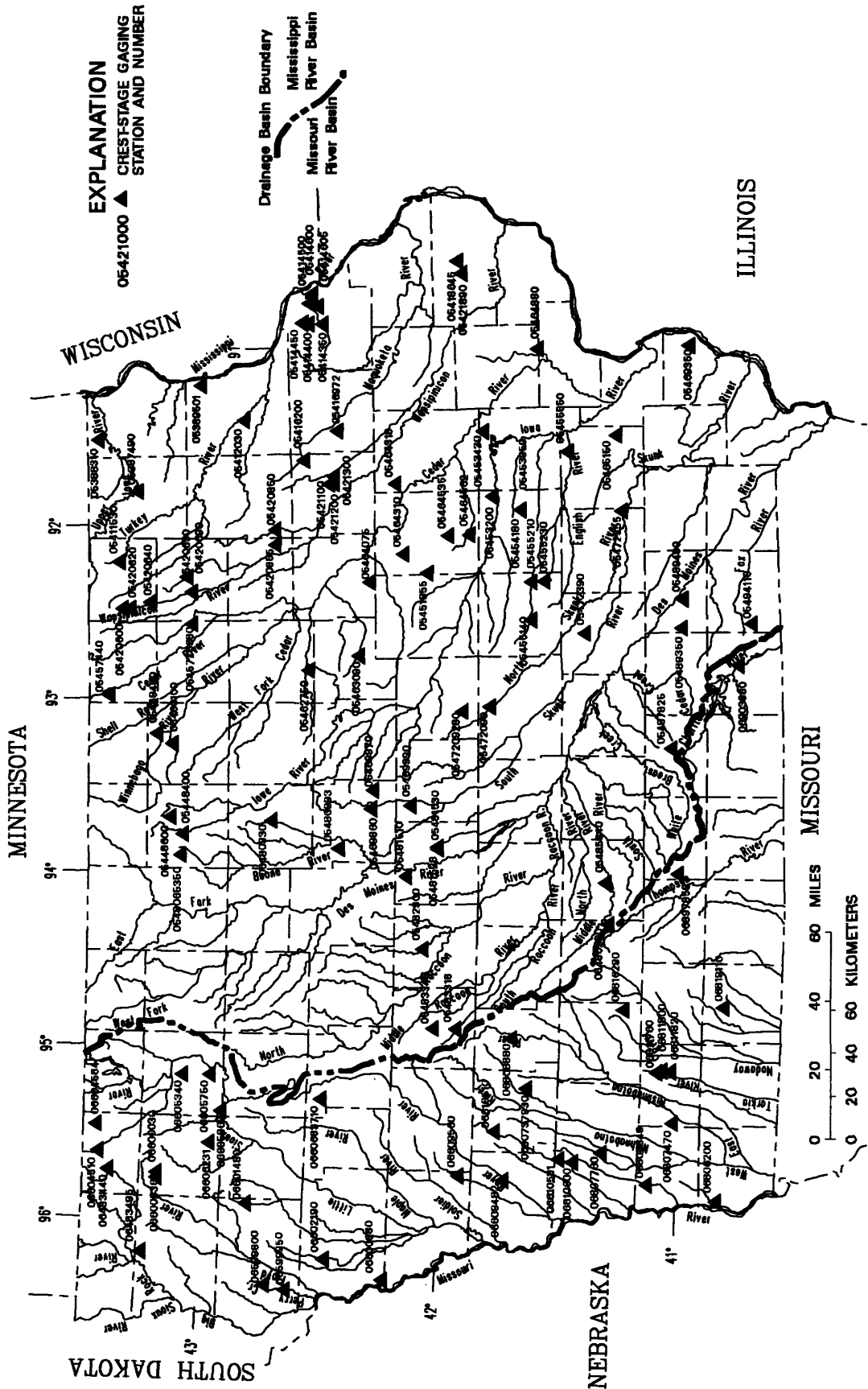


Figure 4. -- Location of active, crest-stage gaging stations in Iowa.

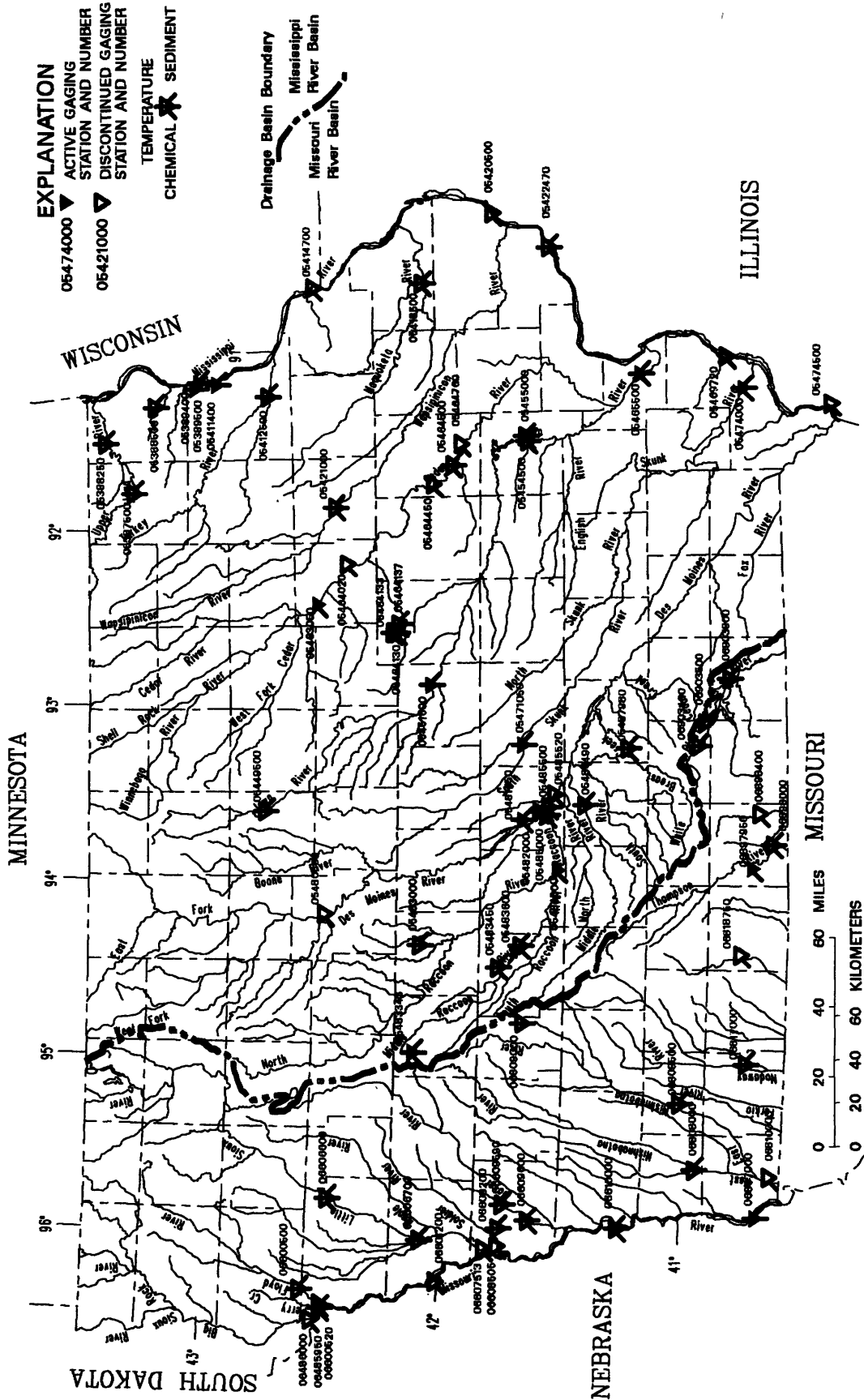


Figure 5. -- Location of active and discontinued surface water-quality stations in Iowa.

With the exception of the Mississippi River at McGregor, which has most of its drainage basin in Minnesota and Wisconsin, the sediment discharge at the sediment stations reflected the near normal statewide precipitation during water year 1994. The Mississippi River at McGregor had an annual sediment discharge of 1.18 million tons, which was the fourth lowest sediment discharge in 19 years of record (fig. 6).

The annual sediment discharge for the Iowa River at Marshalltown (05451500), located in central Iowa, was 250,800 tons, the second lowest annual average sediment discharge in 6 years of record. Hazelbrush Creek near Maple River (05483343), located in west-central Iowa, has only a 9 sq mi drainage area and had an annual sediment discharge of 643.6 tons.

The sediment station on the Des Moines River near Saylorville (05481650), is located in central Iowa and is downstream from a major flood-control reservoir (Saylorville Reservoir). The annual sediment discharge at this station for water year 1994 was 211,750 tons, and was the eighth smallest discharge in the 17 years since closure of the dam. The average annual sediment discharge since closure of the dam is 277,600 tons (fig. 6).

Sediment discharges for the Iowa River at Wapello (05465500) and the Skunk River at Augusta (05474000), located in southeast Iowa, indicate the near normal precipitation in central and eastern Iowa in water year 1994. The Iowa River basin drainage includes parts of southeast, east-central, central, northeast, and north-central Iowa, and drains an area nearly three times as large as the Skunk Basin. The Iowa River at Wapello had an annual sediment discharge of 1.44 million tons. This represents 50 percent of the 16-year average sediment discharge of 2.83 million tons (fig. 6). The headwaters of the Skunk River basin are in central and southeast Iowa, and flow is southeasterly to the confluence with the Mississippi River. A substantial part of the drainage basin is located in the southeast, and the annual precipitation for this area was 68 percent of normal during water year 1994. The annual sediment discharge for the Skunk River at Augusta was 629,800 tons, which is 24 percent of the 19-year average sediment discharge of 2.62 million tons (fig. 6).

The annual sediment discharge for the two stations located in northeast Iowa also reflect the effect of precipitation patterns on small drainage basins. The annual sediment discharge for Bloody Run Creek near Marquette (05489400) was 3,117 tons, of which 61.8 percent was measured during the month of February. Also, 54 percent of the February total was on one day, February 19. The annual sediment discharge for Sny Magill Creek near Clayton (05411400) was 4,775 tons. Twenty-nine percent of this annual discharge was measured in February and 38.3 percent of the yearly total was measured in June.

The three Missouri River stations (fig. 5) have large drainage areas, and the sediment discharges reflect that. The annual sediment discharges in downstream order are: 06486000 Missouri River at Sioux City, Iowa (6.46 million tons), 06610000 Missouri River at Omaha, Nebraska (16.2 million tons), and 06807000 Missouri River at Nebraska City, Nebraska (26.2 million tons).

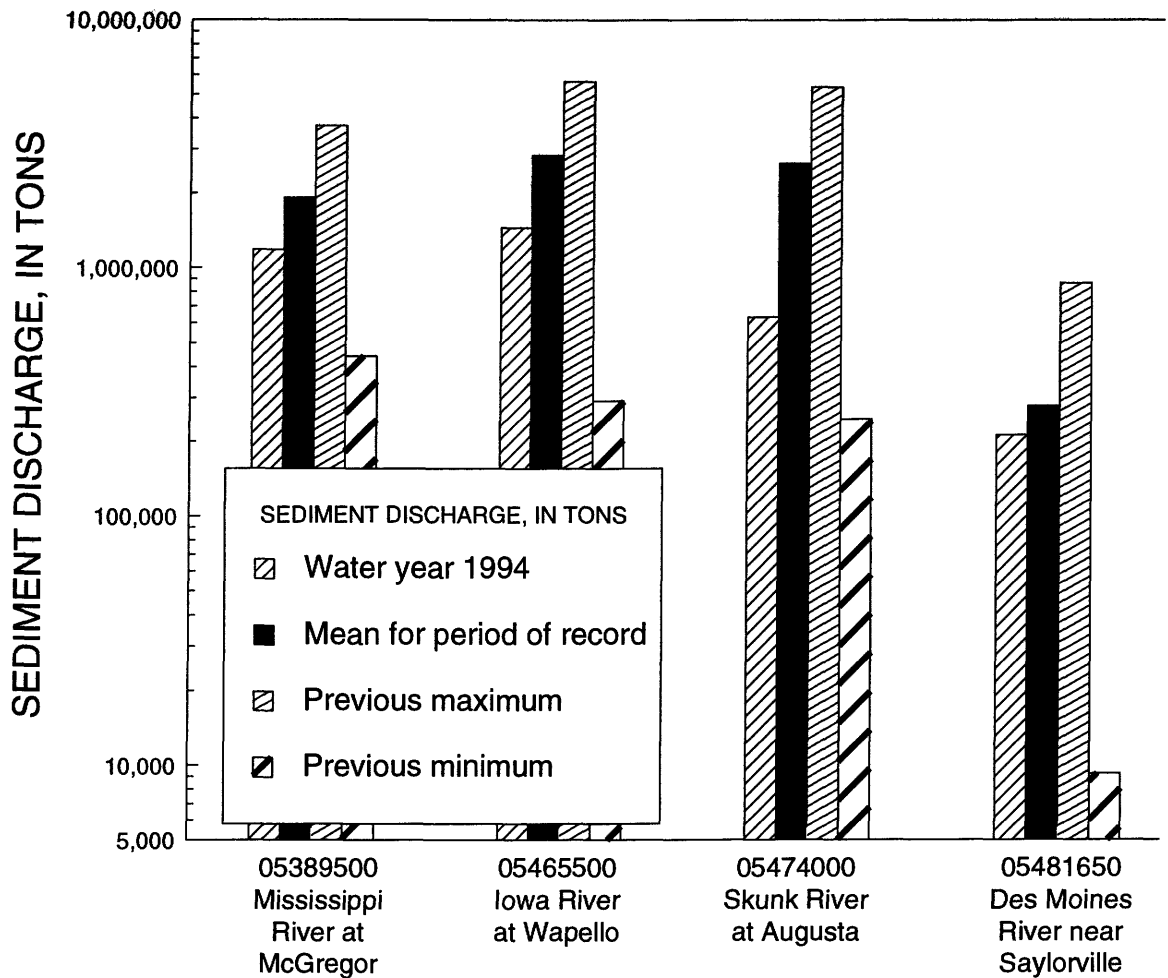


Figure 6. Comparison of annual sediment discharge for water year 1994 with mean, previous maximum, and previous minimum annual sediment discharges for periods of record at four long-term daily sediment stations in Iowa.

Ground Water

Monitoring water-level changes in wells provides valuable information on the effects of natural stresses and human activities on the ground-water resources of Iowa. Water-level measurements are compiled into a long-term, regional data base. Uses of the data base include: (1) evaluation of changes in ground-water storage through time in the major aquifers; (2) assessment of the effects of natural and human stresses on ground-water systems; and (3) a source of information to help State and local officials effectively manage the resource and predict future supplies. The 1994 ground-water-level monitoring network in Iowa consisted of 232 monitoring wells that were measured quarterly, intermittently, or on a monthly basis (fig. 7).

Ground-water supplies in Iowa are withdrawn from unconsolidated aquifers and, in most areas of the State, deeper bedrock aquifers. There are three types of unconsolidated aquifers: (1) alluvial aquifers, which consist of sand-and-gravel deposits associated with present-day fluvial systems; (2) glacial-drift aquifers, which consist of shallow, discontinuous, permeable lenses of sand and gravel interbedded with less-permeable glacial drift; and (3) buried-channel aquifers. Buried-channel aquifers are formed in areas where coarse sand and gravel were deposited in bedrock valleys and overlain by a thick layer of glacial drift.

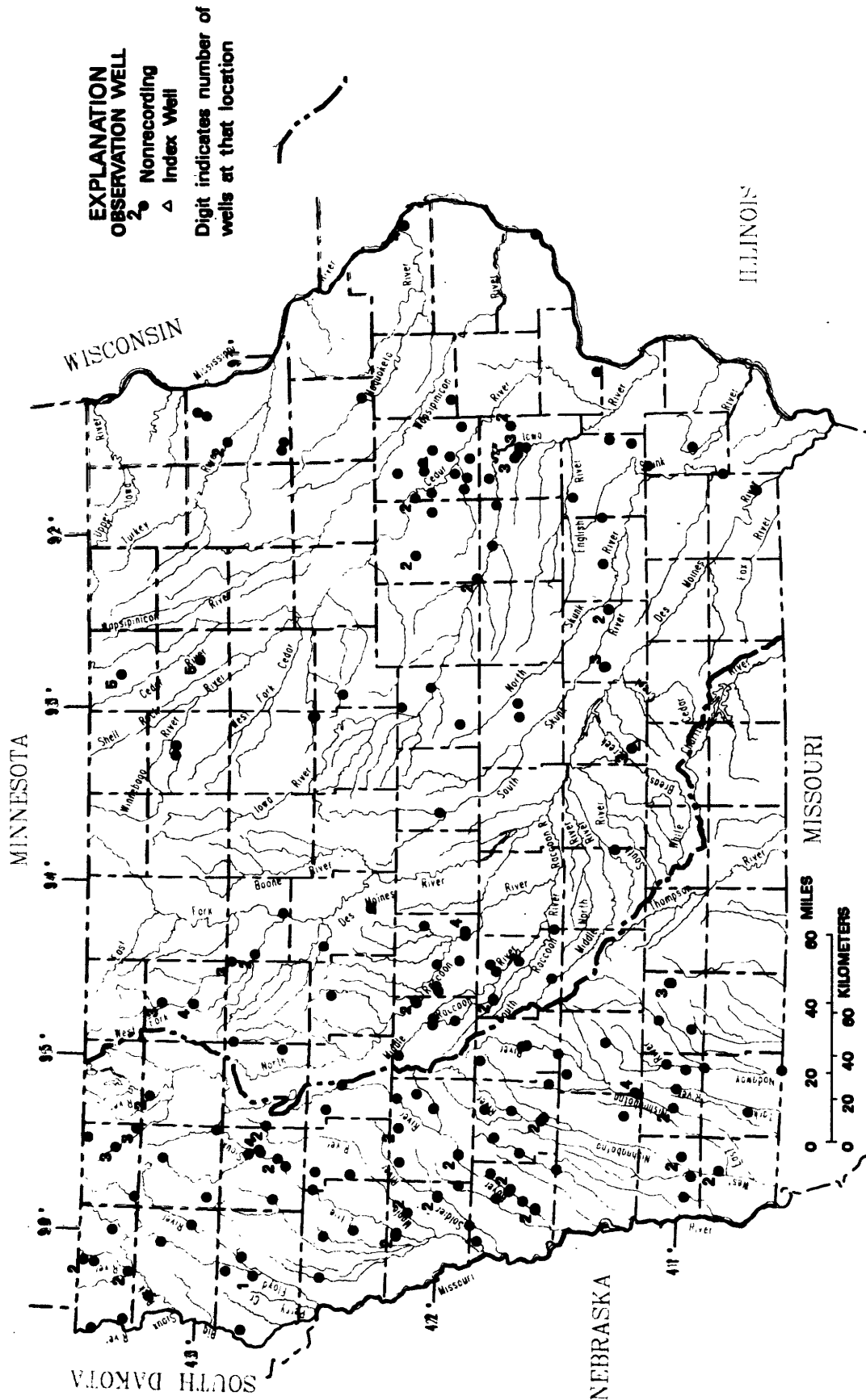


Figure 7. -- Location of recording and nonrecording wells in the ground-water-level observation network in Iowa.

Recharge to the shallow, unconsolidated aquifers occurs mainly by infiltration of precipitation and is dependent on the amount of precipitation received by the aquifer at the land surface in the immediate area. In general, water levels in unconsolidated alluvial and glacial-drift aquifers commonly exhibit a regular, seasonal pattern. This pattern consists of a moderate rise during the fall, then a gradual decline during the winter, followed by a second rise in the water levels in the spring due to precipitation and runoff from snowmelt, then a gradual decline throughout the summer growing season.

During the 1994 water year, the statewide average annual precipitation in Iowa was 84 percent, or slightly below normal (water years 1961-90) (table 1). The below-normal precipitation is reflected in the water levels measured in the three index wells in the State (fig. 8). The water levels measured in the index well completed in glacial drift of Pleistocene age in Linn County (fig. 8) slightly exceeded the 25th percentile from April 1994 through May 1994. Water levels less than the 25th percentile of the monthly mean water levels for the specified month for the period of record are considered in the below normal range. The water levels measured in the well completed in the glacial-drift aquifer in Webster County were also in the below normal range April 1994 through May 1994. Water-level measurements made in the well completed in glacial-drift aquifer in Marion County were within average percentiles except for October 1993 when the monthly water measurement was slightly above the 75th percentile.

Ground-water levels in monitoring wells completed in the unconsolidated aquifers were generally normal. During water year 1994, ten wells completed in unconsolidated aquifers recorded new historical high water levels. These wells were located in seven counties, six of which are in the western part of the state, and completed in alluvial, glacial-drift, and alluvial aquifers (table 2). The Johnson County well was the only well with a historical high water level that was located in eastern Iowa.

Table 2. Historical high water level measured during the 1994 water year in wells completed in unconsolidated aquifers

[Water-level measurements are in feet below land surface]

County	Well number (fig. 7)	Aquifer type	New historical high water level	Date measured	Previous historical high water level	Date measured
Adams	410247094324801	Glacial Drift	1.46	10-29-93	2.08	05-07-93
Adams	410248094324801	Glacial Drift	3.72	02-03-94	4.70	05-07-93
Cass	412832095033501	Buried Channel	113.50	11-04-93	114.47	08-11-93
Clay	431316095135202	Alluvial	9.06	11-03-93	9.11	08-10-93
Harrison	414149095422401	Glacial Drift	47.28	11-01-93	47.30	08-12-93
Johnson	414221091361103	Buried Channel	124.43	02-04-94	124.74	08-27-93
Palo Alto	431047094415201	Alluvial	1.08	05-03-94	3.99	05-05-93
Palo Alto	431047094415202	Alluvial	1.78	05-03-94	4.03	05-05-93
Palo Alto	431047094415203	Alluvial	1.21	05-05-93	3.94	05-05-93
Pottawattamie	411359095171901	Buried Channel	124.45	05-05-94	124.86	04-04-88

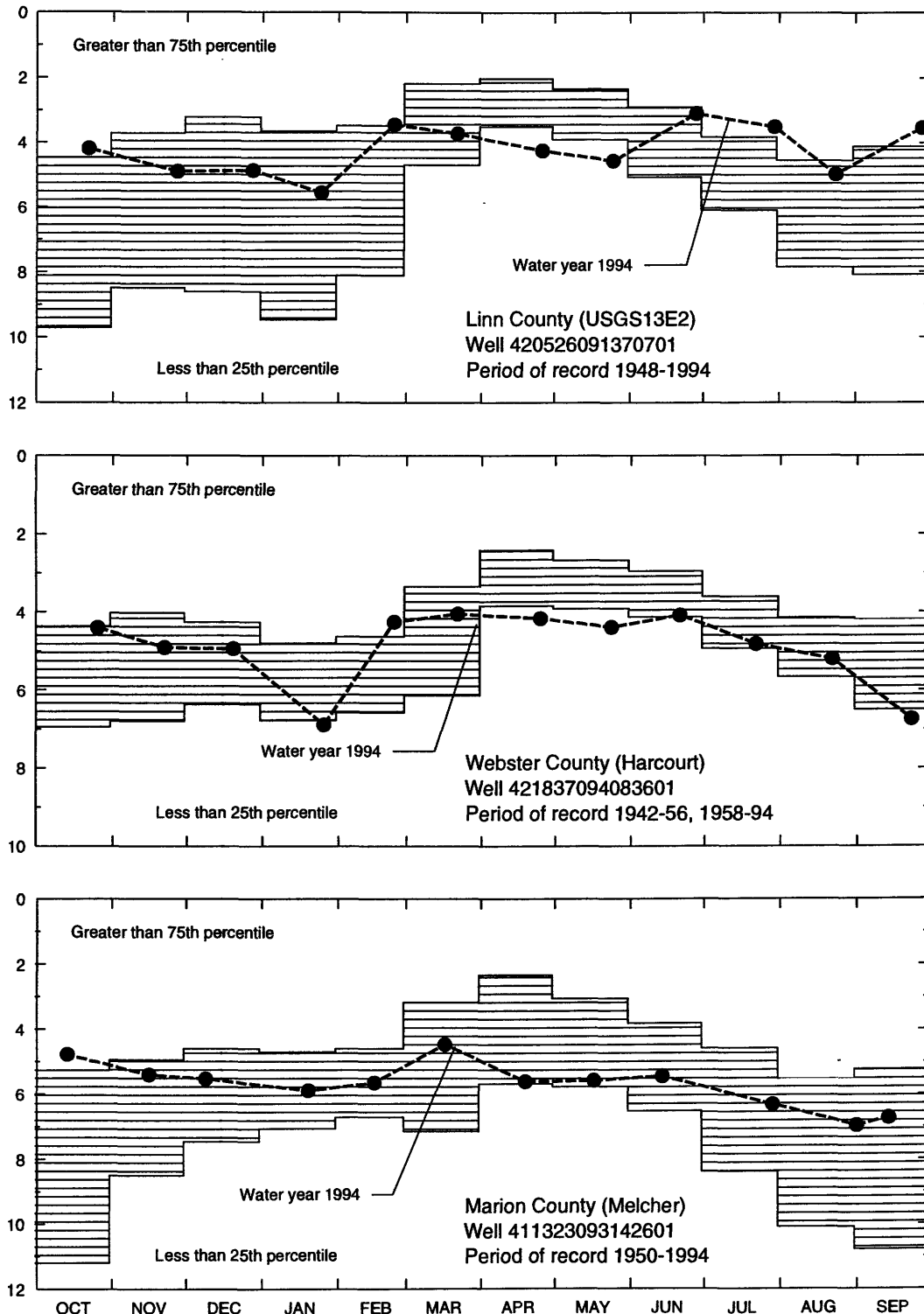


Figure 8. Monthly water-level measurements made during water year 1994 compared to percent distribution of monthly water levels for a specific month for period of record for three index wells completed in glacial drift.

Table 3. Historical low water level measured during the 1994 water year in wells completed in unconsolidated aquifers

[Water-level measurements are in feet below land surface]

County	Well number (fig. 7)	Aquifer type	New historical low water level	Date measured	Previous historical low water level	Date measured
Adams	405731094480801	Alluvial	22.95	02-04-94	21.95	02-01-93
Adams	410317094324801	Alluvial	3.60	02-03-94	2.61	02-01-93
Adams	410247094324801	Glacial Drift	2.40	07-27-94	2.29	06-14-93
Carroll	415658094462601	Alluvial	8.33	08-03-94	7.52	02-02-93
Carroll	420230094455101	Alluvial	5.48	08-03-94	4.55	02-01-93
Cherokee	424039095342802	Alluvial	16.34	05-04-94	16.28	02-04-93
Cherokee	424523095313101	Alluvial	14.06	02-08-94	13.22	02-04-93
Cherokee	424523095313102	Alluvial	13.73	02-08-94	12.90	02-04-93
Cherokee	424523095313103	Alluvial	13.83	02-08-94	12.96	02-04-93
Freemont	404946095344801	Alluvial	19.96	05-05-94	19.58	11-03-92
Freemont	404946095344802	Alluvial	19.90	05-05-94	19.44	11-03-92
Humboldt	424736094244702	Alluvial	7.60	12-20-93	4.98	02-04-93
Ida	404946095344802	Alluvial	14.40	05-03-94	12.63	02-05-93
Mitchell	432156092484101	Glacial Drift	5.07	01-31-94	3.51	08-04-92
Montgomery	405403095004401	Alluvial	15.49	05-05-94	13.94	08-04-92
Montgomery	410103095594501	Alluvial	15.36	05-05-94	15.20	00-04-94
Page	403446095010701	Alluvial	3.00	07-26-94	2.80	10-06-87
Palo Alto	430246094421201	Alluvial	4.34	01-31-94	2.15	02-04-93
Palo Alto	430246094421202	Alluvial	6.48	05-03-94	2.95	07-27-90
Palo Alto	430246094421203	Alluvial	6.14	05-03-94	2.94	07-27-90
Palo Alto	430246094421204	Alluvial	6.14	05-03-94	2.93	07-27-90
Plymouth	424552096141301	Alluvial	9.85	07-28-94	9.76	02-04-93
Shelby	414211095161701	Alluvial	21.79	07-29-94	20.96	08-07-92

Historical low water levels were measured in twenty three wells in the state completed in glacial-drift aquifers (table 3). These wells were located in twelve counties, all, with the exception of Mitchell county, in the western part of the state. All wells in unconsolidated aquifers having historic lows were in alluvial aquifers, except for wells in Adams and Mitchell counties which are completed in glacial drift aquifers.

There are five major bedrock-aquifer units in Iowa. The first is the Cambrian- Ordovician aquifer system, which consists of aquifers in sandstone of Early Cambrian age and dolomite and sandstone of Late Cambrian to Early Ordovician age. The basal aquifer of the Cambrian-Ordovician aquifer system, the Dresbach, is present locally in northeastern and east-central Iowa. Overlying the Dresbach aquifer is the more areally extensive Jordan-St. Peter aquifer. The uppermost aquifer in the Cambrian-Ordovician aquifer system is the Galena aquifer, which is separated from the underlying Jordan-St. Peter aquifer by a shale confining unit. Overlying the Cambrian-Ordovician aquifer system is the Silurian-Devonian aquifer, which yields water from fractures in Silurian dolomite and Devonian limestone. Above the Silurian-Devonian aquifer is the Mississippian aquifer, which is composed of limestone and dolomite of Mississippian age, which underlies about 60 percent of Iowa. Overlying the Mississippian aquifer are discontinuous lenses of sandstone in the Cherokee and Kansas City Groups of Pennsylvanian age, which form small,

localized aquifers. The Dakota aquifer, which yields water from sandstone of Cretaceous age in northwest and western Iowa, is the youngest, bedrock-aquifer unit in the State.

Although not directly dependent on local infiltration by precipitation, recharge to confined buried-channel and bedrock aquifers is affected by extended changes in climatic conditions as well as human-induced activities, such as withdrawals by pumping. In most cases, the response of the confined aquifers to natural- and human-induced stresses is not as rapid as the response exhibited by the unconfined, unconsolidated aquifers.

New historical high water levels were measured in eleven wells throughout the State (table 4). One historical high water level was measured in a well completed in the Cambrian-Ordovician aquifer system, one in the Silurian aquifer, two in the Mississippian aquifer, and seven historical high water levels were measured in wells completed in the Dakota aquifer.

Table 4. Historical high water level measured during the 1994 water year in wells completed in bedrock aquifers

[Water-level measurements are in feet below land surface]

County	Well number (fig. 7)	Aquifer type	New historical high water level	Date measured	Previous historical high water level	Date measured
Buena Vista	425233094545001	Dakota	115.06	01-31-94	131.65	05-06-85
Carroll	420705094394501	Dakota	46.93	08-03-94	47.38	10-11-91
Delaware	422029091144302	Silurian	10.74	08-10-94	16.59	05-30-91
Guthrie	414728094385301	Dakota	36.76	05-04-94	37.82	08-13-93
Ida	423107095383201	Mississippian	180.97	07-27-94	186.45	07-27-83
Mahaska	411914092274701	Mississippian	100.79	08-01-94	101.06	08-10-93
Monona	420139095155701	Dakota	183.60	11-03-93	184.38	08-25-93
Monona	421018095591301	Dakota	49.62	11-03-93	49.78	08-05-93
Plymouth	424805096074801	Cambrian-Ordovician	56.56	02-10-94	57.12	08-04-93
Woodbury	422058095573701	Dakota	53.39	11-03-93	54.14	08-05-93
Woodbury	422910096135811	Dakota	128.10	07-28-94	128.32	07-08-87

New historical low water levels were measured in sixteen wells completed in bedrock aquifers in Iowa (table 5). One of the historical low water levels were measured in wells completed in the Cambrian-Ordovician aquifer system, six in the Silurian aquifer, seven in the Devonian aquifer, one in the Mississippian aquifer, and one historical low water level was measured in a well completed in the Dakota aquifer.

Table 5. Historical low water level measured during the 1994 water year in wells completed in bedrock aquifers

[Water-level measurements are in feet below land surface]

County	Well number (fig. 7)	Aquifer type	New historical low water level	Date measured	Previous historical low water level	Date measured
Benton	420731092083801	Devonian	87.50	08-02-94	64.96	10-12-88
Benton	420731092083803	Devonian	65.36	02-03-94	65.03	10-12-88
Floyd	430200092435303	Devonian	74.35	05-02-94	74.00	08-04-92
Floyd	430200092435305	Devonian	76.63	11-01-93	73.84	08-07-92
Jackson	420842090165701	Cambrian-Ordovician	8.87	05-03-94	7.67	09-06-84
Johnson	413925091324001	Silurian	168.89	08-02-94	168.89	08-02-88
Johnson	414132091345501	Silurian	259.49	07-22-94	253.87	07-31-91
Johnson	414132091345502	Silurian	251.34	07-22-94	246.43	07-31-91
Johnson	414132091345503	Silurian	291.00	07-22-94	287.00	07-31-91
Lyon	432601096335511	Silurian	151.57	02-11-94	152.17	10-09-86
Madison	411727093483001	Mississippian	277.34	07-27-94	276.23	07-21-93
Marshall	415640093062101	Silurian	232.32	11-01-93	228.72	07-23-90
Mithcell	432156092484102	Devonian	11.92	01-31-94	10.73	02-01-93
Mithcell	432156092484103	Devonian	12.26	01-31-94	11.55	02-01-93
Mithcell	432156092484104	Devonian	14.92	01-31-94	14.24	02-01-93
Osceola	431620095482402	Dakota	238.48	07-28-94	236.27	05-05-93

Surface-Water Quality

Surface-water-quality data were collected in Iowa during water year 1994 at four National Stream-Quality Accounting Network (NASQAN) stations and one Hydrologic Benchmark Network (HBMN) station. The NASQAN stations in Iowa are 05463050 Cedar River at Cedar Falls, 05465500 Iowa River at Wapello, 05474000 Skunk River at Augusta, and 05484500 Raccoon River at Van Meter. The HBMN station is 06897950 Elk Creek near Decatur City (fig. 5). The combined drainage area of the five stations is approximately 25,000 mi². Land use throughout the five drainage basins is primarily agricultural. Samples were collected six times during the 1994 water year at the NASQAN sites Cedar River at Cedar Falls and Raccoon River at Van Meter, five times at sites Iowa River at Wapello and Skunk River at Augusta, and four times at the HBMN station Elk Creek near Decatur City.

Nearly all the samples collected at the five stations contained detectable concentrations of agricultural chemicals. Dissolved nitrate plus nitrite as nitrogen (hereafter referred to as nitrate) was detected frequently in Iowa streams during water year 1994, with most samples containing concentrations greater than the detection level of 0.05 mg/L (milligrams per liter). Nitrate concentrations in these samples did not exceed 10 mg/L, which is the U.S. Environmental Protection Agency (USEPA) Maximum Contaminant Level (MCL) for public drinking water (USEPA, 1990, Maximum contaminant levels, subpart B of part 141, National primary drinking-water regulations: U.S. Code of Federal Regulations, Title 40, Parts 100 to 149, revised as of July 1, 1990, p.553-677). For comparison, in water year 1993, Raccoon River at Van Meter equalled 10ug/L two times.

Water samples collected three times at three NASQAN stations were analyzed for seven herbicides. Alachlor, atrazine, cyanazine, metolachlor, metribuzin and deeththylatrazine were detected at least once, and trifluralin was not detected. Water samples were collected four times at Raccoon River at Van Meter and analyzed for the same seven

herbicides as mentioned above with the same results. The largest herbicide concentration was 4.1ug/L (micrograms per liter) of atrazine in a sample collected from the Cedar River at Cedar Falls in June 1994. The largest overall concentration of these compounds in a single event was also on the Cedar River at Cedar Falls in June. This contained 4.1ug/l of atrazine, 2.40ug/l of metolachlor, 0.87ug/l of cynazine, 0.69ug/l of deethylatrazine, and 0.44 ug/l of metribuzin. The atrazine concentration exceeded the USEPA MCL of 3.0ug/L (USEPA, 1992, Fact sheet: EPA 570/9-91-012FS, December 1992). Herbicide concentrations were generally larger in water samples collected during May and June than in samples collected at other times during water year 1994. Samples collected in October had the lowest overall concentrations of the six herbicides during the 1994 water year.

Ground-Water Quality

The Iowa ground-water-quality monitoring program has been operated since 1982 by the U.S. Geological Survey in cooperation with the University of Iowa Hygienic Laboratory and the Iowa Department of Natural Resources, Geological Survey Bureau. The purpose of the program is twofold: 1) to provide consistent and representative data describing the chemical water quality of the principal aquifers of the State; and 2) to determine possible trends in both water quality and spatial distribution of non-point source contaminants.

The ground-water-quality monitoring program was initiated to continue a program begun in 1950 by the State Health Department that consisted of periodic, nonspecific sampling of untreated water from municipal supply wells. Each year, approximately 250 wells, primarily municipal supply, were randomly-selected for sampling between April and November. Between 1985 and 1989, the emphasis of the program was on the analysis of nitrate and herbicide concentrations in samples from wells less than 200 feet in depth. Because of the random pattern of sampling both spatially (different wells each year) and seasonally (different times during the year), trends in ground-water quality were difficult to determine from the data. Therefore, in 1990, to provide year-to-year continuity of data and a more statistically sound basis for the study of long-term water-quality trends, a sampling strategy based on a random selection of wells weighted by aquifer vulnerability was implemented. Aquifer vulnerability was determined by the frequency of atrazine detections in water samples collected from wells in the respective aquifers. In 1990 and 1991, a fixed network of 50 wells was selected to be sampled annually, and approximately 200 wells continued to be selected on a rotational basis.

In 1992, the investigation of water-quality trends became the primary focus of the program, and a 10-year work plan was designed to eliminate spatial and seasonal variance, yet allow flexibility within the schedule to address additional data needs. For sampling site selection in 1992, the well inventory was divided into categories based on aquifer type and again on well depth for surficial aquifers, and into categories designated "vulnerable to contamination" and "not vulnerable to contamination" based on the map "Groundwater Vulnerability Regions of Iowa" for bedrock aquifers. Vulnerability was determined by the combination and interpretation of factors including geologic and soil data, thickness of Quaternary cover, proximity to agricultural injection wells and sinkholes through which contaminants can be introduced to the aquifer, and evaluation of historical ground water and well contamination (Hoyer, B.E., and Hallberg, G.R., 1991, Groundwater Vulnerability Regions of Iowa, Special Map Series 11: Iowa Department of Natural Resources, scale 1:500,000). A total of 90 sites was chosen for sampling from a well inventory comprising approximately 1,640 public supply wells. The sampling effort during the 1994 water year is the third year of this 10-year program to determine possible ground-water-quality trends.

During the 1994 water year, a total of 101 ground-water samples were collected from municipal wells (figs. 9,10) consisting of one bedrock (5 samples) and two surficial (96 samples) aquifers located throughout the State. Forty-five of the wells from surficial aquifers were sampled as part of an ongoing program to determine water-quality trends, and the remaining 56 wells were sampled in an effort to assess the water quality of shallow (< 300 feet deep) wells located on the alluvial plains of the Missouri River and its tributaries. Because the samples from the latter assessment will not be used as part of the ongoing network to investigate long-term water-quality trends, both the analytical data and discussion of the results of the respective sampling efforts will be presented separately.

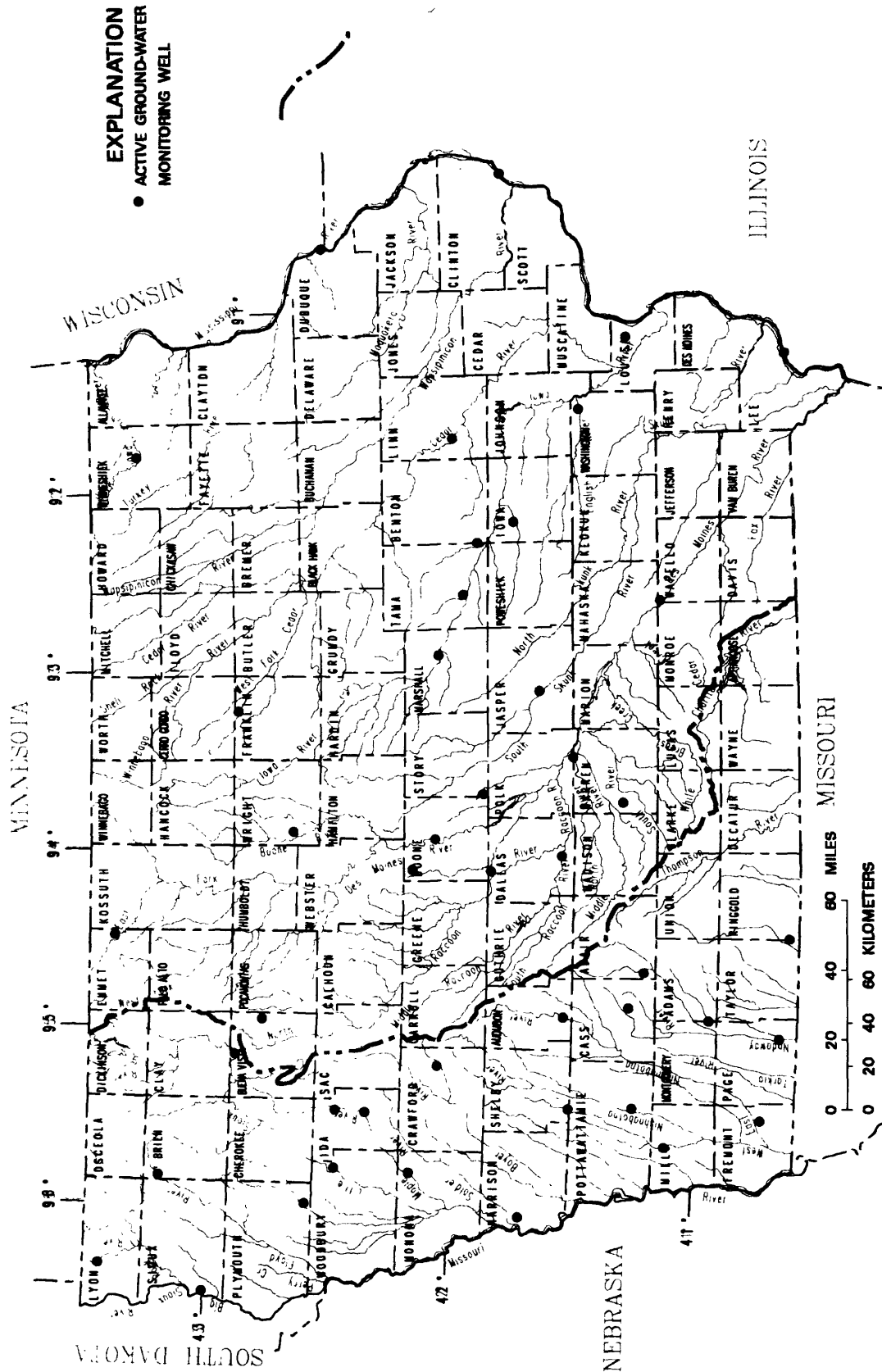


Figure 9.--Location of wells in the trends assessment network, of the ground-water-quality monitoring program.

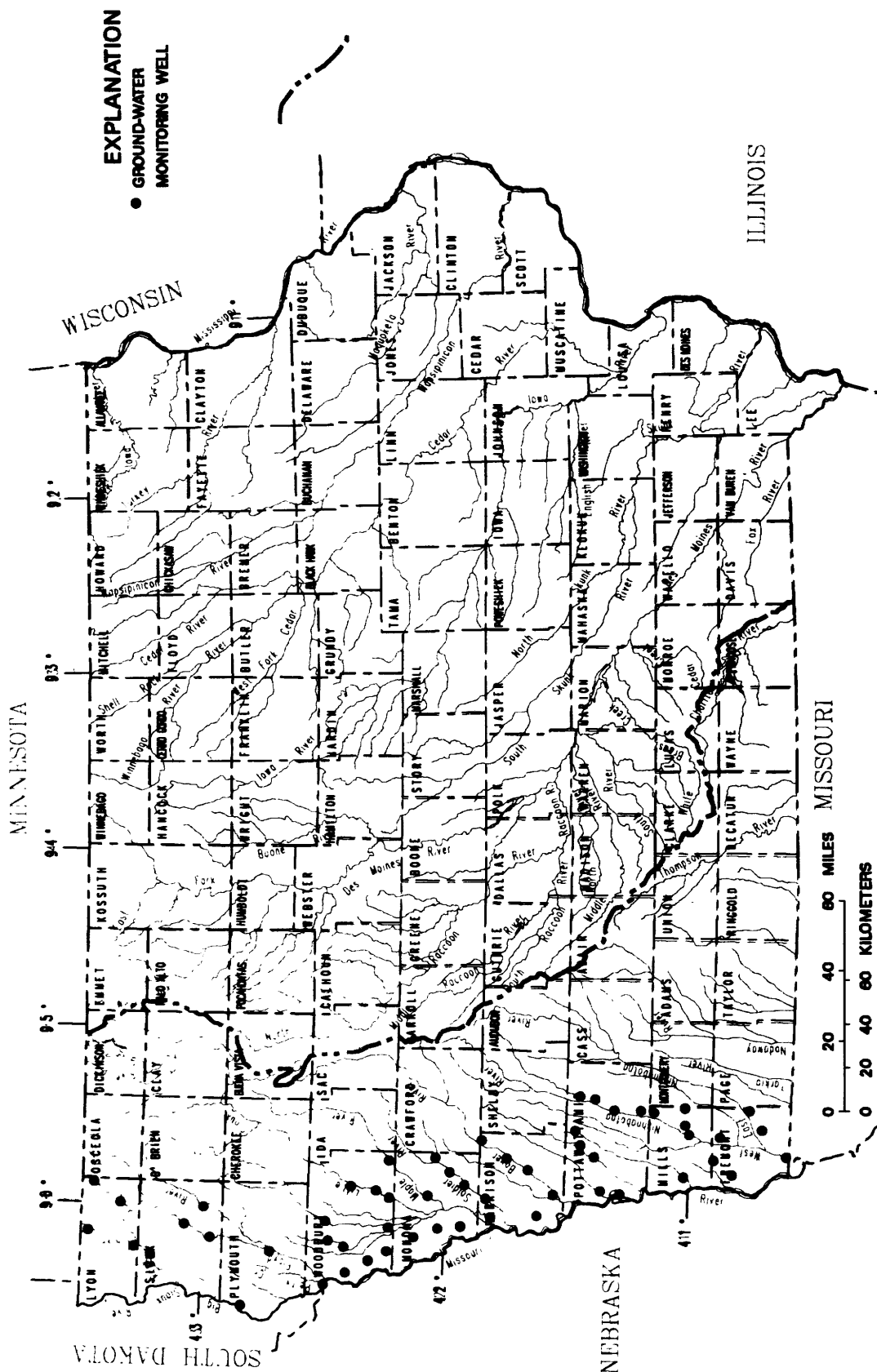


Figure 10.--Location of wells in the Missouri River and tributary alluvium assessment.

Trends Assessment Network

Forty-five wells from two surficial aquifer types throughout the State were sampled (fig. 9). The aquifer types include: 1) alluvial aquifers (31 wells) comprising sand and gravel associated with present-day fluvial systems; and 2) glacial drift and buried channel aquifers (14 wells) associated with previous glaciation. Samples were collected during June and July, 1994. All samples were analyzed by the University of Iowa Hygienic Laboratory for nutrients, herbicides and regulated, volatile organic compounds VOC's, and are published in this report. Discussion of analytical results will be limited to the nitrogen species nitrate and ammonia, and herbicides.

A summary of results of nutrient and herbicide analyses is listed by compound in table 6. Nitrate or ammonia was detected in 43 of 45 samples analyzed for these compounds, and one or more herbicides were detected in 7 samples.

Table 6. Summary of nitrogen species and herbicides detected in samples from the trends assessment project of the ground-water-quality monitoring network, water year 1994

[µg/L micrograms per liter; mg/L, milligrams per liter; <, less than detection limit]

Compound	Number of samples analyzed	Number of samples in which compound was detected	Detection level	Maximum concentration detected
Acetochlor	15	0	0.10 µg/L	<.10 µg/L
Ammonia	43	27	.10 mg/L	7.5 mg/L
Alachlor	15	0	.10 µg/L	<.10 µg/L
Atrazine	15	4	.10 µg/L	1.0 µg/L
Butylate	15	0	.10 µg/L	<.10 µg/L
Cyanazine	15	1	.10 µg/L	.13 µg/L
Deethylatrazine	15	5	.10 µg/L	.23 µg/L
Deisopropylatrazine	15	0	.10 µg/L	<.10 µg/L
Metolachlor	15	3	.10 µg/L	2.1 µg/L
Metribuzin	15	0	.10 µg/L	<.10 µg/L
Nitrate	45	26	.10 mg/L	17.0 mg/L
Prometryn	15	2	.10 µg/L	.73 µg/L
Trifluralin	15	0	.10 µg/L	<.10 µg/L

Concentrations of nitrate greater than 3.0 mg/L generally can be attributed to human activities, whereas concentrations less than 3.0 mg/L may indicate ambient concentrations from naturally occurring soil nitrogen or geologic deposits (Madison, R.J., and Brunett, J.O., 1984, Overview of the occurrence of nitrate in ground water of the United States, in National water summary 1984--Water quality trends: U.S. Geological Survey Water-Supply Paper 2275, p. 93-105). Nitrate concentrations were greater than 3.0 mg/L in 17 of 45 samples. Concentrations in six samples exceeded 10 mg/L, which is the USEPA MCL for public drinking water. Of the 26 samples that contained detectable concentrations of nitrate, 85 percent were from wells completed in alluvial aquifers, and 15 percent were from glacial drift and buried channel aquifers. The median concentration of all samples was 0.5 mg/L, however when the wells are separated into categories based on well depth, the median nitrate concentrations vary from 1.8 mg/L in wells less than 50 feet deep to 3.4 mg/L in wells from 50 to 100 feet deep to <0.10 mg/L in wells greater than 100 feet deep. The maximum nitrate concentration was 17.0 mg/L. Twenty-seven samples had detectable ammonia concentrations. Of these samples, 59 percent were collected from alluvial aquifers, and 41 percent were from glacial drift and buried channel aquifers.

Water from 7 of the 15 wells sampled for herbicides contained detectable concentrations of one or more herbicides or herbicide degradation products. For analysis, a screen for triazines and for alachlor was performed on all samples. Those with concentrations above the detection level (0.10 mg/L) were further analyzed for 8 herbicides commonly used in Iowa, two atrazine degradation products, and acetochlor, which was first introduced during the 1994 water year. No sample contained herbicide concentrations that exceeded the MCL or proposed MCL of any of the analytes. Six of seven samples contained atrazine or its metabolite, deethylatrazine. Cyanazine, metolachlor, and/or prometryn were also detected in four samples. No detectable amounts of alachlor, metribuzin, butylate, trifluralin, deisopropylatrazine, or acetochlor were found in any of the samples. All samples with detectable herbicide concentrations were from wells completed in alluvial aquifers. The detection frequency in wells less than 100 feet deep (20 percent) is greater than the rate of occurrence during the same period of the previous two years (15 percent in 1992; 11 percent in 1993), but less than the 22-percent rate described for the same periods prior to 1988 (Detroy, M.G., 1988, Ground-water-quality-monitoring program in Iowa: Nitrate and pesticides in shallow aquifers: U.S. Geological Survey Water-Resources Investigations Report 88-4123, 32 p.). A direct comparison of detection frequency between 1988 and 1994 may be misleading because each year different wells were sampled, however comparison is feasible between years 1992 through 1994 because essentially the same wells were used. Variance in detection frequency may reflect several factors including changes in agricultural practices concerning use of herbicides, and climactic conditions.

Missouri River and Tributary Alluvium Assessment

Fifty-six wells located in the alluvial plains of the Missouri River and its tributaries were sampled (fig. 10). The wells were completed in two surficial and one bedrock aquifer consisting of alluvium (38 wells), glacial drift or buried channel deposits (13 wells), and Cretaceous-age sandstones of the Dakota Group (5 wells). Based on the combination and interpretation of factors including geologic and soil data, well depth, thickness of Quaternary cover, and the evaluation of historical groundwater and well contamination, all wells sampled were considered to be vulnerable to surface-applied agricultural chemicals or other compounds. The purpose of this assessment was to compare analytical results from a portion of the State to the 1994 results of the statewide ground-water-quality monitoring program. Samples were collected during August and September, 1994. All samples were analyzed by the University of Iowa Hygienic Laboratory for nutrients, herbicides and (VOC's), and are published in this report. Discussion and comparison of analytical results with the ongoing water-quality trends network will be limited to the nitrogen species nitrate and ammonia, and herbicides.

A summary of results of nutrient and herbicide analyses is listed by compound in table 7. Nitrate or ammonia was detected in 54 of 56 samples analyzed for these compounds, and one or more herbicides were detected in 9 samples.

Table 7. Summary of nitrogen species and herbicides detected in samples from the Missouri River and tributary alluvium assessment project of the ground-water-quality monitoring network, water year 1994

[µg/L micrograms per liter; mg/L, milligrams per liter; <, less than detection limit]

Compound	Number of samples analyzed	Number of samples in which compound was detected	Detection level	Maximum concentration detected
Acetochlor	19	0	0.10 µg/L	<.10 µg/L
Ammonia	56	26	.10 mg/L	4.0 mg/L
Alachlor	19	1	.10 µg/L	.11 µg/L
Atrazine	19	8	.10 µg/L	2.2 µg/L
Butylate	19	0	.10 µg/L	<.10 µg/L
Cyanazine	19	1	.10 µg/L	.26 µg/L
Deethylatrazine	19	4	.10 µg/L	.23 µg/L
Deisopropylatrazine	19	1	.10 µg/L	.19 µg/L
Metolachlor	19	4	.10 µg/L	4.7 µg/L
Metribuzin	19	0	.10 µg/L	<.10 µg/L
Nitrate	56	35	.10 mg/L	18.0 mg/L
Prometryn	19	2	.10 µg/L	.20 µg/L
Trifluralin	19	0	.10 µg/L	<.10 µg/L

Nitrate concentrations from samples from these wells were greater than 3.0 mg/L in 21 of 56 samples. Concentrations in four samples exceeded the USEPA MCL of 10 mg/L. Of the 35 samples that contained detectable concentrations of nitrate, 77 percent were from wells completed in alluvial aquifers, 14 percent were from glacial drift and buried channel aquifers, and 9 percent were from the Dakota Group. The median nitrate concentrations from these groupings were 2.6 mg/L, <0.1 mg/L and 0.3 mg/L, respectively. The median concentration of all samples from surficial aquifers was 1.0 mg/L, however when the wells are separated into categories based on well depth, the median nitrate concentrations decrease from 3.9 mg/L in wells less than 50 feet deep to 0.4 mg/L in wells from 50 to 100 feet deep to <0.10 mg/L in wells greater than 100 feet deep. The maximum nitrate concentration was 18.0 mg/L. Twenty-six samples had detectable ammonia concentrations. Of these samples, 54 percent were collected from alluvial aquifers, 35 percent were from glacial drift and buried channel aquifers, and 11 percent were from the Dakota Group.

Water from 9 of the 19 wells sampled for herbicides contained detectable concentrations of one or more herbicides or herbicide degradation products. No sample contained herbicide concentrations that exceeded the MCL or proposed MCL of any of the analytes. All nine samples contained atrazine or its metabolite, deethylatrazine. Alachlor, cyanazine, metolachlor, prometryn and/or deisopropylatrazine were also detected in five samples. No detectable amounts of metribuzin, butylate, trifluralin, or acetochlor were found in any of the samples. Eight of nine samples with detectable herbicide concentrations were from wells completed in alluvial aquifers, and one sample was from the bedrock aquifer. The detection frequency in wells less than 100 feet deep is 24 percent.

SPECIAL NETWORKS AND PROGRAMS

Hydrologic Benchmark Network is a network of 57 sites in small drainage basins around the country whose purpose is to provide consistent data on the hydrology, including water quality, and related factors in representative undeveloped watersheds nationwide, and to provide analyses on a continuing basis to compare and contrast conditions observed in basins more obviously affected by the activities of man.

National Stream Quality Accounting Network (NASQAN) is a nationwide data-collection network designed by the U.S. Geological Survey to meet many of the information needs of government agencies and other groups involved in natural or regional water-quality planning and management. The 500 or so sites in NASQAN are generally located at the downstream ends of hydrologic accounting units designated by the U.S. Geological Survey Office of Water Data Coordination in consultation with the Water Resources Council. The objectives of NASQAN are (1) to obtain information on the quality and quantity of water moving within and from the United States through a systematic and uniform process of data collection, summarization, analysis, and reporting such that the data may be used for, (2) description of the areal variability of water quality in the Nation's rivers through analysis of data from this and other programs, (3) detection of changes or trends with time in the pattern of occurrence of water-quality characteristics, and (4) providing a nationally consistent data base useful for water-quality assessment and hydrologic research.

The National Trends Network (NTN) is a 150-station network for sampling atmospheric deposition in the United States. The purpose of the network is to determine the variability, both in location and in time, of the composition of atmospheric deposition, which includes snow, rain, dust particles, aerosols, and gases. The core from which the NTN was built was the already-existing deposition-monitoring network of the National Atmospheric Deposition Program (NADP).

Radiochemical Program is a network of regularly sampled water-quality stations where samples are collected to be analyzed for radioisotopes. The streams that are sampled represent major drainage basins in the conterminous United States.

Tritium Network is a network of stations which has been established to provide baseline information on the occurrence of tritium in the Nation's surface waters. In addition to the surface-water stations in the network, tritium data are also obtained at a number of precipitation stations. The purpose of the precipitation stations is to provide an estimate sufficient for hydrologic studies of the tritium input to the United States.

EXPLANATION OF THE RECORDS

The surface-water and ground-water records published in this report are for the 1994 water year that began October 1, 1993, and ended September 30, 1994. A calendar of the water year is provided on the inside of the front cover. The records contain streamflow data, stage and content data for lakes and reservoirs, water-quality data for surface and ground water, and ground-water-level data. The locations of the stations and wells where the data were collected are shown in figures 3-5, 7, 9, 10. The following sections of the introductory text are presented to provide users with a more detailed explanation of how the hydrologic data published in this report were collected, analyzed, computed, and arranged for presentation.

Station Identification Numbers

Each data station, whether streamsite or well, in this report is assigned a unique identification number. This number is unique in that it applies specifically to a given station and to no other. The number usually is assigned when a station is first established and is retained for that station indefinitely. The systems used by the U.S. Geological Survey to assign identification numbers for surface-water stations and for ground-water well sites differ, but both are based on geographic location. The "downstream order" system is used for regular surface-water stations and the "latitude-longitude" system is used for wells.

Downstream Order System

Since October 1, 1950, the order of listing hydrologic-station records in Survey reports is in a downstream direction along the main stream. All stations on a tributary entering upstream from a mainstream station are listed before that

station. A station on a tributary that enters between two mainstream stations is listed between them. A similar order is followed in listing stations on first rank, second rank, and other ranks of tributaries. The rank of any tributary with respect to the stream to which it is immediately tributary is indicated by an indentation in the "List of Stations" in the front of this report. Each indentation represents one rank. This downstream order and system of indentation shows which stations are on tributaries between any two stations and the rank of the tributary on which each station is situated.

The station-identification number is assigned according to downstream order. In assigning station numbers, no distinction is made between partial-record stations and other stations; therefore, the station number for a partial-record station indicates downstream-order position in a list made up of both types of stations. Gaps are left in the series of numbers to allow for new stations that may be established; hence, the numbers are not consecutive. The complete eight-digit number for each station, such as 05388250, which appears just to the left of the station name, includes the two-digit Part number "05" plus the six-digit downstream-order number "388250." The Part number designates the major river basin; for example, Part "05" is the Mississippi River Basin.

Latitude-Longitude System

The identification numbers for wells and miscellaneous surface-water sites are assigned according to the grid system of latitude and longitude. The number consists of 15 digits. The first six digits denote the degrees, minutes, and seconds of latitude, the next seven digits denote degrees, minutes, and seconds of longitude, and the last two digits (assigned sequentially) identify the wells or other sites within a 1-second grid. This site-identification number, once assigned, is a pure number and has no locational significance. In the rare instance where the initial determination of latitude and longitude are found to be in error, the station will retain its initial identification number; however, its true latitude and longitude will be listed in the LOCATION paragraph of the station description. (See figure below.)

Latitude and longitude coordinates for wells:

1. 414315091252001
2. 414315091252002
3. 414316091251901

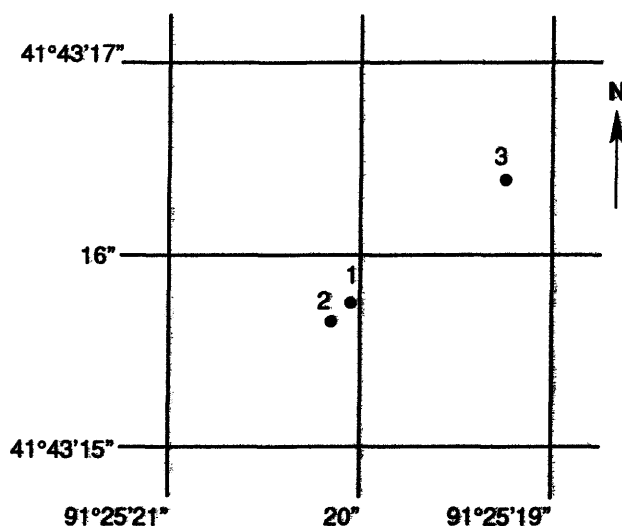


Figure 11. Latitude-longitude well number.

Numbering System For Wells

Each well is identified by means of (1) a 15-digit number that is based on the grid system of latitude and longitude, and (2) a local number that is provided for continuity with older reports and for other use as dictated by local needs. For maximum utility, latitude and longitude code numbers are determined to seconds in order that each well may have a unique number. The first six digits denote degrees, minutes, and seconds of north latitude; the next seven digits are degrees, minutes, and seconds of west longitude; and the last two numbers are a sequential number assigned in the order in which the wells are located in a 1-second quadrangle.

The local well numbers are in accordance with the Bureau of Land Management's system of land subdivision. Each well number is made up of three segments. The first segment indicates the township, the second the range, and the third the section in which the well is located (fig. 12. The letters after the section number which are assigned in a counter-clockwise direction (beginning with "A" in the northeast quarter), represent subdivisions of the section. The first letter denotes a 160-acre tract, the second a 40-acre tract, the third a 10-acre tract, and the fourth a 2.5 acre tract. Numbers are added as suffixes to distinguish wells in the same tract. Thus, the number 96-20-3CDBD1 designates the well in the SE 1/4 NW 1/4 SE 1/4 SW 1/4 sec.3, T.96 N., R.20 W.

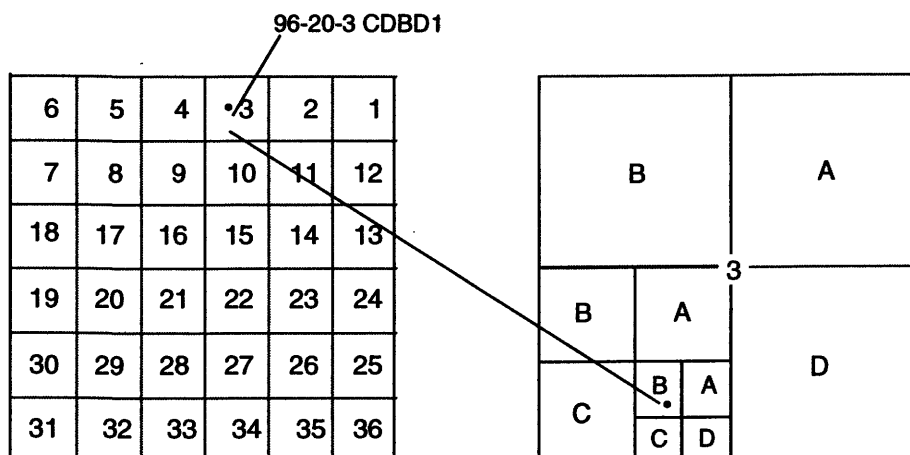


Figure 12. Local well-numbering system for well 96-20-3CDBD1.

Records of Stage and Water Discharge

Records of stage and water discharge may be complete or partial. Complete records of discharge are those obtained using a continuous stage-recording device through which either instantaneous or mean daily discharges may be computed for any time, or any period of time, during the period of record. Complete records of lake or reservoir content, similarly, are those for which stage or content may be computed or estimated with reasonable accuracy for any time, or period of time. They may be obtained using a continuous stage-recording device, but need not be. Because daily mean discharges and end-of-day contents commonly are published for such stations, they are referred to as "daily stations." Location of all complete-record surface water stations which are given in this report are shown in figure 12.

Partial records are obtained through discrete measurements without using a continuous stage-recording device and generally pertain only to a characteristic of either high, medium or low flow. The location of all active, crest-stage gaging stations are shown in figure 14.

Data Collection and Computation

The data obtained at a complete-record gaging station on a stream or canal consist of a continuous record of stage, individual measurements of discharge throughout a range of stages, and notations regarding factors that may affect the relationships between stage and discharge. These data, together with supplemental information, such as weather records, are used to compute daily discharges. The data obtained at a complete-record gaging station on a lake or reservoir consist of a record of stage and of notations regarding factors that may affect the relationship between stage and lake content. These data are used with stage-capacity curves or tables to compute lake storage.

Continuous records of stage are obtained with analog recorders that trace continuous graphs of stage or with digital recorders that punch stage values on paper tapes at selected time intervals. Measurements of discharge are made with current meters using methods adopted by the Geological Survey as a result of experience accumulated since 1880. These methods are described in standard textbooks, in Water-Supply Paper 2175, and in U.S. Geological Survey Techniques of Water-Resources Investigations, Book 3, Chapter A6.

In computing discharge records, results of individual measurements are plotted against the corresponding stages, and stage-discharge relation curves are then constructed. From these curves, rating tables indicating the approximate discharge for any stage within the range of the measurements are prepared. If it is necessary to define extremes of discharge outside the range of the current-meter measurements, the curves are extended using: (1) logarithmic plotting; (2) velocity-area studies; (3) results of indirect measurements of peak discharge, such as slope-area or contracted-opening measurements, and computations of flow over dams or weirs; or (4) step-backwater techniques.

Daily mean discharges are computed by applying the daily mean stages (gage heights) to the stage-discharge curves or tables. If the stage-discharge relation is subject to change because of frequent or continual change in the physical features that form the control, the daily mean discharge is determined by the shifting-control method, in which correction factors based on the individual discharge measurements and notes of the personnel making the measurements are applied to the gage heights before the discharges are determined from the curves or tables. This shifting-control method also is used if the stage-discharge relation is changed temporarily because of aquatic growth or debris on the control. For some stations, formation of ice in the winter may so obscure the stage-discharge relations that daily mean discharges must be estimated from other information such as temperature and precipitation records, notes of observations, and records for other stations in the same or nearby basins for comparable periods.

At some stream-gaging stations, the stage-discharge relation is affected by the backwater from reservoirs, tributary streams, or other sources. This necessitates the use of the slope method in which the slope or fall in a reach of the stream is a factor in computing discharge. The slope or fall is obtained by means of an auxiliary gage set at some distance from the base gage. At some stations the stage-discharge relation is affected by changing stage; at these stations the rate of change in stage is used as a factor in computing discharge.

In computing records of lake or reservoir contents, it is necessary to have available from surveys, curves or tables defining the relationship of stage and content. The application of stage to the stage-content curves or tables gives the contents from which daily, monthly, or yearly changes then are determined. If the stage-content relation changes because of deposition of sediment in a lake or reservoir, periodic resurveys may be necessary to redefine the relation. Even when this is done, the contents computed may become increasingly in error as the lapsed time since the last survey increases. Discharges over lake or reservoir spillways are computed using stage-discharge relations.

For some gaging stations, there are periods when no gage-height record is obtained, or the recorded gage height is so faulty that it cannot be used to compute daily discharge or contents. This happens when the recorder stops or otherwise fails to operate properly, intakes are plugged, the float is frozen in the well, or for various other reasons. For these periods, the daily discharges are estimated from the recorded range in stage, discharge computed before and after the missing record, discharge measurements, weather records, and comparison with other station records from the same or nearby basins. Likewise, daily contents may be estimated from operator's logs, previous or following record, inflow-outflow studies, and other information. Information explaining how estimated daily-discharge values are identified in station records is included in the next two sections, "Data Presentation" (REMARKS paragraph) and "Identifying Estimated Daily Discharge."

Data Presentation

Streamflow data in this report are presented in a new format that is considerably different from the format in data reports prior to the 1991 water year. The major changes are that statistical characteristics of discharge now appear in tabular summaries following the water-year data table and less information is provided in the text or station manuscript above the table. These changes represent the results of a pilot program to reformat the annual water-data report to meet current user needs and data preference.

The records published for each continuous-record surface-water discharge station (gaging station) consist of four parts, the manuscript or station description; the data table of daily mean values of discharge for the current water year with summary data; a tabular statistical summary of monthly mean flow data for a designated period, by water year; and a summary statistics table that includes statistical data of annual, daily, and instantaneous flows as well as data pertaining to annual runoff, 7-day low-flow minimums, and flow duration.

Station manuscript

The manuscript provides, under various headings, descriptive information, such as station location; period of record; historical extremes outside period of record; record accuracy; and other remarks pertinent to station operation and regulation. The following information, as appropriate, is provided with each continuous record of discharge or lake content. Comments to follow clarify information presented under the various headings of the station description.

LOCATION.--Information on locations is obtained from the most accurate maps available. The location of the gage with respect to the cultural and physical features in the vicinity and with respect to the reference place mentioned in the station name is given. River mileages were determined by methods given in "River Mileage Measurement," Bulletin 14, Revision of October 1968, prepared by the Water Resources Council or were provided by the U.S. Army Corps of Engineers.

DRAINAGE AREA.--Drainage areas are measured using the most accurate maps available. Because the type of maps available varies from one drainage basin to another, the accuracy of drainage areas likewise varies. Drainage areas are updated as better maps become available.

PERIOD OF RECORD.--This indicates the period for which there are published records for the station or for an equivalent station. An equivalent station is one that was in operation at a time that the present station was not, and whose location was such that records from it can reasonably be considered equivalent with records from the present station.

REVISED RECORDS.--because of new information, published records occasionally are found to be incorrect, and revisions are printed in later reports. Listed under this heading are all the reports in which revisions have been published for the station and the water years to which the revisions apply. If a revision did not include daily, monthly, or annual figures of discharge, that fact is noted after the year dates as follows: "(M)" means that only the instantaneous maximum discharge was revised; "(m)" that only the instantaneous minimum was revised; and "(P)" that only peak discharges were revised. If the drainage area has been revised, the report in which the most recently revised figure was first published is given.

GAGE.--The type of gage in current use, the datum of the current gage sea level (see "Definition of Terms"), and a condensed history of the types, locations, and datums of previous gages are given under this heading.

REMARKS.--All periods of estimated daily-discharge record will either be identified by date in this paragraph of the station description for water-discharge stations or flagged in the daily-discharge table. (See next section, "Identifying Estimated Daily Discharge.") If a REMARKS paragraph is used to identify estimated record, the paragraph will begin with this information presented as the first entry. The paragraph is also used to present information relative to the accuracy of the records, to special methods of computation, and to conditions that affect natural flow at the station. In addition, information may be presented pertaining to average discharge data for the period of record; to extremes data for the period of record and the current year; and, possibly, to other pertinent items. For

reservoir stations, information is given on the dam forming the reservoir, the capacity, outlet works and spillway, and purpose and use of the reservoir.

COOPERATION.--Records provided by a cooperating organization or obtained for the Geological Survey by a cooperating organization are identified here.

EXTREMES FOR PERIOD OF RECORD.--Extremes may include maximum and minimum stages and maximum and minimum discharges or content. Extremes are published only for stations with significant flow regulation and where extremes occurred in pre-regulation periods. Unless otherwise qualified, the maximum discharge or content is the instantaneous maximum corresponding to the highest stage that occurred. The highest stage may have been obtained from a graphic or digital recorder, a crest-stage gage, or by direct observation of a nonrecording gage. If the maximum stage did not occur on the same day as the maximum discharge or content, it is given separately. Similarly, the minimum is the instantaneous minimum discharge, unless otherwise qualified, and was determined and is reported in the same manner as the maximum.

EXTREMES OUTSIDE PERIOD OF RECORD.--Included here is information concerning major floods or unusually low flows that occurred outside the stated period of record. The information may or may not have been obtained by the U.S. Geological Survey.

REVISIONS.--If a critical error in published records is discovered, a revision is included in the first report published following discovery of the error.

Although rare, occasionally the records of a discontinued gaging station may need revision. Because, for these stations, there would be no current or, possibly, future station manuscript published to document the revision in a "Revised Records" entry, users of data for these stations who obtained the record from previously published data reports may wish to contact the District Office (address given on the back of the title page of this report) to determine if the published records were ever revised after the station was discontinued. Of course, if the data for a discontinued station were obtained by computer retrieval, the data would be current and there would be no need to check because any published revision of data is always accompanied by revision of the corresponding data in computer storage.

Manuscript information for lake or reservoir stations differs from that for stream stations in the nature of the "Remarks" and in the inclusion of a skeleton stage-capacity table when daily contents are given.

Headings for AVERAGE DISCHARGE, EXTREMES FOR PERIOD OF RECORD, and EXTREMES FOR CURRENT YEAR have been deleted and the information contained in these paragraphs is now presented in the tabular summaries following the discharge table or in the REMARKS paragraph, as appropriate. EXTREMES FOR PERIOD OF RECORD are now presented only for stations with significant flow regulation and where extremes occurred in pre-regulation periods. No changes have been made to the data presentations of lake contents or reservoir storage.

Data table of daily mean values

The daily table for stream-gaging stations gives mean discharge for each day and is followed by monthly and yearly summaries. In the monthly summary below the daily table, the line headed "TOTAL" gives the sum of the daily figures. The line headed "MEAN" gives the average flow in cubic feet per second during the month. The lines headed "MAX" and "MIN" give the maximum and minimum daily discharges, respectively, for the month. Discharge for the month also is usually expressed in cubic feet per second per square mile (line headed "CFSM"), or in inches (line headed "IN."), or in acre-feet (line headed "AC-FT"). Figures for cubic feet per second per square mile and runoff in inches are omitted if there is extensive regulation or diversion or if the drainage area includes large noncontributing areas. In the yearly summary below the monthly summary, the figures shown are the appropriate discharges for the calendar and water years. At some stations monthly and (or) yearly observed discharges are adjusted for reservoir storage or diversion, or diversions or reservoir contents are given. These figures are identified by a symbol and corresponding footnote.

Statistics of monthly mean data

A tabular summary of the mean (line headed "MEAN"), maximum (line headed "MAX"), and minimum (line headed "MIN") of monthly mean flows for each month for a designated period is provided below the mean values table. The water years of the first occurrence of the maximum and minimum monthly flows are provided immediately below those figures. The designated period will be expressed as "FOR PERIOD OF RECORD, BY WATER YEAR (WY)," for unregulated streams for the water years listed in the PERIOD OF RECORD paragraph in the station manuscript. It will consist of all of the station record within the specified water years, inclusive, including complete months of record for partial water years, if any, and may coincide with the period of record for the station. The water years for which the statistics are computed will be consecutive, unless a break in the station record is indicated in the manuscript. For significantly regulated streams the first and last water years of the range of years will be given for the post-regulation period.

Summary statistics

A table titled "SUMMARY STATISTICS" follows the statistics of monthly mean data tabulation. This table consists of four columns, with the first column containing the line headings of the statistics being reported. The table provides a statistical summary of yearly, daily, and instantaneous flows, not only for the current water year but also for the previous calendar year and for a designated period, as appropriate. The designated period selected, "PERIOD OF RECORD," for unregulated streams, will consist of all of the station record within the specified water years, inclusive, including complete months of record for partial water years, if any, and may coincide with the period of record for the station. The water years for which the statistics are computed will be consecutive, unless a break in the station record is indicated in the manuscript. For significantly regulated streams the period selected will be designated as "WATER YEARS ____ - ____," for the post regulation period. All of the calculations for the statistical characteristics designated ANNUAL (See line headings below.), except for the "ANNUAL 7-DAY MINIMUM" statistic, are calculated for the designated period using complete water years. The other statistical characteristics may be calculated using partial water years.

The date or water year, as appropriate, of the first occurrence of each statistic reporting extreme values of discharge is provided adjacent to the statistic. Repeated occurrences may be noted in the REMARKS paragraph of the manuscript or in footnotes. Because the designated period may not be the same as the station period of record published in the manuscript, occasionally the dates of occurrence listed for the daily and instantaneous extremes in the designated-period column may not be within the selected water years listed in the heading. When this occurs, it will be noted in the REMARKS paragraph or in footnotes. Selected streamflow duration curve statistics and runoff data are also given. Runoff data may be omitted if there is extensive regulation or diversion of flow in the drainage basin.

The following summary statistics data, as appropriate, are provided with each continuous record of discharge. Comments to follow clarify information presented under the various line headings of the summary statistics table.

ANNUAL TOTAL.--The sum of the daily mean values of discharge for the year. At some stations the annual total discharge is adjusted for reservoir storage or diversion. The adjusted figures are identified by a symbol and corresponding footnotes.

ANNUAL MEAN.--The arithmetic mean of the individual daily mean discharges for the year noted or for the designated period. At some stations the yearly mean discharge is adjusted for reservoir storage or diversion. The adjusted figures are identified by a symbol and corresponding footnotes.

HIGHEST ANNUAL MEAN.--The maximum annual mean discharge occurring for the designated period.

LOWEST ANNUAL MEAN.--The minimum annual mean discharge occurring for the designated period.

HIGHEST DAILY MEAN.--The maximum daily mean discharge for the year or for the designated period.

LOWEST DAILY MEAN.--The minimum daily mean discharge for the year or for the designated period.

ANNUAL 7-DAY MINIMUM.--The lowest mean discharge for 7 consecutive days for a calendar year or a water year. Note that most low-flow frequency analyses of annual 7-day minimum flows use a climatic year (April 1 - March 31). The date shown in the summary statistics table is the initial date of the 7-day period. (This value should not be confused with the 7-day 10-year low-flow statistic.)

INSTANTANEOUS PEAK FLOW.--The maximum instantaneous discharge occurring for the water year or for the designated period. Note that secondary instantaneous peak discharges above a selected base discharge are stored in District computer files for stations meeting certain criteria. Those discharge values may be obtained by writing to the District Office. (See address on back of title page of this report.)

INSTANTANEOUS PEAK STAGE.--The maximum instantaneous stage occurring for the water year or for the designated period. If the dates of occurrence for the instantaneous peak flow and instantaneous peak stage differ, the REMARKS paragraph in the manuscript or a footnote may be used to provide further information.

INSTANTANEOUS LOW FLOW.--The minimum instantaneous discharge occurring for the water year or for the designated period.

ANNUAL RUNOFF.--Indicates the total quantity of water in runoff for a drainage area for the year. Data reports may use any of the following units of measurement in presenting annual runoff data:

Acre-foot (AC-FT) is the quantity of water required to cover 1 acre to a depth of 1 foot and is equivalent to 43,560 cubic feet or about 326,000 gallons or 1,233 cubic meters.

Cubic feet per second per square mile (CSFM) is the average number of cubic feet of water flowing per second from each square mile of area drained, assuming the runoff is distributed uniformly in time and area.

Inches (INCHES) indicates the depth to which the drainage area would be covered if all of the runoff for a given time period were uniformly distributed on it.

10 PERCENT EXCEEDS.--The discharge that is exceeded 10 percent of the time for the designated period.

50 PERCENT EXCEEDS.--The discharge that is exceeded 50 percent of the time for the designated period.

90 PERCENT EXCEEDS.--The discharge that is exceeded 90 percent of the time for the designated period.

Data collected at partial-record stations follow the information for continuous-record sites. Data for partial-record discharge stations are presented in two tables. The first is a table of annual maximum stage and discharge at crest-stage stations, and the second is a table of discharge measurements at low-flow partial-record stations. The tables of partial-record stations are followed by a listing of discharge made at sites other than continuous-record or partial-record stations. These measurements are generally made in times of drought or flood to give better areal coverage to those events. Those measurements and others collected for some special reason are called measurements at miscellaneous sites.

Identifying Estimated Daily Discharge

Estimated daily-discharge values published in the water-discharge tables of annual State data reports are identified by listing the dates of the estimated record in the REMARKS paragraph of the station description.

Accuracy of the Records

The accuracy of streamflow records depends primarily on: (1) The stability of the stage-discharge relation or, if the control is unstable, the frequency of discharge measurements; and (2) the accuracy of measurements of stage, measurements of discharge, and interpretation of records.

The accuracy attributed to the records is indicated under "REMARKS." "Excellent" means that about 95 percent of the daily discharges are within 5 percent of their true values; "good," within 10 percent; and "fair," within 15 percent. Records that do not meet the criteria mentioned are rated "poor." Different accuracies may be attributed to different parts of a given record.

Daily mean discharges in this report are given to the nearest hundredth of a cubic foot per second for values less than 1 ft³/s the nearest tenth between 1.0 and 10 ft³/s; to whole numbers between 10 and 1,000 ft³/s; and to 3 significant figures for more than 1,000 ft³/s. The number of significant figures used is based solely on the magnitude of the discharge value. The same rounding rules apply to discharges listed for partial-record stations and miscellaneous sites.

Discharge at many stations, as indicated by the monthly mean, may not reflect natural runoff due to the effects of diversion, consumption, regulation by storage, increase or decrease in evaporation due to artificial causes, or to other factors. For such stations, figures of cubic feet per second per square mile and of runoff, in inches, are not published.

Other Records Available

Information used in the preparation of the records in this publication, such as discharge-measurement notes, gage-height records, temperature measurements, and rating tables is on file in various field offices of the Iowa District. Also, most of the daily mean discharges are in computer-readable form and have been analyzed statistically. Information on the availability of the unpublished information or on the results of statistical analyses of the published records may be obtained from the offices whose addresses are given on the back of the title page of this report.

Records of Surface-Water Quality

Records of surface-water quality ordinarily are obtained at or near streamgaging stations because interpretation of records of surface-water quality nearly always requires corresponding discharge data. Records of surface-water quality in this report may involve a variety of types of data and measurement frequencies.

Classification of Records

Water-quality data for surface-water sites are grouped into one of three classifications. A continuing-record station is a site where data are collected on a regularly scheduled basis. Frequency may be once or more times daily, weekly, monthly, or quarterly. A partial-record station is a site where limited water-quality data are collected systematically over a period of years. Frequency of sampling is usually less than quarterly. A miscellaneous sampling site is a location other than a continuing or partial-record station, where random samples are collected to give better areal coverage to define water-quality conditions in the river basin.

A careful distinction needs to be made between "continuing records" as used in this report and "continuous recordings," which refers to a continuous graph or a series of discrete values punched at short intervals on a paper tape. Some records of water quality, such as temperature and specific conductance, may be obtained through continuous recordings; however, because of costs, most data are obtained only monthly or less frequently. Locations of stations for which records on the quality of surface water appear in this report are shown in figure 4.

Arrangement of Records

Water-quality records collected at a surface-water daily record station are published immediately following that record, regardless of the frequency of sample collection. Station number and name are the same for both records. Where a surface-water daily record station is not available or where the water quality differs significantly from that at the nearby surface-water station, the continuing water-quality record is published with its own station number and name in the regular downstream-order sequence. Water-quality data for partial-record stations and for miscellaneous sampling sites appear in separate tables following the table of discharge measurements at miscellaneous sites.

On-Site Measurements and Sample Collection

In obtaining water-quality data, a major concern needs to be assuring that the data obtained represent the in situ quality of the water. To assure this, certain measurements, such as water temperature, pH, alkalinity and dissolved oxygen, are made onsite when the samples are taken. To assure that measurements made in the laboratory also represent the in situ water, carefully prescribed procedures are followed in collecting the samples, in treating the samples to prevent changes in quality pending analysis, and in shipping the samples to the laboratory. Procedures of onsite measurements and for collecting, treating, and shipping samples are given in publications on "Techniques of Water-Resources Investigations," Book 1, Chap. C2; Book 3, Chap. C2; Book 5, Chap. A1, A3, and A4. All of these references are listed on p. 54-56 of this report. Also, detailed information on collecting, treating, and shipping samples may be obtained from the Geological Survey District office.

One sample can define adequately the water quality at a given time if the mixture of solutes throughout the stream cross section is homogeneous. However, the concentration of solutes at different locations in the cross section may vary widely with different rates of water discharge, depending on the source of material and the turbulence and mixing of the stream. Some streams must be sampled through several vertical sections to obtain the representative sample needed for an accurate mean concentration and for use in calculating load. All samples obtained for the National Stream Quality Accounting Network are obtained from at least several verticals. Whether samples are obtained from the centroid of flow or from several verticals, depends on flow conditions and other factors which must be evaluated by the collector.

Chemical-quality data published in this report are considered to be the most representative values available for stations listed. The values reported represent water-quality conditions at the time of sampling as much as possible, consistent with available sampling techniques and methods of analysis.

Water Temperature and Specific Conductance

Water temperatures are measured at most of the water-quality stations. The measurement of temperature and specific conductance is performed during each regular site visit (usually at a six week interval) to streamgaging stations. Records of stream temperature indicate significant thermal characteristics of the stream when analyzed over a long period of record. Large streams have small daily temperature variations while shallow streams may have a daily range of several degrees and may closely follow the changes in air temperature. Furthermore, some streams may be affected by waste-heat discharge.

Specific conductance can be used as a general indicator of stream quality. This determination is easily made in the field with a portable meter, and the results are very useful as general indicators of dissolved-solids concentration or as a base for extrapolating other analytical data. Records for temperature and specific conductance appear in the section "Analyses of samples collected at miscellaneous sites".

Sediment

Suspended-sediment concentrations are determined from samples collected by using depth-integrating samples. Samples usually are obtained at several verticals in the cross section, or a single sample may be obtained at a fixed point and a coefficient applied to determine the mean concentration in the cross sections.

During periods of rapidly changing flow or rapidly changing concentration, samples may have been collected more frequently (twice daily or, in some instances, hourly). The published sediment discharges for days of rapidly changing flow or concentration were computed by the subdivided-day method (time-discharge weighted average). Therefore, for those days when the published sediment discharge value differs from the value computed as the product of discharge times mean concentration times 0.0027, the reader can assume that the sediment discharge for that day was computed by the subdivided-day method. For periods when no samples were collected, daily discharges of suspended sediment were estimated on the basis of water discharge, sediment concentrations observed immediately before and after the periods, and suspended-sediment loads for other periods of similar discharge.

At other stations, suspended-sediment samples were collected periodically at many verticals in the stream cross section. Although data collected periodically may represent conditions only at the time of observations, such data are useful in establishing seasonal relations between quality and streamflow and in predicting long-term sediment-discharge characteristics of the stream.

In addition to the records of the quantities of suspended-sediment, records of the periodic measurements of the particle-size distribution of the suspended-sediment and bed material are included. Miscellaneous suspended-sediment samples were collected during flood events have been included with the station's water quality data or in the section "Analyses of samples at miscellaneous sites".

Laboratory Measurements

Sediment samples, samples for indicator bacteria, and daily samples for specific conductance are analyzed locally. All other samples are analyzed in the U.S. Geological Survey laboratory in Arvada, Colorado and the University of Iowa Hygienic Laboratory. Methods used in analyzing sediment samples and computing sediment records are given in TWRI, Book 5, Chap. C1. Methods used by the U.S. Geological Survey laboratories are given in TWRI, Book 1, Chap. D2, Book 3, Chap. C2; Book 5, Chap. A1, A3, and A4.

Data Presentation

For continuing-record stations, information pertinent to the history of station operation is provided in descriptive headings preceding the tabular data. These descriptive headings give details regarding location, drainage area, period of record, type of data available, instrumentation, general remarks, cooperation, and extremes for parameters currently measured daily. Tables of chemical, physical, biological, radiochemical data, and so forth, obtained at a frequency less than daily are presented first. Tables of "daily values" of specific conductance, pH, water temperature, dissolved oxygen, and suspended sediment then follow in sequence.

In the descriptive headings, if the location is identical to that of the discharge gaging station, neither the LOCATION nor the DRAINAGE AREA statements are repeated. The following information, as appropriate, is provided with each continuous-record station. Comments that follow clarify information presented under the various headings of the station description.

LOCATION.--See Data Presentation under "Records of Stage and Water Discharge;" same comments apply.

DRAINAGE AREA.--See Data Presentation under "Records of Stage and Water Discharge;" same comments apply.

PERIOD OF RECORD.--This indicates the periods for which there are published water-quality records for the station. The periods are shown separately for records of parameters measured daily or continuously and those measured less than daily. For those measured daily or continuously, periods of record are given for the parameters individually.

INSTRUMENTATION.--Information on instrumentation is given only if a water-quality monitor temperature record, sediment pumping sampler, or other sampling device is in operation at a station.

REMARKS.--Remarks provide added information pertinent to the collection, analysis, or computation of the records.

COOPERATION.--Records provided by a cooperating organization or obtained for the Geological Survey by a cooperating organization are identified here.

EXTREMES.--Maximums and minimums are given only for parameters measured daily or more frequently. None are given for parameters measured weekly or less frequently, because the true maximums or minimums may not have been sampled. Extremes, when given, are provided for both the period of record and for the current water year.

REVISIONS.--If errors in published water-quality records are discovered after publication, appropriate updates are made to the Water-Quality File in the U.S. Geological Survey's computerized data system, WATSTORE, and subsequently by monthly transfer of update transactions to the U.S. Environmental Protection Agency's STORET system. Because the usual volume of updates makes it impractical to document individual changes in the State data-report series or elsewhere, potential users of U.S. Geological Survey water-quality data are encouraged to obtain all required data from the appropriate computer file to insure the most recent updates.

The surface-water-quality records for partial-record stations and miscellaneous sampling sites are published in separate tables following the table of discharge measurements at miscellaneous sites. No descriptive statements are given for these records. Each station is published with its own station number and name in the regular downstream-order sequence.

Remark Codes

The following remark codes may appear with the water-quality data in this report:

PRINTED OUTPUT	REMARK
E	Estimated value
>	Actual value is known to be greater than the value shown
<	Actual value is known to be less than the value shown
K	Results based on colony count outside the acceptance range (non-ideal colony count)
L	Biological organism count less than 0.5 percent (organism may be observed rather than counted)
D	Biological organism count equal to or greater than 15 percent (dominant)
&	Biological organism estimated as dominant

Records of Ground-Water Levels

Ground-water level data from a network of observation wells in Iowa are published in this report. These data provide a limited historical record of water-level changes in the State's most important aquifers. Locations of the observation wells in this network in Iowa are shown in figure 6. Information about the availability of the data in the water-level files and reports of the U.S. Geological Survey may be obtained from the Iowa District Office (see address on back of title page).

Data Collection and Computation

Measurements of water levels are made in many types of wells under varying conditions, but the methods of measurement are standardized to the extent possible. The equipment and measuring techniques used at each observation well ensures that measurements at each well are of consistent accuracy and reliability.

Tables of water-level data are arranged alphabetically by counties. The site identification number, based on latitude and longitude, for a given well is the 15-digit numeric value that appears in the upper left corner of the station description. The secondary identification number is the local well number, an alphanumeric value, derived from the township, range, and section location of the well (fig. 15).

Water-level records are obtained from direct measurements with a chalked steel tape, electric line, airline, or from the graph of a water-level recorder. The water-level measurements in this report are in feet with reference to land-surface datum. Land-surface datum is a plane that is approximately at land surface at each well. The elevation of the land-surface datum is given in the well description. The height of the measuring point above or below land-surface datum is given in each well description. Water levels in wells equipped with recording gages are reported for every fifth day and the end of each month (EOM).

Water-level measurements are reported to the nearest hundredth of a foot. Estimates, indicated by an "e" may be reported in tenths of a foot. Adjustments to the water level recorder chart are indicated by an "a". The error of water-level measurements may be, at most, a few hundredths of a foot.

Data Presentation

Each well record consists of two parts, the station description and the table of water levels observed during the water year. The description of the well is presented by headings preceding the tabular data. The following explains the information presented under each heading.

LOCATION.--This paragraph follows the well identification number and includes the latitude and longitude (given in degrees, minutes, and seconds), the hydrologic unit number, the distance and direction from a geographic point of reference, and the well owner's name.

AQUIFER.--This entry is the aquifer(s) name (if one exists) and geologic age of the strata open to the well.

WELL CHARACTERISTICS.--This entry describes the well depth, casing diameter, casing depth, opening or screened interval(s), method of construction, and use of water from the well.

INSTRUMENTATION.--This paragraph provides information on the frequency of measurement and the collection method used.

DATUM.--This entry includes the measuring point and the land-surface elevation at the well. The measuring point is described physically and in relation to land surface. The elevation of the land-surface datum is describe in feet above (or below) sea level; it is reported with a precision depending on the method of determination.

REMARKS.--This entry describes factors that may influence the water level in a well or the measurement of the water level and any information not presented in the other parts of the station description but considered useful.

PERIOD OF RECORD.--This entry indicates the period for which there are published records for the well. It reports the month and year of the beginning of publication of water-level records by the U.S. Geological Survey.

REVISED RECORDS.--If any revisions of previously published data were made for water-levels, the Water Data Report in which they appeared and year published would appear here.

EXTREMES FOR PERIOD OF RECORD.--This entry contains the highest and lowest water levels for the period of record, below land-surface datum, and the dates of their occurrence.

A table of water levels follows the station description for each well. Water levels are reported in feet below land-surface datum. For wells equipped with recorders, only abbreviated tables are published. The highest and lowest water levels of the water year and the dates of occurrence are shown on a line below the abbreviated table. Because all values are not published for wells with recorders, the extremes may be values that are not listed in the table. Missing records are indicated by dashes in place of the water level.

Hydrographs are included for 59 wells which are representative of hydrologic conditions in the important aquifers in Iowa.

Only water-level data from a national network of observation wells are given in this report. These data are intended to provide a sampling and historical record of water-level changes in the Nation's most important aquifers. Locations of the observation wells in this network in Iowa are shown in figure 6.

Records of Ground-Water Quality

Records of ground-water quality in this report differ from other types of records in that for most sampling sites they consist of only one set of measurements for the water year. The quality of ground water ordinarily changes only slowly; therefore, for most general purposes one annual sampling, or only a few samples taken at infrequent intervals during the year, is sufficient. Frequent measurement of the same constituents is not necessary unless one is concerned with a particular problem, such as monitoring for trends in nitrate concentration. In the special cases where the quality of ground water may change more rapidly, more frequent measurements are made to identify the nature of the changes.

The records of ground-water quality in this report were obtained as a part a statewide ground-water quality monitoring network operated by the Iowa District. All samples were obtained from municipal wells throughout Iowa. This program is conducted in cooperation with the University of Iowa Hygienic Laboratory (UHL) and the Iowa Department of Natural Resources (Geological Survey Bureau). All samples are collected by USGS personnel, field-preserved and submitted to UHL for analysis. Chemical analyses include common constituents (major ions), nutrients, organic compounds, radionuclides and pesticides. Approximately 10 percent of the samples receive additional analyses for about 90 organic priority pollutants, however these analyses are not presented in this report but are on file in the Iowa District Office.

Most methods for collecting and analyzing water samples are described in the "U.S. Geological Survey Techniques of Water-Resources Investigations" manuals listed on a following page. The values reported in this report represent water-quality conditions at the time of sampling as much as possible, consistent with available sampling techniques and methods of analysis. All samples were obtained by trained personnel. The wells sampled were pumped long enough to assure that the water collected came directly from the aquifer and had not stood for a long time in the well casing where it would have been exposed to the atmosphere and to the material comprising the casings. The samples collected represent raw water

Data Presentation

The records of ground-water quality are published in a section titled GROUND-WATER QUALITY DATA immediately following the ground-water-level records. Data for quality of ground water are listed alphabetically by county, and are identified by station number. The prime identification number for wells sampled is the 15-digit station number derived from the latitude-longitude locations. No descriptive statements are given for ground-water-quality records; however, the station number, date and time of sampling, depth of well, and other pertinent data are given in the table containing the chemical analyses of the ground water. The REMARK codes listed for surface-water-quality records are also applicable to ground-water-quality records.

Explanation of Quality of Ground-Water Data Tables -- Descriptive Headings

STATION NUMBER	LOCAL WELL NUMBER	DATE	LOCAL WELL NAME	COUNTY	SAMPLE DATE	SAMPLE TIME	AQUIFER CODE	DEPTH OF WELL, TOTAL (FT)
↓	↓	↓	↓	↓	↓	↓	↓	↓
411441094401602	075N33W32CDDD	1943	BRIDGEWATER 1	ADAIR	08-11-92	1130	111ALVM	49

STATION NUMBER: 15-digit number based on grid system of latitude and longitude.

LOCAL WELL NUMBER: Refers to the Bureau of Land Management System of land subdivision.

DATE: The date that construction on the well was completed.

LOCAL WELL NAME: Name used by community to identify well.

COUNTY: The name of the county where the well is located.

SAMPLE DATE: Date the well was sampled.

SAMPLE TIME: Time the sample was collected.

AQUIFER CODE: Refers to the lithologic unit in which the well is completed. Derived from two digits of the GEOLOGIC UNIT, the principal unit which provides the majority of water to the well.

11 - Quaternary	34 - Devonian
21 - Cretaceous	35 - Silurian
32 - Pennsylvanian	36 - Ordovician
33 - Mississippian	37 - Cambrian

The third digit and remaining alphabetic characters refer to the more specific lithologic unit which the well is tapping. The following examples are commonly used units:

<u>Code</u>	<u>General</u>	<u>Specific</u>
111ALVM	Quaternary	(alluvium)
217DKOT	Cretaceous	(Dakota sandstone)
344CDVL	Devonian	(Cedar Valley limestone)

DEPTH OF WELL, TOTAL (FT): Total depth of well in feet.

ACCESS TO WATSTORE DATA

The U.S. Geological Survey is the principal Federal water-data agency and, as such, collects and disseminates about 70 percent of the water data currently being used by numerous State, local, private, and other Federal agencies to develop and manage our water resources. As part of the Geological Survey's program of releasing water data to the public, a large-scale computerized system has been developed for the storage and retrieval of water data collected through its activities. The National WATER Data STORAGE and RETRIEVAL System (WATSTORE) was established in 1972 to provide an effective and efficient means for the processing and maintenance of water data collected through the activities of the U.S. Geological Survey and to facilitate release of the data to the public. A variety of useful products, ranging from data tables to complex statistical analyses such as Log Pearson Type III, can be produced using WATSTORE. The system resides on the central computer facilities of the U.S. Geological Survey at its National Center in Reston, Virginia, and consists of related files and data bases.

- * Station Header File - Contains descriptive information on more than 40,000 sites throughout the United States and its territories where the Geological Survey collects or has collected data.
- * Daily Values File - Contains more than 220 million daily value of stream flows, stages, reservoir contents, water temperatures, specific conductances, sediment concentrations, sediment discharges, and ground-water levels.
- * Peak Flow File - Contains approximately 500,000 maximum (peak) streamflow and gage-height values at surface-water sites.
- * Water Quality File - Contains approximately 2 million analyses of watersamples that describe the chemical, physical, biological, and radio-chemical characteristics of both surface and ground water.
- * Ground-Water Site Inventory Data Base - Contains inventory data for more than 900,000 wells, springs, and other sources of ground water. The data includes site location, geohydrologic characteristics, well-construction history, and one-time field measurements such as water temperature.

In 1976, the U.S. Geological Survey opened WATSTORE to the public for direct access. The signing of a Memorandum of Agreement with the Survey is required to obtain direct access to WATSTORE. The system can be accessed either synchronously or asynchronously. The requestor will be expected to pay all computer costs he/she incurs. Direct access may be obtained by contacting:

U.S. Geological Survey
National Water Data Exchange
421 USGS National Center
Reston, Virginia 22092

In addition to providing direct access to WATSTORE, data can be provided in various machine-readable formats on magnetic tape or 5-1/4 inch floppy disk; and, as noted in the introduction, on CD-ROM discs. Beginning with the 1990 water year, all water-data reports will also be available on Compact Disc - Read Only Memory (CD-ROM). All data reports published for the current water year for the entire Nation, including Puerto Rico and the Trust Territories, will be reproduced on a single CD-ROM disc. Information about the availability of specific types of data or products, and user charges, can be obtained locally from each of the Water Resources Division's District offices. (See address on the back of the title page.) A limited number of CD-ROM discs will be available for sale by the Books and Open-File Reports Section, U.S. Geological Survey, Federal Center, Box 25425, Denver Colorado 80225.

DEFINITION OF TERMS

Terms related to streamflow, water-quality, and other hydrologic data, as used in this report, are defined below. See also table for converting English units to International System (SI) Units on the inside of the back cover.

Acre-foot (AC-FT, acre-ft) is the quantity of water required to cover 1 acre to a depth of 1 foot and is equivalent to 43,560 cubic feet or about 326,000 gallons or 1,233 cubic meters.

Aquifer is a geologic formation, group of formations, or part of a formation that contains sufficient saturated permeable material to yield significant quantities of water to wells and springs.

Artesian means confined and is used to describe a well in which the water level stands above the top of the aquifer tapped by the well. A flowing artesian well is one in which the water level is above the land surface.

Bacteria are microscopic unicellular organisms, typically spherical, rodlike, or spiral and threadlike in shape, often clumped into colonies. Some bacteria cause disease, while others perform an essential role in nature in the recycling of materials; for example, by decomposing organic matter into a form available for reuse by plants.

Fecal coliform bacteria are bacteria that are present in the intestine or feces of warm-blooded animals. They are often used as indicators of the sanitary quality of the water. In the laboratory they are defined as all organisms that produce blue colonies within 24 hours when incubated at 44.5 C plus or minus 0.2 C on M-FC medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 mL of sample.

Fecal streptococcal bacteria are bacteria found also in the intestine of warm-blooded animals. Their presence in water is considered to verify fecal pollution. They are characterized as Gram-positive, cocci bacteria which are capable of growth in brain-heart infusion broth. In the laboratory they are defined as all the organisms which produce red or pink colonies within 48 hours at 35 C plus or minus 1.0 C on KF-streptococcus medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 mL of sample.

Bed material is the sediment mixture of which a streambed, lake, pond, reservoir, or estuary bottom is composed.

Bottom material: See Bed material.

Contents is the volume of water in a reservoir or lake. Unless otherwise indicated, volume is computed on the basis of a level pool and does not include bank storage.

Control designates a feature downstream from the gage that determines the stage-discharge relation at the gage. This feature may be a natural constriction of the channel, an artificial structure, or a uniform cross section over a long reach of the channel.

Control structure as used in this report is a structure on a stream or canal that is used to regulate the flow or stage of the stream or to prevent the intrusion of salt water.

Cubic foot per second (ft³/s) is the rate of discharge representing a volume of 1 cubic foot passing a given point during 1 second and is equivalent to 7.48 gallons per second or 448.8 gallons per minute or 0.02832 cubic meters per second.

Cubic foot per second day is the volume of water represented by a flow of 1 cubic foot per second for 24 hours. It is equivalent to 86,400 cubic feet, approximately 1.9835 acre-feet, about 646,000 gallons, or 2,445 cubic meters.

Cubic feet per second per square mile (CFSM) is the average number of cubic feet of water flowing per second from each square mile of area drained, assuming that the runoff is distributed uniformly in time and area.

Discharge is the volume of water (or more broadly, volume of fluid plus suspended sediment) that passes a given point within a given period of time.

Mean discharge (MEAN) is the arithmetic mean of individual daily mean discharges during a specific period.

Instantaneous discharge is the discharge at a particular instant of time.

Annual 7-day minimum is the lowest mean discharge for 7 consecutive days for a calendar year or a water year. Note that most low-flow frequency analyses of annual 7-day minimum flows use a climatic year (April 1 - March 31). The date shown in the summary statistics table is the initial date of the 7-day period. (This value should not be confused with the 7-day 10-year low-flow statistic).

Dissolved refers to that material in a representative water sample which passes through a 0.45 mm membrane filter. This is a convenient operational definition used by Federal agencies that collect water data. Determinations of "dissolved" constituents are made on subsamples of the filtrate.

Dissolved-solids concentration of water is determined either analytically by the "residue-on-evaporation" method, or mathematically by totaling the concentrations of individual constituents reported in a comprehensive chemical analysis. During the analytical determination of dissolved solids, the bicarbonate (generally a major dissolved component of water) is converted to carbonate. Therefore, in the mathematical calculation of dissolved-solids concentration, the bicarbonate value, in milligrams per liter, is multiplied by 0.492 to reflect the change.

Drainage area of a stream at a specified location is that area, measured in a horizontal plane, enclosed by a topographic divide from which direct surface runoff from precipitation normally drains by gravity into the stream above the specified point. Figures of drainage area given herein include all closed basins, or noncontributing areas, within the area unless otherwise specified.

Drainage basin is a part of the surface of the earth that is occupied by a drainage system, which consists of a surface stream or a body of impounded surface water together with all tributary surface streams and bodies of impounded surface water.

Gage height (G.H.) is the water-surface elevation referred to some arbitrary gage datum. Gage height is often used interchangeably with the more general term "stage," although gage height is more appropriate when used with a reading on a gage.

Gaging station is a particular site on a stream, canal, lake, or reservoir where systematic observations of hydrologic data are obtained.

Hardness of water is a physical-chemical characteristic that is commonly recognized by the increased quantity of soap required to produce lather. It is computed as the sum of equivalents of polyvalent cations and is expressed as the equivalent concentration of calcium carbonate (CaCO_3).

Hydrologic Benchmark Network is a network of 57 sites in small drainage basins around the country whose purpose is to provide consistent data on the hydrology, including water quality, and related factors in representative undeveloped watersheds nationwide, and to provide analyses on a continuing basis to compare and contrast conditions observed in basins more obviously affected by the activities of man.

Hydrologic unit is a geographic area representing part or all of a surface drainage basin or distinct hydrologic feature as delineated by the Office of Water Data Coordination on the State Hydrologic Unit Maps; each hydrologic unit is identified by an eight-digit number.

Land-surface datum (lsd) is a datum plane that is approximately at land surface at each ground-water observation well.

Measuring point (MP) is an arbitrary permanent reference point from which the distance to the water surface in a well is measured to obtain the water level.

Micrograms per gram ($\mu\text{g/g}$) is a unit expressing the concentration of a chemical constituent as the mass (micrograms) of the element per unit mass (gram) of material analyzed.

Micrograms per liter (UG/L, $\mu\text{g/L}$) is a unit expressing the concentration of chemical constituents in solution as mass (micrograms) of solute per unit volume (liter) of water. One thousand micrograms per liter is equivalent to one milligram per liter.

Milligrams per liter (MG/L, mg/L) is a unit for expressing the concentration of chemical constituents in solution. Milligrams per liter represents the mass of solute per unit volume (liter) of water. Concentration of suspended sediment also is expressed in mg/L and is based on the mass of dry sediment per liter of water-sediment mixture.

National Geodetic Vertical Datum of 1929 (NGVD of 1929) is a geodetic datum derived from a general adjustment of the first order level nets of both the United States and Canada. It was formerly called "Sea Level Datum of 1929" or "mean sea level" in this series of reports. Although the datum was derived from the average sea level over a period of many years at 26 tide stations along the Atlantic, Gulf of Mexico, and Pacific Coasts, it does not necessarily represent local mean sea level at any particular place.

National Stream Quality Accounting Network (NASQAN) is a nationwide data-collection network designed by the U.S. Geological Survey to meet many of the information needs of government agencies and other groups involved in natural or regional water-quality planning and management. The 500 or so sites in NASQAN are generally located at the downstream ends of hydrologic accounting units designated by the U.S. Geological Survey Office of Water Data Coordination in consultation with the Water Resources Council. The objectives of NASQAN are (1) to obtain information on the quality and quantity of water moving within and from the United States through a systematic and uniform process of data collection, summarization, analysis, and reporting such that the data may be used for, (2) description of the areal variability of water quality in the Nation's rivers through analysis of data from this and other programs, (3) detection of changes or trends with time in the pattern of occurrence of water-quality characteristics, and (4) providing a nationally consistent data base useful for water-quality assessment and hydrologic research.

The National Trends Network (NTN) is a 150-station network for sampling atmospheric deposition in the United States. The purpose of the network is to determine the variability, both in location and in time, of the composition of atmospheric deposition, which includes snow, rain, dust particles, aerosols, and gases. The core from which the NTN was built was the already-existing deposition-monitoring network of the National Atmospheric Deposition Program (NADP).

Parameter Code is a 5-digit number used in the U.S. Geological Survey computerized data system, WATSTORE, to uniquely identify a specific constituent. The codes used in WATSTORE are the same as those used in the U.S. Environmental Protection Agency data system, STORET. The Environmental Protection Agency assigns and approves all requests for new codes.

Partial-record station is a particular site where limited streamflow and/or water-quality data are collected systematically over a period of years for use in hydrologic analyses.

Particle size is the diameter, in millimeters (mm), of a particle determined by either sieve or sedimentation methods. Sedimentation methods (pipet, bottom-withdrawal tube, visual-accumulation tube) determine fall diameter of particles in either distilled water (chemically dispersed) or in native water (the river water at the time and point of sampling).

Particle-size classification used in this report agrees with the recommendation made by the American Geophysical Union Subcommittee on Sediment Terminology. The classification is as follows::

<u>Classification</u>	<u>Size (mm)</u>	<u>Method of analysis</u>
Clay	0.00024 - 0.004	Sedimentation
Silt	.004 - .062	Sedimentation
Sand	.062 - 2.0	Sedimentation or sieve
Gravel	2.0 - 64.0	Sieve

The particle-size distributions given in this report are not necessarily representative of all particles in transport in the stream. Most of the organic matter is removed, and the sample is subjected to mechanical and chemical dispersion before analysis in distilled water. Chemical dispersion is not used for native-water analysis.

Pesticides are chemical compounds used to control undesirable organisms. Major categories of pesticides include insecticides, miticides, fungicides, herbicides, and rodenticides.

Picocurie (PC, pCi) is one trillionth (1×10^{-12}) of the amount of radioactivity represented by a curie (Ci). A curie is the amount of radioactivity that yields 3.7×10^{10} radioactive disintegrations per second. A picocurie yields 2.22 dpm (disintegrations per minute).

Radiochemical program is a network of regularly sampled water-quality stations where samples are collected to be analyzed for radioisotopes. The streams that are sampled represent major drainage basins in the conterminous United States.

Recoverable from bottom material is the amount of a given constituent that is in solution after a representative sample of bottom material has been digested by a method (usually using an acid or mixture of acids) that results in dissolution of readily soluble substances. Complete dissolution of all bottom material is not achieved by the digestion treatment and thus the determination represents less than the total amount (that is, less than 95 percent) of the constituent in the sample. To achieve comparability of analytical data, equivalent digestion procedures would be required of all laboratories performing such analyses because different digestion procedures are likely to produce different analytical results.

Return period is the average time interval between occurrences of a hydrological event of a given or greater magnitude, usually expressed in years. May also be called recurrence interval.

Runoff in inches (IN., in.) shows the depth to which the drainage area would be covered if all the runoff for a given time period were uniformly distributed on it.

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

Sediment is solid material that originates mostly from disintegrated rocks and is transported by, suspended in, or deposited from water; it includes chemical and biochemical precipitates and decomposed organic material, such as humus. The quantity, characteristics, and cause of the occurrence of sediment in streams are influenced by environmental factors. Some major factors are degree of slope, length of slope, soil characteristics, land usage, and quantity and intensity of precipitation.

Bed load is the sediment that is transported in a stream by rolling, sliding, or skipping along the bed and very close to it. In this report, bed load is considered to consist of particles in transit within 0.25 ft of the streambed.

Bed load discharge (tons per day) is the quantity of bed load measured by dry weight that moves past a section as bed load in a given time.

Suspended sediment is the sediment that at any given time is maintained in suspension by the upward components of turbulent currents or that exists in suspension as a colloid.

Suspended-sediment concentration is the velocity-weighted concentration of suspended sediment in the sampled zone (from the water surface to a point approximately 0.3 ft above the bed) expressed as milligrams of dry sediment per liter of water-sediment mixture (mg/L).

Mean concentration is the time-weighted concentration of suspended sediment passing a stream section during a 24-hour day.

Suspended-sediment discharge (tons/day) is the rate at which dry mass of sediment passes a section of a stream or is the quantity of sediment, as measured by dry mass or volume, that passes a section in a given time. It is calculated in units of tons per day as follows: concentration (mg/L) \times discharge $\text{ft}^3/\text{s} \times 0.0027$.

Suspended-sediment load is a general term that refers to material in suspension. It is not synonymous with either discharge or concentration.

Total sediment discharge (tons/day) is the sum of the suspended sediment discharge and the bed-load discharge. It is the total quantity of sediment, as measured by dry mass or volume, that passes a section during a given time.

Total-sediment load or total load is a term which refers to the total sediment (bed load plus suspended-sediment load) that is in transport. It is not synonymous with total-sediment discharge.

7-day 10-year low flow ($7 Q_{10}$) is the discharge at the 10-year recurrence interval taken from a frequency curve of annual values of the lowest mean discharge for 7 consecutive days (the 7-day low flow).

Sodium adsorption ratio (SAR) is the expression of relative activity of sodium ions in exchange reactions within soil and is an index of sodium or alkali hazard to the soil. Waters range in respect to sodium hazard from those which can be used for irrigation on almost all soils to those which are generally unsatisfactory for irrigation.

Solute is any substance that is dissolved in water.

Specific conductance is a measure of the ability of a water to conduct an electrical current. It is expressed in microsiemens per centimeter at 25 C. Specific conductance is related to the type and concentration of ions in solution and can be used for approximating the dissolved-solids content of the water. Commonly, the concentration of dissolved solids (in milligrams per liter) is about 65-percent of the specific conductance (in microsiemens). This relation is not constant from stream to stream, and it may vary in the same source with changes in the composition of the water.

Stage-discharge relation is the relation between gage height (stage) and volume of water, per unit of time, flowing in a channel.

Streamflow is the discharge that occurs in a natural channel. Although the term "discharge" can be applied to the flow of a canal, the word "streamflow" uniquely describes the discharge in a surface stream course. The term "streamflow" is more general than "runoff" as streamflow may be applied to discharge whether or not it is affected by diversion or regulation.

Surface area of a lake is that area outlined on the latest U.S.G.S. topographic map as the boundary of the lake and measured by a planimeter in acres. In localities not covered by topographic maps, the areas are computed from the best maps available at the time planimetered. All areas shown are those for the stage when the planimetered map was made.

Surficial bed material is the part (0.1 to 0.2 ft) of the bed material that is sampled using U.S. Series Bed-Material Samplers.

Suspended (as used in tables of chemical analyses) refers to the amount (concentration) of undissolved material in a water-sediment mixture. It is associated with the material retained on a 0.45-micrometer filter.

Suspended, recoverable is the amount of a given constituent that is in solution after the part of a representative water-suspended sediment sample that is retained on a 0.45 mm membrane filter has been digested by a method (usually using a dilute acid solution) that results in dissolution of only readily soluble substances. Complete dissolution of all the particulate matter is not achieved by the digestion treatment and thus the determination represents something less than the "total" amount (that is, less than 95-percent) of the constituent present in the sample. To achieve comparability of analytical data, equivalent digestion procedures are required of all laboratories performing such analyses because different digestion procedures are likely to produce different analytical results.

Determinations of "suspended, recoverable" constituents are made either by analyzing portions of the material collected on the filter or, more commonly, by difference, based on determinations of (1) dissolved and (2) total recoverable concentrations of the constituent.

Suspended, total is the total amount of a given constituent in the part of a representative water-suspended sediment sample that is retained on a 0.45 mm membrane filter. This term is used only when the analytical procedure assures measurement of at least 95-percent of the constituent determined. A knowledge of the expected form of the constituent in the sample, as well as the analytical methodology used, is required to determine when the results should be reported as "suspended, total."

Determinations of "suspended, total" constituents are made either by analyzing portions of the material collected on the filter or, more commonly, by difference, based on determinations of (1) dissolved and (2) total concentrations of the constituent.

Thermograph is an instrument that continuously records variations of temperature on a chart. The more general term "temperature recorder" is used in the table headings and refers to any instrument that records temperature whether on a chart, a tape, or any other medium.

Time-weighted average is computed by multiplying the number of days in the sampling period by the concentrations of individual constituents for the corresponding period and dividing the sum of the products by the total number of days. A time-weighted average represents the composition of water that would be contained in a vessel or reservoir that had received equal quantities of water from the stream each day for the year.

Tons per acre-foot indicates the dry mass of dissolved solids in 1 acre-foot of water. It is computed by multiplying the concentration of the constituent, in milligrams per liter, by 0.00136.

Tons per day (T/DAY) is the quantity of a substance in solution or suspension that passes a stream section during a 24-hour period.

Total is the total amount of a given constituent in a representative water-suspended sediment sample, regardless of the constituent's physical or chemical form. This term is used only when the analytical procedure assures measurement of at least 95-percent of the constituent present in both the dissolved and suspended phases of the sample. A knowledge of the expected form of the constituent in the sample, as well as the analytical methodology used, is required to judge when the results should be reported as "total." (Note that the word "total" does double duty here, indicating both that the sample consists of a water-suspended sediment mixture and that the analytical method determined all of the constituent in the sample.)

Total discharge is the total quantity of any individual constituent, as measured by dry mass or volume, that passes through a stream cross-section per unit of time. This term needs to be qualified, such as "total sediment discharge," "total chloride discharge," and so on.

Total recoverable is the amount of a given constituent that is in solution after a representative water-suspended sediment sample has been digested by a method (usually using a dilute acid solution) that results in dissolution of only readily soluble substances. Complete dissolution of all particulate matter is not achieved by the digestion treatment, and thus the determination represents something less than the "total" amount (that is, less than 95-percent) of the constituent present in the dissolved and suspended phases of the sample. To achieve comparability of analytical data, equivalent digestion procedures are required of all laboratories performing such analyses because different digestion procedures are likely to produce different analytical results.

Tritium Network is a network of stations which has been established to provide baseline information on the occurrence of tritium in the Nation's surface waters. In addition to the surface-water stations in the network, tritium data are also obtained at a number of precipitation stations. The purpose of the precipitation stations is to provide an estimate sufficient for hydrologic studies of the tritium input to the United States.

Water year in U.S. Geological Survey reports dealing with surface-water supply is the 12-month period October 1 through September 30. The water year is designated by the calendar year in which it ends and which includes 9 of the 12 months. Thus, the year ending September 30, 1992, is called the "1992 water year."

WDR is used as an abbreviation for "Water-Data Report" in the REVISED RECORDS paragraph to refer to State annual hydrologic-data reports (WRD was used as an abbreviation for "Water-Resources Data" in reports published prior to 1976).

Weighted average is used in this report to indicate discharge-weighted average. It is computed by multiplying the discharge for a sampling period by the concentrations of individual constituents for the corresponding period and dividing the sum of the products by the sum of the discharges. A discharge-weighted average approximates the composition of water that would be found in a reservoir containing all the water passing a given location during the water year after thorough mixing in the reservoir.

WSP is used as an abbreviation for "Water-Supply Paper" in reference to previously published reports.

PUBLICATIONS ON TECHNIQUES OF WATER-RESOURCES INVESTIGATIONS

The U.S. Geological Survey publishes a series of manuals describing procedures for planning and conducting specialized work in water-resources investigations. The material is grouped under major subject headings called books and is further divided into sections and chapters. For example, Section A of Book 3 (Applications of Hydraulics) pertains to surface water. The chapter, the unit of publication, is limited to a narrow field of subject matter. This format permits flexibility in revision and publications as the need arises.

The reports listed below are for sale by the U.S. Geological Survey, Branch of Information Services, Box 25286, Federal Center, Denver, Colorado 80225 (authorized agent of the Superintendent of Documents, Government Printing Office). Prepayment is required. Remittance should be sent by check or money order payable to the U.S. Geological Survey. Prices are not included because they are subject to change. Current prices can be obtained by writing to the above address. When ordering or inquiring about prices for any of these publications, please give the title, book number, chapter number, and "U.S. Geological Survey Techniques of Water-Resources Investigations."

- 1-D1. *Water temperature--influential factors, field measurement, and data presentation*, by H.H. Stevens, Jr., J. F. Ficken, and G. F. Smoot: USGS--TWRI Book 1, Chapter D1. 1975. 65 pages.
- 1-D2. *Guidelines for collection and field analysis of ground-water samples for selected unstable constituents*, by W. W. Wood: USGS--TWRI Book 1, Chapter D2. 1976. 24 pages.
- 2-D1. *Application of surface geophysics to ground-water investigations*, by A. A. R. Zohdy, G. P. Eaton, and D. R. Mabey: USGS--TWRI Book 2, Chapter D1. 1974. 116 pages
- 2-D2. *Application of seismic-refraction techniques to hydrologic studies*, by F. P. Haeni: USGS--TWRI Book 2, Chapter D2. 1988. 86 pages.
- 2-E1. *Application of borehole geophysics to water-resources investigations*, by W. S. Keys and L. M. McCary: USGS--TWRI Book 2, Chapter E1. 1971. 126 pages.
- 2-E2. *Borehole geophysics applied to ground-water investigations*, by W. S. Keys: USGS--TWRI Book 2, Chapter

- E2. 1990. 150 pages.
- 2-F1. *Application of drilling, coring, and sampling techniques to test holes and wells*, by Eugene Shuter and W. E. Teasdale: USGS--TWRI Book 2, Chapter F1. 1989. 97 pages.
- 3-A1. *General field and office procedures for indirect discharge measurements*, by M. A. Benson and Tate Dalrymple: USGS--TWRI Book 3, Chapter A1. 1967. 30 pages.
- 3-A2. *Measurement of peak discharge by the slope-area method*, by Tate Dalrymple and M. A. Benson: USGS--TWRI Book 3, Chapter A2, 1967. 12 pages.
- 3-A3. *Measurement of peak discharge at culverts by indirect methods*, by G. L. Bodhaine: USGS--TWRI Book 3, Chapter A3., 1968. 60 pages.
- 3-A4. *Measurement of peak discharge at width contractions by indirect methods*, by H. F. Matthai: USGS--TWRI Book3, Chapter A4. 1967. 44 pages.
- 3-A5. *Measurement of peak discharge at dams by indirect methods*, by Harry Hulsing: USGS--TWRI Book 3, Chapter A5. 1967. 29 pages.
- 3-A6. *General procedure for gaging streams*, by R. W. Carter and Jacob Davidian: USGS--TWRI Book 3, Chapter A6. 1968. 13 pages.
- 3-A7. *Stage measurements at gaging stations*, by T. J. Buchanan and W. P. Somers: USGS--TWRI Book 3, Chapter A7. 1968. 28 pages.
- 3-A8. *Discharge measurements at gaging stations*, by T. J. Buchanan and W. P. Somers: USGS--TWRI Book 3, Chapter A8. 1969. 65 pages.
- 3-A9. *Measurement of time of travel in streams by dye tracing*, by F. A. Kilpatrick and J. F. Wilson, Jr.: USGS--TWRI Book 3, Chapter A9. 1989. 27 pages.
- 3-A10. *Discharge ratings at gaging stations*, by E. J. Kennedy: USGS--TWRI Book 3, Chapter A10, 1984. 59 pages.
- 3-A11. *Measurement of discharge by moving-boat method*, by G. F. Smoot and C. E. Novak: USGS--TWRI Book 3, Chapter A11, 1969. 22 pages.
- 3-A12. *Fluorometric procedures for dye tracing, Revised*, by J. F. Wilson, Jr., E. D. Cobb, and F. A. Kilpatrick: USGS--TWRI Book 3, Chapter A12. 1986. 41 pages.
- 3-A13. *Computation of continuous records of streamflow*, by E. J. Kennedy: USGS--TWRI Book 3, Chapter A13. 1983. 53 pages.
- 3-A14. *Use of flumes in measuring discharge*, by F. A. Kilpatrick and V. R. Schneider: USGS--TWRI Book 3, Chapter A14. 1983. 46 pages.
- 3-A15. *Computation of water-surface profiles in open channels*, by Jacob Davidian: USGS--TWRI Book 3, Chapter A15, 1984. 48 pages.
- 3-A16. *Measurement of discharge using tracers*, by F. A. Kilpatrick and E. D. Cobb: USGS--TWRI Book 3, Chapter A16. 1985. 52 pages.
- 3-A17. *Acoustic velocity meter systems*, by Antonius Laenen: USGS--TWRI Book 3, Chapter A17. 1985. 38 pages.
- 3-A18. *Determination of stream reaeration coefficients by use of tracers*, by F. A. Kilpatrick, R. E. Rathburn, Nobuhiro Yotsukura, G. W. Parker, and L. L. DeLong: USGS--TWRI Book 3, Chapter A18. 1989. 52 pages.
- 3-A19. *Levels of streamflow gaging stations*, by E. J. Kennedy: USGS--TWRI Book 3, Chapter A19. 1990. 31 pages.
- 3-A20. *Simulation of soluble waste transport and buildup in surface waters using tracers*, by F. A. Kilpatrick: USGS--TWRI Book 3, Chapter A20. 1993. 38 pages.
- 3-B1. *Aquifer-test design, observation, and data analysis*, by R. W. Stallman: USGS--TWRI Book 3, Chapter B1. 1971. 26 pages.
- 3-B2. *Introduction to ground-water hydraulics, a programmed text for self-instruction*, by G. D. Bennett: USGS--TWRI Book 3, Chapter B2. 1976. 172 pages.
- 3-B3. *Type curves for selected problems of flow to wells in confined aquifers*, by J. E. Reed: USGS--TWRI Book 3, Chapter B3. 1980. 106 pages.
- 3-B4. *Regression modeling of ground-water flow*, by R. L. Cooley and R. L. Naff: USGS--TWRI Book 3, Chapter B4. 1990. 232 pages.
- 3-B4. *Supplement 1. Regression modeling of ground-water flow - Modifications to the computer code for nonlinear regression solution of steady-state ground-water flow problems*, by R. L. Cooley. USGS--TWRI Book 3, Chapter B4. 1993. 8 pages.
- 3-B5. *Definition of boundary and initial conditions in the analysis of saturated ground-water flow systems--An introduction*, by O. L. Franke, T. E. Reilly, and G. D. Bennett: USGS--TWRI Book 3, Chapter B5. 1987. 15 pages.
- 3-B6. *The principle of superposition and its application in ground-water hydraulics*, by T. E. Reilly, O. L. Franke, and G. D. Bennett: USGS--TWRI Book 3, Chapter B6. 1987. 28 pages.
- 3-B7. *Analytical solutions for one-, two-, and three-dimensional solute transport in ground-water systems with uni-*

- form flow*, by E. J. Wexler: USGS--TWRI Book 3, Chapter B7. 1992. 90 pages.
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MISSISSIPPI RIVER BASIN

UPPER IOWA RIVER BASIN

05388250 UPPER IOWA RIVER NEAR DORCHESTER, IA

LOCATION.--Lat 43°25'16", long 91°30'31", in SW1/4 NW1/4 sec.1, T.99 N., R.6 W., Allamakee County, Hydrologic Unit 07060002, on right bank at upstream side of bridge on State Highway 76, 650 ft upstream from Mineral Creek, 0.5 mi upstream from Bear Creek, 3.5 mi south of Dorchester, and 18.1 mi upstream from mouth.

DRAINAGE AREA.--770 mi².

PERIOD OF RECORD.--September 1936 to June 1975 (gage heights and discharge measurements only), July 1975 to current year.

GAGE.--Water-stage recorder. Datum of gage is 660.00 ft above sea level. Prior to Jan. 6, 1938, nonrecording gage on old bridge at site 0.2 mi upstream at datum 5.91 ft higher. Jan. 6, 1938 to Apr. 26, 1948, nonrecording gage at datum 60.00 ft lower, Apr. 27, 1948 to August 1963, nonrecording gage on old bridge and August 1963 to June 1975 nonrecording gage on new bridge at same datum.

REMARKS.--Estimated daily discharges: Dec. 1-3, Dec. 21 to Mar. 3, and Mar. 16, 17. Records good except those for estimated daily discharges, which are poor. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data. U.S. Geological Survey gage-height telemeter and U.S. Army Corps of Engineers data collection platform at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of May 30, 1941, reached a stage of 21.8 ft, from flood profile, discharge, 30,400 ft³/s on basis of slope-area determination of peak flow.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	872	570	e425	e360	e300	e620	631	773	370	367	519	407
2	845	558	e430	e340	e290	e640	616	752	365	354	491	416
3	823	557	e431	e330	e285	e680	606	725	355	337	515	425
4	824	556	428	e300	e310	699	590	702	345	388	545	425
5	804	554	421	e290	e320	869	583	683	340	370	514	419
6	800	547	413	e270	e300	2830	572	672	348	344	505	410
7	796	536	405	e250	e270	2910	551	673	353	352	635	407
8	777	530	396	e220	e240	2390	537	668	360	405	568	401
9	789	527	396	e240	e230	1690	529	647	357	390	518	392
10	797	526	396	e270	e240	1400	525	624	422	373	555	383
11	781	513	388	e250	e250	1190	518	607	449	372	648	373
12	777	510	371	e270	e280	1080	518	582	424	365	717	393
13	777	517	389	e260	e290	1200	545	563	448	349	1190	414
14	744	515	391	e230	e310	1300	561	549	444	348	942	398
15	729	515	392	e200	e350	1550	731	558	430	347	785	401
16	755	510	392	e210	e380	e1400	822	534	446	344	685	457
17	746	495	392	e200	e410	e1300	910	517	442	353	614	411
18	711	494	394	e180	e440	1140	916	510	431	364	606	407
19	696	497	396	e170	e1500	1040	863	503	440	377	681	420
20	686	495	401	e200	e2500	988	801	498	427	632	625	410
21	679	485	e370	e220	e1900	984	773	480	403	1530	574	401
22	666	473	e330	e250	e1400	998	730	469	384	1710	521	427
23	648	470	e310	e280	e1100	990	706	450	405	1230	490	437
24	641	461	e300	e300	e800	954	699	453	479	1040	465	425
25	631	455	e290	e330	e660	884	737	419	477	898	443	476
26	615	458	e270	e300	e580	837	866	404	463	786	439	577
27	602	461	e240	e280	e520	790	839	393	454	700	428	586
28	599	459	e280	e300	e580	749	814	384	423	639	424	624
29	593	455	e300	e270	---	712	836	382	396	589	408	631
30	579	449	e320	e250	---	681	788	382	378	555	409	589
31	576	---	e340	e280	---	656	---	377	---	532	430	---
TOTAL	22358	15148	11397	8100	17035	36151	20713	16933	12258	17740	17889	13342
MEAN	721	505	368	261	608	1166	690	546	409	572	577	445
MAX	872	570	431	360	2500	2910	916	773	479	1710	1190	631
MIN	576	449	240	170	230	620	518	377	340	337	408	373
AC-FT	44350	30050	22610	16070	33790	71710	41080	33590	24310	35190	35480	26460
CFSM	.94	.66	.48	.34	.79	1.51	.90	.71	.53	.74	.75	.58
IN.	1.08	.73	.55	.39	.82	1.75	1.00	.82	.59	.86	.86	.64

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1975 - 1994, BY WATER YEAR (WY)

	MEAN	439	472	405	282	413	1078	1066	843	736	644	613	507
MAX	2045	1476	1421	836	1400	1922	3973	2066	2765	3318	3702	1334	
(WY)	1987	1983	1983	1983	1984	1983	1993	1991	1993	1993	1993	1986	
MIN	116	125	99.9	96.7	112	386	225	175	123	119	112	131	
(WY)	1990	1990	1990	1977	1978	1981	1977	1977	1977	1989	1989	1976	

SUMMARY STATISTICS	FOR 1993 CALENDAR YEAR	FOR 1994 WATER YEAR	WATER YEARS 1975 - 1994
ANNUAL TOTAL	626047	209064	
ANNUAL MEAN	1715	573	629
HIGHEST ANNUAL MEAN			1726
LOWEST ANNUAL MEAN			178
HIGHEST DAILY MEAN	15100	2910	15100
LOWEST DAILY MEAN	240	170	79
ANNUAL SEVEN-DAY MINIMUM	284	197	82
INSTANTANEOUS PEAK FLOW		4200	22000
INSTANTANEOUS PEAK STAGE		a14.90	20.00
ANNUAL RUNOFF (AC-FT)	1242000	414700	456000
ANNUAL RUNOFF (CFSM)	2.23	.74	.82
ANNUAL RUNOFF (INCHES)	30.25	10.10	11.11
10 PERCENT EXCEEDS	3320	867	1400
50 PERCENT EXCEEDS	1010	485	370
90 PERCENT EXCEEDS	370	296	136

e Estimated.

a Ice affected.

05389400 BLOODY RUN CREEK NEAR MARQUETTE, IA

LOCATION.--Lat 43°02'27", long 91°12'23", in Basil Giard Claim #1, sec. 16 T.95 N., R.3 W., Clayton County, Hydrologic Unit 07060001, on right bank 50 ft downstream from State Highway 18 bridge, 1.5 miles upstream from mouth at Mississippi River, and 1.5 miles west of Marquette.

DRAINAGE AREA.--34.1 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1991 to current year.

GAGE.--Water-stage encoder.

REMARKS.--Estimated daily discharges: Dec. 23-31, Jan. 7-10, 14-29, Feb. 7-11, Feb. 24 to Mar. 1, Mar. 3-8, and July 27, 28. Records good except those for estimated daily discharges, which are poor. U.S. Geological Survey data collection platform at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	31	31	27	23	19	e24	21	25	20	25	21	24
2	30	30	27	24	18	25	22	24	20	26	21	24
3	30	30	28	24	18	e27	22	24	20	26	21	25
4	29	29	28	24	18	e26	23	24	20	25	23	27
5	29	30	28	25	17	e40	24	25	20	23	22	25
6	28	31	27	24	17	e75	24	24	19	21	22	24
7	28	31	27	e23	e16	e54	23	24	23	21	21	24
8	29	29	26	e22	e15	e33	23	24	20	27	21	24
9	41	28	26	e20	e14	26	22	22	19	24	22	25
10	35	28	26	e21	e15	24	23	23	20	23	30	24
11	34	28	26	21	e16	23	23	23	20	22	26	22
12	33	30	26	23	15	24	25	23	19	23	24	21
13	33	30	25	25	16	29	25	23	35	24	23	20
14	31	29	25	e23	16	29	23	24	22	26	23	20
15	32	30	24	e21	15	31	26	23	20	23	23	21
16	32	29	24	e19	15	27	24	23	19	23	23	24
17	31	28	24	e18	15	25	24	23	19	22	23	20
18	31	29	25	e17	15	24	23	22	20	22	22	20
19	29	28	25	e16	302	24	23	23	30	22	30	20
20	29	29	25	e17	121	24	25	22	29	96	27	22
21	30	28	25	e16	45	26	24	22	24	42	22	23
22	30	28	25	e17	33	25	24	23	28	33	23	30
23	30	27	e24	e19	29	24	23	29	58	26	21	28
24	30	27	e25	e18	e27	24	22	29	40	26	21	26
25	30	29	e22	e20	e25	24	24	25	29	23	22	35
26	30	30	e20	e21	e23	23	24	25	27	25	23	42
27	30	30	e18	e20	e22	24	25	22	26	e23	21	36
28	31	29	e19	e19	e23	24	26	21	25	e23	22	31
29	31	28	e20	e19	---	23	25	21	26	22	23	32
30	31	28	e22	19	---	23	26	20	25	22	25	30
31	31	---	e23	20	---	22	---	20	---	21	25	---
TOTAL	959	871	762	638	940	876	711	725	742	830	716	769
MEAN	30.9	29.0	24.6	20.6	33.6	28.3	23.7	23.4	24.7	26.8	23.1	25.6
MAX	41	31	28	25	302	75	26	29	58	96	30	42
MIN	28	27	18	16	14	22	21	20	19	21	21	20
AC-FT	1900	1730	1510	1270	1860	1740	1410	1440	1470	1650	1420	1530
CFSM	.91	.85	.72	.60	.98	.83	.69	.69	.72	.78	.68	.75
IN.	1.05	.95	.83	.70	1.02	.95	.77	.79	.81	.90	.78	.84

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1992 - 1994, BY WATER YEAR (WY)

MEAN	21.6	28.4	24.1	20.6	27.8	47.1	38.7	39.5	34.6	36.9	31.6	27.0
MAX	30.9	35.3	26.0	22.3	33.6	87.6	55.3	65.7	55.4	54.2	48.9	36.4
(WY)	1994	1992	1992	1992	1994	1993	1993	1993	1993	1993	1993	1993
MIN	16.4	21.0	21.8	19.0	20.6	25.3	23.7	23.4	23.8	26.8	22.7	19.0
(WY)	1992	1993	1993	1993	1993	1992	1994	1994	1992	1994	1992	1992

SUMMARY STATISTICS

FOR 1993 CALENDAR YEAR

FOR 1994 WATER YEAR

WATER YEARS 1992 - 1994

ANNUAL TOTAL	16120	9539	
ANNUAL MEAN	44.2	26.1	31.5
HIGHEST ANNUAL MEAN			42.1
LOWEST ANNUAL MEAN			26.1
HIGHEST DAILY MEAN	550	Mar 31	550
LOWEST DAILY MEAN	17	Jan 18	13
ANNUAL SEVEN-DAY MINIMUM	18	Jan 17	15
INSTANTANEOUS PEAK FLOW			566
INSTANTANEOUS PEAK STAGE			6.54
INSTANTANEOUS LOW FLOW			13
ANNUAL RUNOFF (AC-FT)	31970	18920	22830
ANNUAL RUNOFF (CFSM)	1.29	.77	.92
ANNUAL RUNOFF (INCHES)	17.57	10.40	12.55
10 PERCENT EXCEEDS	64	31	45
50 PERCENT EXCEEDS	35	24	24
90 PERCENT EXCEEDS	20	19	18

e Estimated.

05389400 BLOODY RUN CREEK NEAR MARQUETTE, IA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--October 1991 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1991 to current year.

WATER TEMPERATURES: October 1991 to current year.

SUSPENDED-SEDIMENT DISCHARGE: October 1991 to current year.

REMARKS.--Records of specific conductance are obtained from suspended-sediment samples at time of analysis. Sample analyses marked with an asterisk are affected by precipitate which may influence the suspended-sediment percentage finer than .062 mm.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 670 microsiemens Sept. 27, 1994; minimum daily, 244 microsiemens Mar. 31, 1993.

WATER TEMPERATURES: Maximum daily, 20.0°C June 20, 1992; minimum daily, 0.0°C Jan. 7, 18-21, 1994.

SEDIMENT CONCENTRATIONS: Maximum daily mean, 2,780 mg/L Mar. 31, 1993; minimum daily mean, 2 mg/L Jan. 18, 1992.

SEDIMENT LOADS: Maximum daily, 4,500 tons Mar. 31, 1993; minimum daily, 0.09 tons Jan. 18, 1992.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 670 microsiemens Sept. 27; minimum daily, 320 microsiemens Feb. 19.

WATER TEMPERATURES: Maximum daily, 19.0°C June 19, 22, 23, July 19, Aug. 22; minimum daily, 0.0°C Jan. 7, 18-21.

SEDIMENT CONCENTRATIONS: Maximum daily mean, 1,780 mg/L Feb. 19; minimum daily mean, 4 mg/L Sept. 19.

SEDIMENT LOADS: Maximum daily, 1,690 tons Feb. 19; minimum daily, 0.24 tons Sept. 19.

SPECIFIC CONDUCTANCE MICROSIEMENS/CM AT 25 DEG C, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	498	412	433	437	465	494	497	479	585	421	466	614
2	432	412	445	484	515	492	519	470	571	443	472	431
3	420	428	626	415	554	491	491	541	602	420	427	408
4	426	425	449	459	483	518	537	510	586	481	464	412
5	423	419	430	445	531	580	545	507	462	465	437	479
6	---	416	447	444	477	335	457	504	524	503	531	544
7	437	416	417	433	426	364	452	428	564	457	567	538
8	441	418	421	487	508	453	545	528	528	462	401	424
9	477	429	470	436	528	508	510	473	471	450	535	440
10	486	433	439	442	496	554	483	478	432	519	418	409
11	456	420	487	538	443	536	417	486	468	523	482	451
12	436	420	442	418	551	485	493	532	393	425	424	413
13	422	462	480	467	490	544	467	507	568	505	413	505
14	452	433	430	437	505	550	491	597	507	411	425	562
15	425	455	454	426	512	538	494	482	488	540	414	490
16	432	458	548	533	473	511	459	481	417	521	428	509
17	448	431	434	469	561	476	495	436	427	506	408	500
18	447	445	447	535	483	554	552	549	388	487	452	511
19	409	496	465	459	320	508	477	534	509	461	436	616
20	410	435	443	409	346	568	459	548	509	448	512	488
21	424	439	428	408	439	513	440	475	464	489	429	496
22	428	419	498	426	533	490	488	518	502	527	524	588
23	416	436	420	433	548	496	521	548	473	548	458	519
24	457	441	556	583	489	441	522	549	565	548	441	523
25	419	439	458	583	486	404	482	573	553	550	462	607
26	432	428	432	483	538	483	534	588	495	480	443	642
27	440	510	468	497	470	413	523	575	479	468	433	670
28	444	424	431	408	448	494	560	605	518	408	446	656
29	420	458	435	453	---	486	532	592	505	449	599	662
30	415	468	483	552	---	453	529	545	477	490	598	592
31	408	---	430	417	---	472	---	554	---	438	475	---

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DAY	MEAN CONCEN- TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN- TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN- TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN- TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN- TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN- TRATION (MG/L)	LOAD (TONS/ DAY)
OCTOBER			NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	14	1.1	68	5.6	94	6.9	81	5.1	71	3.7	52	3.4
2	30	2.4	56	4.5	85	6.3	72	4.7	59	2.9	49	3.4
3	41	3.2	45	3.6	59	4.5	93	6.1	57	2.7	50	3.6
4	41	3.2	35	2.8	62	4.7	88	5.8	86	4.1	33	2.3
5	56	4.3	21	1.7	97	7.3	92	6.3	60	2.7	45	4.9
6	63	4.8	18	1.5	105	7.7	69	4.6	73	3.4	91	18
7	52	3.9	32	2.7	117	8.4	86	5.3	95	4.1	86	13
8	28	2.2	92	7.2	105	7.5	73	4.3	57	2.3	55	4.9
9	39	4.3	107	8.1	80	5.7	112	6.0	60	2.3	21	1.5
10	59	5.5	101	7.7	90	6.3	63	3.6	67	2.7	12	.77
11	63	5.8	94	7.1	66	4.7	60	3.4	82	3.5	15	.93
12	54	4.8	77	6.2	100	7.1	57	3.7	56	2.3	22	1.5
13	57	5.1	63	5.0	49	3.3	89	6.1	76	3.3	22	1.8
14	45	3.9	66	5.2	88	6.0	95	5.9	65	2.7	27	2.1
15	29	2.6	61	4.9	38	2.5	88	5.0	56	2.3	25	2.1
16	41	3.5	71	5.6	54	3.5	71	3.6	51	2.1	28	2.0
17	66	5.5	72	5.4	105	6.9	83	4.0	40	1.6	26	1.8
18	67	5.6	81	6.3	86	5.7	66	3.0	45	1.8	30	1.9
19	58	4.5	58	4.4	90	6.0	78	3.4	1780	1690	16	1.0
20	73	5.8	61	4.8	117	7.9	94	4.3	385	155	19	1.3
21	51	4.2	71	5.4	118	8.1	90	3.9	65	8.4	29	2.0
22	33	2.7	70	5.2	60	4.1	75	3.4	25	2.2	35	2.4
23	46	3.7	68	4.9	53	3.4	71	3.6	27	2.1	22	1.5
24	52	4.2	68	4.9	29	2.0	40	1.9	60	4.4	17	1.1
25	69	5.6	70	5.5	83	4.9	54	2.9	69	4.7	10	.61
26	32	2.6	65	5.3	95	5.1	74	4.2	44	2.7	14	.92
27	47	3.8	69	5.6	84	4.1	62	3.3	51	3.0	5	.35
28	66	5.4	94	7.5	54	2.8	97	5.0	57	3.5	13	.82
29	75	6.3	86	6.5	96	5.2	79	4.1	---	---	12	.78
30	66	5.6	78	5.9	74	4.4	51	2.6	---	---	13	.79
31	43	3.6	---	---	96	6.0	45	2.5	---	---	11	.68
TOTAL	---	129.7	---	157.0	---	169.0	---	131.6	---	1926.5	---	84.15
APRIL			MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	12	.69	20	1.3	16	.84	27	1.8	24	1.3	9	.56
2	14	.83	16	1.1	22	1.2	28	1.9	20	1.1	16	1.1
3	14	.87	7	.46	12	.62	24	1.7	17	.94	12	.84
4	17	1.0	13	.87	9	.50	23	1.5	8	.49	17	1.3
5	13	.83	16	1.1	17	.92	20	1.2	11	.63	21	1.4
6	12	.79	10	.66	14	.72	15	.84	10	.62	13	.83
7	24	1.5	15	1.0	16	.97	18	1.0	12	.71	17	1.1
8	12	.71	14	.92	16	.87	19	1.4	13	.72	21	1.4
9	13	.79	17	1.0	17	.91	15	.96	11	.68	15	1.1
10	13	.78	20	1.3	16	.87	11	.70	35	3.0	14	.88
11	16	.97	16	1.0	25	1.4	9	.52	22	1.5	7	.43
12	24	1.6	13	.83	26	1.3	13	.81	30	1.9	18	1.0
13	28	1.9	17	1.0	153	17	12	.80	21	1.3	14	.74
14	23	1.5	16	1.1	74	4.4	20	1.4	12	.75	6	.31
15	34	2.4	13	.83	43	2.3	14	.92	12	.76	16	.97
16	25	1.6	15	.97	45	2.4	11	.66	12	.75	39	2.5
17	8	.53	23	1.4	28	1.5	8	.45	29	1.8	21	1.1
18	12	.76	15	.93	18	.97	11	.65	29	1.7	6	.36
19	25	1.5	17	1.0	67	6.1	27	2.0	92	11	4	.24
20	29	1.9	17	1.0	84	6.7	527	161	47	3.8	25	1.5
21	20	1.3	18	1.1	63	4.1	180	21	16	.97	13	.86
22	18	1.2	17	1.1	48	3.6	59	5.3	13	.80	11	.92
23	10	.64	54	6.6	237	51	40	2.9	13	.75	27	2.0
24	15	.91	51	4.5	103	13	30	2.1	27	1.5	13	.91
25	25	1.6	37	2.5	41	3.2	29	1.9	19	1.2	6	.59
26	18	1.2	31	2.1	34	2.5	50	3.3	17	1.0	19	2.2
27	19	1.2	23	1.4	26	1.8	41	2.5	15	.84	17	1.6
28	15	1.0	18	1.0	23	1.6	33	2.0	11	.68	18	1.5
29	9	.62	16	.88	20	1.4	31	1.8	9	.54	11	.99
30	15	1.1	21	1.2	18	1.2	23	1.3	13	.87	8	.62
31	---	---	19	1.0	---	---	32	1.8	13	.90	---	---
TOTAL	---	34.22	---	43.15	---	135.89	---	228.11	---	45.50	---	31.85
YEAR	3116.67											

MISSISSIPPI RIVER BASIN

05389400 BLOODY RUN CREEK NEAR MARQUETTE, IA--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12.0	4.0	4.0	4.0	1.0	4.0	8.0	8.0	14.0	16.0	16.0	12.0
2	9.0	6.0	4.0	3.0	1.0	4.0	9.0	8.0	13.0	15.0	16.0	14.0
3	9.0	6.0	4.0	2.0	1.0	4.0	8.0	8.0	14.0	16.0	16.0	13.0
4	11.0	5.0	4.0	2.0	1.0	4.0	9.0	8.0	12.0	16.0	16.0	14.0
5	10.0	4.0	4.0	2.0	1.0	4.5	7.0	8.0	15.0	16.0	14.0	14.0
6	---	4.0	4.0	2.0	1.0	4.5	7.0	8.0	14.0	16.0	14.0	12.0
7	10.0	4.0	4.0	.0	1.0	4.0	6.0	10.0	14.0	17.0	15.0	12.0
8	14.0	5.0	4.0	1.0	1.0	5.0	7.0	8.0	14.0	16.0	14.0	12.0
9	10.0	5.0	4.0	1.0	1.0	5.0	8.0	8.0	---	16.0	14.0	12.0
10	11.0	4.0	5.0	2.0	1.0	4.0	8.0	8.0	14.0	17.0	14.0	12.0
11	6.0	6.0	3.0	1.0	1.0	4.0	8.0	11.0	15.0	16.0	14.0	12.0
12	8.0	5.0	4.0	2.0	1.0	4.0	8.0	11.0	15.0	16.0	14.0	12.0
13	8.0	5.0	4.0	3.0	1.0	4.0	8.0	12.0	18.0	17.0	14.0	12.0
14	6.0	4.0	4.0	1.0	1.0	4.0	8.0	14.0	18.0	16.0	14.0	13.0
15	7.0	4.0	4.0	1.0	1.0	6.0	11.0	12.0	18.0	15.0	14.0	18.0
16	10.0	4.0	5.0	---	1.0	5.0	8.0	11.0	17.0	16.0	15.0	16.0
17	11.0	6.0	6.0	1.0	2.0	5.0	9.0	13.0	16.0	16.0	14.0	15.0
18	9.0	4.0	6.0	.0	2.0	6.0	10.0	12.0	16.0	17.0	14.0	14.0
19	10.0	5.0	5.0	.0	4.0	5.0	9.0	11.0	19.0	19.0	14.0	14.0
20	10.0	5.0	4.0	.0	4.0	8.0	9.0	12.0	18.0	16.0	15.0	13.0
21	9.0	5.0	4.0	.0	4.0	8.0	9.0	13.0	18.0	16.0	14.0	14.0
22	7.0	4.0	5.0	1.0	4.0	8.0	10.0	12.0	19.0	16.0	19.0	14.0
23	8.0	4.0	2.0	1.0	3.0	8.0	9.0	15.0	19.0	16.0	14.0	15.0
24	9.0	5.0	3.0	1.0	2.0	6.0	14.0	16.0	16.0	16.0	14.0	13.0
25	8.0	4.0	2.0	1.0	2.0	6.0	15.0	12.0	16.0	16.0	14.0	12.0
26	8.0	4.0	2.0	1.0	2.0	6.0	15.0	12.0	16.0	16.0	14.0	14.0
27	8.0	4.0	2.0	1.0	3.0	8.0	12.0	12.0	15.0	16.0	13.0	10.0
28	7.0	4.0	2.0	1.0	4.0	6.0	10.0	12.0	16.0	14.0	14.0	12.0
29	5.0	4.0	3.0	1.0	---	8.0	7.0	12.0	16.0	14.0	13.0	10.0
30	6.0	5.0	2.0	1.0	---	9.0	7.0	12.0	16.0	16.0	14.0	10.0
31	6.0	---	3.0	1.0	---	7.0	---	12.0	---	17.0	14.0	---

05389500 MISSISSIPPI RIVER AT MCGREGOR, IA

LOCATION.--Lat 43°01'29", long 91°10'21", in SE1/4 SE1/4 sec.22, T.95 N., R.3 W., Clayton County, Hydrologic Unit 07060001, on right bank in city park at east end of Main Street in McGregor, 2.6 mi upstream from Wisconsin River, 4.3 mi downstream from Yellow River, and at mile 633.4 upstream from Ohio River.

DRAINAGE AREA.--67,500 mi², approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--August 1936 to current year.

REVISED RECORDS.--WDR IA-75-1: 1974.

GAGE.--Water-stage recorder. Datum of gage is 604.84 ft above sea level. Prior to June 1, 1937, and since June 2, 1939, auxiliary water-stage recorder; June 1, 1937 to June 1, 1939, auxiliary nonrecording gage 14.1 mi upstream in tailwater of dam 9, at datum 5.30 ft lower.

REMARKS.--Estimated daily discharges: Dec. 11 to Mar. 8. Records good except those for estimated daily discharges, which are poor. Minor flow regulation caused by navigation dams. U.S. Army Corps of Engineers data collection platform at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1828, that of Apr. 24, 1965.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	44000	35200	31500	e26000	e27000	e54000	65500	100000	43000	43200	41600	29400
2	44100	35100	28500	e29000	e26500	e52000	64900	105000	42400	43500	37400	30600
3	43600	33000	26500	e30500	e26500	e49000	63500	108000	42500	43800	34200	31600
4	42900	30700	27300	e31500	e26000	e48000	62400	111000	43300	43800	33400	31900
5	42200	31400	29600	e32500	e26000	e47000	62000	113000	43200	44100	32200	32200
6	41300	33100	34100	e33000	e26000	e49000	61000	114000	41900	44500	31400	32200
7	40300	33000	37600	e33000	e26000	e58000	60600	114000	39900	45900	31000	30900
8	39800	32800	38800	e32500	e26000	e64000	59600	113000	39100	48400	30500	29100
9	39700	32800	38900	e31500	e26000	70000	59900	111000	39300	50900	30400	26700
10	39300	32800	38800	e30500	e26000	69000	59400	108000	40000	54100	31900	25500
11	38700	32800	e35000	e30000	e26000	68000	58600	106000	40700	55900	37800	25600
12	38400	33600	e33000	e29000	e26000	64000	58300	102000	41400	57600	40000	25600
13	38500	34700	e31000	e28500	e26000	61200	59400	99000	42400	58700	41900	25800
14	37700	36000	e30500	e28000	e26000	57300	59900	96700	41800	60400	43400	26900
15	37400	37300	e30500	e28000	e26000	55000	61800	94400	41200	60200	43500	29900
16	38000	36900	e31000	e28000	e26000	53900	63900	90800	40700	57300	42400	35400
17	38200	36900	e31500	e28000	e26000	53300	65900	86500	40100	51700	40100	43000
18	38400	38000	e34000	e27500	e26000	53100	68800	82600	40000	46400	38200	48900
19	38400	39100	e36000	e27000	e28000	55400	70400	79000	40100	43700	37800	55100
20	37600	40200	e37000	e25000	e35000	58200	71600	75400	40600	42900	37900	60700
21	36800	42900	e37000	e24000	e40000	60200	75400	72300	40500	43100	38100	65200
22	36300	45500	e37000	e23000	e48000	60000	78400	67600	40100	42900	38300	73600
23	36300	45700	e34000	e23500	e56000	59700	80400	64800	39300	42400	36900	80200
24	36500	44200	e31500	e23500	e59000	60600	81700	63800	40800	42200	35500	82400
25	36900	41200	e26500	e24000	e60000	60000	82900	61300	41800	42500	32600	83200
26	36400	39500	e23000	e25000	e59000	60700	85100	58600	42300	43200	30700	82800
27	35800	36400	e21500	e26000	e58000	63100	89000	54100	42400	43900	29500	78300
28	35200	36200	e21000	e27500	e58000	65700	89900	51600	42400	44700	27800	73400
29	34800	35400	e21000	e28000	---	67400	92000	48700	42900	45000	27600	65400
30	34700	34100	e21500	e28000	---	67800	94700	46300	42900	45100	27000	60100
31	34900	---	e23000	e27500	---	66900	---	44900	---	44300	27700	---
TOTAL	1193100	1096500	958100	869000	971000	1831500	2106900	2643400	1239000	1476300	1088700	1421600
MEAN	38490	36550	30910	28030	34680	59080	70230	85270	41300	47620	35120	47390
MAX	44100	45700	38900	33000	60000	70000	94700	114000	43300	60400	43500	83200
MIN	34700	30700	21000	23000	26000	47000	58300	44900	39100	42200	27000	25500
AC-FT	2367000	2175000	1900000	1724000	1926000	3633000	4179000	5243000	2458000	2928000	2159000	2820000
CFSM	.57	.54	.46	.42	.51	.88	1.04	1.26	.61	.71	.52	.70
IN.	.66	.60	.53	.48	.54	1.01	1.16	1.46	.68	.81	.60	.78

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1936 - 1994, BY WATER YEAR (WY)

	MEAN	28190	28440	21740	18790	19340	38790	73440	60320	48750	40140	27120	28810
MAX	114600	64840	59200	35700	48540	103800	164800	119200	112600	142200	84430	72890	
(WY)	1987	1983	1992	1983	1984	1983	1965	1975	1993	1993	1993	1986	
MIN	9874	10870	9506	7665	9934	13190	27780	18240	13420	11220	10330	10650	
(WY)	1937	1938	1937	1940	1940	1940	1990	1977	1988	1988	1964	1940	

SUMMARY STATISTICS	FOR 1993 CALENDAR YEAR	FOR 1994 WATER YEAR	WATER YEARS 1936 - 1994
ANNUAL TOTAL	23834100	16895100	
ANNUAL MEAN	65300	46290	36210
HIGHEST ANNUAL MEAN			64720
LOWEST ANNUAL MEAN			17400
HIGHEST DAILY MEAN	187000	Jul 1	114000
LOWEST DAILY MEAN	17000	Jan 21	21000
ANNUAL SEVEN-DAY MINIMUM	18200	Feb 24	22400
INSTANTANEOUS PEAK FLOW			115000
INSTANTANEOUS PEAK STAGE			15.59
ANNUAL RUNOFF (AC-FT)	47270000	33510000	25.38
ANNUAL RUNOFF (CFSM)	.97	.69	26230000
ANNUAL RUNOFF (INCHES)	13.14	9.31	.54
10 PERCENT EXCEEDS	125000	73500	7.29
50 PERCENT EXCEEDS	48300	40200	74800
90 PERCENT EXCEEDS	20000	26500	26300
			13000

e Estimated.

a Also Dec. 29.

05389500 MISSISSIPPI RIVER AT MCGREGOR, IA--Continued

WATER-QUALITY RECORDS

LOCATION.--Samples collected from right bank dock 0.3 mi downstream from discharge station. Prior to April 1981, at bridge on U.S. Highway 18, 1.2 mi upstream from gage.

PERIOD OF RECORD.--July 1975 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: July 1975 to current year.

WATER TEMPERATURES: July 1975 to current year.

SUSPENDED-SEDIMENT DISCHARGE: July 1975 to current year.

REMARKS.--Records of specific conductance are obtained from suspended-sediment samples at time of analysis.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SEDIMENT CONCENTRATIONS: Maximum daily mean, 2,350 mg/L Mar. 19, 1986; minimum daily mean, 1 mg/L on many days in 1977-92.

SEDIMENT LOADS: Maximum daily, 363,000 tons Mar. 19, 1986; minimum daily, 31 tons Dec. 25, 1976.

EXTREMES FOR CURRENT YEAR.--

SEDIMENT CONCENTRATIONS: Maximum daily mean, 118 mg/L Feb. 20; minimum daily mean, 3 mg/L Jan. 17-19.

SEDIMENT LOADS: Maximum daily, 11,200 tons Feb. 20; minimum daily, 219 tons Jan 19.

SPECIFIC CONDUCTANCE MICROSIEMENS/CM AT 25 DEG C, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	500	483	---	527	454	---	---	488	---	450	---
2	---	---	---	---	---	---	---	402	---	---	---	---
3	---	---	---	534	---	---	---	---	---	512	---	472
4	494	---	490	---	530	451	451	---	488	---	---	---
5	---	513	---	---	---	---	---	---	---	---	---	452
6	---	---	487	536	554	---	---	407	490	---	448	---
7	492	---	---	---	---	442	462	---	---	---	---	---
8	---	493	---	---	---	---	---	---	---	495	456	---
9	---	---	482	---	---	---	---	408	---	---	430	457
10	496	---	---	530	---	---	---	---	484	---	---	---
11	---	509	---	---	528	412	451	---	---	492	---	---
12	---	---	467	---	---	---	---	396	---	---	---	461
13	---	---	---	---	---	---	---	---	490	---	---	---
14	---	---	---	522	520	442	454	---	---	---	444	---
15	496	502	---	---	---	---	---	---	---	428	---	469
16	---	---	---	---	---	---	---	423	---	---	434	---
17	---	---	482	---	---	---	---	---	---	---	---	---
18	---	499	---	542	530	426	432	---	490	440	---	462
19	510	---	---	---	---	---	---	476	---	---	438	---
20	486	---	510	---	398	---	---	---	484	429	---	454
21	---	---	---	---	---	459	390	---	---	---	---	---
22	510	486	---	530	448	---	418	---	---	---	455	432
23	---	---	---	---	---	---	---	478	476	454	---	---
24	---	---	516	---	---	442	---	---	502	---	---	---
25	494	---	---	544	---	---	384	---	---	450	462	326
26	---	469	---	---	446	---	---	---	506	---	---	---
27	---	---	---	---	---	438	---	---	---	---	---	363
28	---	---	550	---	---	---	---	---	---	---	476	---
29	499	---	---	---	---	---	414	490	---	447	---	---
30	---	---	518	536	---	---	---	---	518	---	---	408
31	---	---	---	---	---	434	---	---	---	---	474	---

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	18	3140	18	4990	42	4870	41	4760	42	4660	19	1520
2	17	2930	14	3960	46	5270	37	4300	33	3360	20	1660
3	16	2710	12	3600	51	5880	34	4010	30	2730	20	1750
4	16	2620	11	3310	55	6390	32	3810	27	2480	19	1610
5	18	3000	10	3030	51	5920	31	3670	26	2220	17	1500
6	21	3450	10	2990	48	5390	29	3540	24	2040	18	1570
7	24	3880	13	4040	49	5290	28	3480	23	1960	19	1590
8	24	3820	18	5530	51	5400	27	3600	23	1900	20	1570
9	23	3790	24	7240	53	5650	29	4050	23	1890	21	1510
10	23	3720	28	8080	55	5880	32	4650	24	2110	21	1440
11	22	3490	31	8960	53	5830	33	5040	32	3310	21	1450
12	18	2840	34	9440	51	5740	32	4900	27	2870	21	1470
13	15	2330	32	8610	50	5760	29	4670	22	2470	22	1550
14	13	2060	30	7800	51	5760	28	4500	20	2370	33	2450
15	16	2600	28	7070	52	5790	26	4290	21	2410	77	6210
16	20	3380	26	6340	53	5830	27	4240	21	2400	72	6830
17	25	4390	24	5700	54	5860	29	4010	21	2270	62	7150
18	30	5600	23	5150	55	5890	30	3800	22	2220	50	6620
19	33	6320	22	4740	53	5710	35	4090	24	2430	34	4970
20	36	7040	23	4640	50	5530	83	9610	21	2160	24	3930
21	40	8090	24	4590	47	5180	50	5830	20	2100	25	4340
22	41	8780	24	4430	44	4810	34	3980	20	2060	26	5170
23	40	8690	25	4450	42	4440	31	3530	20	1950	26	5710
24	38	8470	28	4850	44	4860	29	3270	19	1850	27	5940
25	37	8290	31	5170	46	5220	27	3110	19	1700	27	6080
26	37	8440	35	5490	48	5490	27	3150	20	1690	28	6160
27	36	8770	39	5630	49	5580	27	3200	22	1730	28	5840
28	36	8790	43	5970	49	5650	27	3260	23	1690	26	5150
29	34	8430	46	6080	50	5830	27	3300	21	1570	24	4300
30	25	6460	45	5580	50	5820	28	3410	19	1410	23	3900
31	---	---	43	5170	---	---	31	3710	18	1370	---	---
TOTAL	---	156320	---	172630	---	166520	---	128770	---	69380	---	110940

YEAR 1178819

MISSISSIPPI RIVER MAIN STEM

05389500 MISSISSIPPI RIVER AT MCGREGOR, IA--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	10	6.5	---	.0	.0	---	---	17	---	22	---
2	---	---	---	---	---	---	---	6	---	---	---	---
3	---	---	---	.0	---	---	---	---	---	19	---	17
4	15	---	7	---	.0	2	8	---	18	---	---	---
5	---	11.5	---	---	---	---	---	---	---	---	---	16.5
6	---	---	8	.0	.0	---	---	8	18	---	21	---
7	15	---	---	---	---	1	8	---	---	---	---	---
8	---	14	---	---	---	---	---	---	---	19	21	---
9	---	---	6	---	---	---	---	10	---	---	23.5	18
10	16	---	---	.0	---	---	---	---	18	---	---	---
11	---	8	---	---	.0	3	9	---	---	19	---	---
12	---	---	7	---	---	---	---	12	---	---	---	18
13	---	---	---	---	---	---	---	---	18	---	---	---
14	---	---	---	.0	.0	2	9	---	---	---	19	---
15	16	8	---	---	---	---	---	---	---	19	---	18
16	---	---	---	---	---	---	---	13	---	---	16	---
17	---	---	4	---	---	---	---	---	---	---	---	---
18	---	8	---	---	.0	3	11	---	20	20	---	17.5
19	14.5	---	---	---	---	---	---	14	---	---	19	---
20	13	---	4	---	.0	---	---	---	19	19	---	19
21	---	---	---	---	---	1	11	---	---	---	---	---
22	11	7	---	---	.0	---	11	---	---	---	19	19
23	---	---	---	---	---	---	---	14	21.5	18	---	---
24	---	---	4	---	---	2	---	---	19	---	---	---
25	11	---	---	.0	---	---	17	---	---	19	16.5	16
26	---	6	---	---	.0	---	---	---	19.0	---	---	---
27	---	---	---	---	---	2	---	---	---	---	---	15.0
28	---	---	.0	---	---	---	---	---	---	---	18	---
29	11	---	---	---	---	---	8.5	17	---	18	---	---
30	---	---	.0	.0	---	---	---	---	20	---	---	14
31	---	---	---	---	---	10	---	---	---	---	18	---

05411400 SNY MAGILL CREEK NEAR CLAYTON, IA

LOCATION.--Lat 42°56'55", long 91°11'10", in SW1/4 NE1/4 NW1/4 sec. 22, T.94 N., R.3 W. Clayton County, Hydrologic Unit 07060003, on right bank 130 ft downstream from bridge on county highway, 4.9 mi northwest of Clayton, and 0.9 mi upstream of county highway X56.

DRAINAGE AREA.--27.6 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1, 1991 to current year.

GAGE.--Water-stage encoder.

REMARKS.--Estimated daily discharge: Dec. 23-30, Jan. 6-10, 14-24, Jan. 29 to Feb. 12, and Feb. 24 to Mar. 1. Records good except those for estimated daily discharges and discharges greater than 600 ft³/s, which are poor. U.S. Geological Survey data collection platform at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	29	30	22	18	e19	e20	21	23	17	22	19	15
2	28	30	22	18	e17	20	21	21	17	21	19	15
3	28	31	22	17	e15	20	21	21	17	21	20	17
4	27	31	22	17	e14	32	22	20	16	34	21	16
5	27	30	22	16	e13	90	23	21	17	24	19	16
6	27	29	23	e16	e12	61	21	20	17	19	18	16
7	26	29	22	e15	e12	41	21	20	24	19	18	15
8	26	28	22	e15	e12	32	20	20	20	27	17	15
9	33	27	20	e16	e13	26	21	19	18	26	18	16
10	28	27	18	e16	e14	24	20	18	18	22	27	16
11	27	29	17	17	e14	23	20	18	20	20	21	17
12	26	30	17	17	e14	24	24	18	18	18	18	17
13	26	34	18	16	14	26	25	18	32	19	16	16
14	26	30	18	e15	15	28	23	19	21	25	16	16
15	27	31	18	e14	15	30	30	18	19	21	15	32
16	28	28	18	e13	15	27	26	18	18	19	15	32
17	27	24	18	e14	16	25	24	17	18	18	15	20
18	26	24	19	e13	18	24	24	16	18	17	15	17
19	25	24	18	e13	268	24	23	16	63	18	22	17
20	25	24	18	e12	102	27	22	16	51	88	22	18
21	26	24	18	e13	41	30	21	16	28	33	16	17
22	25	24	18	e14	31	28	20	16	26	27	15	19
23	24	23	e16	e15	21	27	20	20	162	22	15	21
24	24	23	e15	e15	e19	25	20	22	94	21	13	21
25	25	27	e13	16	e18	24	21	21	53	20	15	42
26	25	26	e12	15	e17	23	22	22	38	21	15	51
27	27	25	e13	16	e18	23	21	19	32	18	14	38
28	31	23	e14	15	e19	23	21	18	29	19	15	28
29	31	23	e15	e15	---	22	21	18	27	21	15	23
30	30	22	e16	e15	---	21	22	18	23	21	16	19
31	30	---	18	e16	---	21	---	17	---	20	16	---
TOTAL	840	810	562	473	816	891	661	584	971	741	536	638
MEAN	27.1	27.0	18.1	15.3	29.1	28.7	22.0	18.8	32.4	23.9	17.3	21.3
MAX	33	34	23	18	268	90	30	23	162	88	27	51
MIN	24	22	12	12	12	20	20	16	16	17	13	15
AC-FT	1670	1610	1110	938	1620	1770	1310	1160	1930	1470	1060	1270
CFSM	.98	.98	.66	.55	1.06	1.04	.80	.68	1.17	.87	.63	.77
IN.	1.13	1.09	.76	.64	1.10	1.20	.89	.79	1.31	1.00	.72	.86

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1991 - 1994, BY WATER YEAR (WY)

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
MEAN	16.8	22.0	17.7	14.0	19.2	33.9	36.7	35.3	32.5	30.8	25.2	23.6
MAX	27.1	27.0	18.1	15.3	29.1	54.7	61.2	68.3	51.3	52.4	46.5	32.4
(WY)	1994	1994	1994	1994	1994	1993	1993	1993	1993	1993	1993	1993
MIN	11.5	18.2	17.2	13.1	10.4	18.4	22.0	18.8	13.8	16.3	12.0	17.2
(WY)	1993	1993	1993	1993	1993	1992	1994	1992	1992	1992	1992	1992

SUMMARY STATISTICS

FOR 1993 CALENDAR YEAR

FOR 1994 WATER YEAR

WATER YEARS 1991 - 1994

ANNUAL TOTAL	14132.8	8523	
ANNUAL MEAN	38.7	23.4	25.7
HIGHEST ANNUAL MEAN			36.6
LOWEST ANNUAL MEAN			17.1
HIGHEST DAILY MEAN	313	Mar 31	313
LOWEST DAILY MEAN	8.8	Feb 24	8.5
ANNUAL SEVEN-DAY MINIMUM	9.3	Feb 22	9.3
INSTANTANEOUS PEAK FLOW			a1,300
INSTANTANEOUS PEAK STAGE			8.60
INSTANTANEOUS LOW FLOW			8.5
ANNUAL RUNOFF (AC-FT)	28030	16910	18600
ANNUAL RUNOFF (CFSM)	1.40	.85	.93
ANNUAL RUNOFF (INCHES)	19.05	11.49	12.64
10 PERCENT EXCEEDS	68	30	47
50 PERCENT EXCEEDS	31	20	18
90 PERCENT EXCEEDS	12	15	12

e Estimated.

a From rating curve extended above 600 ft³/s.

MISSISSIPPI RIVER BASIN

05411400 SNY MAGILL CREEK NEAR CLAYTON, IA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--October 1991 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1991 to current year.

WATER TEMPERATURES: April 1991 to current year.

SUSPENDED-SEDIMENT DISCHARGE: October 1991 to current year.

REMARKS.--Records of specific conductance are obtained from suspended-sediment samples at time of analysis. Sample analyses marked with an asterisk are affected by precipitate which may influence the suspended-sediment percentage finer than .062 mm.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 650 microsiemens Apr. 18, 1992; minimum daily, 266 microsiemens Mar. 16, 1993.

WATER TEMPERATURES: Maximum daily, 25.5°C June 22, 1993; minimum daily, 1.0°C Jan. 11, Feb. 1, 1994.

SEDIMENT CONCENTRATIONS: Maximum daily mean, 2,390 mg/L Apr. 20, 1992; minimum daily mean, 0 mg/L Mar. 21, 22, 1993.

SEDIMENT LOADS: Maximum daily, 1,850 tons Aug. 23, 1993; minimum daily, 0.01 tons Mar. 22, 1993.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 634 microsiemens June 22; minimum daily, 281 microsiemens Feb. 19.

WATER TEMPERATURES: Maximum daily, 19.0°C June 6; minimum daily, 1.0°C Jan. 11, Feb. 1.

SEDIMENT CONCENTRATIONS: Maximum daily mean, 1,470 mg/L Feb. 19; minimum daily mean, 4 mg/L May 5.

SEDIMENT LOADS: Maximum daily, 1,290 tons Feb. 19; minimum daily, 0.24 tons May 5.

SPECIFIC CONDUCTANCE MICROSIEMENS/CM AT 25 DEG C, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	438	429	---	---	497	467	430	504	383	---	393	---
2	439	---	---	465	---	585	471	---	---	---	437	---
3	---	419	---	454	---	461	---	---	398	---	380	---
4	420	---	---	---	---	470	486	---	---	---	---	410
5	---	---	---	---	---	295	423	439	---	---	401	---
6	418	---	---	432	---	424	440	---	482	---	389	---
7	---	---	---	---	---	506	527	---	---	---	402	---
8	425	---	---	---	---	507	504	---	---	---	393	---
9	462	---	408	---	---	498	435	420	---	---	476	582
10	412	---	---	---	---	425	403	386	---	---	487	---
11	415	---	---	427	---	469	439	385	---	---	---	---
12	430	---	---	534	---	452	418	---	---	---	---	---
13	391	---	---	---	---	482	589	---	493	---	414	---
14	---	---	---	---	508	469	---	---	---	---	397	---
15	---	---	---	---	523	439	535	409	439	---	470	---
16	---	416	---	---	---	---	405	396	---	---	390	---
17	---	---	---	---	567	---	442	---	---	---	430	---
18	---	---	---	---	468	508	---	---	---	---	---	---
19	412	---	---	---	281	---	---	---	---	---	491	442
20	411	425	---	427	423	---	482	399	490	327	451	---
21	412	---	---	---	---	425	484	---	443	---	---	478
22	407	---	---	---	---	448	440	414	634	---	406	518
23	---	---	---	---	---	420	487	520	479	---	---	---
24	430	---	---	---	---	546	---	382	454	---	---	426
25	---	---	---	464	---	444	476	588	---	415	---	475
26	---	---	---	---	---	603	---	466	547	---	---	568
27	---	---	---	---	413	---	424	---	394	---	---	619
28	---	---	---	---	619	523	---	393	---	404	---	---
29	532	---	---	---	---	496	449	---	406	---	---	---
30	---	---	400	---	---	450	---	---	---	---	---	---
31	---	---	407	---	---	521	---	426	---	---	---	---

61

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DAY	MEAN CONCEN- TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN- TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN- TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN- TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN- TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN- TRATION (MG/L)	LOAD (TONS/ DAY)
OCTOBER			NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	10	.77	13	1.1	11	.65	26	1.2	71	3.6	29	1.6
2	8	.58	12	.97	12	.73	22	1.0	63	2.9	47	2.5
3	8	.60	10	.81	13	.75	13	.61	54	2.2	33	1.8
4	8	.62	10	.84	13	.79	12	.55	49	1.9	84	12
5	9	.66	11	.92	13	.77	12	.52	18	.63	1020	497
6	17	1.3	11	.90	16	.99	19	.82	17	.55	451	89
7	33	2.3	11	.83	20	1.2	22	.89	19	.62	37	4.1
8	45	3.2	10	.75	27	1.6	25	1.0	19	.62	24	2.1
9	43	3.9	10	.71	32	1.7	26	1.1	21	.74	18	1.3
10	53	4.0	11	.83	29	1.4	26	1.1	20	.76	14	.92
11	66	4.8	12	.95	28	1.2	31	1.4	22	.83	15	.92
12	34	2.4	13	1.1	27	1.3	29	1.3	20	.76	33	2.1
13	36	2.5	32	3.0	24	1.1	27	1.2	21	.79	28	2.0
14	25	1.8	29	2.4	21	.98	29	1.2	22	.87	11	.82
15	19	1.4	32	2.7	20	.99	20	.76	32	1.3	12	.99
16	18	1.3	33	2.5	18	.88	16	.56	27	1.1	12	.86
17	17	1.3	30	1.9	23	1.2	17	.64	23	1.0	14	.95
18	20	1.4	23	1.5	22	1.1	17	.60	45	2.4	17	1.1
19	14	.93	12	.79	23	1.1	16	.56	1470	1290	16	1.1
20	17	1.2	5	.35	24	1.2	15	.49	175	61	14	1.0
21	11	.74	7	.44	24	1.2	17	.60	27	3.1	14	1.1
22	35	2.3	6	.40	23	1.1	16	.60	23	1.9	19	1.4
23	22	1.4	8	.52	22	.95	17	.69	22	1.2	27	2.0
24	7	.48	11	.67	20	.81	20	.81	22	1.1	20	1.4
25	7	.45	14	1.1	18	.63	39	1.6	18	.87	16	1.0
26	8	.55	9	.64	20	.65	48	2.0	23	1.1	25	1.6
27	9	.67	7	.48	19	.67	46	2.0	27	1.3	24	1.5
28	9	.75	7	.45	20	.76	49	2.0	17	.87	18	1.1
29	10	.84	9	.55	11	.45	54	2.2	---	---	20	1.2
30	11	.87	7	.41	9	.39	59	2.4	---	---	16	.90
31	12	1.0	---	---	28	1.3	73	3.2	---	---	43	2.4
TOTAL	---	47.01	---	31.51	---	30.54	---	35.60	---	1386.01	---	639.76
APRIL			MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	20	1.1	15	.96	32	1.5	40	2.4	24	1.2	22	.92
2	28	1.6	15	.86	19	.86	31	1.8	45	2.3	20	.84
3	17	.98	11	.60	26	1.1	33	1.9	39	2.1	23	1.0
4	13	.80	12	.66	27	1.2	63	7.2	44	2.5	26	1.1
5	11	.68	4	.24	29	1.3	29	1.9	34	1.7	25	1.1
6	21	1.2	7	.37	38	1.7	25	1.3	28	1.3	23	1.0
7	16	.90	9	.49	43	2.8	23	1.2	51	2.4	25	1.0
8	21	1.1	10	.51	32	1.7	29	2.1	52	2.4	23	.93
9	22	1.2	9	.49	29	1.4	26	1.8	53	2.5	21	.91
10	9	.51	17	.83	27	1.3	24	1.4	45	3.2	23	1.0
11	16	.87	16	.75	30	1.6	23	1.2	41	2.4	22	.98
12	23	1.5	19	.91	13	.63	22	1.1	39	1.8	24	1.1
13	13	.88	15	.71	75	8.4	22	1.1	31	1.4	25	1.1
14	11	.68	15	.78	15	.83	28	1.9	23	.95	24	1.1
15	27	2.1	15	.74	21	1.1	27	1.5	13	.51	46	6.7
16	31	2.2	29	1.4	19	.91	25	1.3	38	1.5	45	4.0
17	12	.76	28	1.3	21	1.0	34	1.7	14	.58	35	1.9
18	15	.98	27	1.2	23	1.1	51	2.4	8	.32	33	1.5
19	17	1.0	25	1.1	746	498	72	4.5	78	6.7	35	1.6
20	24	1.5	22	.97	798	177	1000	478	57	3.7	77	3.8
21	8	.43	23	.97	43	3.2	55	5.0	29	1.3	80	3.8
22	6	.31	19	.80	34	2.4	46	3.3	14	.60	98	4.9
23	10	.53	99	7.4	1040	1030	42	2.5	12	.45	112	6.3
24	17	.93	50	3.1	193	60	38	2.1	13	.48	120	6.7
25	22	1.2	38	2.8	63	9.3	38	2.1	14	.55	112	13
26	24	1.4	53	3.3	29	3.1	42	2.4	15	.59	66	9.2
27	37	2.1	32	1.6	50	4.2	41	2.0	13	.50	110	11
28	18	1.0	30	1.5	49	3.9	43	2.2	16	.63	102	7.7
29	12	.69	30	1.5	58	4.2	32	1.9	17	.69	108	6.5
30	10	.61	32	1.6	42	2.6	31	1.7	18	.77	112	5.6
31	---	---	46	2.2	---	---	39	2.1	22	.95	---	---
TOTAL	---	31.74	---	42.64	---	1828.33	---	545.0	---	48.97	---	108.28
YEAR	4775.39											

MISSISSIPPI RIVER BASIN

05411400 SNY MAGILL CREEK NEAR CLAYTON, IA--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	12.0	---	---	1.0	6.0	15.0	5.0	10.0	---	10.0	---
2	13.0	---	---	4.0	---	5.0	5.0	---	---	---	15.0	---
3	---	13.0	---	4.0	---	4.0	---	---	15.0	---	10.0	---
4	---	---	---	---	---	3.0	5.0	---	---	---	---	---
5	---	---	---	---	---	5.0	4.0	8.0	---	---	15.0	---
6	---	---	---	---	---	5.0	3.0	---	19.0	---	10.0	---
7	---	---	---	---	---	5.0	7.0	---	---	---	13.0	---
8	---	---	---	---	---	5.0	7.0	---	---	---	15.0	---
9	---	---	4.0	---	---	6.0	5.0	8.0	---	---	10.0	17.5
10	---	---	---	---	---	3.0	7.0	8.0	---	---	10.0	---
11	---	---	---	1.0	---	6.0	5.0	15.0	---	---	---	---
12	---	---	---	---	---	8.0	5.0	---	---	---	---	---
13	---	---	---	---	---	5.0	5.0	---	15.0	---	15.0	---
14	---	---	---	---	3.0	8.0	---	---	---	---	16.0	---
15	---	---	---	---	3.0	7.0	5.0	15.0	15.0	---	14.0	---
16	---	6.0	---	---	5.0	---	5.0	15.0	---	---	15.0	---
17	---	---	---	---	---	---	6.0	---	---	---	15.0	---
18	---	---	---	---	5.0	5.0	---	---	---	---	---	---
19	12.5	---	---	---	4.0	---	---	---	---	---	10.0	17.0
20	13.0	12.0	---	---	3.0	---	5.0	15.0	15.0	15.0	10.0	---
21	13.0	---	---	---	---	7.0	7.0	---	15.0	---	---	10.0
22	12.0	---	---	---	---	15.0	8.0	---	15.0	---	14.0	10.0
23	---	---	---	---	---	15.0	8.0	15.0	10.0	---	---	---
24	12.0	---	---	---	---	4.0	---	15.0	10.0	---	---	15.0
25	---	---	---	---	---	6.0	5.0	15.0	---	18.5	---	15.0
26	---	---	---	---	---	5.0	---	10.0	15.0	---	---	15.0
27	---	---	---	---	5.0	---	5.0	---	15.0	---	---	13.0
28	---	---	---	---	5.0	8.0	---	15.0	---	17.0	---	---
29	13.0	---	---	---	---	5.0	5.0	---	12.0	---	---	---
30	---	---	4.0	---	---	9.0	---	---	---	---	---	---
31	---	---	4.0	---	---	10.0	---	15.0	---	---	---	---

05411950 BIG SPRING NEAR ELKADER, IA

LOCATION.--Lat 42°54'33", long 91°28'01", in SE1/4 NE1/4 SE1/4 sec.31, T.94 N., R.5 W., Clayton County, Hydrologic Unit 07060004, at base of bluff 300 ft from left bank of Turkey River at Big Springs Fish Hatchery, and 6 mi northwest of Elkader.

DRAINAGE AREA.--103 mi², determined by the Iowa Department of Natural Resources, Geological Survey Bureau.

PERIOD OF RECORD.--April and May 1938, March to October 1982, April to September 1983, March, May to August, 1988, (discharge measurements only), October 1989 to September 30, 1991 (gage heights and discharge measurements only), and October 1991 to current year. Prior to October 1991, daily mean discharges published in open-file reports of the U.S. Geological Survey.

REVISED RECORDS.--WDR IA-75-1: 1974.

GAGE.--Water-stage recorder. Datum of gage is 1,034.92 ft above sea level.

REMARKS.--Estimated daily discharges: Nov. 15, 18, Jan. 14, 28, 29, Feb. 1, 2, 19-23, Apr. 1-5, 24, and July 19 to Sept. 12. Records fair. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data. Total flow of spring is not accounted for due to diversion to trout ponds from back spring.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum discharge, 586 ft³/s June 15, 1991, gage height 24.74 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	55	44	32	24	e27	40	e44	35	26	48	e41	e21
2	53	43	31	24	e26	40	e42	34	25	46	e40	e21
3	53	43	33	23	26	40	e42	34	25	42	e38	e21
4	52	42	32	25	26	47	e41	35	25	44	e37	e23
5	52	42	31	28	26	131	e40	34	26	43	e34	e21
6	52	41	30	29	25	158	40	34	26	41	e32	e21
7	52	41	30	27	24	105	38	34	29	41	e32	e21
8	51	40	30	27	25	80	38	34	27	41	e30	e22
9	55	39	30	27	24	64	37	33	26	41	e30	e19
10	52	39	28	27	23	58	35	31	26	38	e35	e21
11	52	39	28	27	24	55	34	31	27	38	e47	e20
12	53	39	29	29	24	60	35	30	26	37	e44	e20
13	52	40	29	28	23	67	37	30	44	37	e39	20
14	51	38	29	e27	25	64	35	30	37	37	e36	20
15	51	e38	28	27	23	68	42	30	33	35	e35	19
16	52	37	29	27	23	61	43	27	33	34	e32	19
17	50	37	29	28	23	56	41	27	33	35	e30	19
18	50	e37	29	28	26	52	41	27	33	33	e28	19
19	49	35	29	28	e228	51	40	27	34	e35	e30	19
20	50	35	29	28	e261	53	40	27	33	e115	e29	19
21	50	35	27	28	e102	57	40	26	31	e89	e27	19
22	50	35	27	28	e74	56	39	25	31	e65	e25	19
23	49	35	27	28	e54	55	39	25	45	e54	e23	20
24	49	35	28	28	49	52	e40	31	69	e48	e22	19
25	49	35	28	28	46	49	40	27	60	e46	e21	22
26	48	35	28	28	43	48	42	32	56	e43	e21	27
27	48	34	25	28	41	46	38	28	53	e41	e22	23
28	47	34	23	e27	41	43	36	28	52	e37	e22	21
29	45	32	23	e27	---	41	36	27	50	e35	e22	21
30	43	31	23	28	---	41	34	27	48	e38	e22	21
31	43	---	24	28	---	42	---	28	---	e40	e21	---
TOTAL	1558	1130	878	844	1382	1880	1169	928	1089	1397	947	617
MEAN	50.3	37.7	28.3	27.2	49.4	60.6	39.0	29.9	36.3	45.1	30.5	20.6
MAX	55	44	33	29	261	158	44	35	69	115	47	27
MIN	43	31	23	23	23	40	34	25	25	33	21	19
AC-FT	3090	2240	1740	1670	2740	3730	2320	1840	2160	2770	1880	1220

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1989 - 1994, BY WATER YEAR (WY)

	1989	1990	1991	1992	1993	1994
MEAN	25.5	30.5	30.0	26.6	28.1	53.0
MAX	50.3	66.9	66.6	47.1	49.4	97.7
(WY)	1994	1992	1992	1992	1994	1993
MIN	11.1	11.1	9.74	11.8	12.6	20.9
(WY)	1990	1990	1990	1990	1989	1989

SUMMARY STATISTICS

FOR 1993 CALENDAR YEAR

FOR 1994 WATER YEAR

WATER YEARS 1989 - 1994

ANNUAL TOTAL	25619	13819	
ANNUAL MEAN	70.2	37.9	39.7
HIGHEST ANNUAL MEAN			70.5
LOWEST ANNUAL MEAN			13.2
HIGHEST DAILY MEAN	416	261	416
LOWEST DAILY MEAN	23	19	9.4
ANNUAL SEVEN-DAY MINIMUM	25	19	9.5
INSTANTANEOUS PEAK FLOW		261	416
ANNUAL RUNOFF (AC-FT)	50820	27410	28740
10 PERCENT EXCEEDS	125	52	80
50 PERCENT EXCEEDS	55	34	31
90 PERCENT EXCEEDS	31	23	11

e Estimated.

a Also Sept. 15-22.

TURKEY RIVER BASIN

05412060 SILVER CREEK NEAR LUANA, IA

LOCATION.--Lat 43°01'19", long 91°29'21", in NE1/4 sec.25, T.95 N., R.6 W., Clayton County, Hydrologic Unit 07060004, on right upstream bank at bridge on county road W70, 2.3 miles south of Highway 52 and 18, and 3.2 miles south of Luana.

DRAINAGE AREA.--4.39 mi².

PERIOD OF RECORD.--May 1986 to current year.

GAGE.--Water-stage recorder.

REMARKS.--Estimated daily discharges: Oct. 1-14, Dec. 4-8, Dec. 11 to Jan. 25, Jan. 28-30, and Feb. 4 to Mar. 2. Records good except those for estimated daily discharges, which are poor.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e2.9	3.0	2.0	e1.8	1.3	e1.0	1.2	1.9	1.0	2.5	2.0	.90
2	e2.8	3.0	2.0	e1.8	1.3	e1.1	1.2	1.6	1.1	1.9	2.0	.92
3	e2.7	3.0	2.0	e1.7	1.3	1.2	1.2	1.5	1.1	1.6	1.9	1.1
4	e2.7	3.0	e1.6	e1.6	e1.2	4.6	1.3	1.6	1.1	1.9	1.5	.91
5	e2.6	2.9	e1.5	e1.6	e1.1	52	1.3	1.6	1.1	1.8	1.5	.88
6	e2.6	2.4	e1.2	e1.5	e1.1	17	1.3	1.5	1.1	1.7	1.4	.81
7	e2.5	2.4	e1.3	e1.5	e1.1	8.8	1.3	1.4	1.3	2.0	1.2	.80
8	e2.9	2.4	e2.0	e1.4	e1.0	3.6	1.3	1.4	1.2	3.0	1.2	.82
9	e3.4	2.4	2.0	e1.5	e.97	1.8	1.4	1.4	1.4	2.3	1.3	.83
10	e2.9	2.4	1.8	e1.6	e.90	1.7	1.4	1.3	2.1	1.7	4.5	.80
11	e2.7	2.4	e1.7	e1.6	e1.0	2.0	1.4	1.3	2.1	1.7	3.0	.80
12	e2.6	2.5	e1.7	e1.5	e1.1	3.7	2.4	1.3	1.7	1.6	2.3	.80
13	e2.9	2.8	e1.6	e1.4	e1.2	3.0	2.0	1.4	7.7	1.3	2.0	.81
14	e3.1	2.2	e1.6	e1.2	e1.3	3.7	1.6	1.3	3.9	1.4	2.2	.84
15	2.8	2.0	e1.6	e1.1	e1.4	3.6	4.4	1.3	3.2	1.2	2.0	.92
16	3.4	2.0	e1.7	e1.2	e1.5	1.8	3.2	1.3	3.0	1.2	2.1	1.1
17	3.1	2.0	e1.8	e1.1	e2.0	1.5	2.5	1.3	3.0	1.1	2.0	.80
18	2.5	2.0	e1.9	e1.0	e4.0	1.5	2.4	1.2	3.4	1.1	1.7	.80
19	2.4	2.0	e1.8	e1.0	e28	1.5	1.9	1.2	3.2	1.6	1.8	.80
20	2.4	2.0	e1.8	e1.1	e4.0	2.3	1.6	1.3	2.2	12	2.4	.71
21	2.4	2.0	e1.7	e1.2	e2.0	2.8	1.6	1.3	2.4	5.2	2.0	.80
22	2.6	2.0	e1.7	e1.3	e1.3	2.2	1.6	1.3	2.4	4.1	1.7	.91
23	3.0	2.0	e1.7	e1.4	e1.0	2.1	1.9	2.0	7.5	2.9	1.6	.97
24	3.0	2.0	e1.6	e1.5	e.96	1.8	2.2	1.5	6.2	1.8	1.3	1.0
25	3.0	2.0	e1.5	e1.5	e.92	1.6	2.1	2.9	5.3	1.9	1.2	3.8
26	3.0	2.4	e1.4	1.4	e.88	1.6	3.5	2.4	4.5	2.1	1.2	3.2
27	3.2	2.4	e1.3	1.3	e.84	1.6	2.3	1.4	4.1	1.7	1.2	1.1
28	3.0	2.4	e1.4	e1.4	e.90	1.5	1.7	1.3	3.5	1.6	1.1	.91
29	2.4	1.9	e1.5	e1.5	---	1.2	1.6	1.3	3.2	1.7	1.1	.75
30	2.4	2.0	e1.6	e1.2	---	1.2	1.7	1.2	2.7	1.8	1.1	.75
31	2.8	---	e1.7	1.4	---	1.2	---	1.1	---	2.4	.96	---
TOTAL	86.7	69.9	51.7	43.3	65.57	136.2	56.5	45.8	87.7	71.8	54.46	31.34
MEAN	2.80	2.33	1.67	1.40	2.34	4.39	1.88	1.48	2.92	2.32	1.76	1.04
MAX	3.4	3.0	2.0	1.8	28	52	4.4	2.9	7.7	12	4.5	3.8
MIN	2.4	1.9	1.2	1.0	.84	1.0	1.2	1.1	1.0	1.1	.96	.71
AC-FT	172	139	103	86	130	270	112	91	174	142	108	62
CFSM	.64	.53	.38	.32	.53	1.00	.43	.34	.67	.53	.40	.24
IN.	.73	.59	.44	.37	.56	1.15	.48	.39	.74	.61	.46	.27

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1986 - 1994, BY WATER YEAR (WY)

	1986	1987	1988	1989	1990	1991	1992	1993	1994
MEAN	1.33	2.68	2.34	1.69	1.70	6.05	4.50	3.08	6.42
MAX	2.80	11.1	9.34	5.21	5.64	17.7	12.1	8.17	32.3
(WY)	1994	1992	1992	1992	1992	1993	1993	1993	1991
MIN	.12	.11	.023	.006	.18	2.44	.12	.20	.16
(WY)	1990	1990	1990	1990	1990	1987	1989	1989	1989

SUMMARY STATISTICS

FOR 1993 CALENDAR YEAR

FOR 1994 WATER YEAR

WATER YEARS 1986 - 1994

ANNUAL TOTAL	2697.60	800.97	
ANNUAL MEAN	7.39	2.19	3.24
HIGHEST ANNUAL MEAN			7.90
LOWEST ANNUAL MEAN			.76
HIGHEST DAILY MEAN	86	Mar 31	431
LOWEST DAILY MEAN	.90	Feb 24	.00
ANNUAL SEVEN-DAY MINIMUM	1.1	Feb 22	.00
INSTANTANEOUS PEAK FLOW			200
INSTANTANEOUS PEAK STAGE			7.77
ANNUAL RUNOFF (AC-FT)	5350	1590	2350
ANNUAL RUNOFF (CFSM)	1.68	.50	.74
ANNUAL RUNOFF (INCHES)	22.86	6.79	10.03
10 PERCENT EXCEEDS	13	3.1	6.2
50 PERCENT EXCEEDS	4.0	1.6	1.3
90 PERCENT EXCEEDS	1.8	1.0	.14

e Estimated.

TURKEY RIVER BASIN

65

05412100 ROBERTS CREEK ABOVE SAINT OLAF, IA

LOCATION.--Lat 42°55'49", long 91°23'03", in SW1/4 NW1/4 sec.25, T.94 N., R.5 W., Clayton County, Hydrologic Unit 07060004, on left downstream bank at bridge on road X28, 0.1 mi north of county road B65, on north edge of Saint Olaf.

DRAINAGE AREA.--70.7 mi².

PERIOD OF RECORD.--September 1957 to July 1977 (operated as a low-flow station only), March 1986 to current year.

GAGE.--Water-stage recorder. Datum of gage is 826.73 ft above sea level.

REMARKS.--Estimated daily discharges: Dec. 22 to Mar. 8. Records good except those for estimated daily discharges, which are poor. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	29	21	21	e11	e8.4	e8.8	21	16	6.6	9.5	12	8.2
2	27	21	21	e11	e8.6	e9.4	21	16	6.6	8.8	11	8.0
3	26	21	19	e10	e8.6	e10	20	14	6.6	8.2	11	8.9
4	26	21	19	e9.8	e8.6	e11	20	13	6.5	8.3	11	9.4
5	25	21	19	e9.8	e8.6	e150	20	13	6.5	9.6	10	8.4
6	25	20	19	e9.4	e8.5	e320	19	13	6.4	8.2	9.9	8.1
7	26	19	18	e9.2	e8.4	e110	19	14	6.3	8.9	9.7	7.6
8	25	20	18	e8.8	e8.3	e80	18	14	6.7	9.6	9.5	8.3
9	34	20	18	e9.0	e8.2	55	18	13	6.5	11	9.1	8.0
10	33	19	20	e9.6	e8.0	43	18	12	6.0	9.1	11	7.2
11	29	18	16	e10	e7.9	36	17	11	6.8	8.1	22	7.4
12	28	18	19	e11	e7.8	38	17	11	6.7	7.7	14	6.7
13	27	20	20	e11	e7.6	50	22	11	22	7.4	13	6.4
14	26	22	19	e10	e7.3	41	20	10	19	7.5	11	6.3
15	25	21	19	e10	e7.0	52	26	10	11	7.3	11	7.0
16	28	20	18	e8.6	e6.9	39	27	10	9.2	6.9	11	8.3
17	28	20	18	e9.0	e7.0	33	21	9.5	8.3	6.8	11	11
18	26	20	19	e8.8	e7.4	31	19	9.2	7.8	6.6	11	7.9
19	26	20	19	e8.8	e140	31	18	9.2	9.9	6.2	12	7.4
20	25	20	19	e8.2	e88	30	16	9.0	8.7	65	10	7.1
21	25	20	17	e8.8	e52	34	16	8.8	8.0	32	9.9	7.4
22	25	21	e15	e9.4	e30	33	16	8.2	7.1	22	8.8	7.9
23	25	21	e14	e9.8	e17	30	15	8.5	12	18	8.6	8.4
24	24	22	e13	e9.6	e11	29	15	12	47	16	8.2	8.7
25	24	22	e13	e9.2	e9.5	27	15	11	19	15	8.1	10
26	24	24	e12	e9.4	e8.6	25	17	10	15	13	8.2	17
27	23	22	e11	e9.6	e9.0	25	19	9.8	13	13	9.2	11
28	22	23	e10	e9.2	e9.2	24	15	8.7	11	12	8.2	8.0
29	22	21	e11	e8.8	---	23	15	8.2	10	12	7.6	7.0
30	22	20	e11	e8.4	---	22	16	7.9	9.7	12	7.7	6.4
31	21	---	e12	e8.0	---	22	---	7.5	---	11	8.3	---
TOTAL	801	618	517	293.2	517.4	1472.2	556	338.5	325.9	396.7	323.0	249.4
MEAN	25.8	20.6	16.7	9.46	18.5	47.5	18.5	10.9	10.9	12.8	10.4	8.31
MAX	34	24	21	11	140	320	27	16	47	65	22	17
MIN	21	18	10	8.0	6.9	8.8	15	7.5	6.0	6.2	7.6	6.3
AC-FT	1590	1230	1030	582	1030	2920	1100	671	646	787	641	495
CFSM	.37	.29	.24	.13	.26	.67	.26	.15	.15	.18	.15	.12
IN.	.42	.33	.27	.15	.27	.77	.29	.18	.17	.21	.17	.13

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1986 - 1994, BY WATER YEAR (WY)

	MEAN	10.4	21.7	18.8	10.3	14.0	61.0	50.3	27.9	54.1	29.2	19.6	18.3
MAX	25.8	82.5	65.7	38.9	48.4	198	167	88.5	313	192	87.4	49.9	
(WY)	1994	1992	1992	1992	1992	1993	1993	1993	1991	1993	1993	1993	
MIN	.075	.003	.000	.11	.15	25.7	1.63	.86	.29	.098	.86	.53	
(WY)	1990	1990	1990	1991	1991	1990	1989	1989	1989	1989	1988	1989	

SUMMARY STATISTICS	FOR 1993 CALENDAR YEAR	FOR 1994 WATER YEAR	WATER YEARS 1986 - 1994
ANNUAL TOTAL	29933.6	6408.3	
ANNUAL MEAN	82.0	17.6	28.9
HIGHEST ANNUAL MEAN			85.6
LOWEST ANNUAL MEAN			4.36
HIGHEST DAILY MEAN	1490	Mar 31	7090
LOWEST DAILY MEAN	7.4	Feb 24	.00
ANNUAL SEVEN-DAY MINIMUM	8.3	Feb 22	.00
INSTANTANEOUS PEAK FLOW			1280
INSTANTANEOUS PEAK STAGE			a15.78
INSTANTANEOUS LOW FLOW			5.8
ANNUAL RUNOFF (AC-FT)	59370	12710	20950
ANNUAL RUNOFF (CFSM)	1.16	.25	.41
ANNUAL RUNOFF (INCHES)	15.75	3.37	5.56
10 PERCENT EXCEEDS	176	27	59
50 PERCENT EXCEEDS	42	12	10
90 PERCENT EXCEEDS	13	7.5	.20

e Estimated.

a Ice affected.

TURKEY RIVER BASIN

05412500 TURKEY RIVER AT GARBER, IA

LOCATION.--Lat 42°44'24", long 91°15'42", in SE1/4 NW1/4 sec.36, T.92 N., R.4 W., Clayton County, Hydrologic Unit 07060004, on right bank 10 ft upstream from bridge on county highway C43, 800 ft upstream from Wayman Creek, 1,000 ft southeast of Garber, 2,000 ft downstream from Elk Creek, 1 mi downstream from Volga River, and 19.8 mi upstream from mouth.

DRAINAGE AREA.--1,545 mi².

PERIOD OF RECORD.--August 1913 to November 1916, May 1919 to September 1927, April 1929 to September 1930, October 1932 to current year. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 1308: 1922-25 (M), 1927 (M). WSP 1438: Drainage area.

GAGE.--Water-stage encoder. Datum of gage is 634.46 ft above sea level. Prior to Feb. 7, 1935, nonrecording gage at same site and datum.

REMARKS.--Estimated daily discharges: Dec. 23 to Mar. 3. Records good except those for estimated daily discharges, which are poor. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data. U.S. Army Corps of Engineers data collection platform at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1890, that of June 15, 1991.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1450	937	715	e590	e470	e2200	1010	929	528	1090	904	540
2	1400	923	737	e580	e490	e2000	994	908	507	992	861	538
3	1350	926	723	e540	e465	e1900	962	877	496	904	816	578
4	1320	921	670	e520	e480	1690	948	854	483	2370	812	588
5	1270	914	646	e500	e530	2780	964	837	465	1400	760	571
6	1250	886	618	e460	e500	5920	945	831	461	1110	785	570
7	1230	870	588	e440	e460	5580	914	835	466	1060	691	578
8	1210	862	574	e380	e430	4350	895	838	484	2020	674	585
9	1320	861	583	e390	e400	2930	887	810	487	1450	653	577
10	1430	850	571	e405	e380	2320	889	779	479	1260	690	559
11	1400	843	532	e430	e440	1950	875	762	509	1070	824	530
12	1360	840	543	e410	e480	1740	896	737	493	1080	791	531
13	1310	886	534	e430	e520	1790	961	717	540	1040	827	581
14	1270	886	593	e395	e540	1790	958	702	647	1240	821	566
15	1240	880	579	e360	e600	1960	1070	698	614	1020	766	537
16	1270	858	550	e320	e640	1970	1340	688	577	941	725	587
17	1310	838	551	e340	e720	1820	1380	662	546	909	689	579
18	1270	817	566	e280	e850	1650	1370	640	551	854	778	542
19	1230	829	570	e290	e1400	1530	1290	622	853	815	709	557
20	1190	818	555	e320	e4000	1480	1190	606	1350	1710	778	560
21	1170	810	559	e370	e2250	1520	1130	583	858	3280	882	538
22	1150	806	560	e440	e1900	1560	1070	573	713	4100	786	535
23	1120	797	e520	e540	e1700	1540	1030	571	3180	3150	734	543
24	1100	785	e500	e530	e1600	1470	995	635	4720	2140	686	570
25	1090	795	e490	e500	e2000	1360	974	649	2890	1770	645	819
26	1070	823	e480	e470	e2800	1290	1000	641	2210	1530	634	1380
27	1030	799	e440	e460	e2500	1240	1020	622	1800	1350	612	1050
28	1020	782	e465	e485	e2600	1190	941	596	1540	1220	592	851
29	1010	765	e500	e500	---	1130	930	579	1350	1110	568	792
30	983	736	e540	e420	---	1080	910	567	1200	1030	557	753
31	948	---	e600	e430	---	1040	---	548	---	954	559	---
TOTAL	37771	25343	17652	13525	32145	63770	30738	21896	31997	45969	22609	19085
MEAN	1218	845	569	436	1148	2057	1025	706	1067	1483	729	636
MAX	1450	937	737	590	4000	5920	1380	929	4720	4100	904	1380
MIN	948	736	440	280	380	1040	875	548	461	815	557	530
AC-FT	74920	50270	35010	26830	63760	126500	60970	43430	63470	91180	44840	37860
CFSM	.79	.55	.37	.28	.74	1.33	.66	.46	.69	.96	.47	.41
IN.	.91	.61	.43	.33	.77	1.54	.74	.53	.77	1.11	.54	.46

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1913 - 1994, BY WATER YEAR (WY)

MEAN	562	610	482	523	829	2059	1686	1282	1321	933	851	647
MAX	2527	2834	2889	3306	4265	4832	6382	3896	5316	5772	5119	3011
(WY)	1987	1962	1983	1916	1922	1979	1951	1983	1947	1993	1993	1938
MIN	88.2	92.2	78.5	62.0	60.9	188	288	95.7	103	121	140	108
(WY)	1950	1950	1959	1940	1959	1934	1957	1934	1934	1936	1964	1958

SUMMARY STATISTICS

	FOR 1993 CALENDAR YEAR	FOR 1994 WATER YEAR	WATER YEARS 1913 - 1994
ANNUAL TOTAL	1038296	362500	
ANNUAL MEAN	2845	993	986
HIGHEST ANNUAL MEAN			2905
LOWEST ANNUAL MEAN			249
HIGHEST DAILY MEAN	18600	5920	33700
LOWEST DAILY MEAN	420	280	49
ANNUAL SEVEN-DAY MINIMUM	474	326	51
INSTANTANEOUS PEAK FLOW		9700	49900
INSTANTANEOUS PEAK STAGE		a18.48	30.10
ANNUAL RUNOFF (AC-FT)	2059000	719000	714000
ANNUAL RUNOFF (CFSM)	1.84	.64	.64
ANNUAL RUNOFF (INCHES)	25.00	8.73	8.67
10 PERCENT EXCEEDS	6610	1700	2070
50 PERCENT EXCEEDS	1740	817	508
90 PERCENT EXCEEDS	580	480	164

e Estimated.

a Ice affected.

05418500 MAQUOKETA RIVER NEAR MAQUOKETA, IA

LOCATION.--Lat 42°05'05", long 90°38'04", in SW1/4 NE1/4 sec. 17, T.84 N., R.3 E., Jackson County, Hydrologic Unit 07060006, on right bank 300 ft upstream from bridge on State Highway 62, 1,200 ft upstream from Prairie Creek, 2.0 mi northeast of Maquoketa, 2.2 mi downstream from North Fork, and 26.7 mi upstream from mouth.

DRAINAGE AREA.--1,553 mi².

PERIOD OF RECORD.--September 1913 to current year. Prior to October 1939, published as "below North Fork near Maquoketa". Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 405: 1914. WSP 1438: Drainage area. WSP 1508: 1914-17, 1919-25, 1926 (M), 1929, 1933-34 (M), 1943.

GAGE.--Water-stage encoder. Datum of gage is 625.96 ft above sea level. Prior to July 14, 1924, nonrecording gage, and July 15, 1924 to Sept. 30, 1972, recording gage at same site at datum 10.00 ft higher.

REMARKS.--Estimated daily discharges: Dec. 12-15, and Dec. 25 to Mar. 2. Records fair except those estimated daily discharges, which are poor. Diurnal fluctuation caused by powerplant 4 mi upstream of station. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data. U.S. Army Corps of Engineers data collection platform at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--A flood, probably in 1903, reached a stage of 23.5 ft, discharge, 43,000 ft³/s, at datum in use prior to Oct. 1, 1972.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2040	1140	1020	e950	e720	e1500	1090	1010	743	1690	995	879
2	1970	1310	1020	e860	e740	e1400	1110	1060	694	1430	1030	906
3	1870	1250	982	e760	e740	1470	1150	994	737	1440	939	854
4	1770	1250	1030	e700	e720	1830	1130	969	681	1530	967	934
5	1690	1200	1010	e660	e740	4070	1190	984	668	2460	1000	896
6	1620	1190	1020	e720	e820	4550	760	953	673	3300	1100	936
7	1580	1190	993	e640	e800	3730	874	1020	710	2590	966	867
8	1550	1140	981	e600	e760	2710	907	979	698	2160	983	829
9	1680	1100	983	e640	e720	2160	952	983	671	2440	890	868
10	1960	1050	978	e680	e700	1920	920	934	666	2820	917	787
11	2190	1040	933	e720	e700	1730	939	907	676	2170	968	807
12	2210	1050	e920	e700	e680	1590	944	920	678	1890	1040	792
13	2080	1130	e940	e640	e680	1560	946	854	844	1740	989	784
14	2010	1160	e960	e620	e780	1500	1010	881	777	1920	1640	777
15	2020	1130	e1040	e600	e900	1490	1040	871	799	1930	2150	802
16	1890	1110	998	e620	e920	1490	1010	863	696	1760	1560	772
17	1840	1070	1010	e640	e1000	1400	996	835	714	1670	1420	739
18	1730	1070	1010	e580	e1300	1420	945	815	671	1620	1270	733
19	1690	1030	989	e580	e4000	1350	986	724	654	1550	1590	721
20	1320	1030	1010	e610	e12000	1320	974	792	731	2030	1660	734
21	1490	1020	1000	e680	e8000	1390	897	798	2150	3000	1480	707
22	1520	1020	980	e730	e3100	1390	919	723	1700	2310	1250	750
23	1470	998	914	e680	e2200	1410	852	752	1670	1940	1190	765
24	1430	970	791	e1000	e1800	1310	914	810	3650	1750	1120	870
25	1450	1020	e520	e900	e1600	1300	923	767	6270	1560	1060	1110
26	1420	1040	e520	e800	e1500	1280	1310	861	5550	1420	1130	1760
27	1420	993	e540	e780	e1500	1290	1540	709	3000	1300	998	2050
28	1340	982	e500	e740	e1400	1250	1200	823	2360	1230	991	2250
29	1280	1040	e520	e720	---	1230	982	690	2070	1160	1020	1830
30	1410	1020	e560	e700	---	1130	1020	717	1830	1100	940	1610
31	1200	---	e600	e660	---	1170	---	827	---	1060	989	---
TOTAL	52140	32743	27272	21910	51520	54340	30430	26825	44431	57970	36242	30119
MEAN	1682	1091	880	707	1840	1753	1014	865	1481	1870	1169	1004
MAX	2210	1310	1040	1000	12000	4550	1540	1060	6270	3300	2150	2250
MIN	1200	970	500	580	680	1130	760	690	654	1060	890	707
AC-FT	103400	64950	54090	43460	102200	107800	60360	53210	88130	115000	71890	59740
CFSM	1.08	.70	.57	.46	1.18	1.13	.65	.56	.95	1.20	.75	.65
IN.	1.25	.78	.65	.52	1.23	1.30	.73	.64	1.06	1.39	.87	.72

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1914 - 1994, BY WATER YEAR (WY)

	MEAN	725	792	661	700	1094	1894	1343	1196	1412	1059	832	898
MAX	2486	4983	2397	2851	4161	4798	4843	4267	6670	8835	3340	3074	
(WY)	1987	1962	1983	1960	1971	1993	1973	1974	1947	1993	1924	1981	
MIN	210	198	177	150	196	241	305	198	170	177	227	182	
(WY)	1957	1959	1959	1940	1936	1934	1934	1934	1934	1936	1958	1958	

SUMMARY STATISTICS	FOR 1993 CALENDAR YEAR	FOR 1994 WATER YEAR	WATER YEARS 1914 - 1994
ANNUAL TOTAL	1045968	465942	
ANNUAL MEAN	2866	1277	1050
HIGHEST ANNUAL MEAN			2874
LOWEST ANNUAL MEAN			306
HIGHEST DAILY MEAN	29200	12000	34800
LOWEST DAILY MEAN	460	500	105
ANNUAL SEVEN-DAY MINIMUM	526	537	105
INSTANTANEOUS PEAK FLOW		b15000	48000
INSTANTANEOUS PEAK STAGE		b28.65	a24.70
ANNUAL RUNOFF (AC-FT)	2075000	924200	760400
ANNUAL RUNOFF (CFSM)	1.85	.82	.68
ANNUAL RUNOFF (INCHES)	25.05	11.16	9.18
10 PERCENT EXCEEDS	6010	1990	1970
50 PERCENT EXCEEDS	1850	1010	646
90 PERCENT EXCEEDS	848	695	293

e Estimated.

a Datum in use prior to Oct. 1, 1972.

b Ice affected.

MISSISSIPPI RIVER MAIN STEM

05420500 MISSISSIPPI RIVER AT CLINTON, IA

LOCATION.--Lat 41°46'50", long 90°15'07", in NW1/4 sec.34, T.81 N., R.6 E., Clinton County, Hydrologic Unit 07080101, on right bank at foot of Eighth Avenue in Camanche, 5.0 mi upstream from Wapsipinicon River, 6.4 mi downstream from Clinton, 10.6 mi downstream from Lock and Dam 13, and at mile 511.8 upstream from Ohio River.

DRAINAGE AREA.--85,600 mi², approximately, at Fulton-Lyons Bridge at Clinton.

PERIOD OF RECORD.--June to August 1873 (fragmentary), October 1873 to current year (October 1932 to September 1939, published as "at Le Claire").

REVISED RECORDS.--WDR IA-75-1: 1974.

GAGE.--Water-stage encoder. Datum of gage is 562.68 ft above sea level. June 6, 1969 to Sept. 16 1988, water-stage recorder at site 400 ft upstream at same datum. Auxiliary water-stage recorder at Lock and Dam 13 since Oct. 1, 1958. See WSP 1728 for history of changes prior to Oct. 1, 1955.

REMARKS.--Estimated daily discharges: Dec. 26 to Mar. 7, Mar. 17, and Sept. 25, 26. Records good except those for estimated daily discharges, which are poor. Minor flow regulation caused by navigation dams. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data. U.S. Army Corps of Engineers data collection platform at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage known since at least 1828, that of Apr. 28, 1965.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	62200	49200	47200	e32000	e36000	e70000	80000	107000	56800	57400	56300	40000
2	62100	47400	46400	e34000	e36000	e70000	79900	111000	54400	56700	54000	42800
3	62300	47400	45600	e37000	e36000	e66000	80300	116000	53800	57100	51500	43600
4	61600	47100	43100	e39000	e36000	e64000	81600	134000	53500	57700	49400	41600
5	60400	45600	43600	e40000	e35000	e68000	81400	142000	53700	63000	48200	43100
6	60100	46000	44100	e40000	e34000	e70000	81500	144000	53600	65600	47000	45600
7	58500	45800	45100	e41000	e34000	e70000	81500	147000	53000	62500	46800	44700
8	58000	45900	47400	e42000	e33000	69300	81000	147000	52900	63400	46100	43600
9	58100	45900	49800	e42000	e33000	71600	81500	146000	52400	69500	45200	42500
10	59300	45900	49700	e43000	e33000	72600	81900	143000	50900	68900	44100	41600
11	57800	48200	49600	e42000	e35000	75100	81700	139000	50500	67800	43900	38900
12	55300	48500	48100	e41000	e37000	75800	80800	137000	50000	72600	46900	37100
13	53500	51000	45200	e41000	e36000	77800	80600	127000	49800	73500	49800	37100
14	52400	49600	49100	e40000	e35000	85800	80700	125000	44900	74800	54000	36600
15	51700	50300	51000	e40000	e35000	92300	80500	121000	44500	76200	55900	38000
16	53500	50500	48800	e39000	e36000	92000	81300	115000	44600	76200	53700	41500
17	56100	48300	49400	e39000	e36000	e80000	81900	113000	54200	74300	51400	45100
18	57500	47700	49300	e38000	e36000	71600	81800	108000	53700	73000	49600	51500
19	57400	48100	50000	e37000	e37000	70200	78700	103000	53000	66900	50400	57200
20	56900	51800	50700	e35000	e64000	67000	76000	96200	53100	62300	56800	61300
21	56300	55900	50800	e35000	e82000	71200	80300	90700	55700	61600	57000	67300
22	54600	55400	51200	e35000	e90000	75400	86800	84300	54800	64300	51200	73100
23	54300	58100	51800	e34000	e82000	73400	84100	77400	55700	65400	49200	78900
24	54200	57400	50200	e34000	e76000	74100	86600	73500	58900	62900	47300	87700
25	53900	56500	43700	e33000	e70000	73600	89500	71700	66700	59700	45900	e96000
26	53500	58900	e26000	e34000	e72000	73600	94800	69900	70000	58500	45800	99000
27	53000	54900	e26000	e35000	e70000	74400	98700	65000	64300	57100	43100	98500
28	52000	52700	e27000	e35000	e70000	76800	98900	63300	58600	56900	41400	92600
29	50100	52100	e29000	e36000	---	78000	100000	57900	57200	57200	39900	89900
30	49500	50200	e30000	e37000	---	80300	103000	54100	57700	57400	37800	90400
31	49200	---	e31000	e38000	---	80500	---	55100	---	57700	36800	---
TOTAL	1735300	1512300	1369900	1168000	1345000	2310400	2537300	3284100	1632900	1998100	1496400	1746800
MEAN	55980	50410	44190	37680	48040	74530	84580	105900	54430	64450	48270	58230
MAX	62300	58900	51800	43000	90000	92300	103000	147000	70000	76200	57000	99000
MIN	49200	45600	26000	32000	33000	64000	76000	54100	44500	56700	36800	36600
AC-FT	3442000	3000000	2717000	2317000	2668000	4583000	5033000	6514000	3239000	3963000	2968000	3465000
CFSM	.65	.59	.52	.44	.56	.87	.99	1.24	.64	.75	.56	.68
IN.	.75	.66	.60	.51	.58	1.00	1.10	1.43	.71	.87	.65	.76

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1874 - 1994, BY WATER YEAR (WY)

	MEAN	40820	38770	27450	25380	27520	50260	88840	81180	68130	55480	37530	38080
MAX	203600	146800	73590	54100	65680	127500	169900	212400	182100	198900	113400	92340	
(WY)	1882	1882	1882	1973	1966	1973	1965	1888	1892	1993	1993	1938	
MIN	13490	13760	11120	11390	14000	17600	26040	23190	15420	14690	12460	13870	
(WY)	1934	1934	1934	1890	1893	1934	1931	1977	1988	1988	1936	1933	

SUMMARY STATISTICS

FOR 1993 CALENDAR YEAR

FOR 1994 WATER YEAR

WATER YEARS 1874 - 1994

ANNUAL TOTAL	33762400	22136500	
ANNUAL MEAN	92500	60650	48330
HIGHEST ANNUAL MEAN			94690
LOWEST ANNUAL MEAN			18870
HIGHEST DAILY MEAN	238000	Jul 7	147000
LOWEST DAILY MEAN	26000	Dec 26	26000
ANNUAL SEVEN-DAY MINIMUM	28000	Feb 24	28700
INSTANTANEOUS PEAK FLOW			148000
INSTANTANEOUS PEAK STAGE			15.96
ANNUAL RUNOFF (AC-FT)	66970000	43910000	35020000
ANNUAL RUNOFF (CFSM)	1.08	.71	.56
ANNUAL RUNOFF (INCHES)	14.67	9.62	7.67
10 PERCENT EXCEEDS	172000	88400	93900
50 PERCENT EXCEEDS	72900	54600	37000
90 PERCENT EXCEEDS	35100	36700	18800

e Estimated.

a Also Dec. 27.

69

e Estimated.

WAPSIPINICON RIVER BASIN

05422000 WAPSIPINICON RIVER NEAR DE WITT, IA

LOCATION.--Lat 41°46'01", long 90°32'05", in SW1/4 NE1/4 sec.6, T.80 N., R.4 E., Clinton County, Hydrologic Unit 07080103, on left bank 5 ft upstream from bridge on old U.S. Highway 61, 0.9 mi downstream from Silver Creek, 4.0 mi south of water tower in De Witt, 6.2 mi upstream from Brophy Creek, and 18.2 mi upstream from mouth.

DRAINAGE AREA.--2,330 mi².

PERIOD OF RECORD.--June 1934 to current year.

REVISED RECORDS.--WSP 1308: 1937 (M). WSP 1438: Drainage area. WSP 1708: 1951.

GAGE.--Water-stage encoder. Datum of gage is 598.81 ft above sea level.

REMARKS.--Estimated daily discharges: Dec. 26 to Feb. 27, and Apr. 28 to May 3. Records good except those for estimated daily discharges, which are poor. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data. U. S. Army Corps of Engineers gage-height telemeter and data collection platform at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3680	1650	1130	e410	e450	7430	1640	e1170	810	3890	1740	827
2	3370	1600	1120	e410	e460	7410	1570	e1200	797	3470	1510	781
3	3110	1580	1170	e430	e450	6890	1510	e1170	761	2750	1320	736
4	2940	1550	1180	e420	e460	4100	1460	1140	722	2310	1270	713
5	2760	1500	1180	e400	e470	3750	1430	1130	695	2030	1180	726
6	2590	1470	1170	e420	e460	4670	1380	1140	671	1990	1160	728
7	2460	1430	1160	e400	e470	4670	1330	1130	652	2430	1210	706
8	2360	1410	1150	e400	e480	3910	1290	1120	708	2700	1120	686
9	2320	1370	1130	e450	e500	3990	1280	1110	702	2220	1070	673
10	2340	1350	1100	e470	e540	3850	1240	1090	644	2040	1050	662
11	2450	1330	1060	e460	e600	3600	1250	1080	594	2470	1030	642
12	2920	1320	1020	e560	e630	3450	1270	1070	593	2470	1000	620
13	3160	1380	1020	e500	e660	3280	1340	1040	695	2160	939	604
14	3080	1370	1080	e450	e680	3230	1310	1020	833	1940	914	588
15	2930	1360	1160	e420	e740	3360	1410	999	781	1810	886	571
16	2790	1340	1150	e420	e800	3370	1460	958	749	1740	1600	566
17	2640	1340	1150	e480	e1000	3110	1350	928	754	1610	1950	553
18	2480	1330	1200	e430	e1200	2840	1340	891	717	1540	1840	543
19	2390	1320	1270	e410	e2000	2670	1440	866	690	1560	1720	532
20	2340	1300	1260	e450	e3200	2570	1530	834	763	1580	1560	523
21	2300	1280	1230	e480	e4500	2600	1580	807	825	1520	1360	516
22	2230	1270	1210	e630	e4300	2610	1570	782	823	1590	1220	517
23	2170	1250	1170	e600	e6000	2460	1510	762	857	1690	1120	536
24	2130	1230	1190	e600	e9600	2310	1440	763	2730	1680	1020	550
25	2050	1250	767	e580	e8800	2170	1390	753	3040	1740	953	569
26	1990	1280	e460	e620	e8000	2100	1330	747	3620	1790	918	598
27	1910	1250	e410	e570	e7400	2090	1310	731	4350	1880	876	648
28	1860	1230	e380	e580	7530	2010	e1260	722	4660	2120	834	1300
29	1810	1200	e410	e560	---	1890	e1210	726	4390	2450	873	2510
30	1740	1170	e410	e540	---	1790	e1180	765	4070	2540	913	2410
31	1690	---	e430	e510	---	1700	---	780	---	2200	902	---
TOTAL	76990	40710	30927	15060	72380	105880	41610	29424	43696	65910	37058	23134
MEAN	2484	1357	998	486	2585	3415	1387	949	1457	2126	1195	771
MAX	3680	1650	1270	630	9600	7430	1640	1200	4660	3890	1950	2510
MIN	1690	1170	380	400	450	1700	1180	722	593	1520	834	516
AC-FT	152700	80750	61340	29870	143600	210000	82530	58360	86670	130700	73500	45890
CFSM	1.07	.58	.43	.21	1.11	1.47	.60	.41	.63	.91	.51	.33
IN.	1.23	.65	.49	.24	1.16	1.69	.66	.47	.70	1.05	.59	.37

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1934 - 1994, BY WATER YEAR (WY)

	MEAN	1911	1130	930	847	1222	3036	2989	2218	2256	1714	1142	1060
MAX	3549	6435	4945	4086	3798	7137	9768	6351	10950	14280	8550	5647	
(WY)	1973	1962	1983	1946	1984	1986	1993	1974	1947	1993	1993	1993	
MIN	137	159	104	59.4	104	301	453	323	234	165	103	133	
(WY)	1977	1965	1977	1977	1940	1954	1977	1977	1977	1936	1936	1976	

SUMMARY STATISTICS	FOR 1993 CALENDAR YEAR	FOR 1994 WATER YEAR	WATER YEARS 1934 - 1994
ANNUAL TOTAL	1921717	582779	
ANNUAL MEAN	5265	1597	1624
HIGHEST ANNUAL MEAN			5461
LOWEST ANNUAL MEAN			374
HIGHEST DAILY MEAN	21500	Jul 15	25400
LOWEST DAILY MEAN	380	Dec 28	46
ANNUAL SEVEN-DAY MINIMUM	467	Dec 25	47
INSTANTANEOUS PEAK FLOW			31100
INSTANTANEOUS PEAK STAGE			14.19
ANNUAL RUNOFF (AC-FT)	3812000	1156000	1176000
ANNUAL RUNOFF (CFSM)	2.26	.69	.70
ANNUAL RUNOFF (INCHES)	30.68	9.30	9.47
10 PERCENT EXCEEDS	11800	3110	3840
50 PERCENT EXCEEDS	3340	1220	900
90 PERCENT EXCEEDS	1160	514	222

a Estimated.

a Ice affected.

05422470 CROW CREEK AT BETTENDORF, IA

LOCATION.--Lat 41°33'03", long 90°27'15", in NW1/4 NW1/4 sec.24, T.78 N., R.4 E., Scott County, Hydrologic Unit 07080101, on left bank 200 ft upstream from bridge on Valley Road (old U.S. Highway 67), 3.5 mi east of U.S. Highway 6, and 0.7 mi upstream from mouth.

DRAINAGE AREA.--17.8 mi².

PERIOD OF RECORD.--October 1977 to current year.

GAGE.--Water-stage recorder. Datum of gage is 576.23 ft above sea level.

REMARKS.--Estimated daily discharges: Oct. 1-26, and Dec. 22 to Mar. 3. Records good except those for estimated daily discharges, which are poor. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e20	8.5	8.9	e8.2	e4.0	e14	12	12	4.8	6.2	2.3	1.9
2	e19	8.3	10	e7.2	e4.1	e13	11	9.6	5.6	7.6	2.2	1.8
3	e19	8.6	8.5	e6.6	e3.8	e12	10	9.2	5.4	5.7	2.1	1.8
4	e18	8.3	8.1	e5.8	e3.6	32	9.6	8.4	4.6	5.3	6.4	2.2
5	e17	8.0	8.2	e5.2	e3.5	54	9.0	8.4	4.3	4.8	2.7	3.0
6	e17	7.6	8.0	e6.0	e3.8	52	8.5	11	4.3	4.6	2.5	2.0
7	e17	7.7	7.7	e5.2	e3.7	38	8.2	9.4	4.3	4.0	2.1	1.8
8	e16	7.8	7.6	e4.8	e3.7	28	8.2	8.1	28	4.9	2.1	1.7
9	e19	7.6	7.1	e5.2	e3.6	24	8.6	8.6	6.6	4.2	2.1	1.6
10	e18	10	6.7	e6.0	e3.5	20	8.2	8.1	5.8	3.8	2.2	1.6
11	e17	11	6.3	e7.0	e4.5	17	7.7	8.1	6.1	3.6	2.5	1.7
12	e16	18	6.2	e6.0	e5.6	17	30	7.7	5.4	3.5	2.2	1.7
13	e15	13	7.0	e5.0	e5.4	16	17	7.9	13	3.4	2.3	1.7
14	e15	16	18	e4.0	e7.0	16	13	10	6.2	29	2.3	1.7
15	e15	10	13	e3.6	e7.0	15	53	12	4.4	6.1	2.1	1.7
16	e16	8.1	10	e4.3	e7.4	14	22	8.5	3.8	4.9	1.8	2.0
17	e15	7.5	11	e5.6	e15	13	18	7.8	3.8	4.6	1.7	2.0
18	e14	6.8	16	e4.7	e25	13	17	7.4	3.6	3.8	22	2.0
19	e13	6.8	14	e3.5	e5.0	12	15	7.1	7.1	13	4.7	2.0
20	e12	6.5	12	e4.0	e100	12	14	7.1	6.2	4.0	2.2	1.8
21	e11	6.8	11	e4.3	e37	13	16	7.1	3.8	3.8	2.0	1.7
22	e10	6.2	e10	e5.0	e24	9.5	12	6.7	3.6	3.7	1.9	2.0
23	e10	6.3	e7.0	e6.4	e19	9.9	11	7.0	19	3.4	1.8	1.2
24	e9.8	6.7	e5.0	e12	e10	9.9	11	11	50	3.0	1.8	1.7
25	e9.6	16	e3.3	e10	e11	9.2	11	7.3	13	2.7	1.7	1.3
26	e9.5	9.2	e3.2	e7.4	e10	10	10	7.1	19	2.7	2.1	.94
27	9.3	8.3	e3.4	e6.2	e10	12	9.0	5.9	11	2.7	1.9	.85
28	9.0	7.8	e3.0	e5.6	e13	11	9.2	5.8	8.8	2.6	1.7	.81
29	8.6	7.8	e3.4	e5.4	---	10	8.9	5.8	7.6	2.4	1.6	.76
30	8.5	7.3	e4.0	e4.5	---	11	12	5.4	6.9	2.4	2.4	.74
31	8.6	---	e6.0	e3.7	---	11	---	5.1	---	2.3	2.6	---
TOTAL	431.9	268.5	253.6	178.4	398.2	548.5	409.1	250.6	276.0	158.7	92.0	49.70
MEAN	13.9	8.95	8.18	5.75	14.2	17.7	13.6	8.08	9.20	5.12	2.97	1.66
MAX	20	18	18	12	100	54	53	12	50	29	22	3.0
MIN	8.5	6.2	3.0	3.5	3.5	9.2	7.7	5.1	3.6	2.3	1.6	.74
AC-FT	857	533	503	354	790	1090	811	497	547	315	182	.99
CFSM	.78	.50	.46	.32	.80	.99	.77	.45	.52	.29	.17	.09
IN.	.90	.56	.53	.37	.83	1.15	.85	.52	.58	.33	.19	.10

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1977 - 1994, BY WATER YEAR (WY)

	MEAN	12.1	13.5	14.9	8.48	12.2	23.7	19.4	17.0	26.8	16.1	18.3	8.37
MAX	50.9	45.4	44.1	25.0	42.1	54.6	61.3	32.5	157	65.4	99.8	34.7	
(WY)	1982	1993	1983	1988	1985	1979	1983	1986	1990	1992	1990	1992	
MIN	.67	1.19	.77	1.18	.76	3.45	2.33	1.68	3.17	.74	.85	.49	
(WY)	1989	1990	1990	1979	1989	1989	1989	1989	1988	1988	1978	1988	

SUMMARY STATISTICS	FOR 1993 CALENDAR YEAR	FOR 1994 WATER YEAR	WATER YEARS 1977 - 1994
ANNUAL TOTAL	9130.6	3315.20	
ANNUAL MEAN	25.0	9.08	15.9
HIGHEST ANNUAL MEAN			31.7
LOWEST ANNUAL MEAN			3.35
HIGHEST DAILY MEAN	300	100	1660
LOWEST DAILY MEAN	3.0	.74	.13
ANNUAL SEVEN-DAY MINIMUM	3.6	1.0	.21
INSTANTANEOUS PEAK FLOW		unknown	7700
INSTANTANEOUS PEAK STAGE		unknown	11.03
INSTANTANEOUS LOW FLOW		.73	.06
ANNUAL RUNOFF (AC-FT)	18110	6580	11530
ANNUAL RUNOFF (CFSM)	1.41	.51	.89
ANNUAL RUNOFF (INCHES)	19.08	6.93	12.15
10 PERCENT EXCEEDS	47	17	33
50 PERCENT EXCEEDS	16	7.2	7.7
90 PERCENT EXCEEDS	7.8	2.0	1.3

e Estimated.

IOWA RIVER BASIN

05449000 EAST BRANCH IOWA RIVER NEAR KLEMME, IA

LOCATION.--Lat 43°00'31", long 93°37'42", in NE1/4 NW1/4 sec.36, T.9S N., R.24 W., Hancock County, Hydrologic Unit 07080207, on left bank 15 ft upstream from bridge on county highway B55, 1.2 mi west of Chicago, Rock Island and Pacific Railroad crossing in Klemme, 1.5 mi upstream from Drainage ditch 9, 18.2 mi upstream from confluence with West Branch Iowa River, and at mile 341.0.

DRAINAGE AREA.--133 mi².

PERIOD OF RECORD.--April 1948 to September 1976, June 1977 to current year. Prior to October 1958, published as East Fork Iowa River near Klemme.

REVISED RECORDS.--WSP 1438: Drainage area. WDR IA-80-1: 1978.

GAGE.--Water-stage recorder. Datum of gage is 1,179.33 ft above sea level. Apr. 1, 1948 to Sept. 30, 1955, nonrecording gage at site 0.6 mi upstream at datum 0.80 ft higher. Oct. 1, 1955 to Sept. 30, 1969, at present site at datum 0.31 ft lower.

REMARKS.--Estimated daily discharges: Nov. 26 to Dec. 2, Dec. 6-12, Dec. 21 to Mar. 9, and June 13, 14. Records good except those for estimated daily discharges, which are poor. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1944 reached a stage of about 10 ft, from information by local residents, former site and datum.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	65	44	e32	e28	e15	e44	38	79	27	133	238	34
2	60	45	e31	e25	e17	e56	37	72	25	115	264	35
3	59	44	32	e23	e19	e100	32	67	19	90	206	38
4	58	45	32	e20	e17	e180	35	67	17	189	237	42
5	55	40	32	e22	e18	e300	31	67	42	272	180	52
6	55	39	e29	e24	e21	e240	36	78	57	157	138	52
7	55	43	e26	e18	e16	e170	34	83	54	171	114	48
8	61	39	e29	e12	e11	e140	37	80	46	544	102	45
9	92	36	e27	e13	e12	e110	38	74	38	480	90	41
10	93	42	e25	e15	e9.5	99	35	65	39	279	107	38
11	88	40	e22	e18	e9.7	89	34	63	54	170	137	35
12	82	40	e26	e16	e10	86	54	56	48	146	155	32
13	77	46	35	e17	e10	85	89	54	e145	229	220	31
14	74	40	40	e14	e11	85	89	55	e156	340	180	29
15	71	38	43	e11	e11	79	105	49	124	325	140	28
16	70	39	46	e12	e10	65	119	44	80	464	116	33
17	66	39	52	e15	e13	60	104	42	63	766	98	29
18	63	40	63	e13	e15	55	95	39	61	720	87	26
19	60	40	65	e10	e25	51	82	36	184	633	78	25
20	59	37	64	e12	e80	50	77	34	138	563	70	24
21	59	38	e20	e11	e68	49	76	27	107	427	58	33
22	56	37	e23	e16	e56	46	70	25	77	313	54	169
23	56	39	e19	e14	e45	48	66	34	270	242	53	136
24	56	35	e21	e22	e40	48	66	76	631	191	48	104
25	54	36	e16	e20	e33	43	64	80	569	156	47	93
26	52	e31	e15	e17	e37	45	110	81	396	131	61	97
27	50	e28	e14	e15	e34	44	109	66	239	116	53	90
28	52	e32	e11	e17	e38	42	83	57	157	103	47	80
29	48	e33	e18	e15	---	40	85	50	119	92	43	73
30	45	e33	e15	e14	---	37	85	42	96	86	41	69
31	44	---	e23	e13	---	38	---	34	---	83	37	---
TOTAL	1935	1158	946	512	701.2	2624	2015	1776	4078	8726	3499	1661
MEAN	62.4	38.6	30.5	16.5	25.0	84.6	67.2	57.3	136	281	113	55.4
MAX	93	46	65	28	80	300	119	83	631	766	264	169
MIN	44	28	11	10	9.5	37	31	25	17	83	37	24
AC-FT	3840	2300	1880	1020	1390	5200	4000	3520	8090	17310	6940	3290
CFSM	.47	.29	.23	.12	.19	.64	.51	.43	1.02	2.12	.85	.42
IN.	.54	.32	.26	.14	.20	.73	.56	.50	1.14	2.44	.98	.46

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1949 - 1994, BY WATER YEAR (WY)

	MEAN	40.7	39.7	27.9	13.1	31.7	121	146	102	141	90.0	51.8	51.5
MAX	217	234	215	88.8	334	441	728	435	738	487	656	455	
(WY)	1987	1993	1983	1992	1984	1973	1965	1991	1984	1993	1979	1965	
MIN	2.08	1.78	.68	.15	.28	4.25	7.41	7.44	3.63	2.47	4.70	3.63	
(WY)	1949	1990	1990	1990	1959	1975	1957	1989	1989	1989	1949	1958	

SUMMARY STATISTICS	FOR 1993 CALENDAR YEAR	FOR 1994 WATER YEAR	WATER YEARS 1949 - 1994
ANNUAL TOTAL	82753	29631.2	
ANNUAL MEAN	227	81.2	69.1
HIGHEST ANNUAL MEAN			247
LOWEST ANNUAL MEAN			8.74
HIGHEST DAILY MEAN	3530	766	3880
LOWEST DAILY MEAN	11	9.5	.00
ANNUAL SEVEN-DAY MINIMUM	16	10	.00
INSTANTANEOUS PEAK FLOW		800	5960
INSTANTANEOUS PEAK STAGE		8.58	10.67
ANNUAL RUNOFF (AC-FT)	164100	58770	50090
ANNUAL RUNOFF (CFSM)	1.70	.61	.52
ANNUAL RUNOFF (INCHES)	23.15	8.29	7.06
10 PERCENT EXCEEDS	631	169	176
50 PERCENT EXCEEDS	83	49	20
90 PERCENT EXCEEDS	21	17	3.6

e Estimated.

73

LOCATION.--Lat 42°45'36", long 93°37'23", in NW1/4 NE1/4 sec.25, T.92 N., R.24 W., Wright County, Hydrologic Unit 07080207, on left bank 10 ft downstream from bridge on county highway C38, 0.9 mi downstream from drainage ditch 123, 3.8 mi northwest of Rowan, 10.7 mi downstream from confluence of East and West Branches, and at mile 316.4.

PERIOD OF RECORD.--October 1940 to September 1976, June 1977 to current year.

REVISED RECORDS.—WSP 1308: 1942-43 (M). WSP 1438: Drainage area. WDR IA-80-1: 1978.

GAGE.--Water-stage recorder. Datum of gage is 1,143.35 ft above sea level . Prior to Oct. 14, 1948, nonrecording gage at same site and datum.

REMARKS.--Estimated daily discharges: Nov. 27 to Dec. 1, Dec. 7-12, Dec. 22 to Mar. 8, Mar. 17, and July 28, 29. Records good except those for estimated daily discharges, which are poor. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	243	155	e110	e100	e54	e180	139	255	135	484	301	103
2	234	153	117	e90	e62	e210	139	238	128	469	444	106
3	219	153	119	e80	e68	e270	136	217	123	418	472	109
4	214	153	118	e72	e62	e500	129	205	115	627	416	117
5	207	151	120	e78	e68	e1100	132	205	118	1170	421	133
6	200	142	109	e88	e74	e900	128	218	152	1210	354	137
7	202	127	e89	e68	e56	e700	131	269	189	970	289	127
8	201	145	e98	e45	e40	e580	129	293	182	949	255	118
9	250	143	e90	e50	e43	490	131	280	161	1050	242	110
10	306	136	e84	e56	e35	456	134	253	146	1050	237	102
11	309	140	e80	e64	e37	368	129	225	145	953	289	97
12	297	142	e94	e56	e38	341	138	213	158	681	365	91
13	272	148	119	e60	e38	317	215	193	410	574	477	87
14	251	151	128	e52	e41	323	324	184	786	720	563	84
15	243	146	142	e41	e40	303	355	186	754	933	468	82
16	236	141	156	e48	e38	287	423	173	486	965	365	78
17	228	145	166	e54	e47	e248	429	158	319	1080	299	79
18	217	144	190	e48	e70	228	372	151	258	1270	257	75
19	210	140	213	e39	e130	213	331	145	242	1440	228	74
20	203	141	214	e42	e290	213	289	140	349	1580	202	74
21	205	135	159	e39	e250	209	269	134	340	1470	181	75
22	205	135	e110	e56	e210	199	254	128	283	1270	165	135
23	201	131	e68	e52	e160	191	236	126	611	1000	150	301
24	197	132	e74	e80	e140	182	223	174	1270	728	139	260
25	190	135	e58	e72	e120	171	221	267	1580	565	134	223
26	182	113	e52	e64	e140	163	219	263	1680	467	140	211
27	177	e98	e49	e55	e130	164	288	238	1570	400	148	207
28	173	e105	e41	e60	e150	160	273	200	1240	e350	132	190
29	172	e110	e64	e54	---	153	241	179	863	e309	123	170
30	163	e105	e56	e50	---	147	253	165	608	275	114	154
31	156	---	e85	e48	---	140	---	147	---	250	110	---
TOTAL	6763	4095	3372	1861	2631	10106	6810	6222	15401	25677	8480	3909
MEAN	218	136	109	60.0	94.0	326	227	201	513	828	274	130
MAX	309	155	214	100	290	1100	429	293	1680	1580	563	301
MIN	156	98	41	39	35	140	128	126	115	250	110	74
AC-FT	13410	8120	6690	3690	5220	20050	13510	12340	30550	50930	16820	7750
CFSM	.51	.32	.25	.14	.22	.76	.53	.47	1.20	1.93	.64	.30
IN.	.59	.36	.29	.16	.23	.88	.59	.54	1.34	2.23	.74	.30

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1941 - 1994, BY WATER YEAR (WY)

MEAN	131	131	85.2	54.9	106	391	470	338	462	298	161	148
MAX	720	695	588	298	931	1415	2439	1793	2452	1922	1684	1213
(WY)	1987	1993	1983	1983	1984	1973	1965	1991	1984	1993	1979	1965
MIN	8.14	9.49	5.62	3.63	3.54	23.9	32.4	44.3	19.2	14.9	14.3	8.83
(WY)	1990	1990	1990	1959	1959	1968	1957	1989	1989	1989	1948	1958

SUMMARY STATISTICS	FOR 1993 CALENDAR YEAR	FOR 1994 WATER YEAR	WATER YEARS 1941 - 1994
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ANNUAL TOTAL	297391		95327			
ANNUAL MEAN	815		261		232	
HIGHEST ANNUAL MEAN					869	1993
LOWEST ANNUAL MEAN					30.4	1956
HIGHEST DAILY MEAN	6010	Apr 1	1680	Jun 26	7640	Jun 21 1954
LOWEST DAILY MEAN	41	Dec 28	35	Feb 10	2.8	Dec 22 1989
ANNUAL SEVEN-DAY MINIMUM	56	Dec 24	38	Feb 10	3.0	Jan 19 1959
INSTANTANEOUS PEAK FLOW			1690	Jun 26	8460	Jun 21 1954
INSTANTANEOUS PEAK STAGE			10.33	Jun 26	14.88	Jun 21 1954
ANNUAL RUNOFF (AC-FT)	589900		189100		168400	
ANNUAL RUNOFF (CFSM)	1.90		.61		.54	
ANNUAL RUNOFF (INCHES)	25.79		8.27		7.36	
10 PERCENT EXCEEDS	2100		564		578	
50 PERCENT EXCEEDS	338		164		80	
90 PERCENT EXCEEDS	84		60		16	

e Estimated.

IOWA RIVER BASIN

05451500 IOWA RIVER AT MARSHALLTOWN, IA

LOCATION.--Lat 42°03'57", long 92°54'27", in SE1/4 SE1/4 sec.23, T.84 N., R.18 W., Marshall County, Hydrologic Unit 07080208, on right bank 10 ft downstream from bridge on State Highway 14, 1,500 ft upstream from Burnett Creek, 2.2 mi upstream from Linn Creek, and at mile 222.8.

DRAINAGE AREA.--1,532 mi², revised.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1902 to September 1903, October 1914 to September 1927, October 1932 to current year. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1558: 1915-18, 1919 (M), 1920, 1921-23 (M), 1924-27, 1933, 1934 (M), 1936, 1938, 1947 (M).

GAGE.--Water-stage encoder. Datum of gage is 853.10 ft above sea level. See WSP 1728 for history of changes prior to Sept. 21, 1934.

REMARKS.--Estimated daily discharges: Dec. 8-14, Dec. 20 to Mar. 5, July 31 to Aug. 1, Aug. 31 to Sept. 5, and Sept. 10-16. Records good except those for estimated daily discharges, which are poor. U.S. Army Corps of Engineers data collection platform at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1900	996	704	e340	e220	e800	703	763	584	2860	e788	e380
2	1780	988	687	e355	e241	e1000	689	742	577	2420	788	e325
3	1710	963	665	e320	e210	e1200	660	747	554	1920	753	e295
4	1620	960	661	e280	e220	e1800	633	740	529	2100	930	e330
5	1560	932	632	e300	e240	e4600	646	729	513	2980	937	e400
6	1530	875	612	e280	e278	5520	622	809	515	2260	919	468
7	1490	866	590	e260	e250	4260	613	922	570	2080	869	487
8	1440	856	e560	e280	e230	2930	605	997	1220	2520	824	468
9	2170	844	e540	e303	e220	2570	608	1030	980	2490	750	444
10	2430	812	e520	e325	e200	2370	606	1010	837	2130	698	e375
11	2160	834	e500	e310	e230	1930	578	963	808	1930	677	e335
12	2010	807	e480	e280	e290	1640	617	905	711	1850	689	e300
13	1870	866	e540	e250	250	e280	1500	669	825	2380	1870	907
14	1770	846	e600	e230	e265	1410	684	785	2130	1810	1060	e240
15	1730	831	621	e250	e270	1380	855	777	1850	1660	1110	e230
16	1700	816	602	e230	e280	1290	1050	761	1670	1520	1110	e225
17	1600	812	613	e240	e400	1210	1060	746	1580	1510	1070	319
18	1510	793	642	e198	e690	1140	1070	717	1460	1550	952	284
19	1450	793	660	e215	e1200	1070	1060	673	1290	1550	829	267
20	1400	773	e605	e235	e2500	1040	1010	650	1360	1740	736	262
21	1360	757	e520	e260	e1800	1020	963	631	1750	1750	658	293
22	1310	754	e435	e290	e1400	982	906	601	1760	1790	607	582
23	1270	753	e280	e330	e1100	942	847	601	2740	1840	559	971
24	1250	733	e240	e320	e900	927	817	638	4320	1830	511	1040
25	1220	736	e218	e300	e800	888	793	638	3850	1720	472	1260
26	1220	709	e200	e280	e700	863	770	630	3540	1510	461	1550
27	1160	706	e200	e250	e640	843	726	700	3460	1270	447	1380
28	1140	691	e220	e240	e700	803	703	721	3480	1100	429	1210
29	1110	704	e200	e220	---	770	715	686	3240	990	409	1060
30	1070	697	e240	e213	---	741	755	651	2910	916	412	959
31	1030	---	e290	e209	---	717	---	613	---	e844	e390	---
TOTAL	47970	24503	15077	8393	16754	50156	23033	23401	53168	56310	22751	16999
MEAN	1547	817	486	271	598	1618	768	755	1772	1816	734	567
MAX	2430	996	704	355	2500	5520	1070	1030	4320	2980	1110	1550
MIN	1030	691	200	198	200	717	578	601	513	844	390	225
AC-FT	95150	48600	29910	16650	33230	99480	45690	46420	105500	111700	45130	33720
CFSM	.99	.52	.31	.17	.38	1.03	.49	.48	1.13	1.16	.47	.36
IN.	1.14	.58	.36	.20	.40	1.19	.55	.56	1.26	1.34	.54	.40

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1903 - 1994, BY WATER YEAR (WY)

	MEAN	496	493	358	306	626	1601	1478	1276	1696	1002	573	515
MAX	2721	2593	2139	2231	3424	4206	6796	5559	7619	8389	7062	3362	
(WY)	1987	1973	1983	1973	1915	1973	1965	1991	1918	1993	1993	1993	
MIN	39.2	46.2	31.0	10.2	20.9	98.4	99.3	49.9	16.0	41.8	35.9	27.5	
(WY)	1940	1940	1990	1977	1940	1934	1934	1934	1934	1977	1934	1939	

SUMMARY STATISTICS	FOR 1993 CALENDAR YEAR	FOR 1994 WATER YEAR	WATER YEARS 1903 - 1994
ANNUAL TOTAL	1251590	358515	
ANNUAL MEAN	3429	982	868
HIGHEST ANNUAL MEAN			3456
LOWEST ANNUAL MEAN			77.3
HIGHEST DAILY MEAN	19300	Aug 17	39400
LOWEST DAILY MEAN	200	Dec 26	4.7
ANNUAL SEVEN-DAY MINIMUM	217	Dec 24	5.2
INSTANTANEOUS PEAK FLOW			6420
INSTANTANEOUS PEAK STAGE			16.75
ANNUAL RUNOFF (AC-FT)	2483000	711100	628900
ANNUAL RUNOFF (CFSM)	2.19	.63	.56
ANNUAL RUNOFF (INCHES)	29.77	8.53	7.54
10 PERCENT EXCEEDS	7740	1860	2110
50 PERCENT EXCEEDS	2250	770	381
90 PERCENT EXCEEDS	460	261	71

e Estimated.

05451500 IOWA RIVER AT MARSHALLTOWN, IA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--April 1988 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: April 1988 to current year.

WATER TEMPERATURES: April 1988 to current year.

SUSPENDED-SEDIMENT DISCHARGE: April 1988 to current year.

REMARKS.--Records of specific conductance are obtained from suspended-sediment samples at times of analysis. During periods of partial ice cover, sediment samples are collected in open water channel.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 805 microsiemens May 13, 1990; minimum daily, 239 microsiemens Aug. 17, 1993.

WATER TEMPERATURES: Maximum daily, 34.0°C July 27, 1988; minimum daily, 0.0°C on many days during winter period.

SEDIMENT CONCENTRATIONS: Maximum daily mean, 4,960 mg/L Mar. 19, 1990; minimum daily mean, 2 mg/L Aug. 8, 16, 1988.

SEDIMENT LOADS: Maximum daily, 76,700 tons July 12, 1993; minimum daily, 0.20 tons Aug. 8, 16, 1988.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 683 microsiemens Jan. 12; minimum daily, 256 microsiemens Feb. 20.

WATER TEMPERATURES: Maximum daily, 28.0°C June 17; minimum daily, 0.0°C on many days during winter period.

SEDIMENT CONCENTRATIONS: Maximum daily mean, 2,860 mg/L June 13; minimum daily mean, 12 mg/L Feb. 7.

SEDIMENT LOADS: Maximum daily, 21,200 tons June 13; minimum daily, 8.1 tons Feb. 7.

SPECIFIC CONDUCTANCE MICROSIEMENS/CM AT 25 DEG C, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	431	457	---	517	530	---	414	431	521	462	425
2	---	460	462	---	---	556	---	412	499	---	451	463
3	488	419	445	---	551	586	556	407	523	---	460	---
4	447	441	415	---	637	527	497	434	607	479	516	---
5	457	427	454	---	---	269	546	423	491	518	---	439
6	425	---	489	---	---	305	510	423	474	465	---	445
7	575	439	465	---	596	388	458	---	551	498	531	496
8	587	433	448	---	---	---	423	---	452	512	474	486
9	---	435	434	---	553	---	443	453	526	490	519	---
10	---	426	427	---	---	434	452	481	531	---	516	---
11	572	437	462	534	585	482	430	427	---	511	484	---
12	549	---	438	683	---	505	418	429	452	586	522	---
13	655	453	437	---	---	533	543	545	391	480	496	520
14	590	---	463	601	629	495	453	---	512	524	490	490
15	538	469	460	---	642	485	463	---	559	560	500	507
16	567	463	450	---	435	550	477	552	601	436	530	491
17	---	479	452	544	502	485	436	488	586	---	540	---
18	591	530	469	---	456	492	429	437	---	506	556	---
19	---	440	447	---	---	---	436	466	---	532	457	480
20	611	437	450	565	256	---	480	442	538	544	---	499
21	595	430	444	539	330	525	433	515	560	534	---	516
22	611	451	458	---	376	551	461	488	564	514	448	478
23	---	465	508	559	---	512	457	550	---	---	521	588
24	---	459	---	486	---	500	443	479	---	449	465	---
25	493	---	---	---	---	533	428	505	---	528	475	594
26	419	---	---	492	---	496	461	522	---	455	472	547
27	463	---	---	---	---	494	417	510	564	---	---	586
28	461	480	---	547	---	559	---	---	524	513	---	471
29	440	442	---	---	---	519	419	---	520	469	425	472
30	---	444	---	---	---	606	---	574	507	---	506	583
31	---	---	---	494	---	655	---	482	---	---	521	---

IOWA RIVER BASIN

05451500 IOWA RIVER AT MARSHALLTOWN, IA--Continued

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1993 to SEPTEMBER 1994

DAY	MEAN CONCEN- TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN- TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN- TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN- TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN- TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN- TRATION (MG/L)	LOAD (TONS/ DAY)
OCTOBER			NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	101	516	159	427	133	253	115	106	121	72	34	73
2	110	530	143	382	145	269	112	107	107	70	45	121
3	125	578	107	279	78	140	113	98	91	52	36	117
4	107	468	161	419	87	155	111	84	45	27	95	462
5	110	466	141	355	120	205	115	93	37	24	591	7340
6	105	434	128	303	106	175	113	85	27	20	553	8120
7	100	401	125	291	131	208	104	73	12	8.1	482	5460
8	76	296	172	396	111	168	97	73	19	12	494	3900
9	119	713	175	398	106	155	93	76	61	36	435	3020
10	115	755	153	334	112	157	91	80	44	24	280	1800
11	91	530	78	175	119	161	89	74	39	24	200	1050
12	98	532	59	129	139	180	91	69	42	33	177	783
13	71	358	117	276	158	230	96	65	45	34	169	684
14	83	399	129	296	148	240	142	88	56	40	158	603
15	67	314	130	292	140	235	103	70	46	34	140	523
16	65	296	75	165	153	248	93	58	40	30	129	446
17	61	266	92	202	144	238	92	60	24	26	133	434
18	55	224	117	251	166	287	96	51	30	56	106	327
19	54	212	127	271	174	310	96	56	278	901	84	242
20	75	284	151	316	162	265	114	72	327	2210	74	206
21	63	233	155	317	165	232	118	83	164	797	73	200
22	75	266	137	279	164	193	128	100	91	344	75	198
23	63	218	139	282	167	126	145	129	53	157	96	243
24	80	269	176	349	152	98	112	97	36	87	89	222
25	97	318	137	271	145	85	112	91	31	67	105	252
26	91	298	102	196	136	73	118	89	32	60	55	128
27	134	417	83	159	128	69	107	72	28	48	43	98
28	146	449	76	142	124	74	102	66	31	59	63	136
29	106	319	94	179	120	65	108	64	---	---	67	140
30	89	255	141	265	115	75	117	67	---	---	47	94
31	87	242	---	---	118	92	121	68	---	---	30	57
TOTAL	---	11856	---	8396	---	5461	---	2464	---	5352.1	---	37479
APRIL			MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	27	52	110	226	167	263	405	3120	93	198	84	86
2	35	66	93	187	114	177	330	2180	81	172	48	42
3	33	60	90	182	107	159	252	1310	71	144	56	45
4	47	81	92	183	98	140	361	2390	121	311	63	56
5	39	69	94	185	119	165	706	5890	107	270	114	123
6	32	54	105	231	150	208	407	2480	87	215	101	127
7	51	84	119	298	214	348	332	1860	83	194	86	113
8	42	69	129	348	1050	3830	602	4180	84	186	93	117
9	49	81	136	378	544	1450	456	3090	64	129	90	108
10	57	94	124	338	343	776	305	1760	52	99	83	84
11	83	129	113	295	283	619	248	1290	58	105	74	67
12	100	167	97	236	238	457	223	1110	66	124	64	52
13	61	111	104	232	2860	21200	199	1000	177	440	57	40
14	97	181	109	231	979	5780	223	1080	208	597	59	38
15	173	404	109	229	550	2750	198	890	177	533	55	34
16	217	614	111	228	412	1860	177	726	194	585	57	35
17	196	563	119	239	379	1620	168	686	182	526	80	69
18	211	612	115	223	348	1370	164	687	167	430	84	64
19	219	630	112	203	293	1030	163	684	146	328	71	51
20	167	454	105	184	333	1230	206	978	127	251	58	41
21	163	423	100	170	527	2520	205	970	110	196	83	71
22	159	389	103	167	465	2220	179	866	96	158	450	852
23	123	281	99	160	792	6710	200	992	71	107	539	1400
24	131	288	146	252	1400	16300	243	1200	74	101	432	1210
25	153	327	123	212	718	7500	197	917	72	92	431	1460
26	147	305	128	219	489	4680	197	804	58	72	423	1770
27	145	284	158	300	453	4230	161	553	61	74	361	1350
28	133	252	134	261	479	4500	127	376	66	77	315	1030
29	108	209	122	226	446	3900	102	272	81	90	264	752
30	104	213	117	205	444	3480	89	219	64	71	187	486
31	---	---	151	250	---	---	87	198	74	78	---	---
TOTAL	---	7546	---	7278	---	101472	---	44758	---	6953	---	11773
YEAR	250788.1											

05451500 IOWA RIVER AT MARSHALLTOWN, IA--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	5.0	.5	---	.0	.5	---	13.0	20.5	21.5	25.0	21.5
2	---	6.5	3.0	---	---	1.0	---	14.0	19.0	---	23.5	19.0
3	15.0	8.0	2.5	---	.0	1.0	11.0	13.0	19.5	---	24.0	---
4	14.5	9.0	2.5	---	.0	1.5	10.0	15.0	25.0	24.5	22.5	---
5	13.5	6.0	2.0	---	---	1.5	6.0	14.5	25.0	25.0	---	21.5
6	16.0	---	2.5	---	---	1.0	5.5	12.0	25.0	25.0	---	19.5
7	20.0	4.0	2.0	---	.0	2.5	7.5	---	25.0	26.0	25.0	23.0
8	18.0	4.0	1.5	---	---	---	10.0	---	19.5	22.5	23.5	24.0
9	---	5.0	3.0	---	.0	---	12.5	13.0	22.5	22.0	23.5	---
10	---	4.5	2.5	---	---	2.0	13.5	14.0	22.5	---	22.0	---
11	11.0	7.0	.0	.0	.0	3.0	10.0	14.0	---	23.5	20.0	---
12	12.0	---	.5	.0	---	4.0	9.0	15.0	23.5	25.0	20.5	---
13	11.0	6.5	2.0	---	---	5.0	10.0	15.0	20.0	23.0	21.0	24.0
14	10.0	---	2.5	.0	.0	6.0	13.5	---	23.0	22.0	20.5	25.0
15	14.0	5.5	4.0	---	.5	6.5	13.0	---	27.0	23.0	21.0	25.5
16	13.0	4.5	3.5	---	.5	6.0	14.5	17.0	26.0	24.5	21.0	22.0
17	---	5.5	4.0	.0	1.0	5.5	16.0	21.5	28.0	---	22.0	---
18	12.0	5.0	4.0	---	1.0	7.0	16.5	19.5	---	24.0	24.0	---
19	---	5.0	4.0	---	---	---	16.0	20.0	---	25.0	24.5	20.5
20	14.0	5.0	2.5	.0	.5	---	13.5	20.5	23.5	24.0	---	20.0
21	12.0	6.0	.5	.0	1.0	11.0	13.5	24.0	25.0	22.5	---	21.0
22	10.0	5.0	.0	---	.0	10.0	14.0	26.0	25.0	23.5	22.5	17.0
23	---	6.5	.0	.0	---	11.5	13.5	24.5	---	---	22.5	15.5
24	---	5.0	---	.0	---	9.0	20.5	20.0	---	25.0	24.5	---
25	14.0	---	---	---	---	7.0	19.0	22.5	---	24.0	26.0	16.5
26	11.0	---	---	.0	---	8.5	20.0	19.0	---	23.0	24.5	14.5
27	8.0	---	---	---	---	8.5	13.5	20.0	20.5	---	---	14.0
28	9.0	.0	---	.0	---	6.0	---	---	21.5	24.0	---	14.5
29	6.0	.5	---	---	---	5.0	11.0	---	22.0	23.5	21.0	15.0
30	---	.0	---	---	---	5.0	---	25.0	22.0	---	21.5	17.5
31	---	---	---	.0	---	7.5	---	24.0	---	---	20.0	---

05451700 TIMBER CREEK NEAR MARSHALLTOWN, IA

LOCATION.--Lat 42°00'32", long 92°51'08", in SE1/4 SW1/4 sec.8, T.83 N., R.17 W., Marshall County, Hydrologic Unit 07080208, on left bank 20 ft upstream from bridge on Shady Oaks Road, 3.0 mi upstream from mouth, and 3.0 mi southeast of Marshalltown.

DRAINAGE AREA.--118 mi².

PERIOD OF RECORD.--October 1949 to current year.

REVISED RECORDS.--WSP 1708: 1950-55, 1957-59.

GAGE.--Water-stage encoder. Datum of gage is 849.44 ft above sea level. Prior to Oct. 1, 1991 at site 1/8 mile upstream at same datum.

REMARKS.--Estimated daily discharges: Nov. 27-30, Dec. 11-13, and Dec. 23 to Mar. 5. Records good except those for estimated daily discharges, which are poor. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data. U.S. Army Corps of Engineers rain-gage and data collection platform at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1947 reached a stage of 16.8 ft, discharge, 5,700 ft³/s.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	219	93	57	e50	e28	e70	48	61	38	120	31	13
2	202	91	57	e45	e28	e68	46	55	44	79	30	13
3	196	89	56	e40	e29	e70	45	53	42	66	30	12
4	188	88	56	e35	e28	e400	45	52	39	73	35	28
5	177	83	55	e38	e31	e580	45	52	40	66	29	48
6	172	82	54	e40	e35	306	44	68	40	60	26	26
7	165	81	52	e43	e30	170	43	66	40	56	25	20
8	164	78	52	e35	e27	123	43	65	87	62	25	18
9	190	76	52	e37	e26	101	41	62	61	55	23	15
10	170	75	52	e40	e25	90	40	60	57	54	24	15
11	159	75	e40	e42	e27	81	38	57	54	52	25	12
12	153	76	e46	e40	e30	80	43	55	51	49	39	11
13	145	82	e50	e35	e28	77	44	54	295	57	42	11
14	142	73	54	e30	e27	75	42	54	131	251	27	10
15	150	74	54	e25	e27	73	210	55	100	86	24	9.9
16	150	72	52	e29	e35	69	115	51	87	68	23	11
17	139	71	54	e33	e50	69	94	50	80	62	22	8.5
18	132	69	53	e28	e150	67	86	48	111	57	21	7.9
19	130	68	50	e23	e1100	65	76	48	103	53	19	7.6
20	126	66	49	e25	e600	64	71	47	84	52	19	7.5
21	122	66	46	e28	e180	64	71	45	78	50	16	9.7
22	120	64	42	e34	e120	61	67	44	71	46	16	71
23	120	64	e23	e47	e100	61	63	46	101	44	16	37
24	116	63	e23	e42	e64	58	62	53	99	41	15	32
25	112	68	e22	e37	e68	55	61	46	82	40	15	172
26	106	61	e22	e25	e60	54	59	45	77	38	22	142
27	101	e56	e23	e32	e64	53	54	43	71	37	17	93
28	100	e50	e21	e30	e72	51	55	41	69	37	12	72
29	97	e54	e25	e27	---	51	55	42	66	35	13	59
30	98	e58	e31	e26	---	50	57	42	64	32	18	53
31	96	---	e40	e27	---	49	---	39	---	30	19	---
TOTAL	4457	2166	1363	1068	3089	3305	1863	1599	2362	1908	718	1045.1
MEAN	144	72.2	44.0	34.5	110	107	62.1	51.6	78.7	61.5	23.2	34.8
MAX	219	93	57	50	1100	580	210	68	295	251	42	172
MIN	96	50	21	23	25	49	38	39	38	30	12	7.5
AC-FT	8840	4300	2700	2120	6130	6560	3700	3170	4690	3780	1420	2070
CFSM	1.22	.61	.37	.29	.93	.90	.53	.44	.67	.52	.20	.30
IN.	1.41	.68	.43	.34	.97	1.04	.59	.50	.74	.60	.23	.33

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1950 - 1994, BY WATER YEAR (WY)

	MEAN	38.3	40.7	36.8	37.4	87.5	149	105	121	140	94.7	61.5	41.3
MAX	286	265	183	200	351	597	385	447	493	866	635	341	
(WY)	1987	1984	1984	1973	1971	1979	1993	1974	1984	1993	1993	1986	
MIN	.76	1.11	.60	.054	3.07	5.11	2.84	3.08	1.09	1.03	1.16	1.21	
(WY)	1951	1951	1956	1977	1954	1956	1956	1977	1977	1956	1956	1950	

SUMMARY STATISTICS

FOR 1993 CALENDAR YEAR

FOR 1994 WATER YEAR

WATER YEARS 1950 - 1994

ANNUAL TOTAL	111772	24943.1	
ANNUAL MEAN	306	68.3	79.4
HIGHEST ANNUAL MEAN			299
LOWEST ANNUAL MEAN			2.84
HIGHEST DAILY MEAN	5310	Jul 9	1100
LOWEST DAILY MEAN	21	Dec 28	7.5
ANNUAL SEVEN-DAY MINIMUM	23	Dec 23	8.9
INSTANTANEOUS PEAK FLOW			a1200
INSTANTANEOUS PEAK STAGE			a14.14
INSTANTANEOUS LOW FLOW			7.2
ANNUAL RUNOFF (AC-FT)	221700	49470	57540
ANNUAL RUNOFF (CFSM)	2.60	.58	.67
ANNUAL RUNOFF (INCHES)	35.24	7.86	9.14
10 PERCENT EXCEEDS	642	121	172
50 PERCENT EXCEEDS	196	53	32
90 PERCENT EXCEEDS	50	23	2.8

e Estimated.

a Ice affected.

05451900 RICHLAND CREEK NEAR HAVEN, IA

LOCATION.--Lat 41°53'58", long 92°28'27", in SE1/4 NE1/4 sec.21, T.82 N., R.14 W., Tama County, Hydrologic Unit 07080208, on right bank 5 ft upstream from bridge on county highway, 0.5 mi northeast of Haven, and 3.0 mi upstream from mouth.

DRAINAGE AREA.--56.1 mi².

PERIOD OF RECORD.--October 1949 to current year.

REVISED RECORDS.--WSP 1708: 1950-55, 1956 (M), 1957, 1958 (M), 1959.

GAGE.--Water-stage encoder. Datum of gage is 788.69 ft above sea level. Prior to Oct. 1, 1971, at datum 10.00 ft higher.

REMARKS.--Estimated daily discharges: Nov. 26-28, Dec. 21 to Mar. 4, June 21-24, and July 7. Records fair except those for estimated daily discharges, which are poor. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data. U.S. Army Corps of Engineers data collection platform at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1918 reached a stage of 24.3 ft present datum, discharge not determined.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	114	43	24	e25	e13	e20	18	21	16	56	12	6.4
2	102	42	24	e22	e15	e24	18	19	18	36	12	6.5
3	98	42	23	e19	e15	e30	18	18	17	29	13	6.6
4	93	40	22	e17	e14	e350	18	18	16	44	13	13
5	85	37	22	e15	e15	300	18	18	16	31	11	14
6	82	37	22	e17	e17	138	17	24	16	32	11	8.8
7	79	37	21	e16	e15	73	17	22	17	e45	11	8.0
8	77	36	21	e14	e13	50	18	21	32	75	10	7.9
9	102	34	21	e15	e11	40	17	20	20	35	9.3	7.7
10	81	33	21	e17	e10	35	16	19	21	31	10	7.0
11	78	33	20	e19	e11	31	16	19	22	29	11	7.0
12	74	34	23	e18	e13	29	20	18	20	27	14	7.2
13	69	37	21	e15	e13	29	19	17	334	33	13	7.1
14	67	32	21	e12	e12	28	17	18	81	29	10	6.1
15	73	32	21	e9.6	e13	27	38	18	54	26	9.4	5.4
16	70	31	20	e11	e19	25	26	17	43	26	9.1	5.1
17	65	30	20	e12	e28	24	23	17	37	25	8.8	5.2
18	62	29	20	e10	e80	23	22	17	77	23	8.4	5.3
19	61	29	20	e9.0	e700	21	20	17	71	21	8.0	5.2
20	59	28	20	e9.5	e200	22	21	17	49	35	7.8	5.1
21	57	28	e16	e12	e60	23	21	16	e41	22	7.5	5.1
22	55	26	e12	e15	e36	22	20	16	e70	21	7.3	9.4
23	54	26	e10	e21	e30	22	20	18	e100	20	7.0	7.2
24	53	26	e9.0	e25	e21	21	20	19	e80	19	6.5	6.7
25	51	29	e8.8	e23	e23	20	19	20	47	18	6.2	22
26	49	e22	e8.7	e20	e20	21	19	19	57	17	7.5	25
27	47	e21	e9.2	e19	e19	20	18	17	39	17	6.5	14
28	47	e23	e8.2	e17	e21	20	19	16	36	17	6.2	11
29	45	26	e9.6	e16	---	20	19	17	33	15	6.2	9.9
30	44	32	e14	e14	---	19	20	17	31	14	7.5	8.9
31	43	---	e20	e12	---	19	---	15	---	13	7.2	---
TOTAL	2136	955	552.5	496.1	1457	1546	592	565	1511	881	287.4	263.8
MEAN	68.9	31.8	17.8	16.0	52.0	49.9	19.7	18.2	50.4	28.4	9.27	8.79
MAX	114	43	24	25	700	350	38	24	334	75	14	25
MIN	43	21	8.2	9.0	10	19	16	15	16	13	6.2	5.1
AC-FT	4240	1890	1100	984	2890	3070	1170	1120	3000	1750	570	523
CFSM	1.23	.57	.32	.29	.93	.89	.35	.32	.90	.51	.17	.16
IN.	1.42	.63	.37	.33	.97	1.03	.39	.37	1.00	.58	.19	.17

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1950 - 1994, BY WATER YEAR (WY)

	MEAN	18.3	23.2	17.9	20.3	43.4	69.8	58.2	57.1	62.3	46.5	33.7	21.0
MAX	105	122	85.8	104	165	270	323	337	270	463	427	159	
(WY)	1987	1984	1983	1960	1965	1979	1991	1974	1990	1993	1993	1993	
MIN	.24	.31	.25	.020	.32	1.05	.85	2.04	.25	.66	.76	.58	
(WY)	1957	1951	1957	1977	1989	1956	1956	1956	1956	1977	1955	1950	

SUMMARY STATISTICS FOR 1993 CALENDAR YEAR FOR 1994 WATER YEAR WATER YEARS 1950 - 1994

ANNUAL TOTAL	57729.5	11242.8	
ANNUAL MEAN	158	30.8	39.3
HIGHEST ANNUAL MEAN			162
LOWEST ANNUAL MEAN			2.49
HIGHEST DAILY MEAN	2260	700	2880
LOWEST DAILY MEAN	8.2	5.1	.00
ANNUAL SEVEN-DAY MINIMUM	9.1	5.2	.00
INSTANTANEOUS PEAK FLOW		1170	12200
INSTANTANEOUS PEAK STAGE		a19.49	26.71
INSTANTANEOUS LOW FLOW		4.9	
ANNUAL RUNOFF (AC-FT)	114500	22300	28440
ANNUAL RUNOFF (CFSM)	2.82	.55	.70
ANNUAL RUNOFF (INCHES)	38.28	7.46	9.51
10 PERCENT EXCEEDS	343	58	78
50 PERCENT EXCEEDS	82	20	14
90 PERCENT EXCEEDS	20	8.8	1.0

e Estimated.

a Ice affected.

b Also Sept. 16, 17.

IOWA RIVER BASIN

05452000 SALT CREEK NEAR ELBERON, IA

LOCATION.--Lat 41°57'51", long 92°18'47", in NW1/4 NW1/4 sec.36, T.83 N., R.13 W., Tama County, Hydrologic Unit 07080208, on left bank 20 ft upstream from bridge on U.S. Highway 30, 2.0 mi upstream from Hog Run, 3.0 mi south of Elberon, and 9.0 mi upstream from mouth.

DRAINAGE AREA.--201 mi².

PERIOD OF RECORD.--October 1945 to current year.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1558: 1946.

GAGE.--Water-stage encoder. Datum of gage is 781.58 ft above sea level (Iowa Highway Commission bench mark). Prior to Oct. 15, 1945 and June 14, 1947 to Feb. 10, 1949, nonrecording gage on upstream side of bridge at present datum.

REMARKS.--Estimated daily discharges: Oct. 9, Nov. 27-29, Dec. 21 to Mar. 2, June 13-16, 26, 27, July 6, 7, and July 29 to Aug. 1. Records good except those for estimated daily discharge, which are poor. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data. U.S. Army Corps of Engineers rain gage and data collection platform at station. Rating extended above 33,000 ft³/s.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 16, 1944 reached a stage of 19.9 ft, from floodmark at downstream side of bridge, discharge, about 30,000 ft³/s.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	354	142	101	e54	e34	e54	68	77	65	110	e79	40
2	316	141	97	e47	e39	e57	68	71	70	98	75	39
3	301	139	86	e42	e37	74	69	69	68	91	74	40
4	288	137	87	e38	e41	598	67	69	65	94	76	48
5	268	130	87	e36	e48	1610	67	70	64	99	68	68
6	260	124	86	e39	e50	731	66	103	64	e85	65	48
7	253	124	81	e38	e47	248	66	104	98	e80	64	43
8	245	124	84	e33	e43	158	67	99	301	569	62	41
9	e360	119	83	e35	e42	111	68	95	103	178	57	40
10	313	118	82	e38	e39	97	65	89	100	115	60	39
11	290	118	66	e41	e41	83	63	87	115	102	65	38
12	269	115	83	e40	e43	86	73	83	117	98	67	36
13	248	131	88	e36	e40	86	78	80	e700	937	74	36
14	238	115	84	e33	e42	84	71	80	e500	2770	62	34
15	242	112	84	e30	e47	84	108	81	e400	1690	58	33
16	237	109	80	e32	e53	75	95	73	e290	396	56	33
17	221	108	80	e37	e60	72	84	71	228	344	54	32
18	210	103	81	e34	e200	71	82	69	88	252	52	32
19	206	102	81	e29	e700	67	77	67	101	211	51	32
20	200	100	81	e32	e1100	69	73	66	361	199	49	32
21	196	98	e60	e33	e200	78	77	64	123	173	47	32
22	187	97	e50	e36	e90	79	74	62	96	152	45	38
23	183	97	e44	e41	e70	81	73	63	408	137	44	41
24	179	96	e36	e49	e60	73	75	80	602	126	43	39
25	175	100	e33	e46	e60	71	74	73	260	117	42	205
26	167	92	e31	e44	e54	73	72	72	e200	108	46	397
27	162	e80	e33	e42	e50	73	65	66	e170	103	43	213
28	162	e77	e30	e41	e54	71	66	65	134	97	41	138
29	152	e82	e33	e37	---	68	70	70	117	e90	40	109
30	148	86	e40	e34	---	67	69	78	108	e84	43	97
31	144	---	e46	e32	---	67	---	69	---	e82	46	---
TOTAL	7174	3316	2118	1179	3384	5316	2190	2365	6116	9787	1748	2093
MEAN	231	111	68.3	38.0	121	171	73.0	76.3	204	316	56.4	69.8
MAX	360	142	101	54	1100	1610	108	104	700	2770	79	397
MIN	144	77	30	29	34	54	63	62	64	80	40	32
AC-FT	14230	6580	4200	2340	6710	10540	4340	4690	12130	19410	3470	4150
CFSM	1.15	.55	.34	.19	.60	.85	.36	.38	1.01	1.57	.28	.35
IN.	1.33	.61	.39	.22	.63	.98	.41	.44	1.13	1.81	.32	.39

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1946 - 1994, BY WATER YEAR (WY)

	MEAN	65.1	81.8	66.3	75.2	141	279	194	189	251	200	109	71.8
MAX	250	425	314	337	607	844	652	573	1825	1803	1157	440	
(WY)	1978	1983	1983	1973	1982	1993	1983	1982	1947	1993	1993	1993	
MIN	4.85	4.08	2.29	1.14	7.02	11.7	11.0	5.75	7.79	3.84	5.65	5.43	
(WY)	1951	1951	1977	1977	1977	1954	1989	1977	1977	1989	1949	1950	

SUMMARY STATISTICS	FOR 1993 CALENDAR YEAR			FOR 1994 WATER YEAR			WATER YEARS 1946 - 1994		
ANNUAL TOTAL	206038			46786					
ANNUAL MEAN	564			128			144		
HIGHEST ANNUAL MEAN							569		
LOWEST ANNUAL MEAN							23.2		
HIGHEST DAILY MEAN	14000			2770			14000		
LOWEST DAILY MEAN	30			29			.85		
ANNUAL SEVEN-DAY MINIMUM	34			32			.95		
INSTANTANEOUS PEAK FLOW				5060			41800		
INSTANTANEOUS PEAK STAGE				16.98			20.85		
ANNUAL RUNOFF (AC-FT)	408700			92800			104000		
ANNUAL RUNOFF (CFSM)	2.81			.64			.71		
ANNUAL RUNOFF (INCHES)	38.13			8.66			9.71		
10 PERCENT EXCEEDS	1280			243			280		
50 PERCENT EXCEEDS	295			76			54		
90 PERCENT EXCEEDS	63			38			8.5		

e Estimated.

e Estimated.
a Ice affected.

IOWA RIVER BASIN

05453000 BIG BEAR CREEK AT LADORA, IA

LOCATION.--Lat 41°44'58", long 92°10'55", in SW1/4 SW1/4 sec.7, T.80 N., R.11 W., Iowa County, Hydrologic Unit 07080208, on left bank 10 ft downstream from bridge on county highway V52, 0.4 mi south of Ladora, 1.2 mi downstream from Coats Creek, 2.8 mi upstream from Little Bear Creek, and 8.1 mi upstream from mouth.

DRAINAGE AREA.--189 mi².

PERIOD OF RECORD.--October 1945 to current year. Prior to October 1966, published as Bear Creek at Ladora.

REVISED RECORDS.--WSP 1308: 1947 (M). WSP 1438: Drainage area.

GAGE.--Water-stage encoder. Datum of gage is 744.94 ft above sea level. Oct. 1945 to June 26, 1946, non-recording gage and June 27, 1946 to Sept. 30, 1980, water-stage recorder at datum 10.00 ft higher.

REMARKS.--Estimated daily discharges: Nov. 27-29, Dec. 22 to Mar. 2, and June 10-13. Records good except those for estimated daily discharges, which are poor. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data. U.S. Army Corps of Engineers data collection platform at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	405	104	72	e38	e19	e66	56	59	25	122	28	16
2	345	102	66	e34	e21	e100	56	50	32	138	27	15
3	310	100	67	e30	e20	160	54	46	36	86	30	14
4	288	98	57	e26	e19	1000	55	45	28	82	48	30
5	269	92	56	e23	e21	1170	53	45	26	75	39	73
6	253	86	55	e24	e23	682	52	55	27	68	30	26
7	239	88	50	e23	e22	329	51	61	29	77	28	20
8	229	87	55	e21	e20	228	52	55	1100	223	27	18
9	256	82	54	e23	e18	176	52	52	202	141	24	17
10	232	82	53	e25	e17	155	51	49	e120	92	24	16
11	212	81	51	e27	e18	130	48	51	e76	77	25	15
12	200	83	63	e24	e18	128	54	48	e64	67	27	14
13	188	103	65	e21	e17	121	59	48	e700	62	45	14
14	181	85	55	e18	e18	113	52	47	283	59	29	14
15	182	81	53	e17	e20	108	53	53	179	56	24	13
16	186	76	49	e18	e50	97	58	45	137	77	22	12
17	172	76	49	e19	e100	93	51	41	105	75	21	12
18	163	72	51	e17	e370	89	52	38	83	54	21	12
19	162	74	50	e16	e1300	84	49	36	446	49	20	11
20	154	68	47	e18	e600	82	46	35	148	61	19	10
21	146	69	42	e21	e250	88	49	34	132	62	18	11
22	141	66	e33	e25	e130	83	49	33	100	47	17	13
23	135	66	e24	e35	e90	78	46	33	112	43	17	14
24	132	65	e20	e43	e66	73	48	55	396	39	16	13
25	129	72	e19	e38	e70	69	49	43	152	38	16	21
26	123	67	e18	e33	e64	68	46	41	129	36	16	57
27	117	e54	e18	e28	e60	66	41	35	107	34	18	31
28	118	e58	e16	e23	e58	62	44	32	94	33	15	23
29	111	e63	e17	e20	---	60	48	30	85	31	14	20
30	105	68	e19	e19	---	57	47	30	78	30	15	18
31	105	---	e24	e18	---	57	---	28	---	28	18	---
TOTAL	5988	2368	1368	765	3499	5872	1521	1353	5231	2162	738	593
MEAN	193	78.9	44.1	24.7	125	189	50.7	43.6	174	69.7	23.8	19.8
MAX	405	104	72	43	1300	1170	59	61	1100	223	48	73
MIN	105	54	16	16	17	57	41	28	25	28	14	10
AC-FT	11880	4700	2710	1520	6940	11650	3020	2680	10380	4290	1460	1180
CFSM	1.02	.42	.23	.13	.66	1.00	.27	.23	.92	.37	.13	.10
IN.	1.18	.47	.27	.15	.69	1.16	.30	.27	1.03	.43	.15	.12

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1946 - 1994, BY WATER YEAR (WY)

	MEAN	59.4	76.1	65.9	77.1	120	242	200	195	217	144	97.7	80.2
MAX	375	341	294	432	543	895	704	1185	1136	1011	1537	559	
(WY)	1987	1993	1983	1960	1971	1979	1973	1974	1947	1993	1993	1993	
MIN	.49	1.68	.33	.021	2.07	5.99	4.17	2.25	2.94	5.00	2.36	1.34	
(WY)	1957	1956	1956	1977	1977	1957	1956	1956	1956	1956	1955	1956	

SUMMARY STATISTICS	FOR 1993 CALENDAR YEAR	FOR 1994 WATER YEAR	WATER YEARS 1946 - 1994
ANNUAL TOTAL	178087	31458	
ANNUAL MEAN	488	86.2	131
HIGHEST ANNUAL MEAN			516
LOWEST ANNUAL MEAN			8.26
HIGHEST DAILY MEAN	4780	1300	9480
LOWEST DAILY MEAN	16	10	.00
ANNUAL SEVEN-DAY MINIMUM	18	12	.00
INSTANTANEOUS PEAK FLOW		2550	10500
INSTANTANEOUS PEAK STAGE		22.13	a15.32
INSTANTANEOUS LOW FLOW		10	
ANNUAL RUNOFF (AC-FT)	353200	62400	95070
ANNUAL RUNOFF (CFSM)	2.58	.46	.69
ANNUAL RUNOFF (INCHES)	35.05	6.19	9.43
10 PERCENT EXCEEDS	1140	162	277
50 PERCENT EXCEEDS	244	52	46
90 PERCENT EXCEEDS	64	18	4.9

e Estimated.

a Datum in use prior to Oct. 1, 1980.

05453100 IOWA RIVER AT MARENGO, IA

LOCATION.--Lat 41°48'48", long 92°03'51", in SE1/4 NE1/4 sec.24, T.81 N., R.11 W., Iowa County, Hydrologic Unit 07080208, on left bank 5 ft upstream from bridge on county highway V66, 1.0 mi downstream from Big Bear Creek, 0.8 mi north of Marengo, 4.6 mi upstream from Hilton Creek, and at mile 139.1.

DRAINAGE AREA.--2,794 mi².

PERIOD OF RECORD.--October 1956 to current year. Monthly discharge only for some periods, published in WSP 1728.

REVISED RECORDS.--WSP 1558: 1957.

GAGE.--Water-stage encoder. Datum of gage is 720.52 ft above sea level.

REMARKS.--Estimated daily discharges: Dec. 23 to Mar. 3, and Sept. 14-19. Records good except those for estimated daily discharges, which are poor. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data. U.S. Army Corps of Engineers data collection platform at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5110	1960	1350	e760	e470	e1600	1290	1260	936	4610	1320	487
2	4590	1920	1430	e700	e500	e2100	1240	1300	904	4450	1220	451
3	4230	1890	1410	e640	e430	e2800	1200	1250	920	4160	1180	417
4	3920	1870	1390	e560	e470	4050	1170	1200	880	3560	1250	455
5	3610	1820	1340	e620	e500	7130	1120	1190	812	3180	1160	687
6	3400	1780	1310	e560	e560	7760	1080	1260	777	3690	1200	620
7	3230	1740	1280	e520	e500	8240	1070	1400	771	4140	1210	546
8	3090	1710	1260	e580	e450	8020	1050	1520	1910	3940	1180	491
9	3160	1690	1250	e620	e430	8020	1030	1600	1870	4210	1120	470
10	3680	1660	1240	e660	e390	7510	1010	1640	2030	3920	1080	456
11	4040	1640	1180	e600	e470	5260	985	1640	1790	3570	1080	417
12	4070	1620	1120	e540	e640	4290	998	1610	1590	3160	1010	379
13	3850	1690	1130	e500	e620	3620	1040	1530	3180	3100	1060	346
14	3600	1690	1170	e460	e600	3230	1080	1460	4470	4130	1100	e310
15	3400	1680	1220	e500	e620	3010	1100	1410	4310	4470	1160	e290
16	3300	1650	1240	e580	e660	2770	1660	1360	3520	4610	1270	e270
17	3250	1620	1240	e460	e700	2580	1800	1290	3000	3490	1330	e250
18	3080	1600	1230	e390	e1200	2420	1770	1230	2660	2890	1360	e300
19	2900	1590	1250	e430	e2100	2260	1730	1180	3030	2650	1290	e250
20	2770	1560	1250	e500	e4300	2140	1680	1130	2850	2720	1160	224
21	2640	1540	1250	e580	e3500	2070	1640	1080	2570	2700	1030	212
22	2510	1510	1230	e620	e2500	1970	1580	1030	2330	2700	907	223
23	2440	1480	e760	e700	e1900	1880	1500	1000	2800	2610	806	370
24	2380	1460	e440	e620	e1600	1790	1430	1040	4140	2600	728	635
25	2330	1480	e410	e580	e1400	1710	1380	1090	4770	2590	668	1050
26	2280	1470	e400	e540	e1200	1650	1340	1100	5090	2510	625	2350
27	2220	1440	e430	e500	e1100	1600	1270	1040	5240	2340	582	2720
28	2190	1390	e390	e470	e1400	1530	1220	991	5180	2090	542	2380
29	2110	1310	e500	e440	---	1460	1190	1030	4950	1810	502	2000
30	2060	1290	e580	e430	---	1390	1180	1080	4800	1600	509	1720
31	2010	---	e680	e400	---	1330	---	1020	---	1440	499	---
TOTAL	97450	48750	32360	17060	31210	107190	38833	38961	84080	99640	31138	21776
MEAN	3144	1625	1044	550	1115	3458	1294	1257	2803	3214	1004	726
MAX	5110	1960	1430	760	4300	8240	1800	1640	5240	4610	1360	2720
MIN	2010	1290	390	390	390	1330	985	991	771	1440	499	212
AC-FT	193300	96700	64190	33840	61910	212600	77030	77280	166800	197600	61760	43190
CFSM	1.13	.58	.37	.20	.40	1.24	.46	.45	1.00	1.15	.36	.26
IN.	1.30	.65	.43	.23	.42	1.43	.52	.52	1.12	1.33	.41	.29

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1957 - 1994, BY WATER YEAR (WY)

	MEAN	1044	1189	998	875	1378	3323	3395	2879	3100	2680	1604	1105
MAX	5078	3878	3633	4194	5424	8227	11310	9340	9051	19620	15290	7901	
(WY)	1987	1973	1983	1973	1984	1979	1993	1991	1993	1993	1993	1993	1993
MIN	80.8	90.0	63.0	31.3	79.0	256	259	179	114	116	108	123	
(WY)	1957	1957	1990	1977	1977	1964	1977	1977	1977	1977	1989	1988	

SUMMARY STATISTICS	FOR 1993 CALENDAR YEAR	FOR 1994 WATER YEAR	WATER YEARS 1957 - 1994
ANNUAL TOTAL	2599960	648448	
ANNUAL MEAN	7123	1777	1966
HIGHEST ANNUAL MEAN			7192
LOWEST ANNUAL MEAN			283
HIGHEST DAILY MEAN	35600	Jul 12	35600
LOWEST DAILY MEAN	390	Dec 28	24
ANNUAL SEVEN-DAY MINIMUM	450	Dec 24	25
INSTANTANEOUS PEAK FLOW			38000
INSTANTANEOUS PEAK STAGE			20.31
INSTANTANEOUS LOW FLOW			205
ANNUAL RUNOFF (AC-FT)	5157000	1286000	1424000
ANNUAL RUNOFF (CFSM)	2.55	.64	.70
ANNUAL RUNOFF (INCHES)	34.62	8.63	9.56
10 PERCENT EXCEEDS	16100	3750	4910
50 PERCENT EXCEEDS	5110	1340	1000
90 PERCENT EXCEEDS	1250	470	193

e Estimated.

IOWA RIVER BASIN

05453510 CORALVILLE LAKE NEAR CORALVILLE, IA

LOCATION.--Lat 41°43'29", long 91°31'40", in SW1/4 NE1/4 sec.22, T.80 N., R.6 W., Johnson County, Hydrologic Unit 07080208, at outlet works at left end of Coralville Dam on Iowa River, 2.3 mi upstream from Rapid Creek, 4.3 mi northeast of Coralville Post Office and at mile 83.3.

DRAINAGE AREA.--3,115 mi².

PERIOD OF RECORD.--October 1958 to current year.

GAGE.--Water-stage recorder. Datum of gage is at sea level (levels by U.S. Army Corps of Engineers).

REMARKS.--Reservoir is formed by earthfill dam completed in 1957. Storage began in September 1958. Releases controlled by three gates, 8.33 ft wide and 20 ft high, into forechamber of 23-ft diameter concrete conduit through dam. Inlet invert elevation at 646.0 ft. No dead storage. Maximum design discharge through gates is 20,000 ft³/s. Ungated spillway is concrete overflow section 500 ft in length at elevation 712 ft above sea level, contents, 469,000 acre-ft, surface area, 24,800 acres. Reservoir is used for flood control, low-flow augmentation, conservation and recreation. Normal operation will maintain an elevation of 670 ft Feb. 15 to June 15, surface area, 1,820 acres; 680 ft June 15 to Sept. 25, surface area, 4,900 acres; 683 ft Sept. 25 to Dec. 15, and 680 ft December 15 to Feb. 1, with a minimum release of 150 ft³/s and maximum release of 10,000 ft³/s Dec. 15 to May 1 and 6,000 ft³/s May 1 to Dec. 15. Storage tables for water years 1985-1986 published as day second-feet instead of acre-feet storage.

COOPERATION.--Records provided by U.S. Army Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily contents, 586,000 acre-ft July 20, 1993, maximum elevation, 716.75 ft July 24, 1993; minimum daily contents, 456 acre-ft Jan. 15, 1975; minimum elevation, 658.77 ft Mar. 10, 1959.

EXTREMES FOR CURRENT YEAR.--Maximum daily contents, 91,900 acre-ft Oct. 1; maximum elevation, 690.20 ft Oct. 1; minimum daily contents, 26,300 acre-ft Mar. 13; minimum elevation, 678.55 ft Mar. 13.

Capacity table (elevation, in feet, and contents, in acre-ft)

660	621	692	114,000	710	413,000
665	2,760	696	160,000	712	461,000
670	7,230	700	215,000	714	512,000
675	15,100	702	251,000	716	566,000
680	29,600	704	287,000	718	622,000
684	52,800	706	326,000	720	681,000
688	81,200	708	370,000		

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	91900	70500	71200	47000	46000	27300	27700	28400	36200	59300	46200	47800
2	87000	71200	71500	46300	46400	27400	27800	28100	37500	56600	45900	49000
3	81100	71500	71700	45900	46700	27500	27500	28700	38500	55700	47000	50700
4	75500	71800	71700	46200	46800	28200	27900	30200	39400	54400	47000	53100
5	72000	71000	71600	46700	46900	29000	27800	29700	40100	50600	46500	55300
6	69100	70500	70800	47000	47000	31700	28100	28900	40900	47800	46200	56400
7	65500	70600	72200	46300	47000	32600	28200	27700	41800	50900	45900	55800
8	64800	71000	73700	45600	47800	32600	28500	27400	42400	53300	45600	56100
9	65000	71100	74100	45600	47800	33100	28400	27600	43500	51000	44700	56900
10	64800	71200	72400	46300	47900	30700	28000	27600	44000	47900	47800	56500
11	64800	71400	70100	46900	47900	28300	27500	27600	44000	46600	49500	55900
12	66500	71400	69800	46800	47100	26400	27600	27600	43700	45500	50400	56200
13	70900	72000	70600	46100	45800	26300	27500	27500	46800	45500	48300	56600
14	76500	71900	70900	46800	44700	27300	27600	27800	46800	43900	46300	57000
15	78200	71000	68900	48200	42900	27400	27400	27800	46800	45200	45900	57200
16	77000	70700	65800	48200	41800	27300	27400	27700	46800	48700	45900	57800
17	75000	70300	63200	47300	41000	28000	28200	27500	46900	49000	46300	57600
18	73000	70600	59400	46800	42200	28300	28500	27400	46800	48100	47000	57700
19	71300	71000	55200	47600	46100	28200	28000	27400	46300	46800	47200	57900
20	71000	70800	50500	47600	53400	28200	27700	27600	47400	46200	46800	58000
21	70400	70700	48600	47100	56300	27400	27700	27800	47400	45800	46700	58500
22	70100	70200	47300	46500	51000	27100	27600	28000	46700	46500	46300	58900
23	69800	69800	46100	46000	43100	27800	27400	28200	47300	46700	46300	59100
24	69800	68600	44800	45500	40300	27700	27400	28200	45400	46700	46800	59900
25	70000	69900	44600	45200	36100	27900	27300	28500	43500	46700	47000	60300
26	69900	69600	45400	45100	32000	28100	27700	29000	43300	46500	47800	60600
27	69400	70000	46800	44800	28800	28100	27600	30000	43700	46500	47700	60300
28	69700	70500	46200	44400	27800	28000	28100	31300	45000	46000	47500	59400
29	69600	70000	45200	44700	---	28000	28200	32600	54300	46100	46800	58800
30	69600	70100	45700	45200	---	27900	28500	33700	60900	46400	47500	59200
31	70000	---	47400	45600	---	27800	---	35000	---	46500	47200	---
MEAN	71900	70700	60400	46300	44200	28400	27800	28800	44800	48500	46900	56800
MAX	91900	72000	74100	48200	56300	33100	28500	35000	60900	59300	50400	60600
MIN	64800	68600	44600	44400	27800	26300	27300	27400	36200	43900	44700	47800

05453520 IOWA RIVER BELOW CORALVILLE DAM NEAR CORALVILLE, IA

LOCATION.--Lat 41°43'23", long 91°31'47", in SW1/4 NE1/4 sec.22, T.80 N., R.6 W., Johnson County, Hydrologic Unit 07080208, on left bank about 500 ft downstream of Coralville Dam control house, 2.3 miles upstream from Rapid Creek, 4.3 miles northeast of Coralville post office, and at mile 83.2.

DRAINAGE AREA.--3,115 mi².

PERIOD OF RECORD.--October 1992 to September 1993.

GAGE.--Water-stage recorder. Datum of gage is 600 feet above sea level (levels by U.S. Army Corps of Engineers).

REMARKS.--Estimated daily discharges: Jan. 15-21, Jan. 28 to Feb. 11, Mar. 16, 17, Apr. 7-11, May 28 to June 6, and Sept. 3-5, 14-24. Records good. Periodic observations of water temperatures and specific conductance are published in this report as miscellaneous water-quality data. U.S. Army Corps of Engineers data collection platform at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8420	1780	1040	1030	e600	3520	1570	1500	e600	4720	1510	529
2	8350	1770	1280	1310	e580	3110	1490	1610	e590	5040	1350	215
3	8260	1790	1410	1160	e580	2890	1500	1230	e590	4530	1240	e160
4	7720	2020	1550	1010	e580	3200	1350	649	e590	4280	1500	e180
5	6220	2240	1670	915	e560	4380	1210	1580	e600	4260	1350	e210
6	5520	2040	1660	915	e540	5880	1220	1940	e590	3950	1230	354
7	5490	1710	983	937	e540	7270	e1100	2120	671	3700	1230	952
8	4360	1580	314	940	e580	7720	e1150	1820	1200	4340	1260	625
9	3420	1590	1150	751	e600	7970	e1200	1510	1640	4760	1460	400
10	3570	1590	2110	630	e620	8590	e1250	1660	1810	4740	584	678
11	3930	1590	2260	624	e640	8470	e1300	1770	1870	4240	574	760
12	3520	1600	1430	814	721	7390	1320	1690	1710	3570	861	463
13	2170	1740	874	939	725	5040	1350	1660	2170	2960	1820	358
14	843	1930	1270	611	723	3570	1370	1590	3470	3370	1670	e400
15	2590	2170	2200	e340	889	3360	1390	1520	3920	3550	1260	e400
16	4250	2000	2840	e640	911	e3200	1350	1520	3840	3170	1120	e390
17	4640	1830	2830	e820	1060	e2500	1340	1520	3290	3920	1190	e380
18	4620	1500	2810	e700	1620	2590	1670	1420	2750	3680	1230	e380
19	4380	1360	2790	e420	2750	2650	2080	1350	2610	2990	1300	e380
20	3520	1650	2750	e550	3380	2640	1980	1190	2650	2740	1340	e370
21	3240	1660	2110	e700	5090	2820	1830	1090	2640	2720	1180	e320
22	3060	1650	1610	756	7150	2580	1830	1090	2620	2510	1140	e360
23	2950	1790	1320	743	7360	2130	1750	1100	2890	2380	901	e450
24	2760	2000	1030	724	7270	1870	1630	1180	3710	2380	792	e500
25	2650	1330	647	721	7180	1870	1580	1070	4300	2380	796	765
26	2630	1340	343	707	6810	1880	1540	853	4280	2380	813	1520
27	2490	1340	257	711	6010	1860	1410	668	4280	2270	784	2440
28	2390	1330	669	715	4340	1860	1320	e700	4290	2190	774	2650
29	2380	1330	917	e620	---	1720	1270	e620	2200	1890	771	2310
30	2170	1100	627	e580	---	1650	1270	e620	2490	1590	797	1820
31	1870	---	396	e590	---	1670	---	e600	---	1520	784	---
TOTAL	124383	50350	45147	23623	70409	117850	43620	40440	70861	102720	34611	21719
MEAN	4012	1678	1456	762	2515	3802	1454	1305	2362	3314	1116	724
MAX	8420	2240	2840	1310	7360	8590	2080	2120	4300	5040	1820	2650
MIN	843	1100	257	340	540	1650	1100	600	590	1520	574	160
AC-FT	246700	99870	89550	46860	139700	233800	86520	80210	140600	203700	68650	43080

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1992 - 1994, BY WATER YEAR (WY)

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
MEAN	2409	2225	2843	1242	2099	5194	4615	5326	4783	11960	9810	6887
MAX	4012	2771	4229	1723	2515	6587	7776	9347	7203	20610	18500	13050
(WY)	1994	1993	1993	1993	1994	1993	1993	1993	1993	1993	1993	1993
MIN	805	1678	1456	762	1684	3802	1454	1305	2362	3314	1116	724
(WY)	1993	1994	1994	1994	1993	1994	1994	1994	1994	1994	1994	1994

SUMMARY STATISTICS	FOR 1993 CALENDAR YEAR	FOR 1994 WATER YEAR	WATER YEARS 1992 - 1994
ANNUAL TOTAL	2867701	745733	
ANNUAL MEAN	7857	2043	4976
HIGHEST ANNUAL MEAN			7910
LOWEST ANNUAL MEAN			2043
HIGHEST DAILY MEAN	25000	Jul 21	25000
LOWEST DAILY MEAN	257	Dec 27	160
ANNUAL SEVEN-DAY MINIMUM	551	Dec 25	347
INSTANTANEOUS PEAK FLOW			8890
INSTANTANEOUS PEAK STAGE			55.76
INSTANTANEOUS LOW FLOW			160
ANNUAL RUNOFF (AC-FT)	5688000	1479000	3605000
10 PERCENT EXCEEDS	19500	4280	13800
50 PERCENT EXCEEDS	6060	1570	2370
90 PERCENT EXCEEDS	1320	582	699

e Estimated.

IOWA RIVER BASIN

05454000 RAPID CREEK NEAR IOWA CITY, IA

LOCATION.--Lat 41°41'19", long 91°29'15", in NE1/4 NE1/4 sec.36, T.80 N., R.6 W., Johnson County, Hydrologic Unit 07080209, on left bank 80 ft upstream from bridge on State Highway 1, 3.5 mi northeast of Iowa City, and 4.7 mi upstream from mouth.

DRAINAGE AREA.--25.3 mi².

PERIOD OF RECORD.--October 1937 to current year. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 1558: 1941 (M), 1943 (P), 1944 (M), 1946. WSP 1708: 1951 (P), 1952. WDR IA-67-1: Drainage area.

GAGE.--Water-stage recorder and concrete control with sharp-crested weir. Datum of gage is 673.72 ft above sea level.

REMARKS.--Estimated daily discharges: Nov. 27-29, Dec. 22 to Mar. 5, May 3-11, 19-29, May 31 to June 14, June 16-27, and Sept. 20-24, 27-29. Records good except those for estimated daily discharges, which are poor. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data. U.S.G.S. Sutro 8200 with telephone modem in station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	44	10	6.9	e4.7	e5.0	e11	11	7.7	e2.2	10	1.5	2.6
2	39	9.9	7.2	e4.2	e5.6	e10	11	6.5	e2.5	9.3	1.3	1.8
3	36	9.9	7.9	e3.7	e5.2	e13	10	e5.6	e2.9	9.1	2.2	1.3
4	33	10	7.4	e3.4	e5.4	e30	9.9	e5.2	e2.8	8.6	48	2.1
5	30	9.9	7.3	e3.0	e5.8	e54	9.5	e6.4	e2.7	7.1	8.2	5.6
6	28	8.9	6.7	e3.4	e6.4	51	8.7	e9.5	e2.5	21	4.7	3.3
7	27	8.3	6.4	e3.2	e5.9	39	8.4	e8.0	e2.4	18	4.0	2.0
8	25	8.4	6.6	e2.9	e4.6	30	8.9	e7.0	e5.0	9.7	3.1	1.3
9	26	8.5	6.8	e3.3	e2.8	24	9.1	e6.0	e6.0	7.9	2.3	1.2
10	23	8.1	5.1	e3.6	e2.3	21	8.4	e5.6	e5.2	6.4	2.3	1.1
11	23	8.3	5.7	e3.7	e2.1	18	8.1	e4.9	e4.7	5.6	4.4	1.1
12	21	8.5	6.6	e3.4	e2.1	18	11	3.9	e6.0	5.0	3.3	1.1
13	20	10	8.4	e3.0	e2.1	17	11	3.6	e80	5.4	3.9	1.2
14	19	14	8.2	e2.5	e2.3	17	9.6	5.0	e20	6.7	3.5	1.1
15	19	9.5	7.1	e2.2	e2.5	17	8.6	7.1	6.7	4.9	2.5	1.1
16	18	9.3	7.1	e2.4	e3.9	15	7.5	5.6	e4.6	6.2	1.9	.91
17	17	8.4	9.5	e2.8	e10	15	7.3	5.2	e4.0	6.4	1.6	.83
18	16	8.4	10	e2.5	e26	16	7.4	4.7	e3.6	4.1	3.5	.84
19	16	7.8	9.9	e2.1	e34	18	6.9	e4.3	e3.2	3.8	2.8	.87
20	16	8.5	8.8	e2.3	e80	18	6.3	e4.0	e13	8.2	1.7	e.84
21	15	7.8	8.3	e3.2	e39	14	7.7	e3.7	e9.0	6.4	1.3	e.80
22	14	8.0	e6.0	e4.8	e22	16	6.9	e3.5	e5.4	4.4	1.7	e.98
23	14	7.8	e4.8	e6.0	e15	17	6.7	e3.9	e13	3.6	2.4	e.90
24	13	7.6	e3.8	e7.7	e11	14	7.3	e4.5	e52	2.9	3.5	e.84
25	13	7.8	e3.0	e7.0	e10	13	7.5	e4.3	e35	2.6	3.7	1.4
26	12	9.1	e2.6	e6.2	e8.0	14	6.7	e3.6	e26	2.0	6.8	3.2
27	12	e7.0	e2.8	e6.0	e8.7	15	5.3	e3.1	e19	2.0	2.4	e2.5
28	12	e6.0	e2.4	e5.8	e10	13	6.0	e2.8	17	1.8	1.2	e1.9
29	12	e7.4	e2.7	e5.2	---	12	6.4	e2.6	14	1.5	3.9	e1.3
30	10	6.5	e3.1	e4.7	---	11	7.0	2.7	12	1.4	12	.96
31	10	---	e3.5	e4.5	---	11	---	e2.4	---	1.3	6.0	---
TOTAL	633	259.6	192.6	123.4	337.7	602	246.1	152.9	382.4	193.3	151.6	46.97
MEAN	20.4	8.65	6.21	3.98	12.1	19.4	8.20	4.93	12.7	6.24	4.89	1.57
MAX	44	14	10	7.7	80	54	11	9.5	80	21	48	5.6
MIN	10	6.0	2.4	2.1	2.1	10	5.3	2.4	2.2	1.3	1.2	.80
AC-FT	1260	515	382	245	670	1190	488	303	758	383	301	93
CFSM	.81	.34	.25	.16	.48	.77	.32	.19	.50	.25	.19	.06
IN.	.93	.38	.28	.18	.50	.89	.36	.22	.56	.28	.22	.07

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1938 - 1994, BY WATER YEAR (WY)

	MEAN	6.92	10.7	9.60	10.2	22.5	30.4	23.4	25.5	24.1	16.5	12.6	8.48
MAX	36.5	84.0	66.6	56.8	77.5	106	98.6	167	134	105	176	66.6	66.6
(WY)	1942	1993	1983	1946	1953	1979	1973	1974	1990	1969	1993	1965	1965
MIN	.000	.000	.000	.000	.22	.42	1.25	1.13	.21	.000	.032	.000	.000
(WY)	1954	1956	1956	1940	1989	1956	1956	1977	1956	1957	1955	1955	1955

SUMMARY STATISTICS	FOR 1993 CALENDAR YEAR	FOR 1994 WATER YEAR	WATER YEARS 1938 - 1994
ANNUAL TOTAL	20303.4	3321.57	
ANNUAL MEAN	55.6	9.10	16.7
HIGHEST ANNUAL MEAN			63.8
LOWEST ANNUAL MEAN			1.09
HIGHEST DAILY MEAN	1710	80	1720
LOWEST DAILY MEAN	2.4	.80	.00
ANNUAL SEVEN-DAY MINIMUM	2.9	.87	.00
INSTANTANEOUS PEAK FLOW		237	6700
INSTANTANEOUS PEAK STAGE		6.92	15.61
INSTANTANEOUS LOW FLOW		.78	.00
ANNUAL RUNOFF (AC-FT)	40270	6590	12100
ANNUAL RUNOFF (CFSM)	2.20	.36	.66
ANNUAL RUNOFF (INCHES)	29.85	4.88	8.97
10 PERCENT EXCEEDS	111	18	34
50 PERCENT EXCEEDS	25	6.5	5.0
90 PERCENT EXCEEDS	7.5	2.0	.10

e Estimated.

05454300 CLEAR CREEK NEAR CORALVILLE, IA

LOCATION.--Lat 41°40'36", long 91°35'55", in NE1/4 SE1/4 sec.1, T.79 N., R.7 W., Johnson County, Hydrologic Unit 07080209, on left bank about 15 ft upstream from bridge on county highway, 1.1 mi west of post office in Coralville, 1.5 mi downstream from Deer Creek and 2.7 mi upstream from mouth.

DRAINAGE AREA.--98.1 mi².

PERIOD OF RECORD.--October 1952 to current year. Monthly discharge only for some periods, published in WSP 1728.

REVISED RECORDS.--WDR IA-93-1: 1974 (M), 1982 (M), 1990 (M).

GAGE.--Water-stage encoder. Datum of gage is 647.48 ft above sea level (levels by U.S. Army Corps of Engineers). Prior to Jan. 7, 1957, nonrecording gage at same site and datum.

REMARKS.--Estimated daily discharges: Nov. 13, 14, 28, 29, Dec. 21 to Mar. 5, and Mar. 9, 10, 18-20, 24-29. Records good except those for estimated daily discharges, which are poor. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data. U.S. Army Corps of Engineers data collection platform at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	235	66	114	e45	e20	e70	42	33	17	36	13	18
2	200	65	45	e40	e22	e60	41	30	21	35	12	16
3	184	63	41	e34	e23	e66	40	27	22	32	16	15
4	169	62	41	e30	e21	e300	38	26	18	31	141	22
5	148	59	41	e28	e24	e430	39	25	17	30	36	48
6	140	56	41	e32	e27	350	37	42	17	27	22	28
7	133	55	37	e28	e23	187	35	38	16	35	19	22
8	125	56	38	e26	e20	126	35	32	61	215	17	18
9	145	54	39	e28	e20	e100	36	29	54	65	15	16
10	126	53	39	e30	e18	e86	34	26	39	44	32	14
11	118	53	33	e32	e25	75	33	25	42	39	169	12
12	112	62	35	e30	e30	73	38	25	36	33	41	12
13	102	e70	45	e27	e29	69	42	24	369	30	39	11
14	101	e64	49	e21	e37	67	37	24	154	41	36	11
15	101	57	49	e17	e40	66	37	27	79	29	27	10
16	102	53	44	e20	e39	61	33	24	60	32	24	9.4
17	98	52	42	e26	e64	60	30	22	49	36	20	9.3
18	95	49	47	e20	e250	e54	30	21	42	26	22	8.5
19	92	50	47	e16	e500	e52	28	20	37	23	18	8.4
20	90	47	45	e18	e700	e50	27	20	131	31	16	8.1
21	88	46	e36	e20	e200	75	28	19	74	33	14	7.9
22	85	45	e23	e22	e130	65	29	18	42	24	13	11
23	85	44	e17	e35	e100	61	31	19	228	21	13	10
24	85	45	e16	e46	e45	e56	29	24	235	19	12	9.9
25	82	54	e15	e40	e46	e74	28	22	93	18	19	13
26	78	55	e15	e35	e45	e80	26	21	71	17	128	42
27	74	46	e16	e32	e44	e66	27	20	58	17	23	38
28	74	e42	e14	e30	e60	e54	26	19	49	16	18	22
29	70	e48	e18	e29	---	e48	29	18	43	15	16	18
30	67	151	e26	e24	---	44	29	18	39	15	27	17
31	66	---	e35	e19	---	43	---	18	---	13	24	---
TOTAL	3470	1722	1143	880	2602	3068	994	756	2213	1078	1042	505.5
MEAN	112	57.4	36.9	28.4	92.9	99.0	33.1	24.4	73.8	34.8	33.6	16.8
MAX	235	151	114	46	700	430	42	42	369	215	169	48
MIN	66	42	14	16	18	43	26	18	16	13	12	7.9
AC-FT	6880	3420	2270	1750	5160	6090	1970	1500	4390	2140	2070	1000
CFSM	1.14	.59	.38	.29	.95	1.01	.34	.25	.75	.35	.34	.17
IN.	1.32	.65	.43	.33	.99	1.16	.38	.29	.84	.41	.40	.19

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1953 - 1994, BY WATER YEAR (WY)

	MEAN	30.9	46.6	41.4	41.3	70.2	118	102	102	103	97.4	65.3	47.3
MAX	143	246	162	206	229	402	452	589	566	991	759	337	
(WY)	1987	1962	1993	1960	1959	1979	1973	1974	1990	1993	1993	1965	
MIN	.55	.95	.54	.10	2.79	4.49	4.15	3.79	.83	1.69	1.94	.69	
(WY)	1958	1956	1956	1977	1954	1954	1956	1956	1956	1954	1953	1953	

SUMMARY STATISTICS

FOR 1993 CALENDAR YEAR

FOR 1994 WATER YEAR

WATER YEARS 1953 - 1994

ANNUAL TOTAL	112160	19473.5	
ANNUAL MEAN	307	53.4	72.2
HIGHEST ANNUAL MEAN			327
LOWEST ANNUAL MEAN			6.57
HIGHEST DAILY MEAN	5760	700	7310
LOWEST DAILY MEAN	14	7.9	.00
ANNUAL SEVEN-DAY MINIMUM	16	8.8	.00
INSTANTANEOUS PEAK FLOW		864	11700
INSTANTANEOUS PEAK STAGE		a9.19	16.36
INSTANTANEOUS LOW FLOW		7.2	.00
ANNUAL RUNOFF (AC-FT)	222500	38630	52290
ANNUAL RUNOFF (CFSM)	3.13	.54	.74
ANNUAL RUNOFF (INCHES)	42.53	7.38	10.00
10 PERCENT EXCEEDS	699	101	150
50 PERCENT EXCEEDS	129	36	27
90 PERCENT EXCEEDS	39	16	2.6

e Estimated.

a Ice affected.

b Also Sept. 22.

05454500 IOWA RIVER AT IOWA CITY, IA

LOCATION.--Lat 41°39'24", long 91°32'27", in SE1/4 SE1/4 sec.9, T.79 N., R.6 W., Johnson County, Hydrologic Unit 07080209, on right bank 25 ft downstream from Hydraulics Laboratory of University of Iowa in Iowa City, 175 ft downstream from University Dam, 0.8 mi upstream from Ralston Creek, 3.6 mi downstream from Clear Creek, and at mile 74.2.

DRAINAGE AREA.--3,271 mi².

PERIOD OF RECORD.--June 1903 to current year. Monthly discharge only for some periods, published in WSP 1308.

GAGE.--Water-stage encoder. Datum of gage is 29.00 ft above Iowa City datum, and 617.27 ft above sea level. Oct. 1, 1934 to Sept. 30, 1972, at datum 10.00 ft higher. See WSP 1708 for history of changes prior to Oct. 1, 1934.

REMARKS.--Estimated daily discharge: Dec. 27-30, Jan. 15-22, Feb. 1-15, and July 27 to Aug. 2. Records good except those for estimated daily discharges, which are poor. Slight fluctuation at low stages caused by powerplant above station. Flow regulated by Coralville Lake (station 05453510), 9.1 mi upstream, since Sept. 17, 1958. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data. U.S. Army Corps of Engineers data collection platform at station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 42,500 ft³/s June 8, 1918, gage height, 19.6 ft, from graph based on gage readings, site and datum then in use; minimum daily discharge, 29 ft³/s Oct. 21, 22, 1916, regulated.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of July 17, 1881, reached a stage of 21.1 ft, from floodmarks at site and datum in use 1913-21, from information by local resident, discharge, 51,000 ft³/s. Maximum stage known since at least 1850, about 3 ft higher than that of July 17, 1881, occurred in June 1851, discharge, 70,000 ft³/s, estimated

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9060	1950	1260	1100	e631	3870	1670	1630	729	4820	e1900	688
2	8930	1950	1430	1500	e620	3510	1590	1770	729	5280	e1500	376
3	8790	1950	1560	1340	e620	3220	1600	1470	711	4830	1290	205
4	8210	2130	1680	1190	e610	3740	1460	823	704	4560	1720	237
5	6630	2400	1800	1080	e600	5090	1340	1700	699	4560	1450	278
6	5640	2240	1810	1080	e600	6200	1290	2130	694	4320	1280	436
7	5560	1910	1220	1080	e590	7460	1190	2310	804	4050	1270	1040
8	4720	1780	457	1100	e620	8110	1320	2060	1320	4730	1270	782
9	3720	1780	1190	919	e660	8320	1390	1690	1790	5130	1550	498
10	3820	1780	2200	761	e680	8990	1450	1820	1900	5070	724	769
11	4160	1790	2350	757	e760	9080	1450	1930	2010	4630	848	885
12	3870	1830	1680	936	e800	7910	1480	1870	1820	3930	920	619
13	2620	1940	1060	1100	e810	5590	1490	1810	2570	3290	1840	498
14	1140	2110	1400	810	e900	3850	1490	1760	3760	3520	1760	497
15	2650	2320	2230	e490	e1000	3580	1490	1680	4270	3940	1330	494
16	4350	2220	2960	e790	1310	3450	1470	1670	4190	3460	1170	485
17	4790	2030	2940	e1080	1530	2840	1460	1660	3670	4130	1210	482
18	4770	1760	2940	e1000	2260	2680	1740	1560	3000	4080	1290	478
19	4590	1560	2910	e600	3750	2760	2170	1480	2780	3250	1330	481
20	3790	1850	2870	e650	4620	2750	2160	1350	3010	2980	1370	417
21	3440	1850	2330	e800	5150	2980	1980	1230	2920	2920	1240	354
22	3280	1850	1780	e840	7270	2770	1980	1220	2780	2680	1200	485
23	3140	1930	1500	822	7570	2290	1910	1230	3430	2500	982	556
24	2980	2320	1220	900	7600	2000	1790	1310	4200	2490	872	563
25	2840	1590	861	888	7500	1990	1730	1240	4630	2480	890	884
26	2830	1580	517	886	6990	2000	1680	1030	4590	2470	1030	1580
27	2690	1580	e350	881	6220	2000	1580	857	4560	e2400	886	2530
28	2570	1580	e800	875	4820	1990	1510	760	4550	e2300	874	2810
29	2550	1570	e1000	748	---	1870	1440	756	2480	e2200	875	2500
30	2380	1390	e720	637	---	1730	1450	754	2510	e2100	929	1980
31	2080	---	543	634	---	1730	---	751	---	e1900	896	---
TOTAL	132590	56520	49568	28274	77091	126350	47750	45311	77810	111000	37696	24887
MEAN	4277	1884	1599	912	2753	4076	1592	1462	2594	3581	1216	830
MAX	9060	2400	2960	1500	7600	9080	2170	2310	4630	5280	1900	2810
MIN	1140	1390	350	490	590	1730	1190	751	694	1900	724	205
AC-FT	263000	112100	98320	56080	152900	250600	94710	89870	154300	220200	74770	49360

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1959 - 1994, BY WATER YEAR (WY)a

	MEAN	1202	1542	1504	1130	1757	3527	3863	3152	3408	3434	2362	1643
MAX	4277	5395	4580	5381	5789	7988	9764	9763	11590	22220	20060	13760	
(WY)	1994	1987	1983	1973	1973	1971	1979	1993	1991	1993	1993	1993	
MIN	135	121	130	141	125	366	348	184	99.1	72.8	162	147	
(WY)	1990	1967	1989	1990	1977	1977	1989	1977	1977	1977	1989	1976	

SUMMARY STATISTICS	FOR 1993 CALENDAR YEAR	FOR 1994 WATER YEAR	WATER YEARS 1959 - 1994a
ANNUAL TOTAL	3077898	814847	
ANNUAL MEAN	8433	2232	2379
HIGHEST ANNUAL MEAN			8502
LOWEST ANNUAL MEAN			304
HIGHEST DAILY MEAN	26200	Jul 21	26200
LOWEST DAILY MEAN	350	Dec 27	49
ANNUAL SEVEN-DAY MINIMUM	684	Dec 25	50
INSTANTANEOUS PEAK FLOW			28200
INSTANTANEOUS PEAK STAGE			28.52
INSTANTANEOUS LOW FLOW			
ANNUAL RUNOFF (AC-FT)	6105000	1616000	1724000
10 PERCENT EXCEEDS	20500	4600	5970
50 PERCENT EXCEEDS	6880	1730	1320
90 PERCENT EXCEEDS	1490	656	196

e Estimated.

a Post regulation.

05455010 SOUTH BRANCH RALSTON CREEK AT IOWA CITY, IA

LOCATION.--Lat 41°39'05", long 91°30'27", in SW1/4 NE1/4 sec.14, T.79 N., R.6 W., Johnson County, Hydrologic Unit 07080209, on right bank 60 ft downstream from bridge on Muscatine Avenue in Iowa City, and 1.2 mi upstream from mouth.

DRAINAGE AREA.--2.94 mi².

PERIOD OF RECORD.--October 1963 to current year.

REVISED RECORDS.--WDR IA-66-1: Drainage area.

GAGE.--Water-stage recorder and V-notch sharp-crested weir. Datum of gage is 678.03 ft above sea level.

REMARKS.--Estimated daily discharge: Dec. 24 to Feb. 16, Feb. 22 to Mar. 1. Records good except those for estimated daily discharges, which are poor. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of July 14, 1962, reached a stage of 10.5 ft, from flood profile, discharge not determined.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.2	.74	1.3	e.92	e.20	e1.3	1.3	1.2	.87	.71	.09	.11
2	2.2	1.5	.87	e.70	e.17	1.5	1.2	1.1	2.6	.73	.03	.09
3	2.2	.79	.72	e.60	e.16	5.1	1.2	.99	.59	.51	.86	.08
4	2.0	.76	.74	e.50	e.15	12	1.6	.94	.54	.84	7.8	1.9
5	1.9	.69	.72	e.46	e.20	6.1	1.8	2.1	.52	.49	.56	.28
6	1.7	.72	.71	e.52	e1.5	3.9	1.3	4.7	.45	.82	.46	.15
7	1.6	.74	.68	e.50	e.37	2.7	1.1	1.6	.72	.64	.40	.10
8	1.7	.79	.66	e.44	e.35	2.1	1.3	1.2	9.1	.92	.35	.07
9	2.4	.64	.71	e.47	e.33	1.8	1.2	1.1	.65	.30	.27	.08
10	1.6	.68	.64	e.50	e.31	1.6	1.1	.90	.97	.25	5.1	.03
11	1.6	.72	.56	e.52	e.50	1.4	1.2	.79	.58	.23	1.4	.04
12	1.4	4.4	.61	e.40	e.40	1.4	2.8	.72	.15	.19	2.0	.01
13	1.3	1.3	1.7	e.35	e1.5	1.3	1.6	.63	12	2.4	1.9	.00
14	1.3	1.1	2.1	e.26	e6.0	1.4	1.1	1.9	.53	.41	.70	.00
15	1.5	.98	1.0	e.15	e15	1.3	1.0	.63	.35	.23	.52	.00
16	1.3	.78	.80	e.17	e30	1.3	.89	.47	3.9	2.1	.25	.00
17	1.2	.79	1.1	e.20	36	1.4	.87	.47	.55	.29	.23	.00
18	1.1	.73	2.5	e.17	15	1.4	.90	.44	.29	.18	1.9	.00
19	1.1	.75	1.3	e.14	11	1.3	.96	.48	.27	.16	.48	.00
20	1.1	.74	1.1	e.18	17	2.0	1.7	.55	13	2.5	.25	.00
21	1.1	.74	1.0	e.22	2.8	2.5	2.0	.55	2.0	.61	.12	.00
22	1.0	.63	.94	e.40	e1.9	1.4	1.7	.50	.78	.24	.09	2.4
23	1.1	.65	.89	e1.5	e1.7	1.6	1.6	1.4	22	.17	.07	.10
24	1.1	1.5	e.84	e2.0	e1.3	1.4	2.3	1.2	9.1	.14	.03	.82
25	.85	2.1	e.70	e3.0	e1.1	1.4	1.1	.78	2.0	.12	.55	1.7
26	.83	.87	e.56	e1.2	e1.1	2.5	1.0	.38	1.5	.10	1.7	3.5
27	.82	.77	e.52	e.70	e1.2	1.6	1.4	.30	1.1	.10	.10	.36
28	.87	.76	e.54	e.50	e1.3	1.4	2.2	.23	.79	.11	.15	.26
29	.72	.67	e.50	e.30	---	1.5	1.1	.22	.68	.12	.04	.24
30	.75	.61	e1.7	e.22	---	1.5	2.9	.22	.63	.11	1.3	.26
31	.73	---	e2.3	e.17	---	1.3	---	.22	---	.09	.16	---
TOTAL	42.27	29.64	31.01	18.36	148.54	70.4	43.42	28.91	89.21	16.81	29.86	12.58
MEAN	1.36	.99	1.00	.59	5.30	2.27	1.45	.93	2.97	.54	.96	.42
MAX	2.4	4.4	2.5	3.0	36	12	2.9	4.7	22	2.5	7.8	3.5
MIN	.72	.61	.50	.14	.15	1.3	.87	.22	.15	.09	.03	.00
AC-FT	84	59	62	36	295	140	86	57	177	33	59	25
CFSM	.46	.34	.34	.20	1.80	.77	.49	.32	1.01	.18	.33	.14
IN.	.53	.38	.39	.23	1.88	.89	.55	.37	1.13	.21	.38	.16

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1964 - 1994, BY WATER YEAR (WY)

	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975
MEAN	1.18	1.53	1.54	1.29	2.68	3.29	3.82	3.56	3.76	3.04	2.38	1.78
MAX	4.52	7.55	7.85	6.17	10.1	10.2	15.3	16.3	12.7	17.6	23.2	8.44
(WY)	1985	1993	1983	1974	1982	1979	1973	1974	1990	1993	1993	1970
MIN	.000	.007	.002	.000	.071	.49	.94	.13	.23	.034	.10	.004
(WY)	1964	1990	1990	1977	1989	1981	1990	1992	1992	1988	1964	1991

SUMMARY STATISTICS FOR 1993 CALENDAR YEAR FOR 1994 WATER YEAR WATER YEARS 1964 - 1994

	1993	1994	1964-1994
ANNUAL TOTAL	2713.81	561.01	
ANNUAL MEAN	7.44	1.54	2.48
HIGHEST ANNUAL MEAN			8.19
LOWEST ANNUAL MEAN			.52
HIGHEST DAILY MEAN	230	36	230
LOWEST DAILY MEAN	.50	.00	.00
ANNUAL SEVEN-DAY MINIMUM	.65	.00	.00
INSTANTANEOUS PEAK FLOW		243	1070
INSTANTANEOUS PEAK STAGE		5.12	9.47
INSTANTANEOUS LOW FLOW		.00	.00
ANNUAL RUNOFF (AC-FT)	5380	1110	1800
ANNUAL RUNOFF (CFSM)	2.53	.52	.84
ANNUAL RUNOFF (INCHES)	34.34	7.10	11.47
10 PERCENT EXCEEDS	16	2.3	5.0
50 PERCENT EXCEEDS	2.2	.79	.72
90 PERCENT EXCEEDS	.76	.15	.02

e Estimated.

05455100 OLD MANS CREEK NEAR IOWA CITY, IA

LOCATION.--Lat. 41°36'23", long. 91°36'56", in SE1/4 SW1/4 NW1/4 sec. 36, T.79 N., R.7 W., Johnson County, Hydrologic Unit 07080209, on left bank 10 ft downstream from bridge on county highway W62, 5 miles southwest of Iowa City, 5.9 miles upstream of Dirty Face Creek, and 8.6 miles upstream from mouth.

DRAINAGE AREA.--201 mi².

PERIOD OF RECORD.--October 1950 to September 1964, published in WSP 1914. Annual maximum, water years 1965-84. Occasional low-flow measurements, water years 1964-77; October 1984 to current year.

GAGE.--Water-stage encoder. Datum of gage is 637.49 ft above sea level. Prior to Nov. 16, 1984, nonrecording gage at same site at datum 2.00 ft higher. Prior to Oct. 1, 1987, at datum 2.00 ft higher.

REMARKS.--Estimated daily discharges: Oct. 24, 25, Nov. 27-30, Dec. 21 to Mar. 6, and Sept. 9-11. Records good except those for estimated daily discharges, which are poor. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data. U.S. Army Corps of Engineers data collection platform at station.

COOPERATION.--Gage height record and discharge measurements for water years 1951-64 were collected by the U.S. Army Corps of Engineers and computed by the U.S. Geological Survey.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum discharge, 13,500 ft³/s, on the basis of contracted-opening of peak flow, June 15, 1982, gage height, 17.25 ft, present datum.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	389	93	65	e58	e26	e92	70	51	37	106	28	28
2	329	92	67	e52	e29	e80	66	50	40	101	27	24
3	294	92	62	e45	e28	e88	63	46	45	90	28	22
4	272	90	62	e40	e28	e350	64	44	40	85	204	27
5	248	86	62	e36	e31	e700	61	44	38	79	85	87
6	224	80	60	e43	e35	e540	58	54	37	74	42	47
7	212	80	57	e36	e28	325	57	62	37	89	36	33
8	202	81	57	e34	e23	232	58	54	185	236	35	28
9	201	79	58	e37	e26	186	57	50	201	115	31	e23
10	190	77	58	e39	e24	162	55	47	114	78	30	e20
11	178	77	51	e41	e33	155	54	45	101	67	36	e19
12	171	80	50	e40	e39	146	60	43	84	60	34	18
13	159	108	65	e35	e38	133	70	43	446	56	37	17
14	154	90	66	e28	e50	127	61	42	276	62	36	17
15	152	80	65	e23	e70	123	56	47	145	52	29	16
16	152	75	59	e26	e130	115	52	43	116	57	27	15
17	146	74	58	e34	e450	111	48	39	99	73	26	16
18	136	74	63	e26	e840	108	48	38	88	52	25	15
19	133	74	64	e21	e800	99	47	38	89	45	23	14
20	128	71	61	e24	e900	95	45	38	112	68	21	13
21	125	69	e50	e26	e400	109	47	38	616	71	20	13
22	120	68	e30	e29	e170	106	48	38	159	49	19	15
23	121	66	e22	e46	e130	99	46	37	512	43	18	17
24	e112	68	e20	e60	e60	90	47	45	1150	39	18	16
25	e108	74	e19	e52	e70	81	50	46	388	36	69	16
26	106	79	e20	e46	e60	83	47	73	252	35	358	37
27	103	e60	e21	e40	e58	84	45	60	200	33	55	46
28	104	e50	e18	e38	e80	78	43	46	164	33	34	29
29	101	e55	e25	e34	---	74	47	42	135	32	30	22
30	95	e60	e35	e32	---	71	47	41	116	30	30	19
31	94	---	e45	e25	---	71	---	39	---	29	34	---
TOTAL	5259	2302	1515	1146	4656	4913	1617	1423	6022	2075	1525	729
MEAN	170	76.7	48.9	37.0	166	158	53.9	45.9	201	66.9	49.2	24.3
MAX	389	108	67	60	900	700	70	73	1150	236	358	87
MIN	94	50	18	21	23	71	43	37	37	29	18	13
AC-FT	10430	4570	3010	2270	9240	9740	3210	2820	11940	4120	3020	1450
CFSM	.84	.38	.24	.18	.83	.79	.27	.23	1.00	.33	.24	.12
IN.	.97	.43	.28	.21	.86	.91	.30	.26	1.11	.38	.28	.13

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1951 - 1994, BY WATER YEAR (WY)

	MEAN	53.0	103	61.4	66.8	114	265	160	187	172	172	124	71.2
	MAX	307	636	337	436	346	793	625	765	907	1515	1190	598
	(WY)	1987	1962	1993	1960	1953	1962	1993	1986	1990	1993	1993	1993
	MIN	.21	.39	.35	.26	2.50	2.12	1.29	4.97	5.34	1.43	2.97	.36
	(WY)	1958	1956	1956	1956	1954	1954	1956	1956	1956	1954	1988	1957

SUMMARY STATISTICS FOR 1993 CALENDAR YEAR FOR 1994 WATER YEAR WATER YEARS 1951 - 1994

	ANNUAL TOTAL	203043	33182	
	ANNUAL MEAN	556	90.9	
	HIGHEST ANNUAL MEAN			129
	LOWEST ANNUAL MEAN			607
	HIGHEST DAILY MEAN	8780	Jul 6	10.3
	LOWEST DAILY MEAN	18	Dec 28	1954
	ANNUAL SEVEN-DAY MINIMUM	21	Dec 23	1957
	INSTANTANEOUS PEAK FLOW			1957
	INSTANTANEOUS PEAK STAGE			1957
	INSTANTANEOUS LOW FLOW			1957
	ANNUAL RUNOFF (AC-FT)	402700	65820	13000
	ANNUAL RUNOFF (CFSM)	2.77	.45	17.61
	ANNUAL RUNOFF (INCHES)	37.58	6.14	.01
	10 PERCENT EXCEEDS	1550	170	b
	50 PERCENT EXCEEDS	225	57	
	90 PERCENT EXCEEDS	62	24	

e Estimated.

a Ice affected.

b Several days in 1957, 1958, and 1964.

05455500 ENGLISH RIVER AT KALONA, IA

LOCATION.--Lat 41°27'59", long 91°42'56", in SE1/4 SE1/4 sec.13, T.77 N., R.8 W., Washington County, Hydrologic Unit 07080209, on right bank 30 ft upstream from bridge on State Highway 1, 0.8 mi south of Kalona, 1.1 mi upstream from Camp Creek, 4.5 mi downstream from Smith Creek, and 14.5 mi upstream from mouth.

DRAINAGE AREA.--573 mi².

PERIOD OF RECORD.--September 1939 to current year.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1558: 1940 (M), 1941. WSP 1708: 1956, 1957 (P), 1958 (P).

GAGE.--Water-stage encoder. Datum of gage is 633.45 ft above sea level (levels by U.S. Army Corps of Engineers). Prior to Dec. 27, 1939, nonrecording gage 30 ft downstream at same datum.

REMARKS.--Estimated daily discharges: Nov. 28 to Dec. 1 and Dec. 21 to Mar. 2. Records good except those for estimated daily discharges, which are poor. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data. U.S. Army Corps of Engineers data collection platform at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1930 reached a stage of 19.9 ft, from floodmark, from information by local residents, discharge, 18,500 ft³/s.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1040	217	e155	e105	e80	e220	164	125	86	160	45	30
2	862	214	174	e95	e84	e240	162	133	89	215	41	27
3	733	214	169	e86	e75	261	156	126	102	166	46	25
4	671	212	165	e82	e78	1010	152	118	113	145	167	38
5	599	207	166	e76	e72	3750	153	114	102	138	177	130
6	538	196	159	e80	e84	2750	149	119	95	129	103	135
7	505	187	150	e76	e74	1210	144	131	97	127	76	85
8	480	185	143	e72	e70	702	142	136	425	213	65	56
9	484	188	147	e77	e68	484	145	129	1080	208	59	42
10	481	184	149	e84	e64	383	145	120	487	160	53	34
11	447	183	139	e90	e74	328	141	114	382	123	52	29
12	421	186	117	e87	e84	304	140	109	359	110	54	25
13	397	235	137	e80	e78	300	155	106	369	103	64	23
14	378	255	169	e76	e90	286	158	103	531	105	76	22
15	371	218	167	e74	e110	280	150	110	367	99	64	21
16	376	201	160	e80	e200	265	139	114	275	104	51	19
17	372	192	152	e89	e600	248	131	103	235	129	45	19
18	351	188	163	e84	e1400	242	128	96	214	119	43	18
19	335	184	170	e74	e1900	230	128	92	206	94	42	16
20	326	179	165	e80	e2600	219	120	90	207	100	36	15
21	315	172	e120	e77	e1800	234	119	89	842	112	32	15
22	298	169	e84	e84	e500	246	123	87	419	109	29	19
23	288	166	e60	e98	e300	232	120	87	540	88	28	20
24	284	166	e66	e105	e220	219	116	100	2310	77	26	20
25	278	174	e64	e115	e260	198	119	136	1000	70	27	23
26	270	192	e66	e130	e240	189	121	145	443	66	59	49
27	259	165	e60	e120	e210	195	117	122	318	62	45	92
28	248	e150	e56	e100	e200	189	109	105	244	59	38	71
29	245	e140	e62	e92	---	177	113	97	203	55	31	48
30	232	e140	e70	e83	---	168	124	93	175	51	29	35
31	221	---	e80	e75	---	165	---	91	---	49	30	---
TOTAL	13105	5659	3904	2726	11615	15924	4083	3440	12315	3545	1733	1201
MEAN	423	189	126	87.9	415	514	136	111	410	114	55.9	40.0
MAX	1040	255	174	130	2600	3750	164	145	2310	215	177	135
MIN	221	140	56	72	64	165	109	87	86	49	26	15
AC-FT	25990	11220	7740	5410	23040	31590	8100	6820	24430	7030	3440	2380
CFSM	.74	.33	.22	.15	.72	.90	.24	.19	.72	.20	.10	.07
IN.	.85	.37	.25	.18	.75	1.03	.27	.22	.80	.23	.11	.08
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1940 - 1994, BY WATER YEAR (WY)												
MEAN	154	259	199	220	360	718	648	613	572	433	294	253
MAX	1004	2060	1085	1429	1066	2957	2736	3529	2570	4207	3696	3169
(WY)	1987	1962	1983	1946	1984	1979	1973	1974	1990	1993	1993	1965
MIN	2.98	2.38	2.19	.76	13.8	10.8	5.35	9.62	21.7	7.31	6.34	3.10
(WY)	1954	1956	1956	1977	1954	1954	1956	1956	1940	1954	1955	1955
SUMMARY STATISTICS												
FOR 1993 CALENDAR YEAR				FOR 1994 WATER YEAR				WATER YEARS 1940 - 1994				
ANNUAL TOTAL				569380				79250				
ANNUAL MEAN				1560				217				
HIGHEST ANNUAL MEAN								393				
LOWEST ANNUAL MEAN								1721				
HIGHEST DAILY MEAN				22300				Jul 6		41.7		
LOWEST DAILY MEAN				56				Dec 28		22300		
ANNUAL SEVEN-DAY MINIMUM				62				Dec 23		.66		
INSTANTANEOUS PEAK FLOW										.68		
INSTANTANEOUS PEAK STAGE										3870		
INSTANTANEOUS LOW FLOW										a16.33		
ANNUAL RUNOFF (AC-FT)				1129000				157200		15		
ANNUAL RUNOFF (CFSM)				2.72						Sep 20		
ANNUAL RUNOFF (INCHES)				36.96						.38		
10 PERCENT EXCEEDS				4560						5.15		
50 PERCENT EXCEEDS				651						382		
90 PERCENT EXCEEDS				160						129		
										45		
										860		
										122		
										11		

e Estimated.

a Ice affected.

05455700 IOWA RIVER NEAR LONE TREE, IA

LOCATION.--Lat 41°25'15", long 91°28'25", in NW1/4 NE1/4 sec.6, T.76 N., R.5 W., Louisa County, Hydrologic Unit 07080209, on left bank 2,000 ft downstream from tri-county bridge on county highway W66, 5 mi southwest of Lone Tree, 6.2 mi downstream from English River, and at mile 47.2.

DRAINAGE AREA.--4,293 mi².

PERIOD OF RECORD.--October 1956 to current year.

GAGE.--Water-stage encoder. Datum of gage is 588.16 ft above sea level. Prior to Dec. 28, 1956, nonrecording gage at same site and datum.

REMARKS.--Estimated daily discharges: Dec. 24-31 and Jan. 6 to Feb. 24. Records good except those for estimated daily discharges, which are fair. Flow regulated by Coralville Lake (station 05453510), 36.1 mi upstream, since Sept. 17, 1958. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data. U.S. Army Corps of Engineers gage height telemeter and data collection platform at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of May 25, 1944, reached a stage of 19.94 ft, discharge not determined, from information by U.S. Army Corps of Engineers.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12800	2750	1570	901	e790	4200	2300	1620	708	3900	1650	822
2	12100	2710	1580	1760	e800	3860	2160	1890	714	5470	1630	512
3	11700	2710	1820	1790	e800	3330	2110	1920	715	5320	1420	260
4	11400	2740	1840	1720	e780	4310	2070	1240	699	4790	1790	164
5	10500	3110	2040	1480	e820	9260	1840	1130	692	4700	2240	274
6	8580	3150	2070	e1100	e800	10400	1780	2120	675	4630	1610	404
7	8090	2780	1930	e900	e740	9480	1580	2390	660	4300	1430	671
8	7730	2470	1090	e830	e760	9300	1650	2560	1260	4320	1360	1010
9	5970	2440	714	e900	e780	9050	1700	1980	2930	5410	1550	575
10	5660	2420	1890	e930	e810	9130	1810	1860	2840	5180	1250	396
11	5910	2410	2500	e870	e860	9490	1820	2050	2730	5010	816	778
12	6110	2420	2430	e1000	e1000	9170	1830	2060	2590	4290	808	682
13	5000	2620	1400	e830	e1150	7670	1870	1960	2780	3740	1290	424
14	2970	2770	1320	e640	e1200	5100	1870	1940	4160	3300	2070	352
15	2530	2920	1920	e500	e1400	4430	1840	1880	4750	4130	1680	345
16	5110	3020	2970	e600	e1800	4320	1790	1810	4550	3600	1280	350
17	6320	2660	3170	e800	e2300	3900	1730	1790	4340	3740	1200	327
18	6310	2560	3200	e720	e3400	3410	1730	1750	3590	4530	1300	320
19	6230	2060	3200	e600	e4500	3480	2180	1570	3200	3620	1330	312
20	5590	2240	3160	e670	e5900	3460	2550	1530	3140	3280	1390	307
21	4730	2320	3020	e900	e7400	3530	2270	1300	4090	3190	1390	234
22	4580	2300	2150	e1100	e8000	3760	2220	1250	4060	3110	1160	232
23	4280	2260	1780	e1050	e8400	3280	2200	1250	3880	2760	1130	364
24	4210	2730	e1200	e1000	e8200	2830	2070	1320	6670	2680	867	381
25	3920	2300	e800	e1050	8090	2680	1960	1450	6960	2650	795	410
26	3860	2020	e580	e990	7720	2640	1890	1350	5650	2620	1260	975
27	3800	1970	e500	e980	6980	2660	1750	1150	5290	2590	1110	1980
28	3550	1900	e450	e950	5890	2620	1700	866	5080	2410	866	2750
29	3510	1860	e500	e900	---	2560	1560	767	4500	2360	819	2750
30	3440	1800	e680	e800	---	2350	1560	745	2620	1940	842	2240
31	3080	---	e750	e760	---	2300	---	724	---	1700	903	---
TOTAL	189570	74420	54224	30021	92070	157960	57390	49222	96523	115270	40236	21601
MEAN	6115	2481	1749	968	3288	5095	1913	1588	3217	3718	1298	720
MAX	12800	3150	3200	1790	8400	10400	2550	2560	6960	5470	2240	2750
MIN	2530	1800	450	500	740	2300	1560	724	660	1700	795	164
AC-FT	376000	147600	107600	59550	182600	313300	113800	97630	191500	228600	79810	42850

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1959 - 1994, BY WATER YEAR (WY)a

MEAN	1591	2121	2006	1593	2434	4918	5255	4416	4494	4444	3052	2309
MAX	6115	6347	6678	7814	7205	10410	12230	14030	13150	30320	26150	18150
(WY)	1994	1962	1983	1973	1973	1993	1979	1993	1974	1993	1993	1993
MIN	192	190	168	154	158	539	533	282	147	180	186	210
(WY)	1989	1967	1989	1977	1977	1977	1989	1977	1977	1977	1989	1988

SUMMARY STATISTICS FOR 1993 CALENDAR YEAR FOR 1994 WATER YEAR WATER YEARS 1959 - 1994a

	1993	1994	1959-1994
ANNUAL TOTAL	4239514	978507	
ANNUAL MEAN	11620	2681	
HIGHEST ANNUAL MEAN			3222
LOWEST ANNUAL MEAN			11900
HIGHEST DAILY MEAN	55100	Jul 7	1993
LOWEST DAILY MEAN	450	Dec 28	1989
ANNUAL SEVEN-DAY MINIMUM	609	Dec 25	1993
INSTANTANEOUS PEAK FLOW			69
INSTANTANEOUS PEAK STAGE			75
ANNUAL RUNOFF (AC-FT)	8409000	1941000	57100
10 PERCENT EXCEEDS	26700	5610	22.94
50 PERCENT EXCEEDS	9210	1980	2334000
90 PERCENT EXCEEDS	2130	704	7650
			1830
			307

e Estimated.

a Post-regulation period.

05457700 CEDAR RIVER AT CHARLES CITY, IA

LOCATION.--Lat 43°03'45", long 92°40'23", in SE1/4 NE1/4, sec.12, T.95 N., R.16 W., Floyd County, Hydrologic Unit 07080201, on right bank 800 ft downstream from bridge on U.S. Highway 18 (Brantingham Street) in Charles City, 10.6 mi upstream from Gizzard Creek, and at mile 252.9 upstream from mouth of Iowa River.

DRAINAGE AREA.--1,054 mi².

PERIOD OF RECORD.--October 1964 to current year.

GAGE.--Water-stage encoder. Datum of gage is 973.02 ft above sea level.

REMARKS.--Estimated daily discharges: Dec. 23 to Mar. 7. Records good except those for estimated daily discharges, which are poor. Occasional minor regulation by dam 0.2 mi upstream from gage. Daily wire-weight gage readings available in district office for period Sept. 13, 1945 to June 30, 1954, at same site and datum. Discharge not published for this period because of extreme regulation of streamflow by power dam 0.2 mi upstream. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data. U.S. National Weather Service Limited Automatic Remote Collector telemeter at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Mar. 27, 1961, reached a stage of 21.6 ft, from flood marks, discharge, 29,200 ft³/s.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	883	478	376	e350	e250	e370	441	994	426	506	1410	358
2	834	473	422	e300	e270	e340	434	966	390	477	1590	344
3	813	463	403	e330	e290	e320	424	870	365	444	1170	370
4	769	462	411	e310	e300	e300	420	815	349	426	2830	465
5	733	462	400	e300	e320	e1000	419	780	347	405	1780	482
6	713	458	397	e270	e280	e1700	419	748	392	426	1360	476
7	694	453	343	e240	e310	e3300	407	720	626	492	1230	453
8	684	442	368	e220	e280	3110	407	681	1850	580	1070	418
9	681	438	374	e260	e250	1850	412	642	2390	572	934	399
10	668	439	379	e280	e240	1350	418	601	1590	565	888	379
11	665	435	272	e250	e260	1100	417	557	1260	500	1680	372
12	662	431	267	e290	e280	997	430	529	1060	460	2810	344
13	633	441	392	e260	e300	977	458	499	1180	469	2660	330
14	551	442	446	e230	e310	1070	576	484	1340	822	1930	514
15	571	458	431	e200	e320	1210	758	478	1290	1280	1460	463
16	582	453	465	e220	e330	1230	782	458	1240	1250	1250	392
17	588	444	497	e230	e320	1040	970	437	1250	1260	1110	355
18	583	434	511	e235	e330	887	944	419	1080	1200	894	358
19	569	431	547	e220	e400	797	844	396	1040	1040	803	375
20	562	427	566	e200	e450	648	773	384	1190	2640	727	443
21	560	427	552	e220	e900	659	812	371	1210	4850	666	441
22	567	423	420	e240	e1000	686	778	366	1160	4140	602	523
23	544	413	e370	e280	e880	693	738	390	1140	2560	550	449
24	528	401	e350	e290	e780	661	702	372	1260	1870	513	552
25	521	415	e330	e280	e650	746	661	520	1230	1460	481	800
26	517	401	e300	e270	e520	693	672	665	1010	1250	480	812
27	513	289	e270	e280	e440	642	791	668	828	1090	469	845
28	510	303	e290	e290	e410	587	934	594	694	948	425	877
29	497	336	e310	e280	---	499	894	531	613	820	405	848
30	492	339	e330	e250	---	470	937	498	560	734	389	718
31	489	---	e350	e240	---	454	---	471	---	659	382	---
TOTAL	19176	12711	12139	8115	11670	30386	19072	17904	30360	36195	34948	14955
MEAN	619	424	392	262	417	980	636	578	1012	1168	1127	498
MAX	883	478	566	350	1000	3300	970	994	2390	4850	2830	877
MIN	489	289	267	200	240	300	407	366	347	405	382	330
AC-FT	38040	25210	24080	16100	23150	60270	37830	35510	60220	71790	69320	29660
CFSM	.59	.40	.37	.25	.40	.93	.60	.55	.96	1.11	1.07	.47
IN.	.68	.45	.43	.29	.41	1.07	.67	.63	1.07	1.28	1.23	.53

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1965 - 1994, BY WATER YEAR (WY)

	MEAN	585	525	378	276	367	1276	1524	1030	999	834	717	550
MAX	2339	1639	1396	888	1707	3172	5264	3434	4071	3009	4704	1670	
(WY)	1987	1983	1983	1973	1984	1983	1965	1991	1993	1993	1993	1965	
MIN	126	97.7	85.4	86.3	127	176	251	197	130	159	114	116	
(WY)	1977	1977	1990	1990	1990	1968	1968	1977	1977	1988	1988	1976	

SUMMARY STATISTICS FOR 1993 CALENDAR YEAR FOR 1994 WATER YEAR WATER YEARS 1965 - 1994

	ANNUAL TOTAL	726618	247631	
ANNUAL MEAN	1991	678		
HIGHEST ANNUAL MEAN			756	
LOWEST ANNUAL MEAN			2048	1993
HIGHEST DAILY MEAN	22100	Aug 17	159	1977
LOWEST DAILY MEAN	190	Feb 16	22100	Aug 17 1993
ANNUAL SEVEN-DAY MINIMUM	211	Feb 16	60	Nov 23 1976
INSTANTANEOUS PEAK FLOW			218	Dec 17 1989
INSTANTANEOUS PEAK STAGE			5110	Aug 16 1993
INSTANTANEOUS LOW FLOW			8.29	Mar 2 1965
ANNUAL RUNOFF (AC-FT)	1441000		171	Nov 17 1989
ANNUAL RUNOFF (CFSM)		1.89	491200	
ANNUAL RUNOFF (INCHES)		25.65	.64	
10 PERCENT EXCEEDS	4330		8.74	.72
50 PERCENT EXCEEDS	995			9.75
90 PERCENT EXCEEDS	274			

e Estimated.

05458000 LITTLE CEDAR RIVER NEAR IONIA, IA

LOCATION.--Lat 43°02'05", long 92°30'05", in SW1/4 NE1/4 sec.21, T.95 N., R.14 W., Chickasaw County, Hydrologic Unit 07080201, on left bank 12 ft downstream from bridge on county highway B57, 2.4 mi west of Ionia, 6.4 mi upstream from mouth, and 7.6 mi downstream from Beaver Creek.

DRAINAGE AREA.--306 mi².

PERIOD OF RECORD.--October 1954 to current year.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1708: 1959.

GAGE.--Water-stage encoder. Datum of gage is 973.35 ft above sea level.

REMARKS.--Estimated daily discharges: Dec. 24-29. Records good except those for estimated daily discharges, which are poor. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data. U.S. National Weather Service Limited Automatic Remote Collector at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 22, 1954, reached a stage of 11.37 ft, discharge, 4,600 ft³/s.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	138	97	83	66	57	102	145	162	105	119	302	163
2	135	95	81	67	58	96	142	155	98	109	880	161
3	131	95	77	67	58	93	138	149	93	102	724	163
4	128	95	82	67	57	113	136	142	89	100	599	186
5	124	94	80	67	57	453	136	139	88	101	506	200
6	124	92	74	65	55	766	131	136	89	100	534	199
7	122	87	65	63	54	1020	127	133	102	102	399	193
8	123	90	81	60	53	867	127	128	138	131	341	184
9	125	89	77	58	53	463	127	125	345	121	301	174
10	124	89	74	57	53	353	127	121	290	107	303	173
11	124	87	48	56	53	289	124	118	215	102	582	179
12	123	87	68	56	53	288	124	114	190	96	911	175
13	122	94	84	57	52	305	132	111	293	93	817	167
14	120	95	84	57	52	375	144	110	295	120	577	161
15	119	94	86	57	52	407	208	110	264	110	472	158
16	119	93	89	55	52	383	249	108	217	156	399	165
17	118	90	89	54	53	321	253	102	189	157	350	167
18	117	87	89	54	56	288	230	96	167	175	316	170
19	114	87	91	54	156	262	206	93	152	205	295	165
20	114	87	92	53	362	246	188	89	140	1680	274	160
21	113	85	74	53	374	245	175	86	135	1550	254	157
22	112	84	71	53	273	242	169	84	124	907	236	160
23	111	84	56	53	186	233	161	90	177	576	218	169
24	109	83	e58	53	151	218	158	98	209	476	206	205
25	107	84	e57	53	131	200	155	104	225	398	195	237
26	105	78	e56	53	121	187	152	116	199	340	189	255
27	104	69	e54	50	116	177	158	125	176	303	185	278
28	102	81	e56	51	109	172	187	119	157	280	180	261
29	101	74	e60	53	---	163	174	113	142	258	173	235
30	99	68	65	53	---	155	165	110	130	244	166	218
31	98	---	64	55	---	150	---	110	---	234	161	---
TOTAL	3625	2614	2265	1770	2957	9632	4848	3596	5233	9552	12045	5638
MEAN	117	87.1	73.1	57.1	106	311	162	116	174	308	389	188
MAX	138	97	92	67	374	1020	253	162	345	1680	911	278
MIN	98	68	48	50	52	93	124	84	88	93	161	157
AC-FT	7190	5180	4490	3510	5870	19110	9620	7130	10380	18950	23890	11180
CFSM	.38	.28	.24	.19	.35	1.02	.53	.38	.57	1.01	1.27	.61
IN.	.44	.32	.28	.22	.36	1.17	.59	.44	.64	1.16	1.46	.69

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1955 - 1994, BY WATER YEAR (WY)

	MEAN	147	126	79.7	48.9	82.6	375	356	234	260	173	183	146
MAX	902	632	503	265	644	1056	1466	906	1136	959	1744	807	
(WY)	1987	1983	1983	1973	1984	1961	1965	1991	1969	1993	1993	1965	
MIN	9.64	12.4	4.93	4.20	3.40	34.5	47.3	30.5	18.4	14.2	7.23	12.7	
(WY)	1990	1990	1990	1959	1959	1964	1957	1958	1989	1964	1989	1988	

SUMMARY STATISTICS	FOR 1993 CALENDAR YEAR	FOR 1994 WATER YEAR	WATER YEARS 1955 - 1994
ANNUAL TOTAL	204935	63775	
ANNUAL MEAN	561	175	185
HIGHEST ANNUAL MEAN			584
LOWEST ANNUAL MEAN			32.0
HIGHEST DAILY MEAN	9140	Aug 16	1680
LOWEST DAILY MEAN	44	Feb 21	48
ANNUAL SEVEN-DAY MINIMUM	46	Feb 18	52
INSTANTANEOUS PEAK FLOW			2180
INSTANTANEOUS PEAK STAGE			8.76
INSTANTANEOUS LOW FLOW			36
ANNUAL RUNOFF (AC-FT)	406500	126500	133800
ANNUAL RUNOFF (CFSM)	1.83	.57	.60
ANNUAL RUNOFF (INCHES)	24.91	7.75	8.20
10 PERCENT EXCEEDS	1410	304	387
50 PERCENT EXCEEDS	176	124	70
90 PERCENT EXCEEDS	60	57	17

e Estimated.

05458500 CEDAR RIVER AT JANESVILLE, IA

LOCATION.--Lat 42°38'54", long 92°27'54", in NE1/4 SW1/4 sec.35, T.91 N., R.14 W., Bremer County, Hydrologic Unit 07080201, on left bank 300 ft downstream from bridge on county highway at Janesville, 3.6 mi upstream from West Fork Cedar River, and at mile 207.7 upstream from mouth of Iowa River.

DRAINAGE AREA.--1,661 mi².

PERIOD OF RECORD.--October 1904 to Sept. 1906, October 1914 to September 1927, October 1932 to September 1942, October 1945 to current year. Monthly discharge only for some periods, published in WSP 1308. Published as Red Cedar River at Janesville, 1905-06.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1558: 1906 (M), 1915-16 (M), 1917, 1918-19 (M), 1920-27, 1933-37 (M), 1940-42 (M).

GAGE.--Water-stage recorder. Datum of gage is 868.26 ft above sea level. Prior to July 26, 1919, nonrecording gage at site 1,000 ft downstream at datum 4.0 ft lower. July 26, 1919 to Sept. 30, 1927, Nov. 14, 1932 to Sept 30, 1942, and Apr. 26, 1946 to Nov. 10, 1949, nonrecording gage at county bridge 300 ft upstream at same datum.

REMARKS.--Estimated daily discharges: Oct. 20 to Dec. 7, Dec. 12, and Dec. 24 to Feb. 27. Records good except those for estimated daily discharges, which are poor. Diurnal fluctuation during low water caused by powerplant at Waverly, 10 mi upstream. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data. U.S. National Weather Service gage-height telemeter at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Mar. 17, 1945, reached a stage of 16.2 ft, from floodmark at site 300 ft upstream, discharge, 34,300 ft³/s. Flood of Mar. 16, 1929, reached a stage of about 16 ft, from information by City of Waterloo, discharge not determined.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1530	e840	e620	e670	e450	710	794	1390	843	1120	1180	720
2	1420	e800	e600	e600	e470	674	746	1440	798	1050	1800	737
3	1410	e840	e600	e640	e510	588	726	1360	742	969	2480	715
4	1360	e850	e620	e620	e540	606	772	1330	704	946	2120	716
5	1320	e850	e640	e600	e560	896	811	1680	685	894	2810	781
6	1250	e830	e660	e540	e520	2290	812	1220	674	857	2590	825
7	1230	e820	e670	e500	e560	2980	801	910	668	814	2150	868
8	1220	e840	651	e450	e540	4050	830	1110	764	1000	1750	826
9	1340	e820	667	e570	e480	4690	768	1120	1600	1140	1530	778
10	1350	e800	666	e530	e450	3230	747	1120	2690	936	1340	707
11	1280	e780	628	e570	e500	2160	762	1010	2110	943	1330	661
12	1250	e820	e740	e520	e540	1980	794	942	1770	926	2070	674
13	1220	e880	751	e430	e500	1910	815	906	1620	892	3800	670
14	1170	e840	697	e390	e470	1860	833	872	1790	1260	3520	642
15	1100	e820	635	e370	e450	1920	984	838	1900	1400	2840	682
16	1100	e790	439	e410	e480	1980	1330	815	1810	1800	2180	753
17	1180	e810	595	e420	e520	1960	1390	811	1440	1920	1900	732
18	1130	e760	777	e390	e580	1840	1450	780	1360	1580	1640	646
19	1130	e760	856	e380	e800	1650	1590	751	1220	1860	1510	655
20	e1150	e720	865	e360	e1500	1520	1450	704	1200	1980	1380	651
21	e1080	e720	864	e400	e1150	1420	1350	705	1770	3460	1170	665
22	e1040	e770	843	e460	e1000	1430	1320	656	1270	5080	1360	784
23	e1000	e780	698	e500	e900	1400	1310	713	1420	5380	938	801
24	e940	e740	e580	e540	e840	1340	1280	753	2680	3790	975	792
25	e900	e720	e560	e520	e800	1160	1240	752	2070	2820	979	909
26	e880	e720	e540	e470	e760	1250	1190	785	2080	2380	1190	1370
27	e880	e700	e520	e480	e740	1250	1140	911	1910	2020	926	1590
28	e860	e680	e500	e440	750	1170	1180	1000	1570	1720	860	1350
29	e840	e680	e530	e470	---	1000	1340	986	1450	1580	853	1290
30	e840	e630	e610	e420	---	877	1390	931	1240	1410	817	1260
31	e830	---	e640	e440	---	793	---	885	---	1290	743	---
TOTAL	35230	23410	20262	15100	18360	52584	31945	30186	43848	55217	52731	25250
MEAN	1136	780	654	487	656	1696	1065	974	1462	1781	1701	842
MAX	1530	880	865	670	1500	4690	1590	1680	2690	5380	3800	1590
MIN	830	630	439	360	450	588	726	656	668	814	743	642
AC-FT	69880	46430	40190	29950	36420	104300	63360	59870	86970	109500	104600	50080
CFSM	.68	.47	.39	.29	.39	1.02	.64	.59	.88	1.07	1.02	.51
IN.	.79	.52	.45	.34	.41	1.18	.72	.68	.98	1.24	1.18	.57

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1905 - 1994, BY WATER YEAR (WY)

	MEAN	607	576	429	340	543	1859	1801	1201	1253	956	785	637
MAX	3793	2672	2404	1293	3393	4851	8966	5668	6223	6024	7762	2805	
(WY)	1987	1983	1983	1983	1984	1973	1993	1991	1993	1993	1993	1993	1993
MIN	101	121	75.2	80.3	61.2	124	247	134	95.2	84.7	83.6	117	
(WY)	1935	1934	1934	1917	1959	1934	1957	1934	1934	1934	1934	1934	1934

SUMMARY STATISTICS	FOR 1993 CALENDAR YEAR	FOR 1994 WATER YEAR	WATER YEARS 1905 - 1994
ANNUAL TOTAL	1236450	404123	
ANNUAL MEAN	3388	1107	917
HIGHEST ANNUAL MEAN			3454
LOWEST ANNUAL MEAN			187
HIGHEST DAILY MEAN	33000	Aug 18	34800
LOWEST DAILY MEAN	300	Feb 18	28
ANNUAL SEVEN-DAY MINIMUM	347	Feb 17	50
INSTANTANEOUS PEAK FLOW			5690
INSTANTANEOUS PEAK STAGE			6.29
ANNUAL RUNOFF (AC-FT)	2452000	801600	664100
ANNUAL RUNOFF (CFSM)	2.04	.67	.55
ANNUAL RUNOFF (INCHES)	27.69	9.05	7.50
10 PERCENT EXCEEDS	7870	1900	2020
50 PERCENT EXCEEDS	1940	857	451
90 PERCENT EXCEEDS	516	526	158

e Estimated.

05458900 WEST FORK CEDAR RIVER AT FINCHFORD, IA

LOCATION.--Lat 42°37'50", long 92°32'24", in SW1/4 SE1/4 sec.6, T.90 N., R.14 W., Black Hawk County, Hydrologic Unit 07080204, on left bank 100 ft downstream from bridge on county highway C55 at Finchford, 3.2 mi upstream from Shell Rock River, and 5.0 mi upstream from mouth.

DRAINAGE AREA.--846 mi².

PERIOD OF RECORD.--October 1945 to current year. Prior to October 1955, published as West Fork Shell Rock River at Finchford.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1558: 1946 (M), 1947.

GAGE.--Water-stage recorder. Datum of gage is 867.54 ft above sea level. Prior to June 10, 1955, nonrecording gage at same site and datum.

REMARKS.--Estimated daily discharges: Oct. 4-8, and Dec. 24 to Mar. 8. Records good except those for estimated daily discharges, which are poor. An authorized diversion of 2,100 acre-ft is made into Big Marsh, 16 mi upstream from gage, each year between September 1 and November 15. Net effect on daily flows at gage is unknown. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data. U.S. National Weather Service gage-height telemeter at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in March 1929 reached a stage of about 14 ft, from information by local resident, discharge, about 12,800 ft³/s.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	885	425	431	e360	e180	e520	606	629	535	1580	597	567
2	840	424	415	e320	e190	e500	594	620	473	1370	582	531
3	801	424	386	e300	e200	e480	576	601	435	1250	616	509
4	e800	427	394	e280	e210	e640	564	579	409	1160	598	508
5	e780	426	387	e240	e215	e1000	560	563	390	1120	614	508
6	e740	421	378	e210	e230	e2000	557	564	380	1160	673	535
7	e720	405	359	e230	e250	e5800	548	594	378	1190	629	575
8	e740	399	337	e200	e230	e4500	542	655	387	1160	599	565
9	731	399	351	e240	e210	4080	549	610	398	1060	577	550
10	772	395	345	e230	e200	2710	562	669	372	1000	567	544
11	785	390	325	e240	e220	1520	555	617	361	925	569	520
12	771	399	275	e220	e240	1210	549	571	353	838	592	501
13	738	427	313	e200	e250	1130	583	530	396	766	1640	486
14	706	446	357	e180	e240	1110	664	497	600	856	3520	475
15	704	443	363	e170	e210	1110	811	478	892	1100	2970	465
16	716	441	374	e190	e220	1080	923	468	810	1160	2480	468
17	703	435	387	e200	e230	1030	956	450	658	1220	1570	492
18	685	426	399	e180	e240	969	926	427	579	1230	1260	488
19	668	423	421	e160	e600	922	860	408	524	1270	941	473
20	650	452	447	e150	e1100	884	799	392	510	1310	865	463
21	629	450	446	e170	e900	867	746	374	561	1430	868	462
22	603	429	444	e190	e860	857	712	358	667	1410	860	482
23	592	495	637	e210	e820	841	676	353	1020	1260	788	517
24	575	526	e440	e230	e760	810	646	449	2120	1090	730	579
25	513	508	e400	e180	e740	775	627	673	2710	928	776	642
26	485	502	e370	e200	e680	736	608	922	3540	787	1030	691
27	469	442	e330	e230	e640	715	596	829	3920	737	801	756
28	457	421	e300	e210	e580	700	667	722	3630	729	651	764
29	449	433	e330	e240	---	675	665	635	2850	688	604	734
30	441	445	e340	e200	---	646	639	571	2050	656	588	700
31	435	---	e350	e170	---	620	---	616	---	625	582	---
TOTAL	20583	13078	11831	6730	11645	41437	19866	17424	32908	33065	30737	16550
MEAN	664	436	382	217	416	1337	662	562	1097	1067	992	552
MAX	885	526	637	360	1100	5800	956	922	3920	1580	3520	764
MIN	435	390	275	150	180	480	542	353	353	625	567	462
AC-FT	40830	25940	23470	13350	23100	82190	39400	34560	65270	65580	60970	32830
CFSM	.78	.52	.45	.26	.49	1.58	.78	.66	1.30	1.26	1.17	.65
IN.	.91	.58	.52	.30	.51	1.82	.87	.77	1.45	1.45	1.35	.73

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1946 - 1994, BY WATER YEAR (WY)

	MEAN	308	310	244	166	299	1028	1044	790	943	715	385	328
MAX	1412	1502	1165	995	2303	2456	4170	3434	3358	3995	3023	2149	
(WY)	1973	1973	1983	1973	1984	1961	1965	1991	1984	1993	1993	1965	
MIN	14.9	22.3	14.2	9.35	6.37	86.2	81.8	80.1	39.5	26.6	15.2	16.9	
(WY)	1990	1959	1959	1959	1959	1954	1957	1957	1977	1977	1989	1989	

SUMMARY STATISTICS

FOR 1993 CALENDAR YEAR

FOR 1994 WATER YEAR

WATER YEARS 1946 - 1994

ANNUAL TOTAL	639389	255854	
ANNUAL MEAN	1752	701	547
HIGHEST ANNUAL MEAN			1800
LOWEST ANNUAL MEAN			65.5
HIGHEST DAILY MEAN	16700	Apr 1	5800
LOWEST DAILY MEAN	180	Feb 27	150
ANNUAL SEVEN-DAY MINIMUM	191	Feb 23	174
INSTANTANEOUS PEAK FLOW			7500
INSTANTANEOUS PEAK STAGE	16.73	Apr 1a	b13.63
INSTANTANEOUS LOW FLOW			150
ANNUAL RUNOFF (AC-FT)	1268000	507500	396400
ANNUAL RUNOFF (CFSM)	2.07	.83	.65
ANNUAL RUNOFF (INCHES)	28.11	11.25	8.79
10 PERCENT EXCEEDS	3780	1120	1330
50 PERCENT EXCEEDS	1190	571	228
90 PERCENT EXCEEDS	310	236	44

e Estimated.

a Revised.

b Ice affected.

LOCATION.--Lat 43°09'54", long 93°11'33", in NE1/4 NW1/4 sec.3, T.96 N., R.20 W., Cerro Gordo County, Hydrologic Unit 07080203, on right bank 650 ft upstream from Thirteenth Street Bridge in Mason City, 0.1 mi downstream from Calmus Creek, 1.0 mi upstream from Willow Creek, and at mile 275.8 upstream from mouth of Iowa River.

PERIOD OF RECORD.--October 1932 to current year. Prior to December 1932, monthly discharge only, published in WSP 1308. Prior to October 1959, published as Lime Creek at Mason City.

GAGE.--Water-stage encoder and concrete control. Datum of gage is 1,069.59 ft above sea level. Prior to Oct. 15, 1934, nonrecording gage at datum 6.47 ft lower. Oct. 15 to Nov. 6, 1934, nonrecording gage at different datum, and Nov. 7, 1934, to Mar. 22, 1935, nonrecording gage at present datum.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	228	190	165	e170	e72	e180	219	420	192	455	509	151
2	344	189	166	e150	e90	e190	212	396	184	428	466	150
3	467	187	161	e140	e110	e200	202	367	175	387	393	157
4	448	187	172	e130	e100	e240	197	344	167	382	420	162
5	408	184	175	e140	e120	e1100	197	356	192	420	386	182
6	294	179	157	e150	e130	e940	193	381	249	431	342	178
7	289	171	124	e130	e90	e800	188	400	285	560	313	166
8	289	165	166	e90	e64	e700	182	392	287	657	289	156
9	331	171	178	e100	e66	e500	185	364	256	686	282	e149
10	332	169	167	e120	e56	e560	175	334	242	616	361	e143
11	315	167	95	e130	e58	e520	164	307	235	563	513	137
12	307	170	122	e110	e60	e560	182	284	221	511	527	138
13	289	192	185	e120	e62	e600	289	267	603	651	578	132
14	281	193	210	e100	e64	613	343	265	611	1280	561	128
15	278	190	248	e84	e67	574	417	261	473	1090	512	136
16	273	189	266	e90	e64	558	449	243	372	1630	453	141
17	264	190	279	e100	e80	514	409	229	298	1960	400	140
18	260	189	304	e88	e84	459	377	217	280	1450	352	139
19	251	186	312	e82	e100	402	335	206	487	1220	316	134
20	248	183	305	e88	e500	369	300	199	507	1240	289	137
21	249	180	e180	e84	e400	357	291	187	424	1070	268	165
22	243	180	e200	e110	e330	343	277	186	330	931	251	215
23	238	181	e150	e100	e260	334	260	217	968	845	226	245
24	231	174	e160	e140	e200	323	248	313	1730	769	212	248
25	228	180	e150	e110	e160	296	250	330	1120	700	212	271
26	219	147	e100	e96	e170	283	376	305	907	645	e181	307
27	212	127	e98	e80	e160	276	394	278	767	601	148	266
28	211	133	e80	e90	e170	262	365	247	643	556	130	236
29	206	172	e130	e84	---	245	411	230	546	506	116	213
30	196	151	e120	e74	---	232	431	223	474	455	e127	197
31	190	---	e150	e66	---	226	---	207	---	415	156	---
TOTAL	8619	5266	5475	3346	3887	13756	8518	8955	14225	24110	10289	5319
MEAN	278	176	177	108	139	444	284	289	474	778	332	177
MAX	467	193	312	170	500	1100	449	420	1730	1960	578	307
MIN	190	127	80	66	56	180	164	186	167	382	116	128
AC-FT	17100	10450	10860	6640	7710	27290	16900	17760	28220	47820	20410	10550
CFSM	.53	.33	.34	.21	.26	.84	.54	.55	.90	1.48	.63	.34
IN.	.61	.37	.39	.24	.27	.97	.60	.63	1.01	1.71	.73	.34

MEAN	170	166	110	74.8	115	519	592	397	455	293	218	188
MAX	840	811	724	378	1002	1707	2880	1807	2160	1915	2054	1073
(WY)	1966	1942	1983	1983	1984	1973	1965	1991	1993	1993	1979	1938
MIN	11.3	12.7	7.45	6.61	7.50	17.6	61.0	16.1	21.9	7.29	4.89	12.6
(WY)	1935	1934	1934	1977	1959	1934	1957	1934	1934	1934	1934	1933

SUMMARY STATISTICS	FOR 1993 CALENDAR YEAR		FOR 1994 WATER YEAR		WATER YEARS 1933 - 1994	
ANNUAL TOTAL	335796		111765			
ANNUAL MEAN	920		306		275	
HIGHEST ANNUAL MEAN					947	
LOWEST ANNUAL MEAN					28.1	
HIGHEST DAILY MEAN	6130	Apr 1	1960	Jul 17	9370	Mar 27 1961
LOWEST DAILY MEAN	80	Dec 28	56	Feb 10	1.2	Aug 19 1989
ANNUAL SEVEN-DAY MINIMUM	100	Feb 24	61	Feb 8	3.1	Dec 29 1933
INSTANTANEOUS PEAK FLOW			2330	Jul 16	10800	Mar 30 1933
INSTANTANEOUS PEAK STAGE			7.26	Jul 16	15.70	Mar 30 1933
ANNUAL RUNOFF (AC-FT)	666100		221700		199500	
ANNUAL RUNOFF (CFSM)	1.75		.58		.52	
ANNUAL RUNOFF (INCHES)	23.75		7.90		7.11	
10 PERCENT EXCEEDS	2360		560		697	
50 PERCENT EXCEEDS	546		230		107	
90 PERCENT EXCEEDS	113		100		19	

e Estimated.

05460000 CLEAR LAKE AT CLEAR LAKE, IA

LOCATION.--Lat 43°08'01", long 93°22'57", in SE1/4 NE1/4 sec.13, T.96 N., R.22 W., Cerro Gordo County, Hydrologic Unit 07080203, at the public bathing beach in the town of Clear Lake near dam across Clear Creek.

DRAINAGE AREA.--22.6 mi².

PERIOD OF RECORD.--May 1933 to current year. No winter records 1933-52. Record fragmentary November 1952 to June 1959.

GAGE.--Water-stage recorder. Datum of gage is 1,222.24 ft above sea level, and 4.60 ft below crest of spillway of dam at outlet. See WSP 1708 for history of changes prior to June 25, 1959.

REMARKS.--Lake is formed by concrete dam on Clear Creek with ungated overflow spillway 50 ft long at elevation 1,226.84 ft above sea level. Dam constructed in 1903. A previous outlet works had been constructed in 1887. Lake is used for conservation and recreation. Area of lake is approximately 3,600 acres.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height observed, 5.94 ft July 3, 1951; minimum observed, 0.76 ft Oct. 26, 1989.

EXTREMES FOR CURRENT YEAR.--Maximum gage height, (a) 5.32 ft July 18; minimum, 4.53 ft Nov. 12.

(a) Affected by wind

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.83	4.63	4.62	4.71	4.84	4.97	4.94	4.90	4.79	5.00	5.18	4.79
2	4.80	4.62	4.62	4.72	4.84	4.98	4.94	4.88	4.77	4.95	5.18	4.79
3	4.80	4.63	4.62	4.73	4.84	4.98	4.91	4.88	4.77	4.94	5.18	4.79
4	4.77	4.62	4.62	4.74	4.84	4.99	4.88	4.88	4.76	4.95	5.16	4.79
5	4.76	4.62	4.62	4.73	4.84	5.02	4.89	4.89	4.82	4.96	5.13	4.84
6	4.77	4.60	4.63	4.74	4.84	5.04	4.89	4.90	4.82	4.94	5.11	4.82
7	4.77	4.60	4.62	4.75	4.85	5.04	4.87	4.91	4.78	4.95	5.08	4.81
8	4.77	4.58	4.62	4.74	4.85	5.04	4.88	4.92	4.75	4.99	5.06	4.80
9	4.82	4.58	4.63	4.74	4.86	5.04	4.89	4.89	4.76	4.93	5.02	4.80
10	4.82	4.58	4.63	4.74	4.86	5.04	4.85	4.89	4.77	4.89	5.07	4.79
11	4.81	4.58	4.62	4.75	4.86	5.04	4.82	4.88	4.79	4.90	5.06	4.77
12	4.78	4.56	4.62	4.75	4.86	5.04	4.85	4.84	4.77	4.89	5.09	4.76
13	4.77	4.65	4.63	4.76	4.86	5.03	4.92	4.82	4.85	4.94	5.10	4.76
14	4.77	4.61	4.66	4.76	4.85	5.03	4.91	4.84	4.87	5.00	5.07	4.75
15	4.77	4.63	4.67	4.76	4.86	5.03	5.01	4.85	4.86	5.00	5.05	4.75
16	4.76	4.64	4.67	4.76	4.85	5.03	4.95	4.83	4.84	5.08	5.02	4.75
17	4.76	4.62	4.68	4.76	4.85	5.03	4.92	4.81	4.83	5.13	5.01	4.71
18	4.76	4.63	4.69	4.77	4.86	5.02	4.91	4.80	4.85	5.15	5.00	4.70
19	4.75	4.64	4.69	4.77	4.87	5.01	4.90	4.79	4.92	5.21	4.99	4.69
20	4.77	4.62	4.70	4.77	4.88	5.01	4.87	4.79	4.92	5.22	4.96	4.67
21	4.78	4.62	4.70	4.77	4.89	5.01	4.87	4.78	4.91	5.22	4.94	4.69
22	4.74	4.59	4.70	4.77	4.89	5.00	4.87	4.77	4.89	5.20	4.92	4.74
23	4.75	4.59	4.69	4.78	4.94	5.02	4.88	4.82	4.97	5.19	4.90	4.74
24	4.73	4.58	4.69	4.77	4.95	5.02	4.87	4.90	5.04	5.17	4.88	4.73
25	4.72	4.64	4.70	4.78	4.97	4.99	4.86	4.90	5.05	5.14	4.87	4.74
26	4.72	4.64	4.70	4.78	4.97	4.99	5.03	4.88	5.03	5.11	4.91	4.72
27	4.71	4.63	4.70	4.83	4.97	4.98	4.92	4.88	5.01	5.08	4.91	4.72
28	4.71	4.63	4.70	4.83	4.97	4.97	4.87	4.88	5.01	5.07	4.88	4.71
29	4.68	4.63	4.70	4.84	---	4.96	4.93	4.86	4.95	5.05	4.85	4.69
30	4.64	4.62	4.70	4.84	---	4.96	4.89	4.86	4.92	5.03	4.83	4.67
31	4.64	---	4.71	4.84	---	4.96	---	4.82	---	5.04	4.81	---
MEAN	4.76	4.61	4.66	4.77	4.88	5.01	4.90	4.86	4.87	5.04	5.01	4.75
MAX	4.83	4.65	4.71	4.84	4.97	5.04	5.03	4.92	5.05	5.22	5.18	4.84
MIN	4.64	4.56	4.62	4.71	4.84	4.96	4.82	4.77	4.75	4.89	4.81	4.67

05462000 SHELL ROCK RIVER AT SHELL ROCK, IA

LOCATION.--Lat 42°42'43", long 92°34'58", in NW1/4 NE1/4 sec.11, T.91 N., R.15 W., Butler County, Hydrologic Unit 07080202 on right bank 400 ft upstream from bridge on county highway C45 in Shell Rock, 2.2 mi downstream from Curry Creek, and 10.4 mi upstream from mouth.

DRAINAGE AREA.--1,746 mi².

PERIOD OF RECORD.--June 1953 to current year. Prior to July 1953, monthly discharge only, published in WSP 1728.

REVISED RECORDS.--WSP 1438: Drainage area.

GAGE.--Water-stage recorder. Rockfill dam since Oct. 19, 1957. Datum of gage is 885.34 ft above sea level.

REMARKS.--Estimated daily discharges: Dec. 26 to Mar. 7, June 21-23, and July 14-23. Records good except those for estimated daily discharges, which are poor. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data. U.S. National Weather Service gage-height telemeter at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in 1856 reached a stage of 17.7 ft at bridge 400 ft downstream, from information provided by U.S. Army Corps of Engineers, discharge, about 45,000 ft³/s.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1640	917	722	e620	e410	e730	914	1250	936	1640	1600	712
2	1560	904	724	e620	e430	e710	888	1230	869	1590	1890	718
3	1480	887	744	e600	e480	e720	862	1170	833	1480	1850	696
4	1440	886	742	e590	e520	e740	854	1110	792	1370	1580	714
5	1370	894	744	e570	e540	e780	852	1090	769	1310	1490	770
6	1320	877	744	e540	e500	e2000	818	1110	813	1300	1360	771
7	1290	858	680	e500	e520	e5000	804	1190	979	1330	1240	756
8	1270	829	639	e450	e510	3340	790	1190	1090	1590	1150	733
9	1310	835	680	e510	e450	3060	790	1150	1140	1650	1060	701
10	1370	827	719	e500	e430	2820	780	1090	1090	1690	1070	675
11	1380	824	654	e490	e470	2590	761	1040	1100	1570	1260	648
12	1340	820	566	e490	e500	2490	748	973	1110	1450	1630	625
13	1300	859	576	e480	e470	2200	810	928	1260	1510	1790	609
14	1260	878	731	e435	e430	2210	984	889	2110	e2640	1700	593
15	1230	893	790	e415	e420	2250	1180	885	2010	e3570	1600	580
16	1210	872	869	e420	e450	2160	1290	870	1670	e3130	1480	583
17	1190	864	909	e430	e480	1860	1360	825	1430	e4140	1350	570
18	1150	840	943	e410	e500	1710	1270	794	1260	e4640	1230	575
19	1130	849	991	e390	e540	1550	1170	762	1170	e3730	1130	572
20	1110	829	1020	e380	e700	1440	1080	732	1680	e3580	1060	558
21	1090	827	972	e410	e1200	1380	1040	715	e2400	e4190	1000	552
22	1080	823	802	e430	e1100	1350	981	696	e3300	e3910	946	578
23	1080	800	639	e490	e1050	1310	931	741	e4700	e3390	886	633
24	1070	791	454	e520	e1020	1270	912	873	5760	3060	837	727
25	1050	797	434	e490	e970	1200	886	1290	5930	2780	911	772
26	1030	811	e470	e460	e880	1130	884	1380	4180	2510	1000	857
27	1000	744	e480	e470	e800	1100	1070	1260	3020	2280	932	1030
28	997	651	e530	e430	e730	1070	1150	1140	2490	2130	865	928
29	992	636	e600	e460	---	1020	1130	1040	2080	1960	799	840
30	966	700	e600	e410	---	971	1180	990	1830	1800	768	784
31	951	---	e590	e430	---	934	---	1050	---	1660	738	---
TOTAL	37656	24822	21758	14840	17500	53095	29169	31453	59801	74580	38202	20860
MEAN	1215	827	702	479	625	1713	972	1015	1993	2406	1232	695
MAX	1640	917	1020	620	1200	5000	1360	1380	5930	4640	1890	1030
MIN	951	636	434	380	410	710	748	696	769	1300	738	552
AC-FT	74690	49230	43160	29440	34710	105300	57860	62390	118600	147900	75770	41380
CFSM	.70	.47	.40	.27	.36	.98	.56	.58	1.14	1.38	.71	.40
IN.	.80	.53	.46	.32	.37	1.13	.62	.67	1.27	1.59	.81	.44

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1954 - 1994, BY WATER YEAR (WY)

MEAN	746	691	524	350	480	1647	1995	1546	1632	1229	910	742
MAX	2544	2326	2381	1375	2833	5426	8540	5889	6239	6461	5637	2816
(WY)	1987	1983	1983	1983	1984	1992	1965	1991	1993	1993	1979	1993
MIN	74.1	77.7	39.8	45.6	44.7	193	226	243	138	114	66.7	96.6
(WY)	1990	1990	1990	1959	1959	1968	1957	1958	1977	1977	1989	1989

SUMMARY STATISTICS FOR 1993 CALENDAR YEAR FOR 1994 WATER YEAR WATER YEARS 1954 - 1994

ANNUAL TOTAL	1164130	423736	
ANNUAL MEAN	3189	1161	
HIGHEST ANNUAL MEAN			1043
LOWEST ANNUAL MEAN			3231
HIGHEST DAILY MEAN	20000	Apr 1	1993
LOWEST DAILY MEAN	350	Feb 18	1977
ANNUAL SEVEN-DAY MINIMUM	390	Feb 17	32100
INSTANTANEOUS PEAK FLOW			Mar 28 1961
INSTANTANEOUS PEAK STAGE			27
INSTANTANEOUS LOW FLOW			Dec 22 1989
ANNUAL RUNOFF (AC-FT)	2309000		29
ANNUAL RUNOFF (CFSM)	1.83		Dec 16 1989
ANNUAL RUNOFF (INCHES)	24.80		Mar 28 1961
10 PERCENT EXCEEDS	7360		16.26
50 PERCENT EXCEEDS	2160		
90 PERCENT EXCEEDS	513		

e Estimated.

a Ice affected.

05463000 BEAVER CREEK AT NEW HARTFORD, IA

LOCATION.--Lat 42°34'22", long 92°37'04", in SE1/4 SE1/4 sec.28, T.90 N., R.15 W., Butler County, Hydrologic Unit 07080205, on right bank 5 ft from right end of bridge on county highway T55, 0.2 mi north of New Hartford, and 8 mi upstream from mouth.

DRAINAGE AREA.--347 mi².

PERIOD OF RECORD.--October 1945 to current year. Prior to April 1948, monthly discharge only, published in WSP 1308.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1558: 1948-49. WSP 1708: 1947 (M).

GAGE.--Water-stage encoder. Datum of gage is 882.44 ft above sea level. Prior to July 14, 1959, nonrecording gage at same site and datum.

REMARKS.--Estimated daily discharges: Dec. 23 to Mar. 7. Records fair except those for estimated daily discharges, which are poor. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data. U.S. National Weather Service Limited Automatic Remote Collector at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	395	257	209	e135	e80	e250	161	155	134	371	164	132
2	367	254	187	e140	e74	e230	156	154	130	340	171	131
3	350	250	182	e130	e72	e350	151	151	126	286	164	138
4	343	251	169	e120	e80	e600	153	148	122	461	154	136
5	330	238	164	e110	e90	e1100	152	146	119	1030	145	153
6	327	223	160	e120	e96	e2000	149	153	121	533	137	187
7	318	218	152	e110	e96	e980	148	178	112	451	131	164
8	315	217	155	e100	e88	655	152	200	106	1000	126	149
9	614	208	152	e110	e82	470	158	200	103	594	118	138
10	695	204	151	e115	e76	389	153	185	99	423	116	132
11	584	203	129	e120	e84	334	145	174	98	355	117	125
12	521	202	164	e125	e90	152	152	161	94	303	125	118
13	467	236	174	e120	e88	317	185	153	319	360	838	113
14	441	231	154	e110	e96	324	201	146	468	1890	1900	110
15	455	220	165	e98	e100	324	275	147	290	1320	1420	107
16	456	214	172	e84	e96	288	351	138	219	492	476	108
17	423	211	174	e100	e92	279	301	131	184	388	356	124
18	400	205	182	e105	e90	264	269	127	163	361	330	119
19	388	205	185	e96	e110	247	236	123	180	524	284	112
20	376	195	185	e74	e400	245	210	120	353	593	240	108
21	358	193	162	e80	e700	238	205	118	303	422	213	107
22	337	188	155	e92	e550	227	193	115	230	358	196	152
23	345	187	e145	e100	e430	220	183	112	593	328	182	301
24	334	184	e110	e105	e340	208	180	163	1670	287	169	272
25	321	189	e84	e110	e250	194	175	218	1610	256	179	295
26	311	197	e64	e115	e180	191	172	296	993	229	218	398
27	295	186	e66	e105	e230	189	154	227	784	213	187	430
28	295	228	e64	e96	e265	180	147	194	593	200	165	346
29	282	227	e74	e94	---	172	152	174	473	188	153	291
30	267	223	e100	e90	---	166	148	162	387	178	145	256
31	258	---	e130	e82	---	162	---	148	---	170	139	---
TOTAL	11968	6444	4519	3291	5025	12111	5567	5017	11176	14904	9458	5452
MEAN	386	215	146	106	179	391	186	162	373	481	305	182
MAX	695	257	209	140	700	2000	351	296	1670	1890	1900	430
MIN	258	184	64	74	72	162	145	112	94	170	116	107
AC-FT	23740	12780	8960	6530	9970	24020	11040	9950	22170	29560	18760	10810
CFSM	1.11	.62	.42	.31	.52	1.13	.53	.47	1.07	1.39	.88	.52
IN.	1.28	.69	.48	.35	.54	1.30	.60	.54	1.20	1.60	1.01	.58

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1946 - 1994, BY WATER YEAR (WY)

	MEAN	115	123	85.8	73.3	150	476	390	317	377	261	150	114
MAX	495	673	514	403	651	1606	1578	1606	2213	1686	1368	1028	
(WY)	1987	1973	1983	1946	1983	1993	1993	1991	1947	1993	1993	1965	
MIN	4.98	8.80	7.13	2.88	3.84	28.1	33.8	23.2	12.5	4.47	4.22	6.02	
(WY)	1957	1957	1990	1956	1956	1954	1954	1977	1956	1956	1989	1988	

SUMMARY STATISTICS	FOR 1993 CALENDAR YEAR	FOR 1994 WATER YEAR	WATER YEARS 1946 - 1994
ANNUAL TOTAL	319326	94932	
ANNUAL MEAN	875	260	219
HIGHEST ANNUAL MEAN			874
LOWEST ANNUAL MEAN			21.8
HIGHEST DAILY MEAN	11500	Mar 31	16300
LOWEST DAILY MEAN	62	Feb 18	2.0
ANNUAL SEVEN-DAY MINIMUM	73	Feb 17	80
INSTANTANEOUS PEAK FLOW			4400
INSTANTANEOUS PEAK STAGE			b11.46
ANNUAL RUNOFF (AC-FT)	633400	188300	158900
ANNUAL RUNOFF (CFSM)	2.52	.75	.63
ANNUAL RUNOFF (INCHES)	34.23	10.18	8.59
10 PERCENT EXCEEDS	1910	455	477
50 PERCENT EXCEEDS	544	184	84
90 PERCENT EXCEEDS	108	100	16

e Estimated.

a Also Dec. 28.

b Ice affected.

05463050 CEDAR RIVER AT CEDAR FALLS, IA
(National stream-quality accounting network station)

WATER-QUALITY RECORDS

LOCATION.--Lat 42°32'20", Long 92°26'58", in NW1/4 NE1/4 sec.12, T.89N., R.14W., Black Hawk County, Hydrologic Unit 07080205, at bridge on U.S. Highway 20 at Cedar Falls, 1.1 mi upstream from Dry Run, and at mile 196.0 upstream from mouth of Iowa River.

DRAINAGE AREA.--4,734 mi².

PERIOD OF RECORD.--October 1975 to September 1979, May 1984 to September 1985, October 1986 to current year.

REMARKS.--Water discharge estimated on basis of records at gaging station 8.1 mi downstream at Waterloo. No significant inflow between gaging station and sampling site.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	TEMPER- ATURE AIR (DEG C) (00020)	TUR- BID- ITY (NTU) (00076)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	BARO- METRIC PRES- SURE (MM HG) (00025)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)
OCT 22...	1215	3790	556	8.6	9.0	17.0	4.4	12.6	111	748	65
DEC 03...	1230	2410	619	8.5	1.5	-3.0	1.1	13.7	100	745	K26
MAR 15...	1245	6090	486	8.3	4.0	5.5	8.0	12.5	98	742	K18
MAY 05...	1125	3760	498	8.2	13.0	14.0	32	12.9	125	746	K40
JUN 24...	1115	8980	385	7.9	19.5	24.5	160	7.3	82	736	K16000
AUG 16...	1135	8290	480	8.1	19.5	16.5	2.3	8.0	89	744	2300

DATE	STREP- TOCOC FECAL, KF AGAR (COLS. PER 100 ML) (31673)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY WAT DIS TOT IT FIELD MG/L AS CACO3 (39086)	CAR- BONATE WATER DIS IT FIELD MG/L AS CO3 (00452)
OCT 22...	--	290	78	23	9.0	6	0.2	2.4	228	7
DEC 03...	37	300	80	25	12	8	0.3	2.3	243	6
MAR 15...	130	230	64	17	6.8	6	0.2	3.2	187	0
MAY 05...	100	250	63	23	14	11	0.4	2.8	190	13
JUN 24...	K26000	170	48	13	5.3	6	0.2	3.3	129	0
AUG 16...	530	230	63	17	5.8	5	0.2	4.1	186	10

DATE	BICAR- BONATE WATER DIS IT FIELD MG/L AS HCO3 (00453)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SiO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N) (00605)
OCT 22...	264	33	18	0.2	9.4	336	334	0.46	3440	1.2
DEC 03...	284	38	20	0.2	10	370	358	0.50	2410	0.26
MAR 15...	228	28	15	0.2	12	292	278	0.40	4800	0.75
MAY 05...	204	50	20	0.3	4.3	304	309	0.41	3090	1.5
JUN 24...	157	17	11	0.2	13	241	220	0.33	5840	2.1
AUG 16...	206	21	13	0.2	13	283	274	0.38	6330	0.97

IOWA RIVER BASIN

05463050 CEDAR RIVER AT CEDAR FALLS, IA--Continued

DATE	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	SEDI- MENT, DIS- CHARGE, SUS- PENDEDED (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDEDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
OCT 22...	5.5	0.02	0.01	1.2	<0.01	0.05	0.44	91	931	79
DEC 03...	5.6	0.01	0.04	0.3	0.03	0.03	0.04	78	508	60
MAR 15...	4.3	0.04	0.25	1.0	0.13	0.15	0.18	44	723	97
MAY 05...	4.1	0.02	0.02	1.5	<0.01	<0.01	0.11	52	528	100
JUN 24...	7.1	0.06	0.16	2.3	0.15	0.15	0.62	739	17900	94
AUG 16...	5.5	0.02	0.03	1.0	0.15	0.16	0.31	115	2570	99

DATE	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)	VANA- DIUM, DIS- SOLVED (UG/L AS V) (01085)	ATRA- ZINE WATER UNFLTRD REC (UG/L) (39630)	CYAN- AZINE TOTAL (UG/L) (81757)	METRI- BUZIN IN WHOLE WATER (UG/L) (81408)	ALA- CHLOR TOTAL RECOVER (UG/L) (77825)	METOLA- CHLOR IN WHOLE WATER (UG/L) (39356)	TRI- FLURA- LIN TOTAL RECOVER (UG/L) (39030)	BUTY- LATE TOTAL (UG/L) (99901)	DEETHYL ATRA- ZINE, WATER, DISS, REC (UG/L) (04040)
OCT 22...	170	<6	0.2	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.12
DEC 03...	--	--	--	--	--	--	--	--	--	--
MAR 15...	120	<6	0.2	<0.10	<0.10	<0.10	0.13	<0.10	<0.10	--
MAY 05...	190	<6	--	--	--	--	--	--	--	--
JUN 24...	--	--	4.1	0.87	0.44	<0.10	2.40	<0.10	<0.10	0.69
AUG 16...	120	<6	--	--	--	--	--	--	--	--

IOWA RIVER BASIN

05464000 CEDAR RIVER AT WATERLOO, IA

LOCATION.--Lat 42°29'44", long 92°20'03", in NW1/4 NW1/4 sec.25, T.89 N., R.13 W., Black Hawk County, Hydrologic Unit 07080205, on left bank at foot of East Seventh Street, 0.3 mi upstream from Eleventh Avenue bridge in Waterloo, 1.1 mi downstream from Black Hawk Creek, and at mile 187.9 upstream from mouth of Iowa River.

DRAINAGE AREA.--5,146 mi².

PERIOD OF RECORD.--October 1940 to current year. Prior to April 1941, monthly discharge only, published in WSP 1308.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1558: 1950.

GAGE.--Water-stage encoder. Datum of gage is 824.14 ft above sea level.

REMARKS.--Estimated daily discharges: Dec. 25 to Feb. 27, and Mar. 22, 26. Records excellent except those for estimated daily discharges, which are fair. Slight diurnal fluctuation during low flow caused by powerplant upstream from station. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data. U.S. National Weather Service gage-height telemeter and U.S. Army Corps of Engineers data collection platform at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Mar. 16, 1929, reached a stage of about 20 ft, determined by U. S. Army Corps of Engineers, from information by City of Waterloo, discharge, 65,000 ft³/s. Flood of Apr. 2, 1933, reached a stage of about 19.5 ft from information by City of Waterloo, discharge, 61,000 ft³/s.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5430	2920	2330	e1700	e1100	2970	2830	3870	3160	6070	4140	2390
2	4960	2950	2350	e1600	e1150	2870	2720	3910	2860	5510	4210	2370
3	4840	2880	2320	e1700	e1200	2810	2670	3950	2690	5080	5560	2340
4	4740	2930	2350	e1600	e1200	2990	2610	3640	2560	5030	5320	2330
5	4560	2940	2350	e1500	e1300	4580	2690	3860	2460	5200	5010	2370
6	4410	2820	2370	e1400	e1200	10500	2680	3960	2380	5180	5610	2570
7	4210	2740	2340	e1300	e1100	16600	2620	3460	2420	4810	4810	2630
8	4320	2750	2210	e1200	e1100	14500	2590	3740	2570	5270	4120	2600
9	5250	2750	2190	e1400	e1200	12900	2610	3820	3040	6110	3670	2470
10	5740	2700	2220	e1500	e1300	11000	2600	3770	4360	5330	3440	2360
11	5400	2610	2150	e1400	e1400	8140	2530	3580	4430	4740	3300	2200
12	5090	2700	2040	e1300	e1500	6540	2610	3350	3780	4530	3970	2150
13	4810	2870	2320	e1200	e1700	6040	2670	3150	4090	4350	6840	2150
14	4590	2820	2280	e1000	e1600	5890	2870	3070	5020	5880	9260	2070
15	4460	2850	2380	e1100	e1700	5850	3640	2950	5760	8940	9680	2030
16	4460	2780	2280	e1100	e1800	5900	4120	2850	5380	8790	8070	2100
17	4470	2770	2320	e1000	e1800	5670	4500	2790	4660	8060	6210	2100
18	4300	2770	2610	e940	e1900	5220	4480	2670	4050	8800	5390	2080
19	4180	2770	2820	e1000	e2600	4870	4410	2570	4310	8820	4510	2040
20	4060	2750	2900	e1100	e3800	4560	4220	2500	4090	8900	4110	2040
21	3930	2740	2910	e1200	e6600	4340	3910	2350	5280	9790	3700	2040
22	3710	2830	2690	e1400	e4300	4190	3730	2270	5120	11500	3470	2180
23	3760	2890	1870	e1400	e3800	4170	3660	2300	5610	12100	3180	2380
24	3820	2710	1660	e1300	e3100	4050	3560	2670	9430	10700	2870	2700
25	3470	2600	e1500	e1200	e2900	3820	3490	3240	12700	8450	3500	3220
26	3450	2540	e1300	e1300	e3000	3650	3410	3880	12800	7190	4120	3660
27	3400	2390	e1200	e1200	e3100	3660	3270	3950	11400	6270	3590	4270
28	3250	2360	e1200	e1200	3110	3540	3480	3760	9840	5710	3070	4180
29	3250	2210	e1400	e1100	---	3090	3680	3550	8440	5070	2820	3870
30	3160	2150	e1500	e1000	---	3080	3800	3320	7010	4790	2660	3680
31	3060	---	e1600	e1100	---	2890	---	3190	---	4420	2550	---
TOTAL	132540	81490	65960	39440	61560	180880	98660	101940	161700	211390	142760	77570
MEAN	4275	2716	2128	1272	2199	5835	3289	3288	5390	6819	4605	2586
MAX	5740	2950	2910	1700	6600	16600	4500	3960	12800	12100	9680	4270
MIN	3060	2150	1200	940	1100	2810	2530	2270	2380	4350	2550	2030
AC-FT	262900	161600	130800	78230	122100	358800	195700	202200	320700	419300	283200	153900
CFSM	.83	.53	.41	.25	.43	1.13	.64	.64	1.05	1.33	.89	.50
IN.	.96	.59	.48	.29	.45	1.31	.71	.74	1.17	1.53	1.03	.56

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1941 - 1994, BY WATER YEAR (WY)

	MEAN	2105	2052	1544	1236	1749	5694	6184	4482	4968	3810	2715	2117
MAX	8499	7434	6891	5479	9448	13760	24940	19010	18320	21210	18770	9258	
(WY)	1987	1973	1983	1973	1984	1973	1993	1991	1993	1993	1993	1993	1993
MIN	364	370	266	252	188	687	741	732	474	455	328	387	
(WY)	1990	1990	1990	1959	1959	1964	1957	1977	1977	1989	1989	1955	

SUMMARY STATISTICS FOR 1993 CALENDAR YEAR FOR 1994 WATER YEAR WATER YEARS 1941 - 1994

	ANNUAL TOTAL	3796800	1355890	
ANNUAL MEAN	10400	3715		
HIGHEST ANNUAL MEAN			3226	
LOWEST ANNUAL MEAN			10580	1993
HIGHEST DAILY MEAN	67000	Apr 2	636	1977
LOWEST DAILY MEAN	1200	Feb 24	74000	Mar 29 1961
ANNUAL SEVEN-DAY MINIMUM	1280	Feb 23	152	Jan 28 1959
INSTANTANEOUS PEAK FLOW	66100	Apr 2a	173	Feb 13 1959
INSTANTANEOUS PEAK STAGE	20.60	Apr 2a	76700	Mar 29 1961
ANNUAL RUNOFF (AC-FT)	7531000		21.86	Mar 29 1961
ANNUAL RUNOFF (CFSM)	2.02		2337000	
ANNUAL RUNOFF (INCHES)	27.45		.63	
10 PERCENT EXCEEDS	24500		8.52	
50 PERCENT EXCEEDS	7010		7390	
90 PERCENT EXCEEDS	1710		1740	
			539	

e Estimated.

a Revised.

05464500 CEDAR RIVER AT CEDAR RAPIDS, IA

LOCATION.--Lat 41°58'14", long 91°40'01", in SE1/4 NW1/4 sec.28, T.83 N., R.7 W., Linn County, Hydrologic Unit 07080205, on right bank 400 ft upstream from bridge on Eighth Avenue in Cedar Rapids, 2.7 mi upstream from Prairie Creek, and at mile 112.7 upstream from mouth of Iowa River.

DRAINAGE AREA.--6,510 mi².

PERIOD OF RECORD.--October 1902 to current year. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 955: 1924. WSP 1308: 1904, 1906-13, 1915, 1917, 1919-24, 1928, 1930,. WSP 1438: Drainage area. WSP 1558: 1915-18 (M), 1920 (M), 1922 (M), 1929, 1933, 1943.

GAGE.--Water-stage encoder. Datum of gage is 700.47 ft above sea level. Prior to Aug. 20, 1920, nonrecording gage at same site and datum.

REMARKS.--Estimated daily discharges: Dec. 26-30, Jan. 5 to Feb. 26, and Mar. 5-7. Records good except those for estimated daily discharges, which are poor. Flow affected by city hydroelectric dam 1/2 mile upstream since June 1979. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data. U. S. Army Corps of Engineers data collection platform at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1851 reached a stage of about 20 ft, discharge, 65,000 ft³/s, estimated.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8130	4490	3370	1850	e1600	4510	4280	4030	3580	8300	5290	3690
2	7710	4380	3510	2190	e1650	4450	4030	4050	3520	6800	4950	3590
3	7180	4260	3470	2310	e1700	4460	3990	4050	3300	6070	5050	3510
4	6910	4250	3400	2210	e1700	4810	3890	4030	3200	5980	5780	3580
5	6610	4240	3420	e2100	e1900	e5600	3830	3970	3100	6070	5900	3550
6	6410	4210	3390	e2050	e1800	e7400	3810	4030	2990	6190	5570	3540
7	6240	4110	3400	e2000	e1600	e8600	3780	4290	2910	7470	5930	3520
8	5940	4030	3380	e1800	e1600	18200	3720	4100	3040	6250	5670	3680
9	6310	3980	3320	e2000	e1700	21300	3670	4020	2990	6780	5130	3530
10	7880	3990	3280	e2200	e1900	17000	3650	4120	3260	7120	4870	3450
11	8450	3940	3230	e2000	e2000	14300	3550	4080	3860	6530	4740	3360
12	8000	3930	3100	e1900	e2200	11900	3550	3890	4340	5810	4550	3210
13	7250	4000	3130	e1800	e2400	9030	3580	3790	4460	5440	4700	3130
14	6840	4070	3430	e1600	e2300	8090	3590	3670	4700	5790	6260	3080
15	6560	4040	3390	e1700	e2400	7760	3690	3580	4830	6450	8390	3040
16	6370	4010	3430	e1700	e2300	7450	4150	3480	5480	8190	9520	2990
17	6320	3940	3430	e1600	e2300	7420	4460	3360	5320	9380	9000	2950
18	6150	3930	3390	e1400	e2400	7220	4760	3190	4970	8820	7230	2950
19	6100	3930	3490	e1600	e3700	6840	4760	3180	4460	9090	6220	2940
20	5870	3860	3710	e1800	e5600	6440	4720	3190	4950	9570	5470	2850
21	5720	3830	3750	e1900	e8200	6160	4670	3010	4600	9850	4950	2890
22	5560	3830	3760	e2000	e7600	5870	4420	2970	4870	9850	4700	2890
23	5360	3830	3320	e2000	e6800	5690	4140	2800	5940	10500	4350	2970
24	5280	3930	2740	e1900	e5600	5450	4080	2930	8120	11600	4290	3210
25	5250	3860	2030	e1700	e4800	5400	4080	3030	10400	11900	3990	3650
26	5060	3770	e1800	e1900	e5000	5200	4010	3310	11900	10200	4310	5710
27	4920	3700	e1700	e1800	5060	5010	3850	3800	13500	8110	6170	6460
28	4890	3580	e1600	e1700	4660	4900	3750	3970	13700	7080	5080	6020
29	4760	3460	e1600	e1600	---	4770	3750	3940	12100	6480	4400	5500
30	4650	3080	e1750	e1500	---	4530	3920	3930	10100	5880	4170	5090
31	4520	---	1800	e1600	---	4280	---	3670	---	5580	3940	---
TOTAL	193200	118460	93520	57410	92470	240040	120130	113460	174490	239130	170570	110530
MEAN	6232	3949	3017	1852	3302	7743	4004	3660	5816	7714	5502	3684
MAX	8450	4490	3760	2310	8200	21300	4760	4290	13700	11900	9520	6460
MIN	4520	3080	1600	1400	1600	4280	3550	2800	2910	5440	3940	2850
AC-FT	383200	235000	185500	113900	183400	476100	238300	225000	346100	474300	338300	219200
CFSM	.96	.61	.46	.28	.51	1.19	.62	.56	.89	1.18	.85	.57
IN.	1.10	.68	.53	.33	.53	1.37	.69	.65	1.00	1.37	.97	.63

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1903 - 1994, BY WATER YEAR (WY)

	MEAN	2318	2394	1840	1573	2447	6751	6722	5054	5499	4017	2963	2426
MAX	10570	9327	8675	8529	12230	17420	35320	24500	23420	33910	28700	13990	
(WY)	1987	1973	1983	1973	1984	1929	1993	1991	1947	1993	1993	1993	
MIN	463	410	290	299	304	664	1045	527	350	533	377	466	
(WY)	1990	1990	1990	1911	1940	1934	1957	1934	1934	1989	1934	1934	

SUMMARY STATISTICS	FOR 1993 CALENDAR YEAR	FOR 1994 WATER YEAR	WATER YEARS 1903 - 1994
ANNUAL TOTAL	5506540	1723410	
ANNUAL MEAN	15090	4722	3670
HIGHEST ANNUAL MEAN			15130
LOWEST ANNUAL MEAN			689
HIGHEST DAILY MEAN	70500	Apr 4	71500
LOWEST DAILY MEAN	1600	Feb 23	1400
ANNUAL SEVEN-DAY MINIMUM	1650	Feb 22	1620
INSTANTANEOUS PEAK FLOW			22500
INSTANTANEOUS PEAK STAGE			10.43
ANNUAL RUNOFF (AC-FT)	10920000	3418000	2659000
ANNUAL RUNOFF (CFSM)			.73
ANNUAL RUNOFF (INCHES)	31.47	9.85	7.66
10 PERCENT EXCEEDS	34700	7810	8150
50 PERCENT EXCEEDS	10800	4030	2070
90 PERCENT EXCEEDS	2400	1960	660

e Estimated.

IOWA RIVER BASIN

05465000 CEDAR RIVER NEAR CONESVILLE, IA

LOCATION.--Lat 41 24'36", long 91 17'06", in SW1/4 SW1/4 sec.2, T.76 N., R.4 W., Muscatine County, Hydrologic Unit 07080206, on right bank 10 ft downstream from bridge on county highway G28, 3.4 mi northeast of Conesville, 5.2 mi downstream from Wapsinonoc Creek, 10.7 mi upstream from mouth, and at mile 39.8 upstream from mouth of Iowa River.

DRAINAGE AREA.--7,785 mi².

PERIOD OF RECORD.--September 1939 to current year.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1708: 1956.

GAGE.--Water-stage encoder. Datum of gage is 581.95 ft above sea level. Prior to Feb. 2, 1940, and Apr. 11, 1952, to July 1, 1954, nonrecording gage, Feb. 2, 1940, to Apr. 10, 1952, and July 2, 1954, to Sept. 16, 1963, water-stage recorder, at site 150 ft downstream on left bank at same datum.

REMARKS.--Estimated daily discharges: Nov. 1, Dec. 23 to Feb. 25, and Sept. 2, 27-30. Records good except those for estimated daily discharges, which are poor. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data. U.S. Army Corps of Engineers data collection platform at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in March 1929 reached a stage of 15.8 ft, from information by local residents to U.S. Army Corps of Engineers.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12300	e5400	3720	e2100	e1300	5900	5070	4650	4020	11800	6220	4120
2	11200	5250	3630	e1900	e1300	5420	4970	4890	3760	10100	5810	e3700
3	10300	5120	4020	e1700	e1300	5210	4850	4940	3660	8680	5360	3420
4	9500	5040	4030	e1600	e1350	5460	4640	4900	3520	7760	5460	3350
5	8920	5020	3930	e1800	e1450	7890	4520	4900	3230	7420	6100	3340
6	8470	4900	3810	e1700	e1600	11100	4410	4940	3090	7470	6400	3450
7	8120	4830	3760	e1650	e1600	11100	4330	4940	2940	7450	5850	3340
8	7890	4760	3790	e1650	e1500	11700	4290	5140	2970	9240	6000	3270
9	7720	4650	3750	e1700	e1450	15800	4250	5150	3370	8220	5940	3260
10	7890	4580	3710	e1800	e1500	19500	4160	4820	3590	8170	5280	3410
11	9420	4590	3600	e1850	e1600	20100	4080	4860	3240	8280	4780	3230
12	10700	4610	3460	e1750	e1600	17100	4100	4850	3590	7930	4600	3070
13	10400	4780	3440	e1600	e1700	14500	4160	4650	4600	7050	4280	2990
14	9410	4900	3510	e1500	e1650	11300	4150	4420	5520	6950	4240	2810
15	8830	4910	3620	e1600	e1800	9750	4230	4300	6020	7050	5290	2740
16	8440	4850	3810	e1500	e2100	9110	4360	4120	5590	7420	7790	2720
17	8130	4760	3750	e1400	e2500	8660	4510	3910	6140	8770	9110	2620
18	7980	4710	3880	e1200	e2800	8560	5040	3710	6270	10100	9500	2550
19	7780	4640	3880	e1200	e3200	8400	5340	3520	5910	9970	8660	2530
20	7660	4630	3860	e1350	e5600	8040	5550	3370	5210	9910	7360	2540
21	7400	4540	4000	e1500	e10000	7710	5540	3350	6010	10600	6480	2510
22	7130	4490	4190	e1500	e13000	7550	5510	3290	6020	10700	5650	2490
23	6880	4450	e3500	e1600	e10500	7120	5300	3230	5820	10700	5030	2500
24	6670	4420	e3000	e1500	e9400	6870	5020	3140	7950	11000	4590	2500
25	6510	4570	e2500	e1400	e8600	6530	4850	3080	10200	11900	4300	2610
26	6460	4620	e2000	e1400	8180	6420	4890	3110	11700	12400	3990	3120
27	6330	4470	e1500	e1350	6690	6290	4810	3260	12800	11300	3870	e4700
28	5960	4340	e1300	e1350	6460	6000	4630	3650	14100	9410	5940	e7400
29	5930	4210	e1350	e1300	---	5790	4500	4190	14700	8240	5930	e7100
30	5820	4040	e1700	e1250	---	5630	4480	4220	13800	7440	4910	e6500
31	5540	---	e1900	e1250	---	5440	---	4220	---	6790	4410	---
TOTAL	251690	141080	101900	47950	111730	285950	140540	129720	189340	280220	179130	103890
MEAN	8119	4703	3287	1547	3990	9224	4685	4185	6311	9039	5778	3463
MAX	12300	5400	4190	2100	13000	20100	5550	5150	14700	12400	9500	7400
MIN	5540	4040	1300	1200	1300	5210	4080	3080	2940	6790	3870	2490
AC-FT	499200	279800	202100	95110	221600	567200	278800	257300	375600	555800	355300	206100
CFSM	1.04	.60	.42	.20	.51	1.18	.60	.54	.81	1.16	.74	.44
IN.	1.20	.67	.49	.23	.53	1.37	.67	.62	.90	1.34	.86	.50

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1940 - 1994, BY WATER YEAR (WY)

	MEAN	3099	3315	2605	2431	3168	8181	9454	7151	7654	6167	4237	3394
MAX	12380	10240	11110	11860	12000	17590	36790	24440	27780	42110	34190	19530	
(WY)	1987	1973	1983	1973	1984	1948	1993	1991	1993	1993	1993	1993	
MIN	599	590	429	365	359	1056	1244	1219	768	815	700	620	
(WY)	1957	1956	1990	1977	1940	1954	1957	1940	1977	1989	1989	1955	

SUMMARY STATISTICS

FOR 1993 CALENDAR YEAR

FOR 1994 WATER YEAR

WATER YEARS 1940 - 1994

ANNUAL TOTAL	6702810	1963140	
ANNUAL MEAN	18360	5378	
HIGHEST ANNUAL MEAN			5076
LOWEST ANNUAL MEAN			18710
HIGHEST DAILY MEAN	69800	Apr 6	1993
LOWEST DAILY MEAN	1300	Dec 28	1956
ANNUAL SEVEN-DAY MINIMUM	1750	Dec 25	1955
INSTANTANEOUS PEAK FLOW			250
INSTANTANEOUS PEAK STAGE			329
ANNUAL RUNOFF (AC-FT)	13300000	3894000	74000
ANNUAL RUNOFF (CFSM)	2.36	.69	17.11
ANNUAL RUNOFF (INCHES)	32.03	9.38	8.86
10 PERCENT EXCEEDS	38800	9600	11600
50 PERCENT EXCEEDS	15000	4710	3080
90 PERCENT EXCEEDS	2900	1650	886

e Estimated.

05465500 IOWA RIVER AT WAPELLO, IA
(National stream-quality accounting network station)

LOCATION.--Lat 41°10'48", long 91°10'57", in NW1/4 SE1/4 sec.27, T.74N., R.3 W., Louisa County, Hydrologic Unit 07080209, on right bank 30 ft downstream from bridge on State Highway 99 at east edge of Wapello, 13.0 mi downstream from Cedar River, and at mile 16.0.

DRAINAGE AREA.--12,499 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1914 to current year. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 1308: 1917, 1923-30, 1932. WSP 1438: Drainage area. WSP 1558: 1918, 1923-25 (M), 1929. WSP 1708: 1955(P), 1956.

GAGE.--Water-stage encoder. Datum of gage is 538.17 ft above sea level; Oct. 1, 1914 to Apr. 15, 1934, nonrecording gage and Apr. 16, 1934 to Sept. 30, 1972, water-stage recorder at datum 10.00 ft higher.

REMARKS.--Estimated daily discharges: Nov. 3, 4, 16, Dec. 24 to Mar. 3, Mar. 13, 17, 24-28, Apr. 6-10, and Sept. 2-5, 15-20. Records good except those for estimated daily discharges, which are poor. Flow partially regulated by Coralville Lake (station 05453510) 67.3 mi upstream, since Sept. 17, 1958. U.S. Army Corps of Engineers data collection platform at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	28800	9080	6440	e3500	e2100	e10000	8130	6770	5340	16100	8740	5920
2	25500	8800	5990	e3100	e2100	e9700	7750	7050	5170	16400	8280	e5450
3	23800	e8600	6280	e2900	e2200	e9400	7620	7310	5020	15400	7800	e5200
4	22600	e8550	6580	e2700	e2300	e14000	7330	7190	4880	13900	7580	e4950
5	21200	8530	6580	e2900	e2400	14800	7020	6430	4610	12900	8500	e4700
6	19100	8680	6550	e2800	e2700	17200	e6800	7020	4410	12900	8940	4560
7	17100	8540	6600	e2700	e2800	17000	e6700	7780	4250	12900	8360	4550
8	16500	8210	6200	e2700	e2600	17400	e6600	8070	4640	13800	7960	4830
9	15300	7980	5530	e2800	e2400	17500	e6500	8070	5780	15100	8120	4830
10	14200	7890	5530	e3000	e2500	23200	e6400	7300	7590	14900	7980	4550
11	14800	7840	6510	e2900	e2600	26000	6380	7160	6710	14900	6660	4440
12	16500	7900	6670	e2800	e2700	27900	6460	7340	6720	13600	6370	4600
13	16200	8150	6290	e2600	e2900	e27000	6490	7200	7360	12000	6070	4280
14	14300	8290	5610	e2500	e2700	20600	6550	6880	9040	11200	6600	3950
15	12200	8410	5810	e2700	e3000	16700	6680	6780	10700	11300	7170	e3750
16	12900	e8600	6660	e2500	e3400	15300	6700	6530	10800	11800	8730	e3600
17	14200	8310	7370	e2300	e4000	e14500	6650	6270	10700	12400	10700	e3550
18	14500	8100	7440	e2000	e4500	13500	7060	6040	10600	14700	11500	e3500
19	14000	7790	7540	e2000	e5200	13200	7550	5780	10100	15200	11200	e3450
20	13600	7490	7460	e2200	e7200	12900	8330	5460	9140	13900	9690	e3450
21	12500	7650	7480	e2500	e10000	12400	8490	5340	9110	14500	8780	3440
22	12000	7460	7280	e2400	e14000	12400	8300	5100	11100	14600	7840	3390
23	11600	7360	6740	e2600	e19000	11800	8130	4870	10100	14600	7100	3390
24	11200	7360	e5400	e2500	e20000	e11000	7770	4910	12500	14400	6580	3450
25	10900	7800	e4500	e2300	e18000	e10500	7370	4860	17000	14900	6020	3540
26	10600	7330	e3600	e2300	e14000	e10000	7390	5040	17400	15500	5900	3920
27	10500	7190	e2800	e2200	e12000	e9850	7110	4890	17900	15300	6140	5260
28	10100	7010	e2200	e2200	e11000	e9450	6890	4950	18500	13600	6370	9290
29	9830	6840	e2500	e2100	---	9120	6610	5240	19200	12000	7790	10500
30	9730	6710	e2900	e2000	---	8820	6540	5450	17600	10700	6930	9760
31	9430	---	e3200	e2100	---	8490	---	5400	---	9670	6240	---
TOTAL	465690	238450	178240	78800	180300	451630	214300	194480	293970	425070	242640	144050
MEAN	15020	7948	5750	2542	6439	14570	7143	6274	9799	13710	7827	4802
MAX	28800	9080	7540	3500	20000	27900	8490	8070	19200	16400	11500	10500
MIN	9430	6710	2200	2000	2100	8490	6380	4860	4250	9670	5900	3390
MED	14200	7940	6290	2500	2950	13200	6950	6430	9120	13900	7800	4490
AC-FT	923700	473000	353500	156300	357600	895800	425100	385800	583100	843100	481300	285700
CFSM	1.20	.64	.46	.20	.52	1.17	.57	.50	.78	1.10	.63	.38
IN.	1.39	.71	.53	.23	.54	1.34	.64	.58	.87	1.27	.72	.43

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1915 - 1994, BY WATER YEAR (WY)

	MEAN	4439	4861	3946	3626	5439	12610	13050	10220	11320	8618	5924	5086
MAX	17200	16080	18150	20420	17080	31210	45840	33030	46810	77320	61750	37270	
(WY)	1987	1993	1983	1973	1984	1929	1993	1993	1947	1993	1993	1993	
MIN	718	774	604	503	497	1231	1967	865	604	1019	588	826	
(WY)	1957	1956	1956	1956	1940	1931	1957	1934	1934	1989	1931	1955	

SUMMARY STATISTICS	FOR 1993 CALENDAR YEAR	FOR 1994 WATER YEAR	WATER YEARS 1915 - 1994
ANNUAL TOTAL	10943780	3107620	
ANNUAL MEAN	29980	8514	7430
HIGHEST ANNUAL MEAN			30550
LOWEST ANNUAL MEAN			1211
HIGHEST DAILY MEAN	106000	Jul 8	28800 Oct 1
LOWEST DAILY MEAN	2200	Dec 28	2000 Jan 18a
ANNUAL SEVEN-DAY MINIMUM	3100	Dec 25	2110 Jan 27
INSTANTANEOUS PEAK FLOW			31500 Oct 1
INSTANTANEOUS PEAK STAGE			19.76 Oct 1
ANNUAL RUNOFF (AC-FT)	21710000	6164000	5383000
ANNUAL RUNOFF (CFSM)	2.40	.68	.59
ANNUAL RUNOFF (INCHES)	32.57	9.25	8.08
10 PERCENT EXCEEDS	65000	15200	17000
50 PERCENT EXCEEDS	25300	7360	4500
90 PERCENT EXCEEDS	5660	2760	1190

e Estimated.

a Also Jan. 19, 30.

IOWA RIVER BASIN

05465500 IOWA RIVER AT WAPELLO, IA--Continued
(National stream-quality accounting network station)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--January 1978 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: January 1978 to current year.

WATER TEMPERATURE: January 1978 to current year.

SUSPENDED-SEDIMENT DISCHARGE: April 1978 to current year.

REMARKS.--During periods of ice effect samples are collected in open water channel or through ice cover. Records of specific conductance are obtained from suspended-sediment samples at time of analysis.

EXTREMES FOR PERIOD OF RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 920 microsiemens Dec. 17, 1988; minimum daily, 168 microsiemens June 21, 1990.

WATER TEMPERATURES: Maximum daily, 33.0°C July 25, 1987; minimum daily, 0.0°C on many days during winter period.

SEDIMENT CONCENTRATIONS: Maximum daily mean, 4,970 mg/L June 25, 1981; minimum daily mean, 1 mg/L Jan. 21, 22, 1981.

SEDIMENT LOADS: Maximum daily 604,000 tons June 20, 1990; minimum daily, 4.7 tons Dec. 23, 24, 1989.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 618 microsiemens Dec. 26; minimum daily, 322 microsiemens Mar. 10.

WATER TEMPERATURES: Maximum daily, 29.0°C, June 28; minimum daily, 0.5°C Dec. 26, 27, Jan. 1-3, 6, 7.

SEDIMENT CONCENTRATIONS: Maximum daily mean, 1,430 mg/L Mar. 6; minimum daily mean, 26 mg/L May 24.

SEDIMENT LOADS: Maximum daily, 66,500 tons Mar. 6; minimum daily, 243 tons Jan. 30.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	TEMPER- ATURE AIR (DEG C) (00020)	TUR- BID- ITY (NTU) (00076)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, (PER- CENT SATUR- ATION) (00301)	BARO- METRIC PRES- SURE (MM HG) (00025)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)
OCT 19...	1330	13600	524	8.7	13.5	17.0	22	11.4	111	750	120
DEC 01...	1330	6480	612	8.0	1.0	2.0	2.1	14.0	100	752	50
MAR 10...	1315	25100	303	8.0	1.5	3.0	78	13.6	98	752	590
MAY 10...	1445	7200	434	8.4	17.5	23.0	23	13.8	146	753	K68
AUG 17...	1410	10600	524	8.4	24.0	27.0	1.3	8.8	107	747	270

DATE	STREP- TOCOC- FECAL, KF AGAR (COLS. PER 100 ML) (31673)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY WAT DIS TOT IT FIELD MG/L AS CACO3 (39086)	CAR- BONATE WATER DIS IT FIELD MG/L AS CO3 (00452)	BICAR- BONATE WATER DIS IT FIELD MG/L AS HCO3 (00453)	
OCT 19...	K48	280	75	22	11	8	0.3	1.9	229	5	268
DEC 01...	59	290	77	24	15	10	0.4	2.0	229	0	279
MAR 10...	770	130	37	10	6.1	9	0.2	4.2	107	0	130
MAY 10...	K44	190	43	21	15	14	0.5	2.1	146	15	147
AUG 17...	400	240	64	19	13	10	0.4	2.9	195	0	238

DATE	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)
OCT 19...	31	18	0.30	10	331	333	0.45	12200	0.78	5.90
DEC 01...	38	23	0.10	10	366	350	0.50	6400	0.54	5.30
MAR 10...	18	12	0.20	8.1	189	177	0.26	12800	1.1	3.70
MAY 10...	37	25	0.20	0.26	252	244	0.34	4900	2.0	2.90
AUG 17...	30	21	0.20	9.4	311	297	0.42	8900	1.1	4.40

05465500 IOWA RIVER AT WAPELLO, IA--Continued
(National stream-quality accounting network station)

DATE	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	SEDI- MENT, DIS- CHARGE, SUS- PENDEED (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDEED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	SED. SUSP. FALL DIAM. % FINER THAN .062 MM (70342)
OCT 19...	0.02	0.02	0.8	0.05	0.05	0.17	--	--	--	--
DEC 01...	<0.01	0.06	0.6	0.06	0.05	0.11	75	1310	45	--
MAR 10...	0.06	0.37	1.5	0.14	0.20	0.36	380	25800	--	83
MAY 10...	0.02	0.02	2.0	<0.01	<0.01	0.26	110	2140	98	--
AUG 17...	0.01	0.02	1.1	0.12	0.14	0.39	199	5700	89	--

DATE	ALUM- INUM, DIS- SOLVED (UG/L AS AL) (01106)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	COBALT, DIS- SOLVED (UG/L AS CO) (01035)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	SILVER, DIS- SOLVED (UG/L AS AG) (01075)
OCT 19...	<10	100	<3	6	6	4	<10	<1	<1	<10
DEC 01...	--	--	--	--	--	--	--	--	--	--
MAR 10...	40	68	<3	54	<4	10	<10	17	<1	<1
MAY 10...	<10	64	<3	11	7	3	<10	1	<1	<1
AUG 17...	20	91	<3	10	5	1	10	1	<1	<1

DATE	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)	VANA- DIUM, DIS- SOLVED (UG/L AS V) (01085)	ATRA- ZINE WATER UNFLTRD REC (UG/L) (39630)	CYAN- AZINE TOTAL (UG/L) (81757)	METRI- BUZIN IN WHOLE WATER (UG/L) (81408)	ALA- CHLOR TOTAL RECOVER (UG/L) (77825)	METOLA- CHLOR IN WHOLE WATER (UG/L) (39356)	TRI- FLURA- LIN TOTAL RECOVER (UG/L) (39030)	BUTY- LATE TOTAL (UG/L) (99901)	DEETHYL ATRA- ZINE, WATER, DISS, REC (UG/L) (04040)
OCT 19...	160	<6	0.2	<0.10	<0.1	<0.1	<0.10	<0.1	<0.1	0.14
DEC 01...	--	--	--	--	--	--	--	--	--	--
MAR 10...	81	<6	0.3	<0.10	<0.1	<0.1	0.18	<0.1	<0.1	--
MAY 10...	130	<6	0.3	0.23	<0.1	<0.1	0.31	<0.1	<0.1	0.11
AUG 17...	150	<6	--	--	--	--	--	--	--	--

IOWA RIVER BASIN

05465500 IOWA RIVER AT WAPELLO, IA--Continued
(National stream-quality accounting network station)

SPECIFIC CONDUCTANCE MICROSIEMENS/CM AT 25 DEG C, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	488	---	471	479	---	---	474	---	---	---	531	485
2	492	443	461	486	---	---	488	---	---	---	---	478
3	488	474	465	497	---	368	500	438	517	---	532	442
4	---	481	---	---	---	---	464	448	---	479	---	---
5	---	474	494	---	---	---	453	---	---	476	465	---
6	---	456	461	491	---	350	478	448	---	488	467	492
7	498	---	---	511	---	---	495	436	---	496	---	---
8	503	---	---	---	---	---	---	432	---	496	---	460
9	---	507	---	---	---	---	---	431	455	501	532	452
10	517	429	473	---	---	322	---	456	429	---	---	451
11	---	457	475	---	---	---	---	---	442	---	527	---
12	520	464	462	---	---	---	---	---	463	---	526	486
13	474	493	461	---	---	---	---	---	462	498	---	488
14	459	456	471	---	---	324	---	---	450	504	524	490
15	---	463	---	---	---	331	---	---	454	503	---	509
16	---	465	---	---	---	447	---	---	---	---	470	---
17	---	---	---	---	---	441	484	---	---	---	517	---
18	477	---	---	---	---	---	480	452	---	---	---	---
19	516	462	---	---	---	---	---	455	448	521	---	522
20	---	466	---	---	---	---	---	462	452	515	---	508
21	---	---	---	---	---	---	---	---	460	---	---	512
22	---	504	---	---	---	---	---	---	---	---	549	---
23	---	---	---	---	---	407	---	465	---	513	473	---
24	---	---	---	---	370	381	438	483	---	508	475	---
25	466	---	---	---	---	451	436	485	453	499	---	528
26	481	---	618	---	378	---	---	---	---	490	485	---
27	---	---	516	---	471	---	---	---	462	---	486	---
28	---	---	---	---	443	---	---	---	475	---	485	532
29	496	---	---	---	---	---	432	505	477	563	---	---
30	---	---	---	---	---	506	420	507	---	560	---	---
31	---	---	---	---	---	491	---	506	---	550	---	---

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15.0	---	2.0	.5	---	---	7.0	---	---	---	---	24.0
2	14.5	4.0	2.0	.5	---	---	7.0	---	---	---	---	23.0
3	14.5	4.0	2.0	.5	---	2.0	---	16.0	21.0	---	26.0	23.0
4	---	4.0	2.0	---	---	---	8.0	17.0	---	27.0	---	---
5	---	4.0	2.0	---	---	---	9.0	---	---	27.0	25.0	---
6	---	4.0	2.0	.5	---	4.0	10.0	18.0	---	28.0	25.0	19.0
7	11.5	---	---	.5	---	---	11.0	18.0	---	28.0	---	---
8	11.0	---	---	---	---	---	---	19.0	---	28.0	---	21.0
9	---	4.0	---	---	---	---	---	19.0	24.0	28.0	24.0	23.0
10	11.0	4.0	1.0	---	---	---	---	---	24.0	---	---	24.0
11	---	4.0	---	---	---	---	---	---	24.0	---	24.0	---
12	10.0	4.0	1.5	---	---	---	---	---	24.0	---	24.0	26.0
13	10.0	4.0	1.5	---	---	---	---	---	24.0	27.0	---	27.0
14	10.0	4.0	1.0	---	---	6.0	---	---	26.0	28.0	24.0	25.0
15	---	3.0	---	---	---	6.0	---	---	26.0	28.0	---	---
16	---	---	---	---	---	6.0	---	---	---	---	22.0	---
17	---	---	---	---	---	6.5	14.0	---	---	---	24.0	---
18	10.0	---	---	---	---	---	14.0	17.0	---	---	---	---
19	9.0	2.5	---	---	---	---	---	17.0	27.0	27.0	---	27.0
20	---	2.0	---	---	---	---	---	20.5	28.0	28.0	---	27.0
21	---	---	---	---	---	---	---	---	27.0	---	---	26.0
22	---	5.5	---	---	---	---	---	---	---	---	24.0	---
23	---	---	---	---	---	6.0	---	21.0	---	26.0	26.0	---
24	---	---	---	---	1.0	6.0	16.0	22.0	---	26.0	27.0	---
25	7.0	---	---	---	---	6.0	16.0	23.0	28.0	26.0	---	---
26	7.0	---	.5	---	1.0	---	---	---	---	24.5	27.5	---
27	---	---	.5	---	2.0	---	---	---	---	---	27.0	---
28	---	---	---	---	2.0	---	---	---	29.0	---	26.0	17.0
29	4.0	---	---	---	---	---	17.0	22.0	28.0	26.0	---	---
30	---	---	---	---	---	6.5	17.0	22.0	---	26.0	---	---
31	---	---	---	---	---	7.0	---	23.0	---	26.0	---	---

05470000 SOUTH SKUNK RIVER NEAR AMES, IA

LOCATION.--Lat 42°04'06", long 93°37'09", in NW1/4 SW1/4 sec.23, T.84 N., R.24 W., Story County, Hydrologic Unit 07080105, on left bank 2.5 mi north of Ames, 3.5 mi downstream from Keigley Branch, 5.2 mi upstream from Squaw Creek, and at mile 228.1 upstream from mouth of Skunk River.

DRAINAGE AREA.--315 mi².

PERIOD OF RECORD.--July 1920 to September 1927, October 1932 to current year. Monthly discharge only for some periods, published in WSP 1308. Prior to October 1966, published as Skunk River near Ames.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1308: 1921, 1925-26, 1934-35 (M), 1937 (M), 1939 (M), 1947-50 (M). WDR IA-67-1: 1965. WDR IA-74-1: 1973 (P).

GAGE.--Water-stage encoder. Concrete control since July 21, 1934. Datum of gage is 893.61 ft above sea level (Iowa Highway Commission benchmark). Prior to Aug. 25, 1921, nonrecording gage at same site and datum.

REMARKS.--Estimated daily discharges: Dec. 24-30 and Jan. 3 to Mar. 3. Records good except those for estimated daily discharges, which are poor. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data. U.S. National Weather Service Limited Automatic Remote Collector at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	340	176	101	65	e32	e110	92	83	64	277	47	26
2	306	172	100	64	e34	e120	90	82	72	238	44	25
3	289	170	98	e60	e35	e140	83	81	74	204	61	24
4	279	170	97	e52	e36	840	82	81	68	367	118	78
5	256	170	96	e50	e38	1370	81	84	77	603	67	102
6	249	161	94	e52	e38	889	76	111	79	385	48	77
7	240	154	89	e52	e34	575	73	158	317	292	39	60
8	245	146	85	e45	e35	429	73	181	776	663	36	49
9	444	139	86	e46	e33	336	74	183	328	476	32	41
10	498	134	87	e48	e34	288	71	165	239	328	37	35
11	423	127	73	e42	e35	256	65	153	191	259	39	32
12	377	124	69	e44	e33	246	72	142	160	214	108	28
13	337	123	85	e40	e34	243	81	130	838	208	280	27
14	315	126	93	e36	e36	244	87	128	917	240	181	25
15	315	126	90	e33	e34	245	129	145	538	178	118	25
16	312	126	87	e37	e35	225	147	134	377	153	91	33
17	295	126	87	e34	e34	206	135	123	289	137	73	32
18	277	124	90	e32	e80	183	127	114	242	120	63	31
19	263	122	96	e35	e600	156	116	107	222	108	55	27
20	256	121	100	e36	e520	148	104	103	313	102	49	24
21	248	121	94	e39	e430	145	103	98	421	88	43	60
22	239	119	80	e40	e320	142	98	93	322	81	38	512
23	222	115	66	e42	e240	140	94	97	1510	73	34	334
24	208	113	e62	e39	e190	131	93	102	1400	66	31	239
25	198	111	e60	e37	e170	119	93	98	940	61	27	257
26	198	108	e58	e34	e140	116	88	92	727	55	31	304
27	189	100	e52	e36	e120	116	79	85	575	58	36	284
28	196	103	e56	e35	e110	109	75	79	465	51	31	227
29	189	113	e60	e34	---	103	79	76	382	44	27	188
30	182	105	e64	e32	---	95	80	74	315	40	36	167
31	177	---	64	e31	---	92	---	69	---	37	39	---
TOTAL	8562	3945	2519	1302	3510	8557	2740	3451	13238	6206	1959	3373
MEAN	276	131	81.3	42.0	125	276	91.3	111	441	200	63.2	112
MAX	498	176	101	65	600	1370	147	183	1510	663	280	512
MIN	177	100	52	31	32	92	65	69	64	37	27	24
AC-FT	16980	7820	5000	2580	6960	16970	5430	6850	26260	12310	3890	6690
CFSM	.88	.42	.26	.13	.40	.88	.29	.35	1.40	.64	.20	.36
IN.	1.01	.47	.30	.15	.41	1.01	.32	.41	1.56	.73	.23	.40

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1921 - 1994, BY WATER YEAR (WY)

	MEAN	95.0	96.1	69.0	49.8	115	317	276	269	371	225	118	101
	MAX	723	726	537	315	623	1034	1208	1193	1900	2628	1782	577
	(WY)	1987	1973	1983	1973	1984	1979	1965	1944	1947	1993	1993	1926
	MIN	.12	.14	.000	.000	.31	6.35	6.67	2.28	.011	.017	.087	.081
	(WY)	1954	1956	1977	1977	1956	1981	1956	1934	1977	1977	1934	1976

SUMMARY STATISTICS	FOR 1993 CALENDAR YEAR	FOR 1994 WATER YEAR	WATER YEARS 1921 - 1994
ANNUAL TOTAL	275870	59362	
ANNUAL MEAN	756	163	175
HIGHEST ANNUAL MEAN			752
LOWEST ANNUAL MEAN			5.58
HIGHEST DAILY MEAN	8980	1510	8980
LOWEST DAILY MEAN	30	24	.00
ANNUAL SEVEN-DAY MINIMUM	51	28	.00
INSTANTANEOUS PEAK FLOW		2340	11200
INSTANTANEOUS PEAK STAGE		6.20	14.23
INSTANTANEOUS LOW FLOW		23	
ANNUAL RUNOFF (AC-ET)	547200	117700	126900
ANNUAL RUNOFF (CFSM)	2.40	.52	.56
ANNUAL RUNOFF (INCHES)	32.58	7.01	7.56
10 PERCENT EXCEEDS	1510	328	425
50 PERCENT EXCEEDS	406	100	56
90 PERCENT EXCEEDS	64	35	2.1

e Estimated.

05470500 SQUAW CREEK AT AMES, IA

LOCATION.--Lat 42°01'21", long 93°37'45", in NE1/4 NW1/4 sec.10, T.83 N., R.24 W., Story County, Hydrologic Unit 07080105, on left bank 65 ft downstream from Lincoln Way Bridge in Ames, 0.2 mi downstream from College Creek, and 2.4 mi upstream from mouth.

DRAINAGE AREA.--204 mi².

PERIOD OF RECORD.--May 1919 to September 1927, May 1965 to current year. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 1308: Drainage area, 1920-22 (M), 1923, 1924-25 (M), 1926, 1927 (M), WDR IA-66-1: 1965, WDR IA-71-1: 1970 (M).

GAGE.--Water-stage recorder and concrete control. Datum of gage is 881.00 ft above sea level (levels by Iowa State University). Prior to Mar. 11, 1925, nonrecording gage at site 0.6 mi upstream at different datum. Mar. 11, 1925 to Apr. 30, 1927, nonrecording gage at site 65 ft upstream at datum about 4 ft higher.

REMARKS.-- Estimated daily discharges: Dec. 23 to Jan. 2, Jan. 11-22, Jan. 29 to Feb. 4, and Feb. 7 to Mar. 3. Records good except those for estimated daily discharges, which are poor. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data. U.S. National Weather Service gage-height telemeter at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 4, 1918, reached a stage of 14.5 ft, from floodmarks, site and datum used 1919-25, discharge, 6,900 ft³/s. Flood of Mar. 1, 1965, reached a stage of 10.7 ft, from graph based on gage readings, at present site and datum, discharge, 4,200 ft³/s.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	252	105	61	e44	e17	e34	46	56	34	279	72	15
2	224	104	62	e43	e17	e40	44	52	43	239	31	14
3	212	102	60	43	e18	e90	41	52	41	206	46	13
4	200	103	59	40	e19	980	40	52	36	324	49	98
5	186	95	59	40	20	714	39	59	61	328	30	71
6	177	86	58	37	18	460	36	76	50	222	24	46
7	170	86	50	36	e17	296	35	85	162	184	21	33
8	189	86	56	36	e18	224	34	86	978	696	20	24
9	267	83	60	35	e17	169	34	86	464	431	17	23
10	263	78	55	33	e19	143	32	86	308	288	28	21
11	239	78	36	e28	e21	116	28	83	229	219	22	18
12	219	89	59	e30	e20	111	43	79	186	178	68	16
13	199	97	68	e28	e21	104	43	75	246	197	120	15
14	189	83	61	e26	e22	105	52	83	219	154	105	14
15	205	83	57	e24	e22	103	76	83	174	128	64	13
16	207	78	54	e25	e21	94	62	71	144	111	45	13
17	191	78	56	e24	e21	90	54	63	126	97	37	14
18	179	75	58	e23	e70	88	54	59	634	86	31	14
19	171	74	60	e24	e240	86	50	57	484	80	27	14
20	165	72	61	e26	e200	86	55	54	321	73	23	18
21	164	72	53	e27	e100	85	62	53	547	60	19	29
22	155	69	42	e27	e50	81	60	51	430	58	17	19
23	141	66	e40	27	e37	79	54	59	2020	55	16	12
24	135	67	e39	27	e35	72	54	69	2110	50	15	22
25	128	82	e38	27	e33	63	57	57	1020	47	16	29
26	127	55	e38	27	e33	61	53	52	767	42	17	25
27	115	71	e35	26	e33	61	45	48	603	55	15	24
28	122	71	e36	26	e32	58	45	44	467	40	17	23
29	115	69	e39	e24	---	52	48	44	373	34	13	21
30	107	60	e41	e20	---	48	54	42	316	31	36	20
31	107	---	e42	e16	---	47	---	37	---	40	16	---
TOTAL	5520	2417	1593	919	1191	4840	1430	1953	13593	5032	1077	731
MEAN	178	80.6	51.4	29.6	42.5	156	47.7	63.0	453	162	34.7	24.4
MAX	267	105	68	44	240	980	76	86	2110	696	120	98
MIN	107	55	35	16	17	34	28	37	34	31	13	12
AC-FT	10950	4790	3160	1820	2360	9600	2840	3870	26960	9980	2140	1450
CFSM	.87	.39	.25	.15	.21	.77	.23	.31	2.22	.80	.17	.12
IN.	1.01	.44	.29	.17	.22	.88	.26	.36	2.48	.92	.20	.13

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1920 - 1994, BY WATER YEAR (WY)

	MEAN	88.7	85.1	63.0	42.4	93.1	219	216	223	295	182	92.4	92.1
MAX	505	491	372	275	465	777	777	773	817	1107	2128	1177	568
(WY)	1974	1973	1983	1973	1973	1979	1991	1990	1975	1993	1993	1926	
MIN	.36	.63	.001	.000	.093	2.51	4.32	1.42	2.97	3.61	.95	.071	
(WY)	1989	1967	1977	1977	1977	1981	1977	1981	1977	1927	1989	1971	

SUMMARY STATISTICS

	FOR 1993 CALENDAR YEAR	FOR 1994 WATER YEAR	WATER YEARS 1920 - 1994
ANNUAL TOTAL	193235	40296	
ANNUAL MEAN	529	110	142
HIGHEST ANNUAL MEAN			528
LOWEST ANNUAL MEAN			13.6
HIGHEST DAILY MEAN	12200	Jul 9	2110 Jun 24
LOWEST DAILY MEAN	27	Feb 23	12 Sep 23
ANNUAL SEVEN-DAY MINIMUM	29	Feb 20	14 Sep 13
INSTANTANEOUS PEAK FLOW			2920 Jun 24
INSTANTANEOUS PEAK STAGE		8.66	Jun 24
ANNUAL RUNOFF (AC-FT)	383300	79930	102500
ANNUAL RUNOFF (CFSM)	2.60	.54	.69
ANNUAL RUNOFF (INCHES)	35.24	7.35	9.43
10 PERCENT EXCEEDS	1200	223	350
50 PERCENT EXCEEDS	268	56	46
90 PERCENT EXCEEDS	41	20	1.5

e Estimated.

05471000 SOUTH SKUNK RIVER BELOW SQUAW CREEK NEAR AMES, IA

LOCATION.--Lat 42°00'31", long 93°35'57", in SE1/4 NW1/4 sec. 13, T.83 N., R.24 W., Story County, Hydrologic Unit 07080105, on right bank 500 ft downstream from bridge on county highway, 0.2 mi downstream from Squaw Creek, 200 ft upstream from bridge on U.S. Highway 30, 2 mi southeast of Ames, and at mile 222.6 upstream from mouth of Skunk River.

DRAINAGE AREA.--556 mi².

PERIOD OF RECORD.--October 1952 to September 1979, October 1991 to current year. Prior to October 1966, published as Skunk River below Squaw Creek near Ames.

GAGE.--Water-stage encoder. Datum of gage is 857.10 ft above sea level. Prior to Oct. 1, 1973, at datum 10.00 ft higher. Prior to Oct. 1991, at site 500 ft upstream at same datum.

REMARKS.--Estimated daily discharges: Oct. 10-17, 19-27, 31, Dec. 23 to Mar. 4, June 30, and July 2-4, 6, 7. Records fair except those for estimated daily discharges, which are poor. Low flows are affected by pumpage by City of Ames from surficial aquifer and do not represent the natural flow of the stream. Several observations of water temperature were made during the year. City of Ames gage height telemeter at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of May 19, 1944, reached a stage of 13 ft, from floodmarks, discharge, 10,000 ft³/s, datum then in use.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	710	253	198	e110	e50	e145	165	138	111	610	162	42
2	622	247	186	e110	e52	e160	156	137	118	e550	86	37
3	585	246	177	e105	e53	e200	149	135	109	e440	122	38
4	562	247	173	e95	e55	e1400	144	134	109	e720	181	197
5	512	235	169	e90	e58	2500	148	136	132	954	106	195
6	500	221	162	e90	e56	1530	135	171	123	e650	76	142
7	478	217	151	e88	e51	1020	131	203	214	e520	62	111
8	478	217	147	e82	e53	759	129	233	1750	1420	53	97
9	700	210	147	e81	e50	609	127	241	751	927	42	84
10	e840	204	142	e84	e53	521	123	221	551	650	62	74
11	e760	203	107	e70	e56	458	114	202	447	524	47	66
12	e700	216	137	e74	e53	430	136	191	356	436	146	62
13	e650	228	161	e68	e55	395	138	179	891	440	327	60
14	e580	215	156	e62	e58	379	143	177	1130	433	260	58
15	e560	212	158	e57	e56	360	212	186	698	348	180	52
16	e540	210	143	e62	e56	333	213	177	517	311	140	55
17	e510	209	160	e58	e55	305	205	166	421	289	114	57
18	480	207	173	e55	e150	288	199	157	711	257	101	56
19	e450	211	182	e59	e840	271	182	150	621	238	86	53
20	e430	199	181	e62	e720	260	172	140	561	219	69	56
21	e425	188	147	e66	e530	255	182	135	863	190	59	91
22	e405	175	155	e67	e370	245	167	128	659	179	52	420
23	e385	170	e110	e69	e280	240	159	134	3410	162	49	348
24	e355	166	e105	e66	e230	226	157	151	4170	145	48	275
25	e340	200	e100	e64	e210	210	156	138	2320	131	44	296
26	e335	176	e96	e61	e180	199	148	128	1620	112	53	311
27	e315	195	e87	e62	e160	195	137	117	1300	133	52	307
28	330	206	e92	e61	e150	185	129	110	1110	108	49	264
29	300	201	e100	e58	---	178	131	108	998	89	38	230
30	280	196	e110	e52	---	170	137	111	e820	79	104	214
31	e260	---	e120	e47	---	166	---	107	---	74	64	---
TOTAL	15377	6280	4432	2235	4740	14592	4624	4841	27591	12339	3034	4348
MEAN	496	209	143	72.1	169	471	154	156	920	398	97.9	145
MAX	840	253	198	110	840	2500	213	241	4170	1420	327	420
MIN	260	166	87	47	50	145	114	107	109	74	38	37
MED	480	209	147	66	56	271	148	140	678	311	69	87
AC-FT	30500	12460	8790	4430	9400	28940	9170	9600	54730	24470	6020	8620
CFSM	.89	.38	.26	.13	.30	.85	.28	.28	1.65	.72	.18	.26
IN.	1.03	.42	.30	.15	.32	.98	.31	.32	1.85	.83	.20	.29

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1953 - 1994, BY WATER YEAR (WY)

	MEAN	181	179	122	86.1	162	571	537	486	730	532	326	190
MAX	1079	1270	426	599	919	2026	2037	1421	2380	5220	3921	1157	
(WY)	1974	1973	1973	1973	1973	1979	1965	1974	1993	1993	1993	1993	
MIN	.000	.005	.003	.000	.000	8.71	3.62	6.71	.000	.000	.032	.16	
(WY)	1957	1977	1977	1956	1956	1956	1956	1967	1977	1956	1956	1976	

SUMMARY STATISTICS	FOR 1993 CALENDAR YEAR	FOR 1994 WATER YEAR	WATER YEARS 1953 - 1994
ANNUAL TOTAL	539097	104432	
ANNUAL MEAN	1477	286	342
HIGHEST ANNUAL MEAN			1475
LOWEST ANNUAL MEAN			5.95
HIGHEST DAILY MEAN	20500	4170	20500
LOWEST DAILY MEAN	77	37	.00
ANNUAL SEVEN-DAY MINIMUM	82	48	.00
INSTANTANEOUS PEAK FLOW		5170	26500
INSTANTANEOUS PEAK STAGE	25.53	19.96	25.57
INSTANTANEOUS LOW FLOW		32	.00
ANNUAL RUNOFF (AC-FT)	1069000	207100	247800
ANNUAL RUNOFF (CFSM)	2.66	.51	.62
ANNUAL RUNOFF (INCHES)	36.07	6.99	8.36
10 PERCENT EXCEEDS	3270	621	824
50 PERCENT EXCEEDS	856	169	105
90 PERCENT EXCEEDS	118	56	.80

e Estimated.

a Revised

SKUNK RIVER BASIN

115

05471050 SOUTH SKUNK RIVER AT COLFAX, IA

LOCATION.--Lat 41°40'55", long 93°14'47", in NE1/4 NE1/4 SW1/4 sec.1, T.79 N., R.21 W., Jasper County, Hydrologic Unit 07080105, on left bank 15 ft downstream of bridge on State Highway 117 at north edge of Colfax, 1 mi downstream from Sugar Creek, 2.8 mi upstream from Indian Creek, and at mile 191 upstream from mouth of Skunk River.

WATER-DISCHARGE RECORDS

DRAINAGE AREA.--803 mi².

PERIOD OF RECORD.--October 1985 to current year.

GAGE.--Water-stage encoder. Datum of gage is 770.00 ft above sea level.

REMARKS.--Estimated daily discharges: Nov. 27-30, Dec. 24 to Mar. 3, and Mar. 21. Records good except those for estimated daily discharges, which are poor. U.S. National Weather Service Limited Automatic Remote Collector at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1260	568	314	e210	e130	e300	290	292	133	784	259	107
2	1160	554	322	e200	e140	e350	275	277	138	714	285	88
3	1080	540	315	e180	e120	e400	255	272	136	638	166	81
4	1030	530	311	e160	e130	1170	241	257	130	596	206	150
5	984	512	312	e170	e140	2480	247	259	132	825	263	378
6	939	486	306	e160	e150	1930	256	296	154	874	180	292
7	912	468	299	e150	e140	1380	237	363	163	701	145	203
8	884	464	288	e160	e125	1050	232	408	1290	733	129	156
9	1160	450	310	e170	e120	856	227	435	1160	1200	117	141
10	1260	437	323	e180	e110	747	221	434	784	878	115	121
11	1200	429	269	e170	e130	675	201	402	683	696	120	107
12	1100	431	220	e150	e150	632	209	380	568	611	121	97
13	1020	476	303	e140	e140	604	258	352	600	567	127	89
14	967	464	346	e130	e130	591	265	327	1160	612	436	82
15	1000	445	337	e140	e140	586	404	343	1000	563	383	76
16	1030	430	317	e160	e150	562	427	335	742	499	272	70
17	974	418	314	e130	e180	535	414	308	619	466	201	69
18	924	406	314	e110	e500	516	402	278	549	439	160	76
19	904	402	322	e120	e1100	494	386	251	865	418	138	76
20	869	395	329	e140	e1500	472	354	230	695	396	123	65
21	837	386	316	e160	e800	e460	375	218	720	372	112	63
22	796	377	259	e170	e640	457	374	201	847	340	101	91
23	735	370	229	e190	e450	452	335	208	1420	304	95	434
24	707	362	e120	e170	e400	435	321	221	3610	268	87	408
25	675	366	e110	e160	e340	410	311	240	2690	241	80	391
26	657	357	e105	e150	e280	395	297	218	1760	218	84	392
27	638	e300	e120	e140	e250	384	268	187	1360	198	77	404
28	650	e250	e110	e130	e270	367	244	167	1130	220	76	395
29	637	e240	e130	e120	---	338	235	157	961	200	82	333
30	603	e280	e160	e120	---	308	245	152	835	157	129	279
31	577	---	e190	e110	---	295	---	144	---	145	143	---
TOTAL	28169	12593	8020	4750	8855	20631	8806	8612	27034	15873	5122	5714
MEAN	909	420	259	153	316	666	294	278	901	512	165	190
MAX	1260	568	346	210	1500	2480	427	435	3610	1200	436	434
MIN	577	240	105	110	110	295	201	144	130	145	76	63
AC-FT	55870	24980	15910	9420	17560	40920	17470	17080	53620	31480	10160	11330
CFSM	1.13	.52	.32	.19	.39	.83	.37	.35	1.12	.64	.21	.24
IN.	1.30	.58	.37	.22	.41	.96	.41	.40	1.25	.74	.24	.26

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1986 - 1994, BY WATER YEAR (WY)

	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
MEAN	442	310	324	204	295	957	938	1078	1207	1299	771	460
MAX	1807	715	626	451	731	2094	2435	2481	3139	5640	3549	1911
(WY)	1987	1988	1993	1992	1992	1993	1991	1991	1990	1993	1993	1993
MIN	11.9	17.5	12.4	12.3	16.2	168	62.1	182	96.7	31.8	12.6	6.75
(WY)	1989	1989	1989	1989	1990	1989	1989	1989	1988	1988	1988	1988

SUMMARY STATISTICS

FOR 1993 CALENDAR YEAR

FOR 1994 WATER YEAR

WATER YEARS 1986 - 1994

ANNUAL TOTAL	679852	154179	693	1993
ANNUAL MEAN	1863	422	1831	1989
HIGHEST ANNUAL MEAN			69.6	1989
LOWEST ANNUAL MEAN			13100	Jul 12 1993
HIGHEST DAILY MEAN	13100	Jul 12	63	Sep 21
LOWEST DAILY MEAN	105	Dec 26	71	Sep 15
ANNUAL SEVEN-DAY MINIMUM	122	Dec 24	3860	Jun 24
INSTANTANEOUS PEAK FLOW			14.46	Jun 24
INSTANTANEOUS PEAK STAGE			61	Sep 21
INSTANTANEOUS LOW FLOW			502100	Aug 15, 19 1988
ANNUAL RUNOFF (AC-FT)	1348000	305800	1.2	
ANNUAL RUNOFF (CFSM)	2.32	.53	.86	
ANNUAL RUNOFF (INCHES)	31.50	7.14	11.73	
10 PERCENT EXCEEDS	4520	907	1750	
50 PERCENT EXCEEDS	1250	311	310	
90 PERCENT EXCEEDS	260	120	24	

e Estimated.

05471050 SOUTH SKUNK RIVER AT COLFAX, IA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--April 1988 to December 31, 1993 (discontinued).

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1988 to December 31, 1993 (discontinued).

WATER TEMPERATURES: October 1988 to December 31, 1993 (discontinued).

SUSPENDED-SEDIMENT DISCHARGE: October 1988 to December 31, 1993 (discontinued).

REMARKS.--Records of specific conductance are obtained from suspended-sediment samples at time of analysis. Miscellaneous records of specific conductance, water temperature, and suspended-sediment discharge from May 13 to September 30, 1988 on file at the Iowa District Office.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 1,180 microsiemens Feb. 28, 1993; minimum daily, 146 microsiemens July 5, 1993.

WATER TEMPERATURES: Maximum daily, 31.0°C July 7, 1989; minimum daily, 0.0°C on many days during winter periods.

SEDIMENT CONCENTRATIONS: Maximum daily mean, 2,660 mg/L Aug. 29, 1993; minimum daily mean, 1 mg/L Oct 6, 7, 1991.

SEDIMENT LOADS: Maximum daily, 59,900 tons July 11, 1993; minimum daily, 0.05 ton Jan. 7, 8, 1989.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 717 microsiemens Oct. 12; minimum daily, 442 microsiemens Oct. 20.

WATER TEMPERATURES: Maximum daily, 17.0°C, Oct. 8; minimum daily, 1.0°C, Nov. 27, 29, Dec. 21, 22, 29, 30.

SEDIMENT CONCENTRATIONS: Maximum daily mean, 191 mg/L Nov. 25; minimum daily mean, 39 mg/L Nov. 23.

SEDIMENT LOADS: Maximum daily, 356 tons Oct. 10; minimum daily, 18 tons Dec. 25.

SPECIFIC CONDUCTANCE MICROSIEMENS/CM AT 25 DEG C, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY INSTANTANEOUS VALUES

[illegible]

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1993 TO DECEMBER 1993

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY INSTANTANEOUS VALUES

[illegible]

SKUNK RIVER BASIN

05471200 INDIAN CREEK NEAR MINGO, IA

LOCATION.--Lat 41°48'17", long 93°18'36", in NW1/4 NW1/4 sec. 28, T.81 N., R.21 W., Jasper County, Hydrologic Unit 07080105, on right bank 30 ft downstream from bridge on State Highway 117, 0.7 mi downstream from Wolf Creek, 2.2 mi upstream from Byers Branch, 2.9 mi northwest of Mingo, and 11.3 mi upstream from South Skunk River.

DRAINAGE AREA.--276 mi².

PERIOD OF RECORD.--May 1958 to September 1975; October 1985 to current year.

REVISED RECORDS.--WSP 1728: 1958 (M), 1959 (M).

GAGE.--Water-stage encoder. Datum of gage is 810.47 ft above sea level.

REMARKS.--Estimated daily discharges: Nov. 27-29 and Dec. 21 to Mar. 4. Records good except those for Mar. 18-29 and daily discharges less than 700 ft³/s for June 25 to Aug. 28 which are fair and estimated daily discharges, which are poor. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data. U.S. National Weather Service Limited Automatic Remote Collector at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of May 20, 1944, reached a stage of 21.4 ft, from information by local resident, discharge not determined.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	538	216	140	e120	e56	e95	86	89	72	284	266	41
2	468	211	138	e100	e66	e100	87	87	75	262	133	28
3	427	205	132	e92	e62	e130	83	86	73	227	61	23
4	400	204	130	e87	e64	e600	79	87	67	231	67	45
5	362	192	129	e92	e72	787	79	95	68	269	82	164
6	345	180	127	e95	e76	699	76	121	73	228	52	115
7	329	177	120	e88	e62	456	74	148	81	200	42	79
8	326	174	124	e80	e56	337	74	164	1440	180	37	63
9	723	166	124	e86	e53	262	75	167	817	165	33	53
10	672	162	120	e96	e49	219	74	157	515	152	33	44
11	548	162	104	e100	e53	191	70	146	396	141	33	38
12	485	166	125	e100	e50	182	76	139	321	131	35	33
13	438	192	136	e90	e48	174	83	130	795	124	121	30
14	406	181	130	e70	e50	171	78	130	869	128	109	27
15	430	178	123	e58	e49	169	103	128	529	158	79	25
16	456	178	122	e68	e49	156	112	114	380	126	61	23
17	426	177	129	e62	e80	147	103	107	300	113	51	22
18	395	175	134	e52	e340	143	99	102	249	104	43	21
19	382	174	135	e60	e900	135	96	98	224	97	37	19
20	365	165	138	e66	e660	133	90	96	250	93	31	18
21	344	161	e120	e74	e430	132	100	92	324	88	27	18
22	319	158	e86	e110	e300	126	95	89	287	83	24	335
23	306	153	e62	e140	e190	126	93	87	1040	79	22	844
24	297	151	e52	e120	e150	121	92	104	1640	74	20	404
25	281	154	e50	e99	e115	113	92	112	927	71	19	476
26	266	145	e50	e91	e90	112	89	100	700	67	20	559
27	264	e142	e48	e87	e95	111	80	90	545	68	18	435
28	264	e135	e45	e80	e87	104	77	85	444	69	17	338
29	248	e130	e50	e68	---	97	77	81	364	65	17	272
30	231	140	e90	e57	---	91	80	81	307	61	22	230
31	223	---	e140	e52	---	87	---	76	---	57	47	---
TOTAL	11964	5104	3353	2640	4352	6506	2572	3388	14172	4195	1659	4822
MEAN	386	170	108	85.2	155	210	85.7	109	472	135	53.5	161
MAX	723	216	140	140	900	787	112	167	1640	284	266	844
MIN	223	130	45	52	48	87	70	76	67	57	17	18
AC-FT	23730	10120	6650	5240	8630	12900	5100	6720	28110	8320	3290	9560
CFSM	1.40	.62	.39	.31	.56	.76	.31	.40	1.71	.49	.19	.58
IN.	1.61	.69	.45	.36	.59	.88	.35	.46	1.91	.57	.22	.65

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1959 - 1994, BY WATER YEAR (WY)

	MEAN	122	102	83.0	64.6	121	333	285	374	476	342	181	101
MAX	689	549	319	289	619	816	834	936	1487	2809	1500	678	
(WY)	1987	1973	1973	1973	1971	1993	1965	1974	1991	1993	1993	1993	
MIN	1.11	4.12	2.05	1.87	2.25	10.9	8.07	5.58	10.9	3.49	1.44	.91	
(WY)	1972	1968	1990	1968	1967	1968	1989	1967	1989	1988	1988	1988	

SUMMARY STATISTICS FOR 1993 CALENDAR YEAR FOR 1994 WATER YEAR WATER YEARS 1959 - 1994

	ANNUAL TOTAL	283034	64727										
ANNUAL MEAN		775	177										
HIGHEST ANNUAL MEAN										216			
LOWEST ANNUAL MEAN										751			1993
HIGHEST DAILY MEAN										11.9			1989
LOWEST DAILY MEAN													
ANNUAL SEVEN-DAY MINIMUM													
INSTANTANEOUS PEAK FLOW													
INSTANTANEOUS PEAK STAGE													
INSTANTANEOUS LOW FLOW													
ANNUAL RUNOFF (AC-FT)		561400	128400							156300			
ANNUAL RUNOFF (CFSM)		2.81	.64							.78			
ANNUAL RUNOFF (INCHES)		38.15	8.72							10.62			
10 PERCENT EXCEEDS		1650	402							509			
50 PERCENT EXCEEDS		437	112							74			
90 PERCENT EXCEEDS		86	46							4.4			

e Estimated.

05471500 SOUTH SKUNK RIVER NEAR OSKALOOSA, IA

LOCATION.--Lat 41 21'19", long 92 39'31", in NW1/4 SW1/4 sec.25, T.76 N., R.16 W., Mahaska County, Hydrologic Unit 07080105, on right bank 400 ft upstream from bridge on U.S. Highway 63, 0.3 mi downstream from Painter Creek, 4.0 mi north of Oskaloosa, 52.0 mi upstream from confluence with North Skunk River, and at mile 147.3 upstream from mouth of Skunk River.

DRAINAGE AREA.--1,635 mi².

PERIOD OF RECORD.--October 1945 to current year. Prior to October 1966, published as Skunk River near Oskaloosa. Prior to October 1948, monthly discharge only, published in WSP 1308.

REVISED RECORDS.--WSP 1438: Drainage area.

GAGE.--Water-stage encoder. Datum of gage is 685.50 ft above sea level. Prior to Nov. 21, 1947, nonrecording gage at site 400 ft downstream at same datum.

REMARKS.--Estimated daily discharges: Nov. 28-30, Dec. 22 to Feb. 21, Feb. 23 to Mar. 2, June 17, July 2-7, 9-27, Aug. 20-22, and Sept. 2-5. Records good except those for estimated daily discharges, which are poor. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data. U.S. Army Corps of Engineers data collection platform at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in May 1944 reached a stage of 25.8 ft, from floodmarks, discharge, 37,000 ft³/s, from rating curve extended above 18,000 ft³/s on basis of velocity-area study.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3490	1170	765	e450	e290	e1600	614	558	393	1320	254	197
2	2960	1140	719	e420	e320	e2000	601	573	424	e1200	321	e180
3	2600	1120	715	e380	e290	2480	581	546	416	e1000	465	e160
4	2380	1090	708	e330	e320	3710	582	533	394	e1200	383	e190
5	2210	1070	704	e355	e340	5450	560	530	383	e1400	320	e300
6	2050	1030	736	e330	e370	5140	532	541	405	e1200	353	483
7	1930	980	691	e310	e330	3530	519	613	434	e1490	307	414
8	1840	962	652	e330	e305	2580	507	663	3000	1750	259	323
9	1940	944	639	e355	e280	2050	504	707	3490	e2000	237	273
10	2500	925	644	e370	e270	1720	498	736	2270	e2300	220	238
11	2530	910	622	e350	e320	1480	483	726	1770	e1900	213	212
12	2330	904	572	e325	e370	1370	484	687	1490	e1500	211	193
13	2140	966	597	e300	e350	1280	513	652	1420	e1350	226	175
14	2010	1000	688	e280	e460	1220	515	632	1790	e1270	280	162
15	1930	976	710	e300	e540	1180	554	636	2300	e1220	458	148
16	2050	968	666	e330	e660	1130	787	615	1760	e1100	425	138
17	2030	937	641	e290	e960	1060	734	590	e1400	e950	351	125
18	1900	896	648	e250	e1400	1010	693	560	1240	e870	292	117
19	1840	885	657	e210	e2400	958	663	533	1110	e810	250	114
20	1780	863	657	e240	e5600	917	631	512	1420	e760	e220	110
21	1700	853	650	e300	e4500	902	658	490	1610	e700	e195	108
22	1640	831	e560	e370	3350	884	670	474	1390	e660	e185	130
23	1570	816	e400	e410	e2200	862	635	460	1700	e600	173	172
24	1530	807	e260	e430	e1800	845	608	478	3520	e540	165	924
25	1500	811	e230	e400	e1500	799	612	480	4970	e470	165	702
26	1450	804	e220	e370	e1300	771	590	506	3380	e420	170	813
27	1400	731	e250	e340	e1200	770	559	480	2570	e360	168	828
28	1350	e620	e235	e320	e1350	746	535	449	2080	312	152	742
29	1310	e600	e270	e300	---	721	525	428	1740	304	139	635
30	1270	e680	e330	e280	---	684	519	413	1480	303	140	526
31	1210	---	e400	e260	---	644	---	402	---	271	204	---
TOTAL	60370	27289	17236	10285	33375	50493	17466	17203	51749	31530	7901	9832
MEAN	1947	910	556	332	1192	1629	582	555	1725	1017	255	328
MAX	3490	1170	765	450	5600	5450	787	736	4970	2300	465	924
MIN	1210	600	220	210	270	644	483	402	383	271	139	108
AC-FT	119700	54130	34190	20400	66200	100200	34640	34120	102600	62540	15670	19500
CFSM	1.19	.56	.34	.20	.73	1.00	.36	.34	1.06	.62	.16	.20
IN.	1.37	.62	.39	.23	.76	1.15	.40	.39	1.18	.72	.18	.22

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1946 - 1994, BY WATER YEAR (WY)

	MEAN	524	559	468	479	824	1660	1631	1614	2036	1427	688	507
MAX	3646	3576	2322	3906	3587	4841	5366	6168	9222	11770	7772	5140	
(WY)	1987	1984	1983	1973	1973	1979	1983	1974	1947	1993	1993	1993	
MIN	8.47	14.5	7.55	5.30	42.9	45.9	42.1	74.2	39.4	27.3	43.3	27.8	
(WY)	1957	1957	1956	1956	1954	1954	1956	1956	1977	1977	1988	1956	

SUMMARY STATISTICS	FOR 1993 CALENDAR YEAR	FOR 1994 WATER YEAR	WATER YEARS 1946 - 1994
ANNUAL TOTAL	1431585	334729	
ANNUAL MEAN	3922	917	1035
HIGHEST ANNUAL MEAN			3884
LOWEST ANNUAL MEAN			40.1
HIGHEST DAILY MEAN	20400	Jul 15	20400
LOWEST DAILY MEAN	220	Dec 26	1.8
ANNUAL SEVEN-DAY MINIMUM	256	Dec 24	2.0
INSTANTANEOUS PEAK FLOW			20700
INSTANTANEOUS PEAK STAGE			24.78
INSTANTANEOUS LOW FLOW			102
ANNUAL RUNOFF (AC-FT)	2840000	663900	749700
ANNUAL RUNOFF (CFSM)	2.40	.56	.63
ANNUAL RUNOFF (INCHES)	32.57	7.62	8.60
10 PERCENT EXCEEDS	9340	2000	2570
50 PERCENT EXCEEDS	2610	639	446
90 PERCENT EXCEEDS	649	233	52

e Estimated.

SKUNK RIVER BASIN

05472500 NORTH SKUNK RIVER NEAR SIGOURNEY, IA

LOCATION.--Lat 41°18'03", long 92°12'16", in NE1/4 SE1/4 sec.14, T.75 N., R.12 W., Keokuk County, Hydrologic Unit 07080106, on right bank 10 ft downstream from bridge on State Highway 149, 1.2 mi downstream from Cedar Creek, 2.2 mi south of Sigourney, 4.0 mi upstream from Bridge Creek, and 16.2 mi upstream from confluence with South Skunk River.

DRAINAGE AREA.--730 mi².

PERIOD OF RECORD.--October 1945 to current year.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1558: 1946-47 (M).

GAGE.--Water-stage encoder. Datum of gage is 651.53 ft above sea level. Prior to June 10, 1953, nonrecording gage at same site and datum.

REMARKS.--Estimated daily discharges: Nov. 28-30 and Dec. 22 to Mar. 2. Records good except those estimated daily discharges, which are poor. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data. U.S. Army Corps of Engineers data collection platform at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in May 1944 reached a stage of 22.8 ft, from floodmark, discharge, 14,500 ft³/s.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1880	410	302	e170	e120	e390	210	168	109	220	73	51
2	1460	403	298	e150	e125	e450	213	176	121	211	70	55
3	1250	403	288	e130	e120	491	204	186	129	217	74	56
4	1150	399	278	e115	e130	1220	191	166	139	221	109	73
5	1050	391	279	e130	e145	3060	187	158	134	194	137	155
6	962	372	266	e120	e130	3250	183	156	121	183	101	231
7	903	351	256	e110	e120	2940	173	173	121	192	81	163
8	861	343	242	e120	e115	1250	166	215	721	352	68	103
9	862	344	235	e135	e110	851	165	217	1740	513	63	77
10	995	337	245	e140	e105	672	167	200	884	320	61	66
11	966	332	238	e135	e120	564	162	183	960	209	58	60
12	834	337	221	e125	e145	500	162	170	566	175	58	56
13	778	382	187	e115	e140	469	170	161	440	190	59	52
14	729	406	253	e100	e180	442	188	156	596	168	62	51
15	699	391	272	e110	e240	424	191	162	645	160	73	50
16	709	354	256	e120	e350	401	173	164	433	244	72	50
17	746	340	246	e110	e680	373	374	162	338	277	59	50
18	694	327	238	e94	e1000	351	277	146	286	184	53	47
19	650	321	245	e82	e1800	339	236	135	251	150	51	45
20	633	313	246	e88	e2700	326	213	127	277	145	49	43
21	612	302	234	e105	e2500	332	203	123	956	153	47	42
22	595	292	e150	e130	e5000	338	204	121	437	148	45	45
23	562	287	e100	e160	e2000	336	215	119	744	126	43	49
24	543	284	e90	e190	e640	312	231	125	1060	109	43	46
25	528	291	e86	e230	e500	289	185	135	795	99	58	75
26	512	301	e86	e210	e420	266	185	136	522	92	91	86
27	490	303	e94	e195	e350	265	171	136	388	87	125	103
28	472	e220	e90	e170	e380	258	181	128	323	82	82	171
29	463	e210	e100	e160	---	243	209	119	275	80	62	121
30	443	e240	e130	e135	---	225	172	114	240	78	59	92
31	419	---	e150	e110	---	213	---	111	---	76	53	---
TOTAL	24450	9986	6401	4194	20365	21840	5961	4748	14751	5655	2139	2364
MEAN	789	333	206	135	727	705	199	153	492	182	69.0	78.8
MAX	1880	410	302	230	5000	3250	374	217	1740	513	137	231
MIN	419	210	86	82	105	213	162	111	109	76	43	42
AC-FT	48500	19810	12700	8320	40390	43320	11820	9420	29260	11220	4240	4690
CFSM	1.08	.46	.28	.19	1.00	.97	.27	.21	.67	.25	.09	.11
IN.	1.25	.51	.33	.21	1.04	1.11	.30	.24	.75	.29	.11	.12

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1946 - 1994, BY WATER YEAR (WY)

	MEAN	221	300	242	275	416	883	782	738	749	570	309	311
MAX	1603	1889	1208	1767	1311	2996	2826	4170	4145	5098	3668	2708	
(WY)	1987	1962	1983	1946	1973	1979	1993	1974	1947	1993	1993	1993	
MIN	.13	3.38	2.58	2.26	12.8	17.0	11.2	14.4	20.1	11.2	7.90	4.35	
(WY)	1957	1957	1956	1954	1954	1954	1956	1956	1977	1977	1955	1956	

SUMMARY STATISTICS	FOR 1993 CALENDAR YEAR	FOR 1994 WATER YEAR	WATER YEARS 1946 - 1994
ANNUAL TOTAL	704170	122854	
ANNUAL MEAN	1929	337	483
HIGHEST ANNUAL MEAN			2041
LOWEST ANNUAL MEAN			27.7
HIGHEST DAILY MEAN	15500	Jul 6	5000
LOWEST DAILY MEAN	86	Dec 25	42
ANNUAL SEVEN-DAY MINIMUM	92	Dec 23	45
INSTANTANEOUS PEAK FLOW			a5500
INSTANTANEOUS PEAK STAGE			a19.10
ANNUAL RUNOFF (AC-FT)	1397000	243700	349800
ANNUAL RUNOFF (CFSM)	2.64	.46	.66
ANNUAL RUNOFF (INCHES)	35.88	6.26	8.99
10 PERCENT EXCEEDS	5220	703	1170
50 PERCENT EXCEEDS	1050	190	171
90 PERCENT EXCEEDS	282	67	17

e Estimated.

a Ice affected.

05473400 CEDAR CREEK NEAR OAKLAND MILLS, IA

LOCATION.--Lat. 40°55'20", long 91°40'10", in SE1/4 NW1/4 sec.28, T.71 N., R.7 W., Henry County, Hydrologic Unit 07080107, on left bank 30 ft upstream from bridge on county highway H46, 3.0 mi west of Oakland Mills, 2.9 mi upstream from Wolf Creek, and 4.3 mi upstream from mouth.

DRAINAGE AREA.--530 mi².

PERIOD OF RECORD.--Occasional low-flow measurements, water years 1957 to 1977. July 1977 to current year.

GAGE.--Water-stage recorder. Datum of gage is 565.07 ft above sea level.

REMARKS.--Estimated daily discharges: Nov. 2-11, Nov. 30 to Mar. 4, and June 4, 5, 25, 26. Records good except those for estimated daily discharges, which are poor. Occasional high-water measurements were made by U.S. Army Corps of Engineers in 1965, 1966, 1970, and 1974 and by U.S. Geological Survey in 1966 and 1967. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of April 22, 1973 reached a stage of 24.09 ft, discharge not determined. Flood of June 1905 reached a stage approximately 2 feet higher from information by local resident.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	853	49	e110	e60	e29	e84	59	317	28	95	15	9.0
2	836	e48	e90	e54	e27	e100	59	236	130	94	13	12
3	435	e47	e72	e47	e25	e140	61	155	669	189	14	8.8
4	193	e47	e63	e43	e28	e350	57	113	e360	116	18	14
5	169	e46	e59	e45	e32	2500	53	93	e250	79	28	32
6	156	e46	e54	e42	e37	2310	52	88	187	67	47	35
7	136	e45	e50	e38	e32	1470	51	301	147	58	38	26
8	127	e45	e46	e33	e27	917	47	316	1010	179	21	26
9	126	e44	e43	e35	e24	523	45	200	3250	79	14	16
10	126	e44	e39	e39	e22	344	45	132	1020	62	12	13
11	132	e44	e38	e43	e33	261	48	100	543	53	11	9.4
12	111	51	e46	e39	e32	212	89	82	589	40	10	7.4
13	93	69	e50	e30	e37	193	188	71	360	33	9.9	6.1
14	83	114	e54	e23	e45	183	171	66	257	35	9.9	5.6
15	77	107	e54	e20	e60	171	211	74	191	64	9.2	5.0
16	74	73	e52	e23	e150	160	183	127	143	72	11	4.8
17	72	62	e50	e29	e300	134	113	95	112	40	8.9	4.0
18	74	58	e54	e25	e500	119	80	69	94	37	8.6	3.7
19	75	57	e56	e19	e700	117	67	55	81	61	8.4	4.4
20	73	55	e52	e21	e1100	111	59	48	71	37	7.4	5.3
21	67	52	e45	e25	e800	108	64	42	66	28	6.8	5.4
22	62	52	e35	e33	e400	112	79	38	282	26	6.4	9.3
23	58	52	e28	e45	e240	105	81	39	202	30	6.2	6.3
24	56	52	e23	e56	e120	95	74	44	1450	27	5.6	4.8
25	61	57	e20	e50	e80	87	66	64	e1000	24	5.6	6.5
26	63	78	e19	e43	e70	78	79	60	e450	21	9.0	8.2
27	63	89	e21	e37	e60	76	64	61	250	20	9.0	11
28	60	64	e18	e32	e68	84	55	51	183	19	11	20
29	51	59	e23	e31	---	79	59	41	133	20	8.2	11
30	48	e74	e28	e30	---	69	107	34	111	17	8.5	8.4
31	50	---	e40	e26	---	63	---	31	---	15	12	---
TOTAL	4660	1780	1432	1116	5078	11355	2466	3243	13619	1737	402.6	338.4
MEAN	150	59.3	46.2	36.0	181	366	82.2	105	454	56.0	13.0	11.3
MAX	853	114	110	60	1100	2500	211	317	3250	189	47	35
MIN	48	44	18	19	22	63	45	31	28	15	5.6	3.7
AC-FT	9240	3530	2840	2210	10070	22520	4890	6430	27010	3450	799	671
CFSM	.28	.11	.09	.07	.34	.69	.16	.20	.86	.11	.02	.02
IN.	.33	.12	.10	.08	.36	.80	.17	.23	.96	.12	.03	.02

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1977 - 1994, BY WATER YEAR (WY)

	MEAN	253	353	298	94.4	305	686	601	481	493	638	244	303
MAX	1711	1340	1364	545	1091	1987	1863	1388	2199	4565	2186	1245	
(WY)	1987	1993	1983	1993	1985	1979	1983	1993	1990	1993	1993	1986	
MIN	5.93	10.2	4.43	9.82	6.36	32.3	37.7	33.3	14.6	3.52	5.35	6.28	
(WY)	1989	1990	1990	1989	1989	1989	1989	1988	1988	1988	1983	1991	

SUMMARY STATISTICS	FOR 1993 CALENDAR YEAR	FOR 1994 WATER YEAR	WATER YEARS 1977 - 1994
ANNUAL TOTAL	462474	47227.0	
ANNUAL MEAN	1267	129	397
HIGHEST ANNUAL MEAN			1424
LOWEST ANNUAL MEAN			73.0
HIGHEST DAILY MEAN	8790	Jul 9	8790
LOWEST DAILY MEAN	18	Dec 28	.42
ANNUAL SEVEN-DAY MINIMUM	22	Dec 23	.55
INSTANTANEOUS PEAK FLOW		3600	8920
INSTANTANEOUS PEAK STAGE		13.31	21.27
INSTANTANEOUS LOW FLOW		3.6	
ANNUAL RUNOFF (AC-FT)	917300	93670	287300
ANNUAL RUNOFF (CFSM)	2.39	.24	.75
ANNUAL RUNOFF (INCHES)	32.46	3.31	10.17
10 PERCENT EXCEEDS	4060	238	953
50 PERCENT EXCEEDS	456	54	82
90 PERCENT EXCEEDS	52	11	8.6

e Estimated.

SKUNK RIVER BASIN

05474000 SKUNK RIVER AT AUGUSTA, IA
(National stream-quality accounting network station)

LOCATION.--Lat 40°45'13", long 91°16'40", in NE1/4 NE1/4 sec.26, T.69 N., R.4 W., Des Moines County, Hydrologic Unit 07080107, on left bank 300 ft upstream from bridge on State Highway 394 at Augusta, 2.0 mi upstream from Long Creek, and at mile 12.5.
DRAINAGE AREA.--4,303 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--September to November 1913, October 1914 to current year. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 1308: 1915 (M), 1919-27 (M), 1932-34 (M), 1936, 1937-38 (M), 1942 (M). WSP 1438: Drainage area. WDR IA-71-1: 1966 (M).

GAGE.--Water-stage encoder. Datum of gage is 521.24 ft above NGVD. Prior to Nov. 15, 1913, nonrecording gage at site 400 ft upstream at datum about 0.7 ft higher. May 27, 1915 to Jan. 14, 1935, nonrecording gage at site 400 ft upstream at present datum.

REMARKS.--Estimated daily discharges: Dec. 23 to Mar. 20, Apr. 29 to May 3, June 4-24, July 1-25, and July 28 to Aug. 3. Records fair except those for estimated daily discharges, which are poor. U.S. Army Corps of Engineers data collection platform at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 1, 1903, reached a stage of about 21 ft, discharge, about 45,000 ft³/s. Stage and discharge for flood of April 1973 are believed to be the greatest since 1851.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13200	2240	1360	e870	e620	e3350	1380	e1550	691	e3180	e589	322
2	14400	2170	1410	e800	e670	e3600	1340	e1550	762	e2700	e579	307
3	13000	2110	1510	e700	e620	e3800	1280	e1400	1220	e2360	e578	279
4	9580	2050	1550	e600	e660	e4100	1240	1250	e1780	e2170	564	306
5	7160	2020	1510	e700	e760	e4740	1190	1160	e1510	e1960	541	397
6	5980	1970	1470	e620	e700	e9130	1150	1120	e1150	e1750	835	421
7	5220	1920	1430	e560	e640	e11300	1090	1160	e1030	e1550	799	469
8	4720	1880	1380	e600	e580	e10500	1040	1360	e1620	e1450	648	565
9	4440	1830	1380	e700	e540	e9450	1010	1510	e6940	e1570	566	642
10	4140	1770	1220	e760	e500	e8270	1010	1500	e8910	e2110	535	611
11	4030	1730	1210	e720	e580	e6510	1180	1470	e7530	e2410	487	516
12	4100	1740	1190	e640	e680	e4690	1170	1410	e6700	e2060	453	437
13	4240	1820	1190	e580	e640	e3640	1210	1330	e5700	e1910	422	378
14	4110	1920	1200	e520	e760	e3140	1270	1260	e4540	e1760	417	325
15	3880	1970	1150	e560	e1000	e2850	1400	1200	e3800	e1570	412	292
16	3690	1950	1130	e640	e1300	e2660	1520	1180	e3450	e1440	390	265
17	3560	1910	1230	e560	e1700	e2520	1480	1160	e3650	e1310	395	261
18	3440	1830	1260	e500	e2500	e2380	1300	1100	e3610	e1240	470	242
19	3460	1780	1220	e440	3650	e2270	1300	1030	e3110	e1200	560	227
20	3360	1730	1190	e470	8370	e2190	1370	965	e2660	e1130	517	209
21	3210	1670	1170	e540	11600	2130	1320	904	e2360	e1030	468	198
22	3100	1640	1160	e620	8430	2080	1260	855	e2220	e953	420	208
23	3000	1610	e1000	e700	e5600	2050	1220	820	e3000	e885	372	230
24	2890	1590	e700	e760	e4800	2020	1190	803	e3330	e838	330	216
25	2800	1600	e580	e900	e4000	1940	1180	802	5440	e802	311	198
26	2720	1610	e540	e1100	e3600	1830	1260	818	5260	749	296	205
27	2630	1630	e580	e970	e3300	1770	1240	836	5090	685	373	533
28	2540	1630	e560	e880	e3200	1690	1160	821	4910	e652	418	850
29	2470	1600	e600	e800	---	1610	e1140	798	4690	e635	390	909
30	2390	1490	e700	e700	---	1530	e1350	772	4020	e616	377	967
31	2320	---	e780	e580	---	1440	---	734	---	e602	354	---
TOTAL	149780	54410	34560	21090	72000	121180	37250	34628	110683	45277	14866	11985
MEAN	4832	1814	1115	680	2571	3909	1242	1117	3689	1461	480	399
MAX	14400	2240	1550	1100	11600	11300	1520	1550	8910	3180	835	967
MIN	2320	1490	540	440	500	1440	1010	734	691	602	296	198
AC-FT	297100	107900	68550	41830	142800	240400	73890	68680	219500	89810	29490	23770
CFSM	1.12	.42	.26	.16	.60	.91	.29	.26	.86	.34	.11	.09
IN.	1.29	.47	.30	.18	.62	1.05	.32	.30	.96	.39	.13	.10

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1914 - 1994, BY WATER YEAR (WY)

	MEAN	1364	1574	1314	1337	2341	4416	4089	3730	4191	2832	1736	1691
MAX	11560	10020	8387	8090	7306	16560	18770	13940	19800	26860	18550	15460	
(WY)	1987	1962	1983	1946	1984	1979	1973	1974	1947	1993	1993	1926	
MIN	15.5	20.5	21.2	21.3	56.5	191	104	92.5	130	122	25.8	71.4	
(WY)	1957	1957	1957	1940	1940	1957	1956	1934	1977	1988	1934	1953	

SUMMARY STATISTICS FOR 1993 CALENDAR YEAR FOR 1994 WATER YEAR WATER YEARS 1914 - 1994

	ANNUAL TOTAL	3542010	707709	
ANNUAL MEAN	9704	1939		
HIGHEST ANNUAL MEAN			2550	
LOWEST ANNUAL MEAN			10200	1993
HIGHEST DAILY MEAN	45800	Jul 10	14400	Oct 2
LOWEST DAILY MEAN	540	Dec 26	198	Sep 21a
ANNUAL SEVEN-DAY MINIMUM	609	Dec 24	209	Sep 20
INSTANTANEOUS PEAK FLOW			14500	Oct 2
INSTANTANEOUS PEAK STAGE			12.50	Oct 2
INSTANTANEOUS LOW FLOW			193	Sep 21a
ANNUAL RUNOFF (AC-FT)	7026000		144000	
ANNUAL RUNOFF (CFSM)	2.26		.45	
ANNUAL RUNOFF (INCHES)	30.62		6.12	
10 PERCENT EXCEEDS	23600		4100	6690
50 PERCENT EXCEEDS	6680		1240	1060
90 PERCENT EXCEEDS	1500		439	140

e Estimated.

a Also Sept. 22, 25, 26.

05474000 SKUNK RIVER AT AUGUSTA, IA--Continued
(National stream-quality accounting network station)

WATER QUALITY RECORDS

LOCATION.--Samples collected at bridge on State Highway 394, 300 ft downstream from gage.

PERIOD OF RECORD.--October 1975 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1975 to current year.

WATER TEMPERATURES: October 1975 to current year.

SUSPENDED-SEDIMENT DISCHARGE: October 1975 to current year.

REMARKS.--During periods of ice effect, sediment samples are collected in open water channel. Records of specific conductance are obtained from suspended-sediment samples at time of analysis.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 950 microsiemens Dec. 20, 1979, Feb. 12, 1980; minimum daily, 149 microsiemens Mar. 6, 1993.

WATER TEMPERATURES: Maximum daily, 34.0°C July 20, 1980, Aug. 15-17, 1988, July 10-13, 1989; minimum daily, 0.0°C on many days during winter periods.

SEDIMENT CONCENTRATIONS: Maximum daily mean, 8,550 mg/L June 25, 1981; minimum daily mean, 1 mg/L Mar. 8, 9, 12, 1978, Jan. 5, 6, 1984.

SEDIMENT LOADS: Maximum daily, 499,000 tons Mar. 21, 1978; minimum daily, 1.4 tons Dec. 11, 1989.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 738 microsiemens Jan. 22; minimum daily, 340 microsiemens Feb. 21.

WATER TEMPERATURES: Maximum daily, 27.0°C Aug. 3, 28; minimum daily, 0.0°C on many days during winter periods.

SEDIMENT CONCENTRATIONS: Maximum daily mean, 2,880 mg/L June 10; minimum daily mean, 8 mg/L Feb. 17.

SEDIMENT LOADS: Maximum daily, 69,300 tons June 10; minimum daily, 19 tons Feb. 11.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	TEMPER- ATURE AIR (DEG C) (00020)	TUR- BID- ITY (NTU) (00076)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED SATUR- ATION (00301)	BARO- METRIC PRES- SURE (MM HG) (00025)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)
OCT 20...	1215	3370	569	8.3	13.5	13.0	23	10.1	99	746	K60
DEC 02...	1245	1420	625	7.8	2.5	11.5	3.5	13.5	100	754	19
MAR 09...	1415	9560	320	7.8	3.0	3.0	200	12.4	93	753	490
MAY 11...	1145	1450	523	8.5	18.0	16.0	12	12.2	131	749	K48
AUG 18...	1045	463	507	8.4	25.0	20.0	12	7.4	91	749	84

DATE	STREP- TOCOCCEI FECAL, KF AGAR (COLS. PER 100 ML) (31673)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY WAT DIS TOT IT FIELD MG/L AS CACO3 (39086)	CAR- BONATE WATER DIS IT FIELD MG/L AS CO3 (00452)	BICAR- BONATE WATER DIS IT FIELD MG/L AS HCO3 (00453)
OCT 20...	K64	310	83	25	9.7	6	0.2	1.9	256	3	307
DEC 02...	54	310	79	27	13	8	0.3	2.0	248	0	304
MAR 09...	1200	120	31	9.4	4.3	7	0.2	4.0	98	0	120
MAY 11...	100	250	63	22	9.8	8	0.3	1.9	174	14	183
AUG 18...	120	230	53	23	14	12	0.4	3.5	196	12	213

SKUNK RIVER BASIN

05474000 SKUNK RIVER AT AUGUSTA, IA--Continued
(National stream-quality accounting network station)

DATE	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	NITRO- GEN, DIS- ORGANIC TOTAL (MG/L AS N) (00605)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)
OCT 20...	34	13	0.3	18	364	366	0.50	3310	0.48	6.00
DEC 02...	46	16	0.2	13	373	366	0.51	1430	0.21	4.50
MAR 09...	21	12	0.2	7.8	193	172	0.26	4980	1.0	5.00
MAY 11...	33	19	0.2	3.7	285	269	0.39	1120	1.6	2.80
AUG 18...	44	18	0.3	5.2	293	278	0.40	366	1.2	<0.05
DATE	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	SED. SUSP. FALL DIAM. % FINER THAN .062 MM (70342)
OCT 20...	<0.01	0.02	0.5	0.11	0.10	0.19	148	1350	80	--
DEC 02...	<0.01	0.09	0.3	0.05	0.07	0.07	83	318	42	--
MAR 09...	0.06	0.40	1.4	0.10	0.13	0.28	994	25700	--	96
MAY 11...	0.03	0.03	1.6	<0.01	0.03	0.18	141	552	100	--
AUG 18...	<0.01	0.03	1.2	0.04	0.05	0.27	78	98	100	--
DATE	ALUM- INUM, DIS- SOLVED (UG/L AS AL) (01106)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	COBALT, DIS- SOLVED (UG/L AS CO) (01035)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	SILVER, DIS- SOLVED (UG/L AS AG) (01075)
OCT 20...	<10	120	<3	5	13	4	<10	<1	<1	<1
DEC 02...	--	--	--	--	--	--	--	--	--	--
MAR 09...	20	69	<3	36	<4	3	<10	4	<1	<1
MAY 11...	20	72	<3	10	8	5	<10	1	1	<1
AUG 18...	80	99	<3	5	8	27	<10	2	<1	<1
DATE	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)	VANA- DIUM, DIS- SOLVED (UG/L AS V) (01085)	ATRA- ZINE WATER UNFLTRD REC (UG/L) (39630)	CYAN- AZINE TOTAL (UG/L) (81757)	METRI- BUZIN IN WHOLE WATER (UG/L) (81408)	ALA- CHLOR TOTAL RECOVER (UG/L) (77825)	METOLA- CHLOR IN WHOLE WATER (UG/L) (39356)	TRI- FLURA- LIN TOTAL RECOVER (UG/L) (39030)	BUTY- LATE TOTAL (UG/L) (99901)	DEETHYL ATRA- ZINE, WATER, DISS, REC (UG/L) (04040)
OCT 20...	180	<6	0.2	<0.1	<0.1	<0.10	<0.10	<0.1	<0.1	0.11
DEC 02...	--	--	--	--	--	--	--	--	--	--
MAR 09...	81	<6	0.3	<0.1	<0.1	<0.10	0.12	<0.1	<0.1	--
MAY 11...	140	<6	2.6	3.6	<0.1	0.27	0.95	<0.1	<0.1	0.19
AUG 18...	170	<6	--	--	--	--	--	--	--	--

05474000 SKUNK RIVER AT AUGUSTA, IA--Continued
(National stream-quality accounting network station)

SPECIFIC CONDUCTANCE MICROSIEMENS/CM AT 25 DEG C, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	362	516	521	528	535	---	517	525	499	---	432	471
2	415	469	462	488	436	---	448	514	484	---	443	520
3	465	482	499	478	560	---	540	513	---	---	459	533
4	504	500	528	496	616	---	472	529	531	---	---	518
5	535	445	511	488	677	---	445	442	547	---	518	511
6	570	489	525	---	504	---	501	486	553	---	493	623
7	552	488	527	481	629	---	495	519	558	---	476	---
8	574	490	621	517	548	---	472	555	550	---	496	542
9	552	442	517	500	518	---	479	553	378	---	468	513
10	579	418	527	466	627	---	441	515	---	---	475	500
11	571	445	465	475	699	---	431	522	---	---	467	491
12	572	466	479	507	519	---	452	491	---	---	447	467
13	581	513	525	553	572	---	461	496	---	---	481	441
14	568	602	585	461	504	---	492	470	---	---	501	443
15	568	607	481	530	582	---	462	477	---	---	507	455
16	610	491	544	472	568	---	472	478	---	---	501	428
17	611	491	515	479	651	---	481	469	---	---	492	396
18	596	574	486	537	588	---	429	467	---	---	510	438
19	599	467	546	495	544	---	451	452	---	---	517	439
20	518	550	504	519	535	---	445	461	---	---	552	451
21	535	506	552	478	340	---	463	440	---	---	554	463
22	535	542	530	738	480	---	519	416	---	---	526	478
23	479	511	537	505	363	---	520	419	---	---	470	501
24	479	559	522	620	---	---	442	424	---	---	417	540
25	482	492	514	526	---	---	510	416	---	---	387	548
26	481	497	488	559	---	---	506	470	455	---	401	530
27	469	461	548	588	---	---	476	463	---	491	431	537
28	488	499	589	619	---	---	476	413	---	424	442	535
29	497	504	504	522	---	---	504	411	---	392	459	570
30	560	550	653	489	---	---	495	483	---	406	468	406
31	498	---	533	523	---	565	---	500	---	419	494	---

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15.0	8.0	3.0	1.0	2.0	---	11.0	15.0	17.0	---	25.0	19.0
2	15.0	8.0	5.0	1.0	2.0	---	11.0	15.0	17.0	---	26.5	20.0
3	15.0	10.0	5.0	1.0	2.0	---	12.0	17.0	---	---	27.0	21.0
4	18.0	10.0	4.0	1.0	2.0	---	11.0	17.0	---	---	25.5	19.0
5	17.0	6.0	5.0	1.0	2.0	---	12.0	17.0	---	---	23.0	19.5
6	20.0	5.0	5.0	---	---	---	12.0	16.0	---	---	21.0	19.5
7	19.0	5.0	5.0	1.0	2.0	---	11.0	15.0	---	---	23.0	19.5
8	18.0	7.0	4.0	.0	2.0	---	13.0	20.0	---	---	25.0	20.5
9	15.0	8.0	5.0	.0	2.0	---	14.0	20.0	---	---	23.0	21.0
10	16.0	8.0	4.0	.0	2.0	---	15.0	20.0	---	---	22.0	22.0
11	15.0	8.0	4.0	.0	2.0	---	12.0	22.0	---	---	22.5	25.0
12	15.0	9.0	3.0	.0	3.0	---	11.0	25.0	---	---	22.5	22.0
13	15.0	10.0	4.0	.0	3.0	---	12.0	21.0	---	---	24.0	22.5
14	14.0	8.0	6.0	.0	3.0	---	12.0	21.0	---	---	22.5	24.5
15	18.0	7.0	6.0	.0	3.0	---	12.0	21.0	---	---	21.5	25.0
16	15.0	7.0	5.0	.0	3.0	---	13.0	22.0	---	---	22.0	25.0
17	14.0	6.0	5.0	.0	3.0	---	14.0	22.0	---	---	23.0	22.5
18	14.0	6.0	4.0	.0	4.0	---	20.0	24.0	---	---	25.0	23.5
19	14.0	7.0	5.0	.0	5.0	---	21.0	24.0	---	---	25.5	20.5
20	15.0	7.0	3.0	.0	4.0	---	18.0	25.0	---	---	24.5	21.0
21	14.0	7.0	3.0	.0	3.0	---	19.0	25.0	---	---	24.5	22.0
22	14.0	10.0	3.0	1.0	4.0	---	19.0	25.0	---	---	22.0	21.0
23	14.0	8.0	1.0	.0	4.0	---	20.0	26.0	---	---	23.0	16.5
24	14.0	8.0	1.0	3.0	---	---	20.0	25.0	---	---	24.5	15.5
25	14.0	5.0	1.0	3.0	---	---	19.0	25.0	---	---	26.5	17.0
26	12.0	5.0	1.0	3.0	---	---	24.0	25.0	---	---	25.5	17.0
27	12.0	2.0	1.0	3.0	---	---	18.0	24.0	---	23.5	26.0	15.0
28	11.0	3.0	1.0	2.0	---	---	19.0	20.0	---	23.0	27.0	15.5
29	8.0	3.0	1.0	2.0	---	---	19.0	20.0	---	23.0	21.5	15.0
30	7.0	3.0	.0	3.0	---	---	13.0	17.0	---	23.5	22.0	16.5
31	8.0	---	.0	3.0	---	11.0	---	17.0	---	26.0	21.0	---

SKUNK RIVER BASIN

05474000 SKUNK RIVER AT AUGUSTA, IA--Continued
(National stream-quality accounting network station)

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DAY	MEAN CONCEN- TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN- TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN- TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN- TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN- TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN- TRATION (MG/L)	LOAD (TONS/ DAY)
OCTOBER			NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	200	7080	62	378	54	199	89	209	75	126	51	461
2	145	5620	86	505	72	276	124	268	107	194	50	486
3	144	5030	75	426	72	294	150	283	64	107	45	462
4	139	3590	79	437	50	212	137	222	18	32	42	465
5	140	2700	68	368	48	195	121	229	10	21	476	6090
6	133	2150	47	251	54	213	116	194	33	62	1170	28800
7	142	2000	40	208	41	160	104	157	21	36	1650	50300
8	163	2070	33	166	26	98	108	175	14	22	1330	37700
9	155	1870	53	260	38	141	61	115	85	124	1130	28800
10	135	1510	62	298	67	223	92	189	49	66	624	13900
11	125	1360	55	256	60	195	96	187	12	19	231	4060
12	124	1380	60	283	47	152	51	88	23	42	113	1430
13	124	1420	59	288	42	135	30	47	25	43	103	1010
14	112	1240	42	218	23	75	20	28	47	96	101	856
15	100	1050	35	185	31	97	32	48	28	76	95	731
16	98	975	35	187	45	138	69	119	14	49	95	682
17	133	1270	40	206	52	174	87	132	8	37	93	633
18	94	870	18	89	54	184	42	57	31	209	98	630
19	105	977	36	174	54	178	24	29	27	266	93	570
20	134	1220	30	142	48	155	49	62	58	1310	97	574
21	118	1020	19	86	47	150	47	69	703	22000	96	551
22	109	911	27	118	50	157	14	23	211	4800	100	563
23	145	1170	36	155	48	130	18	34	88	1330	99	547
24	145	1130	36	153	54	102	31	64	94	1220	99	542
25	130	984	43	186	62	97	32	78	93	1000	91	475
26	133	975	57	249	46	67	47	140	81	787	72	357
27	154	1090	74	326	36	56	29	76	94	838	69	331
28	116	799	71	313	38	57	41	97	51	441	53	243
29	124	829	63	274	62	100	48	104	---	---	41	176
30	94	605	57	228	50	94	30	57	---	---	34	142
31	70	440	---	---	72	152	64	100	---	---	32	124
TOTAL	---	55335	---	7413	---	4656	---	3680	---	35353	---	182691
APRIL			MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	69	258	214	896	93	173	496	4260	59	94	111	97
2	56	203	176	737	51	106	388	2830	46	72	109	90
3	80	277	155	586	93	335	299	1910	51	80	111	83
4	105	350	72	244	295	1420	233	1370	111	169	109	91
5	52	166	42	131	255	1040	204	1080	95	139	129	139
6	42	131	29	88	193	599	177	836	151	347	127	145
7	36	106	163	524	161	448	152	636	155	335	146	185
8	84	236	256	942	154	674	136	532	121	212	188	291
9	54	147	212	865	2510	47000	166	704	98	149	232	402
10	110	301	169	686	2880	69300	241	1370	100	143	152	251
11	150	478	145	576	1360	27700	244	1590	100	131	159	221
12	228	720	121	460	829	15000	169	940	97	119	121	143
13	252	824	170	609	513	7900	145	748	88	100	127	130
14	72	248	105	359	306	3750	125	594	86	97	95	83
15	23	87	167	538	254	2610	104	441	83	93	109	86
16	184	758	188	595	188	1750	84	327	75	79	112	80
17	75	308	199	620	443	4370	64	226	73	78	102	72
18	15	53	81	243	472	4600	57	191	83	106	92	60
19	139	492	151	420	314	2640	58	188	106	160	93	57
20	203	750	54	143	214	1540	59	180	93	130	95	54
21	164	585	43	104	154	981	57	159	97	122	96	51
22	87	298	87	200	184	1100	62	160	88	100	109	61
23	73	240	88	194	796	6450	64	153	81	82	113	71
24	33	106	152	330	623	5600	61	138	82	73	92	53
25	501	1590	130	281	1200	18200	68	147	96	80	107	57
26	65	216	45	100	1170	16600	83	168	86	69	99	55
27	150	497	91	206	1010	13900	84	155	98	99	179	304
28	65	206	86	190	899	11900	73	129	106	119	240	552
29	64	197	45	97	788	9990	63	108	109	114	229	564
30	201	733	145	300	669	7290	65	108	114	116	238	623
31	---	---	189	376	---	---	66	107	112	107	---	---
TOTAL	---	11561	---	12640	---	284966	---	22485	---	3914	---	5151
YEAR 629845												

YEAR 629845

05474500 MISSISSIPPI RIVER AT KEOKUK, IA

LOCATION.--Lat 40°23'37", long 91°22'27", in SE1/4 SW1/4 sec.30, T.65 N., R.4 W., Lee County, Hydrologic Unit 07080104, near right bank in tailwater of dam and powerplant of Union Electric Co. at Keokuk, 0.2 mi upstream from bridge on U.S. Highway 136, 2.7 mi upstream from Des Moines River, and at mile 364.2 upstream from Ohio River.

DRAINAGE AREA.--119,000 mi², approximately.

PERIOD OF RECORD.--January 1878 to current year.

GAGE.--Water-stage recorder. Datum of gage is 477.41 ft above sea level (levels by U.S. Army Corps of Engineers). Jan. 1, 1878 to May 1913, nonrecording gage at Galland (formerly Nashville), 8 mi upstream; zero of gage was set to low-water mark of 1864, or 496.52 ft above sea level.

REMARKS.--Discharge computed from records of operation of turbines in powerplant and spillway gates in dam. Minor flow regulation caused by powerplant since 1913 and navigation dams. Records for May 1913 to September 1937 adjusted for change in contents in Keokuk Reservoir, those after September 1937 unadjusted.

COOPERATION.--Records provided by Union Electric Co.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 6, 1851, reached a stage of 21.0 ft, present site and datum, estimated as 13.5 ft at Galland, discharge, 360,000 ft³/s.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	147000	73000	65600	40600	45100	105000	104000	115000	69700	89000	73400	46600
2	134000	70300	63900	44000	45800	105000	102000	118000	69000	90000	74500	43900
3	123000	68200	58300	47600	45200	101000	102000	122000	67800	82100	66900	47700
4	116000	64500	63800	47500	44300	99700	98700	122000	66100	79800	65900	46800
5	113000	61300	58800	51000	43800	108000	104000	130000	61800	80200	54400	47000
6	105000	65200	56200	52700	45300	125000	93400	139000	61100	78600	55600	48200
7	102000	61900	57200	52100	44300	134000	92900	151000	59800	85500	57600	51000
8	97700	64700	60100	53100	43100	139000	92000	151000	62500	85600	57700	51400
9	95600	64000	63500	51900	41500	141000	91100	154000	65200	82700	55100	49600
10	94200	63000	66600	50300	39600	137000	88500	157000	72300	88300	51700	47200
11	92700	63000	66800	51400	40700	138000	89200	155000	66200	90100	51300	46100
12	93000	65200	68200	53200	43000	137000	93500	153000	62200	90500	51500	41700
13	89500	64800	68300	54000	44900	135000	94900	148000	61500	92600	54400	38200
14	89000	70500	62100	51900	43300	135000	92800	145000	61700	97900	58700	38900
15	85000	68400	67100	47600	44300	131000	92200	138000	70700	94800	67700	37200
16	83300	62200	70800	46800	44000	133000	96000	136000	74200	94200	70500	37600
17	85800	69500	68300	45400	45300	130000	93100	131000	68900	94500	72900	46700
18	87300	63400	64900	46600	51100	122000	90200	126000	71600	92200	70100	60400
19	87800	65000	64000	46400	60900	112000	96100	122000	73100	94200	70200	56500
20	84900	63700	67800	45400	97100	110000	93800	116000	66100	85900	73900	59600
21	85800	65500	66800	44500	123000	104000	99500	108000	65100	85300	72400	66200
22	84600	76900	67900	43700	144000	103000	95500	105000	64800	83800	76500	74100
23	80400	75300	70500	42800	141000	108000	102000	99400	72700	85700	67700	83300
24	79800	74900	69500	45000	142000	108000	102000	94700	76300	87200	64300	88000
25	79500	75700	57700	46200	136000	106000	101000	84200	87400	86600	57900	92800
26	77100	76600	38500	45600	128000	107000	107000	88500	105600	83100	59500	98100
27	75400	76000	26100	46300	122000	105000	109000	85900	102700	80100	56000	99400
28	75300	74300	30900	46400	110000	106000	111000	81700	101100	76500	57200	106800
29	76900	73900	33300	47200	---	104000	110000	78400	89500	75100	47800	105900
30	75400	69600	35200	45700	---	104000	119000	77200	89200	75100	48400	105500
31	74100	---	36500	47400	---	104000	---	70700	---	72600	50400	---
TOTAL	2870100	2050500	1815200	1480300	1998600	3636700	2956400	3702700	2185900	2659800	1912100	1862400
MEAN	92580	68350	58550	47750	71380	117300	98550	119400	72860	85800	61680	62080
MAX	147000	76900	70800	54000	144000	141000	119000	157000	106000	97900	76500	107000
MIN	74100	61300	26100	40600	39600	99700	88500	70700	59800	72600	47800	37200
MED	87300	66800	63900	46800	45200	108000	96000	122000	68900	85700	58700	50300
AC-FT	5693000	4067000	3600000	2936000	3964000	7213000	5864000	7344000	4336000	5276000	3793000	3694000
CFSM	.78	.57	.49	.40	.60	.99	.83	1.00	.61	.72	.52	.52
IN.	.90	.64	.57	.46	.62	1.14	.92	1.16	.68	.83	.60	.58

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1879 - 1994, BY WATER YEAR (WY)

	MEAN	MAX	(WY)	MIN	(WY)
1879	50890	221100	1882	16060	1934
1880	50690	211300	1882	16020	1934
1881	38310	125600	1983	13450	1934
1882	35710	101600	1973	14650	1940
1883	41560	95590	1984	15790	1899
1884	80510	185400	1973	21780	1934
1885	119100	250100	1993	32930	1895
1886	106400	260700	1888	27600	1934
1887	92320	227300	1892	17400	1934
1888	73230	385800	1993	16280	1988
1889	48850	223000	1993	13030	1936
1890	47820	163300	1993	15530	1976

SUMMARY STATISTICS	FOR 1993 CALENDAR YEAR	FOR 1994 WATER YEAR	WATER YEARS 1879 - 1994
ANNUAL TOTAL	58702500	29130700	
ANNUAL MEAN	160800	79810	65500
HIGHEST ANNUAL MEAN			162500
LOWEST ANNUAL MEAN			21540
HIGHEST DAILY MEAN	434000	157000	434000
LOWEST DAILY MEAN	26100	26100	5000
ANNUAL SEVEN-DAY MINIMUM	36900	34400	8270
INSTANTANEOUS PEAK FLOW			446000
INSTANTANEOUS PEAK STAGE			a27.58
ANNUAL RUNOFF (AC-FT)	116436400	57780000	47450000
ANNUAL RUNOFF (CFSM)	1.35	.67	.55
ANNUAL RUNOFF (INCHES)	18.35	9.11	7.48
10 PERCENT EXCEEDS	297000	122000	132000
50 PERCENT EXCEEDS	148000	74500	50000
90 PERCENT EXCEEDS	60000	45500	23000

a From floodmark.

05476500 DES MOINES RIVER AT ESTHERVILLE, IA

LOCATION.--Lat 43°23'51", long 94°50'38"; in SW1/4 SE1/4 sec.10, T.99 N., R.34 W., Emmet County, Hydrologic Unit 07100002, on right bank in city park, 1,200 ft downstream from bridge on State Highway 9 at Estherville, 0.1 mi upstream from School Creek, 2.3 mi upstream from Brown Creek, and at mile 404.2.

DRAINAGE AREA.--1,372 mi².

PERIOD OF RECORD.--October 1951 to current year. Prior to November 1951, monthly discharge only, published in WSP 1728.

REVISED RECORDS.--WSP 1438: Drainage area.

GAGE.--Water-stage encoder and concrete control. Datum of gage is 1,247.55 ft above sea level.

REMARKS.--Estimated daily discharges: Nov. 27 to Dec. 14, Dec. 21 to Mar. 18, June 9, and July 20. Records good except those for estimated daily discharges, which are poor. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data. U.S. Army Corps of Engineers data collection platform at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1020	447	e420	e310	e105	e500	918	2420	565	2630	463	612
2	974	527	e440	e320	e110	e540	877	2390	540	2450	424	583
3	905	511	e550	e315	e113	e700	833	2280	525	2270	392	577
4	861	492	e600	e310	e115	e1000	796	2210	501	2090	371	625
5	823	484	e580	e290	e110	e2000	771	2190	540	1970	347	667
6	783	460	e520	e280	e115	e2200	705	2210	799	1900	318	695
7	766	375	e500	e250	e120	e2300	706	2180	1070	1910	302	684
8	749	404	e500	e230	e120	e2200	719	2050	1200	1740	295	680
9	736	477	e510	e230	e115	e2050	707	1900	e1480	1580	296	656
10	730	453	e490	e240	e110	e2200	695	1760	1700	1440	759	618
11	784	457	e440	e230	e110	e2200	642	1620	1730	1310	1930	579
12	843	450	e410	e220	e105	e2100	704	1510	1760	1270	2420	540
13	846	474	e430	e210	e100	e2000	972	1380	2390	1290	2530	516
14	819	510	e450	e195	e98	e1900	1100	1290	2270	1280	2250	482
15	806	568	481	e180	e96	e2000	1160	1230	1960	1180	2180	462
16	784	663	499	e170	e97	e2050	1310	1150	1760	1170	2130	436
17	759	785	569	e180	e97	e2100	1470	1090	1710	1110	2000	408
18	738	811	558	e170	e100	e2200	1530	1050	2570	983	1850	382
19	725	802	564	e160	e140	2330	1610	995	3330	1050	1720	360
20	708	778	569	e180	e350	2120	1660	944	3270	e1210	1580	342
21	695	738	e400	e160	e820	1950	1630	898	3120	1330	1420	348
22	673	730	e320	e145	e860	1810	1510	850	2820	1170	1280	361
23	650	707	e300	e135	e700	1680	1410	816	3040	1020	1160	330
24	640	683	e280	e125	e600	1540	1340	798	3270	913	1090	297
25	631	644	e300	e120	e450	1400	1350	796	3000	828	996	289
26	612	539	e310	e115	e480	1300	1600	794	2950	755	929	276
27	592	e450	e260	e110	e520	1210	1880	764	2980	685	868	260
28	575	e340	e220	e108	e540	1140	2170	736	2990	609	813	244
29	575	e400	e210	e107	---	1060	2250	705	2950	568	754	233
30	540	e450	e240	e105	---	1000	2330	666	2820	530	703	225
31	493	---	e270	e100	---	952	---	615	---	495	663	---
TOTAL	22835	16609	13190	6000	7396	51732	37355	42287	61610	40736	35233	13767
MEAN	737	554	425	194	264	1669	1245	1364	2054	1314	1137	459
MAX	1020	811	600	320	860	2330	2330	2420	3330	2630	2530	695
MIN	493	340	210	100	96	500	642	615	501	495	295	225
AC-FT	45290	32940	26160	11900	14670	102600	74090	83880	122200	80800	69880	27310
CFSM	.54	.40	.31	.14	.19	1.22	.91	.99	1.50	.96	.83	.33
IN.	.62	.45	.36	.16	.20	1.40	1.01	1.15	1.67	1.10	.96	.37

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1952 - 1994, BY WATER YEAR (WY)

	MEAN	213	230	133	67.3	93.2	538	1312	788	789	659	283	200
MAX	1980	1920	741	354	703	2608	6314	3969	5082	6127	2330	1541	
(WY)	1987	1980	1980	1983	1983	1969	1993	1993	1993	1993	1993	1979	
MIN	.92	1.66	1.32	.46	.77	16.0	13.4	15.7	22.6	4.16	2.36	.74	
(WY)	1959	1959	1956	1977	1959	1959	1959	1968	1976	1976	1976	1958	

SUMMARY STATISTICS	FOR 1993 CALENDAR YEAR	FOR 1994 WATER YEAR	WATER YEARS 1952 - 1994
ANNUAL TOTAL	779430	348750	
ANNUAL MEAN	2135	955	443
HIGHEST ANNUAL MEAN			2194
LOWEST ANNUAL MEAN			26.5
HIGHEST DAILY MEAN	8490	Jun 30	3330 Jun 19
LOWEST DAILY MEAN	130	Mar 3	96 Feb 15
ANNUAL SEVEN-DAY MINIMUM	141	Feb 28	99 Feb 12
INSTANTANEOUS PEAK FLOW			3370 Jun 19
INSTANTANEOUS PEAK STAGE			a10.10 Mar 6
INSTANTANEOUS LOW FLOW			
ANNUAL RUNOFF (AC-FT)	1546000	691700	320600
ANNUAL RUNOFF (CFSM)	1.56	.70	.32
ANNUAL RUNOFF (INCHES)	21.13	9.46	4.38
10 PERCENT EXCEEDS	5730	2180	1150
50 PERCENT EXCEEDS	1020	705	109
90 PERCENT EXCEEDS	180	189	7.8

e Estimated.

a Ice affected.

05476750 DES MOINES RIVER AT HUMBOLDT, IA

LOCATION.--Lat 42°43'12", long 94°13'06", in SE1/4 SW1/4 sec.1, T.91 N., R.29 W., Humboldt County, Hydrologic Unit 07100002 on left bank 5 ft downstream from First Avenue in city of Humboldt, about 700 ft downstream from City of Humboldt water plant, 3.2 mi downstream from dam, 3.2 mi upstream from Indian Creek, 3.9 mi upstream from East Fork Des Moines River, and at mile 334.3 upstream from mouth of Des Moines River.

DRAINAGE AREA.--2,256 mi².

PERIOD OF RECORD.--October 1964 to current year. Prior to October 1970, published as West Fork Des Moines River at Humboldt.

GAGE.--Water-stage encoder. Datum of gage is 1,053.54 ft above sea level. Prior to Oct. 3, 1966, nonrecording gage at same site and datum.

REMARKS.--Estimated daily discharges: Dec. 21 to Jan. 23, Jan. 26-27, Jan. 30 to Feb. 14, July 27-29, and Aug. 1. Records good except those for estimated daily discharges, which are poor. Daily nonrecording gage readings available in Iowa City district office for period Mar. 7, 1940 to Sept. 30, 1964. Discharge not published for this period because of extreme regulation at dam 3.2 mi upstream from gage. Power generation and streamflow regulation discontinued August 1964. Low-flow discharges occasionally affected by minor regulation. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data. U.S. Army Corps of Engineers data collection platform at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 23, 1947, reached a stage of 12.2 ft, discharge, 11,000 ft³/s at present site and datum.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1850	942	612	e640	e270	779	1400	2660	835	5090	e1000	887
2	1760	894	718	e620	e280	805	1320	2770	794	4730	940	873
3	1680	889	755	e590	e270	1040	1260	2810	751	4380	882	847
4	1600	929	832	e540	e260	1610	1220	2810	730	4160	802	921
5	1510	888	863	e530	e270	2440	1180	2750	794	4040	743	980
6	1440	857	804	e540	e280	3250	1130	2750	1120	3680	688	978
7	1390	844	676	e520	e260	3320	1080	2830	1280	3360	634	970
8	1370	812	739	e350	e240	3810	1040	2890	1390	3090	585	952
9	1500	742	765	e400	e250	4220	1050	2850	1450	3010	548	930
10	1690	785	741	e450	e240	3910	1030	2700	1530	2750	546	899
11	1650	798	551	e490	e230	3770	1000	2500	1640	2460	576	855
12	1590	798	664	e430	e220	3140	1060	2300	1750	2250	1430	807
13	1570	839	823	e450	e225	2960	1320	2110	2380	2360	1940	779
14	1550	858	782	e370	e210	2980	1800	1970	3230	3300	2220	742
15	1510	863	844	e280	206	2980	2020	1830	3530	4690	2480	720
16	1470	893	935	e300	205	3010	2030	1720	3420	5070	2530	676
17	1430	942	988	e320	207	3040	2030	1590	3080	4440	2450	643
18	1390	1060	1140	e270	249	3140	2110	1490	2770	4060	2390	610
19	1330	1170	1250	e260	877	3270	2150	1420	2840	3590	2310	585
20	1300	1190	1240	e340	1220	3180	2150	1340	3010	3120	2170	555
21	1270	1190	e1130	e330	1390	2930	2180	1260	3440	2950	2020	536
22	1240	1160	e900	e350	1460	2680	2190	1190	4020	2910	1850	584
23	1220	1140	e600	e350	1360	2480	2130	1130	5180	2740	1680	698
24	1180	1150	e660	379	1190	2310	2020	1060	7970	2430	1550	794
25	1150	1170	e620	346	965	2140	1930	1090	9350	2090	1460	737
26	1120	945	e450	e320	878	1970	1870	1080	9110	1830	1400	664
27	1090	519	e320	e300	790	1850	1890	1050	8250	e1620	1320	626
28	1070	424	e240	316	760	1730	2080	1010	7240	e1450	1240	590
29	1050	483	e300	297	---	1650	2260	970	6400	e1280	1160	552
30	1020	518	e560	e280	---	1560	2480	947	5590	1100	1070	522
31	985	---	e620	e270	---	1470	---	893	---	1040	957	---
TOTAL	42975	26692	23122	12228	15262	79424	50410	57770	104874	95070	43571	22512
MEAN	1386	890	746	394	545	2562	1680	1864	3496	3067	1406	750
MAX	1850	1190	1250	640	1460	4220	2480	2890	9350	5090	2530	980
MIN	985	424	240	260	205	779	1000	893	730	1040	546	522
AC-FT	85240	52940	45860	24250	30270	157500	99990	114600	208000	188600	86420	44650
CFSM	.61	.39	.33	.17	.24	1.14	.74	.83	1.55	1.36	.62	.33
IN.	.71	.44	.38	.20	.25	1.31	.83	.95	1.73	1.57	.72	.37

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1965 - 1994, BY WATER YEAR (WY)

	MEAN	654	642	400	230	310	1293	2616	1818	1843	1589	685	559
MAX	3768	2656	1675	1078	1570	5110	8454	6261	9126	11540	4477	3097	
(WY)	1987	1980	1983	1983	1983	1983	1969	1993	1993	1993	1993	1979	
MIN	20.4	28.8	19.9	13.5	19.8	78.9	94.4	77.6	72.3	81.0	42.4	30.1	
(WY)	1977	1977	1977	1977	1977	1968	1968	1968	1977	1976	1976	1976	

SUMMARY STATISTICS FOR 1993 CALENDAR YEAR FOR 1994 WATER YEAR WATER YEARS 1965 - 1994

ANNUAL TOTAL	1458111	573910	
ANNUAL MEAN	3995	1572	1055
HIGHEST ANNUAL MEAN			4136
LOWEST ANNUAL MEAN			74.3
HIGHEST DAILY MEAN	17100	Jul 13	17800
LOWEST DAILY MEAN	240	Dec 28	13
ANNUAL SEVEN-DAY MINIMUM	303	Feb 20	215
INSTANTANEOUS PEAK FLOW			9570
INSTANTANEOUS PEAK STAGE			11.72
INSTANTANEOUS LOW FLOW			198
ANNUAL RUNOFF (AC-FT)	2892000	1138000	764200
ANNUAL RUNOFF (CFSM)	1.77	.70	.47
ANNUAL RUNOFF (INCHES)	24.04	9.46	6.35
10 PERCENT EXCEEDS	9670	3130	2780
50 PERCENT EXCEEDS	2190	1140	410
90 PERCENT EXCEEDS	376	350	62

e Estimated.

05479000 EAST FORK DES MOINES RIVER AT DAKOTA CITY, IA

LOCATION.--Lat 42 43'26", long 94 11'30", in NW1/4 SE1/4 sec.6, T.91 N., R.28 W., Humboldt County, Hydrologic Unit 07100003, on right bank 50 ft upstream from old mill dam, in city park at east edge of Dakota City, 500 ft upstream from bridge on county highway P56, 0.6 mi downstream from bridge on State Highway 3, 3.4 mi upstream from confluence with Des Moines River, and at mile 333.8 upstream from mouth of Des Moines River.

DRAINAGE AREA.--1,308 mi².

PERIOD OF RECORD.--March 1940 to current year. Prior to October 1954, published as "near Hardy".

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1508: 1944, 1945-47 (M).

GAGE.--Water-stage encoder. Datum of gage is 1,038.71 ft above sea level. Prior to Oct. 1, 1954, nonrecording gage at site 8 mi upstream at different datum.

REMARKS.--Estimated daily discharges: Nov. 27 to Dec. 1, Dec. 12, 13, and Dec. 21 to Mar. 10. Records good except those for estimated daily discharges, which are poor. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data. U.S. Army Corps of Engineers data collection platform at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of September 1938 reached a stage of 17.4 ft, discharge, about 22,000 ft³/s, site and datum in use during the period 1940-54.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1200	405	e310	e400	e100	e380	458	789	360	2780	1190	233
2	1110	397	349	e350	e110	e410	435	889	348	2340	959	225
3	1070	389	342	e280	e120	e450	412	950	331	1970	813	220
4	1030	382	294	e230	e110	e700	393	974	321	1730	713	262
5	975	367	288	e250	e130	e1500	379	976	333	1580	632	316
6	921	348	283	e270	e140	e2200	369	980	572	1400	569	303
7	866	337	281	e190	e120	e1800	357	1000	785	1290	522	274
8	848	335	323	e150	e100	e1700	348	1030	809	1260	476	244
9	922	325	277	e170	e110	e1800	343	1060	783	1200	428	211
10	905	313	269	e190	e98	e2100	327	1060	723	1140	413	194
11	882	329	183	e210	e100	2340	308	1040	653	1120	465	180
12	858	323	e170	e170	e105	2340	321	1000	597	1110	521	166
13	820	334	e250	e200	e105	2120	443	945	982	1130	594	157
14	777	331	289	e160	e110	1970	712	890	1620	1650	682	147
15	741	332	321	e140	e120	1850	1000	825	1690	2120	775	142
16	705	346	377	e120	e120	1720	1140	774	1680	2330	837	132
17	671	348	466	e150	e130	1640	1180	723	1690	2630	843	123
18	648	341	608	e130	e150	1530	1180	662	1700	3710	785	120
19	624	341	729	e120	e270	1350	1130	616	1790	5330	693	121
20	602	332	785	e150	e870	1200	1070	578	1580	5640	614	114
21	581	351	e600	e140	e820	1060	997	541	1370	5180	561	114
22	559	378	e350	e160	e600	956	914	513	1340	4510	512	139
23	542	370	e210	e150	e450	873	848	493	2050	3960	467	180
24	525	351	e230	e170	e360	793	798	486	4220	3510	424	425
25	513	338	e270	e150	e320	720	751	479	5690	3130	391	651
26	494	290	e200	e130	e340	667	711	469	4660	2770	368	738
27	475	e210	e140	e110	e350	619	661	455	4130	2400	333	748
28	471	e190	e110	e120	e360	581	644	443	4070	2040	308	689
29	453	e220	e150	e110	---	543	677	428	3740	1750	284	613
30	432	e260	e220	e105	---	507	708	410	3260	1490	263	546
31	419	---	e300	e100	---	476	---	387	---	1310	246	---
TOTAL	22639	9913	9974	5475	6818	38895	20014	22865	53877	75510	17681	8727
MEAN	730	330	322	177	243	1255	667	738	1796	2436	570	291
MAX	1200	405	785	400	870	2340	1180	1060	5690	5640	1190	748
MIN	419	190	110	100	98	380	308	387	321	1110	246	114
AC-FT	44900	19660	19780	10860	13520	77150	39700	45350	106900	149800	35070	17310
CFSM	.56	.25	.25	.14	.19	.96	.51	.56	1.37	1.86	.44	.22
IN.	.64	.28	.28	.16	.19	1.11	.57	.65	1.53	2.15	.50	.25

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1940 - 1994, BY WATER YEAR (WY)

	MEAN	314	316	222	128	229	888	1352	974	1207	843	395	342
MAX	1713	2042	1340	836	1602	4033	7004	5031	5908	6777	4114	2666	
(WY)	1983	1942	1992	1992	1984	1983	1993	1991	1993	1993	1979	1979	
MIN	12.0	14.2	8.45	5.12	10.4	39.4	58.8	52.2	36.3	13.7	15.5	7.40	
(WY)	1959	1959	1977	1977	1959	1968	1977	1940	1977	1977	1976	1976	

SUMMARY STATISTICS	FOR 1993 CALENDAR YEAR	FOR 1994 WATER YEAR	WATER YEARS 1940 - 1994
ANNUAL TOTAL	937446	292388	
ANNUAL MEAN	2568	801	610
HIGHEST ANNUAL MEAN			2744
LOWEST ANNUAL MEAN			29.7
HIGHEST DAILY MEAN	15600	5690	17800
LOWEST DAILY MEAN	110	98	4.8
ANNUAL SEVEN-DAY MINIMUM	139	104	4.8
INSTANTANEOUS PEAK FLOW		5900	178000
INSTANTANEOUS PEAK STAGE		15.80	24.02
ANNUAL RUNOFF (AC-FT)	1859000	580000	441700
ANNUAL RUNOFF (CFSM)	1.96	.61	.47
ANNUAL RUNOFF (INCHES)	26.66	8.32	6.33
10 PERCENT EXCEEDS	6790	1740	1630
50 PERCENT EXCEEDS	1430	476	200
90 PERCENT EXCEEDS	200	140	22

e Estimated.

05480500 DES MOINES RIVER AT FORT DODGE, IA

LOCATION.--Lat 42°30'22", long 94°12'04", in NW1/4 SW1/4 sec.19, T.89 N., R.28 W., Webster County, Hydrologic Unit 07100004, on right bank 400 ft upstream from Soldier Creek, 1,800 ft downstream from Illinois Central Railroad bridge in Fort Dodge, 2,000 ft downstream from Lizard Creek, and at mile 314.6.

DRAINAGE AREA.--4,190 mi².

PERIOD OF RECORD.--April 1905 to July 1906 (no winter records), October 1913 to September 1927 (published as "at Kalo"), October 1946 to current year. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1308: 1924, 1925 (M).

GAGE.--Water-stage encoder. Datum of gage is 969.38 ft above sea level. See WSP 1728 for history of changes prior to Dec. 8, 1949.

REMARKS.--Estimated daily discharges: Nov. 27 to Dec. 2, Dec. 12, Dec. 22 to Mar. 10. Records good except those for estimated daily discharges, which are poor. Occasional minor regulation caused by dam 0.8 mi upstream from gage. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data. U.S. Army Corps of Engineers rain-gage and data collection platform and City of Fort Dodge gage-height telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3560	1630	e1000	e1700	e480	e1400	2270	3670	1620	8300	2850	1310
2	3370	1570	e1200	e1400	e500	e1500	2180	3870	1560	7440	2320	1270
3	3230	1510	1290	e1200	e520	e1600	2090	3970	1490	6700	2070	1220
4	3130	1520	1330	e1100	e470	e2500	2020	4020	1430	6240	1890	1600
5	3000	1490	1340	e1200	e540	e5400	1970	4020	1500	6020	1720	1810
6	2900	1400	1270	e1300	e560	e6400	1900	4100	1990	5460	1600	1660
7	2800	1330	1150	e1000	e500	e6200	1850	4310	2870	5210	1490	1540
8	2750	1340	1230	e660	e440	e5800	1790	4480	2870	5010	1380	1470
9	2960	1250	1250	e680	e450	e6000	1790	4470	2860	4750	1280	1360
10	3220	1210	1200	e840	e420	e6200	1760	4300	2850	4420	1220	1300
11	3200	1270	1050	e960	e420	6740	1710	4070	2890	4090	1250	1230
12	3100	1260	e1000	e760	e430	6020	1800	3840	2950	3860	2260	1150
13	3010	1300	1370	e820	e440	5540	2210	3600	4960	3860	3460	1100
14	2930	1310	1280	e680	e440	5390	3020	3410	7340	5050	3540	1030
15	2860	1300	1290	e580	e460	5220	3510	3220	7420	7050	3600	991
16	2770	1290	1450	e500	e460	5050	3650	3040	6660	7680	3650	941
17	2690	1350	1620	e580	e500	4930	3660	2890	6070	7380	3550	894
18	2590	1440	1920	e500	e660	4890	3680	2750	6540	7620	3420	849
19	2490	1540	2230	e470	e1200	4840	3680	2620	5910	8690	3270	814
20	2390	1550	2310	e620	e3300	4660	3600	2490	5710	8710	3080	776
21	2320	1550	2080	e600	e3000	4310	3540	2380	5780	8140	2880	752
22	2240	1550	e1800	e660	e2200	3980	3470	2290	6180	7500	2690	821
23	2180	1520	e1100	e640	e1700	3720	3360	2190	8520	6830	2450	996
24	2120	1500	e1200	e700	e1400	3480	3230	2100	14500	6090	2250	1360
25	2050	1500	e1300	e640	e1200	3250	3110	2050	18400	5400	2080	1680
26	1970	1160	e800	e580	e1250	3070	3000	2040	16300	4820	2000	1670
27	1920	e840	e620	e540	e1300	2920	2930	1980	14100	4310	1830	1630
28	1880	e740	e410	e560	e1350	2790	3020	1910	12500	3820	1700	1550
29	1820	e810	e600	e540	---	2640	3220	1850	11000	3390	1590	1420
30	1740	e880	e900	e520	---	2490	3440	1800	9460	3040	1500	1300
31	1700	---	e1500	e480	---	2360	---	1710	---	2770	1390	---
TOTAL	80890	39910	40090	24010	26590	131290	82460	95440	194230	179650	71260	37494
MEAN	2609	1330	1293	775	950	4235	2749	3079	6474	5795	2299	1250
MAX	3560	1630	2310	1700	3300	6740	3680	4480	18400	8710	3650	1810
MIN	1700	740	410	470	420	1400	1710	1430	1430	2770	1220	752
AC-FT	160400	79160	79520	47620	52740	260400	163600	189300	385300	356300	141300	74370
CFSM	.62	.32	.31	.18	.23	1.01	.66	.73	1.55	1.38	.55	.30
IN.	.72	.35	.36	.21	.24	1.17	.73	.85	1.72	1.59	.63	.33

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1905 - 1994, BY WATER YEAR (WY)

	MEAN	888	829	571	373	711	2552	3917	2787	3148	2286	1051	902
MAX	6120	4447	3698	2257	4352	11070	17530	10540	16150	21530	9264	6206	
(WY)	1987	1983	1983	1983	1984	1983	1993	1991	1993	1993	1993	1979	
MIN	32.8	54.5	34.7	24.0	35.5	141	238	149	138	75.2	69.0	49.9	
(WY)	1957	1959	1977	1977	1959	1968	1968	1926	1977	1926	1976	1976	

SUMMARY STATISTICS FOR 1993 CALENDAR YEAR FOR 1994 WATER YEAR WATER YEARS 1905 - 1994

ANNUAL TOTAL	2763700		1003314						
ANNUAL MEAN	7572		2749			1670			
HIGHEST ANNUAL MEAN						7882			1993
LOWEST ANNUAL MEAN						143			1977
HIGHEST DAILY MEAN	30200	Jul 14	18400	Jun 25	35100			Apr 8	1965
LOWEST DAILY MEAN	410	Dec 28	410	Dec 28	14			Nov 3	1955
ANNUAL SEVEN-DAY MINIMUM	563	Feb 20	434	Feb 8	23			Jan 13	1977
INSTANTANEOUS PEAK FLOW			18800	Jun 25	35600			Apr 8	1965
INSTANTANEOUS PEAK STAGE			13.65	Mar 5	19.62			Jun 23	1947
INSTANTANEOUS LOW FLOW					14			Nov 3	1955
ANNUAL RUNOFF (AC-FT)	5482000		1990000		1210000				
ANNUAL RUNOFF (CFSM)	1.81		.66		.40				
ANNUAL RUNOFF (INCHES)	24.54		8.91		5.42				
10 PERCENT EXCEEDS	18700		5840		4390				
50 PERCENT EXCEEDS	4230		1970		600				
90 PERCENT EXCEEDS	740		660		100				

e Estimated.

05481000 BOONE RIVER NEAR WEBSTER CITY, IA

LOCATION.--Lat 42°26'01", long 93°48'12", in NW1/4 SE1/4 sec. 18, T.88 N., R.25 W., Hamilton County, Hydrologic Unit 07100005, on right bank 100 ft upstream from bridge on State Highway 17, 2.5 mi south of Webster City, and 3.2 mi downstream from Brewers Creek.

DRAINAGE AREA.--844 mi².

PERIOD OF RECORD.--March 1940 to current year.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1308: 1940 (M), WSP 1708: 1956.

GAGE.--Water-stage encoder. Datum of gage is 989.57 ft above sea level. Prior to June 26, 1940, nonrecording gage at same site and datum.

REMARKS.--Estimated daily discharges: Nov. 28 to Dec. 1, Dec. 23 to Mar. 10, July 24-25, and Aug. 14-16. Records good except those for estimated daily discharges, which are poor. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data. U.S. Army Corps of Engineers rain-gage and gage-height satellite data collection platform at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since 1896, 19.1 ft about June 10, 1918, from floodmarks, from information by local resident, discharge, 21,500 ft³/s. Flood of June 18, 1932, reached a stage of 16.0 ft, discharge, 15,000 ft³/s.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	440	242	e160	e150	e46	e170	139	346	243	1470	277	57
2	409	235	173	e120	e49	e190	138	376	234	1150	249	55
3	385	231	171	e100	e54	e210	129	373	205	935	230	57
4	366	231	157	e78	e52	e300	124	363	184	831	224	146
5	344	226	153	e84	e54	e600	130	373	199	1210	195	308
6	338	211	146	e90	e52	e860	122	456	226	1360	169	344
7	330	197	123	e68	e50	e820	119	571	465	1190	152	245
8	349	194	144	e60	e47	e780	126	702	495	1240	142	183
9	482	195	157	e64	e45	e820	130	754	457	1430	132	145
10	600	194	145	e68	e44	e840	123	706	397	1130	148	119
11	682	185	83	e76	e44	832	115	625	338	906	143	101
12	630	196	131	e66	e46	784	141	567	301	793	268	88
13	568	216	164	e70	e49	716	273	523	1250	787	488	81
14	518	207	161	e64	e48	676	554	509	1530	945	e413	73
15	491	205	159	e58	e49	688	764	490	1400	1280	e372	69
16	467	190	156	e52	e52	643	813	448	1120	1420	e308	69
17	439	185	196	e58	e54	544	812	399	832	1460	246	66
18	416	182	242	e54	e68	469	749	363	703	1430	204	60
19	398	185	302	e52	e120	414	665	338	636	1500	172	58
20	381	179	344	e56	e270	377	575	318	634	1700	146	54
21	369	178	326	e52	e240	352	510	301	647	1560	126	82
22	355	174	207	e62	e200	318	467	301	681	1260	114	186
23	342	171	e150	e60	e180	293	429	286	1680	966	103	233
24	332	170	e110	e64	e160	261	407	293	3520	e772	93	260
25	326	187	e120	e58	e130	228	396	302	4270	e617	89	399
26	315	135	e80	e54	e140	207	372	340	3920	509	109	557
27	302	124	e64	e50	e150	198	329	342	3990	436	104	514
28	298	e120	e56	e52	e160	189	306	341	3480	376	95	433
29	286	e130	e64	e50	---	171	301	318	2650	329	76	368
30	272	e140	e80	e49	---	154	308	304	1930	289	66	324
31	253	---	e110	e47	---	143	---	271	---	259	62	---
TOTAL	12483	5615	4834	2086	2653	14247	10566	12999	38617	31540	5715	5734
MEAN	403	187	156	67.3	94.7	460	352	419	1287	1017	184	191
MAX	682	242	344	150	270	860	813	754	4270	1700	488	557
MIN	253	120	56	47	44	143	115	271	184	259	62	54
AC-FT	24760	11140	9590	4140	5260	28260	20960	25780	76600	62560	11340	11370
CFSM	.48	.22	.18	.08	.11	.54	.42	.50	1.53	1.21	.22	.23
IN.	.55	.25	.21	.09	.12	.63	.47	.57	1.70	1.39	.25	.25

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1941 - 1994, BY WATER YEAR (WY)

	MEAN	233	216	146	100	245	798	885	756	1008	580	260	226
MAX	1771	1395	1181	568	1847	2826	4307	4315	4239	4715	2942	2501	
(WY)	1987	1993	1983	1983	1984	1973	1965	1991	1984	1993	1993	1965	
MIN	6.66	11.0	4.62	.32	3.60	32.5	33.7	46.0	14.1	8.66	9.79	6.48	
(WY)	1950	1950	1977	1977	1950	1968	1957	1968	1977	1977	1949	1976	

SUMMARY STATISTICS	FOR 1993 CALENDAR YEAR	FOR 1994 WATER YEAR	WATER YEARS 1941 - 1994
ANNUAL TOTAL	631580	147089	
ANNUAL MEAN	1730	403	455
HIGHEST ANNUAL MEAN			1861
LOWEST ANNUAL MEAN			36.1
HIGHEST DAILY MEAN	12500	4270	19500
LOWEST DAILY MEAN	56	44	.00
ANNUAL SEVEN-DAY MINIMUM	82	46	.01
INSTANTANEOUS PEAK FLOW		4380	20300
INSTANTANEOUS PEAK STAGE		a8.26	18.55
INSTANTANEOUS LOW FLOW			.00
ANNUAL RUNOFF (AC-FT)	1253000	291800	329400
ANNUAL RUNOFF (CFSM)	2.05	.48	.54
ANNUAL RUNOFF (INCHES)	27.84	6.48	7.32
10 PERCENT EXCEEDS	5200	831	1140
50 PERCENT EXCEEDS	634	235	133
90 PERCENT EXCEEDS	138	58	15

e Estimated.

a Ice affected.

05481300 DES MOINES RIVER NEAR STRATFORD, IA

LOCATION.--Lat 42°15'04", long 93°59'52", in NW1/4 NE1/4 sec.21, T.86 N., R.27 W., Webster County, Hydrologic Unit 07100004, on right bank 6 ft downstream from bridge on State Highway 175, 0.1 mi downstream from Skillet Creek, 4.0 mi southwest of Stratford, 7.3 mi downstream from Boone River and at mile 276.7.

DRAINAGE AREA.--5,452 mi².

PERIOD OF RECORD.--April 1920 to current year in reports of U.S. Geological Survey. Published as "near Boone" 1920-67. Monthly discharge only for some periods, published in WSP 1308. December 1904 to April 1920 (fragmentary gage heights during high-water periods only) in reports of U.S. Weather Bureau.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1508: 1925-27, 1934. WSP 1708: 1955.

GAGE.--Water-stage encoder. Datum of gage is 894.00 ft above sea level. Prior to May 1, 1920, nonrecording gage 16.6 mi downstream at datum 23.49 ft lower. Oct. 9, 1924, to Jan. 10, 1933, nonrecording gage 17.6 mi downstream at datum 28.53 ft lower. Jan. 11, 1933, to Sept. 30, 1934, nonrecording gage 17.9 mi downstream at datum 22.25 ft lower. Oct. 1, 1934 to Feb. 6, 1935, nonrecording gage and Feb. 7, 1935 to Sept. 30, 1967, water-stage recorder 17.9 mi downstream at datum 21.84 ft lower.

REMARKS.--Estimated daily discharges: Nov. 27 to Dec. 3 and Dec. 21 to Mar. 11. Records good except those for estimated daily discharges, which are poor. Occasional minor regulation caused by dam at Fort Dodge. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data. U.S. Army Corps of Engineers rain-gage and satellite data collection platform at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of May 30, 1903, reached a stage of 25.4 ft, from high-water mark, site and datum then in use, discharge, 43,600 ft³/s.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4580	2270	e1500	e2000	e660	e1600	2660	4230	2010	11400	3210	1360
2	4320	2200	e1700	e1700	e700	e1700	2560	4470	1940	9910	2890	1290
3	4080	2150	e1850	e1500	e760	e1900	2470	4650	1860	8820	2490	1270
4	3940	2120	1990	e1300	e720	e3000	2380	4730	1740	8120	2310	1410
5	3760	2120	2000	e1400	e780	e6000	2330	4750	1760	7740	2050	2110
6	3590	2040	1980	e1500	e760	e8800	2240	4860	1930	7790	1850	2070
7	3460	1970	1810	e1300	e700	e8200	2170	5140	3040	7270	1720	1840
8	3350	1940	1790	e970	e640	e7400	2120	5510	3750	7030	1580	1660
9	3710	1910	1860	e1000	e580	e7600	2090	5680	3610	6870	1460	1540
10	4050	1830	1850	e1100	e540	e7800	2070	5540	3490	6350	1390	1430
11	4370	1840	1690	e1200	e540	e7800	2010	5240	3430	5700	1340	1360
12	4200	1870	1410	e1000	e560	7860	2040	4920	3430	5210	1630	1280
13	3990	1920	1790	e1100	e580	7190	2310	4600	5130	4960	3270	1210
14	3820	1940	1990	e1000	e560	6880	3090	4320	8500	5340	3950	1150
15	3730	1950	1900	e900	e580	6710	4350	4120	9580	7540	3870	1100
16	3580	1920	1960	e750	e600	6440	4760	3830	8720	9090	3920	1070
17	3450	1940	2150	e830	e600	6170	4880	3580	7830	9270	3840	1010
18	3330	1990	2370	e800	e800	5960	4840	3350	8620	9000	3670	963
19	3220	2080	2730	e800	e2200	5820	4800	3160	8110	9860	3480	923
20	3100	2160	2980	e860	e3500	5660	4660	2990	7700	10700	3260	898
21	3030	2150	e2700	e810	e3100	5320	4520	2860	7420	10400	3010	872
22	2930	2150	e2200	e880	e2600	4880	4390	2750	7600	9520	2780	937
23	2840	2130	e1500	e850	e2300	4550	4240	2780	9950	8580	2540	1120
24	2790	2100	e1600	e930	e1800	4240	4080	2750	14500	7650	2330	1290
25	2730	2140	e1700	e860	e1300	3940	3920	2550	19600	6740	2160	1770
26	2670	2020	e1200	e780	e1400	3680	3750	2540	21300	6030	2110	2080
27	2590	e1500	e840	e730	e1450	3460	3560	2470	19400	5360	1970	2140
28	2530	e1100	e700	e780	e1500	3290	3520	2390	17500	4740	1870	2010
29	2490	e1150	e960	e760	---	3100	3750	2310	15700	4170	1670	1840
30	2390	e1250	e1400	e720	---	2930	3930	2240	13400	3660	1560	1680
31	2320	---	e1800	e680	---	2770	---	2130	---	3240	1450	---
TOTAL	104940	57850	55900	31790	32810	162650	100490	117440	242550	228060	76630	42683
MEAN	3385	1928	1803	1025	1172	5247	3350	3788	8085	7357	2472	1423
MAX	4580	2270	2980	2000	3500	8800	4880	5680	21300	11400	3950	2140
MIN	2320	1100	700	680	540	1600	2010	2130	1740	3240	1340	872
AC-FT	208100	114700	110900	63060	65080	322600	199300	232900	481100	452400	152000	84660
CFSM	.62	.35	.33	.19	.21	.96	.61	.69	1.48	1.35	.45	.26
IN.	.72	.39	.38	.22	.22	1.11	.69	.80	1.65	1.56	.52	.29

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1920 - 1994, BY WATER YEAR (WY)

	MEAN	1133	1094	767	568	990	3445	4712	3601	4162	2871	1370	1298
MAX	8763	5745	5267	4781	7061	13920	22020	16010	21310	27250	13500	9194	
(WY)	1987	1993	1983	1932	1984	1983	1993	1991	1993	1993	1993	1938	
MIN	47.2	82.5	44.4	18.7	42.3	132	236	131	177	96.1	81.4	67.2	
(WY)	1957	1959	1977	1977	1959	1934	1931	1934	1977	1926	1931	1955	

SUMMARY STATISTICS

	FOR 1993 CALENDAR YEAR	FOR 1994 WATER YEAR	WATER YEARS 1920 - 1994
ANNUAL TOTAL	3661300	1253793	
ANNUAL MEAN	10030	3435	2161
HIGHEST ANNUAL MEAN			10400
LOWEST ANNUAL MEAN			213
HIGHEST DAILY MEAN	41400	Apr 2	55900
LOWEST DAILY MEAN	700	Dec 28	13
ANNUAL SEVEN-DAY MINIMUM	873	Feb 4	14
INSTANTANEOUS PEAK FLOW			57400
INSTANTANEOUS PEAK STAGE			29.70
ANNUAL RUNOFF (AC-FT)	7262000	2487000	1565000
ANNUAL RUNOFF (CFSM)	1.84	.63	.40
ANNUAL RUNOFF (INCHES)	24.98	8.55	5.38
10 PERCENT EXCEEDS	24800	7600	5570
50 PERCENT EXCEEDS	5530	2370	835
90 PERCENT EXCEEDS	1000	891	127

e Estimated.

05481630 SAYLORVILLE LAKE NEAR SAYLORVILLE, IA

LOCATION.--Lat 41°42'13", long 93°41'21", in SE 1/4 SW 1/4 sec.30, T.80 N., R.24 W., Polk County, Hydrologic Unit 07100004, in control tower of Saylorville Dam, 3.2 mi northwest of Saylorville, 4.2 mi upstream from Beaver Creek, and at mile 213.7.

DRAINAGE AREA.--5,823 mi².

PERIOD OF RECORD.--April 1977 to current year.

GAGE.--Water-stage recorder. Datum of gage is at sea level (levels by U.S. Army Corps of Engineers).

REMARKS.--Reservoir is formed by earthfill dam completed in 1976. Storage began in April 1977. Release controlled at intake structure to forechamber of 22 ft diameter concrete conduit through dam. Ungated chute spillway 430 ft in length at right end of dam at elevation 884 ft, contents, 570,000 acre-ft. Conservation pool at elevation 833 ft, contents, 74,000 acre-ft, surface area, 5,400 acres. Flood pool elevation at 890 ft, contents, 676,000 acre-ft, surface area, 16,700 acres. Reservoir is used for flood control, low-flow augmentation, conservation and recreation. Storage tables for water years 1985-1986 published as day second- feet instead of acre-feet storage.

COOPERATION.--Records provided by U.S. Army Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily contents, 717,000 acre-ft July 13, 1993; maximum elevation, 892.00 ft July 14, 1993; minimum daily contents, 45,000 acre-ft May 15, 1985; minimum elevation, 832.61 ft Jan. 19, 1979.

EXTREMES FOR CURRENT YEAR.--Maximum daily contents, 200,000 acre-ft July 10; maximum elevation, 851.73 ft July 11; minimum daily contents, 87,400 acre-ft Apr. 3; minimum elevation, 836.04 ft Apr. 4.

Capacity table (elevation, in feet, and contents, in acre-feet)

810	2,140	840	112,000	870	380,000
815	7,460	845	147,000	875	440,000
820	18,500	850	186,000	880	507,000
825	34,300	855	229,000	885	582,000
830	55,600	860	274,000	890	672,000
835	80,500	865	324,000	895	782,000

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	130000	106000	102000	90000	89000	89300	88200	88100	90500	185000	89300	89800
2	125000	103000	103000	90000	88900	89000	87900	87800	92800	183000	89000	89500
3	111000	103000	103000	89900	89000	89000	87400	87900	92100	178000	88900	89000
4	105000	104000	102000	89400	89200	89500	88500	88500	90600	172000	88800	89800
5	104000	104000	102000	89000	89400	92900	89100	88700	90500	163000	88500	90700
6	103000	102000	100000	88900	89700	104000	89800	89100	89900	159000	88000	92000
7	102000	102000	101000	88700	89600	108000	89600	88700	90600	168000	87800	93100
8	102000	101000	102000	88600	89400	107000	89900	88700	93200	180000	88300	95800
9	98200	101000	102000	88300	89200	100000	89900	88500	93100	192000	88300	96500
10	96100	101000	101000	88400	89000	96200	89600	88400	92200	200000	89100	96600
11	97200	101000	99600	88800	88700	93200	88900	88200	90600	197000	88800	96700
12	106000	100000	99200	89200	88400	91200	89500	88200	89900	187000	88900	97800
13	114000	101000	101000	89600	88100	89000	89000	88400	89400	175000	88900	98300
14	117000	101000	101000	89600	88000	88500	88800	88900	91200	162000	89500	99200
15	116000	100000	99100	89400	88100	88700	88900	88400	94000	152000	89700	99800
16	115000	100000	97100	89400	87800	88300	90200	88200	94400	146000	89600	101000
17	108000	101000	95600	89200	88400	88500	90500	87800	92000	141000	89500	101000
18	104000	101000	94300	88900	89300	88900	90400	87800	89300	135000	89100	101000
19	101000	102000	92900	89000	92100	88700	89400	88400	90200	130000	89300	101000
20	101000	101000	91800	89100	96200	88800	89100	89000	89800	128000	89100	101000
21	101000	101000	91000	89100	100000	88400	89100	89200	88900	126000	88600	101000
22	101000	100000	88700	89200	99100	88000	89000	89300	88100	122000	88600	101000
23	101000	101000	88200	89200	94400	88500	88700	90400	88800	116000	88800	101000
24	101000	100000	88700	89300	90300	87900	88500	90100	91300	108000	88700	101000
25	101000	100000	88200	89400	89000	87800	88000	89400	100000	99900	88700	102000
26	101000	100000	88000	89600	88500	88200	88000	88500	122000	93000	88600	101000
27	102000	101000	88500	89500	88800	88200	88000	88300	144000	89400	88700	101000
28	109000	99800	89400	89400	89100	87900	88600	88300	162000	89300	88800	101000
29	114000	99600	89700	89400	---	88100	88400	89000	175000	90100	89100	101000
30	111000	100000	89600	89300	---	88300	88500	89600	182000	89800	90400	101000
31	108000	---	90000	89100	---	88400	---	89700	---	89600	90200	---
MEAN	107000	101000	95800	89200	90200	91200	89000	88700	102000	143000	89000	97700
MAX	130000	106000	103000	90000	100000	108000	90500	90400	182000	200000	90400	102000
MIN	96100	99600	88000	88300	87800	87800	87400	87800	88100	89300	87800	89000

05481650 DES MOINES RIVER NEAR SAYLORVILLE, IA

LOCATION.--Lat 41°40'50", long 93°40'05", near center of sec.5, T.79 N., R.24 W., Polk County, Hydrologic Unit 07100004, on left bank 5 ft upstream of Fisher Bridge on county highway R6F, 2.0 mi west of Saylorville, 2.1 mi downstream from Rock Creek, 2.3 mi downstream from Saylorville Dam, 2.3 mi upstream from Beaver Creek, and at mile 211.4.

DRAINAGE AREA.--5,841 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1961 to current year.

GAGE.--Water-stage encoder. Datum of gage is 787.42 ft above NGVD (levels by U. S. Army Corps of Engineers). Prior to Aug. 6, 1970, nonrecording gage at same site and datum.

REMARKS.--Estimated daily discharges: Nov. 2-4, Jan. 2-19, Jan. 25 to Feb. 1, and Feb. 7-12. Records good except those for estimated daily discharges, which are poor. Flow regulated by Saylorville Lake (Station 05481630) 2.3 mi upstream since Apr. 12, 1977. U.S. Army Corps of Engineers satellite data collection platform at station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 47,400 ft³/s Apr. 10, 1965, gage height, 24.02 ft; minimum daily discharge, 13 ft³/s. Jan. 25, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1893, 24.5 ft June 24, 1954, from floodmarks, discharge, 60,000 ft³/s.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9380	3380	1300	1840	e880	2280	2890	3960	1850	11600	3340	1660
2	9180	e2540	1590	e1950	936	2290	2880	4190	938	11600	3180	1560
3	8730	e1800	2000	e1900	841	2290	2780	4260	2220	11700	2830	1420
4	7090	e1920	2220	e1800	770	2850	2310	4250	2380	11600	2520	1450
5	4890	2210	2350	e1800	765	4210	2040	4380	2180	11500	2260	1690
6	4270	2280	2320	e1700	762	6290	2050	4550	2120	10500	2170	1610
7	4250	2300	1730	e1500	e740	9460	2190	4780	2410	4040	1950	1150
8	4220	2210	1320	e1400	e780	11200	2300	5040	3090	939	1590	1160
9	4750	2040	1770	e1300	e760	11400	2280	5320	4110	1350	1460	1400
10	5160	2040	2020	e1350	e780	11000	2280	5420	4420	1970	1460	1540
11	4230	2040	2020	e1200	e840	10500	2280	5260	4380	6480	1450	1280
12	1450	2030	1600	e1250	e820	10200	2280	4880	3980	9370	1600	1110
13	628	2040	1200	e1200	880	8880	2440	4430	4030	10700	2100	1030
14	2550	2040	1940	e1150	853	7340	2710	4230	5120	10500	2920	1130
15	4630	2140	2420	e1100	819	6740	3370	4230	7200	10300	3560	1070
16	5340	1960	2570	e1200	758	6750	3770	3940	8560	10800	3750	919
17	5520	1790	2570	e1050	724	6310	4440	3710	9120	11500	3810	1000
18	5460	1800	2630	e960	1170	5990	4880	3380	8790	11700	3810	1060
19	4770	2030	2860	e1000	1640	5990	5000	2900	8070	11600	3510	1060
20	3570	2190	2990	1060	2120	5850	4730	2710	7740	11500	3280	1060
21	3080	2210	3130	1050	4040	5740	4500	2720	7760	11600	3290	1070
22	3070	2200	3080	1030	6180	5450	4370	2720	7470	11600	2870	1070
23	3070	2180	2380	1030	7110	4910	4300	2790	8110	11500	2600	1080
24	3060	2180	1360	1030	6030	4510	4200	2980	9750	11300	2610	1200
25	3050	2200	1270	e960	4020	4210	4110	3060	11300	10800	2300	1620
26	2790	1990	1080	e920	3160	3860	3870	2840	12000	9360	2230	1940
27	1650	1620	988	e960	2560	3670	3460	2570	12400	7490	2120	2060
28	1020	1620	1190	e940	2290	3510	3280	2340	12200	5250	1830	2050
29	1320	1490	1500	e900	---	3240	3400	2100	11700	3940	1650	1980
30	2590	1370	1650	e880	---	2990	3700	2010	11600	3910	1670	1840
31	3370	---	1590	e860	---	2900	---	2100	---	3570	1650	---
TOTAL	128138	61840	60638	38270	54028	182810	99090	114050	196998	271569	77370	41269
MEAN	4133	2061	1956	1235	1930	5897	3303	3679	6567	8760	2496	1376
MAX	9380	3380	3130	1950	7110	11400	5000	5420	12400	11700	3810	2060
MIN	628	1370	988	860	724	2280	2040	2010	938	939	1450	919
AC-FT	254200	122700	120300	75910	107200	362600	196500	226200	390700	538700	153500	81860

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1978 - 1994, BY WATER YEAR (WY)

	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
MEAN	2070	2314	1892	1051	1607	4666	6692	6471	7080	6780	3543	2630					
MAX	7161	6210	5345	3605	6591	13800	17790	18170	19540	32820	15440	13450					
(WY)	1987	1987	1983	1983	1984	1983	1993	1993	1991	1993	1993	1993					
MIN	194	190	205	190	208	362	623	1305	877	254	212	225					
(WY)	1990	1990	1990	1991	1978	1981	1989	1989	1988	1988	1989	1988					

SUMMARY STATISTICS	FOR 1993 CALENDAR YEAR	FOR 1994 WATER YEAR	WATER YEARS 1978 - 1994a
ANNUAL TOTAL	3999798	1326070	
ANNUAL MEAN	10960	3633	3908
HIGHEST ANNUAL MEAN			11320
LOWEST ANNUAL MEAN			487
HIGHEST DAILY MEAN	44300	Jul 21	44300
LOWEST DAILY MEAN	628	Oct 13	144
ANNUAL SEVEN-DAY MINIMUM	846	Feb 23	165
INSTANTANEOUS PEAK FLOW			45700
INSTANTANEOUS PEAK STAGE			b24.22
ANNUAL RUNOFF (AC-FT)	7934000	2630000	2831000
10 PERCENT EXCEEDS	21800	9140	11300
50 PERCENT EXCEEDS	9730	2520	1990
90 PERCENT EXCEEDS	1240	1030	237

e Estimated.

a Post-regulation period.

b Backwater from Raccoon River.

05481650 DES MOINES RIVER NEAR SAYLORVILLE, IA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD: October 1961 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: December 1967 to September 1971, October 1971 to September 1980 (partial record station), October 1980 to current year.

WATER TEMPERATURES: October 1961 to September 1971, October 1971 to September 1980 (partial record station), October 1980 to current year.

SUSPENDED-SEDIMENT DISCHARGE: October 1961 to current year.

REMARKS.--Records of specific conductance are obtained from suspended-sediment samples at time of analysis. During periods of partial ice cover, sediment samples are collected in open water channel.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 1,400 microsiemens Feb. 18, 1977; minimum daily, 90 microsiemens Feb. 19, 1971.

WATER TEMPERATURES: Maximum daily, 36.0°C June 29, 1971; minimum daily, 0.0°C on many days during winter periods.

SEDIMENT CONCENTRATIONS: Maximum daily mean, 5,400 mg/L May 14, 1970; minimum daily mean, 1 mg/L Jan. 8, 1965, Sept. 1, 1988, Feb. 9, July 8, 1990.

SEDIMENT LOADS: Maximum daily, 148,000 tons June 12, 1966; minimum daily, 0.56 tons Sept. 1, 1988.

EXTREMES FOR CURRENT YEAR:

SPECIFIC CONDUCTANCE: Maximum daily, 740 microsiemens Oct. 7; minimum daily, 418 microsiemens Mar. 1.

WATER TEMPERATURES: Maximum daily, 27.0°C Sept. 2, 5, 9, 11, 12; minimum daily, 0.0°C Jan. 21, 23, 28.

SEDIMENT CONCENTRATIONS: Maximum daily mean, 161 mg/L Oct. 30; minimum daily mean, 7 mg/L June 2.

SEDIMENT LOADS: Maximum daily, 4,150 tons June 28; minimum daily, 19 tons June 2.

SPECIFIC CONDUCTANCE MICROSIEMENS/CM AT 25 DEG C, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	654	680	418	---	---	---	452	---	---
2	---	618	---	---	---	---	643	588	---	---	625	621
3	579	597	---	---	---	---	---	598	591	454	594	---
4	---	---	---	601	---	---	638	---	589	---	606	---
5	---	---	---	---	---	---	627	588	---	---	615	596
6	---	657	---	---	---	429	643	595	589	520	615	587
7	740	---	692	---	---	---	624	592	596	---	---	---
8	---	---	---	565	683	429	---	586	---	502	598	616
9	723	549	---	---	---	427	---	593	---	---	606	610
10	673	---	---	635	---	---	---	593	---	580	601	574
11	702	590	---	---	---	---	---	594	508	602	---	587
12	---	---	---	632	---	426	639	608	---	---	---	---
13	519	579	---	---	625	---	---	600	---	595	588	---
14	---	---	596	---	692	---	590	---	598	591	601	625
15	---	---	---	620	---	---	628	---	---	---	568	---
16	---	627	---	650	436	606	---	594	---	---	---	---
17	---	---	---	---	---	684	632	598	---	---	---	---
18	---	648	665	---	---	670	---	598	---	---	---	617
19	---	---	---	---	431	678	---	590	---	607	587	615
20	---	---	---	---	429	---	626	577	485	589	590	---
21	500	702	617	715	432	534	649	---	---	585	591	593
22	---	---	---	---	---	---	---	---	---	576	---	614
23	---	---	---	615	---	640	658	588	---	592	---	---
24	610	---	---	---	428	---	---	589	---	601	---	---
25	520	---	---	---	---	---	597	594	485	---	---	---
26	---	---	---	---	---	630	482	588	590	548	---	620
27	---	580	---	713	---	---	---	---	623	586	585	635
28	---	---	---	704	---	---	575	---	---	584	---	---
29	---	---	---	604	---	---	576	---	---	592	584	---
30	---	687	---	---	---	640	585	---	479	594	---	---
31	498	---	---	---	---	---	---	589	---	---	598	---

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DAY	MEAN CONCEN- TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN- TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN- TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN- TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN- TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN- TRATION (MG/L)	LOAD (TONS/ DAY)
OCTOBER			NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	24	605	148	1350	18	62	55	277	90	214	109	671
2	20	488	111	761	35	162	50	263	89	226	107	663
3	16	366	89	433	58	311	40	205	78	178	95	591
4	12	231	93	482	64	385	20	97	65	135	84	644
5	17	221	82	491	66	419	16	78	55	114	83	947
6	24	277	81	501	61	381	18	83	46	94	85	1470
7	31	361	82	509	41	210	33	134	49	98	92	2400
8	34	385	88	523	26	93	36	136	54	114	101	3070
9	33	430	111	610	41	209	35	123	48	98	74	2270
10	43	592	102	564	50	273	28	102	39	82	58	1730
11	39	446	103	568	49	269	19	62	31	70	62	1770
12	34	138	101	556	39	182	29	98	28	62	63	1720
13	25	42	107	591	50	185	29	94	25	59	62	1490
14	33	267	109	601	108	574	52	161	40	91	59	1130
15	46	585	106	613	92	589	102	303	59	131	58	1050
16	42	602	72	392	65	453	99	321	64	130	128	2330
17	40	597	38	184	66	455	97	275	58	112	140	2390
18	39	578	47	230	65	464	101	262	59	185	134	2170
19	53	673	77	427	84	650	85	229	59	261	85	1370
20	58	548	88	519	94	762	77	219	80	471	46	729
21	74	619	88	524	101	850	76	215	111	1260	35	538
22	95	788	88	521	97	810	74	205	134	2260	32	478
23	97	806	88	514	91	603	72	199	141	2710	34	444
24	95	783	88	517	71	263	71	197	97	1650	37	455
25	122	1000	88	520	66	227	71	184	71	773	32	370
26	129	968	91	485	57	169	75	186	78	664	35	367
27	126	563	95	417	51	137	93	241	88	605	39	388
28	119	327	96	418	54	176	117	297	100	616	36	344
29	139	529	50	211	56	230	126	306	---	---	33	287
30	161	1140	23	87	49	220	111	264	---	---	39	311
31	155	1410	---	---	50	214	97	225	---	---	38	299
TOTAL	---	17365	---	15119	---	10987	---	6041	---	13463	---	34886
APRIL			MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	38	294	16	176	12	62	119	3740	14	128	85	379
2	38	293	17	187	7	19	109	3430	12	107	38	164
3	35	260	33	381	10	64	96	3020	13	98	19	71
4	35	217	32	373	13	85	89	2790	13	86	16	62
5	37	203	28	336	12	72	83	2560	14	87	15	72
6	35	193	21	262	12	69	78	2230	14	85	30	135
7	37	220	16	206	13	85	25	341	13	71	19	59
8	38	239	15	210	34	303	45	140	15	66	18	55
9	39	242	15	221	74	835	47	179	24	97	18	70
10	46	283	16	231	90	1070	18	114	9	37	23	95
11	52	323	15	216	94	1110	28	460	18	69	19	67
12	57	349	15	196	69	754	16	387	46	210	10	29
13	51	334	15	179	49	533	14	389	116	676	12	35
14	43	317	17	189	59	848	18	514	144	1130	17	52
15	45	416	17	189	80	1560	20	543	143	1370	16	48
16	35	359	17	175	105	2440	25	732	148	1500	14	34
17	37	448	22	217	119	2920	30	940	144	1480	13	35
18	34	445	18	167	113	2680	24	768	142	1460	11	32
19	42	568	16	128	102	2230	16	513	133	1270	11	32
20	45	571	18	129	97	2020	17	522	103	911	11	32
21	39	473	17	125	97	2030	21	658	64	570	11	32
22	37	433	16	118	91	1830	16	494	50	391	9	27
23	39	448	17	126	90	1980	17	519	46	320	9	26
24	45	515	16	128	97	2560	12	366	46	324	10	33
25	52	582	14	113	107	3270	13	364	43	266	15	66
26	44	459	16	122	113	3670	36	893	89	542	18	92
27	28	263	17	115	121	4040	27	578	115	659	12	65
28	22	192	15	97	126	4150	8	114	116	569	16	87
29	18	168	13	76	119	3770	14	146	130	577	17	89
30	17	173	14	73	119	3730	12	128	138	621	15	73
31	---	---	13	76	---	---	11	103	154	687	---	---
TOTAL	---	10280	---	5537	---	50789	---	28675	---	16464	---	2148
YEAR 211754												

DES MOINES RIVER BASIN

05481650 DES MOINES RIVER NEAR SAYLORVILLE, IA--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	4.0	1.0	6.0	---	---	---	26.0	---	---
2	---	10.0	---	---	---	---	8.0	22.0	---	---	23.0	27.0
3	21.0	7.0	---	---	---	---	---	23.0	25.0	26.0	23.0	---
4	---	---	---	10.0	---	---	8.0	---	25.0	---	23.0	---
5	---	---	---	---	---	---	8.0	23.0	---	---	23.0	27.0
6	---	5.0	---	---	---	6.0	8.0	23.0	25.0	26.0	23.0	26.0
7	17.0	---	5.0	---	---	---	8.0	23.0	25.0	---	---	---
8	---	---	---	10.0	1.0	5.0	---	23.0	---	22.0	23.0	26.0
9	17.0	5.0	---	---	---	5.0	---	23.0	---	---	---	27.0
10	17.0	---	---	12.0	---	---	---	23.0	---	22.0	---	---
11	17.0	4.0	---	---	---	---	---	24.0	22.0	22.0	---	27.0
12	---	---	---	10.0	---	5.0	---	24.0	---	---	---	27.0
13	18.0	4.0	---	---	2.0	---	---	24.0	---	22.0	26.0	---
14	---	---	5.0	---	1.0	---	11.0	---	24.0	22.0	---	13.0
15	---	---	---	10.0	---	---	---	---	---	---	26.0	---
16	---	4.0	---	10.0	5.0	5.0	---	23.0	---	---	---	---
17	---	---	---	---	---	5.0	---	24.0	---	---	---	---
18	---	4.0	5.0	---	---	5.0	---	24.0	---	---	---	15.0
19	---	---	---	2.0	5.0	6.0	---	24.0	---	22.0	26.0	15.0
20	---	---	---	---	5.0	---	---	24.0	22.0	22.0	26.0	---
21	15.0	4.0	5.0	.0	5.0	7.0	---	---	---	22.0	26.0	---
22	---	---	---	---	---	---	---	---	---	23.0	---	15.0
23	---	---	---	.0	---	8.0	---	24.0	---	22.0	---	---
24	15.0	---	---	---	5.0	---	---	25.0	---	22.0	---	---
25	13.0	---	---	---	---	---	---	25.0	23.0	---	---	---
26	---	---	---	---	---	8.0	---	25.0	25.0	23.0	---	15.0
27	---	4.0	---	1.5	---	---	---	---	25.0	23.0	26.0	15.0
28	---	---	---	.0	---	---	22.0	---	---	23.0	---	---
29	---	---	---	1.0	---	---	22.0	---	---	23.0	25.0	---
30	---	5.0	---	---	---	8.0	22.0	---	25.0	23.0	---	---
31	12.0	---	---	---	---	---	---	25.0	---	---	25.0	---

DES MOINES RIVER BASIN

139

05481950 BEAVER CREEK NEAR GRIMES, IA

LOCATION.--Lat 41°41'18", long 93°44'08", in SW1/4 SW1/4 sec.35, T.80 N., R.25 W., Polk County, Hydrologic Unit 07100004, on right bank 6 ft upstream from bridge on Northwest 70th Avenue, 0.5 mi downstream from Little Beaver Creek, 2.5 mi east of Grimes, and 6 mi upstream from mouth.

DRAINAGE AREA.--358 mi².

PERIOD OF RECORD.--April 1960 to current year.

REVISED RECORDS.--WDR IA-77-1: 1974 (P).

GAGE.--Water-stage encoder and concrete and steel sheeting broad-crested control. Datum of gage is 806.98 ft above sea level. Prior to Aug. 31, 1966, nonrecording gage at same site and datum.

REMARKS.--Estimated daily discharges: Dec. 24 to Mar. 5 and Aug. 3 to Sept. 30. Records good except those for estimated daily discharges, which are poor. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data. U.S. Army Corps of Engineers satellite data collection platform at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	457	224	133	e64	e26	e50	105	95	60	206	20	e8.5
2	403	223	129	e60	e26	e56	106	94	67	178	14	e5.5
3	370	241	124	e62	e27	e110	110	95	65	148	e13	e3.6
4	354	232	123	e60	e29	e260	102	98	59	134	e15	e84
5	336	218	119	e60	e30	e450	95	101	77	124	e13	e67
6	326	196	118	e56	e27	1120	92	109	98	111	e11	e52
7	318	192	113	e54	e25	689	84	121	98	98	e10	e47
8	312	190	121	e56	e26	467	83	135	612	95	e9.2	e44
9	339	183	126	e54	e25	370	83	148	803	90	e8.4	e30
10	361	177	122	e50	e27	320	78	147	513	82	e10	e12
11	373	177	103	e44	e29	290	74	137	378	73	e9.4	e7.0
12	356	178	108	e46	e28	268	83	129	352	72	e25	e6.7
13	334	185	126	e43	e30	247	94	122	384	114	e59	e4.1
14	322	176	124	e39	e32	235	97	116	355	121	e50	e3.0
15	364	170	106	e36	e31	227	135	113	286	90	e39	e2.3
16	425	164	97	e38	e30	207	174	106	244	72	e30	e5.4
17	395	161	97	e36	e31	191	157	96	212	62	e26	e1.8
18	369	160	101	e34	e80	184	150	88	190	53	e17	e1.6
19	350	160	103	e34	e250	172	137	84	193	45	e10	e1.5
20	331	156	106	e40	e200	161	124	80	210	40	e6.7	e1.6
21	318	151	94	e42	e86	162	118	77	356	36	e4.8	e1.2
22	307	147	82	e46	e60	155	113	73	337	32	e4.3	e1.6
23	300	143	47	e49	e54	152	108	90	308	28	e3.3	e1.7
24	295	139	e46	e48	e50	148	107	167	530	26	e2.7	e1.7
25	289	146	e44	e46	e47	138	106	112	505	24	e2.5	e12
26	278	125	e46	e45	e49	133	102	102	371	20	e23	e4.8
27	266	124	e49	e47	e49	132	91	89	308	18	e19	e3.3
28	264	147	e52	e42	e46	127	85	81	265	17	e15	e3.6
29	255	152	e56	e37	---	119	86	74	225	13	e12	e5.7
30	239	144	e64	e30	---	113	89	72	191	11	e31	e4.4
31	229	---	e72	e25	---	108	---	67	---	10	e19	---
TOTAL	10235	5181	2951	1426	1450	7561	3168	3218	8652	2243	532.3	428.6
MEAN	330	173	95.2	46.0	51.8	244	106	104	288	72.4	17.2	14.3
MAX	457	241	133	64	250	1120	174	167	803	206	59	84
MIN	229	124	44	25	25	50	74	67	59	10	2.5	1.2
AC-FT	20300	10280	5850	2830	2880	15000	6280	6380	17160	4450	1060	850
CFSM	.92	.48	.27	.13	.14	.68	.29	.29	.81	.20	.05	.04
IN.	1.06	.54	.31	.15	.15	.79	.33	.33	.90	.23	.06	.04

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1960 - 1994, BY WATER YEAR (WY)

MEAN	113	126	108	65.3	127	376	389	428	431	279	115	82.7
MAX	724	655	486	305	526	1171	1275	1419	1201	2160	695	654
(WY)	1974	1973	1983	1974	1973	1979	1965	1974	1990	1993	1993	1993
MIN	.058	.63	.77	.002	.35	3.98	3.26	1.11	1.41	.24	.73	.26
(WY)	1989	1967	1977	1977	1977	1981	1981	1981	1977	1977	1988	1988

SUMMARY STATISTICS

FOR 1993 CALENDAR YEAR

FOR 1994 WATER YEAR

WATER YEARS 1960 - 1994

	1993	1994	1960-1994
ANNUAL TOTAL	205833	47045.9	
ANNUAL MEAN	564	129	219
HIGHEST ANNUAL MEAN			575
LOWEST ANNUAL MEAN			17.3
HIGHEST DAILY MEAN	11500	Jul 10	11500
LOWEST DAILY MEAN	32	Mar 1	.00
ANNUAL SEVEN-DAY MINIMUM	38	Feb 24	.00
INSTANTANEOUS PEAK FLOW			1580
INSTANTANEOUS PEAK STAGE			9.24
ANNUAL RUNOFF (AC-FT)	408300	93320	158500
ANNUAL RUNOFF (CFSM)	1.58	.36	.61
ANNUAL RUNOFF (INCHES)	21.39	4.89	8.31
10 PERCENT EXCEEDS	1050	319	565
50 PERCENT EXCEEDS	384	95	75
90 PERCENT EXCEEDS	102	11	1.7

e Estimated.

05482135 NORTH RACCOON RIVER NEAR NEWELL, IA

LOCATION.--Lat 42°36'16", long 95°02'42", in NE1/4 NW1/4 sec.24, T.90 N., R.36 W., Buena Vista County, Hydrologic Unit 07100006, on left bank 40 ft downstream from bridge on State Highway 7, 0.8 mi upstream from Outlet Creek, 2.2 mi west of Newell, and at mile 398.6 upstream from mouth of Des Moines River.

DRAINAGE AREA.--233 mi².

PERIOD OF RECORD.--October 1982 to current year.

GAGE.--Water-stage encoder. Datum of gage is 1235.50 ft above sea level.

REMARKS.--Estimated daily discharges: Oct. 28 to July 13. Records good except those for estimated daily discharges, which are poor. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data. National Weather Service Limited Automatic Remote Collector at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	111	e82	e76	e100	e24	e130	e68	e90	e66	e370	63	21
2	99	e80	e76	e80	e34	e170	e66	e86	e68	e320	50	20
3	98	e78	e72	e65	e39	e250	e62	e82	e66	e290	50	21
4	95	e82	e68	e60	e36	e800	e64	e94	e64	e290	54	69
5	87	e78	e66	e65	e45	e940	e62	e180	e78	e280	45	166
6	91	e74	e66	e68	e52	e720	e60	e340	e90	e270	37	106
7	89	e76	e64	e52	e39	e540	e62	e330	e140	e390	31	80
8	87	e74	e60	e30	e28	e390	e60	e310	e240	e400	28	60
9	211	e72	e62	e40	e30	e300	e62	e280	e190	e340	25	46
10	230	e70	e64	e46	e25	e240	e60	e260	e160	e290	26	37
11	198	e72	e56	e52	e26	e200	e58	e240	e150	e260	23	30
12	175	e74	e64	e40	e27	e170	e130	e210	e330	e230	196	26
13	157	e78	e88	e45	e28	e160	e220	e190	e1000	e300	610	23
14	148	e76	e100	e35	e29	e150	e200	e170	e900	e610	377	21
15	143	e72	e110	e26	e49	e140	e190	e155	e760	458	249	20
16	139	e68	e130	e24	e45	e130	e170	e140	e600	354	180	20
17	133	e70	e160	e33	e52	e120	e150	e130	e480	293	133	18
18	127	e70	e190	e26	e62	e105	e130	e120	e430	251	107	17
19	121	e72	e220	e24	e130	e100	e120	e115	e410	224	90	16
20	116	e70	e200	e32	e320	e98	e110	e105	e370	203	74	16
21	112	e68	e180	e31	e200	e94	e105	e100	e460	181	61	15
22	108	e68	e150	e45	e120	e90	e100	e98	e600	144	52	122
23	106	e66	e56	e42	e110	e90	e92	e94	e1200	133	44	580
24	104	e68	e58	e64	e82	e86	e94	e91	e1000	119	35	445
25	101	e64	e62	e49	e70	e82	e92	e90	e840	106	31	314
26	95	e50	e41	e39	e72	e80	e84	e86	e720	96	51	249
27	e91	e41	e35	e32	e82	e78	e80	e83	e600	87	46	209
28	e98	e43	e22	e35	e99	e78	e76	e79	e520	78	32	177
29	e91	e52	e26	e33	---	e72	e82	e81	e450	70	27	157
30	e86	e70	e35	e28	---	e70	e86	e76	e400	62	24	141
31	e82	---	e67	e25	---	e66	---	e71	---	56	23	---
TOTAL	3729	2078	2724	1366	1955	6739	2995	4576	13382	7555	2874	3242
MEAN	120	69.3	87.9	44.1	69.8	217	99.8	148	446	244	92.7	108
MAX	230	82	220	100	320	940	220	340	1200	610	610	580
MIN	82	41	22	24	24	66	58	71	64	56	23	15
AC-FT	7400	4120	5400	2710	3880	13370	5940	9080	26540	14990	5700	6430
CFSM	.52	.30	.38	.19	.30	.93	.43	.63	1.91	1.05	.40	.46
IN.	.60	.33	.43	.22	.31	1.08	.48	.73	2.14	1.21	.46	.52

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1983 - 1994, BY WATER YEAR (WY)

	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
MEAN	139	102	81.4	47.5	93.1	253	367	302	480	244	76.6	68.9
MAX	602	271	229	168	291	825	905	631	1277	1092	371	192
(WY)	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1986
MIN	4.10	2.54	.40	.98	2.13	17.0	15.4	70.1	38.5	9.78	2.17	5.70
(WY)	1990	1990	1990	1990	1990	1990	1990	1989	1989	1989	1989	1984

SUMMARY STATISTICS

	FOR 1993 CALENDAR YEAR	FOR 1994 WATER YEAR	WATER YEARS 1983 - 1994
ANNUAL TOTAL	144802	53215	
ANNUAL MEAN	397	146	188
HIGHEST ANNUAL MEAN			431
LOWEST ANNUAL MEAN			35.7
HIGHEST DAILY MEAN	2360	1200	3670
LOWEST DAILY MEAN	22	15	.07
ANNUAL SEVEN-DAY MINIMUM	27	17	.08
INSTANTANEOUS PEAK FLOW		unknown	2850
INSTANTANEOUS PEAK STAGE		unknown	16.73
INSTANTANEOUS LOW FLOW		14	.07
ANNUAL RUNOFF (AC-FT)	287200	105600	136100
ANNUAL RUNOFF (CFSM)	1.70	.63	.81
ANNUAL RUNOFF (INCHES)	23.12	8.50	10.96
10 PERCENT EXCEEDS	1250	330	467
50 PERCENT EXCEEDS	145	84	72
90 PERCENT EXCEEDS	36	30	6.7

e Estimated.

a Also Sept. 20 and 21.

05482300 NORTH RACCOON RIVER NEAR SAC CITY, IA

LOCATION.--Lat 42°21'16", long 94°59'26", in NW1/4 NW1/4 sec.13, T.87 N., R.36 W., Sac County, Hydrologic Unit 07100006, on right bank 5 ft downstream from bridge on county highway, 2.1 mi upstream from Indian Creek, 0.3 mi upstream from Drainage ditch 73, 4.6 mi south of Sac City, and at mile 367.6 upstream from mouth of Des Moines River.

DRAINAGE AREA.--700 mi².

PERIOD OF RECORD.--June 1958 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,146.03 ft above sea level. Prior to Oct. 1, 1987 at site 1.7 miles downstream at datum 1.43 ft lower.

REMARKS.--Estimated daily discharges: Nov. 26 to Dec. 3, Dec. 9-12, Dec. 23 to Mar. 10, and Mar. 18-21. Records good except those for estimated daily discharges, which are poor. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 21, 1954, reached a stage of 15.61 ft, from floodmark, discharge, 7,000 ft³/s.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	309	243	e220	e310	e80	e400	200	258	187	688	180	62
2	287	243	e220	e240	e105	e500	191	249	193	610	146	62
3	272	236	e210	e190	e120	e580	183	236	186	558	127	59
4	273	243	193	e185	e110	e1200	191	241	176	553	123	239
5	258	230	192	e200	e140	e3650	189	316	208	548	116	373
6	262	216	193	e210	e160	e1850	183	540	247	498	101	327
7	270	229	190	e150	e120	e975	183	807	383	838	90	219
8	273	230	179	e90	e86	e870	182	772	588	855	82	184
9	408	212	e180	e120	e90	e720	186	693	431	737	72	154
10	652	211	e190	e145	e76	e630	175	616	348	592	79	128
11	576	215	e140	e160	e80	554	166	572	336	513	77	112
12	515	219	e170	e120	e82	506	202	523	427	450	108	98
13	462	234	268	e140	e84	467	432	486	1510	482	791	91
14	435	225	281	e110	e90	443	526	467	2440	753	803	84
15	421	208	343	e80	e150	418	496	432	1970	860	571	78
16	411	207	379	e74	e140	362	460	387	1430	686	418	72
17	390	212	449	e100	e160	323	400	363	1080	576	322	67
18	377	212	559	e80	e200	e309	374	342	915	489	250	62
19	360	215	605	e74	e400	e295	348	325	828	428	202	59
20	346	210	561	e100	e1000	e285	311	309	742	367	164	58
21	334	210	513	e96	e600	e275	301	296	791	328	137	60
22	320	204	451	e140	e350	263	283	285	911	293	118	86
23	312	199	e170	e130	e320	260	267	273	1090	257	104	454
24	307	202	e180	e200	e250	250	271	265	2550	229	96	789
25	301	191	e190	e150	e210	238	265	255	2130	199	93	584
26	285	e150	e140	e120	e220	233	242	247	1690	180	109	469
27	274	e120	e100	e98	e250	226	230	231	1330	162	106	408
28	280	e130	e64	e110	e300	221	215	221	1100	148	90	357
29	268	e160	e80	e100	---	212	233	232	935	135	71	314
30	251	e200	e130	e86	---	200	249	218	795	125	63	288
31	243	---	e200	e74	---	195	---	201	---	120	62	---
TOTAL	10732	6216	7940	4182	5973	17910	8134	11658	27947	14257	5871	6397
MEAN	346	207	256	135	213	578	271	376	932	460	189	213
MAX	652	243	605	310	1000	3650	526	807	2550	860	803	789
MIN	243	120	64	74	76	195	166	201	176	120	62	58
AC-FT	21290	12330	15750	8290	11850	35520	16130	23120	55430	28280	11650	12690
CFSM	.49	.30	.37	.19	.30	.83	.39	.54	1.33	.66	.27	.30
IN.	.57	.33	.42	.22	.32	.95	.43	.62	1.49	.76	.31	.34

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1959 - 1994, BY WATER YEAR (WY)

	MEAN	258	222	139	95.1	167	662	776	618	800	505	212	256
MAX	1782	1005	641	498	1038	2723	2726	2077	3344	3096	1188	1966	
(WY)	1983	1984	1983	1983	1984	1983	1983	1991	1984	1993	1993	1962	
MIN	6.39	9.44	4.39	.87	1.16	27.2	25.6	31.9	24.7	23.0	9.29	7.80	
(WY)	1959	1959	1959	1977	1959	1968	1967	1967	1977	1977	1976	1976	

SUMMARY STATISTICS

FOR 1993 CALENDAR YEAR

FOR 1994 WATER YEAR

WATER YEARS 1959 - 1994

ANNUAL TOTAL	403481	127217	
ANNUAL MEAN	1105	349	393
HIGHEST ANNUAL MEAN			1331
LOWEST ANNUAL MEAN			25.3
HIGHEST DAILY MEAN	6090	Mar 30	12400
LOWEST DAILY MEAN	64	Dec 28	.00
ANNUAL SEVEN-DAY MINIMUM	115	Feb 18	.01
INSTANTANEOUS PEAK FLOW			4890
INSTANTANEOUS PEAK STAGE			16.13
INSTANTANEOUS LOW FLOW			55
ANNUAL RUNOFF (AC-FT)	800300	252300	284600
ANNUAL RUNOFF (CFSM)	1.58	.50	.56
ANNUAL RUNOFF (INCHES)	21.44	6.76	7.63
10 PERCENT EXCEEDS	2820	690	1000
50 PERCENT EXCEEDS	488	239	127
90 PERCENT EXCEEDS	150	90	15

e Estimated.

LOCATION.--Lat 41°59'17", long 94°22'36", in SW1/4 NW1/4 sec.20, T.83 N., R.30 W., Greene County, Hydrologic Unit 07100006, on right bank 3 ft downstream from bridge on State Highway 4, 0.1 mi downstream from Drainage ditch 33 and 40, 1.9 mi south of Jefferson, 4.2 mi upstream from Hardin Creek, and at mile 292.5 upstream from mouth of Des Moines River.

PERIOD OF RECORD.--March 1940 to current year. Prior to April 1940, monthly discharge only, published in WSP 1308. Prior to October 1955, published as Raccoon River near Jefferson.

GAGE.--Water-stage encoder. Datum of gage is 967.09 ft above sea level. Prior to Apr. 22, 1946, nonrecording gage at site 4 mi upstream at different datum. Apr. 22 to June 25, 1946, nonrecording gage, June 26, 1946 to Sept. 30, 1955, water-stage recorder, Oct. 1, 1955 to Apr. 30, 1958, nonrecording gage, at present site and datum.

REMARKS.--Estimated daily discharges: Dec. 8-12, Dec. 21 to Mar. 5, May 9, 10, 17-22, June 5, 6, 8-13, July 20, 21, 26-29, and Sept. 26, 27. Records good except those for estimated daily discharges, which are poor. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data. U.S. Army Corps of Engineers rain-gage and satellite data collection platform at station.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	990	649	701	e760	e230	e620	502	570	401	1200	257	133
2	953	640	600	e660	e250	e610	492	585	391	1030	307	117
3	910	631	566	e560	e300	e660	485	580	366	918	316	113
4	875	622	535	e500	e290	e800	473	578	352	854	279	173
5	847	612	523	e540	e350	e2500	468	599	e391	821	265	259
6	818	593	466	e500	e390	5220	472	707	e396	796	232	790
7	801	553	432	e450	e350	3780	452	946	582	780	203	764
8	846	544	e390	e270	e250	2160	455	1410	e2110	848	183	590
9	978	573	e410	e300	e260	1670	445	e1510	e1770	1080	166	469
10	1040	545	e370	e340	e220	1390	441	e1410	e1440	1050	163	386
11	1260	538	e340	e400	e200	1210	424	1240	e1080	868	155	324
12	1320	549	e400	e340	e210	1110	426	1120	e876	735	180	275
13	1220	576	443	e360	e220	1050	469	1040	e967	692	216	240
14	1140	581	540	e310	e250	1030	666	960	1560	688	328	213
15	1100	584	562	e250	e370	1020	1070	914	e3140	824	987	193
16	1070	551	597	e220	e360	991	997	872	2670	1160	828	179
17	1030	535	664	e230	e450	936	985	e788	2200	1040	646	162
18	991	535	747	e250	e500	888	910	e738	1880	874	520	151
19	959	542	852	e200	e800	837	837	e711	1650	804	425	142
20	925	548	980	e250	e1300	790	782	e726	1540	e754	352	135
21	898	546	e820	e240	e1800	758	732	e732	1500	e634	296	126
22	871	530	e660	e350	e2500	725	699	e632	1350	506	251	123
23	847	527	e450	e330	e2000	697	662	605	1530	461	217	134
24	821	516	e470	e420	e1600	674	634	611	1490	417	191	172
25	803	528	e490	e350	e1200	652	630	654	2840	383	177	655
26	778	480	e340	e300	e1000	635	608	590	2870	e344	181	e867
27	750	313	e280	e270	e800	610	571	541	2420	e319	194	e713
28	732	429	e190	e300	e680	594	562	497	1970	e295	195	597
29	720	519	e260	e250	---	565	550	475	1670	e268	192	535
30	705	712	e360	e240	---	542	543	460	1390	249	191	487
31	670	---	e600	e210	---	516	---	437	---	228	152	---
TOTAL	28668	16601	16038	10950	19130	36240	18442	24238	44792	21920	9245	10217
MEAN	925	553	517	353	683	1169	615	782	1493	707	298	341
MAX	1320	712	980	760	2500	5220	1070	1510	3140	1200	987	867
MIN	670	313	190	200	200	516	424	437	352	228	152	113
AC-FT	56860	32930	31810	21720	37940	71880	36580	48080	88840	43480	18340	20270
CFSM	.57	.34	.32	.22	.42	.72	.38	.48	.92	.		

	MEAN	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100	2101	2102	2103	2104	2105	2106	2107	2108	2109	2110	2111	2112	2113	2114	2115	2116	2117	2118	2119	2120	2121	2122	2123	2124	2125	2126	2127	2128	2129	2130	2131	2132	2133	2134	2135	2136	2137	2138	2139	2140	2141	2142	2143	2144	2145	2146	2147	2148	2149	2150	2151	2152	2153	2154	2155	2156	2157	2158	2159	2160	2161	2162	2163	2164	2165	2166	2167	2168	2169	2170	2171	2172	2173	2174	2175	2176	2177	2178	2179	2180	2181	2182	2183	2184	2185	2186	2187	2188	2189	2190	2191	2192	2193	2194	2195	2196	2197	2198	2199	2200	2201	2202	2203	2204	2205	2206	2207	2208	2209	2210	2211	2212	2213	2214	2215	2216	2217	2218	2219	2220	2221	2222	2223	2224	2225	2226	2227	2228	2229	2230	2231	2232	2233	2234	2235	2236	2237	2238	2239	2240	2241	2242	2243	2244	2245	2246	2247	2248	2249	2250	2251	2252	2253	2254	2255	2256	2257	2258	2259	2260	2261	2262	2263	2264	2265	2266	2267	2268	2269	2270	2271	2272	2273	2274	2275	2276	2277	2278	2279	2280	2281	2282	2283	2284	2285	2286	2287	2288	2289	2290	2291	2292	2293	2294	2295	2296	2297	2298	2299	2300	2301	2302	2303	2304	2305	2306	2307	2308	2309	2310	2311	2312	2313	2314	2315	2316	2317	2318	2319	2320	2321	2322	2323	2324	2325	2326	2327	2328	2329	2330	2331	2332	2333	2334	2335	2336	2337	2338	2339	2340	2341	2342	2343	2344	2345	2346	2347	2348	2349	2350	2351	2352	2353	2354	2355	2356	2357	2358	2359	2360	2361	2362	2363	2364	2365	2366	2367	2368	2369	2370	2371	2372	2373	2374	2375	2376	2377	2378	2379	2380	2381	2382	2383	2384	2385	2386	2387	2388	2389	2390	2391	2392	2393	2394	2395	2396	2397	2398	2399	240
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ANNUAL TOTAL	910471		256481					
ANNUAL MEAN	2494		703			792		
HIGHEST ANNUAL MEAN						2615		1993
LOWEST ANNUAL MEAN						32.8		1956
HIGHEST DAILY MEAN	16100	Jul 10	5220	Mar 6		23200	Jun 24	1947
LOWEST DAILY MEAN	190	Feb 24	113	Sep 3		.60	Oct 5	1956
ANNUAL SEVEN-DAY MINIMUM	230	Feb 18	139	Sep 17		.91	Oct 4	1956
INSTANTANEOUS PEAK FLOW			5640	Mar 6		29100	Jun 23	1947
INSTANTANEOUS PEAK STAGE			a11.93	Mar 5		22.30	Jun 23	1947
INSTANTANEOUS LOW FLOW			105	Sep 3b				
ANNUAL RUNOFF (AC-FT)	1806000		508700			573600		
ANNUAL RUNOFF (CFSM)	1.54		.43			.49		
ANNUAL RUNOFF (INCHES)	20.92		5.89			6.64		
10 PERCENT EXCEEDS	6620		1250			1970		
50 PERCENT EXCEEDS	1380		578			276		
90 PERCENT EXCEEDS	336		219			40		

e Estimated.
a Ice affected.
b Also Sept. 4.

DES MOINES RIVER BASIN

143

05483343 HAZELBRUSH CREEK NEAR MAPLE RIVER, IA

LOCATION.--Lat 42°07'36", long 94°58'32", in SW1/4 SW1/4 sec.31, T.85 N., R.35 W., Carroll County, Hydrologic Unit 07100007, on right bank 0.26 mi upstream from bridge on county road, 0.40 mi above mouth, and 2.9 mi northeast of Maple River.

DRAINAGE AREA.--9.22 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1990 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 1,268.17 ft above sea level.

REMARKS.--Estimated daily discharges: Nov. 26, Dec. 22-30, Jan. 3, 7, 8, 15, and Feb. 15 to Mar. 5. Records good except those for estimated daily discharges, which are poor.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	10	5.4	3.3	2.3	1.6	e3.2	2.0	2.9	2.1	3.2	1.3	.67
2	9.8	5.5	3.5	2.0	1.7	e5.0	2.1	2.8	2.0	2.8	1.1	.56
3	9.8	5.5	3.6	e1.8	1.8	e15	2.1	2.5	1.9	4.1	1.1	.56
4	9.7	5.4	3.7	2.0	1.7	e13	2.1	2.5	1.9	5.2	1.1	1.6
5	9.8	4.9	3.5	2.0	1.6	e11	2.1	2.5	2.5	5.2	.97	1.0
6	9.5	4.5	3.6	1.8	1.4	8.6	2.4	2.8	2.3	3.8	1.1	.83
7	8.8	4.6	3.5	e1.4	1.1	6.0	2.0	3.0	2.1	3.2	1.7	.80
8	8.6	4.7	3.3	e1.4	1.2	5.0	2.1	3.5	2.0	2.7	.96	.86
9	8.3	4.3	3.4	1.8	1.1	4.0	2.1	3.2	2.1	2.4	.83	.84
10	8.0	4.3	3.5	1.8	1.0	3.3	1.9	2.9	2.2	2.4	.88	.73
11	8.0	4.3	3.5	1.8	1.1	3.2	1.9	2.9	2.2	2.4	.89	.70
12	7.8	4.4	3.4	1.7	1.1	2.9	2.4	2.8	2.1	3.8	1.4	.68
13	7.7	4.3	3.7	1.7	1.1	3.0	2.3	2.9	2.2	3.0	1.4	.75
14	7.4	4.0	3.8	1.7	1.4	3.1	2.5	2.7	2.1	2.6	1.1	.75
15	7.5	4.1	3.8	e1.5	e1.7	3.1	2.8	2.5	2.0	2.3	.91	.77
16	7.2	4.0	3.9	1.8	e3.5	3.0	2.4	2.7	2.0	9.0	.89	.70
17	6.8	4.3	4.0	1.7	e7.0	2.8	2.4	2.7	2.0	3.9	.86	.71
18	6.6	4.4	4.3	1.4	e15	3.0	3.0	2.7	6.9	2.8	.72	.71
19	6.5	4.0	4.3	1.8	e10	3.0	2.2	2.7	3.2	2.5	.68	.75
20	6.5	3.8	4.4	1.7	e6.0	3.2	2.0	2.8	5.7	2.2	.65	.49
21	6.3	3.9	4.3	1.7	e5.0	3.0	2.4	2.4	8.4	1.9	.69	.39
22	6.3	4.0	e3.5	2.0	e3.2	3.2	2.4	2.3	4.4	1.7	.69	.56
23	6.3	3.8	e3.0	2.5	e4.4	3.0	2.5	2.3	6.5	1.6	.64	.96
24	6.1	3.7	e3.1	2.2	e4.0	2.4	2.6	2.1	5.4	1.7	.59	.68
25	5.6	3.6	e3.2	2.2	e3.6	2.0	2.8	2.0	4.5	1.6	.57	.64
26	5.7	e3.2	e2.3	2.0	e4.2	2.2	2.4	1.9	3.7	1.5	.67	.64
27	5.7	3.3	e2.0	2.2	e4.6	2.0	2.1	1.9	3.4	1.3	.62	.60
28	5.8	3.1	e1.8	2.0	e4.0	2.1	2.0	2.0	3.1	1.3	.59	.60
29	5.5	3.2	e1.9	1.9	---	2.1	1.9	2.1	2.8	1.3	.57	.60
30	5.4	3.3	e2.1	1.8	---	2.1	2.7	1.9	2.6	1.2	.64	.60
31	5.5	---	2.6	1.7	---	2.0	---	1.9	---	1.1	.69	---
TOTAL	228.5	125.8	103.8	57.3	95.1	130.5	68.6	78.8	96.3	85.7	27.50	21.73
MEAN	7.37	4.19	3.35	1.85	3.40	4.21	2.29	2.54	3.21	2.76	.89	.72
MAX	10	5.5	4.4	2.5	15	15	3.0	3.5	8.4	9.0	1.7	1.6
MIN	5.4	3.1	1.8	1.4	1.0	2.0	1.9	1.9	1.9	1.1	.57	.39
AC-FT	453	250	206	114	189	259	136	156	191	170	55	43
CFSM	.80	.45	.36	.20	.37	.46	.25	.28	.35	.30	.10	.08

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1991 - 1994, BY WATER YEAR (WY)

MEAN	3.22	3.70	4.22	2.66	3.27	16.4	12.4	11.6	11.9	12.1	3.95	6.22
MAX	7.37	7.25	6.83	4.49	5.02	37.4	23.7	20.5	25.4	36.6	11.1	22.2
(WY)	1994	1993	1992	1992	1991	1993	1991	1991	1991	1993	1993	1993
MIN	.53	1.63	1.51	1.35	1.51	4.21	2.29	2.54	2.92	2.76	.89	.51
(WY)	1992	1991	1991	1991	1993	1994	1994	1994	1992	1992	1994	1991

SUMMARY STATISTICS	FOR 1993 CALENDAR YEAR	FOR 1994 WATER YEAR	WATER YEARS 1991 - 1994
ANNUAL TOTAL	5442.2	1119.63	
ANNUAL MEAN	14.9	3.07	7.66
HIGHEST ANNUAL MEAN			15.0
LOWEST ANNUAL MEAN			3.07
HIGHEST DAILY MEAN	343	15	343
LOWEST DAILY MEAN	1.0	.39	.36
ANNUAL SEVEN-DAY MINIMUM	1.1	.61	.42
INSTANTANEOUS PEAK FLOW		114	1120
INSTANTANEOUS PEAK STAGE		a6.14	14.77
INSTANTANEOUS LOW FLOW		.22	.20
ANNUAL RUNOFF (AC-FT)	10790	2220	5550
ANNUAL RUNOFF (CFSM)	1.62	.33	.83
10 PERCENT EXCEEDS	31	6.0	18
50 PERCENT EXCEEDS	9.5	2.4	3.4
90 PERCENT EXCEEDS	2.3	.76	.88

e Estimated.
a Ice affected.

05483343 HAZELBRUSH CREEK NEAR MAPLE RIVER, IOWA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--April 1991 to September 30, 1994 (discontinued).

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: April 1991 to September 30, 1994 (discontinued).

WATER TEMPERATURES: April 1991 to September 30, 1994 (discontinued).

SUSPENDED-SEDIMENT DISCHARGE: April 1991 to September 30, 1994 (discontinued).

REMARKS.--Records of specific conductance are obtained from suspended-sediment samples at time of analysis.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 742 microsiemens Oct. 9, 1992; minimum daily, 180 microsiemens Mar. 16, 1993.

WATER TEMPERATURES: Maximum daily, 25.0°C Sept. 9, 1994; minimum daily, 0.0°C on many days during winter period.

SEDIMENT CONCENTRATIONS: Maximum daily mean, 3,230 mg/L Mar. 3, 1994; minimum daily mean, 12 mg/L Mar. 24, Oct. 1, and Dec. 7, 1992.

SEDIMENT LOADS: Maximum daily, 3,870 tons July 9, 1993; minimum daily, 0.02 tons Oct. 18, 19, 24, 25, 1991.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 659 microsiemens Sept. 23; minimum daily, 306 microsiemens Feb. 18.

WATER TEMPERATURES: Maximum daily, 25.0 °C, Sept. 9; minimum daily, 0.0°C on many days during winter period.

SEDIMENT CONCENTRATIONS: Maximum daily mean, 3,230 mg/L Mar. 3; minimum daily mean, 20 mg/L Apr. 7

SEDIMENT LOADS: Maximum daily, 131 tons Mar. 3; minimum daily, 0.09 tons Sept. 21.

SPECIFIC CONDUCTANCE MICROSIEMENS/CM AT 25 DEG C, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	515	458	451	482	577	458	504	480	434	496	437	427
2	433	447	430	519	638	475	495	412	416	401	435	445
3	424	451	452	461	477	416	447	413	403	416	432	440
4	441	442	459	469	466	308	437	398	410	512	447	480
5	511	454	464	559	458	523	464	408	426	547	429	503
6	424	451	461	532	429	491	511	408	407	454	427	459
7	444	454	464	480	452	497	459	476	417	450	433	465
8	430	448	493	---	517	---	499	408	419	429	462	---
9	453	449	448	452	498	---	539	403	437	433	420	436
10	431	469	530	455	462	537	454	406	416	426	431	458
11	431	459	466	451	492	458	464	394	414	441	414	462
12	435	461	473	466	450	505	428	395	473	425	431	469
13	442	488	535	448	493	421	493	398	431	461	578	467
14	450	462	500	448	436	425	466	420	440	442	452	517
15	434	485	492	457	560	473	480	398	401	434	444	460
16	430	574	544	464	560	483	489	404	416	391	440	489
17	428	468	480	453	383	451	465	404	416	439	452	513
18	432	476	---	---	306	---	439	420	536	445	434	471
19	431	463	---	445	486	497	435	422	432	442	435	495
20	416	472	---	453	453	488	444	406	504	441	426	525
21	447	495	458	445	428	504	411	403	538	441	455	451
22	428	469	463	451	497	429	406	425	416	438	427	563
23	436	463	448	456	431	436	401	448	546	467	428	659
24	461	476	457	500	434	526	397	416	484	435	436	468
25	445	485	449	444	441	448	401	410	501	433	458	587
26	465	477	448	---	487	493	409	405	510	436	463	476
27	451	467	480	451	439	436	420	411	502	452	444	480
28	464	544	467	577	440	---	406	405	497	433	523	462
29	478	468	470	528	---	---	403	406	436	435	448	462
30	473	446	470	640	---	458	404	438	496	423	433	455
31	484	---	451	451	---	505	---	419	---	431	439	---

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DAY	MEAN CONCEN- TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN- TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN- TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN- TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN- TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN- TRATION (MG/L)	LOAD (TONS/ DAY)
OCTOBER			NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	114	3.2	46	.67	84	.75	78	.49	56	.24	94	.81
2	86	2.3	44	.64	110	1.0	64	.35	45	.21	120	1.6
3	118	3.1	42	.63	69	.67	77	.37	47	.22	3230	131
4	134	3.5	57	.83	94	.93	65	.35	61	.28	1820	64
5	143	3.8	59	.79	114	1.1	55	.30	49	.21	710	21
6	151	3.9	62	.77	137	1.3	45	.22	58	.22	247	6.1
7	141	3.4	56	.69	117	1.1	49	.19	65	.20	110	1.8
8	108	2.5	43	.55	105	.96	65	.25	75	.25	68	.93
9	103	2.3	92	1.1	80	.74	116	.56	61	.17	67	.74
10	101	2.2	98	1.1	76	.72	112	.54	57	.16	58	.51
11	115	2.5	40	.46	66	.63	96	.46	51	.15	70	.63
12	122	2.6	78	.93	51	.47	103	.47	67	.20	100	.78
13	93	1.9	103	1.2	118	1.2	97	.44	66	.19	101	.83
14	130	2.6	51	.55	118	1.2	117	.53	79	.31	97	.82
15	101	2.0	48	.52	149	1.5	130	.53	97	.45	95	.78
16	65	1.3	96	1.1	96	1.0	103	.51	232	2.2	74	.60
17	61	1.1	47	.54	64	.70	80	.36	842	16	55	.42
18	70	1.2	41	.49	61	.71	62	.24	2180	88	58	.47
19	78	1.4	40	.43	64	.75	59	.29	499	13	72	.59
20	81	1.4	50	.51	62	.75	60	.27	188	3.0	56	.49
21	77	1.3	53	.56	57	.67	55	.25	138	1.9	94	.75
22	61	1.0	52	.56	58	.55	77	.43	127	1.1	77	.67
23	64	1.1	50	.52	70	.57	100	.67	168	2.0	111	.90
24	62	1.0	51	.51	63	.53	88	.51	193	2.1	68	.44
25	65	.99	73	.71	66	.57	81	.47	143	1.4	58	.31
26	66	1.0	85	.73	41	.25	94	.50	122	1.4	34	.21
27	63	.98	54	.48	67	.36	107	.63	119	1.5	54	.29
28	66	1.0	69	.58	56	.27	64	.35	115	1.2	43	.24
29	75	1.1	43	.38	77	.40	42	.22	---	---	35	.20
30	46	.68	65	.58	72	.41	55	.27	---	---	40	.23
31	36	.53	---	---	73	.51	81	.37	---	---	31	.17
TOTAL	---	58.88	---	20.11	---	23.27	---	12.39	---	138.26	---	239.31
APRIL			MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	42	.23	72	.55	131	.74	132	1.2	99	.36	148	.27
2	35	.19	40	.30	114	.62	97	.73	138	.39	137	.21
3	48	.27	44	.29	92	.46	200	2.5	113	.35	146	.22
4	45	.26	55	.37	114	.58	195	2.7	89	.25	189	.87
5	44	.25	66	.44	138	.95	199	2.8	97	.25	224	.62
6	34	.23	69	.52	135	.82	164	1.7	94	.28	168	.38

DES MOINES RIVER BASIN

05483343 HAZELBRUSH CREEK NEAR MAPLE RIVER, IOWA--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12.0	5.0	4.0	1.0	.0	.0	3.0	4.0	14.0	18.0	19.0	14.0
2	10.0	7.0	3.0	.0	.0	1.0	6.0	9.0	13.0	18.0	19.0	14.0
3	11.0	7.0	5.0	.0	.0	2.5	1.0	8.0	12.0	17.0	20.0	17.0
4	12.0	9.0	4.0	.0	.0	5.0	5.0	10.0	14.0	18.0	19.0	16.0
5	9.0	4.0	3.0	.0	.0	5.0	.0	9.0	16.0	20.0	14.0	18.0
6	15.0	3.0	1.0	.0	.0	3.0	.0	7.0	18.0	18.0	16.0	14.0
7	16.0	3.0	1.0	.0	.0	3.0	.0	7.0	18.0	19.0	18.0	14.0
8	14.0	4.0	1.0	---	.0	---	5.0	8.0	15.0	15.0	19.0	---
9	8.0	4.0	3.0	.0	.0	---	7.0	9.0	14.0	16.0	16.0	25.0
10	7.0	3.0	3.0	.0	.0	2.0	4.0	9.0	16.0	18.0	20.0	19.0
11	7.0	4.0	.0	.0	.0	.0	5.0	13.0	16.0	18.0	17.0	18.0
12	8.0	4.0	4.0	.0	.0	3.0	5.0	12.0	15.0	18.0	17.0	19.0
13	7.0	6.0	4.0	.0	.0	2.0	5.0	13.0	19.0	16.0	18.0	20.0
14	10.0	5.0	2.0	.0	.0	3.0	6.0	15.0	22.0	17.0	14.0	21.0
15	12.0	3.0	3.0	.0	.0	3.0	7.0	13.0	22.0	16.0	13.0	21.0
16	12.0	4.0	3.0	.0	1.0	1.0	6.0	13.0	21.0	18.0	15.0	16.0
17	11.0	4.0	4.0	.0	1.0	3.0	6.0	13.0	21.0	17.0	19.0	14.0
18	10.0	5.0	---	---	2.0	---	10.0	13.0	21.0	17.0	19.0	12.0
19	10.0	5.0	---	.0	5.0	5.0	8.0	14.0	20.0	19.0	20.0	12.0
20	9.0	3.0	---	.0	.0	7.0	11.0	14.0	21.0	18.0	17.0	16.0
21	8.0	4.0	.0	.0	.0	2.0	8.0	17.0	18.0	17.0	15.0	17.0
22	7.0	4.0	.0	.0	.0	6.0	7.0	16.0	17.0	17.0	16.0	12.0
23	10.0	6.0	.0	1.0	.0	3.0	8.0	17.0	17.0	17.0	17.0	10.0
24	10.0	2.0	.0	.0	.0	.0	15.0	17.0	16.0	18.0	19.0	11.0
25	10.0	.0	.0	---	.0	.0	15.0	15.0	17.0	17.0	22.0	14.0
26	9.0	.0	.0	---	.0	3.0	13.0	12.0	24.0	17.0	19.0	11.0
27	7.0	.0	.0	.0	.0	3.0	6.0	12.0	15.0	15.0	21.0	9.0
28	9.0	.0	.0	.0	.0	---	5.0	14.0	16.0	14.0	18.0	9.0
29	4.0	1.0	.0	.0	---	---	3.0	17.0	18.0	16.0	15.0	9.0
30	4.0	2.0	.0	.0	---	1.0	4.0	17.0	15.0	16.0	18.0	14.0
31	7.0	---	.0	.0	---	3.0	---	17.0	---	19.0	16.0	---

05483450 MIDDLE RACCOON RIVER NEAR BAYARD, IA

LOCATION.--Lat 41°46'43", long 94°29'33", in SW1/4 SW1/4 sec. 32, T.81 N., R.31 W., Guthrie County, Hydrologic Unit 07100007, on left bank 15 ft downstream from bridge on State Highway 25, 0.2 mi downstream from Battle Run Creek, 1.8 mi upstream from Springbrook Creek, 5.8 mi southeast of Bayard, 10.4 mi upstream from dam at Lake Panorama, and at mile 279.2 upstream from mouth of Des Moines River.

DRAINAGE AREA.--375 mi².

PERIOD OF RECORD.--March 1979 to current year. Occasional low-flow measurements, water years 1976, 1977.

GAGE.--Water-stage encoder. Datum of gage is 1,040.00 ft above sea level. Prior to June 23, 1979, nonrecording gage on downstream side of State Highway 25 bridge.

REMARKS.--Estimated daily discharges: Nov. 26 to Dec. 1 and Dec. 21 to Mar. 5. Records good except those for estimated daily discharges, which are poor. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data. Gage-height telemeter at station. U.S. Army Corps of Engineers data collection platform at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of July 3, 1973 reached a stage of 21.63 ft, from contracted-opening measurement, discharge, 14,600 ft³/s.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	315	208	e140	e140	e84	e170	129	107	76	115	56	37
2	295	193	145	e120	e94	e160	127	106	83	145	64	33
3	285	184	142	e110	e110	e200	124	103	81	112	55	32
4	280	183	139	e100	e100	e760	122	102	75	119	85	54
5	269	177	138	e110	e110	e620	123	104	87	141	69	97
6	261	171	137	e120	e120	493	119	115	103	165	52	72
7	258	171	133	e100	e100	364	119	122	93	123	47	48
8	254	172	133	e90	e80	290	118	120	88	117	45	41
9	287	168	131	e98	e88	244	116	121	95	101	44	38
10	292	166	130	e110	e76	225	113	116	92	93	45	37
11	276	164	125	e130	e82	208	112	111	92	90	46	35
12	268	164	122	e110	e88	198	119	109	138	88	48	33
13	256	169	128	e120	e92	190	133	106	121	97	58	32
14	250	163	125	e100	e98	183	124	105	163	95	57	31
15	282	159	126	e92	e130	177	156	105	109	86	45	31
16	302	157	126	e84	e120	170	147	101	96	81	40	32
17	276	157	131	e100	e180	166	133	96	93	80	38	32
18	262	155	132	e94	e260	164	129	95	172	81	37	30
19	257	156	132	e84	e500	160	121	93	159	73	35	30
20	256	152	131	e100	e210	156	114	91	181	68	35	29
21	255	154	e120	e96	e180	154	114	89	162	65	34	29
22	251	153	e110	e120	e170	151	112	88	179	61	34	32
23	248	151	e100	e110	e160	150	108	87	197	58	33	42
24	243	150	e110	e140	e140	145	107	87	238	55	33	48
25	239	153	e120	e120	e120	141	106	86	199	54	32	47
26	233	e120	e100	e100	e130	141	104	83	172	51	35	71
27	225	e100	e80	e94	e140	142	99	81	152	49	41	53
28	225	e110	e62	e110	e160	137	101	80	138	48	36	46
29	220	e120	e70	e100	---	135	107	86	125	48	34	41
30	213	e130	e100	e94	---	133	108	86	115	47	33	39
31	210	---	e120	e80	---	130	---	79	---	44	35	---
TOTAL	8043	4730	3738	3276	3922	6857	3564	3060	3874	2650	1381	1252
MEAN	259	158	121	106	140	221	119	98.7	129	85.5	44.5	41.7
MAX	315	208	145	140	500	760	156	122	238	165	85	97
MIN	210	100	62	80	76	130	99	79	75	44	32	29
AC-FT	15950	9380	7410	6500	7780	13600	7070	6070	7680	5260	2740	2480
CFSM	.69	.42	.32	.28	.37	.59	.32	.26	.34	.23	.12	.11
IN.	.80	.47	.37	.32	.39	.68	.35	.30	.38	.26	.14	.12

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1979 - 1994, BY WATER YEAR (WY)

	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
MEAN	125	128	135	97.9	198	324	392	428	469	435	176	120				
MAX	587	376	347	175	645	907	1035	993	1667	2653	673	466				
(WY)	1987	1993	1993	1993	1983	1993	1991	1984	1990	1993	1993	1993				
MIN	20.1	18.3	12.5	13.8	27.4	23.3	22.9	51.6	106	40.2	35.6	18.8				
(WY)	1981	1981	1981	1981	1990	1981	1981	1981	1981	1980	1985	1980				

SUMMARY STATISTICS

FOR 1993 CALENDAR YEAR

FOR 1994 WATER YEAR

WATER YEARS 1979 - 1994

	1993	1994	1979-1994
ANNUAL TOTAL	235803	46347	
ANNUAL MEAN	646	127	255
HIGHEST ANNUAL MEAN			677
LOWEST ANNUAL MEAN			54.1
HIGHEST DAILY MEAN	18100	760	18100
LOWEST DAILY MEAN	62	29	5.5
ANNUAL SEVEN-DAY MINIMUM	79	30	7.3
INSTANTANEOUS PEAK FLOW		2000	27500
INSTANTANEOUS PEAK STAGE		a19.94	29.02
INSTANTANEOUS LOW FLOW		28	
ANNUAL RUNOFF (AC-FT)	467700	91930	184500
ANNUAL RUNOFF (CFSM)	1.72	.34	.68
ANNUAL RUNOFF (INCHES)	23.39	4.60	9.23
10 PERCENT EXCEEDS	1110	225	570
50 PERCENT EXCEEDS	400	114	121
90 PERCENT EXCEEDS	129	42	31

e Estimated.

a Ice affected.

b Also Sept. 21.

05483470 LAKE PANORAMA AT PANORA, IOWA

LOCATION.--Lat 41°41'44", long 94°22'53", in SW 1/4 NE 1/4 sec.31, T.80 N., R.30 W., Guthrie County, Hydrologic Unit 07100007, in gate control building of dam on Middle Raccoon River, 0.5 mi upstream from State Highway 44, 1.0 mi west of Panora, 4.4 mi upstream from Bay Branch, and at mile 268.8 upstream from mouth of Des Moines River.

DRAINAGE AREA.--433 mi².

PERIOD OF RECORD.--May 1979 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,000.00 ft above sea level.

REMARKS.--No missing gage-height record. Lake is formed by earthfill dam with 100 ft bascule gate and concrete chute spillway, and 300 ft earthen emergency spillway. Low-flow outlet is 30-inch conduit and gate valve through dam. Dam was completed in August, 1970 and began filling April 27, 1971. Total storage, 60,000 acre-ft, surface area, 2,900 acres, at top of dam, elevation 1,068 ft. Storage unknown at top of spillway, elevation 1,048 ft. Normal storage, 19,700 acre-ft, surface area, 1,270 acres with bascule gate closed, elevation 1,045 ft. Dead storage unknown with bascule gate open, elevation 1,036 ft. Present lake classification is utility (industrial) but is also used for recreation. Gage-height telemeter at station.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height, 50.68 ft July 9, 1993; minimum, 41.56 ft Oct. 15, 1989.

EXTREMES FOR CURRENT YEAR.--Maximum gage height, 45.87 ft June 18; minimum recorded, 44.44 ft Oct. 21.

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	45.61	45.47	45.32	45.41	45.38	45.27	45.17	45.33	45.39	45.52	45.28	45.18
2	45.55	45.49	44.97	45.39	45.41	45.12	45.17	45.35	45.43	45.49	45.26	45.16
3	45.59	45.47	44.84	45.37	45.42	45.16	45.15	45.35	45.42	45.48	45.22	45.14
4	45.63	45.40	45.10	45.41	45.41	45.44	45.19	45.38	45.41	45.48	45.32	45.33
5	45.59	45.43	45.28	45.41	45.40	45.19	45.25	45.38	45.47	45.50	45.35	45.41
6	45.54	45.39	45.41	45.40	45.42	45.17	45.28	45.36	45.50	45.53	45.31	45.42
7	45.52	45.36	45.45	45.38	45.41	45.26	45.33	45.40	45.50	45.56	45.27	45.38
8	45.56	45.41	45.47	45.39	45.43	45.15	45.29	45.40	45.46	45.51	45.27	45.32
9	45.61	45.52	45.51	45.38	45.41	45.35	45.30	45.43	45.46	45.47	45.22	45.30
10	45.62	45.57	45.52	45.37	45.38	45.37	45.25	45.41	45.47	45.41	45.23	45.27
11	45.62	45.55	45.48	45.40	45.39	45.36	45.23	45.43	45.46	45.39	45.22	45.37
12	45.59	45.45	45.49	45.41	45.41	45.37	45.27	45.39	45.54	45.37	45.23	45.52
13	45.51	45.34	45.55	45.42	45.41	45.40	45.25	45.33	45.54	45.37	45.25	45.34
14	45.39	45.41	45.57	45.43	45.42	45.34	45.22	45.37	45.59	45.37	45.26	45.17
15	45.37	45.45	45.60	45.43	45.46	45.20	45.35	45.42	45.60	45.36	45.24	45.14
16	45.33	45.44	45.58	45.39	45.49	45.15	45.26	45.40	45.55	45.35	45.21	45.14
17	45.21	45.50	45.56	45.37	45.36	45.14	45.17	45.37	45.52	45.33	45.20	45.12
18	45.07	45.49	45.53	45.39	45.16	45.13	45.24	45.40	45.69	45.31	45.19	45.10
19	44.98	45.46	45.53	45.38	45.21	45.17	45.27	45.42	45.57	45.31	45.19	45.08
20	44.83	45.44	45.51	45.36	45.14	45.21	45.29	45.41	45.68	45.30	45.17	45.06
21	44.57	45.42	45.43	45.32	45.15	45.15	45.27	45.43	45.64	45.29	45.14	45.05
22	44.96	45.40	45.39	45.31	45.27	45.16	45.21	45.43	45.62	45.27	45.12	45.06
23	45.29	45.39	45.34	45.35	45.18	45.19	45.11	45.44	45.59	45.26	45.10	45.06
24	45.38	45.40	45.39	45.38	45.25	45.17	45.09	45.42	45.57	45.25	45.10	45.10
25	45.46	45.42	45.50	45.40	45.40	45.18	45.16	45.41	45.59	45.24	45.09	45.20
26	45.47	45.40	45.53	45.45	45.42	45.23	45.20	45.34	45.57	45.23	45.12	45.24
27	45.43	45.37	45.51	45.49	45.39	45.30	45.23	45.34	45.57	45.22	45.12	45.26
28	45.42	45.35	45.47	45.45	45.34	45.37	45.20	45.36	45.63	45.19	45.15	45.27
29	45.44	45.33	45.48	45.42	---	45.42	45.24	45.39	45.62	45.16	45.12	45.24
30	45.47	45.32	45.46	45.42	---	45.33	45.31	45.42	45.55	45.14	45.22	45.23
31	45.46	---	45.43	45.41	---	45.25	---	45.41	---	45.14	45.22	---
MEAN	45.39	45.43	45.43	45.40	45.35	45.25	45.23	45.39	45.54	45.35	45.21	45.22
MAX	45.63	45.57	45.60	45.49	45.49	45.44	45.35	45.44	45.69	45.56	45.35	45.52
MIN	44.57	45.32	44.84	45.31	45.14	45.12	45.09	45.33	45.39	45.14	45.09	45.05

05483600 MIDDLE RACCOON RIVER AT PANORA, IA

LOCATION.--Lat 41°41'14", long 94°22'15", in NE1/4 NW1/4 sec.5, T.79 N., R.30 W., Guthrie County, Hydrologic Unit 07100007, on left bank 15 ft downstream from bridge on county highway, 0.2 mi southwest of Panora, 1.5 mi upstream from Andy's Branch, 1.6 mi downstream from Lake Panorama, 18.2 mi upstream from mouth, and at mile 267.2 upstream from mouth of Des Moines River.

DRAINAGE AREA.--440 mi².

PERIOD OF RECORD.--June 1958 to current year.

REVISED RECORDS.--WDR IA-74-1: 1973 (P).

GAGE.--Water-stage recorder and concrete control. Datum of gage is 991.20 ft above sea level.

REMARKS.--Estimated daily discharges: Dec. 24-31, Jan. 15-19, 31, Feb. 1, 8-10, 12-14, 16-20, and Feb. 25 to Mar. 5. Records good except those for estimated daily discharges, which are poor. City of Panora diverts approximately 100 acre-ft/yr upstream of station. Flow regulated by dam on Lake Panorama since August 1970. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 10, 1953, reached a stage of 14.3 ft, from floodmark, discharge, about 14,000 ft³/s.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	333	207	274	144	e90	e140	121	111	86	158	69	52
2	276	231	519	151	98	e130	97	115	96	155	135	45
3	250	238	49	124	97	e180	92	112	105	139	61	40
4	275	223	56	110	97	e780	115	121	91	136	75	85
5	277	187	96	124	81	e600	81	151	112	147	78	110
6	279	195	112	132	80	447	53	168	119	160	72	99
7	251	185	142	114	84	427	66	142	112	155	65	79
8	233	129	144	104	e86	194	83	135	102	153	60	69
9	272	160	153	111	e115	160	121	147	104	121	58	59
10	300	193	176	108	e100	211	102	132	108	117	57	62
11	308	222	135	94	100	182	96	140	138	104	58	54
12	307	248	131	106	e105	173	135	155	235	110	55	49
13	312	284	165	107	e115	177	160	118	211	112	64	45
14	317	160	161	99	e110	217	122	108	145	111	67	42
15	372	190	161	e92	116	228	157	110	158	106	58	38
16	393	153	177	e86	e130	151	221	138	138	95	59	42
17	382	163	188	e98	e220	166	135	93	130	99	52	39
18	349	187	187	e90	e400	154	116	94	415	83	49	39
19	337	200	176	e92	e450	144	111	87	202	85	47	37
20	404	171	191	96	e320	172	120	96	213	73	49	36
21	211	184	162	95	245	164	145	91	243	74	45	35
22	46	170	133	90	189	120	156	97	222	66	42	35
23	156	148	130	84	141	148	157	93	324	62	40	36
24	220	173	e110	94	79	136	99	98	255	63	38	38
25	226	195	e120	94	e100	117	89	131	259	61	38	46
26	256	149	e100	95	e110	138	88	99	196	58	41	52
27	234	126	e90	110	e120	154	98	73	157	55	41	56
28	232	160	e80	112	e130	168	108	75	142	58	48	54
29	218	153	e90	102	---	189	102	82	155	66	42	55
30	203	208	e120	91	---	148	112	94	154	48	56	51
31	195	---	e130	e84	---	140	---	95	---	49	57	---
TOTAL	8424	5592	4658	3233	4108	6655	3458	3501	5127	3079	1776	1579
MEAN	272	186	150	104	147	215	115	113	171	99.3	57.3	52.6
MAX	404	284	519	151	450	780	221	168	415	160	135	110
MIN	46	126	49	84	79	117	53	73	86	48	38	35
AC-FT	16710	11090	9240	6410	8150	13200	6860	6940	10170	6110	3520	3130
CFSM	.62	.42	.34	.24	.33	.49	.26	.26	.39	.23	.13	.12
IN.	.71	.47	.39	.27	.35	.56	.29	.30	.43	.26	.15	.13

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1959 - 1994, BY WATER YEAR (WY)

	MEAN	121	125	104	84.0	178	431	365	412	423	320	137	128
MAX	670	588	356	439	838	1479	1222	1458	1646	2731	605	528	
(WY)	1987	1973	1993	1973	1971	1979	1984	1974	1990	1993	1993	1973	
MIN	19.5	12.8	7.60	6.95	24.1	20.2	26.4	20.0	9.40	5.56	22.2	19.3	
(WY)	1981	1971	1971	1971	1968	1981	1977	1977	1977	1977	1971	1980	

SUMMARY STATISTICS	FOR 1993 CALENDAR YEAR	FOR 1994 WATER YEAR	WATER YEARS 1959 - 1994
ANNUAL TOTAL	240073	51190	
ANNUAL MEAN	658	140	236
HIGHEST ANNUAL MEAN			701
LOWEST ANNUAL MEAN			38.6
HIGHEST DAILY MEAN	17500	780	17500
LOWEST DAILY MEAN	46	35	.00
ANNUAL SEVEN-DAY MINIMUM	101	37	3.1
INSTANTANEOUS PEAK FLOW		1300	22400
INSTANTANEOUS PEAK STAGE		a7.28	20.04
INSTANTANEOUS LOW FLOW		34	
ANNUAL RUNOFF (AC-FT)	476200	101500	170900
ANNUAL RUNOFF (CFSM)	1.49	.32	.54
ANNUAL RUNOFF (INCHES)	20.30	4.33	7.28
10 PERCENT EXCEEDS	1160	244	519
50 PERCENT EXCEEDS	356	117	91
90 PERCENT EXCEEDS	132	53	27

e Estimated.
a Ice affected.
b Also Sept. 21-23.

05484000 SOUTH RACCOON RIVER AT REDFIELD, IA

LOCATION.--Lat 41°35'22", long 94°09'04", in SW1/4 NE1/4 sec. 2, T.78 N., R.29 W., Dallas County, Hydrologic Unit 07100007, on right bank 20 ft upstream from bridge on county highway at Redfield, 3.2 mi downstream from bridge on U.S. Highway 6, 3.4 mi downstream from Middle Raccoon River, 14.0 mi upstream from mouth, and at mile 245.6 upstream from mouth of Des Moines River.

DRAINAGE AREA.--994 mi².

PERIOD OF RECORD.--March 1940 to current year.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1508: 1940.

GAGE.--Water-stage encoder. Datum of gage is 888.88 ft (revised) above sea level. Prior to June 12, 1946, nonrecording gage, June 12, 1946 to Sept. 30, 1986, water-stage recorder at site 2.4 mi upstream at datum 7.55 ft higher.

REMARKS.--Estimated daily discharges: Dec. 19 to Mar. 13. Records good except those for estimated daily discharges, which are poor. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data. U.S. Army Corps of Engineers rain-gage and data collection platform at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	959	545	404	e250	e200	e330	297	316	205	340	187	122
2	904	558	402	e280	e220	e450	270	278	231	355	183	114
3	825	559	375	e230	e220	e540	243	281	232	330	214	108
4	830	569	350	e190	e210	e660	256	259	224	325	194	197
5	813	524	327	e210	e180	e860	274	334	272	323	223	297
6	801	513	304	e250	e160	e753	203	371	331	321	176	210
7	795	505	312	e230	e170	e761	206	388	315	331	156	167
8	747	476	336	e210	e200	e584	211	378	277	326	148	147
9	788	444	333	e230	e240	e401	250	343	263	296	143	131
10	802	465	351	e210	e230	e469	265	336	266	272	146	122
11	793	489	338	e190	e230	e440	224	306	320	252	149	122
12	789	513	317	e210	e250	e410	271	318	381	372	151	113
13	762	552	354	e200	e270	e426	333	316	637	632	161	110
14	767	413	374	e190	e250	426	328	272	415	382	160	105
15	937	394	352	e180	e340	448	428	286	371	301	151	101
16	1010	444	355	e170	e400	373	399	286	326	262	140	99
17	904	438	370	e200	e250	359	366	286	312	257	137	101
18	839	433	380	e170	e540	372	272	228	694	230	128	98
19	820	422	e317	e180	e580	347	289	229	737	222	125	97
20	803	405	e240	e190	e500	360	259	236	668	210	121	95
21	853	425	e210	e190	e380	387	311	223	552	190	123	94
22	550	380	e200	e180	e300	337	326	233	488	187	113	94
23	542	384	e190	e170	e240	334	317	214	803	177	110	98
24	651	385	e180	e200	e220	345	304	239	679	171	107	104
25	630	376	e200	e200	e300	293	233	231	555	173	103	120
26	658	375	e180	e190	e320	299	254	277	492	167	112	135
27	623	381	e160	e210	e330	324	220	204	415	163	111	138
28	622	389	e150	e230	e350	322	242	191	355	156	108	127
29	602	394	e160	e210	---	340	270	198	340	163	111	121
30	565	399	e180	e200	---	326	267	218	351	152	130	119
31	559	---	e210	e180	---	291	---	210	---	136	163	---
TOTAL	23543	13549	8911	6330	8300	13367	8388	8485	12507	8174	4484	3806
MEAN	759	452	287	204	296	431	280	274	417	264	145	127
MAX	1010	569	404	280	580	860	428	388	803	632	223	297
MIN	542	375	150	170	160	291	203	191	205	136	103	94
AC-FT	46700	26870	17670	12560	16460	26510	16640	16830	24810	16210	8890	7550
CFSM	.76	.45	.29	.21	.30	.43	.28	.28	.42	.27	.15	.13
IN.	.88	.51	.33	.24	.31	.50	.31	.32	.47	.31	.17	.14

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1941 - 1994, BY WATER YEAR (WY)

	MEAN	236	234	190	173	390	860	741	832	966	615	363	294
MAX	1501	1162	826	565	1785	3112	2474	3005	5017	5494	2745	1385	
(WY)	1987	1973	1993	1983	1971	1979	1984	1974	1947	1993	1993	1993	
MIN	28.6	36.2	32.4	30.4	35.5	74.2	50.0	62.9	43.2	57.4	37.8	36.0	
(WY)	1941	1956	1956	1950	1956	1981	1956	1967	1977	1954	1955	1955	

SUMMARY STATISTICS FOR 1993 CALENDAR YEAR FOR 1994 WATER YEAR WATER YEARS 1941 - 1994

ANNUAL TOTAL	576764	119844	
ANNUAL MEAN	1580	328	
HIGHEST ANNUAL MEAN			491
LOWEST ANNUAL MEAN			1632
HIGHEST DAILY MEAN	33600	Jul 10	1993
LOWEST DAILY MEAN	150	Dec 28	1968
ANNUAL SEVEN-DAY MINIMUM	173	Dec 24	91.4
INSTANTANEOUS PEAK FLOW			33600
INSTANTANEOUS PEAK STAGE			17
INSTANTANEOUS LOW FLOW			20
ANNUAL RUNOFF (AC-FT)	1144000	237700	44000
ANNUAL RUNOFF (CFSM)	1.59	.33	29.04
ANNUAL RUNOFF (INCHES)	21.59	4.49	6.71
10 PERCENT EXCEEDS	2980	622	1080
50 PERCENT EXCEEDS	984	286	198
90 PERCENT EXCEEDS	320	133	58

e Estimated.

a Ice affected.

05484500 RACCOON RIVER AT VAN METER, IA
(National stream-quality accounting network station)

LOCATION.--Lat 41°32'02", long 93°56'59", in SW1/4 SW1/4 sec.22, T.78 N., R.27 W., Dallas County, Hydrologic Unit 07100006, on right bank 10 ft downstream from bridge on county highway R16, 0.3 mi northeast of Van Meter, 0.7 mi upstream from small left bank tributary, 1.1 mi downstream from confluence of North and South Raccoon Rivers, 29.0 mi upstream from mouth, and at mile 230.5 upstream from mouth of Des Moines River.

DRAINAGE AREA.--3,441 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April 1915 to current year. Prior to October 1934, monthly discharge only, published in WSP 1308.

REVISED RECORDS.--WSP 1308: 1927 (M), WSP 1438: Drainage area, WSP 1508: 1915 (M), 1925 (M), 1926, 1933 (M), 1939 (M), 1947 (M), 1949 (M).

GAGE.--Water-stage encoder. Datum of gage is 841.16 ft above sea level. See WSP 1308 for history of changes prior to Aug. 8, 1934.

REMARKS.--Estimated daily discharges: Dec. 21 to Mar. 3. Records good except those for estimated daily discharges, which are poor. U.S. Army Corps of Engineers rain-gage and data collection platform and U.S. Weather Service Limited Automatic Remote Collector telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2960	1610	1270	e800	e680	e1100	1080	1190	853	2190	515	413
2	2760	1610	1340	e960	e750	e1200	1030	1160	862	1930	532	358
3	2520	1600	1490	e900	e740	e1500	985	1150	848	1710	579	324
4	2410	1600	1070	e700	e730	5400	968	1150	821	1560	585	461
5	2310	1530	1040	e760	e650	6780	975	1230	870	1450	614	662
6	2230	1470	1070	e860	e560	8030	916	1360	995	1390	518	556
7	2160	1450	1040	e800	e600	8100	882	1490	998	1360	480	678
8	2080	1410	991	e700	e700	6310	891	1690	1270	1350	437	925
9	2150	1340	993	e780	e840	4160	901	2110	3610	1290	396	821
10	2280	1370	1040	e720	e800	3320	946	2350	2890	1480	380	677
11	2410	1400	1010	e650	e780	2820	899	2200	2440	1480	370	592
12	2560	1420	928	e700	e800	2490	933	2010	2140	1660	375	514
13	2640	1510	1080	e680	e860	2270	1050	1880	2470	2280	404	462
14	2540	1470	1110	e640	e950	2140	1090	1730	2200	1470	417	419
15	2870	1380	1130	e600	e1000	2120	1420	1640	2410	1280	428	382
16	3100	1380	1160	e580	e1200	1990	1890	1550	4170	1290	731	350
17	2810	1300	1180	e660	e1900	1840	1950	1470	3750	1510	969	335
18	2580	1280	1260	e590	e3000	1770	1760	1330	3510	1500	830	321
19	2500	1290	1310	e610	e4500	1640	1660	1250	4760	1310	726	306
20	2400	1270	1400	e640	e3000	1560	1540	1190	4330	1170	626	292
21	2470	1250	e1100	e640	e2000	1550	1520	1150	3820	1060	562	282
22	2010	1260	e900	e610	e1400	1470	1480	1110	3490	971	505	270
23	1890	1210	e760	e570	e900	1390	1420	1070	3580	903	466	265
24	1990	1190	e660	e660	e700	1370	1390	1080	3840	842	438	282
25	1960	1250	e810	e660	e800	1280	1260	1060	3400	788	425	343
26	1950	1130	e710	e640	e880	1240	1210	1170	4640	723	411	458
27	1900	858	e600	e700	e1000	1250	1150	1070	4530	667	401	866
28	1860	934	e530	e780	e1050	1230	1110	969	3700	619	392	839
29	1780	1030	e570	e740	---	1210	1120	916	2980	577	409	741
30	1710	1100	e660	e670	---	1180	1140	910	2500	553	455	678
31	1680	---	e700	e620	---	1100	---	892	---	505	498	---
TOTAL	71470	39902	30912	21620	33770	80810	36566	42527	82677	38868	15874	14872
MEAN	2305	1330	997	697	1206	2607	1219	1372	2756	1254	512	496
MAX	3100	1610	1490	960	4500	8100	1950	2350	4760	2280	969	925
MIN	1680	858	530	570	560	1100	882	892	821	505	370	265
AC-FT	141800	79150	61310	42880	66980	160300	72530	84350	164000	77090	31490	29500
CFSM	.67	.39	.29	.20	.35	.76	.35	.40	.80	.36	.15	.14
IN.	.77	.43	.33	.23	.37	.87	.40	.46	.89	.42	.17	.16

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1916 - 1992, BY WATER YEAR (WY)

	MEAN	818	727	532	479	965	2599	2488	2417	3081	1620	887	848
MAX	6840	4774	3085	3461	5438	10480	10630	9257	13970	8909	4309	6692	
(WY)	1974	1973	1983	1932	1984	1979	1983	1984	1947	1973	1951	1926	
MIN	48.6	51.5	31.0	17.2	31.5	146	125	121	112	68.1	28.1	43.1	
(WY)	1940	1938	1938	1940	1940	1931	1956	1934	1977	1936	1936	1939	

SUMMARY STATISTICS

FOR 1993 CALENDAR YEAR

FOR 1994 WATER YEAR

WATER YEARS 1916 - 1992

ANNUAL TOTAL	2008471	509868	
ANNUAL MEAN	5503	1397	1455
HIGHEST ANNUAL MEAN			4840
LOWEST ANNUAL MEAN			166
HIGHEST DAILY MEAN	57500	Jul 10	36400
LOWEST DAILY MEAN	530	Dec 28	10
ANNUAL SEVEN-DAY MINIMUM	649	Dec 24	10
INSTANTANEOUS PEAK FLOW			70100
INSTANTANEOUS PEAK STAGE			26.34
INSTANTANEOUS LOW FLOW			265
ANNUAL RUNOFF (AC-FT)	3984000	1011000	1054000
ANNUAL RUNOFF (CFSM)	1.60	.41	.42
ANNUAL RUNOFF (INCHES)	21.71	5.51	5.75
10 PERCENT EXCEEDS	12000	2530	3650
50 PERCENT EXCEEDS	3820	1110	560
90 PERCENT EXCEEDS	1020	502	108

e Estimated.

DES MOINES RIVER BASIN

05484500 RACCOON RIVER AT VAN METER, IA -- Continued
(National stream-quality accounting network station)

WATER-QUALITY RECORDS

PERIOD OF RECORD:

Chemical analyses: Partial record station September 1968 to September 1973, February 1974 to September 1979, and October 1986 to current year.

Water temperatures: Partial record station September 1968 to September 1973 and February 1974 to September 1979.

Biological analyses: February 1974 to September 1979.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	TEMPER- ATURE AIR (DEG C) (00020)	TUR- BID- ITY (NTU) (00076)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)
OCT 26...	1045	2040	682	8.5	11.0	10.0	3.3	10.1	94	742	62
DEC 06...	1130	1030	710	8.5	1.5	-1.5	4.0	13.5	99	742	K14
MAR 23...	0845	1410	653	8.4	12.5	22.5	1.0	10.0	99	724	44
MAY 10...	0835	2380	690	8.5	15.0	16.0	55	10.2	104	742	430
JUN 15...	0915	2060	617	8.3	27.0	26.0	60	7.0	91	736	1700
AUG 10...	0830	372	461	8.5	22.0	25.0	3.5	6.8	80	741	480

DATE	STREP- TOCOCCHI FECAL, KF AGAR (COLS. PER 100 ML) (31673)	HARD- NESS TOTAL (MG/L AS CaCO3) (00900)	CALCIUM DIS- SOLVED (MG/L AS Ca) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS Mg) (00925)	SODIUM, DIS- SOLVED (MG/L AS Na) (00930)	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LITY WAT DIS TOT IT FIELD AS CaCO3 (39086)	CAR- BONATE WATER DIS IT FIELD MG/L AS CO3 (00452)
OCT 26...	84	350	92	30	9.9	6	0.2	1.6	30	1
DEC 06...	K43	350	91	31	11	6	0.3	1.6	266	8
MAR 23...	17	330	90	26	9.2	6	0.2	2.7	264	3
MAY 10...	330	330	84	28	8.7	5	0.2	2.0	259	5
JUN 15...	2800	330	87	28	8.2	5	0.2	2.1	253	4
AUG 10...	380	200	41	24	14	13	0.4	2.8	161	3

DATE	BICAR- BONATE WATER DIS IT FIELD MG/L AS HCO3 (00453)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS Cl) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SiO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	NITRO- GEN, TOTAL (MG/L AS N) (00605)
OCT 26...	34	34	15	0.4	19	411	256	0.56	2260	0.18
DEC 06...	307	41	17	0.3	18	443	406	0.60	1230	0.26
MAR 23...	316	41	17	0.4	19	398	390	0.54	1520	0.65
MAY 10...	308	39	18	0.5	15	413	390	0.56	2650	1.3
JUN 15...	300	31	16	0.5	22	396	386	0.54	2200	1.5
AUG 10...	193	43	21	0.3	7.3	319	255	0.43	320	1.1

05484500 RACCOON RIVER AT VAN METER, IA -- Continued
(National stream-quality accounting network station)

DATE	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
OCT 26...	8.00	0.02	0.02	0.2	0.05	0.05	0.07	208	1150	52
DEC 06...	8.00	0.02	0.04	0.3	0.08	0.07	0.10	174	484	79
MAR 23...	5.80	0.03	0.05	0.7	0.17	0.18	0.25	478	1820	25
MAY 10...	8.60	0.03	0.03	1.3	0.07	0.07	0.31	335	2150	76
JUN 15...	8.80	0.03	0.05	1.6	0.13	0.14	0.41	437	2430	95
AUG 10...	0.77	0.01	0.02	1.1	<0.01	0.02	0.18	87	87	98

DATE	ALUM- INUM, DIS- SOLVED (UG/L AS AL) (01106)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	COBALT, DIS- SOLVED (UG/L AS CO) (01035)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	SILVER, DIS- SOLVED (UG/L AS AG) (01075)
OCT 26...	<10	110	<3	10	17	15	<10	<1	1	<1
DEC 06...	--	--	--	--	--	--	--	--	--	--
MAR 23...	--	97	<3	14	13	13	<10	2	2	<1
MAY 10...	<10	98	<3	5	14	4	20	<1	2	<1
JUN 15...	--	--	--	--	--	--	--	--	--	--
AUG 10...	40	81	<3	320	14	12	10	3	1	<1

DATE	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)	VANA- DIUM, DIS- SOLVED (UG/L AS V) (01085)	ATRA- ZINE WATER UNFLTRD REC (UG/L) (39630)	CYAN- AZINE TOTAL (UG/L) (81757)	METRI- BUZIN IN WHOLE WATER (UG/L) (81408)	ALA- CHLOR TOTAL RECOVER (UG/L) (77825)	METOLA- CHLOR IN WHOLE WATER (UG/L) (39356)	TRI- FLURA- LIN TOTAL RECOVER (UG/L) (39030)	BUTY- LATE TOTAL (UG/L) (99901)	DEETHYL ATRA- ZINE, WATER, DISS, REC (UG/L) (04040)
OCT 26...	250	<6	0.1	<0.10	<0.1	<0.10	<0.10	<0.1	<0.1	--
DEC 06...	--	--	--	--	--	--	--	--	--	--
MAR 23...	230	<6	<0.1	<0.10	<0.1	<0.10	<0.10	<0.1	<0.1	--
MAY 10...	250	<6	0.3	0.13	<0.1	0.12	0.55	<0.1	<0.1	--
JUN 15...	--	--	1.1	0.58	<0.1	<0.10	0.74	<0.1	<0.1	0.13
AUG 10...	180	<6	--	--	--	--	--	--	--	--

DES MOINES RIVER BASIN

05484800 WALNUT CREEK AT DES MOINES, IA

LOCATION.--Lat 41°35'14", long 93°42'11", in SW1/4 SE1/4 sec.2, T.78 N., R.25 W., Polk County, Hydrologic Unit 07100006, on left bank, 25 ft downstream from bridge on 63rd Street in Des Moines, and 2.2 mi upstream from Raccoon River.

DRAINAGE AREA.--78.4 mi².

PERIOD OF RECORD.--October 1971 to current year.

REVISED RECORDS.--WDR IA-73-1: 1972. WDR IA-75-1: 1973-74.

GAGE.--Water-stage encoder. Datum of gage is 801.04 ft above sea level (levels by Iowa Natural Resources Council).

REMARKS.--Estimated daily discharges: Oct. 9-20, Nov. 24-29, and Dec. 20 to Mar. 3. Records good except those for estimated daily discharges, which are poor. Periodic observations of water temperature and specific conductance published in this report as miscellaneous water quality data. U.S. National Weather Service Limited Automatic Remote Collector at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	156	56	30	e21	e11	e35	21	24	31	85	59	8.9
2	138	54	27	e20	e12	e50	19	19	33	23	5.1	5.6
3	129	51	25	e19	e10	e90	18	18	15	17	4.8	3.6
4	121	50	24	e21	e12	245	18	21	13	15	7.7	195
5	110	47	24	e22	e15	163	18	19	87	11	1.9	38
6	106	46	23	e19	e14	96	17	40	44	9.1	1.1	16
7	100	44	22	e17	e13	72	17	35	39	9.4	.61	12
8	128	43	25	e15	e12	58	18	26	36	7.8	.43	24
9	e170	41	23	e17	e11	49	19	23	30	6.4	.46	13
10	e140	40	22	e19	e13	45	18	21	44	5.7	8.0	6.1
11	e120	40	28	e18	e15	42	16	22	33	67	1.5	5.1
12	e110	63	32	e19	e14	41	46	18	114	94	21	3.2
13	e90	47	34	e18	e17	37	26	17	163	122	5.8	3.7
14	e110	41	31	e16	e21	36	44	31	77	79	2.6	5.4
15	e130	40	26	e14	e30	36	54	18	52	21	1.6	4.7
16	e125	35	23	e16	e40	33	32	16	43	12	1.2	5.5
17	e120	34	27	e15	e100	32	25	14	36	7.2	.86	5.5
18	e100	33	25	e13	e200	31	25	13	30	5.2	.40	7.2
19	e95	33	23	e15	e150	30	23	13	26	4.1	.48	6.9
20	e90	31	e20	e13	e80	34	20	12	28	23	.23	7.3
21	86	31	e18	e15	e60	31	22	12	25	2.9	.00	7.0
22	80	30	e16	e16	e50	28	20	11	24	2.2	.04	30
23	78	29	e17	e20	e40	30	20	64	93	1.6	3.1	9.4
24	75	e26	e18	e19	e45	26	40	29	29	.86	8.5	48
25	72	e22	e16	e17	e50	24	22	23	21	.90	12	77
26	67	e20	e15	e15	e45	24	19	16	17	.75	15	16
27	65	e23	e13	e11	e40	24	16	12	15	1.5	1.1	7.8
28	65	e26	e12	e12	e38	23	22	11	13	4.0	3.1	6.8
29	60	e28	e13	e11	---	22	18	10	11	4.7	1.2	6.9
30	57	29	e15	e10	---	21	39	10	9.8	5.4	153	6.1
31	57	---	e18	e10	---	20	---	9.1	---	6.1	21	---
TOTAL	3150	1133	685	503	1158	1528	732	627.1	1231.8	654.81	342.81	591.7
MEAN	102	37.8	22.1	16.2	41.4	49.3	24.4	20.2	41.1	21.1	11.1	19.7
MAX	170	63	34	22	200	245	54	64	163	122	153	195
MIN	57	20	12	10	10	20	16	9.1	9.8	.75	.00	3.2
AC-FT	6250	2250	1360	998	2300	3030	1450	1240	2440	1300	680	1170
CFSM	1.30	.48	.28	.21	.53	.63	.31	.26	.52	.27	.14	.25
IN.	1.49	.54	.33	.24	.55	.73	.35	.30	.58	.31	.16	.28

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1972 - 1994, BY WATER YEAR (WY)

	MEAN	35.3	40.6	35.1	24.8	43.1	81.1	104	110	118	86.2	51.5	34.3
MAX	166	147	119	123	172	214	310	327	385	427	329	214	193
(WY)	1974	1973	1983	1974	1973	1990	1973	1986	1990	1993	1993	1993	1993
MIN	1.33	.88	.17	.001	.48	3.17	2.71	6.36	7.62	2.96	4.37	.57	.57
(WY)	1972	1977	1977	1977	1977	1981	1981	1977	1977	1985	1976	1976	1976

SUMMARY STATISTICS	FOR 1993 CALENDAR YEAR	FOR 1994 WATER YEAR	WATER YEARS 1972 - 1994
ANNUAL TOTAL	57264	12337.22	
ANNUAL MEAN	157	33.8	63.7
HIGHEST ANNUAL MEAN			158
LOWEST ANNUAL MEAN			10.3
HIGHEST DAILY MEAN	3540	Aug 29	4280
LOWEST DAILY MEAN	10	Feb 17	.00
ANNUAL SEVEN-DAY MINIMUM	15	Dec 24	.46
INSTANTANEOUS PEAK FLOW			792
INSTANTANEOUS PEAK STAGE			7.89
INSTANTANEOUS LOW FLOW			.00
ANNUAL RUNOFF (AC-FT)	113600	24470	46150
ANNUAL RUNOFF (CFSM)	2.00	.43	.81
ANNUAL RUNOFF (INCHES)	27.17	5.85	11.04
10 PERCENT EXCEEDS	318	85	150
50 PERCENT EXCEEDS	100	22	25
90 PERCENT EXCEEDS	23	5.2	2.2

e Estimated.

a Also 20-23.

05485500 DES MOINES RIVER BELOW RACCOON RIVER AT DES MOINES, IA

LOCATION.--Lat 41°34'30", long 93°35'48", in NE1/4 SE1/4 sec.10, T.78 N., R.24 W., Polk County, Hydrologic Unit 07100008, on right bank 10 ft downstream from bridge on Southeast 14th Street at Des Moines, 0.8 mi downstream from Raccoon River and Scott Street Dam, and at mile 200.7.

DRAINAGE AREA.--9,879 mi².

PERIOD OF RECORD.--April 1940 to current year.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1508: 1943 (P).

GAGE.--Water-stage encoder. Datum of gage is 762.52 ft above sea level. Prior to Oct. 1, 1951, and Oct. 1, 1953 to Sept. 30, 1959, water-stage recorder upstream of Scott Street Dam, 0.8 mi upstream at datum 11.16 ft higher. Oct. 1, 1951 to Sept. 30, 1953, and Oct. 1, 1959 to Sept. 30, 1961, nonrecording gage at present site and datum.

REMARKS.--Estimated daily discharges: Oct. 6, Jan. 7 to Feb. 24, and Apr. 26, to May 1. Records good except those for estimated daily discharges, which are poor. Des Moines municipal water supply is taken from infiltration galleries on Raccoon River, 3.5 mi upstream from station. Average daily pumpage was about 29 ft³/s. At times, water is pumped from Raccoon River into recharge basins, or into Waterworks Reservoir, capacity 4,800 acre-ft. Effluent from sewage treatment plant enters the river 2.3 mi downstream from station. Net effect diversions not known. Flow regulated by Saylorville Lake (station 05481630) 13.0 mi upstream, since Apr. 12, 1977. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data. U.S. Army Corps of Engineers data collection platform and Weather Service Limited Automatic Remote Collector (LARC) at station.

COOPERATION.--Average monthly pumpage from galleries provided by Des Moines Water Works.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 116,000 ft³/s July 11, 1993, gage height, 34.29; minimum daily discharge, 26 ft³/s Jan. 16-29, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1893, that of June 26, 1947, site and datum then in use. Flood of May 31, 1903, reached a stage of 20.9 ft, from flood profile, at Scott Street site and datum, by office of Des Moines City Engineer.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15700	5940	2530	2910	e1600	3990	4510	e5800	3510	16500	4670	2300
2	15300	5760	2890	3220	e1800	3930	4470	6220	1830	15800	4350	2190
3	14700	5040	3670	3200	e1700	4160	4330	6270	3070	15600	3970	1940
4	13100	4250	3590	3130	e1600	6460	3780	6180	3680	15300	3700	2530
5	10300	4270	3640	3050	e1500	14300	3300	6290	3770	15000	3360	2430
6	e9370	4320	3600	2810	e1400	15900	3270	6740	3520	14400	3170	2530
7	8340	4260	3110	e2700	e1400	18600	3330	7110	3900	7690	2930	1860
8	8290	4190	2400	e2400	e1600	19900	3570	7500	4950	3100	2530	2040
9	8960	3840	2740	e2200	e1700	18200	3570	8180	7560	3140	2270	2280
10	9620	3780	3210	e2200	e1700	16900	3600	8880	9220	3860	2250	2390
11	9150	3820	3200	e1950	e1700	16000	3620	8800	8320	8140	2210	2110
12	5690	3940	2830	e2100	e1750	15500	3720	8140	7820	11700	2320	1740
13	4280	3970	2190	e2000	e1900	14100	3860	7440	7580	14600	2790	1600
14	6170	3970	3120	e1900	e1900	12000	4290	7060	8480	14200	3590	1630
15	9210	3890	3800	e1800	e2000	10500	5250	6890	10600	13400	4480	1580
16	10800	3770	4040	e2000	e2400	10400	6110	6510	13300	13600	4790	1420
17	10900	3420	4070	e1900	e3200	9760	7030	6070	14600	14400	5340	1420
18	10500	3330	4110	e1700	e4500	8990	7670	5680	14000	15000	5410	1430
19	9620	3510	4510	e1750	e5900	8850	7570	4960	13800	14700	5040	1430
20	7800	3770	4640	e1800	e5600	8570	7370	4540	13700	14400	4580	1420
21	6750	3720	4910	e1750	e7000	8270	6880	4470	13500	14300	4480	1410
22	6580	3710	4720	e1700	e8400	7990	6700	4410	13000	14300	4070	1470
23	6180	3710	3830	e1700	e9200	7290	6500	4700	13400	14100	3600	1500
24	6110	3640	2000	e1800	e8600	6630	6450	4860	15400	13800	3540	1570
25	6170	3700	1740	e1700	7640	6360	6130	4860	16900	13300	3260	2220
26	5920	3480	1850	e1600	5920	5850	e5620	4640	17700	11900	2950	2360
27	4530	2690	1780	e1700	4820	5500	e5000	4360	18600	10000	2730	2610
28	3390	2540	1890	e1800	4080	5350	e4750	3910	18100	7390	2520	2910
29	3450	2630	2570	e1700	---	5030	e5000	3560	17000	5280	2200	2840
30	4840	2530	3000	e1600	---	4730	e5400	3310	16300	5190	2790	2640
31	5950	---	2820	e1550	---	4540	---	3330	---	4820	2340	---
TOTAL	257670	115390	99000	65320	102510	304550	152650	181670	317110	358910	108230	59800
MEAN	8312	3846	3194	2107	3661	9824	5088	5860	10570	11580	3491	1993
MAX	15700	5940	4910	3220	9200	19900	7670	8880	18600	16500	5410	2910
MIN	3390	2530	1740	1550	1400	3930	3270	3310	1830	3100	2200	1410
AC-FT	511100	228900	196400	129600	203300	604100	302800	360300	629000	711900	214700	118600
CFSM	.84	.39	.32	.21	.37	.99	.52	.59	1.07	1.17	.35	.20
IN.	.97	.43	.37	.25	.39	1.15	.57	.68	1.19	1.35	.41	.23

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1978 - 1994, BY WATER YEAR (WY)^a

	MEAN	MAX	(WY)	MIN	(WY)
1978	3558	15060	1987	474	1990
1979	3811	10610	1993	363	1990
1980	3336	9045	1983	342	1990
1981	2012	6439	1983	310	1981
1982	3228	12400	1984	343	1978
1983	8731	23530	1983	560	1981
1984	11380	27620	1993	1082	1981
1985	11540	28190	1993	1794	1981
1986	12580	35250	1984	1716	1988
1987	11520	55960	1993	739	1988
1988	5642	26050	1993	441	1988
1989	4331	21430	1993	434	1988

SUMMARY STATISTICS	FOR 1993 CALENDAR YEAR	FOR 1994 WATER YEAR	WATER YEARS 1978 - 1994 ^a
ANNUAL TOTAL	6768750	2122810	
ANNUAL MEAN	18540	5816	6819
HIGHEST ANNUAL MEAN			19180
LOWEST ANNUAL MEAN			1036
HIGHEST DAILY MEAN	113000	19900	113000
LOWEST DAILY MEAN	1740	1400	200
ANNUAL SEVEN-DAY MINIMUM	1870	1430	236
INSTANTANEOUS PEAK FLOW		20600	116000
INSTANTANEOUS PEAK STAGE		20.29	34.29
ANNUAL RUNOFF (AC-FT)	13430000	4211000	4940000
ANNUAL RUNOFF (CFSM)	1.88	.59	.69
ANNUAL RUNOFF (INCHES)	25.49	7.99	9.38
10 PERCENT EXCEEDS	36600	13900	18900
50 PERCENT EXCEEDS	18000	4270	3520
90 PERCENT EXCEEDS	2790	1770	580

e Estimated.

a Post regulation.

DES MOINES RIVER BASIN

05485640 FOURMILE CREEK AT DES MOINES, IA

LOCATION.--Lat 41°36'50", long 93°32'43", in NE1/4 NE1/4 sec.32, T.79 N., R.23 W., Polk County, Hydrologic Unit 07100008, on right bank 20 ft downstream from bridge on Easton Blvd., 4.4 mi downstream from Muchikinock Creek and 5.0 mi upstream from Des Moines River.

DRAINAGE AREA.--92.7 mi².

PERIOD OF RECORD.--October 1971 to current year.

REVISED RECORDS.--WDR IA-75-1: 1974 (P).

GAGE.--Water-stage encoder. Datum of gage is 795.87 ft above sea level.

REMARKS.--Estimated daily discharges: Nov. 25-29, Dec. 21 to Mar. 4, and July 9-19.. Records good except those for estimated daily discharges, which are poor. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data. U.S. National Weather Service Limited Automatic Remote Collector at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	167	65	33	e30	e12	e43	27	35	33	75	37	13
2	138	61	33	e28	e13	e54	26	31	41	40	13	8.0
3	127	60	32	e26	e11	e90	25	29	33	36	10	6.0
4	118	59	32	e28	e13	e250	24	29	28	40	13	105
5	106	56	32	e30	e18	200	24	30	48	36	6.2	44
6	102	53	31	e26	e17	141	23	37	37	34	3.8	21
7	96	53	30	e23	e15	109	22	39	65	35	3.0	13
8	99	53	30	e21	e14	87	23	37	525	31	3.6	12
9	170	49	31	e25	e13	72	22	36	248	e28	2.4	12
10	147	47	29	e28	e15	64	20	34	192	e26	5.8	8.1
11	124	47	28	e26	e17	56	19	33	161	e25	5.1	7.0
12	111	55	35	e28	e16	52	33	30	117	e25	11	6.6
13	98	65	35	e25	e18	49	31	30	213	e28	13	5.0
14	94	50	34	e22	e21	46	36	35	115	e30	7.5	3.7
15	149	50	33	e19	e30	46	59	36	80	e24	5.3	3.4
16	141	47	31	e21	e40	42	45	29	61	e20	3.5	3.5
17	119	46	32	e20	e100	41	38	27	54	e17	2.9	3.7
18	110	46	32	e18	e200	41	35	25	47	e14	3.4	3.8
19	108	45	32	e20	e250	39	32	24	46	e11	2.2	2.8
20	102	43	32	e18	e150	41	30	24	43	9.3	3.7	3.2
21	98	41	e29	e20	e90	41	33	23	39	7.0	2.5	3.2
22	93	41	e25	e23	e66	39	32	23	36	5.0	2.5	6.6
23	88	41	e27	e30	e45	38	28	224	148	5.6	1.8	5.8
24	84	41	e28	e29	e58	36	34	142	95	6.2	2.0	8.3
25	82	e30	e24	e27	e70	33	30	76	67	4.3	6.7	71
26	77	e20	e22	e21	e60	33	28	58	55	4.2	8.8	34
27	74	e25	e20	e17	e54	33	27	46	47	4.7	3.4	21
28	76	e30	e17	e19	e46	32	29	41	42	4.4	4.1	13
29	70	e33	e20	e15	---	30	29	37	39	3.9	3.0	11
30	67	34	e23	e12	---	28	35	35	35	3.6	100	8.7
31	67	---	e28	e11	---	27	---	32	---	4.1	26	---
TOTAL	3302	1386	900	706	1472	1933	899	1367	2790	637.3	316.2	467.4
MEAN	107	46.2	29.0	22.8	52.6	62.4	30.0	44.1	93.0	20.6	10.2	15.6
MAX	170	65	35	30	250	250	59	224	525	75	100	105
MIN	67	20	17	11	11	27	19	23	28	3.6	1.8	2.8
AC-FT	6550	2750	1790	1400	2920	3830	1780	2710	5530	1260	627	927
CFSM	1.15	.50	.31	.25	.57	.67	.32	.48	1.00	.22	.11	.17
IN.	1.33	.56	.36	.28	.59	.78	.36	.55	1.12	.26	.13	.19

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1972 - 1994, BY WATER YEAR (WY)

	MEAN	47.5	51.2	39.1	26.0	47.0	108	128	136	152	110	54.0	43.5
MAX	258	317	124	118	206	292	354	462	500	607	363	270	
(WY)	1987	1984	1983	1974	1973	1979	1973	1974	1974	1993	1993	1993	
MIN	1.36	1.57	.25	.001	.55	4.04	3.67	6.67	.73	.074	1.66	1.37	
(WY)	1989	1977	1977	1977	1977	1981	1981	1977	1977	1977	1988	1988	

SUMMARY STATISTICS	FOR 1993 CALENDAR YEAR	FOR 1994 WATER YEAR	WATER YEARS 1972 - 1994
ANNUAL TOTAL	76007	16175.9	
ANNUAL MEAN	208	44.3	78.6
HIGHEST ANNUAL MEAN			204
LOWEST ANNUAL MEAN			7.97
HIGHEST DAILY MEAN	3560	Jul 9	3570 Jun 9 1974
LOWEST DAILY MEAN	17	Dec 28	.00 Jan 2 1977
ANNUAL SEVEN-DAY MINIMUM	22	Dec 24	2.6 Aug 18 .00 Jan 2 1977
INSTANTANEOUS PEAK FLOW			779 Jun 8 5380 Aug 28 1977
INSTANTANEOUS PEAK STAGE			7.98 Jun 8 14.84 Jun 9 1974
INSTANTANEOUS LOW FLOW			1.4 Aug 25 .00 many days
ANNUAL RUNOFF (AC-FT)	150800	32080	56920
ANNUAL RUNOFF (CFSM)	2.25	.48	.85
ANNUAL RUNOFF (INCHES)	30.50	6.49	11.52
10 PERCENT EXCEEDS	426	99	190
50 PERCENT EXCEEDS	140	31	29
90 PERCENT EXCEEDS	30	5.7	2.4

e Estimated.

05486000 NORTH RIVER NEAR NORWALK, IA

LOCATION.--Lat 41°27'25", long 93°39'10", in NW1/4 SW1/4 sec.20, T.77 N., R.24 W., Warren County, Hydrologic Unit 07100008, on left bank 10 ft downstream from bridge on county highway R57, 1.7 mi southeast of Norwalk, 5.2 mi upstream from Middle Creek, and 6.2 mi downstream from Badger Creek.

DRAINAGE AREA.--349 mi².

PERIOD OF RECORD.--February 1940 to current year.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1508: 1946. WDR IA-76-1: 1975 (P).

GAGE.--Water-stage encoder. Datum of gage is 788.45 ft above sea level (levels by U.S. Army Corps of Engineers). Prior to June 12, 1946, nonrecording gage at same site and datum. Jan. 7 to Oct. 11, 1960, nonrecording gage at site 2.1 mi upstream at different datum.

REMARKS.--Estimated daily discharges: Nov. 25-30, Dec. 17 to Feb. 18, Mar. 6-17, and Aug. 11-19. Records good except those for estimated daily discharges, which are poor. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data. U.S. Army Corps of Engineers data collection platform at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	589	179	119	e48	e72	83	67	122	61	133	65	28
2	512	176	120	e45	e65	83	65	130	61	152	62	32
3	445	173	122	e40	e56	142	63	127	66	141	68	32
4	416	170	123	e35	e58	693	62	118	75	127	68	43
5	383	165	122	e43	e63	1490	60	117	85	119	59	66
6	348	157	117	e40	e56	e1000	56	149	105	115	59	100
7	335	148	112	e37	e50	e500	53	182	125	105	60	64
8	331	149	103	e33	e40	e300	49	221	126	98	59	35
9	418	151	97	e35	e37	e190	48	201	105	98	57	21
10	413	145	109	e41	e40	e160	48	174	94	96	53	13
11	333	143	100	e39	e42	e140	47	154	96	87	e40	10
12	306	149	80	e41	e43	e135	55	142	110	81	e45	7.9
13	283	186	112	e38	e45	e130	81	132	114	865	e43	7.3
14	263	182	141	e35	e54	e125	91	124	104	908	e40	6.5
15	315	168	149	e33	e60	e125	98	123	92	286	e35	5.7
16	512	158	138	e36	e110	e120	114	119	77	185	e32	5.3
17	466	166	e120	e35	e300	e110	122	110	66	152	e28	4.6
18	367	145	e110	e33	e600	110	101	99	59	137	e25	4.1
19	370	142	e100	e35	1010	109	85	93	101	123	e21	3.8
20	380	136	e90	e33	725	109	74	86	183	117	17	4.0
21	344	131	e76	e39	351	116	76	81	259	111	15	4.2
22	318	126	e66	e45	199	113	122	77	154	99	13	4.7
23	295	125	e58	e55	128	110	160	77	148	90	11	4.9
24	279	124	e52	e70	130	102	136	102	783	83	10	4.1
25	267	e90	e47	e67	135	91	129	100	392	76	11	7.1
26	255	e64	e40	e60	115	85	124	96	235	76	14	7.4
27	237	e70	e38	e45	101	82	111	90	186	79	11	14
28	222	e84	e35	e71	91	79	97	80	161	79	15	18
29	211	e100	e40	e67	---	76	95	69	146	71	19	11
30	197	e110	e45	e62	---	72	103	64	134	64	18	8.7
31	184	---	e50	e68	---	69	---	62	---	63	19	---
TOTAL	10594	4212	2831	1404	4776	6849	2592	3621	4503	5016	1092	577.3
MEAN	342	140	91.3	45.3	171	221	86.4	117	150	162	35.2	19.2
MAX	589	186	149	71	1010	1490	160	221	783	908	68	100
MIN	184	64	35	33	37	69	47	62	59	63	10	3.8
AC-FT	21010	8350	5620	2780	9470	13580	5140	7180	8930	9950	2170	1150
CFSM	.98	.40	.26	.13	.49	.63	.25	.33	.43	.46	.10	.06
IN.	1.13	.45	.30	.15	.51	.73	.28	.39	.48	.53	.12	.06

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1941 - 1994, BY WATER YEAR (WY)

	MEAN	82.6	104	78.5	82.9	161	351	350	326	370	193	120	99.4
MAX	593	747	567	739	911	1041	1401	1402	3260	1722	1185	1007	
(WY)	1987	1973	1993	1973	1973	1965	1973	1984	1947	1993	1993	1993	
MIN	.20	.37	.36	.38	3.21	3.90	1.22	3.71	1.58	1.10	.21	.26	
(WY)	1950	1956	1956	1954	1956	1954	1956	1967	1977	1977	1968	1957	

SUMMARY STATISTICS

FOR 1993 CALENDAR YEAR

FOR 1994 WATER YEAR

WATER YEARS 1941 - 1994

ANNUAL TOTAL	242972	48067.3	
ANNUAL MEAN	666	132	193
HIGHEST ANNUAL MEAN			709
LOWEST ANNUAL MEAN			8.08
HIGHEST DAILY MEAN	7290	Aug 31	21600
LOWEST DAILY MEAN	35	Dec 28	.00
ANNUAL SEVEN-DAY MINIMUM	42	Dec 25	.00
INSTANTANEOUS PEAK FLOW			1600
INSTANTANEOUS PEAK STAGE			16.43
INSTANTANEOUS LOW FLOW			3.7
ANNUAL RUNOFF (AC-FT)	481900	95340	139900
ANNUAL RUNOFF (CFSM)	1.91	.38	.55
ANNUAL RUNOFF (INCHES)	25.90	5.12	7.52
10 PERCENT EXCEEDS	1940	284	440
50 PERCENT EXCEEDS	338	96	43
90 PERCENT EXCEEDS	102	27	2.0

e Estimated.

05486490 MIDDLE RIVER NEAR INDIANOLA, IA

LOCATION.—Lat 41°25'27", long 93°35'09", in SW1/4 SE1/4 sec.35, T.77 N., R.24 W., Warren County, Hydrologic Unit 07100008, on right bank 10 ft downstream from bridge on county highway, 0.4 mi upstream from Cavitt Creek, 1.5 mi upstream from bridge on U.S. Highway 69, and 4.6 mi northwest of Indianola.

DRAINAGE AREA.--503 mi².

PERIOD OF RECORD.--March 1940 to current year.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1508: 1940 (M). 1941. 1944. 1946. 1949 (M).

GAGE.--Water-stage encoder. Datum of gage is 776.15 ft above sea level (U.S. Army Corps of Engineers bench mark). Prior to June 11, 1946, June 9, 1947 to Nov. 23, 1948, and Sept. 8, 1951 to Oct. 30, 1952, nonrecording gage; and June 11, 1946 to June 8, 1947 (destroyed by flood), Nov. 24, 1948 to Sept. 7, 1951, Oct. 31, 1952 to Sept. 30, 1962, water-stage recorder at site 1.6 mi downstream at datum 2.81 ft lower.

REMARKS.--Estimated daily discharges: Nov. 25-30, Dec. 21 to Feb. 19, and Feb. 23 to Mar. 2. Records good except those for estimated daily discharges, which are poor. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data. U.S. Army Corps of Engineers data collection platform at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	529	224	151	e100	e60	e190	106	302	80	142	56	23
2	472	217	153	e86	e64	e230	104	303	688	163	52	20
3	426	213	154	e78	e57	362	99	266	479	194	60	20
4	397	207	150	e80	e66	2140	98	227	213	151	68	35
5	371	198	158	e90	e80	2580	94	220	262	127	54	44
6	348	185	149	e85	e75	1320	90	294	687	130	48	70
7	333	177	140	e75	e70	619	88	591	298	110	49	78
8	384	172	128	e68	e60	394	84	418	219	103	41	49
9	1150	171	132	e70	e55	299	82	341	172	88	35	35
10	730	169	136	e78	e60	255	80	289	159	88	34	28
11	415	166	126	e74	e68	227	80	254	160	77	33	25
12	359	183	117	e80	e63	214	103	212	160	68	35	23
13	330	265	138	e75	e68	208	126	180	143	740	34	22
14	312	249	194	e70	e74	202	132	168	134	455	32	21
15	404	220	220	e62	e85	197	121	166	118	215	30	20
16	673	199	183	e64	e110	189	106	155	106	155	30	18
17	544	181	166	e66	e200	182	145	142	92	121	27	18
18	417	171	161	e57	e900	177	128	132	80	103	26	17
19	470	166	156	e60	e1200	173	102	122	111	90	25	17
20	464	161	152	e57	1770	172	90	113	111	80	23	17
21	387	156	e120	e62	539	177	624	106	122	70	23	16
22	347	152	e100	e80	340	173	1000	102	98	63	22	18
23	327	149	e110	e110	e160	164	451	101	148	56	21	18
24	312	148	e120	e105	e200	157	339	153	466	51	21	17
25	301	e100	e100	e100	e250	149	338	183	451	56	20	20
26	287	e70	e80	e85	e230	142	292	135	240	88	23	25
27	275	e80	e70	e67	e210	137	267	112	183	191	20	23
28	267	e90	e60	e73	e200	130	213	98	156	118	20	24
29	259	e110	e70	e64	---	126	207	90	136	80	21	20
30	247	e140	e80	e58	---	119	219	84	122	62	27	20
31	233	---	e90	e54	---	112	---	79	---	52	25	---
TOTAL	12770	5089	4064	2333	7314	11916	6008	6138	6594	4287	1035	801
MEAN	412	170	131	75.3	261	384	200	198	220	138	33.4	26.7
MAX	1150	265	220	110	1770	2580	1000	591	688	740	68	78
MIN	233	70	60	54	55	112	80	79	80	51	20	16
AC-FT	25330	10090	8060	4630	14510	23640	11920	12170	13080	8500	2050	1590
CFSM	.82	.34	.26	.15	.52	.76	.40	.39	.44	.27	.07	.05
IN.	.84	.38	.30	.17	.54	.88	.44	.45	.49	.32	.08	.05

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1941 - 1994, BY WATER YEAR (WY)

MEAN	122	141	123	112	234	486	484	467	495	268	180	190
MAX	928	961	1070	646	1415	1417	1983	1716	4094	3121	1419	1460
(WY)	1974	1973	1983	1973	1973	1962	1973	1944	1947	1993	1993	1992
MIN	4.28	2.80	1.62	1.02	4.68	7.35	4.81	10.1	3.81	5.20	4.47	3.92
(WY)	1969	1956	1956	1977	1977	1954	1956	1956	1977	1977	1968	1968

SUMMARY STATISTICS	FOR 1993 CALENDAR YEAR	FOR 1994 WATER YEAR	WATER YEARS 1941 - 1994
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ANNUAL TOTAL	339371		68349			
ANNUAL MEAN	930		187		275	
HIGHEST ANNUAL MEAN					1006	1993
LOWEST ANNUAL MEAN					17.8	1968
HIGHEST DAILY MEAN	6950	Aug 12	2580	Mar 5	21400	Jun 13 1947
LOWEST DAILY MEAN	60	Dec 28	16	Sep 21	.11	Jul 2 1977
ANNUAL SEVEN-DAY MINIMUM	79	Dec 25	17	Sep 18	.51	Jun 29 1977
INSTANTANEOUS PEAK FLOW			3580	Mar 5	34000	Jun 13 1947
INSTANTANEOUS PEAK STAGE			a14.91	Feb 19	28.27	Jun 13 1947
ANNUAL RUNOFF (AC-FT)	673100		135600		199100	
ANNUAL RUNOFF (CFSM)	1.85		.37		.55	
ANNUAL RUNOFF (INCHES)	25.10		5.05		7.42	
10 PERCENT EXCEEDS	2830		376		606	
50 PERCENT EXCEEDS	464		122		71	
90 PERCENT EXCEEDS	145		27		8.0	

e Estimated.

e Estimated.
a Ice affected.

05487470 SOUTH RIVER NEAR ACKWORTH, IA

LOCATION.--Lat 41°20'14", long 93°29'10", in SE1/4 SE1/4 sec.34, T.76 N., R.23 W., Warren County, Hydrologic Unit 07100008, on right bank 15 ft downstream from bridge on county highway, 0.5 mi downstream from Otter Creek, and 2.2 mi southwest of Ackworth.

DRAINAGE AREA.--460 mi².

PERIOD OF RECORD.--February 1940 to current year.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1508: 1941, 1945 (M), 1946.

GAGE.--Water-stage encoder. Datum of gage is 769.97 ft above sea level. Prior to June 12, 1946, nonrecording gage, June 13, 1946 to Apr. 13, 1960, water-stage recorder, and Apr. 14, 1960 to Sept. 30, 1961, nonrecording gage, all at site 4.0 mi downstream at datum 8.06 ft lower.

REMARKS.--Estimated daily discharges: Nov. 25-30, Dec. 21 to Feb. 18, Feb. 23 to Mar. 2, Mar. 5-17, Apr. 22-29, and Aug. 14-17. Records good except those for estimated daily discharges, which are poor. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data. U.S. Army Corps of Engineers data collection platform at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1930 reached a stage of 24.5 ft, from information by local residents, discharge, about 30,000 ft³/s, at site 4.0 mi downstream.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	380	110	114	e60	e49	e180	80	254	47	88	27	8.9
2	316	113	117	e54	e54	e250	78	190	860	251	26	6.3
3	276	111	115	e50	e51	e632	72	133	553	229	13	4.8
4	255	110	110	e54	e54	2960	71	114	204	117	15	66
5	229	99	102	e56	e80	e2280	69	116	651	90	8.7	77
6	210	90	91	e52	e76	e1360	68	319	879	69	7.2	35
7	196	88	78	e47	e60	e919	68	884	302	58	6.0	16
8	207	95	75	e42	e56	e638	68	463	175	64	5.9	9.0
9	793	93	85	e46	e49	e395	68	261	134	66	5.9	8.0
10	461	91	84	e54	e56	e284	67	174	138	52	7.2	6.1
11	286	92	83	e51	e60	e215	67	131	168	43	7.1	4.8
12	233	114	83	e54	e56	e209	95	114	149	33	8.3	4.6
13	201	293	105	e50	e58	e196	153	100	163	36	8.8	4.5
14	188	200	214	e46	e66	e190	135	100	138	114	e8.4	4.5
15	282	150	210	e45	e80	e190	89	123	97	63	e7.0	4.2
16	333	136	160	e48	e110	e180	65	106	80	44	e6.8	4.3
17	242	126	137	e45	e200	e170	55	84	99	35	e5.8	3.8
18	209	113	129	e43	e500	160	53	73	86	29	5.1	3.8
19	312	109	121	e45	1260	154	46	66	279	28	4.7	3.6
20	315	100	108	e43	3020	150	39	61	113	31	4.0	3.6
21	231	97	e79	e51	757	148	1120	57	454	28	3.9	3.4
22	191	94	e72	e60	405	136	e1120	54	171	17	3.9	6.4
23	172	93	e66	e78	e150	130	e468	68	852	17	3.9	6.0
24	161	93	e69	e76	e160	117	e319	248	548	20	3.9	5.5
25	153	e60	e62	e62	e210	101	e296	179	232	29	4.1	13
26	140	e47	e52	e54	e190	101	e208	112	160	30	7.8	16
27	130	e54	e43	e50	e175	101	e146	82	124	15	5.7	19
28	130	e80	e45	e54	e170	92	e217	65	108	11	4.9	6.9
29	120	e100	e50	e47	---	84	e141	58	93	9.2	5.5	4.7
30	112	e110	e56	e42	---	78	147	56	78	8.5	14	4.5
31	110	---	e60	e45	---	78	---	52	---	7.3	21	---
TOTAL	7574	3261	2975	1604	8212	12878	5688	4897	8135	1732.0	266.5	364.2
MEAN	244	109	96.0	51.7	293	415	190	158	271	55.9	8.60	12.1
MAX	793	293	214	78	3020	2960	1120	884	879	251	27	77
MIN	110	47	43	42	49	78	39	52	47	7.3	3.9	3.4
AC-FT	15020	6470	5900	3180	16290	25540	11280	9710	16140	3440	529	722
CFSM	.53	.24	.21	.11	.64	.90	.41	.34	.59	.12	.02	.03
IN.	.61	.26	.24	.13	.66	1.04	.46	.40	.66	.14	.02	.03

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1941 - 1994, BY WATER YEAR (WY)

	MEAN	119	133	119	110	225	458	454	426	483	271	140	169
MAX	1283	906	1022	901	1209	1568	1937	1962	4305	3870	1546	1332	
(WY)	1974	1962	1983	1974	1973	1960	1973	1959	1947	1993	1993	1993	
MIN	.35	1.05	.88	1.05	3.70	3.61	1.70	7.14	1.79	1.48	2.02	1.05	
(WY)	1957	1957	1956	1956	1989	1957	1956	1980	1977	1977	1957	1957	

SUMMARY STATISTICS

FOR 1993 CALENDAR YEAR

FOR 1994 WATER YEAR

WATER YEARS 1941 - 1994

ANNUAL TOTAL	331279	57586.7	
ANNUAL MEAN	908	158	259
HIGHEST ANNUAL MEAN			966
LOWEST ANNUAL MEAN			16.1
HIGHEST DAILY MEAN	19500	Jul 6	31400
LOWEST DAILY MEAN	43	Dec 27	.00
ANNUAL SEVEN-DAY MINIMUM	53	Dec 25	.00
INSTANTANEOUS PEAK FLOW			38100
INSTANTANEOUS PEAK STAGE			32.85
INSTANTANEOUS LOW FLOW			.00
ANNUAL RUNOFF (AC-FT)	657100	114200	187300
ANNUAL RUNOFF (CFSM)	1.97	.34	.56
ANNUAL RUNOFF (INCHES)	26.79	4.66	7.64
10 PERCENT EXCEEDS	2500	289	490
50 PERCENT EXCEEDS	291	83	41
90 PERCENT EXCEEDS	92	7.0	3.0

e Estimated.

05487500 DES MOINES RIVER NEAR RUNNELLS, IA

LOCATION.--Lat 41°29'19", long 93°20'17", in SE1/4 NW1/4 sec.12, T.77 N., R.22 W., Polk County, Hydrologic Unit 07100008, on left bank 10 ft downstream from bridge on State Highway 316, 0.2 mi downstream from South River River, 0.5 mi upstream from Camp Creek, 2.2 mi southeast of Runnells, 37.2 mi upstream from Red Rock Dam and at mi 179.5.

DRAINAGE AREA.--11,655 mi².

PERIOD OF RECORD.--October 1985 to current year.

GAGE.--Water-stage encoder. Datum of gage is 700.00 ft above sea level (U.S. Army Corps of Engineers bench mark).

REMARKS.--Estimated daily discharges: Oct. 13, Nov. 25, 26, Dec. 23 to Feb. 21, Feb. 26 to Mar. 2, Apr. 13-18, 21, July 9, 10, Aug. 2, 3, and Sept. 1-4, 8-10, 15-30. Records good except those for estimated daily discharge, which are poor. Flow regulated by Saylorville Lake (station 05481630) 34.2 mi upstream. Stage-discharge relation is affected at times by backwater from Lake Red Rock (05488100). U.S. Army Corps of Engineers data collection platform at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Floods occurred on May 31, 1903; June 14, 1947; June 26, 1947; and June 24, 1954. No gage height or discharge was determined. Gage height and discharge information is available for these floods at other sites on the Des Moines River.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	17400	6710	3840	e3600	e1750	e5000	5430	6850	3620	16500	5300	2190
2	16600	6610	3890	e3800	e1800	e5200	5330	7240	4140	16100	e5000	2110
3	16000	6040	4590	e3750	e1700	5930	4940	7290	3720	15900	e4700	1900
4	15100	5150	5070	e3600	e1650	12400	4590	7200	4450	15600	4510	2570
5	12700	4780	5000	e3600	e1600	20200	3880	7190	4710	15200	3880	2950
6	10900	4900	4760	e3500	e1550	19400	3720	7650	5790	14900	3500	2840
7	9930	4730	4750	e3200	e1500	20300	3700	8990	5140	11800	3310	2330
8	9660	4670	3560	e3000	e1500	21600	3890	9110	6010	6080	2840	1990
9	11500	4360	3340	e2800	e1450	20300	3860	9230	7410	e5320	2430	2150
10	11800	4150	4080	e2500	e1500	18400	3920	9620	9930	e5310	2350	2340
11	11100	4160	4330	e2100	e1600	17100	4090	9690	9820	6350	2260	2260
12	8570	4310	4290	e2200	e1550	16200	4210	9210	9270	10700	2250	1870
13	e6500	4960	3420	e2000	e1700	15200	e4500	8550	9080	14000	2590	1730
14	6600	4930	3970	e2000	e1700	13100	e5200	7920	9130	16300	3160	1680
15	9330	4760	5070	e1900	e1700	11400	e6000	7770	10100	14600	4380	e1650
16	11600	4780	5470	e2300	e1650	11200	e7000	7520	11600	13700	4840	e1600
17	12200	4310	5490	e2200	e4000	10900	e7800	6840	13800	14200	5250	e1500
18	11600	4190	5420	e2000	e6000	10100	e8200	6530	13800	14600	5590	e1500
19	11300	4150	5650	e2050	e9000	9950	8100	5750	13600	14600	5440	e1500
20	10200	4700	5820	e2100	e13000	9850	7980	5060	13900	14500	4760	e1500
21	8630	4800	6100	e2000	e11500	9620	e8960	4850	13900	14200	4560	e1500
22	8270	4860	6010	e2050	13700	9450	9870	4760	13700	14200	4440	e1600
23	7730	4830	e5000	e2100	14300	8870	8270	4790	14600	14000	3680	e1650
24	7460	4810	e2500	e2100	13200	8050	7800	6150	15700	13800	3490	e2000
25	7430	e4660	e2000	e1900	11400	7760	7560	5760	17600	13600	3400	e2400
26	7270	e4420	e1900	e1800	e9000	7190	7220	5580	17500	12600	3010	e2600
27	6420	4090	e1800	e1950	e6500	6730	6470	5020	18200	11300	2940	e2800
28	4800	3550	e2000	e2000	e5200	6590	6130	4490	18200	9050	2700	e3100
29	4250	3740	e3000	e1900	---	6270	5790	4030	17200	6390	2250	e3000
30	4970	3780	e3700	e1850	---	5870	6330	3620	16400	5750	2690	e2800
31	6530	---	e3500	e1750	---	5590	---	3490	---	5550	2670	---
TOTAL	304350	140890	129320	75600	142700	355720	180740	207750	332020	376700	114170	63610
MEAN	9818	4696	4172	2439	5096	11470	6025	6702	11070	12150	3683	2120
MAX	17400	6710	6100	3800	14300	21600	9870	9690	18200	16500	5590	3100
MIN	4250	3550	1800	1750	1450	5000	3700	3490	3620	5310	2250	1500
AC-FT	603700	279500	256500	150000	283000	705600	358500	412100	658600	747200	226500	126200

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1986 - 1994, BY WATER YEAR (WY)

	1986	1987	1988	1989	1990	1991	1992	1993	1994
MEAN	4802	4419	4372	2322	3084	10280	12570	13660	15360
MAX	18040	12660	10000	6237	8190	18390	30380	32740	40530
(WY)	1987	1993	1992	1992	1992	1993	1993	1993	1993
MIN	621	524	473	450	500	1805	1151	2372	1777
(WY)	1990	1990	1990	1990	1990	1989	1989	1988	1988

SUMMARY STATISTICS FOR 1993 CALENDAR YEAR FOR 1994 WATER YEAR WATER YEARS 1986 - 1994

	1993 CALENDAR YEAR	1994 WATER YEAR	1986 - 1994
ANNUAL TOTAL	8121690	2423570	
ANNUAL MEAN	22250	6640	8482
HIGHEST ANNUAL MEAN			22980
LOWEST ANNUAL MEAN			1200
HIGHEST DAILY MEAN	133000	Jul 11	133000
LOWEST DAILY MEAN	1800	Dec 27	390
ANNUAL SEVEN-DAY MINIMUM	2340	Feb 23	407
INSTANTANEOUS PEAK FLOW			134000
INSTANTANEOUS PEAK STAGE			82.88
ANNUAL RUNOFF (AC-FT)	16110000	4807000	6145000
10 PERCENT EXCEEDS	45000	14100	23000
50 PERCENT EXCEEDS	21400	5070	4230
90 PERCENT EXCEEDS	3580	1900	610

e Estimated.

a Ice affected.

05487980 WHITE BREAST CREEK NEAR DALLAS, IA

LOCATION.--Lat 41°14'41", long 93°16'08", in NW1/4 NW1/4 sec.3, T.74 N., R.21 W., Marion County, Hydrologic Unit 07100008, on left bank 15 ft downstream from bridge on county highway, 0.5 mi downstream from Kirk Branch, and 1.7 mi northwest of Dallas.

DRAINAGE AREA.--342 mi².

PERIOD OF RECORD.--October 1962 to current year.

GAGE.--Water-stage encoder. Datum of gage is 759.21 ft above sea level.

REMARKS.--Estimated daily discharges: Nov. 26-30, Dec. 21 to Mar. 3, and Aug. 16 to Sept. 3. Records fair except those for estimated daily discharges, which are poor. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data. U.S. Army Corps of Engineers data collection platform at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 11, 1962 reached a stage of 28.87 ft, from floodmark, discharge, about 12,000 ft³/s. Flood of June 6, 1947 may have been slightly higher.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	141	51	47	e22	e14	e52	55	89	27	24	3.9	e7.0
2	114	53	52	e24	e15	e80	54	84	470	31	4.1	e5.0
3	100	53	50	e22	e13	e150	52	71	455	131	5.1	e3.5
4	90	51	53	e24	e15	2570	50	61	153	51	9.3	27
5	80	48	51	e25	e17	2380	49	58	312	32	5.8	24
6	75	43	48	e22	e16	1240	46	99	683	23	5.7	19
7	70	41	41	e19	e14	828	45	1000	249	19	4.3	20
8	69	42	40	e20	e13	475	45	481	101	20	4.3	12
9	188	42	43	e21	e12	242	47	210	69	21	3.9	6.5
10	93	43	43	e23	e14	176	46	132	65	16	4.1	4.4
11	98	43	41	e22	e15	143	45	93	61	12	4.7	3.2
12	83	50	45	e21	e13	139	62	73	71	9.9	5.3	2.4
13	69	94	49	e20	e16	128	90	62	222	8.9	6.7	2.2
14	63	95	60	e18	e20	118	108	57	137	8.8	9.0	2.0
15	76	85	84	e16	e35	119	86	68	62	8.2	8.3	1.7
16	84	59	90	e17	e90	113	63	79	44	8.2	e7.0	1.6
17	78	53	75	e18	e180	97	53	58	35	9.4	e5.4	1.5
18	76	51	65	e14	e330	98	48	47	82	7.4	e9.0	1.3
19	80	50	58	e16	e470	98	45	41	105	6.7	e8.0	1.2
20	76	46	54	e15	e720	96	42	37	42	6.7	e5.0	1.1
21	75	45	e35	e17	e200	96	831	33	312	16	e3.0	1.3
22	77	44	e30	e19	e80	89	977	30	569	21	e2.0	2.3
23	68	43	e26	e25	e40	90	309	33	703	12	e2.6	2.1
24	64	44	e23	e24	e45	81	172	83	379	8.7	e3.5	1.4
25	63	53	e21	e22	e54	71	126	79	355	8.3	e5.2	4.5
26	60	e50	e18	e20	e50	69	98	101	83	8.4	e8.0	4.0
27	57	e45	e16	e18	e40	68	75	65	53	8.2	e12	6.4
28	57	e35	e15	e17	e45	65	66	42	41	8.4	e8.0	3.9
29	55	e38	e17	e15	---	59	72	34	32	6.9	e4.0	2.6
30	53	e40	e18	e14	---	55	72	31	26	4.9	e7.0	3.3
31	51	---	e20	e13	---	54	---	28	---	3.9	e11	---
TOTAL	2483	1530	1328	603	2586	10139	3929	3459	5998	560.9	185.2	178.4
MEAN	80.1	51.0	42.8	19.5	92.4	327	131	112	200	18.1	5.97	5.95
MAX	188	95	90	25	720	2570	977	1000	703	131	12	27
MIN	51	35	15	13	12	52	42	28	26	3.9	2.0	1.1
AC-FT	4930	3030	2630	1200	5130	20110	7790	6860	11900	1110	367	354
CFSM	.23	.15	.13	.06	.27	.96	.38	.33	.58	.05	.02	.02
IN.	.27	.17	.14	.07	.28	1.10	.43	.38	.65	.06	.02	.02

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1963 - 1994, BY WATER YEAR (WY)

	MEAN	135	126	124	69.7	166	344	462	308	255	313	136	218
	MAX	1153	756	718	601	718	1055	1592	838	1146	3641	1202	1902
	(WY)	1974	1984	1983	1974	1973	1993	1991	1993	1967	1993	1993	1992
	MIN	1.16	1.35	.80	.49	1.82	4.05	3.85	6.44	5.13	1.47	2.09	1.11
	(WY)	1990	1977	1964	1977	1964	1964	1989	1980	1977	1988	1971	1968

SUMMARY STATISTICS	FOR 1993 CALENDAR YEAR	FOR 1994 WATER YEAR	WATER YEARS 1963 - 1994
ANNUAL TOTAL	263807	32979.5	
ANNUAL MEAN	723	90.4	
HIGHEST ANNUAL MEAN			221
LOWEST ANNUAL MEAN			816
HIGHEST DAILY MEAN	23300	2570	17.1
LOWEST DAILY MEAN	15	1.1	24700
ANNUAL SEVEN-DAY MINIMUM	18	1.4	.02
INSTANTANEOUS PEAK FLOW		4910	.05
INSTANTANEOUS PEAK STAGE		16.40	37300
INSTANTANEOUS LOW FLOW		.97	33.45
ANNUAL RUNOFF (AC-FT)	523300	65410	160300
ANNUAL RUNOFF (CFSM)	2.11	.26	.65
ANNUAL RUNOFF (INCHES)	28.69	3.59	8.79
10 PERCENT EXCEEDS	1710	138	438
50 PERCENT EXCEEDS	130	44	36
90 PERCENT EXCEEDS	45	5.0	2.3

e Estimated.

a Also 20,21.

05488100 LAKE RED ROCK NEAR PELLA, IA

LOCATION.--Lat 41°22'11", long 92°58'48", in NE1/4 NW1/4 sec. 19, T.76 N., R.18 W., Marion County, Hydrologic Unit 07100008, at outlet works near right end of Red Rock Dam on Des Moines River, 1.4 mi upstream from Lake Creek, 4.5 mi southwest of Pella and at mile 142.3.

DRAINAGE AREA.--12,323 mi².

PERIOD OF RECORD.--March 1969 to current year.

GAGE.--Water-stage recorder. Datum of gage is at sea level (levels by U.S. Army Corps of Engineers).

REMARKS.--Reservoir is formed by earthfill dam completed in 1969. Storage began in March 1969. Releases controlled through 14 concrete conduits extending through the concrete ogee spillway section into the stilling basin. Inlet invert elevation at 690 ft above sea level. Maximum design discharge through the conduits is 37,500 ft³/s but normal flood control operation limits maximum outflow to 30,000 ft³/s. Spillway section consists of 5 tainter gates, 41 ft wide and 46 ft high, on concrete ogee crest at elevation 736 ft. The storage capacity of the reservoir at full flood-control pool level, 780 ft, is 1,790,000 acre-ft, surface area, 65,500 acres. Conservation pool level, 728 feet, is 89,000 acre-feet, surface area, 9,980 acres. Reservoir is used for flood control, low-flow augmentation, conservation and recreation. Normal operation will maintain an elevation of 728 ft with minimum release of 300 ft³/s and maximum release of 30,000 ft³/s during the non-growing season, providing discharges at Ottumwa and Keosauqua do not exceed 30,000 ft³/s and 35,000 ft³/s respectively. Storage tables for water years 1985-1986 published as day second-feet instead of acre-feet storage.

COOPERATION.--Records provided by U.S. Army Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily contents, 1,933,000 acre-ft July 12, 13, 1993; maximum elevation, 782.67 ft July 13, 1993; minimum daily contents, 43,900 acre-ft May 24, 1985, minimum elevation, 719.68 ft Feb. 17, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum daily contents, 313,000 acre-ft Mar. 6-8; maximum elevation, 744.50 ft Mar. 7; minimum daily contents, 113,000 acre-ft Oct. 12; minimum elevation, 732.02 ft Oct. 12.

Capacity table (elevation, in feet, and contents, in acre-feet)

705	1,200	735	148,000	765	948,000
710	3,940	740	226,000	770	1,178,000
715	11,900	745	324,000	775	1,444,000
720	27,700	750	445,000	780	1,750,000
725	50,700	755	588,000	785	2,109,000
730	89,200	760	754,000	790	2,493,000

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	197000	122000	278000	274000	271000	272000	271000	280000	273000	304000	270000	269000
2	172000	127000	277000	274000	271000	273000	272000	279000	276000	301000	271000	269000
3	153000	137000	276000	273000	271000	275000	271000	278000	277000	300000	272000	269000
4	142000	149000	276000	273000	271000	288000	273000	276000	276000	299000	272000	275000
5	135000	158000	280000	273000	270000	307000	273000	274000	277000	295000	271000	276000
6	127000	165000	274000	275000	271000	313000	272000	275000	276000	291000	270000	277000
7	121000	175000	275000	270000	270000	313000	270000	277000	276000	290000	270000	278000
8	119000	184000	273000	273000	269000	313000	273000	276000	273000	286000	271000	279000
9	119000	193000	273000	272000	269000	309000	273000	274000	272000	281000	270000	281000
10	118000	200000	274000	273000	269000	300000	272000	271000	272000	277000	274000	283000
11	114000	207000	272000	272000	268000	289000	270000	270000	270000	276000	270000	286000
12	113000	215000	274000	271000	269000	279000	276000	270000	270000	273000	271000	288000
13	114000	224000	275000	269000	268000	271000	275000	269000	269000	274000	273000	290000
14	118000	235000	275000	269000	271000	268000	274000	269000	268000	278000	270000	292000
15	117000	241000	275000	269000	272000	266000	273000	267000	270000	277000	268000	294000
16	115000	248000	274000	271000	276000	267000	270000	266000	273000	273000	268000	295000
17	114000	253000	276000	272000	281000	273000	269000	268000	275000	269000	269000	296000
18	115000	259000	275000	273000	282000	275000	271000	268000	275000	267000	270000	297000
19	116000	264000	276000	275000	287000	275000	271000	269000	273000	271000	272000	298000
20	115000	265000	274000	275000	300000	278000	271000	269000	276000	271000	271000	299000
21	114000	273000	277000	274000	300000	274000	274000	268000	277000	273000	271000	301000
22	115000	274000	273000	273000	287000	272000	274000	267000	278000	274000	272000	301000
23	116000	275000	273000	273000	273000	276000	271000	269000	295000	274000	273000	303000
24	116000	273000	274000	273000	272000	270000	271000	272000	302000	275000	272000	305000
25	116000	276000	273000	274000	270000	270000	269000	273000	304000	275000	273000	308000
26	116000	274000	274000	275000	266000	272000	271000	271000	304000	273000	273000	308000
27	115000	275000	275000	275000	267000	273000	270000	270000	303000	271000	273000	310000
28	117000	275000	274000	274000	270000	271000	276000	270000	305000	271000	273000	310000
29	115000	274000	273000	273000	---	272000	276000	271000	305000	271000	272000	310000
30	115000	275000	273000	272000	---	271000	279000	275000	304000	270000	272000	312000
31	118000	---	274000	271000	---	271000	---	271000	---	272000	270000	---
MEAN	123000	225000	275000	273000	274000	281000	272000	272000	281000	279000	271000	292000
MAX	197000	276000	280000	275000	300000	313000	279000	280000	305000	304000	274000	312000
MIN	113000	122000	272000	269000	266000	266000	269000	266000	268000	267000	268000	269000

05488110 DES MOINES RIVER NEAR PELLA, IA

LOCATION.--Lat 41°21'38", long 92°58'23", in SW1/4 SW1/4 SE1/4 sec.19, T.76 N., R.18 W., Marion County, Hydrologic Unit 07100009, on right bank, 0.4 mile downstream of outlet of Red Rock Reservoir, and 0.75 mile upstream of Lake Creek.

DRAINAGE AREA.--12,330 mi².

PERIOD OF RECORD.--October 1992 to current year.

GAGE.--Water-stage encoder. Datum of gage is 600.00 ft above sea level.

REMARKS.--Estimated daily discharges: Jan.18. Records good except those for estimated daily discharges, which are fair. Periodic observations of water temperature and specific conductance are published as in this report as miscellaneous water quality data. U.S. Army Corps of Engineers data collection platform at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	29000	5280	2660	3170	2160	4100	5040	5730	3390	15000	4880	2590
2	26900	4740	3840	3640	2170	4090	5000	6790	3080	14900	4450	2220
3	23800	2760	4460	3630	1950	4330	5010	7270	3420	14900	4160	1940
4	19900	1470	4640	3600	1850	7470	4260	7260	4490	14900	4150	1850
5	15500	1720	4800	3390	1840	12900	3730	7270	5120	15000	3820	2660
6	14000	1950	4700	2940	1840	15300	3740	7250	5850	15000	3640	2670
7	12600	1880	4570	3050	1850	17500	3790	7540	6380	13100	3140	1840
8	10500	1770	3710	2920	1840	19000	3800	8530	6390	6750	2280	1590
9	10800	1760	3250	2970	1840	20000	3760	9420	7080	5260	1940	1420
10	11800	1750	3620	2890	1860	20000	3780	9670	8670	5280	1920	1420
11	12200	1750	3950	3000	1850	19500	3810	9210	9550	5900	3060	1200
12	10100	1770	3210	2970	1830	18700	3760	8500	8380	9310	2470	929
13	6470	1730	2920	2970	1830	16900	4290	7980	8380	12500	2070	847
14	5540	1720	3960	2620	1610	13800	5000	7760	8490	12500	3500	840
15	8290	2250	4520	2250	1450	11300	6050	7720	8240	13200	4620	834
16	11300	2510	4770	1980	1470	9700	6770	6890	9230	13500	4630	815
17	12000	2430	4760	1930	3290	8170	6840	5980	12100	13500	4640	815
18	11000	2440	5030	1950	6440	8330	6850	5710	13500	13500	4640	828
19	10400	2370	5240	1990	7810	8950	7190	5290	13600	12500	4620	827
20	10400	2440	5200	2150	8410	8910	7210	4970	13000	11900	4570	823
21	8850	2870	5220	2230	11500	9230	7060	4970	12600	11900	3930	817
22	7770	4030	5190	2230	15600	9540	9320	4960	12600	11900	3520	794
23	7280	4610	3770	2130	15300	8640	9250	4570	9350	11900	3530	787
24	7270	4590	2490	2130	11600	7980	7840	4630	9900	11900	3530	775
25	7250	4520	2420	2120	9330	6790	7620	5250	15300	11900	3180	1400
26	7170	4510	2120	2380	8120	6240	6810	5480	15700	11900	2960	1930
27	6720	3990	1890	2510	5520	6160	5490	5320	16700	10600	2960	1960
28	5640	3320	2130	2490	4120	6140	4610	4270	16500	8240	2620	2370
29	5090	3300	2580	2480	---	5670	4170	3670	15200	5900	2440	2680
30	5070	2830	2850	2500	---	5380	4770	3680	14900	5410	3130	2420
31	5070	---	2730	2380	---	5180	---	3660	---	5090	3670	---
TOTAL	345680	85060	117200	81590	136280	325900	166620	197200	297090	345040	108670	44891
MEAN	11150	2835	3781	2632	4867	10510	5554	6361	9903	11130	3505	1496
MAX	29000	5280	5240	3640	15600	20000	9320	9670	16700	15000	4880	2680
MIN	5070	1470	1890	1930	1450	4090	3730	3660	3080	5090	1920	775
AC-FT	685700	168700	232500	161800	270300	646400	330500	391100	589300	684400	215500	89040

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1992 - 1994, BY WATER YEAR (WY)

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
MEAN	8216	7414	8082	3315	4527	14000	13320	17440	18920	45230	24050	17490
MAX	11150	11990	12380	3997	4867	17480	21080	28520	27950	79340	44600	33490
(WY)	1994	1993	1993	1993	1994	1993	1993	1993	1993	1993	1993	1993
MIN	5281	2835	3781	2632	4186	10510	5554	6361	9903	11130	3505	1496
(WY)	1993	1994	1994	1994	1993	1994	1994	1994	1994	1994	1994	1994

SUMMARY STATISTICS	FOR 1993 CALENDAR YEAR	FOR 1994 WATER YEAR	WATER YEARS 1992 - 1994
ANNUAL TOTAL	8532710	2251221	
ANNUAL MEAN	23380	6168	15260
HIGHEST ANNUAL MEAN			24360
LOWEST ANNUAL MEAN			6168
HIGHEST DAILY MEAN	104000	Jul 12	104000
LOWEST DAILY MEAN	1270	Feb 18	775
ANNUAL SEVEN-DAY MINIMUM	1750	Nov 8	807
INSTANTANEOUS PEAK FLOW			29400
INSTANTANEOUS PEAK STAGE			97.64
ANNUAL RUNOFF (AC-FT)	16920000	4465000	11060000
10 PERCENT EXCEEDS	45800	13000	33800
50 PERCENT EXCEEDS	21200	4640	7820
90 PERCENT EXCEEDS	2800	1840	2250

e Estimated.

05488200 ENGLISH CREEK NEAR KNOXVILLE, IA

LOCATION.--Lat 41°16'00", long 93°05'00", in NE1/4 SE1/4 sec.16, T.75 N., R.19 W., Marion County, Hydrologic Unit 07100009, on left bank 30 ft from left upstream abutment of bridge on State Highway 92, 3 mi east of Knoxville, and 11.4 mi upstream from mouth at Des Moines River.

DRAINAGE AREA.--90.1 mi².

PERIOD OF RECORD.--July 1985 to current year.

GAGE.--Water-stage encoder. Datum of gage is 721.79 ft above sea level.

REMARKS.--Estimated daily discharges: Oct. 10 to Dec. 9 and Dec. 21 to Mar. 6. Records good except those for July and August, which are fair, and those estimated daily discharges, which are poor. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data. U.S. Army Corps of Engineers satellite data collection platform at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of July 16, 1982 reached a stage of 30.28 ft, gage datum, discharge 28,000 ft³/s, from contracted-opening indirect computations.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	56	e9.5	e9.7	e4.3	e3.8	e12	13	14	1.6	9.1	1.0	.32
2	50	e7.8	e10	e3.9	e4.0	e14	13	15	15	9.3	1.5	.12
3	45	e7.6	e10	e3.5	e3.5	e23	12	11	59	7.8	.79	.07
4	43	e8.0	e10	e3.2	e3.2	e100	11	9.2	17	6.9	1.7	8.2
5	40	e8.3	e11	e2.9	e3.0	e500	11	8.7	11	6.2	1.1	10
6	38	e7.8	e10	e3.4	e2.9	e170	10	10	75	5.1	.57	3.8
7	37	e7.8	e9.7	e2.8	e2.5	119	9.2	20	23	4.1	.44	1.2
8	37	e7.7	e8.8	e2.7	e2.2	68	9.5	20	13	3.6	.38	.53
9	49	e8.2	e8.1	e2.8	e2.0	43	10	16	7.2	3.2	.21	.32
10	e43	e9.1	9.1	e3.0	e1.9	35	11	12	8.2	2.8	.19	.19
11	e31	e10	8.3	e3.3	e1.8	29	9.4	9.8	11	2.4	.27	.18
12	e26	e13	7.3	e3.2	e1.9	31	11	8.1	8.4	1.8	.36	.12
13	e23	e17	8.2	e3.0	e1.8	30	17	6.6	9.2	1.6	.42	.10
14	e19	e15	15	e2.7	e4.0	28	18	6.2	7.4	1.5	.43	.09
15	e19	e9.2	18	e2.4	e20	29	13	6.7	4.1	1.4	.24	.08
16	e23	e7.9	15	e3.0	e70	26	10	8.0	2.4	1.3	.18	.08
17	e22	e6.9	12	e3.7	e100	23	8.2	9.5	1.7	1.2	.13	.10
18	e19	e6.6	12	e2.8	e130	25	7.5	7.1	111	.97	.11	.03
19	e19	e7.2	12	e2.3	e160	25	6.9	4.8	142	.87	.09	.04
20	e21	e7.5	11	e2.4	e600	24	7.0	3.6	73	1.0	.08	.03
21	e20	e7.8	e8.0	e2.6	e60	25	9.3	3.0	94	1.2	.06	.04
22	e18	e7.7	e5.0	e2.8	e16	24	25	2.6	69	.94	.05	.07
23	e19	e7.9	e3.4	e3.0	e10	23	17	2.3	1410	.74	.07	.08
24	e19	e9.3	e2.5	e6.0	e11	22	13	7.5	254	.64	.12	.10
25	e24	e11	e2.7	e20	e12	17	12	10	66	.55	.36	1.4
26	e17	e11	e2.7	e14	e11	16	11	7.9	41	.62	.83	.77
27	e22	e9.2	e3.0	e10	e10	17	8.5	5.3	26	.66	.63	.37
28	e18	e8.4	e2.6	e7.0	e11	16	7.7	3.9	19	1.7	.24	.19
29	e15	e9.0	e2.9	e6.6	---	14	7.9	3.1	14	1.1	.10	.13
30	e14	e9.4	e3.0	e5.0	---	12	12	2.6	10	.88	.78	.21
31	e12	---	e3.3	e3.5	---	12	---	2.0	---	.65	.72	---
TOTAL	858	272.8	254.3	141.8	1259.5	1552	341.1	256.5	2603.2	81.82	14.15	28.96
MEAN	27.7	9.09	8.20	4.57	45.0	50.1	11.4	8.27	86.8	2.64	.46	.97
MAX	56	17	18	20	600	500	25	20	1410	9.3	1.7	10
MIN	12	6.6	2.5	2.3	1.8	12	6.9	2.0	1.6	.55	.05	.03
AC-FT	1700	541	504	281	2500	3080	677	509	5160	162	28	57
CFSM	.31	.10	.09	.05	.50	.56	.13	.09	.96	.03	.01	.01
IN.	.35	.11	.10	.06	.52	.64	.14	.11	1.07	.03	.01	.01

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1985 - 1994, BY WATER YEAR (WY)

	MEAN	31.7	31.5	37.1	16.2	28.4	98.9	127	91.9	57.8	123	46.2	56.3
MAX	161	100	112	43.3	57.6	335	476	220	245	1039	285	159	
(WY)	1987	1993	1993	1986	1992	1993	1991	1986	1990	1993	1993	1992	
MIN	.50	.76	.31	.66	.50	2.05	1.03	2.27	2.27	.18	.17	.026	
(WY)	1989	1989	1989	1989	1989	1989	1989	1989	1992	1988	1988	1991	

SUMMARY STATISTICS FOR 1993 CALENDAR YEAR FOR 1994 WATER YEAR WATER YEARS 1985 - 1994

ANNUAL TOTAL	72914.1	7664.13	
ANNUAL MEAN	200	21.0	64.2
HIGHEST ANNUAL MEAN			214
LOWEST ANNUAL MEAN			6.71
HIGHEST DAILY MEAN	8610	Jul 5	8610
LOWEST DAILY MEAN	2.5	Dec 24	.03
ANNUAL SEVEN-DAY MINIMUM	2.8	Dec 24	.06
INSTANTANEOUS PEAK FLOW			1780
INSTANTANEOUS PEAK STAGE			20.13
INSTANTANEOUS LOW FLOW			.02
ANNUAL RUNOFF (AC-FT)	144600	15200	46500
ANNUAL RUNOFF (CFSM)	2.22	.23	.71
ANNUAL RUNOFF (INCHES)	30.10	3.16	9.68
10 PERCENT EXCEEDS	416	30	94
50 PERCENT EXCEEDS	42	8.0	10
90 PERCENT EXCEEDS	9.2	.32	.27

e Estimated.

05488500 DES MOINES RIVER NEAR TRACY, IA

LOCATION.--Lat 41°16'53", long 92°51'34", in NW1/4 SE1/4 sec.19, T.75 N., R.17 W., Mahaska County, Hydrologic Unit 07100009, on right bank 250 ft upstream from abandoned Bellefontaine Bridge, 0.8 mi east of Tracy, 3.1 mi upstream from Cedar Creek, 3.8 mi downstream from bridge on newly located State Highway 92, 6.4 mi downstream from English Creek, and at mile 130.4.

DRAINAGE AREA.--12,479 mi².

PERIOD OF RECORD.--March 1920 to current year. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1508: 1920 (M), 1922 (M), 1933.

GAGE.--Water-stage encoder. Datum of gage is 670.91 ft above sea level. Prior to June 26, 1940, and June 30, 1952, to Nov. 4, 1960, nonrecording gage, and June 27, 1940, to June 29, 1952, water-stage recorder, at site 250 ft downstream at same datum.

REMARKS.--Estimated daily discharges: Jan 7-9, 14-25, 31, Feb. 1, and Feb. 8-17. Records good except those for periods of estimated daily discharges, which are fair. Flow regulated by Lake Red Rock (station 05488100) 11.9 mi upstream, since March 12, 1969. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data. U.S. Army Corps of Engineers gage-height telemeter and data collection platform at station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 155,000 ft³/s, June 14, 1947, gage height, 26.5 ft; minimum daily discharge, 40 ft³/s Jan. 29 to Feb. 2, 1940.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since 1851, that of June 14, 1947. Flood of May 31, 1903, reached a stage of about 25 ft, discharge, about 130,000 ft³/s. Minimum daily discharge since at least 1910, that of Jan. 29 to Feb. 1, 1940.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	29000	5400	2430	3080	e2350	4670	5030	5670	3560	14900	4920	2950
2	27200	5040	3620	3810	1970	4640	5010	6670	3220	14900	4610	2470
3	23700	3210	4670	3800	2100	4810	5000	7320	3460	14900	4220	2070
4	19900	1400	4840	3780	1950	7470	4470	7310	4330	14900	4230	2010
5	15400	1840	5070	3630	1950	13900	3800	7300	5230	14900	3990	2500
6	13700	1950	5030	2990	1950	15800	3790	7300	5820	14800	3730	2960
7	12800	1930	4870	e3100	1960	17400	3790	7550	6620	13400	3410	1930
8	10500	1860	4090	e3000	e1900	18900	3810	8420	7010	7340	2670	1750
9	10900	1830	3380	e3100	e1900	20400	3780	9350	7260	5360	2210	1460
10	11600	1830	3660	3070	e1900	20400	3770	9630	8760	5320	2210	1450
11	12100	1840	4100	2950	e1900	19900	3770	9300	9910	5680	3050	1280
12	10800	1860	3450	2960	e1900	18800	3800	8610	9050	8440	2890	879
13	7030	1880	2650	2960	e1800	17200	4190	8040	8540	12600	2410	688
14	5240	1870	3940	e2650	e1650	14300	4970	7820	8890	12600	3270	745
15	7930	2020	4650	e2300	e1500	11300	5950	7790	8540	13200	4580	832
16	11000	2240	4990	e2100	e1500	9950	6880	7140	9250	13700	4540	871
17	11900	2080	5000	e2000	e2400	8430	6890	6120	11600	13700	4500	862
18	11200	2090	5220	e2000	6770	8100	6890	5750	13200	13600	4450	858
19	10600	2060	5540	e2150	8090	8930	7130	5430	13500	12900	4410	841
20	10600	2070	5520	e2200	9840	8930	7270	5020	12900	12000	4420	841
21	9490	2500	5520	e2300	11300	9140	7110	5020	12500	12000	4140	841
22	8180	3820	5510	e2200	15700	9440	8800	5010	12300	11900	3690	860
23	7530	4780	4440	e2200	15900	8810	9620	4780	11200	12000	3680	845
24	7510	4770	2470	e2200	12800	8030	7950	4620	9420	11900	3670	844
25	7490	4760	2410	e2150	9850	7170	7620	5200	15300	11900	3460	1330
26	7450	4730	2340	2070	8980	6220	7100	5480	15700	12000	3130	2210
27	7080	4390	2120	2430	6640	6190	5700	5300	16400	11000	3080	2060
28	5990	3490	2280	2350	4710	6180	4860	4500	16600	8780	2850	2160
29	5260	3460	3140	2320	---	5830	4330	3740	15300	6170	2550	2460
30	5230	2960	3750	2380	---	5410	4740	3730	14900	5450	2770	2310
31	5210	---	2980	e2400	---	5240	---	3720	---	5190	3850	---
TOTAL	349520	85960	123680	82630	143160	331890	167820	198640	300270	347430	111590	46167
MEAN	11270	2865	3990	2665	5113	10710	5594	6408	10010	11210	3600	1539
MAX	29000	5400	5540	3810	15900	20400	9620	9630	16600	14900	4920	2960
MIN	5210	1400	2120	2000	1500	4640	3770	3720	3220	5190	2210	688
AC-FT	693300	170500	245300	163900	284000	658300	332900	394000	595600	689100	221300	91570

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1920 - 1994, BY WATER YEAR (WY) a

	MEAN	2782	3124	2279	1952	3339	8032	9511	8403	10200	7730	4778	3587
MAX	17190	19160	12540	13810	15560	21520	37890	30140	51550	80800	45240	33670	
(WY)	1974	1987	1983	1932	1973	1983	1965	1944	1947	1993	1993	1993	
MIN	176	177	133	72.1	78.4	425	699	356	277	220	191	342	
(WY)	1957	1956	1956	1940	1940	1931	1956	1934	1977	1977	1936	1976	

SUMMARY STATISTICS	FOR 1993 CALENDAR YEAR	FOR 1994 WATER YEAR	WATER YEARS 1920 - 1994a
ANNUAL TOTAL	8585790	2288757	
ANNUAL MEAN	23520	6271	5466
HIGHEST ANNUAL MEAN			24450
LOWEST ANNUAL MEAN			496
HIGHEST DAILY MEAN	107000	Jul 12	136000
LOWEST DAILY MEAN	1330	Feb 18	45
ANNUAL SEVEN-DAY MINIMUM	1810	Nov 4	45
INSTANTANEOUS PEAK FLOW			109000
INSTANTANEOUS PEAK STAGE			24.16
ANNUAL RUNOFF (AC-FT)	17030000	4540000	3960000
10 PERCENT EXCEEDS	45900	13200	16100
50 PERCENT EXCEEDS	21100	4840	2500
90 PERCENT EXCEEDS	2920	1920	405

e Estimated.

a Post-regulation period.

05489000 CEDAR CREEK NEAR BUSSEY, IA

LOCATION.--Lat 41°13'09", long 92°54'38", at SW corner sec.11, T.74 N., R.18 W., Marion County, Hydrologic Unit 07100009, on left bank 10 ft downstream from bridge on State Highway 156, 0.8 mi downstream from North Cedar Creek, 1.6 mi northwest of Bussey, 3.0 mi upstream from Honey Creek, and 8.9 mi upstream from mouth.

DRAINAGE AREA.--374 mi².

PERIOD OF RECORD.--October 1947 to current year.

REVISED RECORDS.--WSP 1438: Drainage area.

GAGE.--Water-stage encoder. Datum of gage is 682.15 ft above sea level (levels by U.S. Army Corps of Engineers). Prior to Feb. 21, 1949, nonrecording gage at same site and datum.

REMARKS.--Estimated daily discharges: Dec. 19 to Mar. 3 and June 15-17. Records good except those for estimated daily discharges, which are poor. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data. U.S. Army Corps of Engineers satellite data collection platform.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1946 reached a stage of 28.45 ft on upstream side and 28.05 ft on downstream side of bridge, levels to floodmarks by U.S. Army Corps of Engineers, discharge, 31,500 ft³/s.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	120	43	42	e15	e13	e62	55	112	24	29	10	7.1
2	103	45	48	e16	e13	e70	56	107	267	30	15	5.7
3	88	46	49	e17	e14	e90	50	82	358	28	10	5.1
4	86	50	60	e17	e15	1650	49	72	123	26	10	30
5	77	48	58	e16	e16	2790	50	70	81	25	13	42
6	71	43	52	e15	e15	1060	43	91	163	21	11	19
7	70	38	45	e14	e14	693	39	354	104	38	7.7	11
8	68	40	35	e15	e12	360	39	344	64	218	7.0	7.6
9	79	45	32	e16	e11	219	43	175	42	222	6.5	5.9
10	86	43	36	e17	e13	171	44	122	47	55	6.1	5.4
11	71	44	30	e16	e16	142	42	101	77	31	6.2	4.7
12	69	49	25	e15	e18	148	49	82	64	24	6.3	4.6
13	64	98	35	e14	e20	138	73	68	98	22	8.0	5.0
14	64	105	55	e11	e25	130	67	64	77	73	9.1	5.0
15	68	70	62	e9.2	e31	136	54	89	e60	57	8.1	5.1
16	86	60	51	e9.8	e62	118	41	76	e48	26	7.2	4.5
17	82	56	44	e9.6	e120	107	34	53	e35	24	6.5	4.4
18	67	51	43	e9.2	e200	115	33	44	16	17	6.1	4.7
19	65	53	e37	e10	e320	110	33	39	83	15	5.5	4.2
20	72	51	e32	e11	e500	107	32	35	30	15	5.1	3.8
21	60	51	e25	e13	e300	114	125	35	390	44	5.2	3.9
22	53	48	e21	e15	e130	106	634	32	80	27	4.5	4.0
23	53	47	e18	e17	e54	101	183	31	2220	18	4.6	3.8
24	53	48	e16	e19	e42	92	121	53	873	14	4.5	3.9
25	55	54	e14	e22	e36	73	104	138	189	34	4.6	4.5
26	53	52	e12	e25	e35	70	86	61	108	31	4.7	10
27	48	42	e12	e21	e40	74	65	40	78	19	5.1	17
28	48	43	e11	e17	e50	69	58	32	55	13	4.5	8.8
29	48	42	e13	e15	---	58	118	27	41	12	4.4	5.5
30	46	37	e12	e13	---	53	102	26	31	11	8.9	4.8
31	43	---	e13	e12	---	51	---	27	---	9.4	8.9	---
TOTAL	2116	1542	1038	461.8	2135	9277	2522	2682	5926	1228.4	224.3	251.0
MEAN	68.3	51.4	33.5	14.9	76.2	299	84.1	86.5	198	39.6	7.24	8.37
MAX	120	105	62	25	500	2790	634	354	2220	222	15	42
MIN	43	37	11	9.2	11	51	32	26	16	9.4	4.4	3.8
AC-FT	4200	3060	2060	916	4230	18400	5000	5320	11750	2440	445	498
CFSM	.18	.14	.09	.04	.20	.80	.22	.23	.53	.11	.02	.02
IN.	.21	.15	.10	.05	.21	.92	.25	.27	.59	.12	.02	.02

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1948 - 1994, BY WATER YEAR (WY)

	MEAN	102	136	97.4	91.0	231	419	411	369	283	303	112	169
MAX	950	1331	844	894	952	1371	1552	1350	1258	3846	1070	1384	
(WY)	1974	1962	1983	1974	1949	1960	1973	1960	1967	1982	1993	1992	
MIN	.18	.33	.39	.20	2.29	3.78	.79	7.19	2.74	2.26	2.51	.60	
(WY)	1957	1956	1956	1956	1954	1954	1956	1956	1977	1988	1953	1953	

SUMMARY STATISTICS

FOR 1993 CALENDAR YEAR

FOR 1994 WATER YEAR

WATER YEARS 1948 - 1994

ANNUAL TOTAL	253590	29403.5	
ANNUAL MEAN	695	80.6	227
HIGHEST ANNUAL MEAN			768
LOWEST ANNUAL MEAN			29.4
HIGHEST DAILY MEAN	21700	2790	42000
LOWEST DAILY MEAN	11	3.8	.00
ANNUAL SEVEN-DAY MINIMUM	12	4.0	.00
INSTANTANEOUS PEAK FLOW		4940	96000
INSTANTANEOUS PEAK STAGE		17.00	34.61
INSTANTANEOUS LOW FLOW		1.5	.00
ANNUAL RUNOFF (AC-FT)	503000	58320	164200
ANNUAL RUNOFF (CFSM)	1.86	.22	.61
ANNUAL RUNOFF (INCHES)	25.22	2.92	8.23
10 PERCENT EXCEEDS	1770	120	400
50 PERCENT EXCEEDS	156	42	37
90 PERCENT EXCEEDS	46	6.4	2.4

e Estimated.

[illegible]

DES MOINES RIVER BASIN

05489500 DES MOINES RIVER AT OTTUMWA, IA--Continued

SUMMARY STATISTICS	FOR 1993 CALENDAR YEAR		FOR 1994 WATER YEAR		WATER YEARS 1970 - 1994a	
ANNUAL TOTAL	9194348		2479193		8268	
ANNUAL MEAN	25190		6792		26350	1993
HIGHEST ANNUAL MEAN					1120	1977
LOWEST ANNUAL MEAN					110000	Jul 12 1993
HIGHEST DAILY MEAN	110000	Jul 12	29600	Oct 1	26	Oct 25 1990
LOWEST DAILY MEAN	908	Nov 5	908	Nov 5	182	Jul 7 1977
ANNUAL SEVEN-DAY MINIMUM	1770	Nov 5	1050	Sep 18	112000	Jul 12 1993
INSTANTANEOUS PEAK FLOW			29900	Oct 1	22.15	Jul 12 1993
INSTANTANEOUS PEAK STAGE			11.95	Oct 1		
INSTANTANEOUS LOW FLOW			908	Nov 5		
ANNUAL RUNOFF (AC-FT)	18240000		4917000		5990000	
10 PERCENT EXCEEDS	48800		14400		19600	
50 PERCENT EXCEEDS	22800		5100		4600	
90 PERCENT EXCEEDS	3470		2020		640	

e Estimated.

a Post-regulation period.

05490500 DES MOINES RIVER AT KEOSAUQUA, IA

LOCATION.--Lat 40°43'40", long 91°57'34", in SE1/4 SW1/4 sec.36, T.69 N., R.10 W., Van Buren County, Hydrologic Unit 07100009, on right bank 10 ft upstream from bridge on State Highway 1 at Keosauqua, 4.0 mi downstream from Chequest Creek, and at mile 51.3.

DRAINAGE AREA.--14,038 mi².

PERIOD OF RECORD.--May 1903 to July 1906, April to December 1910, August 1911 to current year. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 525: 1913-20. WSP 1438: Drainage area. WSP 1508: 1903, 1905-6, 1915-18 (M), 1922 (M), 1924-26 (M), 1932-34 (M), 1937, 1942 (M).

GAGE.--Water-stage encoder. Datum of gage is 547.36 ft above sea level. Prior to Dec. 24, 1933, nonrecording gage, and Dec. 25, 1933, to Sept. 30, 1972, water-stage recorder, at same site at datum 10.00 ft higher.

REMARKS.--Estimated daily discharges: Dec. 29 to Feb. 20. Records good except those for estimated daily discharges, which are poor. Prior to Dec. 21, 1958, and since Nov. 30, 1960, some diurnal fluctuation at medium and low stages caused by power plant at Ottumwa. Flow regulated by Lake Red Rock (station 05488100) 91.0 mi upstream, since March 12, 1969. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data. U.S. Army Corps of Engineers satellite data collection platform at station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 146,000 ft³/s June 1, 1903, gage height, 27.85 ft, from floodmark, datum then in use; minimum daily discharge, 40 ft³/s Jan. 30, 1940.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 1, 1851, reached a stage of 24 ft, discharge not determined.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	29700	5130	3660	e4000	e2600	5250	5350	5660	3800	16000	5290	3940
2	29200	5300	2730	e4250	e2500	5050	5050	5930	4880	17100	4950	3140
3	27200	5120	3320	e4500	e2400	5030	5080	6640	5330	16500	4760	2610
4	23800	5450	4880	e4300	e2300	6840	4920	7260	4280	16200	4410	2300
5	19600	2020	4990	e4200	e2200	15800	4820	7220	4440	16100	4320	2160
6	15400	705	5290	e4000	e2100	19900	3730	8300	5290	16000	4140	2240
7	13400	930	5220	e3750	e2000	20200	3880	11400	5690	16000	3790	3110
8	12700	1840	5120	e3400	e2100	20700	3720	9480	8270	14800	3690	2030
9	10700	1830	4650	e3300	e2050	21400	3880	9370	7610	10600	2860	1860
10	10900	1650	3790	e3400	e2000	22000	3880	9960	7100	6540	2180	1500
11	11700	1650	3820	e3300	e1950	21900	3900	10100	8600	5790	2390	1340
12	12100	1670	4320	e3250	e1900	21300	4100	9690	10100	5820	2280	1330
13	10800	1900	4240	e3200	e1800	20300	4250	8830	9160	8520	3480	1220
14	7160	1930	3060	e3100	e1700	18700	4300	8190	8330	13900	2260	780
15	5130	1870	3950	e2900	e1600	15900	5130	8130	8680	14000	2570	765
16	7540	1820	4940	e2500	e1600	12700	5820	7920	8150	14400	4410	788
17	11000	2830	5260	e2300	e2000	10900	6690	7280	8840	15000	4560	755
18	12000	2380	5300	e2200	e3000	9090	6700	6210	11800	14800	4580	717
19	11300	2460	5410	e2150	e6000	8350	6700	5730	14000	14800	4570	693
20	10700	2510	5800	e2200	e12000	9370	6850	5500	14500	13800	4570	705
21	10600	2500	5780	e2300	14900	9440	8570	5000	14000	12900	4550	725
22	9540	2490	5760	e2400	14000	9590	9100	4970	13700	12900	4490	761
23	8100	3480	5700	e2400	17300	9950	9730	4990	15700	12800	3530	753
24	7430	4820	5210	e2350	17300	9310	10400	4970	16900	12800	3610	718
25	7370	4990	3000	e2350	14400	8200	8060	4670	11900	12800	3620	700
26	7370	5000	2320	e2400	11300	7490	7620	5250	16600	12800	3540	855
27	7330	4900	2180	e2500	10100	6330	7190	5500	16800	12700	3110	1470
28	7030	4770	1960	e2700	7450	6250	5930	5350	17500	11600	3100	1970
29	6130	4050	e2700	e2700	---	6150	5320	4790	17400	9190	3050	1980
30	5200	3590	e3300	e2700	---	5910	5020	3850	16300	6420	2740	2430
31	5160	---	e3750	e2600	---	5430	---	3740	---	5510	2770	---
TOTAL	373290	91585	131410	93600	162550	374730	175690	211880	315650	389090	114170	46345
MEAN	12040	3053	4239	3019	5805	12090	5856	6835	10520	12550	3683	1545
MAX	29700	5450	5800	4500	17300	22000	10400	11400	17500	17100	5290	3940
MIN	5130	705	1960	2150	1600	5030	3720	3740	3800	5510	2180	693
MED	10700	2490	4320	2700	2350	9440	5220	6210	9000	12900	3620	1330
AC-FT	740400	181700	260700	185700	322400	743300	348500	420300	626100	771800	226500	91930
CFSM	.86	.22	.30	.22	.41	.86	.42	.49	.75	.89	.26	.11
IN.	.99	.24	.35	.25	.43	.99	.47	.56	.84	1.03	.30	.12

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1970 - 1994, BY WATER YEAR (WY) a	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
MEAN	4630	5569	4822	3285	5143	10940	12910	12830	13300	14810	9140	5914													
MAX	19850	19320	14510	13120	17370	22200	30030	31260	30900	86150	47320	35210													
(WY)	1974	1987	1983	1973	1973	1983	1973	1993	1984	1993	1993	1993													
MIN	383	332	385	291	331	1170	1224	696	300	258	528	362													
(WY)	1977	1977	1977	1977	1977	1981	1977	1977	1977	1977	1989	1976													

SUMMARY STATISTICS	FOR 1993 CALENDAR YEAR	FOR 1994 WATER YEAR	WATER YEARS 1970 - 1994a
ANNUAL TOTAL	9379975	2479990	
ANNUAL MEAN	25700	6794	8624
HIGHEST ANNUAL MEAN			26920
LOWEST ANNUAL MEAN			1303
HIGHEST DAILY MEAN	108000	Jul 13	108000
LOWEST DAILY MEAN	705	Nov 6	115
ANNUAL SEVEN-DAY MINIMUM	1470	Nov 6	204
INSTANTANEOUS PEAK FLOW			111000
INSTANTANEOUS PEAK STAGE			32.66
ANNUAL RUNOFF (AC-FT)	18610000	499000	6248000
ANNUAL RUNOFF (CFSM)	1.83	.48	.61
ANNUAL RUNOFF (INCHES)	24.86	6.57	8.35
10 PERCENT EXCEEDS	50200	14800	20700
50 PERCENT EXCEEDS	23600	5080	4830
90 PERCENT EXCEEDS	3590	1960	684

e Estimated.

a Post-regulation period.

BIG SIOUX RIVER BASIN

06483500 ROCK RIVER NEAR ROCK VALLEY, IA

LOCATION.--Lat 43°12'52", long 96°17'39", in SW1/4 SW1/4 sec.16, T.97 N., R.46 W., Sioux County, Hydrologic Unit 10170204, on left bank 3 ft upstream from bridge on county highway K30, 0.3 mi north of Rock Valley and at mile 19.1.

DRAINAGE AREA.--1,592 mi².

PERIOD OF RECORD.--June 1948 to current year.

REVISED RECORDS.--WSP 1439: Drainage area.

GAGE.--Water-stage encoder. Datum of gage is 1,222.54 ft above sea level. Prior to Aug. 13, 1952, nonrecording gage with supplementary water-stage recorder operating above 6.2 ft gage height. June 4, 1949 to Aug. 12, 1952 and Aug. 13, 1952 to May 4, 1976, water-stage recorder, at site 3.2 mi downstream at datum 10.73 ft lower.

REMARKS.--Estimated daily discharges: Nov. 24 to Dec. 17, Dec. 21 to Mar. 6, Mar. 8, Apr. 18-22, June 1-6, 25-27, and Sept. 18-26. Records good except those for estimated daily discharges, which are poor. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data. U.S. Army Corps of Engineers rain-gage and satellite data collection platform at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in 1897 reached a stage of 17.0 ft, former site and datum, discharge not determined, from information by State Highway Commission.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1020	587	e760	e440	e270	e540	828	2410	e776	1360	330	318
2	967	599	e660	e390	e290	e600	812	2900	e820	1280	311	335
3	925	607	e580	e360	e280	e800	772	e280	e800	1200	295	352
4	898	608	e500	e400	e300	e3000	766	1870	e780	1160	294	457
5	866	592	e460	e420	e380	e8000	745	1670	e1000	1140	276	589
6	850	516	e460	e370	e330	e11000	734	1750	e1300	1110	262	667
7	836	481	e450	e260	e300	8370	780	1780	1850	1130	249	601
8	834	567	e420	e270	e300	e4900	826	1700	4350	1140	238	512
9	891	553	e450	e300	e270	2930	839	1570	4320	1100	247	451
10	957	527	e420	e330	e280	2010	810	1460	2130	1050	312	407
11	950	536	e390	e300	e300	1650	763	1380	1670	1010	780	376
12	923	545	e430	e320	e290	1620	808	1310	1520	964	1740	357
13	881	921	e470	e280	e300	1630	1050	1250	8940	971	2510	350
14	853	1440	e470	e260	e320	1690	1350	1220	20800	1030	2290	328
15	843	1460	e450	e250	e350	1830	1570	1210	10300	984	1490	313
16	836	1160	e540	e270	e400	1760	1930	1180	3960	962	1220	295
17	818	1050	e700	e260	e390	1540	1930	1130	2760	914	1080	284
18	803	984	723	e250	e480	1420	e1610	1080	2290	846	973	e270
19	793	947	714	e290	e1400	1340	e1500	1040	2020	777	854	e250
20	774	903	631	e280	e2200	1290	e1400	1010	1800	731	765	e240
21	769	869	e520	e300	e1800	1250	e1350	977	2400	704	692	e240
22	754	832	e390	e350	e1300	1200	e1300	962	2450	664	618	e270
23	744	800	e400	e450	e1100	1150	1230	946	7790	618	554	e270
24	732	e600	e420	e370	e480	1100	1200	1060	13800	569	501	e260
25	721	e170	e360	e320	e500	1040	1180	1060	e8030	524	473	e250
26	695	e180	e340	e300	e480	1020	1980	1090	e4720	491	444	245
27	668	e400	e220	e280	e500	996	2000	1060	e2540	454	478	239
28	664	e600	e230	e290	e520	965	2030	989	1910	421	415	233
29	641	e700	e330	e270	---	918	1730	943	1630	393	382	228
30	607	e800	e430	e250	---	858	1800	877	1470	367	357	222
31	563	---	e500	e260	---	841	---	807	---	345	336	---
TOTAL	25076	21534	14818	9740	16110	69258	37623	41971	120926	26409	21766	10209
MEAN	809	718	478	314	575	2234	1254	1354	4031	852	702	340
MAX	1020	1460	760	450	2200	11000	2030	2900	20800	1360	2510	667
MIN	563	170	220	250	270	540	734	807	776	345	238	222
AC-FT	49740	42710	29390	19320	31950	137400	74630	83250	239900	52380	43170	20250
CFSM	.51	.45	.30	.20	.36	1.40	.79	.85	2.53	.54	.44	.21
IN.	.59	.50	.35	.23	.38	1.62	.88	.98	2.83	.62	.51	.24

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1948 - 1994, BY WATER YEAR (WY)

MEAN	192	217	119	63.9	203	940	1167	557	879	585	255	175
MAX	1232	2039	676	432	1059	3421	6507	3728	6495	9088	2251	1319
(WY)	1993	1980	1983	1983	1966	1983	1969	1993	1993	1993	1993	1993
MIN	2.39	9.70	3.22	.037	.30	35.1	35.9	44.4	46.3	21.9	6.79	3.26
(WY)	1959	1959	1959	1977	1959	1959	1959	1968	1964	1976	1976	1955

SUMMARY STATISTICS	FOR 1993 CALENDAR YEAR	FOR 1994 WATER YEAR	WATER YEARS 1948 - 1994
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ANNUAL TOTAL	945665		415440				
ANNUAL MEAN	2591		1138			446	
HIGHEST ANNUAL MEAN						2656	1993
LOWEST ANNUAL MEAN						31.0	1968
HIGHEST DAILY MEAN	22300	Jul 12	20800	Jun 14		35400	Apr 7 1969
LOWEST DAILY MEAN	120	Feb 24	170	Nov 25		.00	Feb 20 1959
ANNUAL SEVEN-DAY MINIMUM	139	Feb 23	240	Sep 24		.00	Feb 27 1959
INSTANTANEOUS PEAK FLOW			23100	Jun 14		40400	Apr 7 1969
INSTANTANEOUS PEAK STAGE			18.27	Jun 14		a17.32	Apr 7 1969
ANNUAL RUNOFF (AC-FT)	1876000		824000			323300	
ANNUAL RUNOFF (CFSM)	1.63		.71			.28	
ANNUAL RUNOFF (INCHES)	22.10		9.71			3.81	
10 PERCENT EXCEEDS	7690		1890			1050	
50 PERCENT EXCEEDS	1050		766			107	
90 PERCENT EXCEEDS	223		280			14	

e Estimated.

a Site and datum in use prior to May 5, 1976.

06485500 BIG SIOUX RIVER AT AKRON, IA

LOCATION.--Lat 42°50'14", long 96°33'41", in SW1/4 SE1/4 SW1/4 sec.30, T.93 N., R.48 W., Plymouth County, Hydrologic Unit 10170203, on left bank 15 ft downstream from Iowa Highway 403 bridge, 0.5 mi northwest of Akron, and 2.9 mi upstream from Union Creek.

DRAINAGE AREA.--8,424 mi², of which 1,487 mi² is probably noncontributing.

PERIOD OF RECORD.--October 1928 to current year.

REVISED RECORDS.--WSP 1309: 1929(M), 1931-33(M), 1936(M), 1938(M), 1940(M). WSP 1389: Drainage area. WDR SD-84-1: Drainage area.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 1,118.90 ft above sea level. Prior to Dec. 3, 1934, nonrecording gage at bridge 0.5 mi downstream at same datum. From Dec. 3, 1934, to Oct. 31, 1985, water-stage recorder at site 0.6 mi downstream at same datum.

REMARKS.--Estimated daily discharges: Nov. 26 to Mar. 8. Records good except those for estimated daily discharges, which are poor. U.S. Army Corps of Engineers satellite data-collection platform at station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2820	1690	e1700	e1300	e500	e1200	4170	5540	2120	6600	1450	1210
2	2690	1690	e1800	e1260	e500	e1000	3980	6600	2030	6270	1410	1170
3	2570	1690	e1800	e1200	e500	e1400	3800	7400	1970	5680	1360	1170
4	2470	1700	e1800	e1190	e450	e3000	3660	6680	1910	4760	1310	1320
5	2380	1710	e1800	e1170	e450	e4000	3540	5980	1920	4140	1270	1420
6	2310	1690	e1800	e1080	e450	e8500	3460	5670	3280	4220	1280	1610
7	2260	1640	e1700	e1000	e450	e14000	3370	5680	4220	3560	1250	1640
8	2230	1580	e1600	e960	e450	e16000	3370	5700	4360	3360	1210	1660
9	2250	1630	e1600	e940	e400	12500	3410	5410	5990	3390	1170	1670
10	2260	1620	e1600	e930	e390	8700	3420	5030	5970	3230	1160	1640
11	2260	1620	e1600	e900	e400	6980	3340	4650	4460	3130	1220	1600
12	2220	1630	e1600	e830	e400	5760	3330	4280	3940	3140	1700	1530
13	2180	1790	e1600	e760	e400	5650	3430	3980	4020	3210	3170	1460
14	2130	2160	e1700	e650	e400	5760	3940	3760	7150	3260	3980	1370
15	2100	2880	e1700	e650	e400	5960	4690	3630	15400	3250	4020	1290
16	2070	2980	e1700	e640	e400	6190	4890	3550	17200	3120	3420	1220
17	2060	2620	e1800	e630	e500	6470	5650	3390	7160	3060	3130	1180
18	2040	2470	e1800	e620	e600	6530	5700	3230	4900	2870	3030	1150
19	2010	2410	e1800	e620	e2400	6410	5060	3030	4300	2610	3000	1120
20	2010	2340	e1750	e600	e4300	6410	4730	2850	4000	2440	2900	1090
21	1990	2270	e1600	e560	e4200	6140	4440	2710	4060	2320	2670	1060
22	1980	2210	e1100	e550	e4000	6140	4210	2600	5090	2220	2350	1070
23	1970	2150	e900	e550	e3000	6080	4000	2510	5910	2150	2070	1070
24	1950	2100	e1000	e540	e2200	5950	3830	2440	8300	2060	1860	1040
25	1930	1860	e1200	e530	e1800	5790	3670	2510	13500	1970	1720	1030
26	1900	e1150	e1300	e530	e1600	5600	3630	2590	13800	1870	1610	1010
27	1860	e950	e1300	e540	e1400	5450	4720	2590	9720	1790	1520	1010
28	1840	e1300	e1300	e500	e1300	5280	5170	2620	7890	1710	1480	1000
29	1800	e1800	e1300	e480	---	5040	5550	2520	7400	1630	1380	989
30	1770	e1700	e1300	e480	---	4750	5240	2380	6920	1570	1320	973
31	1730	---	e1300	e480	---	4340	---	2250	---	1500	1260	---
TOTAL	66040	57030	47850	23670	34240	192980	125400	123760	188890	96090	61680	37772
MEAN	2130	1901	1544	764	1223	6225	4180	3992	6296	3100	1990	1259
MAX	2820	2980	1800	1300	4300	16000	5700	7400	17200	6600	4020	1670
MIN	1730	950	900	480	390	1000	3330	2250	1910	1500	1160	973
AC-FT	131000	113100	94910	46950	67920	382800	248700	245500	374700	190600	122300	74920

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1929 - 1994, BY WATER YEAR (WY)

	MEAN	467	435	291	180	477	2346	2973	1556	2016	1409	702	660
MAX	4039	3022	1967	841	2399	8866	20690	9499	15820	21740	6200	7313	
(WY)	1987	1980	1983	1983	1966	1983	1969	1993	1984	1993	1993	1986	
MIN	32.9	47.9	32.1	6.68	12.1	124	139	73.3	100	50.7	45.2	36.4	
(WY)	1959	1959	1977	1977	1936	1931	1931	1934	1933	1931	1976	1976	

SUMMARY STATISTICS FOR 1993 CALENDAR YEAR FOR 1994 WATER YEAR WATER YEARS 1929 - 1994

ANNUAL TOTAL	2296680	1055402	
ANNUAL MEAN	6292	2892	1126a
HIGHEST ANNUAL MEAN			6271
LOWEST ANNUAL MEAN			120
HIGHEST DAILY MEAN	50600	Jul 13	17200 Jun 16
LOWEST DAILY MEAN	520	Jan 26	390 Feb 10
ANNUAL SEVEN-DAY MINIMUM	524	Jan 26	399 Feb 9
INSTANTANEOUS PEAK FLOW			20400 Jun 16
INSTANTANEOUS PEAK STAGE			21.08 Jun 16
ANNUAL RUNOFF (AC-FT)	4555000	2093000	816100
10 PERCENT EXCEEDS	15800	5840	2560
50 PERCENT EXCEEDS	2810	2060	332
90 PERCENT EXCEEDS	600	716	68

e Estimated

a Median of annual mean discharges, 770 ft³/s.

b Gage height, 22.99 ft.

c From high-water mark.

06486000 MISSOURI RIVER AT SIOUX CITY, IA

LOCATION.--Lat. 42°29'09", long 96°24'49", in NW1/4 SE1/4 sec.16, T.29 N., R.9 E., sixth principal meridian, Dakota County, Nebraska, Hydrologic Unit 10230001, on right bank on upstream side of bridge on U.S. Highway 20 and 77 at South Sioux City, Nebraska, 1.9 mi downstream from Big Sioux River, and at mile 732.2.

DRAINAGE.--314,600 mi², approximately. The 3,959 mi² in Great Divide basin are not included.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1897 to current year in reports of the U.S. Geological Survey. Prior to October 1928 and October 1931 to September 1938, monthly discharges only, published in WSP 1310. January 1879 to December 1890, monthly discharges only, in House Document 238, 73rd Congress, 2d session, Missouri River. Gage height records collected in this vicinity September 1878 to December 1899 are contained in reports of Missouri River Commission and since July 1889 are contained in reports of U.S. Weather Bureau.

REVISED RECORDS.--WSP 716: 1929-30. WSP 876: Drainage area.

GAGE.--Water-stage encoder. Datum of gage is 1,056.98 ft above sea level. Sept. 2, 1878 to Dec. 31, 1905, nonrecording gages at various locations within 1.7 mi of present site and at various datums. Jan. 1, 1906 to Feb. 14, 1935, nonrecording gage, and Feb. 15, 1935 to Sept. 30, 1969, water-stage recorder at site 227 ft downstream at datum 19.98 ft higher, and Oct. 1, 1969 to Sept. 30, 1970 at datum 20.00 ft higher. Oct. 1, 1970 to Jan. 30, 1981, water-stage recorder at site 227 ft downstream at present datum.

REMARKS.--Estimated daily discharges: Jan. 10-13, 16-31, and Feb. 12-14, 21-23, 25, 26. Records good except those for estimated daily discharges, which are poor. Flow regulated by upstream main-stem reservoirs. U.S. Army Corps of Engineers rain-gage and satellite data collection platform at station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 441,000 ft³/s Apr. 14, 1952, gage height, 24.28 ft, datum then in use; minimum, 2,500 ft³/s Dec. 29, 1941; minimum gage height, 7.83 ft Jan. 9, 1989.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	25600	26700	18600	23500	20200	23400	31800	32500	36500	37000	31900	32000
2	25500	27000	18600	21100	20400	23900	31600	34500	36400	38700	31800	32100
3	25400	27100	18400	19800	20200	25000	31400	39200	35700	37900	31800	32200
4	25300	27100	18400	19700	20300	29200	31000	44000	35200	37100	31700	33200
5	25300	27200	18500	21000	20300	35000	30700	43200	35500	35800	31200	32800
6	25300	26700	18700	20200	20100	37700	31700	41900	34800	35400	31000	31600
7	25500	26500	19300	14200	19800	37400	34500	39000	36300	35500	31000	31500
8	25800	26500	18600	13200	19100	39300	34300	38700	37600	34500	31100	31500
9	26700	26300	19800	17500	18300	40800	34200	38000	38200	32100	30800	31300
10	26300	26100	20300	e19600	19000	39300	34200	39500	39200	34100	30800	31400
11	26100	25900	19400	e20400	20000	37000	34000	40600	39000	34100	30500	31400
12	26000	26400	20200	e20900	e20400	35900	34800	40400	37500	34700	30800	31700
13	25700	27300	20300	e21100	e20200	36100	35200	40100	37600	35400	31500	32500
14	25500	27000	19800	20400	e19500	33400	34100	40000	37900	35700	31500	31900
15	25400	27000	20500	17800	19000	31500	35300	40000	37600	35400	31600	31600
16	25300	27400	21100	e18000	19300	31100	35300	39200	41600	35900	31300	31300
17	25400	26400	21300	e18400	19500	31100	33500	39200	49200	35800	30700	31000
18	27200	26100	21500	e18900	22100	31200	33600	38800	42900	34800	30600	31300
19	26000	26300	21200	e19400	33900	30900	33200	38100	35700	34400	31100	31000
20	24700	26200	21100	e20100	35200	31000	31800	37500	37200	33500	31600	31200
21	24900	25900	20300	e20800	e30700	31900	30900	37000	36800	32200	31600	31800
22	25400	25700	20300	e21400	e30200	32200	30600	36700	36500	31600	31200	32800
23	25600	24600	18300	e21900	e28600	31800	30400	35900	39000	31400	31100	32900
24	25500	21400	18900	e22000	25700	31800	30300	36200	38100	31200	31200	32200
25	25700	18000	19000	e21500	e24300	31100	30000	35600	38800	31300	31600	32000
26	26100	18000	19100	e20500	e21800	31300	30300	35700	44400	31400	32400	31300
27	26200	17000	18600	e20000	23500	31500	30100	35700	41500	31100	31800	31000
28	26100	17600	18600	e19800	24500	32100	31000	36000	39600	30900	31600	31000
29	26100	17600	18400	e19700	---	32300	32500	37100	40000	30800	31400	30900
30	26200	17700	19300	e19800	---	31700	32100	36900	36900	31000	31800	31200
31	26500	---	21700	e19700	---	31800	---	36900	---	31600	31900	---
TOTAL	798300	736700	608100	612300	636100	1009700	974400	1184100	1153200	1052300	971900	951600
MEAN	25750	24560	19620	19750	22720	32570	32480	38200	38440	33950	31350	31720
MAX	27200	27400	21700	23500	35200	40800	35300	44000	49200	38700	32400	33200
MIN	24700	17000	18300	13200	18300	23400	30000	32500	34800	30800	30500	30900
AC-FT	1583000	1461000	1206000	1214000	1262000	2003000	1933000	2349000	2287000	2087000	1928000	1887000

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1958 - 1994, BY WATER YEAR (WY)a

	MEAN	35040	30340	18460	15870	16790	22060	32490	32420	33930	35450	35850	35690
MAX	63260	62930	36770	27720	27730	36270	50970	46250	54190	53720	63090	63290	63290
(WY)	1976	1976	1987	1987	1983	1983	1969	1986	1971	1975	1975	1975	1975
MIN	14350	6951	8271	7316	6293	10130	23480	23820	23270	26890	24270	25790	25790
(WY)	1962	1962	1962	1964	1963	1958	1961	1962	1962	1958	1993	1962	1962

SUMMARY STATISTICS	FOR 1993 CALENDAR YEAR	FOR 1994 WATER YEAR	WATER YEARS 1958 - 1994a
ANNUAL TOTAL	9630000	10688700	
ANNUAL MEAN	26380	29280	28740
HIGHEST ANNUAL MEAN			40750
LOWEST ANNUAL MEAN			20030
HIGHEST DAILY MEAN	71300	Jul 15	103000
LOWEST DAILY MEAN	9600	Jan 1	3000
ANNUAL SEVEN-DAY MINIMUM	13000	Jan 1	5430
INSTANTANEOUS PEAK FLOW			101000
INSTANTANEOUS PEAK STAGE			30.65
ANNUAL RUNOFF (AC-FT)	19100000	21200000	20820000
10 PERCENT EXCEEDS	39300	37800	43400
50 PERCENT EXCEEDS	25800	31100	29900
90 PERCENT EXCEEDS	14400	19500	11900

e Estimated.

a Post-regulation period.

06486000 MISSOURI RIVER AT SIOUX CITY, IA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--October 1971 to current year. Daily sediment loads October 1954 to September 1971 in reports of U.S. Army Corps of Engineers.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1972 to September 1976, November 1977 to September 1981, October 1991 to current year.

WATER TEMPERATURES: October 1971 to September 1976, November 1977 to September 1981, October 1991 to current year.

SUSPENDED-SEDIMENT DISCHARGE: October 1971 to September 1976, October 1991 to current year.

REMARKS.--Records of specific conductance are obtained from suspended-sediment samples at time of analysis.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 950 microsiemens June 17, 19, 1981; minimum daily, 410 microsiemens Mar. 22, 1978.

WATER TEMPERATURES: Maximum daily, 28.0°C July 30, 1976 and Aug. 7, 1979; minimum daily, 0.0°C on many days during winter period.

SEDIMENT CONCENTRATIONS: Maximum daily mean, 1,620 mg/L Nov. 20, 1972; minimum daily mean, 42 mg/L Dec. 29, 1975.

SEDIMENT LOADS: Maximum daily, 222,000 tons Nov. 20, 1972; minimum daily, 2,150 tons Nov. 20, 1991.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 854 microsiemens Nov. 12; minimum daily, 613 microsiemens Mar. 10.

WATER TEMPERATURES: Maximum daily, 26.0°C July 18, Aug. 2, Sept. 13; minimum daily, 0.0°C Dec. 7 and Mar. 1.

SEDIMENT CONCENTRATIONS: Maximum daily mean, 662 mg/L June 23; minimum daily mean, 106 mg/L Nov. 26.

SEDIMENT LOADS: Maximum daily, 69,900 tons June 23; minimum daily, 4,040 tons Jan. 8.

SPECIFIC CONDUCTANCE MICROSIEMENS/CM AT 25 DEG C, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	796	824	813	---	---	724	760	---	---	757	---	---
2	---	---	---	---	---	---	---	812	---	---	808	777
3	---	---	---	---	---	---	---	---	---	---	---	---
4	805	781	---	---	---	---	---	---	---	---	---	---
5	---	---	---	---	---	---	730	---	---	769	814	---
6	---	---	---	---	---	---	---	---	750	---	---	785
7	---	---	826	---	---	---	---	---	---	---	---	---
8	724	805	---	---	---	---	---	---	---	766	---	---
9	---	---	---	---	---	---	---	838	---	---	792	728
10	---	---	---	---	---	613	---	---	764	---	---	---
11	---	---	---	---	---	---	---	---	---	771	---	---
12	812	854	---	---	---	---	779	---	---	---	776	---
13	---	---	---	---	---	---	---	---	746	---	---	782
14	---	---	---	---	---	---	---	---	---	---	---	---
15	784	846	---	---	778	662	821	---	---	785	---	---
16	---	---	---	---	---	---	---	---	---	---	---	---
17	---	---	---	---	---	---	---	802	619	---	---	---
18	807	850	---	---	---	---	---	---	---	820	---	---
19	---	---	---	---	---	---	827	780	---	---	749	---
20	---	---	---	---	---	---	---	---	727	---	---	822
21	---	---	---	---	---	---	795	---	---	---	---	---
22	---	840	---	---	---	685	---	---	---	---	---	---
23	777	---	---	---	---	---	---	776	---	---	770	822
24	---	---	---	---	---	---	---	---	713	---	---	---
25	779	---	---	---	---	734	---	---	---	792	---	---
26	---	---	---	---	---	---	773	---	---	---	764	780
27	---	---	---	---	---	---	---	779	691	---	---	---
28	804	---	---	---	---	---	---	---	---	---	---	---
29	---	---	---	---	---	763	776	---	---	809	---	---
30	---	---	---	---	---	---	---	---	---	---	789	816
31	---	---	---	---	---	---	---	749	---	---	---	---

06486000 MISSOURI RIVER AT SIOUX CITY, IA--Continued

SUSPENDED-SEDIMENT. WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DAY	MEAN CONCEN- TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN- TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN- TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN- TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN- TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN- TRATION (MG/L)	LOAD (TONS/ DAY)
OCTOBER			NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	145	10000	218	15700	205	10300	240	15200	144	7840	281	17800
2	133	9140	229	16700	206	10300	174	9910	154	8520	281	18100
3	133	9090	230	16800	196	9720	149	8000	156	8510	315	21400
4	122	8310	221	16200	185	9160	145	7740	164	8950	420	33300
5	124	8500	234	17200	205	10200	162	9170	170	9320	534	50700
6	141	9660	230	16600	232	11700	135	7350	167	9050	578	58900
7	153	10500	233	16600	221	11500	116	4440	153	8170	515	52000
8	164	11400	235	16800	197	9930	113	4040	135	6950	515	54700
9	189	13600	240	17100	223	12000	140	6650	130	6460	573	63100
10	177	12600	253	17800	211	11600	172	9100	162	8350	526	55700
11	155	11000	276	19300	176	9250	180	9910	190	10300	486	48500
12	142	9940	328	23400	192	10500	173	9760	210	11600	483	46900
13	142	9830	348	25600	175	9610	200	11400	212	11600	486	47300
14	145	9940	295	21500	149	7960	161	8930	206	10800	513	46200
15	165	11300	227	16600	149	8300	127	6100	319	16300	470	40000
16	133	9060	249	18400	168	9560	149	7240	266	13800	448	37600
17	124	8530	225	16000	174	10000	162	8050	179	9410	427	35800
18	156	11500	205	14500	181	10500	159	8110	176	10800	421	35500
19	145	10200	216	15400	171	9820	192	10100	296	27300	379	31600
20	134	8940	216	15200	169	9610	192	10400	335	31800	340	28500
21	139	9320	220	15400	151	8270	185	10400	260	21600	344	29700
22	169	11600	222	15400	164	9010	171	9880	256	20900	320	27800
23	168	11600	189	12600	140	6920	175	10300	222	17100	312	26800
24	156	10800	128	7430	147	7490	170	10100	209	14500	341	29400
25	164	11400	107	5210	148	7610	146	8480	188	12300	309	26000
26	239	16800	106	5130	142	7340	144	7970	177	10400	312	26400
27	238	16800	107	4910	148	7430	136	7340	288	18400	313	26600
28	228	16100	123	5850	139	6970	116	6200	328	21700	299	25800
29	223	15700	162	7730	147	7300	134	7130	---	---	284	24800
30	219	15500	171	8180	151	7880	139	7430	---	---	275	23500
31	223	16000	---	---	213	12600	127	6760	---	---	260	22300
TOTAL	---	354660	---	441240	---	290340	---	263590	---	372730	---	1112700
APRIL			MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	240	20600	123	10800	159	15700	210	21000	151	13000	169	14600
2	262	22300	136	12700	161	15900	242	25300	123	10600	167	14400
3	307	26000	246	26400	160	15400	224	22900	129	11000	166	14400
4	308	25800	318	37800	160	15200	191	19100	151	12900	184	16500
5	281	23300	273	31900	191	18300	159	15400	139	11700	184	16300
6	270	23100	242	27400	187	17600	148	14100	147	12300	148	12600
7	363	33900	219	23000	211	20700	162	15600	167	14000	148	12600
8	331	30600	194	20300	230	23400	161	15000	175	14600	150	12700
9	282	26000	174	17900	254	26200	136	11800	168	13900	147	12400
10	244	22500	202	21600	307	32500	147	13500	166	13800	150	12700
11	216	19800	246	26900	305	32100	140	12900	149	12300	136	11600
12	223	20900	243	26600	244	24700	166	15600	142	11800	129	11100
13	236	22400	228	24700	208	21100	197	18800	184	15700	134	11800
14	204	18800	211	22800	223	22900	189	18300	190	16100	124	10700
15	237	22600	209	22500	225	22800	178	17000	194	16600	118	10100
16	238	22700	180	19000	302	34300	221	21500	194	16400	121	10200
17	225	20300	150	15900	493	65600	239	23100	162	13500	120	10000
18	230	20900	168	17600	441	51200	217	20300	125	10300	159	13400
19	217	19500	185	19000	353	34000	232	21500	135	11300	147	12300
20	205	17600	181	18300	448	45100	224	20200	159	13600	135	11300
21	202	16900	177	17600	468	46400	217	18800	166	14100	163	14000
22	202	16600	172	17000	471	46500	203	17300	155	13000	260	23100
23	202	16600	158	15300	662	69900	180	15300	140	11800	277	24600
24	196	16100	150	14600	588	60600	156	13100	143	12100	232	20200
25	181	14700	143	13700	401	42300	140	11900	134	11500	237	20400
26	180	14700	151	14600	520	62500	147	12500	143	12500	228	19200
27	176	14300	151	14600	356	39800	144	12100	153	13200	214	17900
28	175	14700	151	14600	318	34100	127	10600	153	13000	216	18100
29	211	18500	207	20700	366	39500	117	9790	148	12500	215	18000
30	170	14800	195	19500	265	26400	118	9900	171	14700	203	17100
31	---	---	169	16800	---	---	151	12900	173	14900	---	---
TOTAL	---	617500	---	622100	---	1022700	---	507090	---	408700	---	444300
YEAR 6457650												

06486000 MISSOURI RIVER AT SIOUX CITY, IA--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15.0	5.0	2.0	---	---	.0	9.0	---	---	24.0	---	---
2	---	---	---	---	---	---	---	11.0	---	---	26.0	20.0
3	---	---	---	---	---	---	---	---	---	---	---	---
4	13.0	6.0	---	---	---	---	---	---	---	---	---	---
5	---	---	---	---	---	---	6.0	---	---	24.0	23.5	---
6	---	---	---	---	---	---	---	---	23.0	---	---	22.0
7	---	---	.0	---	---	---	---	---	---	---	---	---
8	16.0	4.0	---	---	---	---	---	---	---	21.0	---	---
9	---	---	---	---	---	---	---	13.0	---	---	22.0	23.0
10	---	---	---	---	---	1.0	---	---	23.0	---	---	---
11	---	---	---	---	---	---	---	---	---	25.0	---	---
12	12.0	3.0	---	---	---	---	7.0	---	---	---	23.0	---
13	---	---	---	---	---	---	---	---	23.0	---	---	26.0
14	---	---	---	---	---	---	---	---	---	---	---	---
15	14.0	1.5	---	---	1.5	5.0	9.0	---	---	---	---	---
16	---	---	---	---	---	---	---	---	---	---	---	---
17	---	---	---	---	---	---	---	18.0	23.0	---	---	---
18	12.0	3.0	---	---	---	---	---	---	---	26.0	---	---
19	---	---	---	---	---	---	13.0	20.0	---	---	22.0	---
20	---	---	---	---	---	---	---	---	23.0	---	---	21.0
21	---	---	---	---	---	---	11.0	---	---	---	---	---
22	---	4.0	---	---	---	5.0	---	---	---	---	---	---
23	11.0	---	---	---	---	---	---	21.0	---	---	23.0	15.5
24	---	---	---	---	---	---	---	---	23.5	---	---	---
25	13.0	---	---	---	---	4.0	---	---	---	25.0	---	---
26	---	---	---	---	---	---	12.0	---	---	---	23.0	17.0
27	---	---	---	---	---	---	---	22.0	24.0	---	---	---
28	8.0	---	---	---	---	---	---	---	---	---	---	---
29	---	---	---	---	---	6.0	9.0	---	---	21.0	---	---
30	---	---	---	---	---	---	---	---	---	---	24.0	18.0
31	---	---	---	---	---	---	---	21.5	---	---	---	---

06600000 PERRY CREEK AT 38th STREET, SIOUX CITY, IA

LOCATION.--Lat 42°32'08", long 96°24'39", in SE1/4 SE1/4 sec.8, T.89 N., R. 47 W., Woodbury County, Hydrologic Unit 10230001, on left bank at downstream side of bridge on 38th Street in Sioux City, 1.9 mi downstream from West Branch, and 3.6 mi upstream from mouth.

DRAINAGE AREA.--65.1 mi².

PERIOD OF RECORD.--October 1945 to September 1969, June 1981 to current year.

REVISED RECORDS.--WSP 1440: Drainage area.

GAGE.--Water-stage encoder. Datum of gage is 1,112.04 ft above sea level (City of Sioux City benchmark). Prior to May 20, 1954, nonrecording gage with supplementary water-stage recorder in operation above 5.0 ft gage height and May 20, 1954 to Sept. 30, 1969, water-stage recorder at present site at datum 5.0 ft higher.

REMARKS.--Estimated daily discharges: Oct. 20 to Feb. 16, Feb. 23 to Mar. 1, June 7, 8, July 2-10, and July 30 to Sept. 30. Records good except those for estimated daily discharges, which are poor. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data. U.S. National Weather Service Limited Automatic Remote Collector at station. U.S. Army Corps of Engineers data collection platform and rain-gage at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of July 7, 1944, reached a stage of about 30.5 ft, from floodmarks, present datum, discharge, 9,600 ft³/s, on basis of contracted-opening measurement of peak flow by U.S. Army Corps of Engineers.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	18	e18	e17	e15	e11	e25	20	31	21	18	e10	e10
2	15	e18	e16	e12	e12	56	20	29	22	e19	e10	e11
3	15	e18	e16	e10	e10	207	19	28	20	e22	e10	e13
4	17	e17	e16	e12	e12	148	19	28	19	e23	e10	e20
5	13	e17	e16	e14	e15	69	19	30	29	e21	e10	e14
6	14	e16	e15	e12	e14	52	19	34	22	e24	e9.8	e11
7	14	e16	e16	e10	e12	38	19	32	e18	e21	e9.8	e11
8	26	e17	e16	e12	e13	33	20	30	e16	e12	e9.8	e11
9	45	e16	e15	e14	e10	31	19	29	14	e13	e9.8	e11
10	26	e16	e15	e16	e12	30	18	28	13	e15	e9.6	e11
11	28	e16	e14	e13	e13	28	18	28	13	15	e13	e10
12	27	e17	e17	e15	e11	29	33	28	23	23	e19	e10
13	25	e21	e15	e12	e13	29	31	26	23	32	e15	e10
14	26	e19	e13	e10	e15	29	25	24	17	23	e13	e10
15	30	e18	e19	e9.0	e18	29	24	25	14	19	e13	e10
16	25	e18	e18	e11	e20	28	22	20	13	20	e12	e10
17	23	e19	e18	e10	25	28	22	19	19	18	e12	e9.8
18	22	e19	e17	e9.0	849	26	22	19	467	16	e11	e9.8
19	21	e18	e17	e13	900	26	20	19	31	16	e11	e9.8
20	e20	e18	e16	e11	57	26	21	18	24	15	e10	e9.6
21	e20	e17	e15	e13	35	24	21	18	21	15	e10	e9.6
22	e20	e17	e13	e15	22	23	21	18	20	14	e9.8	e14
23	e20	e17	e14	e17	e15	24	21	18	45	14	e9.8	e19
24	e20	e16	e15	e16	e12	23	21	17	26	13	e9.7	e15
25	e19	e10	e13	e15	e13	22	21	17	21	13	e16	e13
26	e19	e12	e12	e13	e14	22	28	19	22	13	e13	e12
27	e19	e14	e10	e11	e16	22	25	17	21	13	e12	e12
28	e18	e15	e11	e13	e20	21	31	18	19	12	e12	e12
29	e18	e16	e12	e12	---	20	37	20	19	12	e11	e11
30	e18	e16	e15	e9.0	---	19	35	18	19	e11	e11	e11
31	e17	---	e17	e10	---	20	---	19	---	e11	e10	---
TOTAL	658	502	469	384.0	2189	1207	691	724	1071	526	352.1	350.6
MEAN	21.2	16.7	15.1	12.4	78.2	38.9	23.0	23.4	35.7	17.0	11.4	11.7
MAX	45	21	19	17	900	207	37	34	467	32	19	20
MIN	13	10	10	9.0	10	19	18	17	13	11	9.6	9.6
AC-FT	1310	996	930	762	4340	2390	1370	1440	2120	1040	698	695
CFSM	.33	.26	.23	.19	1.20	.60	.35	.36	.55	.26	.17	.18
IN.	.38	.29	.27	.22	1.25	.69	.39	.41	.61	.30	.20	.20

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1946 - 1994, BY WATER YEAR (WY)

	MEAN	7.26	6.68	5.69	6.20	18.5	45.8	24.7	22.2	30.7	20.4	12.5	12.6
MAX	29.5	26.3	19.4	47.5	78.4	188	123	140	125	99.6	85.5	147	147
(WY)	1993	1993	1993	1952	1948	1962	1985	1990	1984	1952	1951	1949	1949
MIN	.38	.81	.48	.33	1.31	2.62	2.30	2.91	.94	.35	.30	.083	.083
(WY)	1959	1982	1959	1982	1959	1964	1959	1968	1956	1946	1965	1958	1958

SUMMARY STATISTICS	FOR 1993 CALENDAR YEAR	FOR 1994 WATER YEAR	WATER YEARS 1946 - 1994
ANNUAL TOTAL	11958.4	9123.7	
ANNUAL MEAN	32.8	25.0	17.8
HIGHEST ANNUAL MEAN			38.6
LOWEST ANNUAL MEAN			2.38
HIGHEST DAILY MEAN	527	900	2260
LOWEST DAILY MEAN	7.8	9.0	.00
ANNUAL SEVEN-DAY MINIMUM	9.1	9.8	.00
INSTANTANEOUS PEAK FLOW		2810	8670
INSTANTANEOUS PEAK STAGE		16.92	28.54
ANNUAL RUNOFF (AC-FT)	23720	18100	12910
ANNUAL RUNOFF (CFSM)	.50	.38	.27
ANNUAL RUNOFF (INCHES)	6.83	5.21	3.72
10 PERCENT EXCEEDS	55	28	29
50 PERCENT EXCEEDS	21	17	5.1
90 PERCENT EXCEEDS	11	10	.80

e Estimated.

06600100 FLOYD RIVER AT ALTON, IA

LOCATION.--Lat 42°58'55", long 96°00'03", in NE1/4 NE1/4 sec.11, T.94 N., R.44 W., Sioux County, Hydrologic Unit 10230002, on left bank 270 ft downstream from South County Road at east edge of Alton, 34.3 mi upstream from West Branch Floyd River, and at mile 58.1.

DRAINAGE AREA.--268 mi².

PERIOD OF RECORD.--October 1955 to current year. Prior to December 1955, monthly discharge only, published in WSP 1730.

REVISED RECORDS.--WDR IA-82-1: Drainage area.

GAGE.--Water-stage encoder. Datum of gage is 1,269.55 ft above sea level.

REMARKS.--Estimated daily discharges: Nov. 25-29, Dec. 7, 8, 11, Dec. 20 to Feb. 17, and Feb. 21 to Mar. 6. Records good except those for estimated daily discharges, which are poor. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data. U.S. Army Corps of Engineers rain-gage and satellite data collection platform at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1953 reached a discharge of about 45,500 ft³/s, from information by U. S. Army Corps of Engineers.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	152	123	113	e80	e50	e120	112	304	107	402	94	38
2	146	123	115	e70	e56	e135	112	273	108	434	82	40
3	144	121	112	e62	e54	e450	110	243	105	346	78	42
4	143	122	112	e74	e62	e1200	113	222	102	342	76	59
5	137	118	112	e80	e90	e1400	109	210	200	343	71	104
6	137	112	103	e70	e80	e1100	113	241	518	398	67	93
7	134	114	e100	e50	e72	682	111	266	339	462	64	74
8	149	113	e90	e54	e70	344	111	252	291	444	70	65
9	190	113	113	e60	e56	267	110	230	238	341	78	59
10	200	111	99	e88	e64	225	107	205	208	302	77	52
11	189	113	e76	e70	e78	194	105	194	207	275	77	47
12	180	116	100	e80	e64	197	131	184	206	256	152	43
13	171	140	116	e60	e68	208	195	179	2590	353	143	42
14	165	145	70	e47	e78	216	232	179	3820	584	120	40
15	166	137	121	e43	e88	224	222	174	1090	436	101	37
16	162	133	142	e47	e96	192	203	166	500	358	88	36
17	158	134	121	e43	e90	174	188	162	423	319	80	36
18	154	135	118	e41	111	165	181	158	611	284	74	36
19	151	138	115	e54	590	157	172	155	517	257	68	36
20	148	136	e110	e46	841	157	165	151	523	217	64	37
21	148	135	e92	e52	e560	149	163	146	1270	205	59	37
22	144	131	e76	e86	e310	143	158	141	1870	186	55	48
23	141	129	e70	e120	e170	138	153	136	1620	170	52	57
24	139	125	e96	e80	e100	133	152	136	3050	155	48	56
25	138	e26	e76	e50	e105	129	151	132	2080	143	46	53
26	134	e28	e70	e44	e100	129	168	139	914	133	47	50
27	131	e60	e40	e42	e105	126	164	135	584	124	57	48
28	132	e100	e43	e52	e110	121	166	127	481	115	50	46
29	127	e110	e66	e47	---	117	205	124	418	109	44	44
30	123	113	e90	e42	---	113	283	118	374	102	42	43
31	123	---	e100	e45	---	113	---	111	---	95	40	---
TOTAL	4656	3454	2977	1879	4318	9218	4665	5593	25364	8690	2264	1498
MEAN	150	115	96.0	60.6	154	297	155	180	845	280	73.0	49.9
MAX	200	145	142	120	841	1400	283	304	3820	584	152	104
MIN	123	26	40	41	50	113	105	111	102	95	40	36
AC-FT	9240	6850	5900	3730	8560	18280	9250	11090	50310	17240	4490	2970
CFSM	.56	.43	.36	.23	.58	1.11	.58	.67	3.15	1.05	.27	.19
IN.	.65	.48	.41	.26	.60	1.28	.65	.78	3.52	1.21	.31	.21

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1956 - 1994, BY WATER YEAR (WY)

	MEAN	37.1	37.3	24.7	16.1	114	168	162	96.7	180	89.3	38.5	26.6
MAX	234	287	128	109	2698	605	906	392	973	878	249	175	
(WY)	1993	1980	1983	1973	1985	1979	1969	1984	1984	1993	1993	1993	
MIN	.058	.30	.074	.048	.15	1.77	3.67	2.92	2.36	3.29	.37	.080	
(WY)	1957	1959	1959	1959	1977	1959	1959	1968	1968	1958	1968	1958	

SUMMARY STATISTICS	FOR 1993 CALENDAR YEAR	FOR 1994 WATER YEAR	WATER YEARS 1956 - 1994
ANNUAL TOTAL	114638	74576	
ANNUAL MEAN	314	204	72.0
HIGHEST ANNUAL MEAN			323
LOWEST ANNUAL MEAN			2.66
HIGHEST DAILY MEAN	5850	3820	7160
LOWEST DAILY MEAN	22	26	.00
ANNUAL SEVEN-DAY MINIMUM	26	36	.00
INSTANTANEOUS PEAK FLOW		6220	16300
INSTANTANEOUS PEAK STAGE		17.34	18.54
ANNUAL RUNOFF (AC-FT)	227400	147900	52150
ANNUAL RUNOFF (CFSM)	1.17	.76	.27
ANNUAL RUNOFF (INCHES)	15.91	10.35	3.65
10 PERCENT EXCEEDS	706	349	175
50 PERCENT EXCEEDS	156	121	18
90 PERCENT EXCEEDS	43	47	1.2

e Estimated.

FLOYD RIVER BASIN

06600300 WEST BRANCH FLOYD RIVER NEAR STRUBLE, IA

LOCATION.--Lat 42°55'26", long 96°10'36", in SE1/4 SE1/4 sec. 29, T.94 N., R.45 W., Sioux County, Hydrologic Unit 10230002, on left bank near wingwall at upstream side of bridge on county highway B62, 0.1 mi west of U.S. Highway 75, 0.8 mi downstream from Orange City slough, 2.2 mi northeast of Struble, 21.4 mi upstream from Floyd River, and at mile 45.2 upstream from mouth of Floyd River.

DRAINAGE AREA.--180 mi².

PERIOD OF RECORD.--October 1955 to current year. Prior to December 1955, monthly discharge only, published in WSP 1730.

REVISED RECORDS.--WDR IA-82-1: Drainage area, 1978-81 (P).

GAGE.--Water-stage encoder. Datum of gage is 1,239.40 ft above sea level (State Highway Commission bench mark). Prior to Jan. 5, 1978, at site 721 ft right at old channel at same datum.

REMARKS.--Estimated daily discharges: Nov. 25-30, Dec. 22 to Feb. 18, and Feb. 23 to Mar. 3. Records good except those for estimated daily discharges, which are poor. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data. U.S. National Weather Service Limited Automatic Remote Collector at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	100	84	84	e80	e39	e270	88	205	89	132	49	29
2	93	83	81	e58	e44	e350	86	191	90	123	48	30
3	92	82	77	e45	e42	e900	86	178	88	117	47	30
4	90	82	76	e58	e54	3920	87	169	88	116	46	42
5	87	77	76	e64	e90	2670	83	164	149	109	44	36
6	87	75	74	e54	e72	507	97	188	241	136	42	32
7	86	77	78	e37	e58	264	96	181	157	126	40	29
8	96	76	77	e40	e60	196	98	175	144	110	40	29
9	137	74	76	e45	e45	173	95	162	136	101	39	28
10	125	74	73	e66	e54	155	94	154	130	95	40	27
11	120	75	69	e50	e62	146	94	148	127	90	39	27
12	116	77	81	e60	e54	146	115	140	129	89	219	26
13	111	90	82	e45	e58	145	148	139	298	101	90	26
14	107	86	60	e34	e72	145	168	134	392	120	61	26
15	108	83	90	e32	e90	143	171	126	176	105	55	26
16	107	83	88	e39	e120	131	163	124	151	102	53	26
17	103	84	84	e35	e110	125	153	124	139	93	49	26
18	101	85	83	e32	e170	118	144	113	150	87	47	25
19	99	85	81	e49	2070	114	133	108	129	84	46	25
20	99	83	78	e40	1800	112	127	106	122	80	42	25
21	97	83	72	e50	1130	108	120	104	221	75	38	25
22	95	80	e58	e78	839	105	115	102	154	72	36	32
23	95	78	e62	e110	e400	103	117	99	271	69	35	33
24	93	78	e68	e90	e170	98	117	100	417	65	34	30
25	92	e18	e54	e60	e180	97	117	97	251	62	36	28
26	90	e19	e50	e50	e170	97	149	96	232	59	36	28
27	87	e40	e24	e45	e190	94	132	93	222	57	34	28
28	89	e68	e27	e49	e220	92	139	92	174	56	32	28
29	84	e74	e45	e40	---	92	177	94	155	53	31	28
30	82	e80	e76	e32	---	89	214	92	143	52	30	27
31	82	---	e98	e35	---	90	---	89	---	50	30	---
TOTAL	3050	2233	2202	1602	8463	11795	3723	4087	5365	2786	1508	857
MEAN	98.4	74.4	71.0	51.7	302	380	124	132	179	89.9	48.6	28.6
MAX	137	90	98	110	2070	3920	214	205	417	136	219	42
MIN	82	18	24	32	39	89	83	89	88	50	30	25
AC-FT	6050	4430	4370	3180	16790	23400	7380	8110	10640	5530	2990	1700
CFSM	.55	.41	.39	.29	1.68	2.11	.69	.73	.99	.50	.27	.16
IN.	.63	.46	.46	.33	1.75	2.44	.77	.84	1.11	.58	.31	.18

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1956 - 1994, BY WATER YEAR (WY)

	MEAN	22.9	21.6	15.5	11.7	44.3	131	103	64.4	104	53.3	23.4	19.7
MAX	151	133	76.4	53.1	302	734	637	314	669	379	124	106	
(WY)	1993	1980	1984	1983	1994	1962	1969	1984	1983	1993	1993	1993	
MIN	.22	.35	.048	.000	.000	1.26	1.21	1.00	.82	.89	.24	.17	
(WY)	1959	1959	1965	1959	1959	1968	1959	1968	1977	1958	1958	1958	

SUMMARY STATISTICS

FOR 1993 CALENDAR YEAR

FOR 1994 WATER YEAR

WATER YEARS 1956 - 1994

ANNUAL TOTAL	66407	47671	
ANNUAL MEAN	182	131	51.2
HIGHEST ANNUAL MEAN			227
LOWEST ANNUAL MEAN			2.49
HIGHEST DAILY MEAN	2940	Mar 27	5820
LOWEST DAILY MEAN	18	Nov 25	.00
ANNUAL SEVEN-DAY MINIMUM	28	Feb 23	.00
INSTANTANEOUS PEAK FLOW			8920
INSTANTANEOUS PEAK STAGE			15.86
ANNUAL RUNOFF (AC-FT)	131700	94560	37080
ANNUAL RUNOFF (CFSM)	1.01	.73	.28
ANNUAL RUNOFF (INCHES)	13.72	9.85	3.86
10 PERCENT EXCEEDS	369	173	102
50 PERCENT EXCEEDS	100	87	10
90 PERCENT EXCEEDS	48	32	.60

e Estimated.

a Also Mar. 4, 1994.

06600500 FLOYD RIVER AT JAMES, IA

LOCATION.--Lat 42°34'36", long 96°18'43", in SE1/4 SE1/4 sec.30, T.90 N., R.46 W., Plymouth County, Hydrologic Unit 10230002, on left bank at upstream side of bridge on county highway C70, 0.2 mi east of James, 14.3 mi downstream from West Branch Floyd River, and at mile 7.5.

DRAINAGE AREA.--886 mi².

PERIOD OF RECORD.--December 1934 to current year.

REVISED RECORDS.--WSP 1240: 1935 (M), 1936, 1937-38 (M), 1942, 1945. WSP 1440: Drainage area.

GAGE.--Water-stage encoder. Datum of gage is 1,092.59 ft above sea level. Prior to Sept. 11, 1938, June 9 to Nov. 5, 1953, and Oct. 1, 1955, to May 22, 1957, nonrecording gage and May 23, 1957, to Sept. 30, 1970, water-stage recorder at same site at datum 10.0 ft higher.

REMARKS.--Estimated daily discharges: Nov. 25 to Dec. 12, Dec. 22 to Feb. 18, and Mar. 2-6. Records good except those for estimated daily discharges, which are poor. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data. U.S. Army Corps of Engineers rain-gage and satellite data collection platform at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage and discharge since 1892, that of June 8, 1953, from information by U. S. Army Corps of Engineers.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	432	378	e400	e300	e150	503	373	736	361	889	299	195
2	422	379	e370	e230	e170	e470	367	737	358	888	292	191
3	412	372	e370	e170	e160	e600	361	704	353	871	280	188
4	403	368	e360	e230	e210	e1500	362	671	338	802	269	216
5	398	368	e370	e250	e340	e3900	365	660	366	771	256	231
6	393	354	e350	e210	e280	e4300	361	670	511	840	250	222
7	393	357	e370	e140	e230	2900	370	705	787	890	240	224
8	407	354	e360	e160	e240	1310	365	710	624	888	258	209
9	542	348	e360	e180	e180	1010	360	681	577	821	241	200
10	562	341	e350	e250	e210	863	356	648	535	719	240	190
11	552	343	e330	e190	e250	770	348	612	504	660	239	185
12	529	349	e390	e230	e210	716	378	586	503	632	288	182
13	505	380	352	e180	e230	699	438	565	858	631	940	177
14	487	392	315	e130	e290	690	515	556	2110	714	485	172
15	498	388	285	e120	e350	678	569	548	3590	890	398	165
16	499	374	354	e150	e470	646	547	529	1540	845	352	161
17	485	371	396	e140	e430	603	526	505	982	710	325	158
18	468	375	384	e120	e660	568	506	487	1370	638	302	157
19	459	375	364	e180	4490	539	489	471	1150	596	279	155
20	450	370	357	e160	3100	521	473	457	953	556	263	153
21	441	367	323	e200	1990	501	456	443	1310	521	248	154
22	429	365	e220	e300	1480	484	450	436	1660	491	236	192
23	424	364	e240	e430	1200	472	438	429	2680	466	225	266
24	419	365	e270	e350	990	449	430	423	3820	441	214	234
25	417	e86	e220	e240	823	429	428	421	3770	417	211	221
26	410	e90	e190	e200	622	426	513	417	2880	390	214	204
27	400	e190	e94	e180	601	415	499	410	1610	370	207	190
28	402	e320	e110	e190	565	406	490	401	1270	351	201	185
29	399	e350	e180	e160	---	392	562	396	1110	338	197	180
30	388	e380	e300	e120	---	378	637	387	982	324	191	176
31	377	---	e380	e140	---	373	---	370	---	312	188	---
TOTAL	13802	10213	9714	6230	20921	28511	13332	16771	39462	19672	8828	5733
MEAN	445	340	313	201	747	920	444	541	1315	635	285	191
MAX	562	392	400	430	4490	4300	637	737	3820	890	940	266
MIN	377	86	94	120	150	373	348	370	338	312	188	153
AC-FT	27380	20260	19270	12360	41500	56550	26440	33270	78270	39020	17510	11370
CFSM	.50	.38	.35	.23	.84	1.04	.50	.61	1.48	.72	.32	.22
IN.	.58	.43	.41	.26	.88	1.20	.56	.70	1.66	.83	.37	.24

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1936 - 1994, BY WATER YEAR (WY)

	MEAN	94.7	94.9	67.5	50.3	334	527	395	279	497	287	146	127
MAX	617	804	366	359	9935	2080	2715	1393	2897	2196	1151	1353	
(WY)	1993	1980	1980	1973	1985	1979	1969	1984	1984	1993	1951	1951	
MIN	4.55	4.54	3.05	1.63	1.62	21.5	18.7	15.1	14.4	7.32	6.12	3.40	
(WY)	1959	1959	1959	1959	1959	1964	1959	1968	1968	1936	1958	1958	

SUMMARY STATISTICS

FOR 1993 CALENDAR YEAR

FOR 1994 WATER YEAR

WATER YEARS 1936 - 1994

ANNUAL TOTAL	317189	193189		
ANNUAL MEAN	869	529	227	
HIGHEST ANNUAL MEAN			958	1983
LOWEST ANNUAL MEAN			19.9	1956
HIGHEST DAILY MEAN	8610	Mar 29	4490	Feb 19
LOWEST DAILY MEAN	86	Nov 25	86	Nov 25
ANNUAL SEVEN-DAY MINIMUM	112	Feb 23	143	Jan 14
INSTANTANEOUS PEAK FLOW			e5900	Feb 19
INSTANTANEOUS PEAK STAGE			unknown	Feb 19
ANNUAL RUNOFF (AC-FT)	629100	383200	164600	25.30
ANNUAL RUNOFF (CFSM)	.98	.60	.26	
ANNUAL RUNOFF (INCHES)	13.32	8.11	3.48	
10 PERCENT EXCEEDS	1760	866	502	
50 PERCENT EXCEEDS	494	380	68	
90 PERCENT EXCEEDS	195	181	11	

e Estimated.

06601200 MISSOURI RIVER AT DECATUR, NE

LOCATION.--Lat 42°00'26", long 96°14'29", in NE1/4 SW1/4 sec.36, T.24 N., R.10 E., Burt County, Hydrologic Unit 10230001, on right bank 0.1 mi upstream from Iowa Highway 175 bridge at Decatur, and at mile 691.0.

DRAINAGE AREA.--316,200 mi², approximately. The 3,959 mi² in Great Divide basin are not included.

PERIOD OF RECORD.--October 1987 to current year.

GAGE.--Water-stage encoder. Datum of gage is 1,010.00 ft above sea level, supplementary adjustment of 1954.

REMARKS.--Estimated daily discharges: Feb. 19-28 and Mar. 4-10. Records good, except those for estimated discharge which are poor. Flow regulated by upstream main-stem reservoirs. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data. U.S. Army Corps of Engineers rain-gage and satellite data collection platform at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	25800	26900	19600	23300	20700	24000	32600	33800	37400	37200	33500	32800
2	25900	27100	20400	23000	21200	23900	32500	34500	37100	38700	33400	32800
3	25700	27500	20300	21100	21100	24900	32400	37400	36800	39100	33600	32800
4	25500	27600	20200	20400	21100	29600	32500	42300	36400	38700	33800	34100
5	25400	27400	20200	21100	21300	33300	31900	43600	37600	38100	32900	34300
6	25400	27200	20400	21400	21300	37700	32200	42400	37400	38800	32300	32800
7	25500	26900	20100	19500	21200	39200	35000	40200	37500	36600	32100	32500
8	25800	26600	20400	14100	21000	38700	36200	39000	39600	36400	31900	32600
9	26600	26500	19400	16100	20100	e42000	35900	39500	39900	33500	31500	32700
10	27000	26600	21100	18700	20100	e41800	35800	40200	40800	34000	31500	32700
11	26600	26800	20600	20900	20600	38500	35900	42200	41100	34600	31500	32600
12	26400	27200	19900	21400	21300	36500	36300	41600	40100	35100	31800	32600
13	26300	28100	20700	21900	20800	37700	37600	41300	40100	35900	32900	33400
14	26400	28400	20500	22200	20800	37000	36700	41000	39500	36100	33200	33400
15	26600	27700	20200	19500	21100	34300	36500	41100	39200	36100	33000	32700
16	26500	27900	21000	18500	21200	34400	37300	40600	40600	36200	33100	32200
17	26400	27400	21300	19300	21200	33900	36100	40400	47300	37300	32500	31700
18	28100	26500	21600	19700	22200	33600	34400	40400	48300	36200	32000	31700
19	29100	26400	21700	20300	e32900	32900	34700	39700	38400	36000	32100	31500
20	26200	26500	21500	21400	e39400	32300	33200	38700	37300	35100	32600	31300
21	25900	26000	21100	21800	e35500	32400	32200	38000	38600	34100	32900	31500
22	26300	25700	20900	22200	e30900	32900	31700	37500	38700	32900	32400	32500
23	26600	25300	19600	22700	e30200	32300	31700	36900	40800	32600	32000	33800
24	26700	23700	19300	23100	e28100	32400	31900	36900	43400	32300	32100	32800
25	26700	20600	19800	22700	e26500	32500	31800	37000	41400	32100	32400	32600
26	27000	18700	19900	21900	e25500	32300	32200	37200	46600	31900	33300	32400
27	27000	18300	19700	21500	e24000	32500	32300	37300	45500	31900	33300	32000
28	26900	18900	19600	21000	e26900	33000	32500	37000	42200	31900	32700	32000
29	26600	19100	19600	20800	---	33400	34200	37700	41700	31900	32300	31800
30	26600	19300	19600	21000	---	33200	34300	37700	38900	32100	32500	31800
31	26800	---	20600	20800	---	32700	---	37500	---	32700	32800	---
TOTAL	820300	758800	630800	643300	678200	1045800	1020500	1210600	1210200	1086100	1009900	976400
MEAN	26460	25290	20350	20750	24220	33740	34020	39050	40340	35040	32580	32550
MAX	29100	28400	21700	23300	39400	42000	37600	43600	48300	39100	33800	34300
MIN	25400	18300	19300	14100	20100	23900	31700	33800	36400	31900	31500	31300
AC-FT	1627000	1505000	1251000	1276000	1345000	2074000	2024000	2401000	2400000	2154000	2003000	1937000

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1988 - 1994, BY WATER YEAR (WY)

	MEAN	28990	18060	15580	15700	16520	20110	29110	31290	32530	33930	29450	30600
MAX	33830	32870	20390	20750	24220	33740	34020	39050	40340	51480	32580	35840	
(WY)	1989	1988	1988	1994	1994	1994	1994	1994	1994	1993	1994	1988	
MIN	24250	10470	12070	12360	12210	11580	24410	26130	28240	27680	25700	26750	
(WY)	1993	1991	1991	1990	1991	1991	1991	1991	1991	1991	1993	1993	

SUMMARY STATISTICS

FOR 1993 CALENDAR YEAR

FOR 1994 WATER YEAR

WATER YEARS 1988 - 1994

ANNUAL TOTAL	10112500	11090900	
ANNUAL MEAN	27710	30390	25190
HIGHEST ANNUAL MEAN			30390
LOWEST ANNUAL MEAN			21450
HIGHEST DAILY MEAN	75600	48300	75600
LOWEST DAILY MEAN	10100	14100	7130
ANNUAL SEVEN-DAY MINIMUM	13800	18800	9660
INSTANTANEOUS PEAK FLOW		50700	76400
INSTANTANEOUS PEAK STAGE		27.70	32.10
ANNUAL RUNOFF (AC-FT)	20060000	22000000	18250000
10 PERCENT EXCEEDS	42200	39200	34100
50 PERCENT EXCEEDS	26600	32200	26800
90 PERCENT EXCEEDS	14900	20500	12500

e Estimated.

06602020 WEST FORK DITCH AT HORNICK, IA

LOCATION.--Lat 42°13'37", long 96°04'40", in SW1/4 sec.27, T.86 N., R.45 W., Woodbury County, Hydrologic Unit 10230004, on left bank at upstream side of State Highway 141 bridge, 1.0 mi east of Hornick, 9.2 mi upstream from Wolf Creek, and 13.5 mi north of Onawa.

DRAINAGE AREA.--403 mi².

PERIOD OF RECORD.--April 1939 to September 1969 (published as "at Holly Springs"), July 1974 to current year.

REVISED RECORDS.--WSP 1240: 1943, 1945 (M). WSP 1310: 1941 (M) 1944-46 (M). WSP 1440: Drainage area.

GAGE.--Water-stage encoder. Datum of gage is 1,045.82 ft above sea level. Prior to June 16, 1959, nonrecording gage at site 3.0 mi upstream and June 16, 1959 to Sept. 30, 1969, recording gage at site 2.2 mi upstream at datum 7.0 ft higher.

REMARKS.--Estimated daily discharges: Nov. 25 to Feb. 18, Feb. 24 to Mar. 3, and Aug. 30, 31. Records good except those for estimated daily discharges, which are poor. West Fork ditch is a dredged channel which diverts flow of West Fork Little Sioux River at Holly Springs 5.5 mi south, then southeast 6.5 mi to a point 1.2 mi west of Kennebec, where Wolf Creek enters from left. From this point, ditch roughly parallels the Little Sioux River and is known as Monona-Harrison ditch. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data. U.S. National Weather Service gage-height telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	207	196	e230	e180	e88	e270	172	224	141	342	160	106
2	198	195	e220	e130	e100	e350	171	220	147	320	152	107
3	189	194	e200	e100	e94	e500	171	214	143	300	174	103
4	187	192	e180	e131	e120	1430	170	211	142	339	192	165
5	181	190	e170	e140	e200	1110	171	216	159	352	166	161
6	177	184	e170	e120	e160	645	170	227	160	1100	160	129
7	177	186	e160	e84	e130	415	171	238	151	594	150	109
8	191	185	e140	e90	e130	299	168	236	144	417	293	110
9	293	181	e160	e100	e100	260	164	226	139	325	203	108
10	295	180	e140	e150	e120	243	163	217	149	288	173	104
11	259	179	e120	e110	e140	229	160	207	150	270	165	100
12	245	176	e140	e135	e120	222	174	201	155	267	222	95
13	234	194	e160	e90	e130	221	207	197	661	401	290	95
14	227	198	e170	e76	e160	219	206	202	786	347	212	94
15	248	183	e160	e72	e200	218	197	202	317	296	176	92
16	279	179	e190	e86	e270	214	188	192	252	340	161	90
17	263	179	e230	e78	e250	204	180	183	229	322	154	88
18	253	178	e250	e72	e660	200	176	177	1290	266	150	87
19	244	178	e270	e110	6000	196	174	172	539	251	144	86
20	242	173	e250	e89	2540	193	171	167	347	240	137	86
21	235	171	e220	e110	955	193	170	163	502	229	131	86
22	226	170	e130	e170	558	188	169	162	363	216	127	126
23	223	169	e140	e250	483	185	167	161	1250	210	123	525
24	222	115	e150	e200	e170	185	165	160	2480	199	118	423
25	218	e35	e120	e133	e180	183	165	158	927	191	136	235
26	211	e37	e110	e120	e170	181	181	158	663	183	141	194
27	206	e70	e54	e100	e180	182	187	154	546	177	130	172
28	205	e150	e60	e110	e210	182	180	148	470	174	129	160
29	204	e190	e100	e90	---	179	234	150	411	164	116	150
30	196	e240	e170	e72	---	176	230	151	371	159	e110	148
31	195	---	e220	e80	---	172	---	144	---	157	e105	---
TOTAL	6930	5047	5184	3578	14618	9644	5372	5838	14184	9436	5000	4334
MEAN	224	168	167	115	522	311	179	188	473	304	161	144
MAX	295	240	270	250	6000	1430	234	238	2480	1100	293	525
MIN	177	35	54	72	88	172	160	144	139	157	105	86
AC-FT	13750	10010	10280	7100	28990	19130	10660	11580	28130	18720	9920	8600
CFSM	.55	.42	.41	.29	1.30	.77	.44	.47	1.17	.76	.40	.36
IN.	.64	.47	.48	.33	1.35	.89	.50	.54	1.31	.87	.46	.40

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1974 - 1994, BY WATER YEAR (WY)

	MEAN	83.0	83.2	69.9	49.4	109	250	231	203	324	166	104	77.4
MAX	369	281	199	115	522	633	772	585	2131	561	327	260	
(WY)	1993	1980	1985	1994	1994	1979	1983	1983	1984	1993	1993	1993	
MIN	14.8	16.2	6.61	2.86	11.0	29.7	21.7	23.1	34.7	22.7	16.7	13.4	
(WY)	1977	1977	1979	1977	1979	1981	1977	1977	1989	1976	1976	1976	

SUMMARY STATISTICS FOR 1993 CALENDAR YEAR FOR 1994 WATER YEAR WATER YEARS 1974 - 1994

ANNUAL TOTAL	121294	89165	
ANNUAL MEAN	332	244	147
HIGHEST ANNUAL MEAN			367
LOWEST ANNUAL MEAN			29.9
HIGHEST DAILY MEAN	4490	Mar 28	6000
LOWEST DAILY MEAN	35	Nov 25	35
ANNUAL SEVEN-DAY MINIMUM	59	Feb 22	83
INSTANTANEOUS PEAK FLOW			6740
INSTANTANEOUS PEAK STAGE			21.28
ANNUAL RUNOFF (AC-FT)	240600	176900	106300
ANNUAL RUNOFF (CFSM)	.82	.61	.36
ANNUAL RUNOFF (INCHES)	11.20	8.23	4.95
10 PERCENT EXCEEDS	626	341	290
50 PERCENT EXCEEDS	240	179	72
90 PERCENT EXCEEDS	100	102	18

e Estimated.

06602400 MONONA-HARRISON DITCH NEAR TURIN, IA

LOCATION.--Lat 41°57'52", long 95°59'30", in NW1/4 NE1/4 sec.32, T.83 N., R.44 W., Monona County, Hydrologic Unit 10230004, on left pier at downstream side of bridge on county highway E54, 1.0 mi west of gaging station on Little Sioux River near Turin, 4 mi southwest of Turin, 5.2 mi northeast of Blencoe, and 12.5 mi upstream from mouth.

DRAINAGE AREA.--900 mi²

PERIOD OF RECORD.--April 1939 to current year. Records for April 1939 to January 1958 not equivalent owing to diversion from Little Sioux River through equalizer ditch 1.5 mi upstream. Records prior to 1950 not equivalent owing to diversion between Little Sioux River through diversion ditch 10.2 mi upstream. Prior to May 1942, published as "near Blencoe".

GAGE.--Water-stage encoder. Datum of gage is 1,015.00 ft above sea level (U.S. Army Corps of Engineers bench mark). Prior to May 7, 1942, nonrecording gage at site 4.8 mi downstream at datum 5.40 ft lower. May 7, 1942 to Oct. 13, 1953, nonrecording gage and Oct. 14, 1953 to Sept. 30, 1975, recording gage at same site at datum 5.00 ft higher.

REMARKS.--Estimated daily discharges: Nov. 25 to Dec. 9, Dec. 21 to Jan. 27, Jan. 29 to Feb. 4, Feb. 7-14, Feb. 23 to Mar. 1, Apr. 10-15, June 24-27, and July 6-8. Records fair except those for estimated daily discharges, which are poor. Monona-Harrison ditch is a dug channel and is a continuation of West Fork Ditch, paralleling the Little Sioux River, and discharging into the Missouri River 1.5 mi upstream from the mouth of the Little Sioux River. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data. U.S. Army Corps of Engineers rain-gage and satellite data collection platform at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	328	334	e300	e210	e170	e400	275	356	184	476	309	183
2	320	332	e300	e190	e190	469	271	346	195	448	301	185
3	303	333	e290	e180	e180	686	268	330	194	430	274	180
4	299	332	e270	e200	e200	1910	264	315	187	466	403	433
5	298	323	e260	e220	224	1880	266	316	427	543	297	550
6	297	310	e270	e200	202	1120	254	326	428	e1800	259	333
7	293	306	e270	e170	e180	734	257	356	275	e2400	239	248
8	296	323	e260	e180	e180	554	261	354	236	e1700	353	216
9	945	323	e270	e190	e170	480	250	333	222	1120	528	200
10	709	327	295	e240	e190	447	e245	318	211	839	324	187
11	489	324	271	e220	e230	426	e240	302	276	683	307	177
12	425	334	264	e230	e210	409	e270	289	516	602	294	168
13	395	361	329	e190	e210	403	e330	287	835	815	577	166
14	372	374	314	e160	e220	396	e300	291	1210	881	467	162
15	412	342	289	e150	210	395	e310	296	494	564	338	160
16	499	333	348	e170	209	390	288	280	348	488	297	152
17	455	322	346	e160	294	373	269	271	310	633	272	151
18	421	322	365	e150	911	357	259	258	1110	451	259	151
19	404	318	369	e200	6760	350	249	250	1530	418	242	153
20	390	312	348	e180	4940	354	245	245	523	395	231	148
21	380	306	e260	e210	2160	337	250	237	612	389	218	148
22	368	304	e160	e240	1010	324	248	230	594	367	214	232
23	364	292	e170	e260	e500	317	231	220	629	346	209	1400
24	360	277	e240	e240	e280	314	234	216	e2650	329	196	1360
25	353	e100	e200	e220	e290	298	243	209	e1700	314	203	627
26	350	e110	e190	e210	e280	295	266	214	e1100	309	251	420
27	352	e160	e100	e220	e290	298	290	216	e700	293	219	350
28	346	e220	e110	278	e330	292	263	199	599	283	209	320
29	342	e260	e170	e200	---	290	369	208	543	277	193	289
30	327	e290	e200	e150	---	282	389	205	503	272	185	274
31	327	---	e220	e160	---	274	---	188	---	267	195	---
TOTAL	12219	8904	8048	6178	21220	15854	8154	8461	19341	19598	8863	9723
MEAN	394	297	260	199	758	511	272	273	645	632	286	324
MAX	945	374	369	278	6760	1910	389	356	2650	2400	577	1400
MIN	293	100	100	150	170	274	231	188	184	267	185	148
AC-FT	24240	17660	15960	12250	42090	31450	16170	16780	38360	38870	17580	19290
CFSM	.44	.33	.29	.22	.84	.57	.30	.30	.72	.70	.32	.36
IN.	.51	.37	.33	.26	.88	.66	.34	.35	.80	.81	.37	.40

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1940 - 1994, BY WATER YEAR (WY)

	MEAN	225	184	141	120	425	938	769	622	1129	687	425	302
MAX	2254	1197	1072	1101	3851	4836	7406	4788	7210	4420	4978	4321	
(WY)	1952	1952	1952	1952	1952	1952	1951	1951	1954	1951	1951	1951	
MIN	16.0	18.0	11.4	10.5	13.9	46.9	41.1	43.7	71.8	46.1	8.87	20.5	
(WY)	1959	1959	1959	1959	1959	1968	1968	1968	1989	1976	1941	1958	

SUMMARY STATISTICS	FOR 1993 CALENDAR YEAR	FOR 1994 WATER YEAR	WATER YEARS 1940 - 1994
ANNUAL TOTAL	274553	146563	
ANNUAL MEAN	752	402	497
HIGHEST ANNUAL MEAN			2940
LOWEST ANNUAL MEAN			55.5
HIGHEST DAILY MEAN	6510	Mar 27	6760
LOWEST DAILY MEAN	100	Feb 24	100
ANNUAL SEVEN-DAY MINIMUM	120	Feb 23	152
INSTANTANEOUS PEAK FLOW			7370
INSTANTANEOUS PEAK STAGE			20.80
ANNUAL RUNOFF (AC-FT)	544600	290700	360100
ANNUAL RUNOFF (CFSM)	.84	.45	.55
ANNUAL RUNOFF (INCHES)	11.35	6.06	7.50
10 PERCENT EXCEEDS	1540	596	1160
50 PERCENT EXCEEDS	418	294	141
90 PERCENT EXCEEDS	190	182	39

e Estimated.

06604000 SPIRIT LAKE NEAR ORLEANS, IA

LOCATION.--Lat 43°28'11", long 95°07'25", in NE1/4 NW1/4 sec.20, T.100N., R.36W., Dickinson County, Hydrologic Unit 10230003, 2.3 mi upstream from lake outlet and 2.3 mi northwest of Orleans.

DRAINAGE AREA.--75.6 mi².

PERIOD OF RECORD.--May 1933 to September 1975 (fragmentary prior to 1951), April 1990 to current year. Prior to October 1949, published as "at Orleans".

GAGE.--Water-stage recorder. Datum of gage is 1,387.25 ft above sea level, 90.0 ft above Iowa Lake Survey datum, and 14.2 ft below crest of spillway. Prior to July 6, 1950, non-recording gage or water-stage recorder at various sites near outlet, all at present datum.

REMARKS.--No gage height record Oct. 3 to Nov. 8, Nov. 26 to Dec. 31, Jan. 20-25, and Sept. 9-27. Lake formed by concrete dam with ungated spillway at elevation 1,401.4 ft above sea level. Dam constructed in 1969. A previous outlet works had been constructed in 1944. Lake is used for conservation and recreation.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height, 18.79 ft July 17-20, 1993; minimum observed, 6.75 ft Oct. 20, 1935.

EXTREMES FOR CURRENT YEAR.--Maximum gage height, 15.54 ft June 23; minimum, 13.78 ft Sept. 30.

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	14.73	---	---	14.29	14.21	14.23	14.72	15.27	14.58	15.33	14.50	14.41
2	14.71	---	---	14.29	14.21	14.20	14.70	15.15	14.59	15.28	14.49	14.44
3	---	---	---	14.29	14.21	14.17	14.69	15.07	14.59	15.24	14.48	14.43
4	---	---	---	14.28	14.21	14.13	14.70	14.92	14.57	15.22	14.46	14.49
5	---	---	---	14.28	14.21	14.19	14.73	14.90	14.76	15.21	14.43	14.50
6	---	---	---	14.28	14.21	14.31	14.73	14.95	14.80	15.20	14.39	14.49
7	---	---	---	14.28	14.21	14.43	14.73	14.92	14.82	15.14	14.37	14.48
8	---	---	---	14.28	14.21	14.43	14.73	14.88	14.82	15.09	14.36	14.47
9	---	14.36	---	14.28	14.21	14.40	14.72	14.79	14.78	15.06	14.37	---
10	---	14.36	---	14.27	14.21	14.37	14.72	14.73	14.74	15.02	14.52	---
11	---	14.36	---	14.24	14.20	14.33	14.72	14.69	14.70	15.00	14.54	---
12	---	14.36	---	14.24	14.20	14.30	14.97	14.68	14.73	14.99	14.58	---
13	---	14.36	---	14.24	14.20	14.27	15.34	14.68	15.07	14.96	14.61	---
14	---	14.36	---	14.24	14.20	14.37	15.34	14.70	15.05	14.88	14.61	---
15	---	14.36	---	14.24	14.20	14.72	15.33	14.71	15.05	14.85	14.60	---
16	---	14.36	---	14.24	14.22	14.72	15.29	14.71	15.02	14.83	14.60	---
17	---	14.36	---	14.23	14.20	14.73	15.22	14.71	15.13	14.81	14.60	---
18	---	14.36	---	14.23	14.17	14.74	15.21	14.71	15.31	14.79	14.60	---
19	---	14.36	---	14.23	14.20	14.74	15.18	14.69	15.33	14.77	14.60	---
20	---	14.36	---	---	14.22	14.74	15.11	14.68	15.38	14.75	14.58	---
21	---	14.36	---	---	14.41	14.75	15.06	14.66	15.39	14.73	14.57	---
22	---	14.36	---	---	14.41	14.75	14.97	14.65	15.44	14.71	14.56	---
23	---	14.37	---	---	14.37	14.75	14.86	14.66	15.53	14.69	14.54	---
24	---	14.37	---	---	14.33	14.75	14.81	14.72	15.53	14.67	14.54	---
25	---	14.37	---	---	14.30	14.75	14.94	14.72	15.52	14.65	14.53	---
26	---	---	---	14.20	14.29	14.75	15.19	14.72	15.51	14.61	14.52	---
27	---	---	---	14.20	14.27	14.74	15.19	14.69	15.47	14.58	14.51	---
28	---	---	---	14.21	14.26	14.74	15.19	14.68	15.43	14.56	14.50	13.84
29	---	---	---	14.22	---	14.74	15.39	14.67	15.39	14.55	14.47	13.82
30	---	---	---	14.22	---	14.74	15.34	14.67	15.36	14.53	14.46	13.79
31	---	---	---	14.22	---	14.73	---	14.62	---	14.51	14.43	---
TOTAL	---	---	---	---	398.75	450.71	449.82	458.00	452.39	461.21	449.92	---
MEAN	---	---	---	---	14.24	14.54	14.99	14.77	15.08	14.88	14.51	---
MAX	---	---	---	---	14.41	14.75	15.39	15.27	15.53	15.33	14.61	---
MIN	---	---	---	---	14.17	14.13	14.69	14.62	14.57	14.51	14.36	---

06604200 WEST OKOBOJI LAKE AT LAKESIDE LABORATORY NEAR MILFORD, IA

LOCATION.--Lat 43°22'43", long 95°10'52", in NE1/4 SW1/4 sec.23, T.99N., R.37W., Dickinson County, Hydrologic Unit 10230003, at pumping station of Lakeside Laboratory on west shore, 2.3 mi upstream from lake outlet, and 3.8 mi northwest of Milford.

DRAINAGE AREA.--125 mi².

PERIOD OF RECORD.--May 1933 to current year. Published as "Okoboji Lake at Arnold's Park" 1933-37 and as "Okoboji Lake at Lakeside Laboratory near Milford" 1937-66.

GAGE.--Water-stage recorder. Datum of gage is 1,391.76 ft above sea level, 94.51 ft above Iowa Lake Survey datum, and about 4.0 ft below crest of spillway. Prior to June 17, 1938, nonrecording gage at State Pier at Arnolds Park at same datum.

REMARKS.--Lake formed by concrete dam with ungated spillway at elevation 1,395.8 ft above sea level. Lake is used for conservation and recreation. Area of lake is approximately 3,900 acres.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height, 8.70 ft July 17, 1993; minimum observed, 0.20 ft Sept. 20, 1959.

EXTREMES FOR CURRENT YEAR.--Maximum gage height, 5.42 ft June 27; minimum, 4.13 ft Sept. 20, 30.

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.73	4.22	4.25	4.31	4.31	4.38	4.60	4.62	4.33	5.31	4.47	4.20
2	4.69	4.22	4.24	4.32	4.31	4.38	4.60	4.61	4.32	5.27	4.45	4.22
3	4.65	4.21	4.24	4.33	4.30	4.38	4.58	4.60	4.30	5.23	4.43	4.22
4	4.64	4.21	4.24	4.33	4.30	4.43	4.58	4.61	4.28	5.20	4.41	4.28
5	4.61	4.20	4.24	4.32	4.30	4.50	4.57	4.63	4.38	5.18	4.37	4.29
6	4.59	4.18	4.24	4.32	4.29	4.57	4.54	4.65	4.40	5.17	4.33	4.29
7	4.58	4.17	4.24	4.32	4.29	4.60	4.52	4.65	4.41	5.16	4.31	4.27
8	4.60	4.17	4.23	4.31	4.28	4.62	4.51	4.63	4.38	5.10	4.30	4.27
9	4.56	4.17	4.23	4.31	4.28	4.62	4.50	4.63	4.35	5.07	4.28	4.25
10	4.53	4.17	4.23	4.31	4.28	4.63	4.50	4.62	4.35	5.03	4.33	4.25
11	4.50	4.17	4.23	4.30	4.27	4.64	4.49	4.61	4.35	5.00	4.33	4.24
12	4.49	4.19	4.23	4.30	4.27	4.64	4.56	4.60	4.38	4.98	4.40	4.22
13	4.47	4.21	4.25	4.31	4.27	4.65	4.59	4.59	4.63	4.99	4.44	4.22
14	4.45	4.22	4.30	4.30	4.26	4.67	4.60	4.59	4.66	4.99	4.42	4.21
15	4.45	4.22	4.30	4.30	4.26	4.69	4.61	4.58	4.70	4.97	4.41	4.21
16	4.44	4.21	4.30	4.30	4.25	4.69	4.61	4.56	4.70	4.95	4.39	4.19
17	4.43	4.22	4.31	4.29	4.25	4.69	4.60	4.54	4.73	4.92	4.38	4.18
18	4.42	4.21	4.31	4.29	4.25	4.69	4.59	4.52	4.85	4.89	4.38	4.16
19	4.41	4.21	4.31	4.29	4.29	4.69	4.58	4.50	4.88	4.86	4.37	4.15
20	4.40	4.21	4.31	4.28	4.33	4.69	4.57	4.47	4.94	4.82	4.36	4.14
21	4.38	4.21	4.31	4.28	4.36	4.70	4.57	4.45	5.03	4.80	4.34	4.17
22	4.37	4.22	4.31	4.28	4.36	4.69	4.55	4.45	5.05	4.78	4.32	4.23
23	4.36	4.21	4.31	4.27	4.39	4.68	4.52	4.44	5.28	4.75	4.31	4.21
24	4.36	4.23	4.31	4.27	4.40	4.67	4.53	4.47	5.36	4.71	4.30	4.20
25	4.35	4.26	4.31	4.27	4.40	4.66	4.57	4.46	5.37	4.68	4.29	4.20
26	4.33	4.26	4.32	4.27	4.39	4.66	4.58	4.45	5.40	4.64	4.29	4.18
27	4.31	4.26	4.32	4.31	4.39	4.66	4.59	4.43	5.38	4.60	4.28	4.16
28	4.29	4.26	4.32	4.33	4.39	4.65	4.61	4.40	5.35	4.56	4.27	4.15
29	4.27	4.25	4.31	4.33	---	4.63	4.63	4.39	5.33	4.53	4.24	4.14
30	4.25	4.25	4.31	4.32	---	4.62	4.63	4.37	5.29	4.51	4.24	4.13
31	4.24	---	4.31	4.32	---	4.61	---	4.35	---	4.48	4.21	---
MEAN	4.46	4.21	4.28	4.30	4.31	4.62	4.57	4.53	4.77	4.91	4.34	4.21
MAX	4.73	4.26	4.32	4.33	4.40	4.70	4.63	4.65	5.40	5.31	4.47	4.29
MIN	4.24	4.17	4.23	4.27	4.25	4.38	4.49	4.35	4.28	4.48	4.21	4.13

06605000 OCHEYEDAN RIVER NEAR SPENCER, IA

LOCATION.--Lat 43°07'44", long 95°12'37", in SW1/4 SW1/4 sec.15, T.96N., R.37W., Clay County, Hydrologic Unit 10230003, on left bank 3 ft upstream from bridge on county highway M38, 3.4 mi west by southwest of Spencer, and at mile 4.1.

DRAINAGE AREA.--426 mi².

PERIOD OF RECORD.--October 1977 to current year. Occasional low-flow measurements, water years 1957-61, 1964, 1966-68, 1970, 1971, 1974-77.

GAGE.--Water-stage recorder. Datum of gage is 1,311.66 ft above sea level.

REMARKS.--Estimated daily discharges: Nov. 26 to Dec. 15 and Dec. 20 to Mar. 9. Records good except those for estimated daily discharges, which are poor. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 8, 1953 reached a stage of 12.89 ft, discharge, 26,000 ft³/s on basis of contracted-opening measurement of peak flow.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	294	149	e140	e130	e40	e200	180	535	152	899	134	108
2	269	152	e140	e100	e52	e250	178	494	149	814	128	107
3	259	151	e130	e84	e62	e350	168	447	142	723	121	110
4	251	152	e120	e80	e54	e600	174	418	135	677	121	201
5	238	146	e120	e86	e62	e1300	166	419	254	637	113	334
6	237	138	e110	e90	e70	e2100	176	516	424	641	108	245
7	233	151	e120	e60	e50	e1400	177	566	467	640	103	200
8	236	139	e100	e48	e38	e900	170	528	409	575	101	175
9	291	134	e110	e60	e40	e700	166	473	357	517	107	158
10	290	132	e115	e70	e33	635	163	414	319	470	109	143
11	277	134	e90	e76	e34	546	159	387	290	438	130	130
12	259	135	e110	e60	e35	537	219	350	276	422	155	118
13	240	169	e130	e66	e37	578	449	332	1830	546	283	110
14	232	182	e140	e54	e39	582	507	333	3820	693	401	104
15	228	175	e150	e43	e67	571	475	315	3750	570	340	99
16	225	179	162	e41	e62	467	453	295	1890	487	314	95
17	218	171	156	e50	e74	407	410	277	1240	429	298	90
18	212	166	157	e43	e98	357	396	262	1700	382	285	87
19	209	170	158	e40	e190	332	370	250	1900	346	272	82
20	205	161	e140	e56	e330	321	345	235	1240	317	254	80
21	200	162	e120	e54	e540	293	337	221	1470	291	234	82
22	193	152	e94	e72	e300	281	321	213	1570	279	217	103
23	189	150	e78	e70	e190	272	309	222	1770	259	201	126
24	186	151	e84	e80	e150	250	298	223	3950	240	183	124
25	184	149	e90	e70	e120	229	280	221	3790	225	166	117
26	176	e110	e65	e60	e130	224	282	228	2260	204	178	108
27	169	e82	e45	e52	e150	216	299	216	1500	183	160	102
28	172	e88	e35	e58	e170	202	293	201	1240	169	145	96
29	162	e110	e40	e52	---	194	377	190	1070	160	130	91
30	154	e120	e52	e45	---	185	488	178	921	151	122	87
31	152	---	e100	e41	---	183	---	163	---	141	114	---
TOTAL	6840	4360	3401	1991	3217	15662	8785	10122	40285	13525	5727	3812
MEAN	221	145	110	64.2	115	505	293	327	1343	436	185	127
MAX	294	182	162	130	540	2100	507	566	3950	899	401	334
MIN	152	82	35	40	33	183	159	163	135	141	101	80
MED	225	150	115	60	64	350	295	295	1240	429	155	108
AC-FT	13570	8650	6750	3950	6380	31070	17430	20080	79910	26830	11360	7560
CFSM	.52	.34	.26	.15	.27	1.19	.69	.77	3.15	1.02	.43	.30
IN.	.60	.38	.30	.17	.28	1.37	.77	.88	3.52	1.18	.50	.33

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1978 - 1994, BY WATER YEAR (WY)

	MEAN	148	166	91.0	48.9	85.1	369	511	378	529	384	165	164
MAX	492	796	305	180	402	1019	1462	912	1973	2243	706	597	
(WY)	1983	1980	1983	1983	1983	1983	1983	1993	1993	1993	1993	1979	
MIN	9.23	8.11	1.91	.51	.000	14.0	20.5	54.9	33.8	33.4	15.3	14.2	
(WY)	1990	1990	1990	1979	1979	1990	1990	1981	1989	1989	1989	1988	

SUMMARY STATISTICS	FOR 1993 CALENDAR YEAR	FOR 1994 WATER YEAR	WATER YEARS 1978 - 1994
ANNUAL TOTAL	264289	117727	
ANNUAL MEAN	724	323	254
HIGHEST ANNUAL MEAN			763
LOWEST ANNUAL MEAN			33.4
HIGHEST DAILY MEAN	5620	3950	5620
LOWEST DAILY MEAN	35	33	.00
ANNUAL SEVEN-DAY MINIMUM	53	37	.00
INSTANTANEOUS PEAK FLOW		4490	6450
INSTANTANEOUS PEAK STAGE		10.70	11.28
ANNUAL RUNOFF (AC-FT)	524200	233500	184100
ANNUAL RUNOFF (CFSM)	1.70	.76	.60
ANNUAL RUNOFF (INCHES)	23.08	10.28	8.11
10 PERCENT EXCEEDS	2020	573	599
50 PERCENT EXCEEDS	300	178	105
90 PERCENT EXCEEDS	60	64	13

e Estimated.

06605850 LITTLE SIOUX RIVER AT LINN GROVE, IA

LOCATION.--Lat 42°53'24", long 95°14'30", in SW 1/4 SW 1/4 sec.5, T.93 N., R.37 W., Buena Vista County, Hydrologic Unit 10230003, on right bank at downstream side of bridge on County Highway M36, in Linn Grove, and at mile 123.7.

DRAINAGE AREA.--1,548 mi².

PERIOD OF RECORD.--October 1972 to current year.

REVISED RECORDS.--WDR IA-80-1: 1978-79.

GAGE.--Water-stage encoder. Datum of gage is 1,223.60 ft above sea level.

REMARKS.--Estimated daily discharges: Nov. 25-29, Dec. 21 to Mar. 7, Aug. 7-11, and Aug. 29, 30. Records good except those for estimated daily discharges, which are poor. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data. U.S. Army Corps of Engineers rain-gage and satellite data collection platform at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 10, 1953, gage height 20.96 ft; discharge, 22,500 ft³/s.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1410	702	636	e270	e150	e560	822	1460	570	3860	600	327
2	1330	686	621	e220	e160	e620	795	1580	547	3470	565	318
3	1260	689	618	e170	e140	e700	780	1600	524	3120	540	316
4	1200	688	614	e180	e160	e1100	779	1580	498	2900	513	380
5	1150	675	604	e190	e180	e1700	762	1550	518	2570	482	492
6	1110	647	609	e160	e190	e2700	755	1570	767	2330	464	633
7	1070	610	564	e140	e160	e4000	742	1670	1330	2150	e440	606
8	1070	606	556	e160	e170	7010	724	1770	1380	2070	e410	542
9	1320	630	573	e180	e150	5820	693	1780	1280	2020	e405	485
10	1520	623	582	e210	e150	4530	683	1690	1140	1920	e400	436
11	1450	604	555	e180	e170	3400	678	1540	1050	1800	e430	393
12	1330	603	464	e200	e160	2900	704	1400	1050	1680	586	359
13	1240	621	569	e170	e170	2680	949	1290	1890	1670	799	329
14	1170	658	668	e150	e190	2550	1300	1210	2360	2120	1020	305
15	1120	686	614	e140	e210	2440	1490	1150	2720	2670	1170	299
16	1100	691	685	e150	e220	2340	1530	1100	3740	2860	1200	291
17	1070	678	759	e140	e190	2230	1530	1040	5440	2620	1200	269
18	1040	672	764	e130	e260	2080	1530	960	5440	2350	1170	255
19	1010	672	780	e160	e450	1890	1450	887	4880	2070	1090	242
20	987	661	778	e150	e1000	1670	1360	844	4450	1800	957	230
21	969	657	e600	e160	e1400	1530	1290	801	4850	1580	821	235
22	948	647	e640	e190	e1200	1440	1220	760	4840	1420	712	432
23	916	625	e400	e220	e800	1340	1150	724	5170	1310	635	614
24	890	622	e390	e200	e600	1260	1100	723	6950	1180	568	611
25	861	e500	e420	e190	e520	1180	1040	740	7610	1090	520	543
26	839	e350	e300	e170	e490	1100	991	765	8540	982	503	485
27	814	e250	e180	e150	e480	1050	967	769	8610	889	485	447
28	798	e350	e120	e160	e540	1000	990	730	6940	810	444	416
29	782	e500	e150	e140	---	961	1130	678	5450	750	e410	377
30	745	662	e210	e130	---	908	1300	633	4430	696	e378	351
31	730	---	e300	e140	---	851	---	601	---	646	353	---
TOTAL	33249	18265	16323	5300	10660	65540	31234	35595	104964	59403	20270	12018
MEAN	1073	609	527	171	381	2114	1041	1148	3499	1916	654	401
MAX	1520	702	780	270	1400	7010	1530	1780	8610	3860	1200	633
MIN	730	250	120	130	140	560	678	601	498	646	353	230
AC-FT	65950	36230	32380	10510	21140	130000	61950	70600	208200	117800	40210	23840
CFSM	.69	.39	.34	.11	.25	1.37	.67	.74	2.26	1.24	.42	.26
IN.	.80	.44	.39	.13	.26	1.57	.75	.86	2.52	1.43	.49	.29

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1973 - 1994, BY WATER YEAR (WY)

	MEAN	456	483	293	184	278	1165	1659	1263	1558	1197	517	465
MAX	2070	2050	1122	859	1161	3894	4952	3233	6898	7905	2906	2171	
(WY)	1983	1980	1983	1983	1983	1983	1983	1993	1993	1993	1993	1993	
MIN	21.3	22.0	6.08	3.12	5.92	75.9	77.7	69.4	60.3	36.3	26.4	22.7	
(WY)	1977	1977	1990	1977	1977	1990	1990	1977	1977	1977	1976	1976	

SUMMARY STATISTICS FOR 1993 CALENDAR YEAR FOR 1994 WATER YEAR WATER YEARS 1973 - 1994

ANNUAL TOTAL	974407	412821	
ANNUAL MEAN	2670	1131	794
HIGHEST ANNUAL MEAN			2763
LOWEST ANNUAL MEAN			56.3
HIGHEST DAILY MEAN	15000	Jul 2	15000
LOWEST DAILY MEAN	120	Dec 28	.70
ANNUAL SEVEN-DAY MINIMUM	226	Jan 25	1.1
INSTANTANEOUS PEAK FLOW			16100
INSTANTANEOUS PEAK STAGE			20.63
ANNUAL RUNOFF (AC-FT)	1933000	818800	575400
ANNUAL RUNOFF (CFSM)	1.72	.73	.51
ANNUAL RUNOFF (INCHES)	23.42	9.92	6.97
10 PERCENT EXCEEDS	6710	2340	2060
50 PERCENT EXCEEDS	1520	724	318
90 PERCENT EXCEEDS	258	180	37

e Estimated.

06606600 LITTLE SIOUX RIVER AT CORRECTIONVILLE, IA

LOCATION.--Lat 42°28'20", long 95°47'49", in NE1/4 NW1/4 sec.1, T.88 N., R.43 W., Woodbury County, Hydrologic Unit 10230003 on right bank 50 ft upstream from bridge on State Highway 31, 0.3 mi upstream from Bacon Creek, 0.5 mi west of Correctionville, 0.8 mi downstream from Pierson Creek, and at mile 56.0.

DRAINAGE AREA.--2,500 mi².

PERIOD OF RECORD.--May 1918 to July 1925, October 1928 to July 1932, June 1936 to current year. Monthly discharge only for some periods, published in WSP 1310.

REVISED RECORDS.--WSP 856: 1919. WSP 1240: 1924-25, 1931, 1932 (M), 1937, 1945 (M), 1947 (M), 1949 (M). WSP 1440: Drainage area.

GAGE.--Water-stage encoder. Datum of gage is 1,096.49 ft above sea level. May 28, 1918, to July 1, 1925 and Oct. 29, 1928 to July 15, 1929, nonrecording gage 0.2 mi downstream at datum 1.25 ft lower. July 16, 1929, to July 2, 1932, and June 15, 1936, to Nov. 7, 1938, nonrecording gage at present site and datum.

REMARKS.--Estimated daily discharges: Nov. 25-29 and Dec. 22 to Mar. 3. Records good except those for estimated daily discharges, which are poor. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data. U.S. Army Corps of Engineers rain gage and satellite data collection platform at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 23 or 24, 1891, reached a stage of 29.34 ft, present datum, from levels to floodmark by U.S. Soil Conservation Service (discharge not determined).

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2340	1310	1140	e1200	e600	e1300	1570	1730	966	6870	1350	645
2	2240	1300	1180	e1000	e640	e1400	1500	1880	945	5740	1260	602
3	2150	1260	1110	e720	e600	e1500	1460	1970	910	5070	1220	575
4	2070	1240	1090	e780	e700	2610	1420	2030	868	4840	1170	646
5	1990	1220	1080	e880	e940	3550	1390	2040	876	4350	1060	916
6	1930	1190	1040	e720	e860	5280	1360	2070	992	4050	982	1070
7	1880	1170	991	e600	e800	4880	1330	2120	1290	3730	915	1040
8	1840	1140	983	e640	e800	3740	1310	2170	1590	3370	945	1050
9	1950	1120	974	e720	e720	5000	1270	2230	1810	3120	829	969
10	2190	1100	993	e880	e720	6040	1240	2220	1760	2950	797	882
11	2370	1100	955	e800	e800	5640	1190	2150	1680	2770	752	787
12	2360	1090	915	e880	e760	4770	1260	2040	1610	2670	899	707
13	2220	1120	997	e740	e800	3920	1390	1920	3190	2730	1830	637
14	2090	1150	958	e600	e940	3600	1520	1860	3830	2820	1570	591
15	2050	1140	1010	e540	e1100	3460	1780	1780	4090	3210	1450	542
16	2010	1170	1170	e580	e1300	3330	1930	1710	3590	3540	1520	504
17	1940	1180	1190	e560	e1200	3170	1900	1640	3780	3620	1560	480
18	1880	1170	1250	e520	e1700	3050	1960	1570	5000	3460	1550	458
19	1840	1140	1260	e640	e6600	2890	1950	1500	5410	3100	1530	433
20	1790	1130	1250	e600	e5400	2720	1900	1420	5640	2800	1470	416
21	1750	1120	1220	e640	e4500	2530	1840	1360	5310	2550	1380	404
22	1710	1100	e1000	e900	e3300	2360	1780	1300	5260	2350	1260	557
23	1680	1090	e1000	e1100	e2700	2250	1720	1240	6080	2190	1170	1250
24	1650	1080	e1100	e940	e2000	2150	1660	1190	6830	2070	1050	1380
25	1610	e900	e1000	e860	e1200	2050	1610	1170	7800	1970	958	1340
26	1550	e450	e880	e720	e1100	1980	1560	1180	8060	1860	906	1240
27	1500	e540	e470	e600	e1100	1910	1500	1200	8040	1750	1190	1130
28	1460	e720	e540	e660	e1200	1830	1490	1190	8050	1660	1050	1020
29	1420	e840	e800	e600	---	1760	1560	1170	8300	1570	864	943
30	1380	981	e1000	e520	---	1690	1610	1100	8050	1480	769	872
31	1340	---	e1300	e540	---	1630	---	1030	---	1400	693	---
TOTAL	58180	32261	31846	22680	45080	93990	47030	51180	121607	95660	35949	24086
MEAN	1877	1075	1027	732	1610	3032	1568	1651	4054	3086	1160	803
MAX	2370	1310	1300	1200	6600	6040	1970	2230	8300	6870	1830	1380
MIN	1340	450	470	520	600	1300	1190	1030	868	1400	693	404
AC-FT	115400	63990	63170	44990	89420	186400	93280	101500	241200	189700	71300	47770
CFSM	.75	.43	.41	.29	.64	1.21	.63	.66	1.62	1.23	.46	.32
IN.	.87	.48	.47	.34	.67	1.40	.70	.76	1.81	1.42	.53	.36

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1918 - 1994, BY WATER YEAR (WY)

	MEAN	420	419	282	207	457	1430	1813	1261	1733	1222	589	501
MAX	2994	3079	1698	1323	2708	7328	8677	5002	10110	11600	4469	3671	
(WY)	1983	1980	1983	1983	1971	1983	1983	1993	1993	1993	1993	1938	
MIN	8.33	25.3	15.1	8.31	7.08	53.5	61.9	57.3	58.1	43.4	15.0	14.4	
(WY)	1957	1959	1959	1959	1959	1931	1931	1931	1956	1956	1931	1958	

SUMMARY STATISTICS	FOR 1993 CALENDAR YEAR	FOR 1994 WATER YEAR	WATER YEARS 1918 - 1994
ANNUAL TOTAL	1524164	659549	
ANNUAL MEAN	4176	1807	875
HIGHEST ANNUAL MEAN			4304
LOWEST ANNUAL MEAN			53.7
HIGHEST DAILY MEAN	20200	Jul 18	8300 Jun 29
LOWEST DAILY MEAN	330	Feb 17	404 Sep 21
ANNUAL SEVEN-DAY MINIMUM	391	Feb 12	462 Sep 15
INSTANTANEOUS PEAK FLOW			8360 Jun 29
INSTANTANEOUS PEAK STAGE			17.11 Jun 29
INSTANTANEOUS LOW FLOW			393 Sep 21
ANNUAL RUNOFF (AC-FT)	3023000	1308000	634000
ANNUAL RUNOFF (CFSM)	1.67	.72	.35
ANNUAL RUNOFF (INCHES)	22.68	9.81	4.76
10 PERCENT EXCEEDS	10300	3590	2150
50 PERCENT EXCEEDS	2490	1300	350
90 PERCENT EXCEEDS	490	680	51

e Estimated.

06607200 MAPLE RIVER AT MAPLETON, IA

LOCATION.--Lat 42°09'25", long 95°48'35", in SE1/4 SE1/4 sec.23, T.85 N., R.43 W., Monona County, Hydrologic Unit 10230005, on right bank at downstream side of bridge on State Highway 175, 1.0 mi downstream from Simmons Creek, 1.1 mi southwest of intersection of State Highways 175 and 141 in Mapleton, 2.1 mi upstream from McCleery Creek, and 16.0 mi upstream from mouth.

DRAINAGE AREA.--669 mi².

PERIOD OF RECORD.--October 1941 to current year.

REVISED RECORDS.--WSP 1310: 1942 (M), 1946 (M), 1948 (M). WSP 1440: Drainage area.

GAGE.--Water-stage encoder. Datum of gage is 1,085.86 ft above sea level. See WSP 1730 for history of changes prior to Sept. 20, 1956.

REMARKS.--Estimated daily discharges: Nov. 24 to Dec. 1, Dec. 21 to Feb. 19, Feb. 22 to Mar. 1, Apr. 20-26, May 25-26, July 14-22, and Aug. 27-28. Records good except those for estimated daily discharges, which are poor. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data. U.S. Army Corps of Engineers rain-gage and satellite data collection platform at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	410	410	e450	e370	e170	e380	288	298	217	550	492	212
2	397	411	414	e270	e190	428	278	292	220	665	652	216
3	394	413	400	e210	e180	645	269	287	224	535	460	219
4	395	414	401	e260	e220	1690	270	271	221	927	1030	333
5	388	411	389	e270	e400	1690	259	281	278	821	470	685
6	386	400	363	e250	e330	1120	251	297	283	872	376	468
7	388	391	344	e190	e270	726	250	333	270	741	340	396
8	391	399	341	e200	e260	561	258	349	259	732	672	335
9	488	402	358	e220	e220	484	258	347	249	643	328	299
10	513	398	360	e300	e240	459	255	325	240	583	347	277
11	504	397	328	e240	e270	429	254	296	227	548	327	256
12	472	400	335	e270	e240	414	293	282	219	601	367	242
13	466	419	391	e180	e270	404	326	287	235	740	577	235
14	447	416	487	e160	e320	395	342	306	598	e700	530	229
15	500	404	483	e150	e400	388	352	310	682	e620	428	219
16	516	395	487	e180	e500	368	332	303	437	e580	375	218
17	486	390	475	e160	e470	349	318	289	377	e580	343	210
18	474	385	475	e150	e1400	334	310	271	943	e540	321	203
19	463	381	479	e220	e2200	329	306	260	907	e520	308	196
20	450	373	477	e190	2590	322	e310	248	650	e490	297	193
21	433	363	e420	e230	1760	313	363	244	805	e450	285	193
22	437	349	e250	e340	e760	308	e290	238	793	e420	276	257
23	440	338	e200	e520	e500	313	e280	233	652	407	268	427
24	433	e200	e270	e390	e320	302	e290	234	833	388	257	521
25	437	e100	e210	e270	e330	297	e300	e230	1010	386	250	523
26	431	e110	e200	e240	e320	320	e270	e230	790	372	263	399
27	431	e200	e130	e210	e330	295	256	234	692	368	e290	353
28	428	e350	e150	e230	e350	283	265	233	626	362	e285	321
29	414	e450	e250	e190	---	295	294	238	572	358	255	304
30	406	e490	e340	e150	---	302	299	239	530	351	241	295
31	403	---	e420	e160	---	298	---	227	---	345	220	---
TOTAL	13621	10959	11077	7370	15810	15241	8623	8512	15039	17195	11930	9234
MEAN	439	365	357	238	565	492	287	275	501	555	385	308
MAX	516	490	487	520	2590	1690	352	349	1010	927	1030	685
MIN	386	100	130	150	170	283	250	227	217	345	220	193
AC-FT	27020	21740	21970	14620	31360	30230	17100	16880	29830	34110	23660	18320
CFSM	.66	.55	.53	.36	.84	.73	.43	.41	.75	.83	.58	.46
IN.	.76	.61	.62	.41	.88	.85	.48	.47	.84	.96	.66	.55

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1942 - 1994, BY WATER YEAR (WY)

MEAN	150	140	104	85.9	217	501	395	370	616	351	242	178
MAX	634	506	386	330	1016	1588	1889	1345	2856	1588	1230	1034
(WY)	1983	1993	1983	1983	1971	1983	1983	1984	1984	1993	1951	1951
MIN	9.36	14.6	5.74	3.25	3.64	25.6	19.9	35.9	48.5	33.3	12.6	5.48
(WY)	1957	1959	1959	1959	1959	1957	1957	1968	1955	1956	1956	1956

SUMMARY STATISTICS	FOR 1993 CALENDAR YEAR	FOR 1994 WATER YEAR	WATER YEARS 1942 - 1994
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ANNUAL TOTAL	273935		144611				
ANNUAL MEAN	751		396			279	
HIGHEST ANNUAL MEAN						983	1983
LOWEST ANNUAL MEAN						24.5	1956
HIGHEST DAILY MEAN	5240	Mar 29	2590	Feb 20		14400	Jun 21 1983
LOWEST DAILY MEAN	100	Nov 25	100	Nov 25		.00	Sep 21 1945
ANNUAL SEVEN-DAY MINIMUM	174	Feb 23	171	Jan 13		2.6	Feb 14 1959
INSTANTANEOUS PEAK FLOW			3830	Feb 19		20800	Sep 12 1978
INSTANTANEOUS PEAK STAGE			7.68	Feb 19		22.10	Jun 12 1950
ANNUAL RUNOFF (AC-FT)	543300		286800			202200	
ANNUAL RUNOFF (CFSM)	1.12		.59			.42	
ANNUAL RUNOFF (INCHES)	15.23		8.04			5.67	
10 PERCENT EXCEEDS	1340		609			598	
50 PERCENT EXCEEDS	554		340			125	
90 PERCENT EXCEEDS	280		219			27	

e Estimated.

06607500 LITTLE SIOUX RIVER NEAR TURIN, IA

LOCATION.--Lat 41°57'52", long 95°58'21", in NW1/4 NE1/4 sec.33, T.83 N., R.44 W., Monona County, Hydrologic Unit 10230003, on left bank on downstream side of bridge on county highway E54, 1.0 mi east of gaging station on Monona-Harrison ditch near Turin, 2.5 mi downstream from Maple River, 3.8 mi south of Turin, 6.2 mi northeast of Blencoe, and at mile 13.5.

DRAINAGE AREA.--3,526 mi². Prior to Jan. 15, 1958, 4,426 mi², combined area above this station and Monona-Harrison ditch station 1.0 mi west.

PERIOD OF RECORD.--January 1958 to current year. April 1939 to May 1942 at site 4.7 mi downstream, published as "near Blencoe" June 1942 to January 1958 at site 1,200 ft east on old river channel; records not equivalent owing to diversion into Monona-Harrison ditch through equalizer ditch 1.5 mi upstream 1923 to 1958, and diversion between Monona-Harrison ditch through diversion ditch 8.3 miles upstream since 1958.

GAGE.--Water-stage encoder. Datum of gage is 1,019.85 ft above sea level (U.S. Army Corps of Engineers bench mark). Prior to July 15, 1958, nonrecording gages near present site at different datums. July 15 to Sept. 3, 1958, nonrecording gage at present site and datum.

REMARKS.--Estimated daily discharges: Nov. 25 to Dec. 12, Dec. 22 to Feb. 19, Feb. 23 to Mar. 2, and July 22-28. Records good except those for estimated daily discharges, which are poor. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data. U.S. Army Corps of Engineers rain-gage and and satellite data collection platform at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2820	1710	e2400	e1700	e800	e2400	1830	1960	1470	7710	1530	1070
2	2630	1700	e2300	e1400	e880	e2800	1760	2130	1460	6650	1740	1050
3	2520	1690	e2200	e1000	e840	3130	1710	2280	1460	5810	1600	1010
4	2440	1660	e1900	e1100	e960	3740	1680	2390	1460	5560	2010	1220
5	2320	1600	e1800	e1200	e1300	4740	1660	2450	1470	5430	1600	1400
6	2220	1610	e1800	e1000	e1200	6250	1660	2480	1460	5190	1370	1500
7	2200	1620	e1700	e860	e1100	7050	1630	2530	1470	4610	1280	1490
8	2170	1610	e1600	e880	e1100	5090	1630	2580	1610	4300	1700	1420
9	2300	1620	e1600	e1000	e1000	4690	1600	2690	1970	3880	1330	1390
10	2400	1620	e1500	e1200	e1000	7310	1570	2720	2130	3620	1240	1300
11	2620	1620	e1400	e1100	e1100	7670	1540	2700	2070	3450	1210	1210
12	2740	1640	e1450	e1200	e1050	6240	1570	2600	2120	3420	1200	1140
13	2670	1650	1520	e1000	e1100	4730	1670	2440	2240	3570	1620	1080
14	2540	1670	1600	e840	e1300	4100	1760	2340	3800	3580	2440	1030
15	2490	1680	1600	e740	e1500	3910	1940	2260	4750	3740	1970	978
16	2500	1680	1650	e800	e1800	3790	2210	2150	4250	4060	1850	935
17	2390	1680	1740	e760	e1700	3640	2340	2030	3980	4260	1920	901
18	2300	1670	1760	e740	e2300	3500	2390	1940	4920	4240	1930	880
19	2230	1610	1820	e880	e9000	3330	2370	1860	6040	3940	1910	858
20	2160	1600	1810	e840	7400	3200	2340	1770	6280	3580	1850	832
21	2090	1600	1700	e900	6200	2980	2270	1670	6220	3300	1750	846
22	2050	1580	e1400	e1200	4690	2780	2200	1630	5970	e2900	1630	983
23	2000	1560	e1400	e1500	e3600	2630	2080	1610	6250	e2600	1500	1350
24	1990	1570	e1500	e1400	e3000	2480	2020	1570	7100	e2400	1400	1820
25	1970	e1000	e1400	e1200	e2000	2350	1960	1510	8020	e2200	1330	2010
26	1910	e640	e1200	e1000	e2000	2250	1910	1470	8540	e2100	1310	1790
27	1850	e800	e660	e850	e2000	2170	1820	1480	8380	e1900	1250	1610
28	1820	e1500	e760	e900	e2200	2090	1770	1490	8240	e1800	1480	1460
29	1770	e1900	e1100	e860	---	2010	1820	1500	8280	1700	1340	1370
30	1740	e2400	e1400	e720	---	1940	1890	1480	8380	1620	1220	1300
31	1730	---	e1800	e740	---	1890	---	1460	---	1540	1140	---
TOTAL	69580	47490	49470	31510	64120	116880	56600	63170	131790	114660	48650	37233
MEAN	2245	1583	1596	1016	2290	3770	1887	2038	4393	3699	1569	1241
MAX	2820	2400	2400	1700	9000	7670	2390	2720	8540	7710	2440	2010
MIN	1730	640	660	720	800	1890	1540	1460	1460	1540	1140	832
AC-FT	138000	94200	98120	62500	127200	231800	112300	125300	261400	227400	96500	73850
CFSM	.64	.45	.45	.29	.65	1.07	.54	.58	1.25	1.05	.45	.35
IN.	.73	.50	.52	.33	.68	1.23	.60	.67	1.39	1.21	.51	.39

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1940 - 1994, BY WATER YEAR (WY)

MEAN	563	579	438	314	609	1646	2123	1491	2084	1474	735	605
MAX	3625	3612	2424	2250	3353	9054	10790	6253	15070	13110	5181	3980
(WY)	1983	1980	1983	1992	1971	1983	1965	1993	1984	1993	1993	1993
MIN	.065	.000	.000	.000	.043	.42	.12	.000	.30	.90	.000	.000
(WY)	1949	1952	1951	1951	1957	1957	1957	1957	1956	1953	1957	1950

SUMMARY STATISTICS FOR 1993 CALENDAR YEAR FOR 1994 WATER YEAR WATER YEARS 1940 - 1994

ANNUAL TOTAL	1853170	831153	
ANNUAL MEAN	5077	2277	
HIGHEST ANNUAL MEAN			1067
LOWEST ANNUAL MEAN			5261
HIGHEST DAILY MEAN	25100	Jul 19	28000
LOWEST DAILY MEAN	500	Feb 24	27.44
ANNUAL SEVEN-DAY MINIMUM	596	Feb 23	27.44
INSTANTANEOUS PEAK FLOW			31200
INSTANTANEOUS PEAK STAGE			27.44
ANNUAL RUNOFF (AC-FT)	3676000	1649000	772900
ANNUAL RUNOFF (CFSM)			.30
ANNUAL RUNOFF (INCHES)	19.55	8.77	4.11
10 PERCENT EXCEEDS	11000	4250	2680
50 PERCENT EXCEEDS	3540	1760	383
90 PERCENT EXCEEDS	1200	1000	.40

e Estimated.

a Ice affected.

SOLDIER RIVER BASIN

06608500 SOLDIER RIVER AT PISGAH, IA

LOCATION.--Lat 41°49'50", long 95°55'52", in NW1/4 NE1/4 sec.14, T.81 N., R.44 W., Harrison County, Hydrologic Unit 10230001, on right bank at upstream side of bridge on county highway F20, at west edge of Pisgah, 0.4 mi downstream from Cobb Creek, 0.5 mi upstream from Mogger Ditch, and 13.1 mi upstream from mouth.

DRAINAGE AREA.--407 mi².

PERIOD OF RECORD.--March 1940 to current year.

REVISED RECORDS.--WSP 956: 1940 (M). WSP 1240: 1940, 1941 (M), 1947. WSP 1440: Drainage area.

GAGE.--Water-stage encoder. Datum of gage is 1,036.53 ft above sea level. Prior to Oct. 11, 1954, nonrecording gage at same site and datum with supplementary water-stage recorder operating above 8.2 ft gage height Mar. 2, 1946 to Sept. 24, 1953. Prior to Feb. 1954, on left bank at downstream side of bridge. Prior to June 21, 1989, at site 100 ft downstream at same datum.

REMARKS.--Estimated daily discharges: Nov. 9-11, 24-30, Dec. 3-13, Dec. 22 to Feb. 18, and Feb. 23 to Mar. 2. Records good except those for estimated daily discharges, which are poor. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data. U.S. Army Corps of Engineers rain-gage and satellite data collection platform at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	355	276	790	e330	e130	e320	180	165	121	136	226	140
2	336	280	722	e210	e140	e500	177	156	144	171	152	140
3	335	283	e564	e170	e130	749	170	152	132	155	458	140
4	332	286	e277	e200	e150	1180	172	156	125	517	550	574
5	320	275	e259	e210	e280	562	164	155	243	1620	194	553
6	321	248	e252	e180	e220	388	154	169	245	797	165	214
7	321	262	e270	e130	e180	284	160	177	142	396	161	178
8	320	270	e230	e140	e180	245	158	168	151	291	670	167
9	511	e267	e250	e150	e150	231	157	163	153	239	217	161
10	393	e266	e210	e200	e160	233	154	156	136	221	247	155
11	342	e264	e180	e170	e190	219	148	151	159	207	231	148
12	332	267	e210	e190	e170	231	193	145	1150	459	206	142
13	317	301	e250	e140	e190	224	212	145	374	743	339	138
14	314	268	313	e110	e250	224	176	154	200	307	208	134
15	432	263	250	e110	e410	224	197	153	159	247	180	128
16	394	262	255	e120	e700	207	174	143	146	247	173	126
17	341	264	254	e120	e1500	202	161	140	144	220	167	121
18	332	257	264	e110	e2500	202	165	134	886	202	160	121
19	325	256	251	e150	1250	204	160	130	265	195	156	121
20	320	241	238	e130	374	206	156	128	187	189	148	120
21	315	248	210	e150	253	201	162	125	241	189	142	129
22	309	250	e170	e270	225	197	158	122	193	184	142	258
23	311	245	e190	e400	e210	202	156	123	238	178	142	360
24	308	e200	e210	e200	e150	193	159	124	187	180	139	205
25	306	e60	e180	e190	e160	178	159	120	161	175	146	179
26	296	e66	e170	e160	e150	188	153	118	148	160	263	165
27	292	e150	e90	e140	e170	188	143	120	142	152	170	151
28	297	e300	e100	e150	e230	178	150	121	139	153	151	148
29	282	e600	e140	e130	---	178	178	136	134	153	157	145
30	269	e760	e230	e110	---	171	161	138	133	154	151	145
31	263	---	e400	e120	---	180	---	125	---	152	163	---
TOTAL	10241	8235	8379	5290	10802	8889	4967	4412	6978	9389	6774	5606
MEAN	330	274	270	171	386	287	166	142	233	303	219	187
MAX	511	760	790	400	2500	1180	212	177	1150	1620	670	574
MIN	263	60	90	110	130	171	143	118	121	136	139	120
AC-FT	20310	16330	16620	10490	21430	17630	9850	8750	13840	18620	13440	11120
CFSM	.81	.67	.66	.42	.95	.70	.41	.35	.57	.74	.54	.46
IN.	.94	.75	.77	.48	.99	.81	.45	.40	.64	.86	.62	.51

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1941 - 1994, BY WATER YEAR (WY)

	MEAN	72.7	67.7	57.5	59.8	294	278	153	185	297	176	133	109
MAX	330	274	270	431	7917	897	623	555	1233	1607	632	482	
(WY)	1994	1994	1994	1952	1985	1993	1983	1984	1991	1993	1993	1978	
MIN	9.61	12.8	6.05	3.29	9.43	27.8	12.5	13.6	22.1	22.8	14.4	6.70	
(WY)	1957	1959	1959	1959	1956	1957	1957	1957	1956	1970	1971	1956	

SUMMARY STATISTICS

FOR 1993 CALENDAR YEAR

FOR 1994 WATER YEAR

WATER YEARS 1941 - 1994

ANNUAL TOTAL	187336	89962	
ANNUAL MEAN	513	246	145
HIGHEST ANNUAL MEAN			487
LOWEST ANNUAL MEAN			27.3
HIGHEST DAILY MEAN	18400	Jul 9	2500
LOWEST DAILY MEAN	60	Nov 25	60
ANNUAL SEVEN-DAY MINIMUM	134	Feb 22	121
INSTANTANEOUS PEAK FLOW			a5200
INSTANTANEOUS PEAK STAGE			a14.06
ANNUAL RUNOFF (AC-FT)	371600	178400	28.17
ANNUAL RUNOFF (CFSM)	1.26	.61	.36
ANNUAL RUNOFF (INCHES)	17.12	8.22	4.83
10 PERCENT EXCEEDS	777	366	281
50 PERCENT EXCEEDS	329	187	61
90 PERCENT EXCEEDS	170	131	15

e Estimated.

a Ice affected.

06609500 BOYER RIVER AT LOGAN, IA

LOCATION.--Lat 41°38'33", long 95°46'57", in SE1/4 NW1/4 sec.19, T.79 N., R.42 W., Harrison County, Hydrologic Unit 10230007, on left bank 9 ft downstream from Chicago Central and Pacific Railroad bridge at Logan, 0.4 mi downstream from Elk Grove Creek, 10.5 mi upstream from Willow Creek, and 15.8 mi upstream from mouth.

DRAINAGE AREA.--871 mi².

PERIOD OF RECORD.--May 1918 to July 1925, November 1937 to current year. Monthly discharge only for some periods, published in WSP 1310.

REVISED RECORDS.--WSP 956: 1938-39. WSP 1240: 1918-19, 1920 (M), 1921, 1922 (M), 1924-25, 1938 (M), 1945. WSP 1440: Drainage area.

GAGE.--Water-stage encoder. Datum of gage is 1,009.38 ft above sea level (Chicago and Northwestern Railway Company bench mark). See WSP 1918 for history of changes prior to Oct. 18, 1960.

REMARKS.--Estimated daily discharges: Oct. 2-6, Nov. 24 to Dec. 3, Dec. 22 to Feb. 18, Feb. 20 to Mar. 3, June 20-23, and July 1, 2, 8. Records good except those for estimated daily discharges, which are poor. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data. U.S. Army Corps of Engineers rain-gage and satellite data collection platform at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	695	533	e680	e520	e290	e600	325	288	201	e313	190	187
2	e664	537	e640	e370	e320	e800	320	271	220	e429	199	169
3	e667	536	e580	e340	e310	1090	314	258	230	355	302	162
4	e676	540	518	e400	e370	2500	310	260	219	487	554	336
5	e635	520	475	e420	e500	2210	310	259	315	1040	379	615
6	e614	492	458	e340	e430	1190	295	267	352	927	284	458
7	618	485	429	e280	e390	785	291	300	272	548	249	328
8	624	500	421	e300	e390	614	293	297	234	e430	272	272
9	826	506	442	e320	e340	520	290	299	285	383	258	244
10	813	490	445	e420	e360	498	290	294	232	350	249	221
11	714	502	408	e360	e430	471	279	285	251	316	281	201
12	683	505	407	e400	e410	458	318	274	630	302	238	189
13	653	527	460	e290	e440	451	376	265	714	540	357	175
14	645	516	496	e230	e500	444	355	273	489	421	331	173
15	739	497	488	e230	e600	428	342	274	429	343	276	165
16	760	489	491	e240	e700	412	348	258	331	320	240	167
17	676	494	491	e240	e1200	403	308	242	305	300	220	161
18	652	484	507	e230	e3300	401	298	231	865	290	210	159
19	634	490	505	e290	2550	393	287	226	563	274	199	155
20	624	468	487	e270	e1600	390	274	221	e408	258	187	158
21	613	465	424	e300	e1000	380	291	216	e387	250	178	157
22	599	463	e360	e420	e700	368	283	214	e381	243	174	228
23	594	465	e380	e640	e620	362	266	216	e425	237	169	338
24	592	e420	e410	e450	e390	360	264	216	387	238	165	339
25	589	e200	e360	e390	e400	340	264	212	332	234	181	291
26	573	e230	e320	e360	e390	345	253	211	329	220	346	269
27	557	e350	e230	e310	e410	346	242	208	320	205	307	235
28	560	e400	e240	e320	e500	343	241	199	296	198	229	219
29	553	e480	e300	e300	---	334	273	227	278	192	201	210
30	527	e600	e400	e260	---	324	285	228	266	182	204	197
31	521	---	e600	e270	---	322	---	217	---	175	205	---
TOTAL	19890	14184	13852	10510	19840	18882	8885	7706	10946	11000	7834	7178
MEAN	642	473	447	339	709	609	296	249	365	355	253	239
MAX	826	600	680	640	3300	2500	376	300	865	1040	554	615
MIN	521	200	230	230	290	322	241	199	201	175	165	155
AC-FT	39450	28130	27480	20850	39350	37450	17620	15280	21710	21820	15540	14240
CFSM	.74	.54	.51	.39	.81	.70	.34	.29	.42	.41	.29	.27
IN.	.85	.61	.59	.45	.85	.81	.38	.33	.47	.47	.33	.31

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1919 - 1994, BY WATER YEAR (WY)

	1919	1920	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930
MEAN	180	165	128	124	306	622	430	486	727	431	299	259
MAX	796	558	565	692	1209	2619	1988	1698	2541	3022	1636	1288
(WY)	1974	1974	1973	1973	1971	1979	1983	1984	1990	1993	1951	1978
MIN	11.1	8.33	6.68	3.06	3.55	40.4	23.3	39.9	33.3	51.0	34.5	11.6
(WY)	1957	1940	1938	1940	1940	1981	1957	1968	1956	1977	1976	1939

SUMMARY STATISTICS	FOR 1993 CALENDAR YEAR	FOR 1994 WATER YEAR	WATER YEARS 1919 - 1994
ANNUAL TOTAL	382401	150707	
ANNUAL MEAN	1048	413	349
HIGHEST ANNUAL MEAN			1018
LOWEST ANNUAL MEAN			58.7
HIGHEST DAILY MEAN	24600	Jul 9	24600
LOWEST DAILY MEAN	180	Feb 24	1.5
ANNUAL SEVEN-DAY MINIMUM	247	Feb 22	2.0
INSTANTANEOUS PEAK FLOW			30800
INSTANTANEOUS PEAK STAGE			25.22
ANNUAL RUNOFF (AC-FT)	758500	298900	252800
ANNUAL RUNOFF (CFSM)	1.20	.47	.40
ANNUAL RUNOFF (INCHES)	16.33	6.44	5.44
10 PERCENT EXCEEDS	1720	632	757
50 PERCENT EXCEEDS	774	342	155
90 PERCENT EXCEEDS	320	209	30

e Estimated.

a Ice affected.

MISSOURI RIVER MAIN STEM

06610000 MISSOURI RIVER AT OMAHA, NE

LOCATION.--Lat 41°15'32", long 95°55'20", in SE1/4 NW1/4 sec.23, T.15 N., R.13 E., Douglas County, Hydrologic Unit 10230006, on right bank on left side of concrete floodwall, at foot of Douglas Street, 275 ft downstream from Interstate 480 Highway bridge in Omaha, and at mile 615.9.

DRAINAGE AREA.--322,800 mi², approximately. The 3,959 mi² in Great Divide basin are not included.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--September 1928 to current year. April 1872 to December 1899 (gage heights only) in reports of the Missouri River Commission and since January 1875, (gage heights only) in reports of the U.S. Weather Bureau.

REVISED RECORDS.--WSP 761: Drainage area.

GAGE.--Water-stage encoder. Datum of gage is 948.24 ft above sea level. See WSP 1730 for history of changes prior to Sept. 30, 1936. Oct. 1, 1936 to Sept. 30, 1982 at datum 10.00 ft higher.

REMARKS.--Estimated daily discharges: Feb. 7-13, 27, 28. Records good except those for estimated daily discharges, which are poor. Flow regulated by upstream main-stem reservoirs. U.S. Army Corps of Engineers rain-gage and satellite data collection platform at station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 396,000 ft³/s Apr. 18, 1952, gage height, 40.20 ft, present datum; minimum, about 2,200 ft³/s Jan. 6, 1937; minimum gage height, 6.85 ft, present datum, Feb. 5, 1989, result of freezeup.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	31900	31200	24400	24200	22800	30200	34500	38000	41500	53300	35400	36100
2	31700	31100	25100	27100	22600	30100	35300	36900	41800	52100	36300	35800
3	31800	30800	26300	27100	23100	29800	36000	37300	40800	50600	36500	35800
4	31700	31000	26300	24900	23200	36500	36800	41200	40300	50000	37700	37200
5	31800	30800	26100	23900	23100	45300	36900	46300	40400	49100	38700	39500
6	31800	30700	26000	24500	23200	50300	36700	47500	42800	50300	36800	39400
7	32100	30500	26100	25000	e23400	54800	37000	46400	41200	51100	36200	37000
8	32700	30100	25700	22800	e23200	53900	39200	44400	41000	48500	36600	36500
9	33400	29800	25200	17900	e23000	50900	39800	43500	43200	46900	38000	36300
10	35900	29700	24400	19000	e22000	51800	39000	44000	44300	43200	36600	35900
11	35900	30100	25400	21800	e22300	51700	38300	45400	45700	43300	36500	35400
12	35000	30900	24400	24200	e23000	47400	38800	47400	45100	43000	36500	34900
13	33800	31900	23400	24800	e24000	44000	39400	47300	46900	44000	36600	34900
14	32900	33000	23900	25100	24100	42500	39800	45800	45800	45400	39000	35500
15	32900	33500	24100	25300	23500	40500	39000	45300	46500	45300	39400	35500
16	33000	33200	24000	22400	24200	39100	38900	45200	46800	45100	38000	34900
17	32300	33200	25200	20500	24800	39800	39800	44200	47800	45100	37700	34800
18	31700	32500	26100	21000	23600	39200	38400	43900	55100	46100	37100	34600
19	32700	31400	26700	21000	35400	38600	37700	44100	58200	44300	36600	34900
20	33300	31400	27100	21300	43500	37300	38200	43600	48600	43500	36700	34900
21	30600	31500	27000	23400	40600	36600	37200	43000	48200	42500	37200	35100
22	30000	31100	26100	24300	36300	36500	36200	42600	52000	41400	37100	36500
23	30400	30800	24700	24100	34800	36800	35500	42500	53700	53000	36500	38400
24	30700	30400	23000	24600	33300	35700	35200	42200	55700	39300	35800	41300
25	30500	28700	22300	25200	31400	35200	35500	42000	60000	38900	35700	40700
26	30600	25200	23200	25000	29900	34600	35600	42100	58500	38200	36500	38500
27	31100	22700	23500	24200	e28500	33800	36000	42100	62100	37600	37300	37300
28	31400	22400	23300	23600	e28900	33300	36200	42000	60800	36800	36800	36700
29	31400	23300	23000	23200	---	33600	36500	42200	56400	36300	36200	36500
30	30900	24000	23000	22800	---	34200	38100	42300	55900	35600	35900	36100
31	31000	---	23100	23100	---	34300	---	41700	---	35200	36000	---
TOTAL	996900	896900	768100	727300	761700	1238300	1121500	1342400	1467100	1361700	1143900	1096900
MEAN	32160	29900	24780	23460	27200	39950	37380	43300	48900	43930	36900	36560
MAX	35900	33500	27100	27100	43500	54800	39800	47500	62100	53300	39400	41300
MIN	30000	22400	22300	17900	22000	29800	34500	36900	40300	35200	35400	34600
MED	31800	30800	24700	24100	23800	37300	37100	43500	46800	44000	36600	36100
AC-FT	1977000	1779000	1524000	1443000	1511000	2456000	2224000	2663000	2910000	2701000	2269000	2176000
CFSM	.10	.09	.08	.07	.08	.12	.12	.13	.15	.14	.11	.11
IN.	.11	.10	.09	.08	.09	.14	.13	.15	.17	.16	.13	.13

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1958 - 1994, BY WATER YEAR (WY)^a

	MEAN	37350	33140	20400	17380	19330	27300	38310	37110	39840	39630	38150	38120
MAX	64410	66130	42800	33250	36590	53980	66320	60430	75730	78560	64830	65020	65020
(WY)	1976	1976	1987	1987	1983	1983	1969	1986	1984	1993	1975	1975	1975
MIN	16920	8324	8296	8425	8162	12090	24630	26450	26890	27150	27280	28290	28290
(WY)	1962	1962	1962	1964	1963	1958	1959	1961	1961	1958	1958	1958	1958

SUMMARY STATISTICS

FOR 1993 CALENDAR YEAR

FOR 1994 WATER YEAR

WATER YEARS 1958 - 1994^a

ANNUAL TOTAL	13835700	12922700											
ANNUAL MEAN	37910	35400											
HIGHEST ANNUAL MEAN										32210			
LOWEST ANNUAL MEAN										46090			1984
HIGHEST DAILY MEAN	113000	Jul 10								20790			1958
LOWEST DAILY MEAN	13200	Jan 3								116000	Apr 4	1960	
ANNUAL SEVEN-DAY MINIMUM	16400	Jan 1								2440	Dec 14	1961	
INSTANTANEOUS PEAK FLOW										4650	Dec 10	1961	
INSTANTANEOUS PEAK STAGE										63800	Jun 27	1960	
ANNUAL RUNOFF (AC-FT)	27440000									22.79	Jun 27	1993	
ANNUAL RUNOFF (CFSM)										25630000			
ANNUAL RUNOFF (INCHES)										.11			
10 PERCENT EXCEEDS	62100									.11			
50 PERCENT EXCEEDS	33000									1.49			
90 PERCENT EXCEEDS	17900									.10			
										1.36			
										50100			
										32400			
										14100			

e Estimated.

a Post-regulation period.

06610000 MISSOURI RIVER AT OMAHA, NE--Continued

WATER-QUALITY RECORDS

LOCATION.--Water quality samples were collected from Interstate 80 highway bridge 2.0 mi downstream from gaging station.

PERIOD OF RECORD.--July 1969 to 1976, 1978 to current year. Daily sediment loads for April 1939 to September 1971 are in reports of U.S. Army Corps of Engineers.

PERIOD OF DAILY RECORD.--

CHEMICAL ANALYSES: July 1969 to June 1972.

SPECIFIC CONDUCTANCE: October 1972 to September 1976, January 1978 to September 1981, October 1991 to current year.

WATER TEMPERATURES: October 1971 to September 1976, January 1978 to September 1981, October 1991 to current year.

SUSPENDED-SEDIMENT DISCHARGE: October 1971 to September 1976, October 1991 to current year.

REMARKS.--Records of specific conductance are obtained from suspended-sediment samples at time of analysis.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 950 microsiemens Dec. 4, 5, 1980; minimum daily, 335 microsiemens Mar. 22, 1978.

WATER TEMPERATURES: Maximum daily, 32.0°C July 24, 1972; minimum daily, 0.0°C on many days during winter period.

SEDIMENT CONCENTRATIONS: Maximum daily mean, 8,180 mg/L May 19, 1974; minimum daily mean, 71 mg/L Jan. 3, 1993.

SEDIMENT LOADS: Maximum daily, 1,060,000 tons May 19, 1974; minimum daily, 2,560 tons Jan. 3, 1993.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 847 microsiemens Nov. 19; minimum daily, 571 microsiemens Mar. 11.

WATER TEMPERATURES: Maximum daily, 26.0°C July 19, 25; minimum daily, 1.0°C Nov. 30 and Dec. 14.

SEDIMENT CONCENTRATIONS: Maximum daily mean, 2,420 mg/L Mar. 7; minimum daily mean, 162 mg/L Aug. 24.

SEDIMENT LOADS: Maximum daily, 359,000 tons Mar. 7; minimum daily, 8,430 tons Jan. 9.

SPECIFIC CONDUCTANCE MICROSIEMENS/CM AT 25 DEG C, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	804	---	---	---	---	714	759	---	---	714	796	---
2	---	794	---	---	---	---	---	---	---	---	---	778
3	---	---	---	---	---	---	---	803	770	---	---	---
4	---	---	---	---	---	---	741	---	---	---	---	---
5	795	833	---	---	---	---	---	---	---	---	768	---
6	---	---	---	---	---	---	---	786	---	714	---	---
7	---	---	---	---	---	---	---	---	---	---	---	749
8	792	---	---	---	---	---	742	---	---	723	779	---
9	---	744	---	---	---	---	---	---	752	---	---	770
10	---	---	809	---	---	---	---	831	---	---	---	---
11	---	---	---	---	---	571	---	---	---	763	---	---
12	792	812	---	---	---	---	---	---	---	---	776	752
13	---	---	---	---	---	---	752	809	---	---	---	---
14	---	---	814	---	---	---	---	---	720	---	---	---
15	798	---	---	---	---	---	751	---	---	748	---	---
16	---	815	---	---	---	---	---	---	---	---	763	780
17	---	---	---	---	---	---	---	795	664	---	---	---
18	---	---	---	---	---	654	779	---	---	---	---	---
19	762	847	---	---	---	---	---	---	---	769	764	777
20	---	---	---	---	---	---	---	804	---	---	---	---
21	---	---	---	---	---	---	---	---	709	778	---	---
22	795	---	---	---	---	640	794	---	---	---	---	---
23	---	814	---	---	---	---	---	---	705	---	761	755
24	---	---	---	---	---	---	---	780	---	---	---	---
25	---	---	---	---	---	668	808	---	---	756	---	---
26	780	---	---	---	---	---	---	780	---	---	764	747
27	---	---	---	---	---	---	---	---	---	---	---	---
28	777	---	---	---	---	733	---	---	644	769	---	---
29	---	---	---	---	---	---	788	---	---	---	777	803
30	---	711	---	---	---	---	---	---	---	---	---	---
31	---	---	---	---	---	---	---	768	---	---	---	---

06610000 MISSOURI RIVER AT OMAHA, NE--Continued

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DAY	MEAN CONCEN- TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN- TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN- TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN- TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN- TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN- TRATION (MG/L)	LOAD (TONS/ DAY)
OCTOBER			NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	263	22600	372	31400	288	19000	293	19200	247	15200	319	26100
2	250	21400	383	32100	308	20900	378	27800	255	15600	348	28400
3	243	20900	326	27100	344	24500	371	27200	284	17700	355	28600
4	249	21400	279	23300	351	24900	298	20100	280	17500	766	77500
5	252	21700	283	23500	346	24400	278	17900	267	16600	1510	186000
6	244	21000	308	25600	345	24300	303	20100	270	17000	2180	298000
7	244	21100	329	27100	340	24000	299	20200	276	17400	2420	359000
8	255	22500	321	26100	323	22400	234	14400	295	18500	2190	319000
9	279	25300	301	24200	329	22400	174	8430	316	19600	1860	256000
10	346	33600	283	22700	312	20600	172	9200	327	19400	2020	283000
11	356	34500	284	23100	339	23200	180	13800	303	18200	1970	275000
12	318	30100	293	24500	336	22100	173	19100	258	16000	1630	208000
13	264	24100	308	26600	304	19200	200	20100	219	14200	1270	151000
14	234	20800	314	28000	330	21300	310	21000	218	14200	949	109000
15	245	21800	286	25900	335	21700	322	21900	232	14700	687	75200
16	260	23100	248	22300	301	19500	280	16900	245	16000	538	56700
17	255	22200	275	24600	319	21700	270	14900	330	21800	658	70700
18	241	20700	306	26900	328	23100	293	16600	466	30000	745	78900
19	295	26100	294	24900	325	23400	286	16300	1200	121000	716	74600
20	331	29700	278	23500	319	23400	269	15500	925	109000	692	69800
21	301	24800	269	22900	292	21300	304	19300	764	83800	633	62500
22	290	23500	268	22500	279	19600	309	20300	732	71700	550	54100
23	301	24700	269	22400	270	18000	306	19900	666	62500	655	65000
24	284	23600	262	21400	252	15600	330	21900	547	49200	679	65600
25	247	20400	242	18700	255	15300	332	22600	409	34600	597	56800
26	220	18100	220	14900	272	17000	299	20100	304	24600	536	50000
27	224	18800	203	12400	290	18400	267	17400	239	18400	462	42200
28	260	22000	202	12200	282	17800	257	16300	231	18000	405	36400
29	279	23700	234	14700	266	16500	245	15300	---	---	392	35500
30	307	25600	270	17500	267	16600	248	15300	---	---	388	35800
31	350	29300	---	---	269	16700	269	16700	---	---	390	36200
TOTAL	---	739100	---	693000	---	638800	---	565730	---	912400	---	3570600
APRIL			MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	391	36500	470	48200	270	30300	607	87300	324	31100	256	24900
2	396	37700	366	36500	277	31200	835	117000	347	34000	227	21900
3	407	39500	314	31700	243	26800	1030	141000	332	32700	207	20000
4	419	41600	353	39400	232	25200	1010	136000	464	47400	298	30000
5	426	42400	389	48700	266	29100	1150	153000	515	53800	394	42100
6	423	41900	375	48100	370	42800	1470	199000	383	38100	385	40900
7	446	44600	360	45100	362	40200	1330	183000	264	25800	253	25300
8	546	57900	355	42600	337	37300	765	100000	223	22100	223	22000
9	569	61000	354	41500	401	46800	659	83400	299	30800	218	21300
10	489	51500	346	41100	477	57200	444	51900	262	25900	211	20500
11	394	40800	322	39500	716	88500	433	50600	261	25700	204	19500
12	364	38100	288	36800	660	80300	398	46200	248	24500	204	19200
13	386	41000	277	35400	804	102000	428	51000	237	23500	204	19200
14	428	46000	293	36100	605	74800	481	59000	361	38200	218	20900
15	376	39700	309	37900	630	79200	454	55400	394	41900	208	19900
16	414	43600	309	37700	733	92600	470	57300	334	34300	181	17000
17	576	61800	301	36000	887	115000	472	57600	337	34300	177	16600
18	553	57200	285	33800	1250	188000	498	62000	320	32100	188	17500
19	502	51100	259	30900	1560	246000	428	51100	277	27300	221	20900
20	519	53600	233	27400	714	94200	342	40100	282	28000	200	18800
21	448	45100	232	27000	735	96000	272	31200	295	29700	199	18900
22	341	33300	242	27800	1390	196000	243	27100	292	29300	205	20200
23	306	29300	263	30200	1010	147000	240	25800	225	22100	230	23900
24	261	24900	290	33000	1140	172000	270	28700	162	15700	357	39900
25	222	21300	278	31500	1210	197000	265	27800	164	15800	366	40200
26	259	25000	250	28400	782	124000	248	25600	191	18800	316	32900
27	381	37100	239	27200	884	149000	260	26500	273	27500	289	29100
28	467	45600	239	27100	822	135000	222	22100	264	26200	266	26300
29	447	44100	272	30900	696	106000	209	20500	223	21800	250	24700
30	498	51300	304	34700	739	111000	200	19200	227	22000	224	21900
31	---	---	289	32500	---	---	251	23800	241	23400	---	---
TOTAL	---	1284500	---	1104700	---	2960500	---	2060200	---	903800	---	7364000
YEAR	16169730											

06610000 MISSOURI RIVER AT OMAHA, NE--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15.0	---	---	---	---	2.0	8.0	---	---	25.0	24.0	---
2	---	5.0	---	---	---	---	---	---	---	---	---	22.0
3	---	---	---	---	---	---	---	17.0	20.0	---	---	---
4	---	---	---	---	---	---	9.0	---	---	---	---	---
5	12.0	6.0	---	---	---	---	---	---	---	---	24.0	---
6	---	---	---	---	---	---	---	13.0	---	---	---	---
7	---	---	---	---	---	---	---	---	---	---	---	22.0
8	---	---	---	---	---	---	9.0	---	---	24.0	24.0	---
9	---	---	---	---	---	---	---	---	23.0	---	---	23.0
10	---	---	2.0	---	---	---	---	25.0	---	---	---	---
11	---	---	---	---	---	1.5	---	---	---	23.0	---	---
12	11.0	6.0	---	---	---	---	---	---	---	---	24.0	23.0
13	---	---	---	---	---	---	9.0	16.0	---	---	---	---
14	---	---	1.0	---	---	---	---	---	23.0	---	---	---
15	11.0	---	---	---	---	---	9.0	---	---	24.0	---	---
16	---	3.0	---	---	---	---	---	---	---	---	23.0	22.0
17	---	---	---	---	---	---	---	20.0	23.0	---	---	---
18	---	---	---	---	---	12.0	---	---	---	---	---	---
19	---	4.0	---	---	---	---	---	---	---	26.0	25.0	22.0
20	---	---	---	---	---	---	---	20.0	---	---	---	---
21	---	---	---	---	---	---	---	---	25.0	25.0	---	---
22	12.0	---	---	---	---	8.0	12.0	---	---	---	---	---
23	---	2.0	---	---	---	---	---	---	24.0	---	24.0	19.0
24	---	---	---	---	---	---	---	22.0	---	---	---	---
25	---	---	---	---	---	8.0	17.0	---	---	26.0	---	---
26	11.0	---	---	---	---	---	---	23.0	---	---	23.0	18.0
27	---	---	---	---	---	---	---	---	---	---	---	---
28	11.0	---	---	---	---	6.0	---	---	24.0	25.0	---	---
29	---	---	---	---	---	---	10.0	---	---	---	24.5	16.0
30	---	1.0	---	---	---	---	---	---	---	---	---	---
31	---	---	---	---	---	---	---	22.0	---	---	---	---

06807000 MISSOURI RIVER AT NEBRASKA CITY, NE

LOCATION.--Lat 40°40'55", long 95°50'48", in NW1/4 NE1/4 sec.9, T.8 N., R.14 E., Otoe County, Hydrologic Unit 10240001, on right bank 2.0 mi upstream from Highway 2 Bridge at Nebraska City, and at mile 562.6.

DRAINAGE AREA.--410,000 mi², approximately. The 3,959 mi² in Great Divide basin are not included.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--August 1929 to current year. Gage-height records collected in this vicinity from August 1878 to December 1899 are contained in reports of Missouri River Commission.

REVISED RECORDS.--WSP 761: Drainage area.

GAGE.--Water-stage encoder. Datum of gage is 905.36 ft above sea level, supplementary adjustment of 1954. See WSP 1918 or 1919 for history of changes prior to Apr. 1, 1963.

REMARKS.--Estimated daily discharges: Feb. 12-13. Records good, except those for estimated daily discharges, which are poor. Flow regulated by upstream main-stem reservoirs. U.S. Army Corps of Engineers rain-gage and satellite data collection platform at station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 414,000 ft³/s Apr. 19, 1952; maximum gage height, 27.66 ft Apr. 18, 1952; minimum discharge, 1,600 ft³/s Dec. 31, 1946 (discharge measurement); minimum gage height observed, -0.28 ft Dec. 24, 1960, result of freezeup.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	40800	37300	28400	26300	28200	35000	41100	43400	43100	55800	40600	37800
2	40800	37300	29500	27900	27400	36800	40100	42800	50100	56500	40500	37500
3	40300	36900	31900	29900	27300	37300	39600	42800	45200	55200	42100	37800
4	39900	36700	34100	29700	27600	42400	38900	45200	43900	59100	41400	40000
5	39600	37300	34100	28900	27600	59300	39900	49500	44900	58600	42300	40600
6	39400	37300	34700	28400	27800	79600	40700	52400	51000	57700	41300	41900
7	38800	37400	34700	26600	27700	86600	40300	52200	48400	66300	39600	40900
8	38800	36500	33800	24200	27100	74500	41200	51100	45300	68400	41200	40700
9	39100	36800	33300	21800	26500	66800	43000	49900	45700	60300	42200	39900
10	40500	36800	32600	20400	25800	63600	43600	49200	46600	52700	41100	39100
11	41000	37300	33100	22500	25300	63100	43500	49200	48900	49100	39500	38000
12	40500	38300	33600	24600	e24800	59600	44100	50000	49900	48100	39500	37200
13	39700	39000	32500	26400	e25200	55300	44500	49700	50900	47600	39400	36800
14	38700	40000	33600	26600	26100	53500	45800	49800	50400	53600	40100	36900
15	39200	41300	33500	28100	25900	51300	47900	49000	50500	58800	41100	37500
16	39900	40300	32400	27700	26800	47800	47700	48900	50700	55300	40400	37100
17	40100	40600	32800	24800	28200	46900	48800	48300	50100	54900	39800	36900
18	39500	39600	34200	24300	30500	47000	48600	47100	52900	56100	39600	36900
19	40100	38800	34000	25100	39200	46700	46600	47000	58700	53600	39200	37000
20	40800	37800	34200	24600	65800	46500	45900	46700	55300	51700	38800	37000
21	39600	37600	33800	25400	57900	45800	44700	45700	53000	49600	38900	36900
22	38100	37500	33300	27400	53200	46000	43600	45400	56700	47800	38900	37400
23	37900	37300	32100	28000	49300	46200	42000	45200	68800	46000	38700	38800
24	38400	37400	30100	28600	45100	45400	42000	44500	71400	44400	38100	40300
25	38400	36300	27900	29800	41200	44500	41100	44100	67300	43400	37700	42200
26	38200	31600	27500	30600	37500	44000	41000	44300	64700	42700	38400	40500
27	38300	27700	27500	30400	34800	43500	40700	43900	64100	42000	38900	39400
28	38600	26100	27800	29700	33300	42400	40900	43500	64000	41500	38800	38600
29	38600	26200	27600	29300	---	42400	41600	44100	59600	40900	38100	38200
30	38600	27400	26900	28800	---	42300	42500	43700	57700	40900	37800	37500
31	36600	---	26200	28800	---	41000	---	43500	---	40400	37600	---
TOTAL	1218800	1088400	981700	835600	943100	1583100	1291900	1452100	1609800	1599000	1231600	1157300
MEAN	39320	36280	31670	26950	33680	51070	43060	46840	53660	51580	39730	38580
MAX	41000	41300	34700	30600	65800	86600	48800	52400	71400	68400	42300	42200
MIN	36600	26100	26200	20400	24800	35000	38900	42800	43100	40400	37600	36800
AC-FT	2417000	2159000	1947000	1657000	1871000	3140000	2562000	2880000	3193000	3172000	2443000	2296000

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1958 - 1994, BY WATER YEAR (WY)

	MEAN	42040	38100	25000	21060	26120	38080	47840	46350	50290	45850	41950	42030
MAX	69440	68480	52410	39970	48630	66730	95660	85160	117500	116700	65540	66510	66510
(WY)	1987	1976	1987	1987	1983	1983	1984	1984	1984	1993	1975	1975	1975
MIN	22420	14380	10980	11610	14040	18770	29330	32980	33530	32760	31200	32560	32560
(WY)	1962	1962	1964	1960	1963	1990	1990	1958	1958	1961	1991	1958	1958

SUMMARY STATISTICS	FOR 1993 CALENDAR YEAR	FOR 1994 WATER YEAR	WATER YEARS 1958 - 1994a
ANNUAL TOTAL	18144100	14992400	
ANNUAL MEAN	49710	41080	38760
HIGHEST ANNUAL MEAN			61700
LOWEST ANNUAL MEAN			27810
HIGHEST DAILY MEAN	188000	86600	188000
LOWEST DAILY MEAN	14600	20400	5000
ANNUAL SEVEN-DAY MINIMUM	18100	23800	5930
INSTANTANEOUS PEAK FLOW		90700	196000
INSTANTANEOUS PEAK STAGE		17.72	27.19
ANNUAL RUNOFF (AC-FT)	35990000	29740000	28080000
10 PERCENT EXCEEDS	80900	53600	58600
50 PERCENT EXCEEDS	42000	40100	37300
90 PERCENT EXCEEDS	21800	27700	18000

e Estimated.

a Post-regulation period.

06807000 MISSOURI RIVER AT NEBRASKA CITY, NE.--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.-- May 1951 to current year. Daily sediment loads August 1957 to September 1971 in reports of U.S. Army Corps of Engineers.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: May 1951 to September 1976, October 1991 to current year.

WATER TEMPERATURES: May 1951 to September 1976, October 1991 to current year.

SEDIMENT DISCHARGE: October 1971 to September 1976, October 1991 to current year.

REMARKS.--Records of specific conductance are obtained from suspended-sediment samples at time of analysis.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 994 microsiemens Dec. 17, 1962; minimum daily, 273 microsiemens June 17, 1964.

WATER TEMPERATURES: Maximum daily, 31°C July 26, 1977; minimum daily, 0.0°C on many days during winter period.

SEDIMENT CONCENTRATIONS: Maximum daily mean, 8,220 mg/L May 19, 1974; minimum daily mean, 115 mg/L Jan. 3, 1993.

SEDIMENT LOADS: Maximum daily, 1,590,000 tons May 19, 1974; minimum daily, 4,050 tons Jan. 17, 1972.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 838 microsiemens Nov. 26; minimum daily, 492 microsiemens Mar. 7.

WATER TEMPERATURES: Maximum daily 26.5°C July 21; minimum daily, 0.0°C Jan. 11.

SEDIMENT CONCENTRATIONS: Maximum daily mean, 3,300 mg/L Mar. 7; minimum daily, 160 mg/L Jan. 10.

SEDIMENT LOADS: Maximum daily, 777,000 tons Mar. 7; minimum daily, 8830 tons Jan. 10.

SPECIFIC CONDUCTANCE MICROSIEMENS/CM AT 25 DEG C, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	775	813	---	---	---	---	---	---	---	---	749	---
2	---	---	---	---	---	---	---	755	---	---	---	774
3	---	---	799	---	---	---	---	---	726	---	---	---
4	---	---	---	---	---	---	746	---	---	---	---	---
5	796	789	---	---	---	---	---	---	---	668	765	---
6	---	---	---	---	---	---	---	798	718	---	---	744
7	---	---	---	---	---	492	---	---	---	---	---	---
8	---	779	777	---	---	---	743	---	---	578	761	---
9	---	---	---	---	---	---	---	---	731	---	---	716
10	---	---	---	---	---	---	---	797	---	---	---	---
11	---	---	---	752	---	---	744	---	---	701	---	---
12	---	790	---	---	---	---	---	---	---	---	756	761
13	---	---	829	---	---	---	---	799	718	---	---	---
14	---	---	---	---	816	627	---	---	---	---	---	---
15	769	788	---	---	---	---	733	---	---	632	748	---
16	---	---	---	---	---	---	---	---	---	---	---	782
17	---	---	---	---	---	---	---	771	692	---	---	---
18	768	---	---	---	---	---	---	---	---	---	---	---
19	---	810	---	---	---	---	---	---	---	692	752	796
20	---	---	---	---	---	---	---	769	612	---	---	---
21	---	---	---	---	---	651	---	---	---	726	---	---
22	778	811	---	---	---	---	775	---	---	---	740	829
23	---	---	---	---	---	---	---	762	---	---	---	---
24	---	---	---	834	---	---	---	---	588	---	---	---
25	778	---	---	---	---	674	788	---	---	747	---	---
26	---	838	---	---	---	---	---	754	---	---	758	---
27	---	---	---	---	---	---	---	---	---	---	---	742
28	798	---	---	---	710	720	---	---	612	747	---	---
29	---	---	---	---	---	---	771	---	---	---	765	788
30	---	---	---	---	---	---	---	---	650	---	---	---
31	---	---	---	---	---	741	---	750	---	---	---	---

06807000 MISSOURI RIVER AT NEBRASKA CITY, NE.--Continued

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DAY	MEAN CONCEN- TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN- TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN- TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN- TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN- TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN- TRATION (MG/L)	LOAD (TONS/ DAY)
OCTOBER			NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	344	37800	600	60400	527	40400	231	16400	328	25000	431	40900
2	332	36500	591	59400	567	45300	404	30600	316	23400	469	46700
3	312	34000	569	56600	611	52800	635	51300	324	23900	477	48100
4	281	30300	563	55800	646	59500	612	49000	337	25100	862	102000
5	257	27500	636	64100	595	54800	553	43100	340	25300	1650	265000
6	244	26000	590	59500	599	56100	546	41800	344	25800	2950	653000
7	221	23200	587	59400	591	55400	489	35100	347	25900	3300	777000
8	219	23000	554	54600	459	41900	406	26500	336	24600	2080	418000
9	217	22900	527	52400	430	38700	242	14400	329	23500	1470	266000
10	261	28700	485	48200	405	35600	160	8830	321	22400	1230	212000
11	281	31100	462	46500	420	37500	231	14100	310	21100	1400	239000
12	275	30100	472	48800	429	38900	270	17900	300	20100	1170	188000
13	253	27100	487	51300	367	32200	317	22600	309	21000	895	133000
14	207	21600	505	54600	403	36600	320	23000	328	23100	798	115000
15	220	23400	526	58600	405	36600	385	29300	324	22700	728	101000
16	277	29800	517	56300	372	32600	378	28200	350	25400	672	86700
17	456	49400	578	63300	406	36000	241	16100	403	30700	704	89200
18	496	53000	539	57500	444	40900	209	13700	547	45500	712	90300
19	631	68400	493	51500	441	40500	227	15300	937	103000	771	97100
20	778	85600	484	49400	444	41100	204	13500	2690	481000	782	98200
21	755	80600	566	57500	435	39700	220	15100	1910	300000	737	91000
22	692	71200	893	90400	403	36200	252	18700	1550	222000	712	88500
23	498	50900	910	91600	343	29700	257	19500	1320	175000	689	86100
24	419	43500	912	92100	249	20200	266	20500	1090	132000	625	76600
25	362	37600	914	89500	209	15700	294	23700	822	91600	603	72400
26	308	31800	758	64800	210	15600	347	28700	620	62800	590	70100
27	298	30900	449	33600	225	16700	340	27900	504	47400	560	65700
28	314	32800	392	27600	249	18700	329	26300	392	35300	525	60100
29	398	41500	406	28800	240	17900	330	26100	---	---	577	66100
30	608	63500	478	35400	220	15900	326	25400	---	---	897	102000
31	539	53400	---	---	202	14300	332	25800	---	---	838	92700
TOTAL	---	1247100	---	1719500	---	1094000	---	768430	---	2104600	---	493750

	APRIL			MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	952	106000	547	64200	280	32500	515	77500	453	49800	274	27900	
2	935	101000	540	62400	1090	150000	855	131000	506	55400	253	25700	
3	933	99700	525	60600	749	91600	810	121000	609	69300	237	24100	
4	936	98300	605	74300	537	63700	1430	230000	494	55200	412	45100	
5	919	98900	730	97900	674	82800	1050	166000	525	60000	477	52400	
6	906	99700	828	117000	1240	171000	969	151000	396	44300	520	58900	
7	581	63200	784	110000	745	98400	2460	467000	239	25600	497	54900	
8	550	61300	589	81400	357	43700	2810	520000	234	26100	497	54500	
9	591	68700	425	57300	355	43800	2040	335000	308	35200	427	46100	
10	417	49100	372	49400	373	46900	1080	154000	317	35100	325	34300	
11	339	39900	361	48000	808	109000	772	102000	297	31700	275	283000	
12	353	42100	370	50000	1020	138000	682	88500	294	31300	262	26400	
13	365	43900	365	49100	998	137000	690	88800	292	31000	250	24900	
14	412	51000	379	51000	955	130000	1520	227000	331	35900	246	24500	
15	474	61400	371	49100	921	126000	1760	281000	385	42800	261	26400	
16	466	60100	371	49100	903	124000	716	107000	348	37900	252	25200	
17	451	59400	346	45100	838	113000	663	98200	339	36400	269	26800	
18	436	57200	296	37600	1150	166000	711	108000	330	35300	290	28900	
19	415	52200	237	30100	1620	258000	630	91100	311	32900	283	28200	
20	405	50200	227	28600	1290	193000	564	78700	306	32100	239	23900	
21	392	47300	226	28000	1260	181000	521	69700	302	31700	195	19500	
22	379	44500	237	29000	1440	224000	467	60300	303	31800	194	19600	
23	348	39500	296	36100	1930	363000	413	51300	269	28100	264	27800	
24	341	38700	245	29500	2180	421000	352	42300	212	21700	345	37700	
25	327	36300	207	24600	2030	369000	288	33700	189	19200	402	45900	
26	327	36300	184	22100	1680	293000	275	31700	217	22500	371	40600	
27	336	37000	169	20100	1300	225000	304	34500	297	31300	342	36300	
28	358	39600	171	20000	1140	197000	369	41400	322	33700	300	31300	
29	366	41100	300	35800	795	128000	361	39900	307	31600	276	28500	
30	443	51000	302	35700	624	97100	366	40500	297	30300	241	24400	
31	---	---	292	34300	---	---	369	40100	290	29400	---	---	
TOTAL	---	1774600	---	1527400	---	4816500	---	4108200	---	1114600	---	999000	
YEAR	26211430												

06807000 MISSOURI RIVER AT NEBRASKA CITY, NE.--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15.0	11.0	---	---	---	---	---	---	---	---	25.5	---
2	---	---	---	---	---	---	---	9.0	---	---	---	22.0
3	---	---	4.0	---	---	---	---	---	20.0	---	---	---
4	---	---	---	---	---	---	8.5	---	---	---	---	---
5	14.0	6.0	---	---	---	---	---	---	---	25.5	24.0	---
6	---	---	---	---	---	---	---	12.0	23.0	---	---	23.0
7	---	---	---	---	---	1.0	---	---	---	---	---	---
8	---	5.0	1.0	---	---	---	9.0	---	---	24.0	24.0	---
9	---	---	---	---	---	---	---	---	23.0	---	---	23.0
10	---	---	---	---	---	---	---	14.0	---	---	---	---
11	---	---	---	.0	---	---	9.0	---	---	25.0	---	---
12	---	5.0	---	---	---	---	---	---	---	---	21.0	22.0
13	---	---	1.0	---	---	---	---	18.0	24.0	---	---	---
14	---	---	---	---	1.0	4.0	---	---	---	---	---	---
15	12.0	5.0	---	---	---	---	11.0	---	---	24.0	23.0	---
16	---	---	---	---	---	---	---	---	---	---	---	24.0
17	---	---	---	---	---	---	---	19.0	23.0	---	---	---
18	13.5	---	---	---	---	---	---	---	---	---	---	---
19	---	3.5	---	---	---	---	---	---	---	26.0	25.0	22.0
20	---	---	---	---	---	---	---	20.0	25.0	---	---	---
21	---	---	---	---	---	8.0	---	---	---	26.5	---	---
22	11.0	1.0	---	---	---	---	13.5	---	---	---	25.0	21.0
23	---	---	---	---	---	---	---	22.0	---	---	---	---
24	---	---	---	1.1	---	---	---	---	24.0	---	---	---
25	11.0	---	---	---	---	8.0	17.0	---	---	26.0	---	---
26	---	1.0	---	---	---	---	---	20.0	---	---	23.0	---
27	---	---	---	---	---	---	---	---	---	---	---	---
28	12.0	---	---	---	2.0	6.0	---	---	25.0	25.0	---	---
29	---	---	---	---	---	---	---	---	---	---	25.0	18.0
30	---	---	---	---	---	---	---	---	25.0	---	---	---
31	---	---	---	---	---	6.0	---	23.0	---	---	---	---

06807410 WEST NISHNABOTNA RIVER AT HANCOCK, IA

LOCATION.--Lat 41°23'24", long 95°22'17", in NW1/4 NE1/4 sec.18, T.76 N., R.39 W., Pottawattamie County, Hydrologic Unit 10240002, on right bank at upstream side of bridge on county highway G30, 0.6 mi west of Hancock school, 3.0 mi downstream from Jim Creek, 59.6 mi upstream from confluence with East Nishnabotna River, and at mile 75.1 mi upstream from mouth of Nishnabotna River.

DRAINAGE AREA.--609 mi².

PERIOD OF RECORD.--October 1959 to current year.

GAGE.--Water-stage encoder. Datum of gage is 1,085.83 ft above sea level. Prior to Sept. 15, 1980, on downstream end of right pier at same datum.

REMARKS.--Estimated daily discharges: Nov. 25-30, Dec. 22 to Feb. 18, and Feb. 25 to Mar. 2. Records good except those for estimated daily discharges, which are poor. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data. U.S. Army Corps of Engineers rain-gage and satellite data collection platform at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	628	405	411	e390	e230	e310	201	179	145	299	183	136
2	589	405	415	e350	e250	e340	197	180	177	346	183	131
3	572	405	416	e310	e240	418	193	178	165	306	180	127
4	567	405	411	e320	e250	1340	191	175	155	320	282	213
5	553	401	411	e350	e320	1250	191	172	392	345	228	287
6	541	384	404	e330	e310	638	184	174	625	478	184	209
7	536	380	397	e300	e270	443	181	188	305	331	176	159
8	532	380	395	e270	e270	360	183	185	267	296	202	146
9	552	380	393	e280	e230	323	183	179	247	274	179	137
10	549	380	394	e300	e250	311	182	173	232	261	178	130
11	515	383	380	e290	e270	295	178	168	346	253	182	125
12	511	390	383	e300	e260	286	197	162	2610	336	170	122
13	497	408	391	e290	e270	283	212	159	1710	877	202	119
14	469	400	403	e260	e330	273	197	162	642	439	180	116
15	546	388	403	e240	e450	270	199	163	501	344	163	115
16	629	383	398	e260	e560	256	194	159	435	317	157	118
17	533	380	397	e250	e1100	248	179	153	396	292	153	109
18	510	373	397	e230	e1500	250	176	150	620	275	151	107
19	505	372	397	e240	1320	245	172	146	549	261	144	105
20	490	363	396	e230	551	243	167	145	414	247	141	104
21	479	359	373	e250	386	241	200	142	414	236	137	106
22	464	359	e350	e330	345	233	195	142	397	229	135	164
23	458	359	e350	e450	237	233	181	143	751	222	134	227
24	458	359	e360	e440	334	228	178	141	510	218	132	178
25	456	e250	e320	e400	e320	215	177	141	413	218	131	217
26	442	e170	e310	e300	e240	213	174	144	381	207	255	236
27	433	e190	e180	e270	e260	215	166	141	354	198	220	171
28	431	e250	e190	e280	e280	215	161	138	335	196	158	152
29	424	e330	e240	e250	---	211	172	173	316	193	147	142
30	410	e390	e310	e220	---	205	178	170	304	190	164	135
31	408	---	e400	e220	---	200	---	157	---	179	150	---
TOTAL	15687	10781	11375	9200	11633	10791	5539	4982	15108	9183	5381	4543
MEAN	506	359	367	297	415	348	185	161	504	296	174	151
MAX	629	408	416	450	1500	1340	212	188	2610	877	282	287
MIN	408	170	180	220	230	200	161	138	145	179	131	104
AC-FT	31120	21380	22560	18250	23070	21400	10990	9880	29970	18210	10670	9010
CFSM	.83	.59	.60	.49	.68	.57	.30	.26	.83	.49	.29	.25
IN.	.96	.66	.69	.56	.71	.66	.34	.30	.92	.56	.33	.28

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1960 - 1994, BY WATER YEAR (WY)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
MEAN	199	190	146	120	287	568	400	440	531	372	214	317
MAX	998	910	628	625	993	1946	1295	1586	2019	2925	977	2412
(WY)	1987	1973	1973	1973	1983	1979	1983	1973	1984	1993	1993	1972
MIN	35.3	32.1	17.9	4.58	27.2	40.3	45.6	30.1	26.7	38.4	26.4	14.7
(WY)	1972	1971	1971	1971	1967	1968	1968	1967	1977	1970	1968	1971

SUMMARY STATISTICS	FOR 1993 CALENDAR YEAR	FOR 1994 WATER YEAR	FOR 1995 WATER YEAR	FOR 1996 WATER YEAR	FOR 1997 WATER YEAR	FOR 1998 WATER YEAR	FOR 1999 WATER YEAR	FOR 2000 WATER YEAR	FOR 2001 WATER YEAR	FOR 2002 WATER YEAR	FOR 2003 WATER YEAR	FOR 2004 WATER YEAR
ANNUAL TOTAL	347680	114203										
ANNUAL MEAN	953	313										
HIGHEST ANNUAL MEAN		313										
LOWEST ANNUAL MEAN		966										
HIGHEST DAILY MEAN	22400	Jul 10	2610	Jun 12	37300	Dec 7	1984					
LOWEST DAILY MEAN	130	Feb 17	104	Sep 20	2.2	Feb 8	1971					
ANNUAL SEVEN-DAY MINIMUM	232	Feb 21	109	Sep 15	2.5	Feb 4	1971					
INSTANTANEOUS PEAK FLOW			7750	Jun 12	30100	Jul 10	1993					
INSTANTANEOUS PEAK STAGE			12.58	Jun 12	23.52	Jul 10	1993					
INSTANTANEOUS LOW FLOW			101	Sep 21		Jul 10	1993					
ANNUAL RUNOFF (AC-FT)	689600	226500										
ANNUAL RUNOFF (CFSM)	1.56	.51										
ANNUAL RUNOFF (INCHES)	21.24	6.98										
10 PERCENT EXCEEDS	1530	493			752							
50 PERCENT EXCEEDS	712	260			157							
90 PERCENT EXCEEDS	294	146			33							

e Estimated.

06808500 WEST NISHNABOTNA RIVER AT RANDOLPH, IA

LOCATION.--Lat 40°52'23", long 95°34'48", in NE1/4 NE1/4 sec. 17, T.70 N., R.41 W., Fremont County, Hydrologic Unit 10240002, on right bank at upstream side of bridge on State Highway 184, 0.3 mi downstream from Deer Creek, 0.5 mi west of Randolph, and 16.0 mi upstream from confluence with East Nishnabotna River, and at mile 31.5 upstream from mouth of Nishnabotna River.

DRAINAGE AREA.--1,326 mi².

PERIOD OF RECORD.--June 1948 to current year.

REVISED RECORDS.--WSP 1440: Drainage area. WDR IA-74-1: 1973 (M). WDR IA-76-1: 1975 (P).

GAGE.--Water-stage encoder. Datum of gage is 932.99 ft above sea level, unadjusted. Prior to Aug. 26, 1955, nonrecording gage with supplementary water-stage recorder operating above 8.4 ft June 30, 1949 to Aug. 25, 1955 at same site and datum.

REMARKS.--Estimated daily discharges: Nov. 25-29, Dec. 26 to Feb. 19, and Feb. 25 to Mar. 4. Records good except those for estimated daily discharges, which are poor. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data. U.S. National Weather Service Limited Automatic Remote Collector at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1947 reached a stage of about 24 ft, discharge not determined, from information by local residents.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1740	1220	979	e840	e500	e600	533	524	454	954	597	377
2	1670	1200	986	e760	e540	e640	529	491	2420	1330	559	347
3	1630	1200	983	e680	e520	e700	518	482	811	1040	554	339
4	1580	1210	971	e700	e540	e1200	509	468	629	2230	629	506
5	1530	1170	958	e780	e700	2640	501	459	1270	1280	625	591
6	1510	1120	945	e720	e680	1890	484	460	1580	1060	593	539
7	1470	1100	918	e660	e580	1110	476	463	1110	1150	531	454
8	1520	1100	902	e580	e600	864	475	477	795	954	833	394
9	1730	1100	903	e620	e500	755	468	463	703	881	614	365
10	1560	1100	910	e660	e540	709	462	448	657	831	559	353
11	1520	1100	885	e620	e600	685	465	435	1320	797	553	343
12	1460	1140	888	e660	e560	672	567	425	1010	777	533	336
13	1420	1220	933	e640	e580	665	581	415	4290	1210	512	331
14	1410	1150	977	e560	e660	657	544	428	1610	1430	507	326
15	2490	1130	962	e520	e740	645	533	436	1080	952	493	324
16	1960	1100	969	e580	e900	634	514	425	918	887	462	333
17	1770	1090	963	e540	e1100	625	485	408	847	830	445	331
18	1630	1070	964	e500	e1500	622	463	399	862	773	435	326
19	1630	1070	952	e520	e1800	622	456	385	1080	740	421	321
20	1530	1040	935	e500	1620	620	448	377	957	710	398	316
21	1460	1030	905	e540	888	620	453	371	875	686	382	317
22	1410	1030	836	e700	727	617	493	371	1830	661	375	341
23	1380	1020	787	e940	634	611	489	365	6020	643	368	416
24	1360	1010	780	e920	502	599	471	361	2470	623	357	488
25	1350	e700	732	e840	e700	579	463	355	1620	630	353	495
26	1310	e490	e680	e660	e680	570	444	358	1360	618	373	523
27	1270	e540	e390	e580	e520	574	425	354	1200	589	468	521
28	1280	e700	e420	e620	e560	569	437	353	1110	569	460	445
29	1240	e900	e540	e540	---	558	459	491	1040	557	389	411
30	1210	958	e700	e480	---	547	497	438	988	550	372	396
31	1190	---	e880	e480	---	535	---	427	---	536	406	---
TOTAL	47220	31008	26533	19940	20971	23934	14642	13112	42916	27478	15156	11905
MEAN	1523	1034	856	643	749	772	488	423	1431	886	489	397
MAX	2490	1220	986	940	1800	2640	581	524	6020	2230	833	591
MIN	1190	490	390	480	500	535	425	353	454	536	353	316
AC-FT	93660	61500	52630	39550	41600	47470	29040	26010	85120	54500	30060	23610
CFSM	1.15	.78	.65	.49	.56	.58	.37	.32	1.08	.67	.37	.30
IN.	1.32	.87	.74	.56	.59	.67	.41	.37	1.20	.77	.43	.33

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1948 - 1994, BY WATER YEAR (WY)

	MEAN	382	342	297	264	522	990	745	957	1120	811	538	538
MAX	2002	1277	1140	1201	1777	3877	2867	3227	4728	6357	2610	2531	
(WY)	1987	1973	1973	1973	1973	1979	1973	1973	1967	1993	1993	1972	
MIN	27.1	33.6	20.6	17.4	19.4	67.8	42.7	97.3	65.6	71.2	30.1	41.0	
(WY)	1956	1956	1956	1956	1956	1956	1956	1967	1956	1954	1955	1955	

SUMMARY STATISTICS	FOR 1993 CALENDAR YEAR	FOR 1994 WATER YEAR	WATER YEARS 1948 - 1994
ANNUAL TOTAL	753637	294815	
ANNUAL MEAN	2065	808	629
HIGHEST ANNUAL MEAN			1985
LOWEST ANNUAL MEAN			111
HIGHEST DAILY MEAN	15900	6020	25000
LOWEST DAILY MEAN	200	316	10
ANNUAL SEVEN-DAY MINIMUM	337	324	11
INSTANTANEOUS PEAK FLOW		8820	40800
INSTANTANEOUS PEAK STAGE		18.29	24.80
INSTANTANEOUS LOW FLOW		313	
ANNUAL RUNOFF (AC-FT)	1495000	584800	455700
ANNUAL RUNOFF (CFSM)	1.56	.61	.47
ANNUAL RUNOFF (INCHES)	21.14	8.27	6.45
10 PERCENT EXCEEDS	4290	1410	1330
50 PERCENT EXCEEDS	1510	634	321
90 PERCENT EXCEEDS	540	392	85

e Estimated.

06809210 EAST NISHNABOTNA RIVER NEAR ATLANTIC, IA

LOCATION.--Lat 41°20'46", long 95°04'36", in NW1/4 NW1/4 sec.35, T.76 N., R.37 W., Cass County, Hydrologic Unit 10240003, on left bank at downstream side of bridge on county highway, 1.6 mi upstream from Turkey Creek, 5.2 mi southwest of junction of U.S. Highway 6 and State Highway 83 in Atlantic, 69.1 mi upstream from confluence with West Nishnabotna River, and at mile 84.6 upstream from mouth of Nishnabotna River.

DRAINAGE AREA.--436 mi².

PERIOD OF RECORD.--October 1960 to current year.

GAGE.--Water-stage encoder. Datum of gage is 1,105.83 ft above sea level. Prior to Oct. 1, 1970, at site 2.2 mi upstream at datum 5.00 ft higher.

REMARKS.--Estimated daily discharges: Oct. 24 to Nov. 4, Nov. 25-30, Dec. 22 to Feb. 18, Feb. 26 to Mar. 2, and Apr. 6-13. Records good except those for estimated daily discharges, which are poor. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data. U.S. Army Corps of Engineers rain-gage and satellite data collection platform at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of July 2, 1958 reached a stage of 22.49 ft, from floodmark, discharge, 34,200 ft³/s.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	607	e330	185	e180	e100	e160	113	157	112	280	115	76
2	554	e330	188	e150	e110	e170	110	152	144	474	113	73
3	535	e310	181	e140	e100	328	108	146	123	264	113	70
4	513	e310	179	e150	e105	1340	106	145	112	262	182	169
5	483	296	176	e160	e160	930	105	147	175	243	145	198
6	475	290	163	e150	e150	431	e100	154	316	229	122	102
7	471	288	159	e130	e120	247	e97	166	194	222	113	84
8	475	278	158	e120	e115	192	e98	158	165	209	127	76
9	492	275	165	e130	e100	169	e96	155	155	192	102	73
10	446	267	164	e150	e110	166	e96	149	152	185	106	71
11	432	288	150	e140	e120	160	e92	146	219	184	101	67
12	422	297	163	e150	e115	160	e130	140	308	214	96	66
13	397	315	174	e140	e120	154	e150	136	640	410	105	65
14	389	282	183	e120	e160	152	103	138	264	228	93	63
15	715	276	186	e115	e250	149	135	134	211	184	89	63
16	694	277	177	e120	e400	142	121	131	185	186	85	62
17	526	274	181	e115	e700	143	101	128	175	165	81	58
18	481	260	182	e105	e1200	147	96	120	885	157	81	56
19	471	249	177	e110	911	144	91	114	491	151	81	57
20	442	229	173	e105	287	139	86	112	324	144	75	58
21	439	222	152	e120	197	140	206	110	309	138	74	56
22	425	215	e145	e160	189	137	174	110	289	135	75	68
23	425	206	e150	e220	150	138	146	110	1520	127	72	78
24	e410	201	e160	e210	177	130	134	108	568	128	73	72
25	e400	e130	e140	e180	175	126	131	111	402	127	73	79
26	e390	e80	e130	e140	e150	126	125	115	344	125	107	89
27	e380	e90	e82	e120	e140	126	114	111	302	115	83	82
28	e380	e120	e86	e125	e150	123	122	108	275	99	72	71
29	e360	e150	e110	e110	---	118	136	127	256	104	73	66
30	e340	e170	e140	e92	---	115	140	127	244	105	95	63
31	e330	---	e180	e93	---	116	---	115	---	102	95	---
TOTAL	14299	7305	4939	4250	6761	7018	3562	4080	9859	5888	3017	2331
MEAN	461	243	159	137	241	226	119	132	329	190	97.3	77.7
MAX	715	330	188	220	1200	1340	206	166	1520	474	182	198
MIN	330	80	82	92	100	115	86	108	112	99	72	56
AC-FT	28360	14490	9800	8430	13410	13920	7070	8090	19560	11680	5980	4620
CFSM	1.06	.56	.37	.31	.55	.52	.27	.30	.75	.44	.22	.18
IN.	1.22	.62	.42	.36	.58	.60	.30	.35	.84	.50	.26	.20

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1961 - 1994, BY WATER YEAR (WY)

MEAN	150	136	110	92.3	200	438	345	355	403	304	165	231
MAX	1069	757	529	529	812	1378	1138	1071	1377	2747	1394	1855
(WY)	1987	1973	1993	1973	1971	1965	1973	1973	1991	1993	1993	1972
MIN	21.0	20.3	10.6	7.68	18.7	28.4	27.9	15.0	23.4	15.6	13.4	14.8
(WY)	1967	1969	1964	1971	1968	1968	1981	1967	1977	1968	1968	1971

SUMMARY STATISTICS	FOR 1993 CALENDAR YEAR	FOR 1994 WATER YEAR	WATER YEARS 1961 - 1994
ANNUAL TOTAL	294540	73309	
ANNUAL MEAN	807	201	244
HIGHEST ANNUAL MEAN			842
LOWEST ANNUAL MEAN			23.7
HIGHEST DAILY MEAN	10700	1520	28400
LOWEST DAILY MEAN	80	56	2.5
ANNUAL SEVEN-DAY MINIMUM	121	59	7.0
INSTANTANEOUS PEAK FLOW		2640	
INSTANTANEOUS PEAK STAGE		a8.98	22.81
INSTANTANEOUS LOW FLOW		54	
ANNUAL RUNOFF (AC-FT)	584200	145400	176800
ANNUAL RUNOFF (CFSM)	1.85	.46	.56
ANNUAL RUNOFF (INCHES)	25.13	6.25	7.61
10 PERCENT EXCEEDS	1630	401	550
50 PERCENT EXCEEDS	500	147	103
90 PERCENT EXCEEDS	180	82	22

e Estimated.

a Ice affected.

b Also Sept. 19, 20, and 21.

06809500 EAST NISHNABOTNA RIVER AT RED OAK, IA

LOCATION.--Lat 41°00'31", long 95°14'29", in NW1/4 SE1/4 sec.29, T.72 N., R.38 W., Montgomery County, Hydrologic Unit 10240003, on upstream side of Coolbaugh Street and 200 ft left of left end of Coolbaugh Street bridge in Red Oak, 0.2 mi upstream from Red Oak Creek, 38.0 mi upstream from confluence with West Nishnabotna River, and at mile 53.6 upstream from mouth of Nishnabotna River.

DRAINAGE AREA.--894 mi².

PERIOD OF RECORD.--May 1918 to July 1925, May 1936 to current year. Monthly discharge only for some periods, published in WSP 1310.

REVISED RECORDS.--WSP 1240: 1921, 1922-23 (M), 1924, 1942 (M), 1944 (M), 1946. WSP 1440: Drainage area. WSP 1710: 1957.

GAGE.--Water-stage encoder. Datum of gage is 1,005.45 ft above sea level. Prior to July 5, 1925, nonrecording gage at present site at datum 4.60 ft higher. May 29, 1936, to Nov. 13, 1952, nonrecording gage with supplementary water-stage recorder in operation above 3.2 ft gage height. July 30, 1939, to Nov. 13, 1952, and Nov. 14, 1952, to June 13, 1966, water-stage recorder, all at site 0.5 mi upstream at datum 5.00 ft higher. June 14, 1966, to Sept. 30, 1969, at present site at datum 5.00 ft higher.

REMARKS.--Estimated daily discharges: Nov. 25 to Dec. 1, Dec. 21 to Feb. 19, Feb. 23 to Mar. 4, and Mar. 12-15. Records good except those for estimated daily discharges, which are poor. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data. U.S. National Weather Service Limited Automatic Remote Collector at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1300	657	e500	e500	e290	e480	222	354	243	563	232	189
2	1190	655	517	e420	e310	e540	223	364	628	1120	264	157
3	1120	647	507	e400	e280	e600	222	341	329	814	264	151
4	1070	643	498	e430	e300	e1100	217	325	278	1370	303	206
5	1000	635	493	e450	e450	2140	221	318	477	767	371	404
6	948	604	485	e425	e430	1130	215	323	593	605	293	344
7	921	594	468	e370	e330	699	211	342	522	552	250	224
8	912	594	458	e340	e315	473	212	347	401	511	262	187
9	992	588	455	e370	e280	394	216	330	366	472	296	174
10	902	581	464	e420	e310	362	211	317	368	434	240	163
11	842	579	445	e400	e330	347	205	307	542	415	247	155
12	818	590	426	e420	e300	e330	232	298	990	408	232	149
13	786	630	468	e390	e310	e320	267	285	1380	606	238	144
14	778	624	503	e330	e340	e315	270	284	733	664	238	140
15	1520	579	507	e320	e470	e308	295	284	524	460	212	136
16	1690	566	499	e340	e640	299	340	272	455	424	197	137
17	1220	558	482	e315	e840	289	288	255	425	413	188	133
18	1080	547	488	e300	e1200	292	259	240	1060	379	183	129
19	1050	548	483	e310	e1500	285	250	227	1450	359	180	125
20	981	534	472	e300	960	281	235	221	747	342	171	124
21	928	517	e440	e340	526	287	244	218	657	327	159	124
22	903	516	e410	e420	446	284	477	213	701	315	153	134
23	857	513	e425	e520	e400	277	380	213	6790	307	151	163
24	837	511	e450	e480	e560	281	344	209	3240	303	146	178
25	818	e340	e400	e450	e540	264	330	209	1410	306	143	169
26	781	e230	e380	e390	e420	254	318	211	1080	299	167	190
27	745	e250	e230	e340	e440	258	298	210	871	293	259	197
28	726	e350	e250	e350	e460	244	287	200	758	273	178	167
29	721	e420	e320	e310	---	237	306	224	671	251	153	150
30	680	e480	e400	e260	---	227	334	247	603	247	164	143
31	662	---	e510	e270	---	223	---	241	---	240	202	---
TOTAL	29778	16080	13833	11680	13977	13820	8129	8429	29292	14839	6736	5186
MEAN	961	536	446	377	499	446	271	272	976	479	217	173
MAX	1690	657	517	520	1500	2140	477	364	6790	1370	371	404
MIN	662	230	230	260	280	223	205	200	243	240	143	124
AC-FT	59060	31890	27440	23170	27720	27410	16120	16720	58100	29430	13360	10290
CFSM	1.07	.60	.50	.42	.56	.50	.30	.30	1.09	.54	.24	.19
IN.	1.24	.67	.58	.49	.58	.58	.34	.35	1.22	.62	.28	.22

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1919 - 1994, BY WATER YEAR (WY)

	MEAN	226	208	166	156	354	687	536	646	812	527	352	376
MAX	1816	1335	1038	1078	1438	2596	2194	2440	4891	6971	2821	3074	
(WY)	1987	1973	1993	1973	1973	1965	1973	1973	1947	1993	1993	1972	
MIN	16.5	19.9	14.6	12.3	17.2	32.3	30.4	35.2	40.5	24.5	17.0	14.9	
(WY)	1938	1940	1938	1940	1940	1938	1956	1939	1968	1936	1936	1937	

SUMMARY STATISTICS

FOR 1993 CALENDAR YEAR

FOR 1994 WATER YEAR

WATER YEARS 1919 - 1994

ANNUAL TOTAL	655147	171779		
ANNUAL MEAN	1795	471	424	
HIGHEST ANNUAL MEAN			1842	1993
LOWEST ANNUAL MEAN			54.9	1968
HIGHEST DAILY MEAN	19700	Aug 30	6790	Jun 23
LOWEST DAILY MEAN	170	Feb 17	124	Sep 20
ANNUAL SEVEN-DAY MINIMUM	303	Feb 21	129	Sep 16
INSTANTANEOUS PEAK FLOW			9160	Jun 23
INSTANTANEOUS PEAK STAGE			15.63	Jun 23
INSTANTANEOUS LOW FLOW			122	Sep 21
ANNUAL RUNOFF (AC-FT)	1299000		340700	
ANNUAL RUNOFF (CFSM)	2.01		.53	
ANNUAL RUNOFF (INCHES)	27.26		7.15	
10 PERCENT EXCEEDS	4060		848	901
50 PERCENT EXCEEDS	950		347	173
90 PERCENT EXCEEDS	442		189	40

e Estimated.

06810000 NISHNABOTNA RIVER ABOVE HAMBURG, IA

LOCATION.--Lat 40°37'57", long 95°37'32", in SW1/4 SE1/4 sec.11, T.67 N., R.42 W., Fremont County, Hydrologic Unit 10240004, on left bank 1.7 mi downstream from confluence of East Nishnabotna and West Nishnabotna Rivers, 2 mi northeast of Hamburg, and at mile 13.8.

DRAINAGE AREA.--2,806 mi².

PERIOD OF RECORD.--March 1922 to September 1923, October 1928 to current year. Monthly discharge only for some periods published in WSP 1310.

REVISED RECORDS.--WSP 1240: 1923, 1929-37, 1938-40 (M), 1943 (M). WSP 1440: Drainage area. WDR IA-74-1: 1973.

GAGE.--Water-stage encoder. Datum of gage is 894.17 ft above sea level. See WSP 1730 for history of changes prior to Nov. 16, 1950.

REMARKS.--Estimated daily discharges: Nov. 25-29, Dec. 23 to Feb. 19, Feb. 24 to Mar. 3, June 24, July 26-27, and Sept. 17-20, 24-28. Records good except those for estimated daily discharges, which are poor. U.S. Army Corps of Engineers rain-gage and satellite data collection platform at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3850	2220	1680	e1430	e1110	e1400	1020	1110	857	1980	1020	691
2	3620	2240	1680	e1280	e1150	e1500	1010	1090	4960	2430	1010	636
3	3430	2220	1630	e1190	e1090	e1600	997	1080	2770	2600	989	580
4	3320	2210	1580	e1250	e1110	1940	984	1030	1590	3220	1090	970
5	3200	2170	1550	e1360	e1410	4520	964	997	2530	3430	1080	1080
6	3100	2080	1520	e1280	e1350	3880	960	1020	3140	2300	1170	1090
7	3030	2030	1490	e1180	e1140	2360	942	1030	2470	2200	994	966
8	3070	2030	1480	e1080	e1130	1740	940	1030	1960	1990	1130	747
9	3770	2020	1450	e1160	e980	1370	937	1030	1690	1840	1240	650
10	3230	2010	1430	e1260	e1040	1240	933	989	1570	1740	1030	602
11	3020	1990	1400	e1210	e1100	1180	930	951	2720	1640	948	570
12	2930	2020	1360	e1280	e1020	1150	1090	917	3150	1590	928	548
13	2840	2140	1410	e1240	e1030	1130	1150	887	5330	1720	887	530
14	2780	2080	1530	e1110	e1120	1140	1100	884	3700	2480	851	514
15	3680	2030	1510	e1070	e1320	1120	1060	899	2440	2090	839	511
16	4380	1940	1500	e1160	e1640	1100	1050	889	2070	1770	762	495
17	3900	1910	1490	e1100	e1900	1090	1070	858	1900	1690	727	e485
18	3460	1890	1450	e1060	e2200	1080	988	821	1890	1560	703	e485
19	3400	1860	1440	e1100	e3100	1080	925	794	2640	1460	687	e475
20	3220	1820	1410	e1080	3190	1090	896	775	2690	1390	660	469
21	3060	1780	1350	e1170	1800	1080	884	757	2270	1330	626	449
22	2930	1750	1250	e1420	1270	1080	934	747	2110	1270	604	481
23	2860	1740	e1250	e1600	1040	1080	1190	741	12300	1240	589	595
24	2780	1710	e1350	e1500	e1300	1070	1090	740	e11200	1220	570	e720
25	2720	e1250	e1250	e1400	e1700	1060	1030	722	4050	1210	564	e740
26	2620	e920	e1150	e1300	e1400	1060	986	730	3150	e1280	637	e760
27	2500	e1000	e760	e1200	e1200	1060	923	727	2700	e1300	684	e720
28	2460	e1250	e840	e1350	e1300	1060	940	717	2440	1110	864	e660
29	2400	e1600	e1000	e1210	---	1060	990	890	2240	1030	730	583
30	2320	1770	e1250	e1090	---	1060	1020	949	2090	995	630	531
31	2250	---	e1500	e1080	---	1030	---	853	---	975	655	---
TOTAL	96130	55680	42940	38200	40140	44410	29933	27654	96617	54080	25898	19333
MEAN	3101	1856	1385	1232	1434	1433	998	892	3221	1745	835	644
MAX	4380	2240	1680	1600	3190	4520	1190	1110	12300	3430	1240	1090
MIN	2250	920	760	1060	980	1030	884	717	857	975	564	449
AC-FT	190700	110400	85170	75770	79620	88090	59370	54850	191600	107300	51370	38350
CFSM	1.11	.66	.49	.44	.51	.51	.36	.32	1.15	.62	.30	.23
IN.	1.27	.74	.57	.51	.53	.59	.40	.37	1.28	.72	.34	.26

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1922 - 1994, BY WATER YEAR (WY)

	MEAN	670	650	541	552	1005	1853	1401	1705	2349	1567	1046	1021
MAX	5004	3083	2557	3585	4720	7229	5866	6061	16430	17780	6266	7385	
(WY)	1987	1973	1973	1973	1973	1979	1973	1973	1947	1993	1993	1993	
MIN	39.5	42.9	27.1	21.3	30.3	115	89.7	68.2	151	52.8	16.8	44.1	
(WY)	1938	1938	1938	1940	1940	1931	1956	1934	1956	1936	1934	1937	

SUMMARY STATISTICS	FOR 1993 CALENDAR YEAR	FOR 1994 WATER YEAR	WATER YEARS 1922 - 1994
ANNUAL TOTAL	1850940	571015	
ANNUAL MEAN	5071	1564	1199
HIGHEST ANNUAL MEAN			5062
LOWEST ANNUAL MEAN			170
HIGHEST DAILY MEAN	37000	Jul 25	49600
LOWEST DAILY MEAN	450	Feb 17	4.5
ANNUAL SEVEN-DAY MINIMUM	880	Feb 15	9.9
INSTANTANEOUS PEAK FLOW			22000
INSTANTANEOUS PEAK STAGE			25.13
INSTANTANEOUS LOW FLOW			441
ANNUAL RUNOFF (AC-FT)	3671000	1133000	868700
ANNUAL RUNOFF (CFSM)	1.81	.56	.43
ANNUAL RUNOFF (INCHES)	24.54	7.57	5.81
10 PERCENT EXCEEDS	11200	2850	2700
50 PERCENT EXCEEDS	3200	1210	550
90 PERCENT EXCEEDS	1440	721	113

e Estimated.

06813500 MISSOURI RIVER AT RULO, NE

LOCATION.--Lat 40°03'13", long 95°25'19", in NW1/4 NW1/4 sec.17, T.1 N., R.18 E., Richardson County, Hydrologic Unit 10240005, on right bank at downstream side of bridge on U.S. Highway 159 at Rulo, 3.2 mi upstream from Big Nemaha River, and at mile 498.0.

DRAINAGE AREA.--414,900 mi², approximately. The 3,959 mi² in Great Divide basin are not included.

PERIOD OF RECORD.--October 1949 to current year in reports of U.S. Geological Survey. Gage-height record collected at site 80 ft upstream January 1886 to December 1899 published in reports of Missouri River Commission; September 1929 to September 1950 in files of Kansas City office of U.S. Army Corps of Engineers.

GAGE.--Water-stage encoder. Datum of gage is 837.23 ft above sea level. Oct. 1949 to Sept. 12, 1950, nonrecording gage at site 80 ft upstream and Sept. 13, 1950 to Apr. 19, 1983, recording gage on downstream end of middle pier, all at same datum.

REMARKS.--Estimated daily discharges: Aug. 26-28 and Sept. 12-16, 18-21. Records good except those for estimated daily discharges, which are poor. Flow regulated by upstream main-stem reservoirs. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data. U.S. Army Corps of Engineers satellite data collection platform at station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 358,000 ft³/s Apr. 22, 1952, gage height, 25.60 ft; minimum daily discharge, 4,420 ft³/s Jan. 13, 1957; minimum gage height, -0.19 ft Dec. 25, 1990, result of freezeup.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in 1881 reached a stage of 22.9 ft, from floodmark, discharge not determined.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	47100	43900	32300	31200	30800	38000	45800	47000	46200	61500	42700	40200
2	46000	43900	33700	32100	29900	40500	45500	47200	57500	61100	42900	40400
3	45500	43600	35700	33800	30000	42300	44900	46500	58700	62600	43800	39800
4	45300	43200	38600	34700	30300	47200	44800	46700	49200	62900	44400	41000
5	44900	43100	41000	33200	30500	65600	44500	50600	50600	68600	44800	45300
6	44700	43400	41000	32100	30700	79700	44900	56000	60900	64500	45000	44700
7	44800	43700	40600	28600	30500	90400	45100	58200	56300	66300	43700	44500
8	44700	43500	39900	28000	30200	81500	44800	56600	50600	78200	43200	43500
9	54100	43000	39000	27200	29300	75200	46000	55200	49300	72000	45300	42900
10	51400	42600	38000	24900	29000	70700	46700	53600	49700	64500	45900	41800
11	49800	42600	37900	24200	28500	70000	46300	52300	50700	59500	43300	40700
12	48600	43300	38400	26400	28400	67600	46500	52600	58800	57800	42300	e39500
13	47900	44200	38000	29000	29000	62800	47900	53100	57400	56000	42400	e38600
14	46400	44500	37900	30500	29800	59900	48300	52300	59400	58100	42200	e37900
15	46500	45300	38500	30800	29800	57900	49100	52400	56000	69000	43100	e38500
16	48900	45600	37700	30200	29900	54600	50600	51100	55500	66700	43400	e38700
17	48400	45400	37300	27300	32000	50700	49900	50000	54500	65400	42400	38100
18	47500	45300	37800	24800	35900	50500	51100	48900	55000	62200	41900	e37900
19	47500	44500	38600	26200	42600	50800	49200	48400	61300	60000	41600	e37900
20	48100	43800	38400	27100	70300	50000	48000	48600	63700	56900	41100	e38400
21	48000	43400	38400	25800	75600	49000	47800	48000	58000	55300	41100	e38600
22	46000	43300	37600	28300	70000	48800	47600	47700	58000	52500	41300	38600
23	45200	43100	36900	30500	64000	49100	46000	47600	71300	50400	41600	40000
24	45100	42400	34900	30600	57100	48400	45500	47400	88500	48100	41400	41700
25	45300	41600	33300	31100	50200	47900	45200	47300	77100	46400	40900	44100
26	44900	38900	32200	32500	43900	47300	44200	46700	72300	45300	e41700	44400
27	44500	34600	32500	33100	40300	46800	43800	46800	69700	44200	e41800	42100
28	45100	31900	31800	32600	37600	47400	44100	46600	69900	43900	e42200	41200
29	45000	30800	32200	32100	---	46900	44700	46600	66600	43300	42000	41100
30	45500	31200	31800	31600	---	46900	45200	47300	62700	43000	41300	40600
31	44100	---	31600	31300	---	46000	---	46500	---	43100	40700	---
TOTAL	1446800	1259600	1133500	921800	1096100	1730400	1394000	1545800	1795400	1789300	1321400	1222700
MEAN	46670	41990	36560	29740	39150	55820	46470	49860	59850	57720	42630	40760
MAX	54100	45600	41000	34700	75600	90400	51100	58200	88500	78200	45900	45300
MIN	44100	30800	31600	24200	28400	38000	43800	46500	46200	43000	40700	37900
AC-FT	2870000	2498000	2248000	1828000	2174000	3432000	2765000	3066000	3561000	3549000	2621000	2425000
CFSM	.11	.10	.09	.07	.09	.13	.11	.12	.14	.14	.10	.10
IN.	.13	.11	.10	.08	.10	.16	.12	.14	.16	.16	.12	.11

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1958 - 1994, BY WATER YEAR (WY)

	MEAN	MAX	(WY)	MIN	(WY)
1958	43970	77770	1987	25580	1962
1959	39930	69430	1976	17000	1962
1960	26510	55240	1987	11330	1964
1961	22280	42280	1973	12430	1964
1962	28060	52560	1983	14530	1964
1963	41750	79590	1979	19380	1964
1964	51460	102900	1984	31960	1990
1965	50330	94370	1984	34040	1958
1966	54420	130600	1984	34830	1958
1967	50470	164800	1993	33860	1963
1968	44100	67800	1975	32790	1991
1969	44790	69780	1975	34140	1991

SUMMARY STATISTICS	FOR 1993 CALENDAR YEAR	FOR 1994 WATER YEAR	WATER YEARS 1958 - 1994a
ANNUAL TOTAL	22626100	16656800	
ANNUAL MEAN	61990	45640	41540
HIGHEST ANNUAL MEAN			65930
LOWEST ANNUAL MEAN			29670
HIGHEST DAILY MEAN	289000	Jul 24	289000
LOWEST DAILY MEAN	17600	Jan 4	5200
ANNUAL SEVEN-DAY MINIMUM	19700	Jan 1	5860
INSTANTANEOUS PEAK FLOW			307000
INSTANTANEOUS PEAK STAGE			25.37
ANNUAL RUNOFF (AC-FT)	44880000	33040000	30090000
ANNUAL RUNOFF (CFSM)	.15	.11	.10
ANNUAL RUNOFF (INCHES)	2.03	1.49	1.36
10 PERCENT EXCEEDS	108000	1200	63100
50 PERCENT EXCEEDS	52000	4700	38900
90 PERCENT EXCEEDS	26000	1200	19100

e Estimated.

a Post-regulation period.

06817000 NODAWAY RIVER AT CLARINDA, IA

LOCATION.--Lat 40°44'19", long 95°00'47", in SW1/4 NE1/4 sec.32, T.69 N., R.36 W., Page County, Hydrologic Unit 10240009, near left abutment on downstream side of bridge on State Highway 2 (city route), 0.5 mi downstream from North Branch, 1.2 mi east of city square of Clarinda, and 7.5 mi upstream from East Nodaway River.

DRAINAGE AREA.--762 mi².

PERIOD OF RECORD.--May 1918 to July 1925, May 1936 to current year. Monthly discharge only for some periods, published in WSP 1310. REVISED RECORDS.--WSP 1240: 1918-20 (M), 1921, 1922-25 (M), 1936-38, 1942, 1943-45 (M), 1948. WSP 1440: Drainage area. WSP 1710: 1958, 1959 (P).

GAGE.--Water-stage recorder. Datum of gage is 955.36 ft above sea level. Prior to July 5, 1925, and May 28, 1936, to Mar. 26, 1957 nonrecording gage at same site, and prior to Oct. 1, 1987, at datum 5.00 ft. higher.

REMARKS.--Estimated daily discharges: Nov. 25-30, Dec. 21 to Feb. 19, Feb. 23 to Mar. 2, May 25-28, 31, June 1, 23-24, and Sept. 16-20. Records good except those for estimated daily discharges, which are poor. Clarinda municipal water supply is taken from Nodaway River, 500 ft upstream from station. Average daily pumpage was 1.29 ft³/s. U.S. National Weather Service Limited Automatic Remote Collector (LARC) at station.

COOPERATION.--Average pumpage provided by City of Clarinda water works.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in August 1903 reached a stage of 25.4 ft, from floodmarks, discharge not determined.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1010	422	309	e190	e120	e170	153	228	e112	799	174	99
2	889	415	311	e170	e130	e180	153	250	969	1430	183	81
3	854	406	303	e150	e120	402	150	227	680	1260	174	77
4	813	397	287	e160	e130	1890	149	211	431	6550	167	146
5	744	381	277	e180	e160	1610	140	201	485	4790	181	222
6	696	359	264	e170	e150	806	137	221	920	1500	160	198
7	668	349	255	e150	e130	513	138	234	583	1180	146	112
8	644	349	245	e130	e125	364	142	233	473	1020	148	90
9	738	345	250	e140	e110	304	137	212	419	845	159	84
10	739	338	253	e160	e120	275	135	196	387	771	151	79
11	630	338	236	e145	e140	263	133	183	474	722	147	75
12	600	345	226	e160	e125	251	159	171	1100	1010	144	73
13	576	372	267	e150	e130	247	182	163	1530	853	135	67
14	551	369	300	e130	e150	236	182	161	679	819	129	63
15	1470	336	297	e120	e170	231	198	161	538	590	117	61
16	1650	332	275	e130	e220	225	460	157	465	514	109	e59
17	958	325	262	e125	e350	214	248	143	428	521	109	e58
18	817	318	260	e110	e640	208	204	133	3540	436	105	e59
19	826	311	262	e120	e580	207	184	129	1850	358	97	e59
20	771	303	252	e115	514	201	171	124	1190	312	89	60
21	697	293	e220	e130	292	201	169	118	952	260	87	59
22	637	294	e200	e160	222	200	474	115	1010	240	86	65
23	560	288	e220	e220	e140	192	336	115	e5800	229	84	68
24	534	284	e230	e210	e190	186	280	114	e3690	222	84	69
25	502	e190	e200	e190	e180	178	252	e110	1700	222	77	77
26	486	e140	e150	e150	e140	171	227	e112	1470	236	80	82
27	470	e150	e110	e130	e150	172	204	e108	1190	247	107	77
28	480	e190	e120	e150	e160	169	201	e100	1040	196	110	73
29	470	e240	e130	e120	---	167	213	117	930	182	87	65
30	443	e290	e160	e110	---	160	218	115	853	174	87	64
31	427	---	e200	e110	---	155	---	e110	---	168	104	---
TOTAL	22350	9469	7331	4585	5788	10748	6129	4972	35888	28656	3817	2521
MEAN	721	316	236	148	207	347	204	160	1196	924	123	84.0
MAX	1650	422	311	220	640	1890	474	250	5800	6550	183	222
MIN	427	140	110	110	110	155	133	100	112	168	77	58
AC-FT	44330	18780	14540	9090	11480	21320	12160	9860	71180	56840	7570	5000
CFSM	.95	.41	.31	.19	.27	.45	.27	.21	1.57	1.21	.16	.11
IN.	1.09	.46	.36	.22	.28	.52	.30	.24	1.75	1.40	.19	.12

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1919 - 1994, BY WATER YEAR (WY)

	MEAN	181	172	140	134	311	576	543	625	732	437	240	339
MAX	1658	1602	1090	853	1857	2456	2449	2321	4779	6778	1953	3019	
(WY)	1974	1973	1993	1974	1973	1979	1973	1982	1947	1993	1987	1972	
MIN	7.52	8.27	2.10	6.00	11.3	14.0	14.4	10.3	20.0	17.3	9.81	6.83	
(WY)	1938	1938	1924	1924	1940	1938	1956	1939	1968	1954	1936	1937	

SUMMARY STATISTICS

FOR 1993 CALENDAR YEAR

FOR 1994 WATER YEAR

WATER YEARS 1919 - 1994

ANNUAL TOTAL	548177	142254	
ANNUAL MEAN	1502	390	
HIGHEST ANNUAL MEAN			378
LOWEST ANNUAL MEAN			1577
HIGHEST DAILY MEAN	19100	6550	25500
LOWEST DAILY MEAN	110	58	1.0
ANNUAL SEVEN-DAY MINIMUM	153	59	1.3
INSTANTANEOUS PEAK FLOW		23900	311000
INSTANTANEOUS PEAK STAGE		16.20	25.30
INSTANTANEOUS LOW FLOW		58	
ANNUAL RUNOFF (AC-FT)	1087000	282200	274000
ANNUAL RUNOFF (CFSM)	1.97	.51	.50
ANNUAL RUNOFF (INCHES)	26.76	6.94	6.74
10 PERCENT EXCEEDS	3450	822	810
50 PERCENT EXCEEDS	693	201	100
90 PERCENT EXCEEDS	240	100	19

e Estimated.

06819185 EAST FORK ONE HUNDRED AND TWO RIVER AT BEDFORD, IA

LOCATION.--Lat 40°39'38", long 94°42'59", in NE1/4 sec.35, T.68 N., R.34 W., Taylor County, Hydrologic Unit 10240013, on left bank at downstream side of bridge of county highway N44, 0.1 mi south of Bedford, 0.4 mi upstream from concrete stabilization dam, and 3.0 mi upstream from Daugherty creek.

DRAINAGE AREA.--85.4 mi².

PERIOD OF RECORD.--October 1983 to current year. September 1959 to September 1983, at site 2 mi upstream published as "near Bedford" (station 06819190) not equivalent because of difference in drainage area.

GAGE.--Water-stage encoder. Datum of gage is 1,069.16 ft above sea level.

REMARKS.--Estimated daily discharges: Nov. 23-26, Dec. 19-23, 29, Jan. 2-13, Jan. 27 to Feb. 1, Feb. 14-17, Feb. 23 to Mar. 1, and Aug. 8-15, 25-31. Records fair except those for estimated daily discharges, which are poor. Slight regulation at low flow by low dam used for water supply in Bedford. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data. U.S. National Weather Service Limited Automatic Remote Collector at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	46	13	13	13	e5.0	e9.6	9.7	28	15	39	6.2	1.2
2	39	14	15	e9.0	5.4	19	7.7	18	282	301	4.1	1.2
3	36	13	14	e6.6	5.4	364	6.9	16	84	74	4.6	1.4
4	34	14	14	e7.6	5.3	513	7.2	13	47	120	4.6	51
5	27	13	13	e8.5	5.5	189	7.0	11	203	62	2.6	11
6	26	10	12	e7.4	6.0	107	5.8	16	106	38	1.7	2.9
7	25	10	11	e6.6	4.9	89	5.5	31	61	30	1.6	1.9
8	31	12	10	e6.0	5.1	42	5.5	25	44	22	e1.5	1.5
9	51	10	11	e5.4	4.2	25	6.4	18	34	15	e1.4	1.2
10	29	13	12	e7.0	3.5	20	6.9	12	36	11	e1.3	1.2
11	25	14	8.7	e6.6	3.8	14	6.0	11	135	12	e6.0	1.2
12	24	24	9.0	e7.2	4.2	16	25	9.3	521	8.8	e2.5	1.2
13	20	41	44	e6.6	4.3	15	40	8.6	186	22	e2.1	1.2
14	21	20	126	5.5	e4.7	14	25	8.4	99	16	e1.8	1.2
15	74	19	87	4.3	e5.6	16	19	9.9	30	10	e1.6	1.4
16	43	17	48	3.2	e12	11	9.9	8.4	25	10	1.4	1.2
17	31	17	44	2.7	e25	13	7.5	5.7	16	9.1	1.2	1.2
18	31	14	42	2.0	43	13	8.2	5.1	776	5.9	1.2	1.2
19	57	16	e27	1.8	97	10	6.0	4.6	135	5.1	1.2	1.2
20	40	13	e18	1.9	129	12	5.3	4.2	64	11	1.2	1.2
21	32	13	e11	1.9	31	12	7.6	4.7	40	7.3	1.3	1.2
22	25	13	e7.4	2.3	18	11	10	5.0	24	4.4	1.3	1.4
23	22	e13	e10	3.4	e9.0	14	8.6	6.3	453	2.8	1.2	1.3
24	20	e12	13	5.1	e10	12	14	9.4	92	21	1.3	1.2
25	17	e10	15	13	e12	9.1	14	7.1	52	9.2	e1.2	1.5
26	18	e8.8	14	12	e11	8.9	9.2	5.3	39	9.7	e10	1.6
27	16	9.3	12	e10	e10	9.3	5.8	4.7	28	4.5	e1.7	2.3
28	18	10	8.7	e11	e10	7.8	7.6	4.8	24	2.4	e2.0	1.5
29	16	11	e6.4	e9.6	---	5.9	12	6.5	18	2.2	e1.5	1.2
30	13	12	7.7	e6.0	---	7.9	16	6.9	13	2.2	e60	1.2
31	14	---	9.5	e4.5	---	8.5	---	7.0	---	1.5	e1.5	---
TOTAL	921	429.1	693.4	197.7	489.9	1618.0	325.3	330.9	3682	889.1	132.8	101.1
MEAN	29.7	14.3	22.4	6.38	17.5	52.2	10.8	10.7	123	28.7	4.28	3.37
MAX	74	41	126	13	129	513	40	31	776	301	60	51
MIN	13	8.8	6.4	1.8	3.5	5.9	5.3	4.2	13	1.5	1.2	1.2
AC-FT	1830	851	1380	392	972	3210	645	656	7300	1760	263	201
CFSM	.35	.17	.26	.07	.20	.61	.13	.12	1.44	.34	.05	.04
IN.	.40	.19	.30	.09	.21	.70	.14	.14	1.60	.39	.06	.04

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1984 - 1994, BY WATER YEAR (WY)

	MEAN	34.2	35.9	35.1	10.6	30.6	74.9	92.9	107	85.3	158	24.7	78.5
MAX	159	202	181	21.1	72.3	218	289	309	222	889	173	260	
(WY)	1987	1993	1993	1988	1993	1993	1984	1984	1993	1993	1987	1993	
MIN	.26	.78	.47	.50	.17	2.13	.82	.67	1.90	1.97	.63	.31	
(WY)	1992	1991	1989	1991	1989	1989	1989	1989	1988	1988	1991	1991	

SUMMARY STATISTICS FOR 1993 CALENDAR YEAR FOR 1994 WATER YEAR WATER YEARS 1984 - 1994

ANNUAL TOTAL	62435.2	9810.3	
ANNUAL MEAN	171	26.9	64.1
HIGHEST ANNUAL MEAN			200
LOWEST ANNUAL MEAN			12.0
HIGHEST DAILY MEAN	7600	776	7600
LOWEST DAILY MEAN	4.5	1.2	.00
ANNUAL SEVEN-DAY MINIMUM	8.7	1.2	.00
INSTANTANEOUS PEAK FLOW		1730	
INSTANTANEOUS PEAK STAGE		15.80	
INSTANTANEOUS LOW FLOW		1.2	
ANNUAL RUNOFF (AC-FT)	123800	19460	46460
ANNUAL RUNOFF (CFSM)	2.00	.31	.75
ANNUAL RUNOFF (INCHES)	27.20	4.27	10.20
10 PERCENT EXCEEDS	325	45	99
50 PERCENT EXCEEDS	40	10	8.3
90 PERCENT EXCEEDS	11	1.5	.51

e Estimated.

a Many days.

06897950 ELK CREEK NEAR DECATUR CITY, IA
(Hydrologic bench-mark station)

LOCATION.--Lat 40°43'18", long 93°56'12", near SE corner sec.34, T.69 N., R.27 W., Decatur County, Hydrologic Unit 10280102, at right downstream corner of bridge on county highway, 1,000 ft downstream from West Elk Creek, 5.2 mi upstream from mouth, and 5.7 mi southwest of Decatur City.

DRAINAGE AREA.--52.5 mi².

WATER DISCHARGE RECORDS

PERIOD OF RECORD.--October 1967 to current year.

GAGE.--Water-stage recorder. Datum of gage is 924.70 ft above sea level. Oct. 1, 1967 to Sept. 30, 1974, at datum 10.00 ft higher.

REMARKS.--Estimated daily discharges: Nov. 24-30, and Dec. 21 to Mar. 11. Records good except those for estimated daily discharges, which are poor.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 14, 1967, reached a stage of 18.35 ft, datum in use prior to Oct. 1, 1974, discharge, 17,800 ft³/s, estimated from rating curve extended above 5,300 ft³/s on basis of step-backwater computation. Flood of Aug. 6, 1959, reached a stage between 20.5 and 22.5 ft, datum in use prior to Oct. 1, 1974, from information by assistant county engineer, discharge not determined.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.7	5.8	6.1	e4.1	e2.3	e6.0	8.2	6.8	37	6.8	.19	.32
2	7.3	6.0	6.7	e3.5	e2.5	e10	7.6	4.6	1010	11	.20	.07
3	7.0	5.8	6.6	e3.1	e2.3	e25	6.6	4.3	70	7.3	7.6	.04
4	7.0	5.9	6.1	e3.3	e2.6	e170	6.9	5.6	35	8.2	1.1	52
5	6.5	5.5	5.7	e3.7	e3.2	e110	6.2	7.5	58	5.4	.20	15
6	6.5	5.3	5.4	e3.5	e3.1	e60	5.6	12	38	2.6	.13	5.1
7	6.5	5.3	5.2	e3.0	e2.8	e35	5.4	18	23	2.0	.11	1.0
8	7.0	5.6	5.6	e2.8	e2.5	e27	6.7	12	19	3.2	.10	.42
9	17	5.5	5.5	e2.7	e2.2	e22	5.8	9.2	17	1.2	.10	.23
10	7.3	5.5	5.3	e3.2	e2.4	e21	5.8	6.5	16	.59	.22	.15
11	6.9	5.6	4.9	e3.0	e2.8	e19	7.4	5.5	47	.41	1.8	.10
12	6.5	13	5.4	e3.2	e2.5	20	14	4.2	326	.26	.48	.07
13	6.3	15	12	e3.0	e2.7	18	18	3.5	75	.31	.19	.07
14	6.1	7.4	40	e2.8	e3.0	18	12	12	29	.32	.09	.05
15	21	7.0	22	e2.4	e3.4	17	8.7	13	20	.26	.08	.04
16	12	6.5	11	e2.5	e4.5	15	6.5	6.8	18	.22	.07	.04
17	7.6	6.4	8.6	e2.7	e10	15	5.3	4.6	16	.20	.06	.03
18	7.4	6.0	7.7	e2.3	e45	15	5.3	3.4	12	.13	.06	.02
19	12	6.0	7.4	e2.4	e34	14	4.0	2.9	10	.11	.06	.15
20	8.3	5.6	6.6	e2.3	e25	14	3.1	2.4	9.0	3.2	.05	.09
21	7.1	5.8	e5.0	e2.6	e17	14	8.4	2.0	7.9	2.0	.04	.13
22	6.8	5.6	e4.0	e3.1	e12	12	6.7	3.1	6.2	.15	.04	.27
23	6.9	5.7	e4.5	e4.5	e5.0	12	4.4	2.8	149	.09	.04	.08
24	6.8	e4.6	e5.0	e4.2	e6.8	11	5.8	9.5	28	.23	.03	.08
25	6.5	e3.8	e4.0	e3.9	e8.0	9.2	5.3	11	19	.18	.98	3.1
26	6.0	e2.8	e3.5	e3.5	e7.4	10	4.2	4.1	15	.10	4.0	3.4
27	6.0	e3.4	e2.9	e2.7	e7.0	10	2.3	2.0	13	.07	.19	.23
28	6.0	e4.0	e2.5	e3.0	e6.4	8.7	5.0	.89	11	.06	.22	.09
29	5.7	e4.2	e2.8	e2.6	---	8.0	4.6	.80	9.0	.06	.11	.06
30	5.6	e5.5	e3.2	e2.3	---	7.8	5.3	.80	7.6	.05	80	.04
31	5.7	---	e3.7	e2.1	---	7.9	---	30	---	.05	8.7	---
TOTAL	243.0	180.1	224.9	94.0	228.4	761.6	201.1	211.79	2150.7	56.75	107.24	82.47
MEAN	7.84	6.00	7.25	3.03	8.16	24.6	6.70	6.83	71.7	1.83	3.46	2.75
MAX	21	15	40	4.5	45	170	18	30	1010	11	80	52
MIN	5.6	2.8	2.5	2.1	2.2	6.0	2.3	.80	6.2	.05	.03	.02
AC-FT	482	357	446	186	453	1510	399	420	4270	113	213	164
CFSM	.15	.11	.14	.06	.16	.47	.13	.13	1.37	.03	.07	.05
IN.	.17	.13	.16	.07	.16	.54	.14	.15	1.52	.04	.08	.06

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1968 - 1994, BY WATER YEAR (WY)

MEAN	14.1	17.1	19.4	14.2	27.8	55.6	68.4	52.1	35.6	67.4	12.7	44.2
MAX	79.5	114	131	125	175	282	253	208	152	895	118	344
(WY)	1978	1993	1993	1973	1973	1982	1973	1982	1993	1993	1987	1992
MIN	.000	.000	.000	.000	.001	.14	.015	.17	.000	.014	.001	.000
(WY)	1977	1977	1977	1977	1989	1989	1989	1977	1977	1977	1971	1976

SUMMARY STATISTICS	FOR 1993 CALENDAR YEAR	FOR 1994 WATER YEAR	WATER YEARS 1968 - 1994
ANNUAL TOTAL	43383.9	4542.05	
ANNUAL MEAN	119	12.4	35.7
HIGHEST ANNUAL MEAN			138
LOWEST ANNUAL MEAN			2.27
HIGHEST DAILY MEAN	10200	1010	10200
LOWEST DAILY MEAN	2.0	.02	.00
ANNUAL SEVEN-DAY MINIMUM	2.5	.05	.00
INSTANTANEOUS PEAK FLOW		4880	32800
INSTANTANEOUS PEAK STAGE		20.19	29.93
ANNUAL RUNOFF (AC-FT)	86050	9010	25880
ANNUAL RUNOFF (CFSM)	2.26	.24	.68
ANNUAL RUNOFF (INCHES)	30.74	3.22	9.24
10 PERCENT EXCEEDS	178	18	49
50 PERCENT EXCEEDS	17	5.4	4.4
90 PERCENT EXCEEDS	4.5	.11	.01

e Estimated.

06897950 ELK CREEK NEAR DECATUR CITY, IA--Continued
(Hydrologic bench-mark station)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1968 to current year.

REMARKS.--Miscellaneous biological data collected September 1970 to September 1972 are available in the Iowa City district office.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE PER (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	TEMPER- ATURE AIR (DEG C) (00020)	TUR- BID- ITY (NTU) (00076)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (MG/L) (00301)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML) (31673)
MAR 22...	1500	13	506	8.5	18.5	26.5	1.5	11.6	130	729	15	10
MAY 09...	1215	9.5	548	8.5	23.0	23.0	--	9.7	117	741	1600	200
JUN 14...	1250	29	432	8.1	29.5	32.0	63	7.0	96	731	3800	4600
AUG 10...	1430	0.06	556	8.3	29.5	28.5	2.8	9.3	126	739	920	120

DATE	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY WAT DIS TOT IT FIELD MG/L AS CACO3 (39086)	CAR- BONATE WATER DIS IT FIELD MG/L AS CO3 (00452)	BICAR- BONATE WATER DIS IT FIELD MG/L AS HCO3 (00453)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)
MAR 22...	260	76	16	11	8	0.3	3.2	200	1	247	58	6.4
MAY 09...	--	--	--	--	--	--	--	216	218	265	--	--
JUN 14...	200	60	12	8.7	8	0.3	4.2	171	0	207	37	5.2
AUG 10...	270	81	16	10	7	0.3	2.9	252	0	307	29	10

DATE	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00605)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)
MAR 22...	0.2	9.2	310	303	0.42	10.9	0.37	0.07	0.03	0.03	0.4
MAY 09...	--	--	--	--	--	--	--	--	--	--	--
JUN 14...	0.3	13	265	246	0.36	21.0	0.97	0.69	0.03	0.13	1.1
AUG 10...	0.2	9.5	310	311	0.42	0.05	0.57	<0.05	<0.01	0.03	0.6

DATE	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	SEDI- MENT, SUS- PENDED (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	ALUM- INUM, DIS- SOLVED (UG/L AS AL) (01106)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	COBALT, DIS- SOLVED (UG/L AS CO) (01035)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)
MAR 22...	0.020	0.010	0.050	8	0.28	75	<10	100	<3	16	6
MAY 09...	--	--	--	41	1.0	83	--	--	--	--	--
JUN 14...	0.070	0.080	0.280	227	18	100	30	120	<3	10	6
AUG 10...	<0.010	0.020	0.060	72	0.01	88	20	140	<3	19	4

GRAND RIVER BASIN

06897950 ELK CREEK NEAR DECATUR CITY, IA--Continued

DATE	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	SILVER, DIS- SOLVED (UG/L AS AG) (01075)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)	VANA- DIUM, DIS- SOLVED (UG/L AS V) (01085)	RADIUM 226, DIS- SOLVED, RADON METHOD (PCI/L) (09511)	URANIUM NATURAL DIS- SOLVED (UG/L AS U) (22703)	URANIUM NATURAL 2 SIGMA WATER, DISS, (UG/L) (75990)	RA-226 2 SIGMA WATER, DISS, (PCI/L) (76001)
MAR 22...	110	<10	3	<1	<1	260	<6	--	--	--	--
MAY 09...	--	--	--	--	--	--	--	--	--	--	--
JUN 14...	40	10	2	<2	<1	210	<6	--	--	--	--
AUG 10...	1100	20	4	<1	<1	330	<6	0.09	3.2	<1.0	0.02

06898000 THOMPSON RIVER AT DAVIS CITY, IA

LOCATION.--Lat 40°38'25", long 93°48'29", in SE1/4 SE1/4 sec.35, T.68 N., R.26 W., Decatur County, Hydrologic Unit 10280102, on right bank 15 ft downstream from bridge on U.S. Highway 69 at Davis City, 2.6 mi upstream from Dickersons Branch, and 5.2 mi upstream from Iowa-Missouri State line.

DRAINAGE AREA.--701 mi².

PERIOD OF RECORD.--May 1918 to July 1925, July 1941 to current year. Monthly discharge only for some periods, published in WSP 1310. Prior to October 1918, published as "Grand River".

REVISED RECORDS.--WSP 1240: 1918, 1920-21 (M), 1922-24, 1925 (M), 1946-47 (M). WSP 1440: Drainage area. WSP 1710: 1957.

GAGE.--Water-stage encoder. Datum of gage is 874.04 ft above sea level. May 14, 1918 to July 2, 1925, July 14, 1941 to Feb. 24, 1942, nonrecording gage, and Feb. 25, 1942 to Feb. 8, 1967, water-stage recorder at same site at datum 2.00 ft higher.

REMARKS.--Estimated daily discharges: Oct. 2-5, Nov. 27-29, and Dec. 25 to Mar. 2. Records good except those for estimated daily discharges, which are poor. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data. U.S. National Weather Service Limited Automatic Remote Collector at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Aug. 8, 1885, reached a stage of 22.8 ft, datum in use prior to Feb. 9, 1967, from floodmark, discharge, 30,000 ft³/s.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	601	176	142	e88	e140	e210	113	154	470	85	37	50
2	e520	175	141	e80	e120	e200	111	193	3420	88	37	35
3	e450	175	144	e74	e100	508	108	193	1010	98	44	25
4	e400	175	147	e80	e110	2230	105	166	456	152	41	120
5	e350	168	153	e84	e130	3120	100	156	385	148	47	88
6	336	159	146	e76	e110	1880	95	169	653	125	39	54
7	305	151	135	e70	e90	1190	95	299	464	144	33	48
8	297	148	125	e62	e84	786	91	459	343	116	30	47
9	359	148	120	e68	e74	483	90	304	224	101	29	34
10	542	147	124	e80	e84	367	90	222	181	83	26	26
11	508	147	123	e74	e90	301	93	181	211	74	26	20
12	354	156	111	e80	e82	266	93	154	1760	68	30	16
13	295	266	118	e74	e86	249	107	141	1370	63	29	14
14	270	307	340	e68	e100	239	149	136	490	65	25	13
15	293	239	481	e66	e120	229	198	172	263	95	23	12
16	410	201	332	e70	e200	214	173	147	188	95	23	10
17	736	185	252	e66	e500	198	134	126	182	68	21	9.2
18	488	173	209	e62	e800	190	108	113	143	58	21	8.5
19	410	165	191	e66	e1500	190	102	101	117	55	20	7.8
20	528	157	177	e64	e3000	191	84	96	104	57	18	7.5
21	462	151	150	e80	e1100	190	83	89	97	60	17	7.5
22	367	146	121	e100	e600	183	151	87	96	59	15	7.8
23	281	142	108	e170	e210	179	424	88	715	48	14	7.5
24	264	144	103	e150	e200	168	278	125	270	43	14	7.3
25	240	147	e90	e130	e230	153	204	274	255	40	15	8.7
26	224	137	e74	e100	e270	144	192	183	217	41	20	16
27	207	e80	e62	e86	e250	141	172	118	146	40	18	17
28	220	e94	e67	e140	e230	133	159	99	129	39	14	20
29	207	e110	e74	e130	---	127	138	87	110	49	14	13
30	199	146	e84	e120	---	121	137	80	95	41	247	10
31	186	---	e90	e130	---	115	---	246	---	35	62	---
TOTAL	11309	4915	4734	2788	10610	14895	4177	5158	14564	2333	1049	759.8
MEAN	365	164	153	89.9	379	480	139	166	485	75.3	33.8	25.3
MAX	736	307	481	170	3000	3120	424	459	3420	152	247	120
MIN	186	80	62	62	74	115	83	80	95	35	14	7.3
AC-FT	22430	9750	9390	5530	21040	29540	8290	10230	28890	4630	2080	1510
CFSM	.52	.23	.22	.13	.54	.69	.20	.24	.69	.11	.05	.04
IN.	.60	.26	.25	.15	.56	.79	.22	.27	.77	.12	.06	.04

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1919 - 1994, BY WATER YEAR (WY)

	MEAN	202	228	158	167	337	667	692	628	653	446	202	360
MAX	2138	1462	1299	1292	1849	2375	2586	2600	4750	7239	2255	5178	
(WY)	1974	1962	1983	1960	1973	1979	1973	1951	1947	1993	1987	1992	
MIN	1.41	2.07	.94	.62	1.14	10.7	2.55	1.19	3.08	1.98	9.35	4.13	
(WY)	1957	1956	1956	1956	1956	1954	1956	1956	1956	1977	1955	1953	

SUMMARY STATISTICS	FOR 1993 CALENDAR YEAR	FOR 1994 WATER YEAR	WATER YEARS 1919 - 1994
ANNUAL TOTAL	481770	77291.8	
ANNUAL MEAN	1320	212	399
HIGHEST ANNUAL MEAN			1469
LOWEST ANNUAL MEAN			52.3
HIGHEST DAILY MEAN	27300	3420	52900
LOWEST DAILY MEAN	62	7.3	.10
ANNUAL SEVEN-DAY MINIMUM	77	7.7	.36
INSTANTANEOUS PEAK FLOW		5960	57000
INSTANTANEOUS PEAK STAGE		7.64	24.29
ANNUAL RUNOFF (AC-FT)	955600	153300	288900
ANNUAL RUNOFF (CFSM)	1.88	.30	.57
ANNUAL RUNOFF (INCHES)	25.57	4.10	7.73
10 PERCENT EXCEEDS	3430	410	845
50 PERCENT EXCEEDS	450	127	82
90 PERCENT EXCEEDS	146	25	9.2

e Estimated.

06903400 CHARITON RIVER NEAR CHARITON, IA

LOCATION.--Lat 40°57'12", long 93°15'37", in SW1/4 NE1/4 sec.15, T.71 N., R.21 W., Lucas County, Hydrologic Unit 10280201, on right bank 15 ft downstream from bridge on county highway S43, 0.4 mi downstream from Wolf Creek and 5.0 mi southeast of Chariton.

DRAINAGE AREA.--182 mi².

PERIOD OF RECORD.--October 1965 to current year. Occasional low-flow measurements, water years 1958-60, 1962, 1964.

GAGE.--Water-stage encoder. Datum of gage is 917.90 ft above sea level (U.S. Army Corps of Engineers bench mark).

REMARKS.--Estimated daily discharges: Nov. 26-30, Dec. 21 to Mar. 14, Apr. 27 to May 2, May 17-19, 25, 26, June 12-14, and Aug. 30 to Sept. 30. Records good except those for estimated daily discharges, which are poor. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data. U.S. Army Corps of Engineers data collection platform at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in March 1960 reached a stage of about 23 ft, discharge, about 15,000 ft³/s and flood of June 5, 1947 reached a stage of 21.65 ft, from floodmark, discharge, 11,000 ft³/s. A discharge of 0.08 ft³/s was measured on Oct. 30, 1963.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	28	11	12	e5.3	e2.6	e20	17	e37	6.9	6.3	1.7	e.05
2	23	11	13	e4.9	e2.9	e32	16	e39	98	17	1.5	e.05
3	20	11	15	e4.3	e2.8	e93	15	30	66	21	1.3	e.06
4	18	11	15	e3.8	e3.1	e971	14	27	40	17	1.5	e.12
5	16	11	16	e4.0	e3.6	e1370	14	24	69	14	1.1	e.35
6	15	11	17	e3.8	e3.5	e836	13	422	192	8.1	.81	e1.2
7	13	11	16	e3.5	e3.3	e432	12	973	124	6.0	.75	e.46
8	12	11	15	e3.8	e3.0	e276	11	405	39	5.1	.75	e.26
9	16	10	14	e4.0	e2.9	e133	11	142	22	5.6	.60	e.18
10	16	10	14	e4.3	e3.1	e85	12	75	18	7.7	.48	e.13
11	17	10	13	e4.0	e3.6	e64	13	51	24	7.5	.61	e.10
12	17	12	13	e3.6	e4.2	e54	18	38	e80	4.9	.35	e.07
13	16	34	14	e3.3	e3.9	e49	29	30	e250	3.6	.42	e.06
14	15	36	18	e2.8	e4.5	e50	36	26	e180	3.2	.48	e.05
15	17	33	33	e2.3	e5.8	49	37	30	79	2.8	.44	e.05
16	23	24	48	e2.5	e7.0	43	26	29	37	2.4	.35	e.04
17	23	19	45	e2.3	e10	38	20	e24	23	2.4	.30	e.04
18	21	16	35	e2.1	e17	38	16	e20	17	2.3	.17	e.04
19	21	15	29	e2.0	e30	37	13	e16	50	2.1	.13	e.03
20	21	14	25	e2.3	e50	36	12	13	16	2.2	.08	e.03
21	20	12	e19	e2.6	e100	37	285	12	42	4.2	.08	e.04
22	18	12	e13	e2.9	e64	37	312	9.6	19	3.2	.07	e.05
23	17	12	e8.0	e3.3	e38	34	122	9.1	181	2.6	.08	e.04
24	16	12	e5.6	e4.5	e23	33	63	18	144	2.6	.10	e.04
25	15	14	e4.3	e4.1	e15	28	45	e20	114	3.1	.09	e.05
26	14	e11	e3.6	e3.8	e12	26	38	e23	43	3.1	.09	e.08
27	14	e9.2	e3.9	e3.3	e10	25	e31	19	23	2.5	.13	e.15
28	13	e8.5	e3.3	e3.0	e14	23	e34	14	15	2.7	.06	e.30
29	12	e9.7	e3.6	e2.7	---	20	e38	10	11	2.5	.05	e.25
30	12	e11	e4.0	e2.5	---	18	e34	7.9	7.8	2.1	e.04	e.19
31	11	---	e4.8	e2.4	---	17	---	6.7	---	2.0	e.04	---
TOTAL	530	432.4	493.1	104.0	442.8	5004	1357	2600.3	2030.7	171.8	14.65	4.56
MEAN	17.1	14.4	15.9	3.35	15.8	161	45.2	83.9	67.7	5.54	.47	.15
MAX	28	36	48	5.3	100	1370	312	973	250	21	1.7	1.2
MIN	11	8.5	3.3	2.0	2.6	17	11	6.7	6.9	2.0	.04	.03
CFSM	.09	.08	.09	.02	.09	.89	.25	.46	.37	.03	.00	.00
IN.	.11	.09	.10	.02	.09	1.02	.28	.53	.42	.04	.00	.00

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1966 - 1994, BY WATER YEAR (WY)

	MEAN	88.2	63.4	69.7	38.0	79.7	181	244	173	150	184	82.0	152
MAX	568	294	408	340	364	761	1093	570	856	1711	618	1704	
(WY)	1974	1993	1983	1974	1973	1979	1991	1986	1967	1993	1987	1992	
MIN	.005	.003	.000	.23	.22	6.40	.068	3.91	.38	.000	.10	.086	
(WY)	1990	1990	1990	1977	1989	1989	1989	1977	1988	1988	1989	1991	

SUMMARY STATISTICS

FOR 1993 CALENDAR YEAR

FOR 1994 WATER YEAR

WATER YEARS 1966 - 1994

ANNUAL TOTAL	108557.5	13185.31	
ANNUAL MEAN	297	36.1	125
HIGHEST ANNUAL MEAN			345
LOWEST ANNUAL MEAN			9.71
HIGHEST DAILY MEAN	9670	Jul 6	24600
LOWEST DAILY MEAN	3.3	Dec 28	.00
ANNUAL SEVEN-DAY MINIMUM	3.9	Dec 25	.04
INSTANTANEOUS PEAK FLOW			1660
INSTANTANEOUS PEAK STAGE			16.10
INSTANTANEOUS LOW FLOW			.03
ANNUAL RUNOFF (CFSM)	1.63		.20
ANNUAL RUNOFF (INCHES)	22.19		2.70
10 PERCENT EXCEEDS	919		50
50 PERCENT EXCEEDS	35		12
90 PERCENT EXCEEDS	11		.18
			.53

e Estimated.

a Also Sept. 20.

06903700 SOUTH FORK CHARITON RIVER NEAR PROMISE CITY, IA

LOCATION.--Lat 40°48'02", long 93°11'32", in SW1/4 SW1/4 sec.5, T.69 N., R.20 W., Wayne County, Hydrologic Unit 10280201, on right bank 20 ft downstream from bridge on county highway S50, 1.3 mi downstream from Jordan Creek and 4.3 mi northwest of Promise City.

DRAINAGE AREA.--168 mi².

PERIOD OF RECORD.--October 1967 to current year. Occasional low-flow measurements, water years 1958-66, published as "near Bethlehem". Monthly discharge measurements for March 1965 to September 1967 available in files of Iowa City district office.

GAGE.--Water-stage encoder. Datum of gage is 913.70 ft above sea level (U.S. Army Corps of Engineers bench mark).

REMARKS.--Estimated daily discharges: Nov. 26 to Dec. 11 and Dec. 21 to Mar. 14. Records good except those for estimated daily discharges, which are poor. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data. U.S. Army Corps of Engineers satellite data collection platform at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Sept. 21, 1965, reached a stage of 25.5 ft, from floodmarks, discharge, about 18,000 ft³/s.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	108	16	e20	16	e8.8	e28	17	75	3.9	6.9	11	1.6
2	93	16	e23	e16	e8.4	e35	16	46	153	140	4.4	.96
3	78	17	e22	e14	e8.6	e111	15	34	75	32	2.9	.87
4	64	18	e21	e14	e9.4	e954	15	28	29	16	3.9	2.5
5	54	17	e20	e13	e11	e566	13	26	53	11	3.1	3.8
6	47	15	e19	e12	e10	e161	12	524	124	7.1	2.4	2.3
7	43	15	e18	e10	e9.0	e87	11	480	39	6.9	2.2	1.4
8	40	15	e19	e11	e8.2	e27	12	154	23	220	2.0	.94
9	152	14	e19	e12	e7.4	e21	12	77	19	49	1.8	.85
10	158	14	e17	e14	e8.0	e18	13	52	14	17	1.7	.78
11	40	16	e16	e12	e9.8	e19	15	38	52	8.7	1.7	.71
12	28	22	18	e11	e12	e21	30	30	1170	6.5	1.8	.68
13	21	97	21	e9.8	e15	e23	44	23	449	6.6	1.8	.60
14	17	53	37	e8.0	e18	e29	36	22	91	51	1.6	.63
15	28	35	82	e6.6	e21	41	25	28	46	11	1.8	.83
16	162	31	60	e7.8	e24	37	20	20	31	4.4	1.4	.72
17	73	27	44	e9.0	e30	34	15	12	25	3.3	1.3	.57
18	45	25	41	e7.6	e39	37	13	9.6	23	4.1	1.1	.70
19	38	24	37	e6.4	e60	35	11	7.9	49	3.8	1.0	.66
20	37	23	31	e7.2	e700	35	9.6	6.9	19	3.1	1.2	.63
21	31	22	e23	e8.6	e80	36	115	5.9	36	6.4	.82	.69
22	28	20	e10	e11	e35	35	91	5.7	20	5.4	1.0	.73
23	30	20	e8.2	e18	e30	31	46	5.8	807	3.6	.81	.72
24	24	22	e7.2	e17	e28	28	34	8.7	238	4.3	.84	.72
25	23	29	e6.2	e15	e23	24	31	6.0	62	6.6	.88	1.2
26	21	e25	e6.6	e13	e20	22	26	7.8	30	3.6	.97	1.8
27	20	e22	e6.4	e11	e22	23	18	5.4	20	2.7	.89	1.5
28	20	e18	e6.0	e10	e24	20	36	3.6	13	2.3	.94	1.0
29	18	e19	e8.0	e9.6	---	18	67	3.3	8.4	2.0	1.1	.74
30	17	e19	e10	e9.0	---	17	53	4.7	7.0	1.7	2.9	.83
31	16	---	14	e8.4	---	16	---	4.5	---	1.5	2.3	---
TOTAL	1574	726	690.6	348.0	1279.6	2589	871.6	1754.8	3729.3	648.5	63.55	32.66
MEAN	50.8	24.2	22.3	11.2	45.7	83.5	29.1	56.6	124	20.9	2.05	1.09
MAX	162	97	82	18	700	954	115	524	1170	220	11	3.8
MIN	16	14	6.0	6.4	7.4	16	9.6	3.3	3.9	1.5	.81	.57
MED	37	20	19	11	19	29	17	20	33	6.5	1.7	.80
AC-FT	3120	1440	1370	690	2540	5140	1730	3480	7400	1290	126	65
CFSM	.30	.14	.13	.07	.27	.50	.17	.34	.74	.12	.01	.01
IN.	.35	.16	.15	.08	.28	.57	.19	.39	.83	.14	.01	.01

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1968 - 1994, BY WATER YEAR (WY)

MEAN	106	63.0	72.3	39.3	82.0	183	243	166	138	215	56.9	173
MAX	498	357	440	335	337	853	730	592	580	2351	300	2227
(WY)	1978	1993	1983	1974	1971	1979	1991	1986	1980	1993	1993	1992
MIN	.15	.39	.40	.19	.88	3.21	1.21	5.14	1.18	.24	.76	.53
(WY)	1989	1990	1977	1977	1989	1989	1989	1980	1988	1977	1984	1991

SUMMARY STATISTICS

FOR 1993 CALENDAR YEAR

FOR 1994 WATER YEAR

WATER YEARS 1968 - 1994

ANNUAL TOTAL	131209.6	14307.61	
ANNUAL MEAN	359	39.2	
HIGHEST ANNUAL MEAN			128
LOWEST ANNUAL MEAN			446
HIGHEST DAILY MEAN	9850	Jul 5	1170
LOWEST DAILY MEAN	6.0	Dec 28	.57
ANNUAL SEVEN-DAY MINIMUM	6.9	Dec 23	.67
INSTANTANEOUS PEAK FLOW			1710
INSTANTANEOUS PEAK STAGE			a14.00
INSTANTANEOUS LOW FLOW			.50
ANNUAL RUNOFF (AC-FT)	260300	28380	92820
ANNUAL RUNOFF (CFSM)	2.14	.23	.76
ANNUAL RUNOFF (INCHES)	29.05	3.17	10.36
10 PERCENT EXCEEDS	808	61	202
50 PERCENT EXCEEDS	74	16	14
90 PERCENT EXCEEDS	19	1.4	.88

e Estimated.

a Ice affected.

06903880 RATHBUN LAKE NEAR RATHBUN, IA

LOCATION.--Lat 40°49'30", long 92°53'33", in NW1/4 NE1/4 sec.35, T.70 N., R.18 W., Appanoose County, Hydrologic Unit 10280201, at control tower of Rathbun Dam, 1.8 mi north of Rathbun and 3.9 mi upstream from Walnut Creek and at mile 142.3.

DRAINAGE AREA.--549 mi².

PERIOD OF RECORD.--October 1969 to current year.

GAGE.--Water-stage recorder. Datum of gage is at sea level.

REMARKS.--Reservoir is formed by earthfill dam completed in 1969. Storage began in November 1969. Release is controlled by two hydraulically controlled slide gages, 6 ft wide and 12 ft high, into forechamber of an 11-ft diameter horseshoe conduit through the dam. No dead storage. Maximum design discharge through gates is 5,000 ft³/s. Uncontrolled notch spillway is concrete overflow section 500 ft in length, located about 3,000 ft west of the right abutment of the dam and provides emergency discharge into the adjacent drainage area of Little Walnut Creek. Uncontrolled notch spillway is at elevation 926 ft, contents 545,621 acre-ft, surface area, 20,974 acres. Conservation pool level is at elevation 904.0 ft, contents 199,830 acre-ft, surface area, 10,989 acres. Reservoir is used for flood control, low-flow augmentation, conservation and recreation.

COOPERATION.--Records provided by U.S. Army Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily contents, 570,000 acre-ft July 28, 1993; maximum elevation, 927.16 ft July 28, 1993; minimum daily contents, 100 acre-ft Oct. 1-15, Nov. 17-21, 1969; minimum elevation, 855.40 ft Oct. 6-10, 1969.

EXTREMES FOR CURRENT YEAR.--Maximum daily contents, 391,000 acre-ft Oct. 1; maximum elevation 917.82 ft Oct. 1; minimum daily contents, 149,000 acre-ft Sept. 30; minimum elevation, 898.91 ft Sept. 30.

Capacity table (elevation, in feet, and contents, in acre-feet)

860	150	880	31,900	905	211,000
862	226	885	52,700	910	272,600
865	950	890	80,300	915	345,000
870	5,870	895	115,600	920	428,900
875	17,000	900	158,800	925	524,900

RESERVOIR STORAGE (ACRE-Feet), WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY OBSERVATION AT 08:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	391000	281000	177000	159000	158000	161000	158000	159000	158000	160000	157000	152000
2	387000	277000	175000	159000	158000	159000	158000	159000	159000	161000	157000	152000
3	383000	273000	174000	159000	158000	159000	158000	159000	159000	161000	156000	152000
4	380000	269000	174000	159000	158000	160000	158000	159000	160000	161000	157000	151000
5	376000	267000	173000	159000	158000	165000	158000	159000	160000	161000	157000	152000
6	372000	262000	173000	159000	158000	169000	158000	159000	160000	161000	156000	152000
7	368000	258000	171000	159000	158000	172000	158000	165000	161000	161000	156000	152000
8	365000	254000	170000	159000	158000	172000	157000	168000	161000	163000	156000	152000
9	363000	250000	170000	159000	158000	170000	158000	170000	160000	163000	155000	152000
10	358000	247000	169000	159000	158000	168000	158000	169000	159000	162000	155000	151000
11	354000	243000	168000	159000	157000	166000	157000	168000	159000	161000	156000	151000
12	351000	239000	167000	158000	157000	164000	158000	166000	162000	160000	155000	151000
13	347000	237000	167000	158000	157000	162000	158000	165000	167000	159000	155000	151000
14	345000	233000	164000	158000	157000	160000	158000	163000	170000	159000	155000	151000
15	345000	230000	162000	158000	157000	158000	159000	163000	170000	159000	155000	150000
16	340000	226000	162000	158000	157000	157000	158000	161000	169000	159000	155000	151000
17	338000	223000	161000	158000	157000	157000	158000	159000	168000	159000	155000	150000
18	334000	219000	161000	158000	157000	158000	158000	159000	166000	159000	154000	150000
19	331000	216000	161000	158000	158000	158000	158000	159000	165000	158000	154000	150000
20	327000	212000	161000	158000	161000	158000	158000	159000	163000	159000	154000	150000
21	324000	208000	161000	158000	165000	158000	160000	158000	164000	159000	154000	150000
22	319000	204000	162000	158000	167000	158000	161000	158000	163000	159000	154000	150000
23	316000	201000	161000	158000	168000	158000	162000	158000	164000	158000	153000	149000
24	312000	198000	161000	158000	167000	159000	163000	158000	168000	158000	153000	149000
25	308000	196000	161000	158000	166000	158000	162000	158000	168000	158000	153000	149000
26	305000	192000	160000	158000	165000	158000	161000	158000	166000	158000	153000	150000
27	301000	189000	160000	158000	163000	159000	161000	158000	165000	158000	153000	149000
28	297000	186000	160000	158000	162000	158000	159000	158000	164000	158000	153000	149000
29	294000	183000	160000	158000	---	158000	159000	158000	162000	157000	152000	149000
30	289000	179000	160000	158000	---	158000	159000	158000	161000	157000	152000	149000
31	285000	---	159000	158000	---	158000	---	158000	---	157000	153000	---
MEAN	339000	228000	165000	158000	160000	161000	159000	161000	163000	159000	155000	151000
MAX	391000	281000	177000	159000	168000	172000	163000	170000	170000	163000	157000	152000
MIN	285000	179000	159000	158000	157000	157000	157000	158000	158000	157000	152000	149000

MEAN	322	333	434	275	354	451	378	419	439	515	462	351
MAX	1790	1828	1364	1546	1550	1271	1132	1281	1573	1162	1826	1707
(WY)	1994	1994	1993	1993	1993	1993	1993	1973	1973	1991	1993	1993
MIN	11.5	9.97	5.54	8.98	5.60	9.40	6.74	19.3	16.6	6.53	9.10	11.0
(WY)	1975	1975	1970	1970	1970	1970	1970	1977	1988	1970	1970	1974

CHARITON RIVER BASIN

06903900 CHARITON RIVER NEAR RATHBUN, IA--Continued

SUMMARY STATISTICS	FOR 1993 CALENDAR YEAR		FOR 1994 WATER YEAR		WATER YEARS 1970 - 1994a	
ANNUAL TOTAL	455605		168154		395	
ANNUAL MEAN	1248		461		1164	
HIGHEST ANNUAL MEAN					20.4	
LOWEST ANNUAL MEAN					1950	
HIGHEST DAILY MEAN	1950	Oct 17	1950	Oct 17	1950	Oct 17 1993
LOWEST DAILY MEAN	25	Mar 4	25	Dec 20	1.00	Oct 26 1977
ANNUAL SEVEN-DAY MINIMUM	25	Jul 6	28	Jan 4	1.0	Apr 1 1970
INSTANTANEOUS PEAK FLOW			2780	Dec 14	2780	Dec 14 1993
INSTANTANEOUS PEAK STAGE			14.94	Dec 14	14.94	Dec 14 1993
INSTANTANEOUS LOW FLOW					.00	Oct 26 1977
ANNUAL RUNOFF (AC-FT)	903700		333500		286100	
10 PERCENT EXCEEDS	1910		1900		1190	
50 PERCENT EXCEEDS	1530		48		62	
90 PERCENT EXCEEDS	228		31		13	

a Post-regulation period.

06904010 CHARITON RIVER NEAR MOULTON, IA

LOCATION.--Lat 40°41'30", long 92°46'15", in SE1/4 NE1/4 sec.14, T.68N., R.17W., Appanoose County, Hydrologic Unit 10280201, on right bank 6 ft downstream from bridge on county highway J45, 0.7 mi downstream from Hickory Creek, 5.0 mi west of Moulton, 8.0 mi upstream from Iowa-Missouri border, 20.8 mi downstream from Rathbun Dam, and at mile 121.5.

DRAINAGE AREA.--740 mi².

PERIOD OF RECORD--August 1979 to current year.

GAGE--Water stage encoder. Datum of gage is 800.00 ft above sea level (U.S. Army Corps of Engineers bench mark).

REMARKS.--Estimated daily discharges: Dec. 11-13, Jan. 2 to Feb. 24, and July 11-13. Records good except those for estimated daily discharges, which are poor. Flow regulated by Rathbun Reservoir (station 06903880) 20.8 mi upstream. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data. U.S. Army Corps of Engineers rain-gage and satellite data collection platform at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1947 reached a stage of about 45 ft, discharge unknown, from information by U.S. Army Corps of Engineers.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1870	2020	1570	167	e48	812	61	405	47	223	43	48
2	1850	2020	1040	e150	e48	618	58	323	142	388	43	49
3	1850	2010	482	e90	e47	329	56	190	249	107	43	53
4	1840	2010	437	e70	e54	942	56	157	134	79	47	83
5	1840	2000	434	e39	e49	1390	56	147	76	68	43	108
6	1840	1990	430	e40	e52	748	54	1310	88	59	40	91
7	1900	1980	427	e41	e58	624	53	2250	113	160	39	89
8	1900	1980	425	e43	e52	1030	53	873	373	2450	42	61
9	1940	1980	426	e44	e48	1330	58	647	395	618	38	34
10	1920	2030	422	e45	e47	1310	58	923	383	489	37	34
11	1930	2030	e422	e45	e47	1300	59	913	175	e560	40	33
12	1900	2050	e422	e45	e47	1300	69	892	530	e580	40	32
13	1840	2140	e422	e45	e47	1290	76	881	794	e540	40	32
14	529	2100	1530	e44	e46	1250	76	884	424	192	39	33
15	787	2050	917	e45	e46	1130	78	927	641	97	40	33
16	1970	2030	448	e46	e45	268	69	881	836	87	40	32
17	2080	2050	433	e46	e48	128	60	800	845	105	41	31
18	2050	2030	173	e46	e74	99	54	287	852	93	41	32
19	2040	2020	65	e46	e120	94	51	158	855	59	40	33
20	2020	2010	59	e46	e620	91	49	125	845	54	41	33
21	2030	2010	54	e47	e200	90	662	120	332	57	41	34
22	2020	2040	48	e48	e180	87	451	117	362	53	41	38
23	2040	2000	60	e50	e230	84	182	115	751	51	41	36
24	2050	1660	125	e54	e500	77	356	78	385	49	41	35
25	2040	1620	165	e62	848	71	366	66	634	56	41	38
26	2020	1610	158	e62	837	70	520	60	827	55	44	60
27	2010	1620	157	e56	820	69	522	55	846	50	42	40
28	2000	1620	160	e52	818	65	554	51	839	48	44	39
29	1990	1610	163	e48	---	63	596	49	785	45	44	35
30	1980	1600	163	e46	---	62	392	48	270	45	48	35
31	2010	---	167	e52	---	60	---	47	---	44	51	---
TOTAL	58086	57920	12404	1760	6076	16881	5805	14779	14828	7561	1295	1364
MEAN	1874	1931	400	56.8	217	545	193	477	494	244	41.8	45.5
MAX	2080	2140	1570	167	848	1390	662	2250	855	2450	51	108
MIN	529	1600	48	39	45	60	49	47	47	44	37	31
MED	1970	2010	422	46	52	268	65	190	409	79	41	35
AC-FT	115200	114900	24600	3490	12050	33480	11510	29310	29410	15000	2570	2710
CFSM	2.53	2.61	.54	.08	.29	.74	.26	.64	.67	.33	.06	.06
IN.	2.92	2.91	.62	.09	.31	.85	.29	.74	.75	.38	.07	.07

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1979 - 1994, BY WATER YEAR (WY)

	MEAN	515	514	589	389	501	721	680	586	582	936	672	550
MAX	1874	1931	1557	1696	1772	1831	1481	1195	1341	2849	2004	1976	
(WY)	1994	1994	1983	1993	1983	1993	1993	1993	1980	1982	1993	1993	
MIN	24.2	23.0	20.1	22.2	20.6	24.3	22.7	33.0	20.3	17.9	21.0	26.6	
(WY)	1989	1989	1990	1989	1989	1989	1989	1980	1988	1988	1988	1988	

SUMMARY STATISTICS	FOR 1993 CALENDAR YEAR	FOR 1994 WATER YEAR	WATER YEARS 1979 - 1994
ANNUAL TOTAL	590063	198759	
ANNUAL MEAN	1617	545	607
HIGHEST ANNUAL MEAN			1555
LOWEST ANNUAL MEAN			43.6
HIGHEST DAILY MEAN	5230	2450	8720
LOWEST DAILY MEAN	48	31	14
ANNUAL SEVEN-DAY MINIMUM	82	32	15
INSTANTANEOUS PEAK FLOW		3490	11200
INSTANTANEOUS PEAK STAGE		29.93	36.83
INSTANTANEOUS LOW FLOW		30	
ANNUAL RUNOFF (AC-FT)	1170000	394200	439500
ANNUAL RUNOFF (CFSM)	2.18	.74	.82
ANNUAL RUNOFF (INCHES)	29.66	9.99	11.14
10 PERCENT EXCEEDS	2180	1980	1520
50 PERCENT EXCEEDS	1660	120	330
90 PERCENT EXCEEDS	544	41	26

e Estimated.

CREST-STAGE PARTIAL-RECORD STATIONS

The following table contains annual maximum discharge for crest-stage stations. A crest-stage is a device which will register the peak stage occurring between inspections of the gage. A stage-discharge relation for each gage is developed from discharge measurements made by indirect measurements of peak flow or by current meter. The date of the maximum discharge is not always certain but is usually determined by comparison with nearby continuous-record stations, weather records, or local inquiry. Only the maximum discharge for each water year is given. Information on some lower floods may have been obtained, but is not published herein. The years given in the period of record represent water years up to the current year for which the annual maximum has been determined.

MAXIMUM DISCHARGE AT CREST-STAGE PARTIAL-RECORD STATIONS

[+--Not determined, a--peak stage did not reach bottom of gage, b--ice affected, c--old gage datum, d--estimate, e--peak affected by backwater]

Station name and number	Location and drainage area	Period of record	Water year 1994 maximum			Period of record maximum		
			Date	Gage height (ft)	Dis- charge (ft ³ /s)	Date	Gage height (ft)	Dis- charge (ft ³ /s)
UPPER IOWA RIVER BASIN								
Dry Run Creek near Decorah, Ia. (05387490)	Lat 43°17'29", long 91°48'33", in SE1/4, sec.20, T.98 N., R.8 W., Winneshiek County, Hydrologic Unit 07060002, on State Highway 9, 0.5 mi west of Decorah. Drainage area is 21.0 mi ² .	1978-	02-19-94	18.67	2,100	08-16-93	20.80	4,620
MISSISSIPPI RIVER BASIN								
Mississippi River tributary at McGregor, Ia. (05389501)	Lat 43°01'01", long 91°11'53", in NE1/4, sec.28, T.95 N., R.3 W., Clayton County, Hydrologic Unit 07060001, at culvert on county road X50, at intersection with U.S. Highway 18 (Business Route), in McGregor. Drainage area is 0.72 mi ² .	1991-	06-23-94	1.30	(+)	03-31-93	(+)	(+)
TURKEY RIVER BASIN								
French Hollow Creek near Elkader, Ia (05412030)	Lat 42°50'19", long 91°24'25", in SW1/4, sec.26, T.93 N., R.5 W., Clayton County, Hydrologic Unit 07060004, at culvert on State Highway 13, 1.1 mi south of Elkader. Drainage area is 3.56 mi ² .	1991-	07-20-94	(a)	(+)	06-15-91	(+)	(+)
LITTLE MAQUOKETA RIVER BASIN								
Little Maquoketa River at Graf, Ia. (05414350)	Lat 42°30'09", long 90°51'50", in SE1/4 NW1/4, sec.20, T.89 N., R.1 E., Dubuque County, Hydrologic Unit 07060003, at bridge on county highway, 300 ft downstream from Illinois Central rail- road bridge, 0.5 mi northeast of Graf. Drainage area is 39.6 mi ² .	1951-	07-05-94	9.03	(+)	07-08-51	15.78	7,220
Middle Fork Little Maquoketa River near Rickardsville, Ia. (05414400)	Lat 42°33'38", long 90°51'50", in SE1/4, sec.32, T.90 N., R.1 E., Dubuque County, Hydrologic Unit 07060003, at bridge on county highway, 2 mi southeast of Rickardsville. Drainage area is 30.2 mi ² .	1951-	04-25-94	18.86	(+)	08-02-72	27.70	23,000
North Fork Little Maquoketa River near Rickardsville, Ia. (05414450)	Lat 42°35'09", long 90°51'20", near NW corner, sec.28, T.90 N., R.1 E., Dubuque County, Hydrologic Unit 07060003, at bridge on county highway, 1 mi northeast of Rickardsville. Drainage area is 21.6 mi ² .	1951-	06-21-94	5.81	590	08-02-72	14.02	7,180

MAXIMUM DISCHARGE AT CREST-STAGE PARTIAL-RECORD STATIONS--Continued

Station name and number	Location and drainage area	Period of record	Water year 1994 maximum			Period of record maximum		
			Date	Gage height (ft)	Dis- charge (ft ³ /s)	Date	Gage height (ft)	Dis- charge (ft ³ /s)
LITTLE MAQUOKETA RIVER BASIN--Continued								
Little Maquoketa River near Durango, Ia. (05414500) (discontinued)	Lat 42°33'18", long 90°44'46", in NW1/4 NE1/4, sec.5, T.89 N., R.2 E., Dubuque County, Hydrologic Unit 07060003, on left bank 10 ft upstream from bridge on county highway, 300 ft upstream from Cloie Branch, 1.7 mi east of Durango, 5.6 mi northwest of court house at Dubuque, and 6.4 mi upstream from mouth. Drainage area is 130 mi ² .	1934-	07-05-94	14.54	(+)	08-02-72	23.13	40,000
Little Maquoketa River tributary at Dubuque, Ia. (05414600)	Lat 42°32'33", long 90°41'38", near NW corner, sec.11, T.89 N., R.2 E., Dubuque County, Hydrologic Unit 07060003, at bridge on State Highway 386, near north city limits of Dubuque. Drainage area is 1.54 mi ² .	1951-	07-05-94	11.12	164	07-31-57	27.98	41,650
Bloody Run tributary near Sherrill, Ia. (05414605)	Lat 42°37'13", long 90°45'44", in SE1/4, sec.7, T.90 N., R.2 E., Dubuque County, Hydrologic Unit 07060003, at culvert on county road 1.6 mi northeast of Sherrill. Drain- age area is 0.59 mi ² .	1991-	02-19-94	0.64	(+)	06-15-91	(+)	(+)
LAMONT CREEK BASIN								
Lamont Creek tributary at Lamont, Ia. (05416200)	Lat 42°35'22", long 91°38'52", in SE1/4, sec.22, T.90 N., R.7 W., Buchanan County, Hydrologic Unit 07060006, at culvert on State Highway 187, 0.8 mi southwest of Lamont. Drainage area is 1.78 mi ² .	1991-	06-23-94	2.99	(+)	07-11-93	(+)	(+)
MAQUOKETA RIVER BASIN								
Sand Creek near Manchester, Ia. (05416972)	Lat 42°26'57", long 91°28'50", in SE1/4, sec.12, T.88 N., R.6 W., Delaware County, Hydrologic Unit 07060006, at culvert on State Highway 13, 2.7 mi southwest of Manchester. Drainage area is 11.0 mi ² .	1991-	06-23-94	1.69	(+)	07-11-93	(+)	(+)
Williams Creek near Charlotte, Ia. (05418645)	Lat 41°55'55", long 90°31'44", in SE1/4, sec.6, T.82 N., R.4 E., Clinton County, Hydrologic Unit 07060006, at culvert on county road Y70, 5 mi southwest of Charlotte, 2.1 mi north of county highway E63. Drainage area is 1.77 mi ² .	1990-	02-19-94	3.23	(+)	06-18-93	(+)	(+)
WAPSIPINICON RIVER BASIN								
Little Wapsi- pinicon River tributary near Riceville, Ia. (05420600)	Lat 43°21'31", long 92°29'08", near SW1/4 corner, sec. 27, T.99 N., R.14 W., Howard County, Hydrologic Unit 07080102, at culvert on county highway, 3.5 mi east of Riceville. Drainage area is 1.10 mi ² .	1953-	07-20-94	3.90	105	08-15-93	5.71	2,470

MAXIMUM DISCHARGE AT CREST-STAGE PARTIAL-RECORD STATIONS--Continued

Station name and number	Location and drainage area	Period of record	Water year 1994 maximum			Period of record maximum		
			Date	Gage height (ft)	Dis- charge (ft ³ /s)	Date	Gage height (ft)	Dis- charge (ft ³ /s)
WAPSIPINICON RIVER BASIN--Continued								
Little Wapsi- pinicon River near Oran, Ia. (05420850)	Lat 42°42'53", long 92°02'29", near NW corner, sec.9, T.91 N., R.10 W., Fayette County, Hydrologic Unit 07080102, at bridge on State Highway 3, 2 mi northeast of Oran. Drainage area is 94.1 mi ² .	1966-	02-18-94	86.05	820	08-30-79	91.81	d5,000
Buck Creek near Oran, Ia. (05420855)	Lat 42°42'53", long 92°07'33", in NE1/4, sec.10, T.91 N., R.11 W., Bremer County, Hydrologic Unit 07080102, at bridge on State Highway 3, 2.5 mi northwest of Oran. Drain- age area is 37.9 mi ² .	1966-	06-23-94	87.93	540	06-15-91	90.18	1,720
Pine Creek tributary near Winthrop, Ia. (05421100)	Lat 42°29'17", long 91°47'10", in SW1/4, sec.27, T.89 N., R.8 W., Buchanan County, Hydrologic Unit 07080102, at culvert on county road, 2.5 mi northwest of Winthrop. Drainage area is 0.33 mi ² .	1953-	1994	(a)	(+)	07-17-68	8.97	334
Pine Creek tributary No. 2 at Winthrop, Ia. (05421300)	Lat 42°28'06", long 91°44'33", at N1/4 corner sec.2, T.88 N., R.8 W., Buchanan County, Hydrologic Unit 07080102, at culvert on State Highway 939, near west city limits of Winthrop. Drainage area is 0.70 mi ² .	1953-	1994	(a)	(+)	07-17-68	7.26	570
Silver Creek at Welton, Ia. (05421890)	Lat 41°54'54", long 90°36'00", in NW1/4, sec.15, T.82 N., R.3 E., Clinton County, Hydrologic Unit 07080103, at bridge on U.S. Highway 61, at north edge of Welton. Drainage area is 9.03 mi ² .	1966-	02-20-94	87.22	605	05-17-74	89.77	d4,820
IOWA RIVER BASIN								
Westmain drain- age ditch 1 & 2 at Britt, Ia. (05448400)	Lat 43°06'09", long 93°47'04", in SW1/4, sec.27, T.96 N., R.25 W., Hancock County, Hydrologic Unit 07080207, at bridge on U.S. Highway 18, near east city limits of Britt. Drainage area is 21.2 mi ² .	1966-	1994	(a)	(+)	04-28-75	83.59	372
East Branch Iowa River above Hayfield, Ia. (05448600)	Lat 43°09'21", long 93°41'21", at S1/4 corner sec.4, T.96 N., R.24 W., Hancock County, Hydrologic Unit 07080207, at bridge on county highway, 1.5 mi southeast of Hayfield. Drainage area is 2.23 mi ² .	1953-	1994	(a)	(+)	04-06-65	7.31	250
Honey Creek tributary near Radcliffe, Ia. (0545129280)	Lat 42°19'44", long 93°25'28", in SW1/4, sec.21, T.87 N., R.22 W., Hardin County, Hydrologic Unit 07080207, at culvert on county road highway S27, 1.1 mi northeast of Radcliffe. Drainage area is 3.29 mi ² .	1991-				08-17-93	97.61	(+)

MAXIMUM DISCHARGE AT CREST-STAGE PARTIAL-RECORD STATIONS--Continued

Station name and number	Location and drainage area	Period of record	Water year 1994 maximum			Period of record maximum		
			Date	Gage height (ft)	Dis- charge (ft ³ /s)	Date	Gage height (ft)	Dis- charge (ft ³ /s)
IOWA RIVER BASIN--Continued								
Stein Creek near Clutier, Ia. (05451955)	Lat 42°04'46", long 92°18'00", in NE1/4, sec.24, T.84 N., R.13 W., Tama County, Hydrologic Unit 07080208, at bridge on county highway E36, 5 mi east of Clutier. Drainage area is 23.4 mi ² .	1971-	07-13-94	76.90	5,580	06-15-82	77.92	11,400
Price Creek at Amana, Ia. (05453200)	Lat 41°48'18", long 91°52'23", in SE1/4, sec.22, T.81 N., R.9 W., Iowa County, Hydrologic Unit 07080208, at bridge on State Highway 151, near north edge of Amana. Drainage area is 29.1 mi ² .	1966-	06-07-94	85.18	1,880	06-17-90	88.80	(+)
North Fork tributary to Mill Creek near Solon, Ia. (05453430)	Lat 41°50'24", long 91°30'04" in NW1/4, sec.12, T.81 N., R.9 W., Johnson County, Hydrologic Unit 07080208, at culvert on State Highway 1, 2 mi north of Solon. Drainage area is 0.78 mi ² .		Destroyed in 1993			07-16-92	(+)	(+)
Clear Creek tributary near Williamsburg, Ia. (05454180)	Lat 41°41'16", long 91°57'02", in SE1/4, sec.36, T.80 N., R.10 W., Iowa County, Hydrologic Unit 07080209, at culvert on county road, 4 mi northeast of Williamsburg, 1 mi south of county highway F35. Drainage area is 0.37 mi ² .	1990-	02-18-94 09-23-93 ¹ 07-25-92 ¹ 03-02-91 ¹	43.36 48.47 46.97 44.82	29.6 265 131 (+)	06-17-90	48.76	291
North English River near Montezuma, Ia. (05455140)	Lat 41°38'45", long 92°34'20", in SW1/4, sec.14, T.79 N., R.15 W., Poweshiek County, Hydrologic Unit 07080209, at bridge on county highway, 5.0 mi northwest of Montezuma. Drainage area is 31.0 mi ² .	1972-	02-18-94	20.74	665	07-20-78	28.18	4,640
North English River at Guernsey, Ia. (05455210)	Lat 41°38'42", long 92°21'28", at NW corner sec.22, T.79 N., R.13 W., Poweshiek County, Hydrologic Unit 07080209, at bridge on State Highway 21, 1 mi southwest of Guernsey. Drainage area is 81.5 mi ² .	1960, 1966-	06-19-94	81.05	1,690	06-15-82	87.43	7,460
Deep River at Deep River, Ia. (05455230)	Lat 41°35'29", long 92°21'18", in SW1/4, sec.3, T.78 N., R.13 W., Poweshiek County, Hydrologic Unit 07080209, at bridge on State Highway 21, 1 mi northeast of Deep River. Drainage area is 30.5 mi ² .	1960, 1966-	1994	(a)	(+)	05-14-70	83.85	6,200
Bulgers Run near Riverside, Ia. (05455550)	Lat 41°29'02", long 91°37'36", in SE1/4, sec.11, T.77 N., R.7 W., Washington County, Hydrologic Unit 07080209, at bridge on State Highway 22, 2.5 mi west of Riverside. Drainage area is 6.31 mi ² .	1965-	02-19-94	89.76	(+)	09-21-65	89.04	3,080
Deer Creek near Carpenter, Ia. (05457440)	Lat 43°24'54", long 92°59'05", in NW1/4 sec.9, T.99 N., R.18 W., Mitchell County, Hydrologic Unit 07080201, at bridge on State Highway 105, 1.5 mi east of Carpenter. Drainage area is 91.6 mi ² .	1966-	1994	(a)	(+)	07-18-93	84.65	3,460

MAXIMUM DISCHARGE AT CREST-STAGE PARTIAL-RECORD STATIONS--Continued

Station name and number	Location and drainage area	Period of record	Water year 1994 maximum			Period of record maximum		
			Date	Gage height (ft)	Dis- charge (ft ³ /s)	Date	Gage height (ft)	Dis- charge (ft ³ /s)
IOWA RIVER BASIN--Continued								
Gizzard Creek tributary near Bassett, Ia. (0545776680)	Lat 43°04'01", long 92°34'31", in SE1/4, sec.2, T.95 N., R.15 W., Floyd County, Hydrologic Unit 07080201, at culvert on U.S. Highway 18, 3.3 mi west of Bassett. Drainage area is 3.42 mi ² .	1990-	07-20-94	95.97	(+)	08-10-91	100.59	(+)
Spring Creek near Mason City, Ia. (05459490)	Lat 43°12'48", long 93°12'38", in SE1/4, sec.16, T.97 N., R.20 W., Cerro Gordo County, Hydrologic Unit 07080203, at bridge on U.S. Highway 65, 4 mi north of Mason City. Drainage area is 29.3 mi ² .	1966-	1994	(+)	(+)	05-30-80	90.32	(+)
Willow Creek near Mason City, Ia. (05460100)	Lat 43°08'55", long 93°16'07", near center sec.12, T.96 N., R.21 W., Cerro Gordo County, Hydrologic Unit 07080203, at bridge on U.S. Highway 18, 3.5 mi west of Mason City. Drainage area is 78.6 mi ² .	1966-	04-12-94	90.85	(+)	07-08-69 04-01-93	91.30 91.75	d1,100 1,090
Miller Creek near Eagle Center, Ia. (05464075)	Lat 42°19'22", long 92°20'52", in NW1/4, sec.27, T.87 N., R.13 W., Black Hawk County, Hydrologic Unit 07080205, at culvert on State Highway 21, 1.3 mi southeast of Eagle Center. Drainage area is 9.14 mi ² .	1991-	03-04-94	41.03	(+)	07-08-93	(+)	(+)
East Blue Creek at Center Point, Ia. (05464318)	Lat 42°12'44", long 91°47'21", in SW1/4, sec.33, T.86 N., R.8 W., Linn County, Hydrologic Unit 07080205, at bridge on State Highway 150, 1.5 mi north of Center Point. Drainage area is 17.6 mi ² .	1966-	1994	(a)	(+)	07-05-93	84.27	(+)
Prairie Creek tributary near Van Home, Ia. (05464535)	Lat 41°59'33", long 92°05'06", in NW1/4, sec.24, T.83 N., R.11 W., Benton County, Hydrologic Unit 07080205, at culvert on county highway V64, 1.1 mi south of Van Home. Drainage area is 0.94 mi ² .	1991-	06-07-94	11.64	(+)	08-16-93	(+)	(+)
Thunder Creek at Blainstown, Ia. (05464562)	Lat 41°54'12", long 92°05'03", in NE1/4, sec.23, T.82 N., R.11 W., Benton County, Hydrologic unit 07080205, at culvert on county highway V56, near city limits of Blainstown. Drainage area is 0.96 mi ² .	1991-	06-07-94 08-16-93 ¹ 07-07-92 ¹ 04-29-91 ¹	13.49 15.33 15.06 15.21	(+) 440 452	08-16-93	(+)	(+)
North Fork Long Creek at Ainsworth, Ia. (05465150)	Lat 41°16'51", long 91°32'16", in SW1/4, sec.22, T.75 N., R.6 W., Washington County, Hydrologic Unit 07080209, at bridge on U.S. Highway 218, 1 mi southeast of Ainsworth. Drainage area is 30.2 mi ² .	1951, 1965-	03-03-94	87.66	535	06-08-93	90.20	3,650
Haight Creek at Kingston, Ia. (05469350)	Lat 40°58'14", long 91°02'30", in NW1/4, sec.12, T.71 N., R.2 W., Des Moines County, Hydrologic Unit 07080104, at culvert on State Highway 99, 0.5 mi south of Kingston. Drainage area is 2.67 mi ² .	1990-	1994	(a)	(+)	06-20-90	(+)	(+)

MAXIMUM DISCHARGE AT CREST-STAGE PARTIAL-RECORD STATIONS--Continued

Station name and number	Location and drainage area	Period of record	Water year 1994 maximum			Period of record maximum		
			Date	Gage height (ft)	Dis- charge (ft ³ /s)	Date	Gage height (ft)	Dis- charge (ft ³ /s)
SKUNK RIVER BASIN								
Mud Lake drainage ditch 71, at Jewell, Ia. (05469860)	Lat 42°18'52", long 93°38'23", in SW1/4, sec.27, T.87 N., R.24 W., Hamilton County, Hydrologic Unit 07080105, at bridge on U.S. Highway 69, in Jewell. Drainage area is 65.4 mi ² .	1966-	03-04-94	87.59	1,090	07-09-93	91.32	3,700
Long Dick Creek near Ellsworth, Ia. (05469970)	Lat 42°18'38", long 93°32'06", in NW1/4, sec.33, T.27 N., R.23 W., Hamilton County, Hydrologic Unit 07080105, at culvert on State Highway 175, 2.2 mi east of Ellsworth. Drainage area is 6.08 mi ² .	1991-	03-04-94	91.88	(+)	08-17-93	94.73	(+)
Keigley Branch near Story City, Ia. (05469990)	Lat 42°09'01", long 93°37'13", in NW1/4, sec.26, T.85 N., R.24 W., Story County, Hydrologic Unit 07080105, at bridge on U.S. Highway 69, 3 mi south of Story City. Drainage area is 31.0 mi ² .	1966-	03-04-94	90.07	1,080	07-09-93	91.89	3,200
Snipe Creek tributary at Melbourne, Ia. (0547209280)	Lat 41°56'08", long 93°05'08", in SE1/4, sec.5, T.82 N., R.19 W., Marshall County, Hydrologic Unit 07080106, at culvert on county highway E63, 0.5 mi east of Melbourne. Drainage area is 1.61 mi ² .	1990-	03-03-94	12.32	(+)	06-17-90	(+)	(+)
Middle Creek near Lacey, Ia. (05472390)	Lat 42°43'55", long 93°42'26", at N1/4 corner sec.1, T.76 N., R.16 W., Mahaska County, Hydrologic Unit 07080106, at bridge on U.S. Highway 63, 1.5 mi northwest of Lacey. Drainage area is 23.0 mi ² .	1966-	03-03-94	85.82	813	04-24-76	90.06	9,650
Skunk River tributary near Richland, Ia. (05472555)	Lat 41°15'50", long 91°57'52", in NE1/4, sec.35, T.75 N., R.10 W., Keokuk County, Hydrologic Unit 07080107, at culvert on county highway W15, 4.9 mi north of Richland, 5.1 mi south of State Highway 92. Drainage area is 0.19 mi ² .	1990-	03-03-94	0.76	(+)	06-20-90	(+)	(+)
DES MOINES RIVER BASIN								
Drainage Ditch 97 tributary near Britt, Ia. (0548065350)	Lat 43°06'42", long 93°54'22", in SW1/4, sec.22, T.96 N., R.26 W., Hancock County, Hydrologic Unit 07100005, at culvert on county road, 5.4 mi northwest of Britt. Drainage area is 0.98 mi ² .	1991-	1994	(a)	(+)	07-09-93	94.53	(+)
White Fox Creek at Clarion, Ia. (05480930)	Lat 42°43'55", long 93°42'26", in NW1/4, sec.5, T.91 N., R.24 W., Wright County, Hydrologic Unit 07100005, at bridge on State Highway 3, 1.5 mi east of Clarion. Drainage area is 13.3 mi ² .	1966-	06-23-94	91.52	(+)	07-09-93	93.59	1,400
Brewers Creek tributary near Webster City, Ia. (05480993)	Lat 42°26'57", long 93°51'59", in NW1/4, sec.10, T.88 N., R.26 W., Hamilton County, Hydrologic Unit 07100005, at culvert on U.S. Highway 20, 2.5 mi southwest of Webster City. Drainage area is 1.58 mi ² .	1990-	02-18-94	95.81	(+)	06-04-91	99.25	(+)

MAXIMUM DISCHARGE AT CREST-STAGE PARTIAL-RECORD STATIONS--Continued

Station name and number	Location and drainage area	Period of record	Water year 1994 maximum			Period of record maximum		
			Date	Gage height (ft)	Dis- charge (ft ³ /s)	Date	Gage height (ft)	Dis- charge (ft ³ /s)
DES MOINES RIVER BASIN--Continued								
Bluff Creek at Pilot Mound, Ia. (05481510)	Lat 42°09'59", long 94°01'15", in NW1/4, sec.20 T.85 N., R.27 W., Boone County, Hydrologic Unit 07100004, at bridge on State Highway 329, at northwest edge of Pilot Mound. Drainage area is 23.5 mi ² .	1966-	02-18-94	85.77	612	07-09-93	89.25	1,450
Peas Creek tributary at Boone, Ia. (05481528)	Lat 42°02'06", long 93°51'13", in SW1/4, sec.35, T.84 N., R.26 W., Boone County, Hydrologic Unit 07100004, at culvert on Corporal Rodger Snedden Drive, at intersection with U.S. Highway 30, at the south edge of Boone city limits. Drainage area is 0.30 mi ² .	1990-	1994	(+)	(+)	06-19-93	92.95	(+)
Peas Creek at Boone, Ia. (05481530)	Lat 42°02'04", long 93°51'25", in SE1/4, sec.34, T.84 N., R.26 W., Boone County, Hydrologic Unit 07100004, at culvert on U.S. Highway 30, at the southwest side of Boone city limits. Drainage area is 1.69 mi ² .	1990-	1994	97.13	(+)	07-09-93	97.78	(+)
Hardin Creek near Farlin, Ia. (05482900)	Lat 42°05'34, long 94°25'39", in N1/4 sec.14, T.84 N., R.31 W., Greene County, Hydrologic Unit 07100006, at bridge on county highway, 1.5 mi northeast of Farlin. Drainage area is 101 mi ² .	1951-	1994	(+)	(+)	07-09-93	13.97	3,010
Brushy Fork Creek near Templeton, Ia. (05483318)	Lat 41°56'45", long 94°25'39", in NW1/4, sec.1, T.82 N., R.35 W., Carroll County, Hydrologic Unit 07100007, at bridge on U.S. Highway 71, 4 mi northeast of Templeton. Drainage area is 45.0 mi ² .	1966-	Destroyed in 1993			07-09-93	93.48	19,000
Middle Raccoon River tributary near Carroll, Ia. (05483349)	Lat 42°02'30", long 94°52'43", in NW1/4, sec.36, T.84 N., R.35 W., Carroll County, Hydrologic Unit 07100007, at bridge on U.S. Highway 71, 1.5 mi south of Carroll. Drainage area is 6.58 mi ² .	1966-	1994	(a)	(+)	07-09-93	25.79	7,000
Cedar Creek tributary No.2 near Winterset, Ia. (05485940)	Lat 41°19'49", long 94°03'05", in SW1/4, sec.35, T.76 N., R.28 W., Madison County, Hydrologic Unit 07100008, at culvert on State Highway 92, 0.5 mi west of U.S. Highway 169, 1 mi west of Winterset. Drainage area is 0.78 mi ² .	1990-	07-12-94	93.57	(+)	06-17-90	96.39	(+)
Bush Branch Creek near Stanzel, Ia. (05486230)	Lat 41°18'57", long 94°16'42", in SW1/4, sec.2, T.75 N., R.30 W., Adair County, Hydrologic Unit 07100008, at culvert on State Highway 92, 1 mi west of Stanzel. Drainage area is 3.02 mi ² .	1990-	08-30-94	88.90	(+)	09-15-92	97.06	(+)

MAXIMUM DISCHARGE AT CREST-STAGE PARTIAL-RECORD STATIONS--Continued

Station name and number	Location and drainage area	Period of record	Water year 1994 maximum			Period of record maximum		
			Date	Gage height (ft)	Dis- charge (ft ³ /s)	Date	Gage height (ft)	Dis- charge (ft ³ /s)
DES MOINES RIVER BASIN--Continued								
Little White Breast Creek tributary near Chariton, Ia. (05487825)	Lat 41°03'36", long 93°18'12", in SW1/4, sec. 5, T.72 N., R.21 W., Lucas County, Hydrologic Unit 07100008, at culvert on State Highway 14, 2.0 mi north of Chariton. Drainage area is 0.05 mi ² .	1990-	06-02-94	(a)	(+)	08-19-93	(+)	(+)
South Avery Creek near Blakesburg, Ia. (05489350)	Lat 41°00'59", long 92°50'46", in SE1/4, sec.19, T.72 N., R.15 W., Wapello County, Hydrologic Unit 07100009, at bridge on U.S. Highway 34, 3.5 mi north of Blakesburg. Drainage area is 33.1 mi ² .	1965-	06-23-94	81.01	2,170	07-03-82	90.20	(+)
Bear Creek at Ottumwa, Ia. (05489490)	Lat 41°00'43", long 92°27'54", in NW1/4, sec.27, T.72 N., R.14 W., Wapello County, Hydrologic Unit 07100009, at bridge on U.S. Highway 34, near west edge of Ottumwa. Drainage area is 22.9 mi ² .	1965-	06-23-94	85.63	1,400	09-21-65	92.80	4,000
			05-07-93 ¹	88.51	2,410			
			09-15-92 ¹	86.81	1,840			
			04-18-91 ¹	86.86	1,850			
			02-03-91 ¹	b87.12	(+)			
			05-25-90 ¹	90.76	3,120			
			09-09-89 ¹	86.77	1,820			
			02-20-88 ¹	b84.43	(+)			
			05-31-87 ¹	84.63	990			
			09-19-86 ¹	87.13	1,910			
			03-04-85 ¹	86.20	1,610			
			06-08-84 ¹	86.67	1,780			
			10-08-82 ¹	87.79	2,180			
			07-03-82 ¹	93.91	4,030			
			07-04-81 ¹	89.39	2,770			
			08-17-80 ¹	87.98	2,240			
			03-29-79 ¹	86.80	1,830			
			07-21-78 ¹	87.30	2,010			
			08-07-77 ¹	92.13	3,530			
			04-24-76 ¹	91.50	3,340			
			1975 ¹	(a)	e705			
			05-19-74 ¹	87.46	2,060			
			01-19-73 ¹	86.08	1,570			
			05-08-72 ¹	86.21	1,620			
			1971 ¹	(a)	e1,180			
			06-24-70 ¹	90.81	3,130			
			07-05-69 ¹	85.70	1,420			
			10-15-68 ¹	85.42	1,310			
06-09-67 ¹	89.98	2,880						
1966 ¹	(a)	e1,180						
09-21-65 ¹	93.80	4,000						
FOX RIVER BASIN								
South Fox Creek near West Grove, Ia. (05494110)	Lat 40°43'31", long 92°36'16", in SE1/4, sec.32, T.69 N., R.15 W., Davis County, Hydrologic Unit 07110001, at bridge on State Highway 2, 2.4 mi west of West Grove. Drainage area is 12.2 mi ² .	1965-				07-19-82	90.40	(+)
BIG SIOUX RIVER BASIN								
Dawson Creek near Sibley, Ia. (06483440)	Lat 43°23'23", long 95°42'53", near NW corner sec.20, T.99 N., R.41 W., Osceola County, Hydrologic Unit 10170204, at culvert on county highway A30, 2 mi southeast of Sibley. Drainage area is 4.35 mi ² .	1952-	06-13-94	6.82	(+)	06-29-93	8.84	(+)
Burr Oak Creek near Perkins, Ia. (06483495)	Lat 43°14'43", long 96°10'38", in SE1/4, sec.5, T.97 N., R.45 W., Sioux County, Hydrologic Unit 10170204, at bridge on U.S. Highway 75, 4 mi north of Perkins. Drainage area is 30.9 mi ² .	1966-	06-05-94	86.99	(+)	06-20-83	88.37	(+)

MAXIMUM DISCHARGE AT CREST-STAGE PARTIAL-RECORD STATIONS--Continued

Station name and number	Location and drainage area	Period of record	Water year 1994 maximum			Period of record maximum		
			Date	Gage height (ft)	Dis- charge (ft ³ /s)	Date	Gage height (ft)	Dis- charge (ft ³ /s)
PERRY CREEK BASIN								
Perry Creek near Merrill, Ia. (06599800)	Lat 42°43'16", long 96°10'38", in NW1/4, sec.12, T.91, N., R.47 W., Plymouth County, Hydrologic Unit 10230001, at bridge on county highway C44, 5 mi west of Merrill. Drainage area is 8.17 mi ² .	1953-	02-18-94	6.46	(+)	03-27-62	12.22	(+)
Perry Creek near Hinton, Ia. (06599950)	Lat 42°37'57", long 96°22'13", in NE1/4, sec.15, T.90 N., R.47 W., Plymouth County, Hydrologic Unit 10230001, at bridge on county highway, 4 mi west of Hinton. Drainage area is 30.8 mi ² .	1953-	1994	(+)	(+)	06-14-81	38.68	(+)
FLOYD RIVER BASIN								
Little Floyd River near Sanborn, Ia. (06600030)	Lat 43°11'10", long 95°43'30", in NE1/4, sec.31, T.97 N., R.41 W., O'Brien County, Hydrologic Unit 10230002, at bridge on U.S. Highway 18, 3.5 mi west of Sanborn. Drainage area is 8.44 mi ² .	1966-	06-12-94	89.38	(+)	03-02-70	89.04	(+)
Sweeney Creek tributary near Sheldon, Ia. (06600036)	Lat 43°11'10", long 95°45'25", in SW1/4, sec.25, T.97 N., R.42 W., O'Brien County, Hydrologic Unit 10230002, at culvert on U.S. Highway 18, 4.8 mi east of Sheldon. Drainage area is 0.62 mi ² .	1991-	1994	(a)	(+)	07-14-93	99.27	(+)
Sand Hill Lake Ditch near Sloan, Ia. (06600880)	Lat 42°13'44", long 96°17'39", in SE1/4, sec.27, T.86 N., R.47 W., Woodbury County, Hydrologic Unit 10230001, at culvert on county road, 3.5 mi west of Sloan. Drain- age area is indeterminate.	1991-	1994	(+)	(+)	07-13-92	7.92	(+)
MONONA-HARRISON DITCH BASIN								
Big Whiskey Slough near Remsen, Ia. (06601480)	Lat 42°48'28", long 95°53'21", in NW1/4, sec.11, T.92 N., R.43 W., Plymouth County, Hydrologic Unit 10230004, at bridge on State Highway 3, 4.2 mi east of Remsen. Drainage area is 12.9 mi ² .	1966-	06-22-94	91.95	405	03-22-79	94.87	(+)
Elliott Creek at Lawton, Ia. (06602190)	Lat 42°28'30", long 96°11'22", in NW1/4, sec.3, T.88 N., R.46 W. Woodbury County, Hydrologic Unit 10230004, at bridge on U.S. Highway 20, at west edge of Lawton. Drainage area is 34.8 mi ² .	1966-	1994	(+)	(+)	06-12-84	86.14	30
LITTLE SIOUX RIVER BASIN								
Ocheyedan River near Ocheyedan, Ia. (06604510)	Lat 43°25'58", long 95°36'41", in NE1/4, sec.6, T.99 N., R.40 W., Osceola County, Hydrologic Unit 10230003, at bridge on State Highway 9, 4 mi northwest of Ocheyedan. Drainage area is 73.5 mi ² .	1966-	02-19-94	84.28	(+)	06-29-93	86.79	2,200

MAXIMUM DISCHARGE AT CREST-STAGE PARTIAL-RECORD STATIONS--Continued

Station name and number	Location and drainage area	Period of record	Water year 1994 maximum			Period of record maximum		
			Date	Gage height (ft)	Dis- charge (ft ³ /s)	Date	Gage height (ft)	Dis- charge (ft ³ /s)
LITTLE SIOUX RIVER BASIN--Continued								
Dry Run Creek near Harris, Ia. (06604584)	Lat 43°26'42", long 95°27'41", in NE1/4, sec.33, T.100 N., R.39 W., Osceola County, Hydrologic Unit 10230003, at culvert on county highway M12, 1 mi west of Harris. Drainage area is 4.30 mi ² .	1990-	04-12-94	11.83	(+)	06-29-93	16.44	419
Prairie Creek near Spencer, Ia. (06605340)	Lat 43°05'16", long 95°09'40", in SE1/4, sec.36, T.96 N., R.37 W., Clay County, Hydrologic Unit 10230003, at bridge on U.S. Highway 71, 4 mi south of Spencer. Drainage area is 22.3 mi ² .	1966-	06-13-94	91.05	(+)	07-04-71	90.77	2,200
Willow Creek near Cornell, Ia. (06605750)	Lat 42°58'21", long 95°09'40", in SE1/4, sec.12, T.94 N., R.37 W., Clay County, Hydrologic Unit 10230003, at bridge on U.S. Highway 71, 2 mi northwest of Cornell. Drainage area is 78.6 mi ² .	1966-	1994	(a)	(+)	03-22-79	91.49	4,200
Little Sioux River tributary near Peterson, Ia. (06605868)	Lat 42°55'25", long 95°21'55", in NW1/4, sec.32, T.94 N., R.38 W., Clay County, Hydrologic Unit, 10230003, at culvert on State Highway 10, 1.2 mi northwest of Peterson. Drainage area is 0.29 mi ² .	1991-	1994	(a)	(+)	05-31-93	91.81	(+)
Halfway Creek at Schaller, Ia. (0660683710)	Lat 42°30'18", long 95°17'19", in SW1/4, sec.24, T.85 N., R.38 W., Sac County, Hydrologic Unit 10230005, at culvert on State Highway 110, 0.1 mi north of Schaller. Drainage area is 1.75 mi ² .	1990-	1994	(a)	(+)	07-14-92	94.11	(+)
BOYER RIVER BASIN								
Boyer River tributary at Woodbine, Ia. (06609482)	Lat 41°43'58", long 95°43'19", in SE1/4, sec.15, T.80 N., R.43 W., Harrison County, Hydrologic Unit 10230007, at culvert on county highway F32, 0.5 mi west of Woodbine. Drainage area is 0.67 mi ² .	1990-	1994	(a)	(+)	05-18-91	90.84	(+)
Willow Creek near Soldier, Ia. (06609560)	Lat 41°55'17", long 95°42'05", near S1/4 corner sec.11, T.82 N., R.42 W., Monona County, Hydrologic Unit 10230001, at bridge on State Highway 37, 6 mi southeast of Soldier. Drainage area is 29.1 mi ² .	1966-	06-12-94	79.46	3,490	07-09-93	84.66	6,840
MOSQUITO CREEK BASIN								
Moser Creek near Earling, Ia. (06610510)	Lat 41°46'35", long 95°26'55", in NE1/4, sec.1, T.80 N., R.40 W., Shelby County, Hydrologic Unit 10230006, at bridge on State Highway 37, 1.5 mi west of Earling. Drainage area is 21.6 mi ² .	1966-	06-18-94	79.59	1,590	06-15-84	87.89	(+)

MAXIMUM DISCHARGE AT CREST-STAGE PARTIAL-RECORD STATIONS--Continued

Station name and number	Location and drainage area	Period of record	Water year 1994 maximum			Period of record maximum		
			Date	Gage height (ft)	Dis- charge (ft ³ /s)	Date	Gage height (ft)	Dis- charge (ft ³ /s)
MOSQUITO CREEK BASIN--Continued								
Mosquito Creek tributary near Neola, Ia. (06610581)	Lat 41°30'06", long 95°35'44", 1991- in NE1/4, sec.6, T.77 N., R.41 W., Pottawattamie County, Hydrologic Unit 10230006, at culvert on State Highway 191, 3.8 mi north of Neola. Drainage area is 3.22 mi ² .	07-01-94	77.56	(+)	07-09-93	81.06	(+)	
Mosquito Creek at Neola, Ia. (06610600)	Lat 41°26'36", long 95°36'42", in NE1/4, sec.25, T.77 N., R.42 W., Pottawattamie County, Hydrologic Unit 10230006, at bridge on county highway, 0.5 mi south of Neola. Prior to 04-19-63, gage located 0.9 mi upstream. Drainage area is 131 mi ² .	1952-	07-01-94 07-01-93 ¹ 1992 ¹ 06-14-91 ¹ 06-17-90 ¹ 09-08-89 ¹ 1988 ¹ 05-26-87 ¹ 06-14-86 ¹ 04-05-85 ¹ 06-15-84 ¹ 06-14-83 ¹ 02-20-82 ¹ 05-04-81 ¹ 06-06-80 ¹ 03-29-79 ¹ 09-13-78 ¹ 05-21-77 ¹ 06-14-76 ¹ 08-29-75 ¹ 05-16-74 ¹ 09-26-73 ¹ 09-11-72 ¹ 1971 ¹ 1970 ¹ 07-09-69 ¹ 06-23-68 ¹ 06-15-67 ¹ 05-23-66 ¹ 03-01-65 ¹ 05-24-64 ¹ 06-05-63 ¹ 05-26-62 ¹ 07-27-61 ¹ 08-05-60 ¹ 06-28-59 ¹ 07-02-58 ¹ 06-16-57 ¹ 05-13-56 ¹ 07-09-55 ¹ 08-22-54 ¹ 1953 ¹ 08-29-52 ¹	18.25 30.39 (a) 17.88 30.26 26.64 (a) 22.00 20.48 18.13 18.45 19.74 23.74 22.77 27.56 23.51 31.28 18.93 17.46 16.58 16.89 28.45 31.23 (a) (a) 19.36 16.01 18.03 22.08 28.41 27.15 16.34 15.34 12.62 10.38 12.11 23.26 17.07 10.56 12.30 9.28 (a) 21.33	2,020 10,400 <1,230 2,130 10,800 7,520 <1,440 4,440 3,560 2,430 2,570 3,170 5,470 4,880 8,270 5,330 11,900 3,010 2,570 2,380 2,670 11,100 13,700 <2,040 <2,040 4,180 2,440 3,430 6,030 10,900 9,930 2,590 6,320 4,240 2,900 3,900 17,300 8,070 2,990 4,030 2,370 <1,600 13,600	07-02-58	c23.26	17,300
Keg Creek tributary near Mineola, Ia. (06805849)	Lat 41°07'53", long 95°43'31", in SW1/4, sec.7, T.73 N., R.42 W., Mills County, Hydrologic Unit 10240001, at culvert on county highway H12, 2.4 mi southwest of Mineola. Drainage area is 2.01 mi ² .	1991-	1994	(a)	(+)	08-29-93	81.53	(+)
Township Ditch tributary near Thurman, Ia. (06806200)	Lat 40°50'23", long 95°48'30", in NE1/4, sec.29, T.70 N., R.43 W., Fremont County, Hydrologic Unit 10240001, at culvert on county highway L31, 3.2 mi northwest of Thurman. Drainage area is indeterminate.	1991-	1994	(a)	(+)	07-23-93	87.23	(+)

MAXIMUM DISCHARGE AT CREST-STAGE PARTIAL-RECORD STATIONS--Continued

Station name and number	Location and drainage area	Period of record	Water year 1994 maximum			Period of record maximum		
			Date	Gage height (ft)	Dis- charge (ft ³ /s)	Date	Gage height (ft)	Dis- charge (ft ³ /s)
NISHNABOTNA RIVER BASIN								
Elm Creek near Jacksonville, Ia. (0680737930)	Lat 41°38'44", long 95°12'18", in SW1/4, sec.18, T.79 N., R.37 W., Shelby County, Hydrologic Unit 10240002, at culvert on State Highway 44, 2.8 mi west of Jacksonville. Drainage area is 9.43 mi ² .	1990-	1994	(a)	(+)	06-17-90	95.01	(+)
Indian Creek near Emerson, Ia. (06807470)	Lat 41°01'50", long 95°22'51", in NW1/4, sec.19, T.72 N., R.39 W., Montgomery County, Hydrologic Unit 10240002, at bridge on U.S. State Highway 34, 1 mi east of Emerson. Drainage area is 37.3 mi ² .	1966-	1994	(a)	(+)	06-15-82	92.63	15,800
Middle Silver Creek near Oakland, Ia (06807760)	Lat 41°19'28", long 95°33'19", in E1/4 corner, sec.4, T.75 N., R.41 W., Pottawattamie County, Hydrologic Unit 10240002, at bridge on county highway, 8.5 mi northwest of Oakland. Drainage area is 25.7 mi ² .	1953-	06-22-94	10.34	638	07-04-73	14.73	2,110
Bluegrass Creek at Audubon, Ia. (06808880)	Lat 41°42'46", long 94°55'43", in NW1/4, sec.28, T.73 N., R.35 W., Audubon County, Hydrologic Unit 10240003, at bridge on U.S. Highway 71, near south edge of Audubon. Drainage area is 15.4 mi ² .	1966-	1994	(a)	(+)	07-09-93	88.55	(+)
TARKIO RIVER BASIN								
Tarkio River near Elliott, Ia. (06811760)	Lat 41°06'06", long, 95°06'09", near NE corner sec.28, T.73 N., R.37 W., Montgomery County, Hydrologic Unit 10240005, at bridge on county highway, 4.5 mi southeast of Elliott. Drainage area is 10.7 mi ² .	1952-	1994	(a)	(+)	08-29-93	12.98	4,640
East Tarkio Creek near Stanton, Ia. (06811800)	Lat 41°04'48", long 95°05'34", in W1/2 sec.34, T.73 N., R.37 W., Montgomery County, Hydrologic Unit 10240005, at bridge on county highway H24, 7 mi north of Stanton. Drainage area is 4.66 mi ² .	1952-	06-22-94	8.88	712	06-09-67	13.74	4,790
Tarkio River tributary near Stanton, Ia. (06811820)	Lat 41°02'38", long 95°05'55", in NE1/4 sec.16, T.72 N., R.37 W., Montgomery County, Hydrologic Unit 10240005, at box culvert on county highway H63, 4 mi north of Stanton. Drainage area is 0.67 mi ² .	1952-	06-22-94	(a)	(+)	06-09-67	5.18	835
NODAWAY RIVER BASIN								
West Nodaway River at Massena, Ia. (06816290)	Lat 41°14'44", long 94°45'27", in SE1/4, sec.27, T.70 N., R.34 W., Cass County, Hydrologic Unit 10240009, at bridge on State Highway 148, at southeast corner of Massena. Drainage area is 23.4 mi ² .	1966-	1994	(a)	(+)	02-01-73	82.39	(+)

MAXIMUM DISCHARGE AT CREST-STAGE PARTIAL-RECORD STATIONS--Continued

Station name and number	Location and drainage area	Period of record	Water year 1994 maximum			Period of record maximum		
			Date	Gage height (ft)	Dis- charge (ft ³ /s)	Date	Gage height (ft)	Dis- charge (ft ³ /s)
PLATTE RIVER BASIN								
Middle Branch 102 River near Gravity, Ia. (06819110)	Lat 40°49'40", long 94°44'18", in SE1/4, sec.27, T.70 N., R.34 W., Taylor County, Hydrologic Unit 10240013, at bridge on State Highway 148, 4.8 mi north of Gravity. Drainage area is 33.5 mi ² .	1966-	06-18-94	64.50	(+)	02-01-73	83.65	(+)
Sevenmile Creek near Thayer, Ia. (06897858)	Lat 41°01'37", long 94°00'03", in SE1/4, sec.18, T.72 N., R.27 W., Clarke County, Hydrologic Unit 10280102, at culvert on U.S. Highway 34, 2.6 mi east of Thayer. Drain- age area is 6.61 mi ² .	1991-	03-01-94	15.57	(+)	09-15-92	24.92	(+)
CHARITON RIVER BASIN								
Chariton River near Udell, Ia. (06903980)	Lat 40°46'53", long 92°50'12", in NE1/4, sec.17, T.69 N., R.17 W., Appanoose County, Hydrologic Unit 10280201, at bridge on county highway, 5 west of Udell. Drainage area is 47.8 mi ² .	1972-	1994	(a)	<1,920	07-16-82	860.22	(+)

¹Previously unpublished.

MISCELLANEOUS WATER-QUALITY DATA

231

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	TEMPER- ATURE WATER (DEG C) (00010)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	TEMPER- ATURE WATER (DEG C) (00010)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)
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05388250 Upper Iowa River near Dorchester, IA (LAT 43 25 16N LONG 091 30 31W)

OCT 1993					APR 1994				
12...	1736	766	10.0	563	19...	1026	867	13.0	502
DEC 03...	1425	430	3.0	590	JUN 07...	0900	347	22.0	529
MAR 1994					JUL 26...	1105	790	21.0	506
08...	1045	2520	1.0	269					

05389200 Bloody Run Trib at Spook Cave near Froelich, IA (LAT 43 02 00N LONG 091 18 27W)

MAY 1993					MAR 1994				
28...	1045	8.6	13.0	625	10...	1530	6.6	4.0	686
JUN 30...	1150	20	18.5	425	APR 20...	1008	4.9	10.0	684
SEP 27...	1450	9.1	12.0	693	MAY 03...	1005	5.0	10.0	690
OCT 18...	1357	7.2	11.0	700	JUN 22...	1755	4.6	21.0	693
NOV 16...	0803	6.8	6.0	679	JUL 28...	1454	4.9	18.0	711
DEC 10...	0920	6.3	6.0	675	AUG 09...	1500	4.2	14.0	725
JAN 1994					SEP 20...	0756	4.5	12.0	734
11...	1605	5.3	1.0	736					
FEB 22...	1300	7.9	2.0	646					

05389250 Bloody Run Site No. 2 near Giard, IA (LAT 43 02 08N LONG 091 16 00W)

MAY 1993					MAR 1994				
28...	1005	20	13.0	620	10...	1644	16	4.0	631
JUN 30...	1105	58	16.0	400	APR 20...	1118	11	9.0	666
SEP 27...	1615	19	13.0	512	MAY 03...	1115	11	11.0	659
OCT 18...	1514	16	12.0	668	JUN 22...	1640	10	22.0	655
NOV 16...	0919	14	5.0	672	JUL 28...	1600	9.4	18.0	693
DEC 10...	1005	16	6.0	660	AUG 09...	1602	7.8	15.5	678
FEB 1994					SEP 20...	0907	11	14.0	718
22...	1405	18	2.0	559					

05389400 Bloody Run Creek near Marquette, IA (LAT 43 02 27N LONG 091 12 23W)

OCT 1993					APR 1994				
15...	0850	33	10.0	609	20...	1410	23	11.0	612
DEC 09...	1630	25	6.0	630	JUN 08...	0830	24	14.0	603
JAN 1994					23...	2015	93	17.0	570
12...	0923	24	2.0	611	24...	0856	41	16.0	562
26...	1045	21	2.0	637					
MAR 09...	1130	30	5.0	509					

05389500 Mississippi River at McGregor, IA (LAT 43 01 29N LONG 091 10 21W)

OCT 1993					JUN 1994				
20...	1400	38200	13.0	578	23...	1430	43100	21.5	476
APR 1994					AUG 09...	1420	31300	23.5	480
22...	1740	71700	11.0	399					

05411200 Sny Magill Creek No. 3 Site near Clayton, IA (LAT 42 58 53N LONG 091 14 27W)

MAY 1993					MAR 1994				
28...	1325	6.4	12.0	600	10...	1011	6.1	2.0	661
JUN 30...	1455	13	17.0	578	APR 22...	1100	3.9	9.0	649
SEP 28...	0950	7.5	9.0	654	MAY 03...	1512	4.1	12.0	659
OCT 19...	1100	6.1	11.0	662	JUN 21...	1700	3.4	24.0	629
NOV 16...	1325	6.3	6.0	647	JUL 28...	1036	2.9	16.0	664
DEC 09...	1330	6.3	5.5	600	AUG 10...	1208	8.2	14.5	550
JAN 1994					SEP 19...	1320	3.3	18.0	667
11...	1105	5.4	1.0	667					
FEB 24...	1022	6.0	1.0	707					

MISCELLANEOUS WATER-QUALITY DATA

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05411230 West Fork Sny Magill Creek near Clayton, IA (LAT 42 58 35N LONG 091 14 12W)									
MAY 1993					APR 1994				
28...	1245	3.5	12.0	600	22...	1005	2.8	8.0	639
SEP					MAY				
28...	0905	5.6	9.0	625	03...	1354	3.0	12.0	642
NOV					JUN				
16...	1223	4.0	5.0	638	21...	1510	2.8	21.0	650
DEC					JUL				
09...	1255	2.5	6.0	600	28...	0940	2.2	15.0	645
JAN 1994					AUG				
11...	1000	3.0	1.0	574	10...	1124	4.8	13.5	570
FEB					SEP				
24...	0910	3.3	1.0	667	19...	1225	2.6	17.0	656
MAR									
10...	0925	3.3	2.0	635					
05411260 North Cedar Creek near Clayton, IA (LAT 42 57 46N LONG 091 13 45W)									
MAY 1993					MAR 1994				
28...	1135	4.5	12.0	575	10...	0835	3.6	1.0	664
JUN					APR				
30...	1347	17	17.0	500	22...	0910	2.9	6.0	594
SEP					MAY				
28...	0753	6.1	9.0	592	03...	1245	2.5	11.0	607
OCT					JUN				
19...	0838	5.0	10.0	617	22...	1600	2.9	20.5	610
NOV					JUL				
16...	1105	3.8	5.5	579	28...	0839	2.4	14.0	615
DEC					AUG				
09...	1140	4.4	5.0	550	10...	1307	5.7	15.0	552
JAN 1994					SEP				
11...	0750	3.1	1.0	595	19...	1022	2.1	16.5	629
FEB									
24...	0801	3.0	0.5	575					
05411290 Sny Magill Tributary near Clayton, IA (LAT 42 58 07N LONG 091 13 27W)									
MAY 1993					FEB 1994				
28...	1405	2.2	11.0	580	24...	1054	1.8	1.0	696
JUN					MAR				
30...	1600	4.1	17.0	600	10...	1100	2.3	3.0	595
SEP					APR				
28...	1133	2.6	12.0	601	22...	1147	1.6	10.0	580
OCT					JUN				
19...	1200	2.0	12.0	635	21...	1855	1.8	19.0	611
NOV					JUL				
16...	1420	1.9	6.0	618	28...	1135	1.3	15.0	599
DEC					AUG				
09...	1420	1.5	5.0	600	10...	1130	1.9	13.0	575
JAN 1994					SEP				
11...	1200	1.2	1.0	611	19...	1520	1.0	15.5	617
0541130 Sny Magill Creek No. 2 Site near Clayton, IA (LAT 43 02 08N LONG 091 16 00W)									
MAY 1993					MAR 1994				
28...	1210	24	11.5	600	10...	1155	17	3.0	630
JUN					APR				
30...	1525	58	17.0	550	22...	1250	15	12.0	630
SEP					MAY				
28...	1233	24	12.0	605	03...	1655	15	12.0	616
OCT					JUN				
19...	1310	21	13.0	638	22...	1405	14	20.0	627
NOV					JUL				
16...	1515	19	6.0	618	28...	1246	12	22.5	540
DEC					AUG				
09...	1220	20	6.0	625	10...	1140	25	13.5	599
JAN 1994					SEP				
11...	1200	14	1.0	628	19...	1433	11	18.0	641
FEB									
24...	1147	21	3.0	622					
05411400 Sny Magill Creek near Clayton, IA (LAT 42 56 55N LONG 091 11 10W)									
OCT 1993					JUN 1994				
13...	1500	27	10.0	635	06...	1636	17	19.0	609
NOV					24...	1009	90	14.0	546
16...	1540	27	6.0	587	JUL				
DEC					25...	1715	19	18.5	653
09...	1045	22	4.0	600	AUG				
FEB 1994					10...	1335	34	15.0	577
01...	1715	19	1.0	637	SEP				
MAR					09...	1315	16	17.5	605
10...	1353	25	3.0	609					
APR									
20...	1703	21	9.0	610					

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05411950 Big Spring Fish Hatchery near Elkader, IA (LAT 42 54 33N LONG 091 28 01W)									
DEC 1993					JUN 1994				
08...	1130	21	9.0	600	07...	1420	27	11.0	728
MAR 1994					JUL				
09...	1415	62	7.0	485	29...	1236	27	10.0	822
05412060 Silver Creek near Luana, IA (L-23S) (LAT 43 01 19N LONG 091 29 21W)									
OCT 1993					APR 1994				
14...	0640	3.4	9.0	708	19...	1345	1.8	16.0	640
FEB 1994					JUN				
01...	0331	1.3	1.0	740	02...	1130	2.0	19.0	632
MAR					JUL				
08...	1330	4.0	3.0	529	27...	1245	1.7	21.0	733
05412100 Roberts Creek above St. Olaf, IA (LAT 42 55 49N LONG 091 23 03W)									
OCT 1993					APR 1994				
14...	1050	27	10.0	664	20...	0840	16	11.0	602
DEC					JUN				
08...	1415	18	2.0	600	07...	1607	6.3	24.0	631
MAR 1994					JUL				
09...	1610	73	3.0	419	27...	1030	13	22.0	655
05412500 Turkey River at Garber, IA (LAT 42 44 24N LONG 091 15 42W)									
OCT 1993					JUN 1994				
13...	0729	1310	6.0	619	06...	1346	460	25.0	530
NOV					AUG				
30...	1545	720	3.0	578	08...	1620	679	25.5	505
MAR 1994									
07...	1726	5380	2.0	272					
05418500 Maquoketa River near Maquoketa, IA (LAT 42 05 05N LONG 090 38 04W)									
DEC 1993					MAY 1994				
08...	1135	977	2.0	622	04...	1600	812	14.5	550
MAR 1994					AUG				
24...	1730	1310	9.5	550	22...	1802	1250	24.0	325
05420500 Mississippi River at Clinton, IA (LAT 41 46 50N LONG 090 15 07W)									
OCT 1993					SEP 1994				
29...	1525	50200	2.5	451	26...	1300	99300	19.5	333
JUL 1994									
28...	1530	57400	24.5	442					
05421000 Wapsipinicon River at Independence, IA (LAT 42 27 49N LONG 091 53 42W)									
OCT 1993					APR 1994				
12...	0846	1350	11.0	462	18...	1250	1020	14.0	437
NOV					JUN				
30...	1040	290	2.0	471	06...	1015	213	25.0	404
JAN 1994					AUG				
26...	1421	158	1.0	505	08...	1240	391	24.5	309
MAR									
07...	1250	2280	2.0	247					
05422000 Wapsipinicon River near De Witt, IA (LAT 41 46 01N LONG 090 32 05W)									
DEC 1993					JUL 1994				
08...	1330	1160	2.0	527	11...	1210	2530	26.5	418
FEB 1994					AUG				
11...	1140	609	0.0	625	22...	1126	1170	25.0	320
MAR									
24...	1130	2300	16.0	560					
05422470 Crow Creek at Bettendorf, IA (LAT 41 33 03N LONG 090 27 15W)									
OCT 1993					MAY 1994				
26...	1600	9.2	9.0	550	17...	1230	7.5	0.0	577
DEC					AUG				
09...	1215	6.5	3.5	760	30...	1220	5.3	18.5	430
MAR 1994									
31...	1015	11	6.0	700					

MISCELLANEOUS WATER-QUALITY DATA

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05449000 East Branch Iowa River near Klemme, IA (LAT 43 00 31N LONG 093 37 42W)									
OCT 1993					JUN 1994				
01...	1205	66	13.0	600	07...	1220	54	21.0	750
NOV					JUL				
16...	1355	40	2.0	670	08...	1405	557	18.0	550
MAR 1994					AUG				
16...	1455	64	3.0	558	15...	1450	137	21.0	800
05449500 Iowa River near Rowan, IA (LAT 42 45 36N LONG 093 37 23W)									
OCT 1993					JUN 1994				
01...	1335	242	12.0	610	07...	0940	192	19.0	525
NOV					JUL				
17...	1030	145	2.0	630	08...	1100	937	19.0	525
MAR 1994									
16...	1315	276	3.0	600					
05451500 Iowa River at Marshalltown, IA (LAT 42 03 57N LONG 092 54 27W)									
OCT 1993					MAY 1994				
26...	1105	1220	10.5	684	20...	1235	662	22.0	500
DEC					JUN				
11...	0945	507	0.0	688	23...	0945	2220	23.0	525
05451700 Timber Creek near Marshalltown, IA (LAT 42 00 25N LONG 092 51 15W)									
OCT 1993					APR 1994				
25...	1420	112	12.0	597	06...	1750	43	7.5	540
DEC					MAY				
11...	1220	41	0.5	600	20...	1050	47	16.0	586
05451790 Deer Creek near Toledo, IA (LAT 42 00 52N LONG 092 35 24W)									
JUN 1994					AUG 1994				
24...	1305	104	20.0	510	10...	1245	22	17.5	540
JUL									
05...	1310	73	26.0	480					
05451900 Richland Creek near Haven, IA (LAT 41 53 58N LONG 092 28 27W)									
OCT 1993					JUN 1994				
22...	1205	54	10.0	388	27...	1240	40	21.0	530
DEC					AUG				
10...	1230	21	4.0	500	09...	1535	9.0	23.0	460
MAY 1994									
13...	1100	18	17.0	465					
05452000 Salt Creek near Elberon, IA (LAT 41 57 51N LONG 092 18 47W)									
DEC 1993					AUG 1994				
10...	1000	82	4.0	580	11...	1504	64	18.5	550
MAY 1994									
11...	1840	87	22.0	413					
05452200 Walnut Creek near Hartwick, IA (LAT 41 50 06N LONG 092 23 10W)									
OCT 1993					JUN 1994				
22...	1010	55	7.0	496	20...	1530	34	29.0	340
DEC					AUG				
10...	1400	21	3.0	470	09...	1310	11	23.0	460
MAY 1994									
25...	1635	19	24.0	525					
05453000 Big Bear Creek at Ladora, IA (LAT 41 44 58N LONG 092 10 55W)									
OCT 1993					MAY 1994				
22...	1450	140	10.0	525	10...	2030	50	19.0	450
DEC					JUN				
10...	1345	53	2.5	521	20...	1210	153	25.0	430
MAR 1994					AUG				
31...	1350	57	9.0	475	09...	1040	24	20.0	490
05453100 Iowa River at Marengo, IA (LAT 41 48 48N LONG 092 03 51W)									
OCT 1993					JUN 1994				
22...	1030	2510	10.0	640	22...	1315	2280	27.0	425
DEC					AUG				
10...	1200	1240	2.0	634	11...	1138	1080	20.5	610
MAY 1994									
11...	1420	1650	23.0	425					

MISCELLANEOUS WATER-QUALITY DATA

235

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	TEMPER- ATURE WATER (DEG C) (00010)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	TEMPER- ATURE WATER (DEG C) (00010)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)
05453520 Iowa River below Coralville Dam nr Coralville, IA (LAT 41 43 23N LONG 091 31 47W)									
DEC 1993					JUL 1994				
07...	1330	1060	1.5	600	08...	1730	4870	26.0	480
MAR 1994					AUG				
23...	1415	2140	10.0	620	18...	1210	1290	23.0	489
05454000 Rapid Creek near Iowa City, IA (LAT 41 41 19N LONG 091 29 15W)									
MAR 1994					JUN 1994				
22...	1630	16	14.0	550	29...	1600	14	22.0	540
05454220 Clear Creek near Oxford, IA (LAT 41 43 06N LONG 091 44 24W)									
NOV 1993					MAY 1994				
04...	1305	31	6.0	536	16...	1320	14	19.0	489
DEC					AUG				
07...	1000	20	6.0	532	18...	1720	11	25.0	675
MAR 1994									
04...	1710	500	2.0	206					
21...	1220	45	9.0	400					
05454300 Clear Creek near Coralville, IA (LAT 41 40 36N LONG 091 35 55W)									
OCT 1993					MAR 1994				
26...	1440	78	0.0	520	21...	1620	80	11.0	425
DEC					JUN				
23...	1208	17	0.0	620	29...	1605	41	25.0	599
JAN 1994									
18...	1600	23	0.0	500					
05454500 Iowa River at Iowa City, IA (LAT 41 39 24N LONG 091 32 27W)									
DEC 1993					JUL 1994				
07...	1535	1110	2.0	626	01...	1720	4990	27.0	484
MAR 1994					08...	1110	4390	26.0	420
22...	1415	2480	9.5	620	AUG				
					18...	1433	1300	25.0	560
05455010 South Branch Ralston Creek at Iowa City, IA (LAT 41 39 05N LONG 091 30 27W)									
MAR 1994					JUN 1994				
23...	1620	1.7	13.0	563	29...	1110	0.80	21.0	704
MAY									
16...	1605	0.48	19.5	636					
05455100 Old Mans Creek near Iowa City, IA (LAT 41 36 23N LONG 091 36 56W)									
MAR 1994					JUN 1994				
22...	1030	103	16.0	490	29...	1210	138	22.0	450
MAY					SEP				
24...	1435	45	23.5	474	15...	0820	15	22.0	518
05455270 North Fork English River near Parnell, IA (LAT 41 31 36N LONG 091 59 15W)									
JUN 1994					AUG 1994				
30...	1440	119	25.0	450	10...	1525	20	21.5	440
05455500 English River at Kalona, IA (LAT 41 27 59N LONG 091 42 56W)									
OCT 1993					JUN 1994				
15...	1245	371	11.5	399	22...	1530	378	25.5	326
NOV					AUG				
30...	1540	138	0.0	488	02...	1400	41	26.0	446
05455700 Iowa River near Lone Tree, IA (LAT 41 25 15N LONG 091 28 25W)									
OCT 1993					JUN 1994				
15...	1015	2080	13.0	543	22...	1305	3950	27.0	360
NOV					AUG				
30...	1330	1780	1.0	603	03...	1410	1370	25.5	589
MAY 1994									
04...	1525	1010	14.5	554					

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05457700 Cedar River at Charles City, IA (LAT 43 03 45N LONG 092 40 23W)									
OCT 1993					JUN 1994				
19...	1344	562	11.0	600	09...	1745	2230	20.0	350
MAR 1994					AUG				
09...	1040	1650	0.0	240	02...	0948	1630	21.5	354
APR									
21...	0930	841	10.0	500					
05458000 Little Cedar River near Ionia, IA (LAT 43 02 05N LONG 092 30 05W)									
OCT 1993					APR 1994				
15...	1127	120	10.0	470	21...	1144	176	11.0	460
DEC					AUG				
08...	1415	78	2.0	470	02...	1357	954	23.0	214
MAR 1994									
16...	0906	38	1.0	320					
05458500 Cedar River at Janesville, IA (LAT 42 38 54N LONG 092 27 54W)									
OCT 1993					JUN 1994				
18...	1835	1160	10.5	550	16...	1634	1740	35.0	450
DEC					AUG				
08...	1730	631	2.0	550	03...	1419	2590	24.0	444
05458900 West Fork Cedar River at Finchford, IA (LAT 42 37 50N LONG 092 32 24W)									
OCT 1993					APR 1994				
13...	1057	728	11.0	600	21...	1552	760	15.5	550
DEC					JUN				
09...	0945	362	3.0	560	08...	1505	398	23.0	480
MAR 1994					AUG				
08...	1415	4770	0.0	250	03...	1146	613	24.5	520
17...	1030	1060	3.0	500					
05459500 Winnebago River at Mason City, IA (LAT 43 09 54N LONG 093 11 33W)									
NOV 1993					JUL 1994				
16...	1035	190	2.0	550	13...	0705	524	19.0	675
MAR 1994					AUG				
16...	0935	548	1.0	580	15...	1830	494	22.0	700
APR					SEP				
20...	1147	300	10.5	691	28...	0740	238	14.0	700
JUN									
08...	0745	296	18.0	650					
05462000 Shell Rock River at Shell Rock, IA (LAT 42 42 43N LONG 092 34 58W)									
OCT 1993					JUN 1994				
19...	1040	1130	10.0	600	08...	1100	1060	21.0	500
DEC					25...	1117	6200	22.5	430
08...	1000	605	15.0	570	AUG				
APR 1994					03...	0916	1870	23.0	501
19...	1922	1130	4.0	620					
05463000 Beaver Creek at New Hartford, IA (LAT 42 34 22N LONG 092 37 04W)									
OCT 1993					APR 1994				
14...	1650	432	12.0	600	21...	1646	205	14.0	510
DEC					JUN				
09...	1100	149	2.5	590	10...	1410	104	28.0	545
MAR 1994					AUG				
22...	1349	227	11.0	593	03...	1549	158	24.0	560
05463050 Cedar River at Cedar Falls, IA (LAT 42 32 20N LONG 092 26 58W)									
OCT 1993					MAY 1994				
22...	1215	3790	9.0	556	05...	1125	3760	13.0	498
DEC					JUN				
03...	1230	2410	1.5	619	24...	1115	8980	19.5	385
MAR 1994					AUG				
15...	1245	6090	4.0	486	16...	1135	8290	19.5	480
05463500 Black Hawk Creek at Hudson, IA (LAT 42 24 28N LONG 092 27 47W)									
OCT 1993					JUN 1994				
14...	1305	480	12.0	570	10...	1040	100	24.0	430
DEC					AUG				
07...	1445	136	2.0	600	01...	1451	188	23.0	580
MAR 1994									
15...	1615	320	5.0	510					

MISCELLANEOUS WATER-QUALITY DATA

237

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	TEMPER- ATURE WATER (DEG C) (00010)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	TEMPER- ATURE WATER (DEG C) (00010)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)
05464000 Cedar River at Waterloo, IA (LAT 42 29 44N LONG 092 20 03W)									
JUN 1994 09...	1000	3080	22.0	400	AUG 1994 01...	1206	3910	24.0	543
05464500 Cedar River at Cedar Rapids, IA (LAT 41 58 14N LONG 091 40 01W)									
OCT 1993 13...	1341	7550	10.5	515	AUG 1994 01...	1032	5280	25.0	525
DEC 07...	1000	3350	2.0	590					
05464580 Prairie Creek downstream of Blairstown, IA (LAT 41 54 21N LONG 092 02 42W)									
JUN 1994 24...	1705	270	21.0	535	AUG 1994 10...	0950	23	17.0	560
05465000 Cedar River near Conesville, IA (LAT 41 24 36N LONG 091 17 06W)									
OCT 1993 04...	1250	9470	15.0	548	JUN 1994 22...	1015	6240	27.5	522
NOV 30...	1030	4030	0.0	616	AUG 03...	1145	5260	25.0	492
05465100 Iowa River at Columbus Junction, IA (LAT 41 16 42N LONG 091 20 48W)									
AUG 1994 30...	1554	6500	22.5	543					
05465500 Iowa River at Wapello, IA (LAT 41 10 48N LONG 091 10 57W)									
OCT 1993 19...	1330	13600	13.5	524	MAY 1994 10...	1445	7200	17.5	434
DEC 01...	1330	6480	1.0	612	JUL 26...	1345	15500	24.5	500
MAR 1994 10...	1315	25100	1.5	303	AUG 17...	1410	10600	24.0	524
05470000 South Skunk River near Ames, IA (LAT 42 04 06N LONG 093 37 09W)									
NOV 1993 17...	0740	125	3.5	759	JUN 1994 01...	0820	65	20.0	700
JAN 1994 27...	1615	36	0.0	767	JUL 24...	1710	1280	19.0	640
MAR 21...	1325	145	9.0	725	AUG 05...	1650	548	25.0	625
APR 15...	1150	120	12.0	618	SEP 10...	1415	36	24.0	600
					22...	1505	464	15.0	475
05470500 Squaw Creek at Ames, IA (LAT 42 01 21N LONG 093 37 45W)									
NOV 1993 16...	1545	78	4.0	735	JUL 1994 05...	1505	268	26.0	650
APR 1994 15...	1005	69	11.5	596	AUG 10...	1235	28	23.0	475
MAY 31...	1400	36	17.0	625	SEP 22...	1310	12	18.0	475
JUN 24...	1525	1660	19.5	482					
05471000 South Skunk River below Squaw Creek near Ames, IA (LAT 42 00 31N LONG 093 35 57W)									
NOV 1993 16...	1350	209	3.5	731	JUN 1994 17...	0915	405	25.0	725
MAR 1994 18...	0950	270	5.5	708	24...	1210	4290	18.5	601
APR 15...	0830	187	8.0	556	JUL 05...	1220	891	25.0	560
MAY 31...	1045	187	21.0	650	AUG 10...	1045	114	22.0	450
					SEP 22...	1100	470	17.0	375
					29...	0930	846	12.0	575
05471050 South Skunk River at Colfax, IA (LAT 41 40 55N LONG 093 14 47W)									
DEC 1993 10...	0931	320	3.5	725	JUN 1994 28...	0956	1190	22.0	600
APR 1994 05...	1030	265	7.0	616	AUG 12...	1032	116	20.0	575
MAY 12...	1055	382	22.0	625					

MISCELLANEOUS WATER-QUALITY DATA

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05471200 Indian Creek near Mingo, IA (LAT 41 48 17N LONG 093 18 36W)									
DEC 1993					MAY 1994				
10...	1205	119	2.5	706	13...	1530	130	22.0	615
APR 1994					AUG				
05...	1351	79	6.0	588	12...	1348	37	19.0	500
05471500 South Skunk River near Oskaloosa, IA (LAT 41 21 19N LONG 092 39 31W)									
OCT 1993					JUN 1994				
18...	1355	1890	13.0	660	14...	1245	720	26.0	556
DEC					AUG				
08...	1150	650	1.0	667	03...	1345	442	28.0	420
05472500 North Skunk River near Sigourney, IA (LAT 41 18 03N LONG 092 12 16W)									
OCT 1993					JUN 1994				
14...	1410	699	10.5	480	20...	0930	253	27.0	499
NOV					AUG				
29...	1020	213	0.0	510	02...	1035	69	25.0	472
MAY 1994									
04...	1115	169	13.0	518					
25...	1030	0.0	22.5	540					
05473400 Cedar Creek near Oakland Mills, IA (LAT 40 55 20N LONG 091 40 10W)									
OCT 1993					MAY 1994				
14...	1015	84	9.5	494	12...	1500	81	21.0	593
NOV					JUN				
29...	1700	61	1.0	590	20...	1540	72	31.5	491
MAR 1994					JUL				
04...	1420	252	2.0	469	27...	1445	19	25.5	382
05474000 Skunk River at Augusta, IA (LAT 40 45 13N LONG 091 16 40W)									
OCT 1993					MAY 1994				
20...	1215	3370	13.5	569	11...	1145	1450	18.0	523
DEC					JUL				
02...	1245	1420	2.5	625	26...	1645	737	25.5	461
MAR 1994					AUG				
09...	1415	9560	3.0	320	18...	1045	463	25.0	507
05474500 Mississippi River at Keokuk, IA (LAT 40 23 37N LONG 091 22 27W)									
APR 1994					AUG 1994				
07...	0916	98800	7.0	412	29...	1117	47900	24.5	434
05476500 Des Moines River at Estherville, IA (LAT 43 23 51N LONG 094 50 38W)									
NOV 1993					AUG 1994				
09...	1200	461	4.0	490	16...	1135	2140	20.0	650
JUN 1994					SEP				
08...	1345	1290	20.0	750	28...	1340	243	15.0	750
23...	1400	2930	21.5	675					
JUL									
13...	1405	1370	22.0	675					
05476590 Des Moines River at Emmetsburg, IA (LAT 43 07 34N LONG 094 42 21W)									
JUN 1994					AUG 1994				
09...	1600	1620	19.0	750	16...	0910	2300	20.0	625
13...	1115	2420	21.0	650	SEP				
20...	1200	3250	23.0	564	28...	1150	371	14.0	700
23...	1205	4150	20.5	607					
JUL									
13...	1145	1850	18.0	625					
05476735 Pilot Creek near Bradgate, IA (LAT 42 48 20N LONG 094 27 44W)									
JUN 1994					JUL 1994				
10...	0730	38	17.0	725	15...	1020	259	18.0	700
13...	0915	55	16.0	400	AUG				
16...	1210	200	20.0	650	18...	1235	21	25.0	750
20...	0855	166	19.0	690					
23...	0935	746	17.0	798					

MISCELLANEOUS WATER-QUALITY DATA

239

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	TEMPER- ATURE WATER (DEG C) (00010)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	TEMPER- ATURE WATER (DEG C) (00010)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)
05476750 Des Moines River at Humboldt, IA (LAT 42 43 12N LONG 094 13 06W)									
NOV 1993					JUL 1994				
17...	1305	941	2.0	540	09...	0830	3060	23.0	650
APR 1994					AUG				
19...	0900	2070	13.0	753	18...	0815	2330	22.0	625
JUN					SEP				
16...	0920	3420	24.0	700	26...	1300	651	16.0	600
05479000 East Fork Des Moines River at Dakota City, IA (LAT 42 43 26N LONG 094 11 30W)									
NOV 1993					JUL 1994				
17...	1435	353	2.0	585	15...	0815	2030	20.0	650
APR 1994					AUG				
19...	1100	1130	13.0	681	18...	1030	754	22.0	700
JUN					SEP				
06...	1345	624	24.0	675	26...	1430	684	14.0	625
05480500 Des Moines River at Fort Dodge, IA (LAT 42 30 22N LONG 094 12 04W)									
NOV 1993					JUN 1994				
17...	1450	1350	4.0	712	02...	1200	1490	19.0	575
MAR 1994					27...	1400	14700	23.0	600
22...	1550	4090	10.5	519	AUG				
23...	1515	3860	10.0	625	11...	1700	1280	20.0	625
APR					SEP				
19...	1345	3690	15.5	677	26...	0915	1590	16.0	575
05480820 Boone River near Goldfield, IA (LAT 42 43 27N LONG 093 56 46W)									
MAY 1994					AUG 1994				
24...	1615	135	22.0	703	15...	1035	169	19.0	725
JUN					SEP				
13...	1600	688	20.0	600	27...	0910	120	15.0	725
24...	0900	2300	17.0	439					
JUL									
08...	0830	709	20.0	600					
05481000 Boone River near Webster City, IA (LAT 42 26 01N LONG 093 48 12W)									
NOV 1993					JUN 1994				
17...	1220	186	4.5	718	02...	0830	247	18.0	700
JAN 1994					27...	1100	3980	19.0	750
28...	1040	51	0.0	654	AUG				
MAR					11...	1400	141	21.0	575
21...	1115	352	8.5	652	SEP				
APR					23...	1130	221	17.0	625
18...	0915	765	11.5	718					
05481300 Des Moines River near Stratford, IA (LAT 42 15 04N LONG 093 59 52W)									
NOV 1993					JUN 1994				
17...	0950	1930	3.0	810	01...	1230	2010	20.0	700
FEB 1994					28...	0910	17700	21.5	675
17...	1520	591	0.0	932	AUG				
MAR					11...	1110	1340	21.0	600
03...	0940	1860	1.5	671	SEP				
22...	1255	4840	10.0	638	23...	1410	1160	19.0	650
APR									
18...	1220	4900	14.0	699					
05481650 Des Moines River near Saylorsville, IA (LAT 41 40 50N LONG 093 40 05W)									
NOV 1993					JUL 1994				
16...	0940	1900	4.5	721	06...	1010	11300	25.0	625
JAN 1994					08...	0805	358	22.0	652
27...	0940	0.0	1.5	917	AUG				
MAR					05...	0910	2330	24.0	600
14...	1315	6960	5.5	420	SEP				
APR					21...	1100	1080	24.0	525
14...	1250	2910	11.0	637					
JUN									
14...	1030	4720	24.0	626					
05481860 Beaver Creek near Woodward, IA (LAT 41 48 00N LONG 093 56 20W)									
APR 1994					AUG 1994				
14...	0745	71	10.0	641	10...	0845	6.2	22.0	450
MAY					SEP				
26...	1155	71	20.0	705	21...	1600	0.0	23.0	625
31...	1025	69	6.5	722					
JUN									
24...	1055	75	21.0	590					

MISCELLANEOUS WATER-QUALITY DATA

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05481950 Beaver Creek near Grimes, IA (LAT 41 41 18N LONG 093 44 08W)									
NOV 1993					JUL 1994				
16...	0740	163	3.5	739	06...	0915	112	27.0	660
JAN 1994					AUG				
27...	0825	47	0.0	785	03...	1140	11	27.0	600
MAR					SEP				
08...	1410	444	3.0	285	13...	1050	4.3	25.0	729
APR					21...	0845	1.2	20.0	450
14...	1015	96	12.0	627					
MAY									
26...	1315	104	20.5	691					
05482000 Des Moines River at Des Moines, IA (LAT 41 36 45N LONG 093 37 15W)									
JUN 1994					SEP 1994				
22...	1300	8770	27.0	625	14...	1450	1000	27.0	615
JUL									
11...	1610	7940	26.0	650					
28...	1235	6990	23.0	625					
05482135 North Raccoon River near Newell, IA (LAT 42 36 16N LONG 095 02 42W)									
JUL 1994					AUG 1994				
14...	1440	601	20.0	650	17...	1055	124	20.0	650
05482300 North Raccoon River near Sac City, IA (LAT 42 21 16N LONG 094 59 26W)									
NOV 1993					JUN 1994				
08...	1120	223	3.0	590	03...	1215	193	21.0	750
JAN 1994					JUL				
04...	1030	185	0.0	775	14...	1730	329	22.0	650
10...	1025	144	0.0	825	AUG				
FEB					17...	1300	329	23.0	700
02...	1325	105	0.0	791					
MAR									
15...	0925	419	4.0	590					
05482430 North Raccoon near Lanesboro, IA (LAT 42 10 09N LONG 094 43 31W)									
JUN 1994					AUG 1994				
10...	1015	776	19.0	775	08...	1435	138	27.0	575
JUL					SEP				
01...	0940	898	19.0	700	19...	1600	104	24.0	650
05482500 North Raccoon River near Jefferson, IA (LAT 41 59 17N LONG 094 22 36W)									
NOV 1993					JUN 1994				
10...	1520	522	3.0	610	29...	0800	1750	22.0	610
MAR 1994					AUG				
18...	1320	916	4.0	580	08...	1000	184	25.0	450
APR					SEP				
21...	1105	719	12.5	731	19...	1035	158	22.0	525
05483210 Buttrick Creek near Jefferson, IA (LAT 41 59 35N LONG 094 17 25W)									
MAY 1994					AUG 1994				
31...	1605	40	27.0	668	08...	1235	6.0	27.0	550
JUN					SEP				
29...	0955	140	22.0	700	19...	1335	0.82	23.0	550
05483300 North Raccoon River near Perry, IA (LAT 41 50 07N LONG 094 07 54W)									
JUN 1994					SEP 1994				
17...	1200	3220	27.0	650	22...	0845	155	18.0	575
30...	0830	1910	23.0	660					
AUG									
09...	1420	220	25.0	475					
05483343 Hazelbrush Creek near Maple River, IA (LAT 42 07 36N LONG 094 58 32W)									
JUN 1994					AUG 1994				
14...	0955	2.0	24.0	700	08...	1635	0.95	27.0	675
JUL					SEP				
01...	1145	3.5	23.0	660	19...	0805	0.34	17.0	700

MISCELLANEOUS WATER-QUALITY DATA

241

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	TEMPER- ATURE WATER (DEG C) (00010)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	TEMPER- ATURE WATER (DEG C) (00010)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)
05483450 Middle Raccoon River near Bayard, IA (LAT 41 46 43N LONG 094 29 33W)									
NOV 1993					MAY 1994				
15...	1000	162	3.0	696	25...	0955	85	20.5	698
JAN 1994					JUN				
26...	1105	102	3.0	709	29...	1150	125	23.0	725
MAR					AUG				
07...	1155	367	5.5	524	09...	0755	44	19.0	650
APR					SEP				
13...	1025	141	8.5	628	20...	1100	31	20.0	625
05483600 Middle Raccoon River at Panora, IA (LAT 41 41 14N LONG 094 22 15W)									
NOV 1993					MAY 1994				
15...	1225	190	5.0	664	25...	1400	143	21.5	530
JAN 1994					JUN				
26...	1320	94	1.0	706	30...	1135	147	23.0	600
MAR					AUG				
08...	0915	312	1.5	381	09...	1020	53	24.0	525
APR					SEP				
13...	1325	159	9.0	521	20...	1300	37	22.0	550
05484000 South Raccoon River at Redfield, IA (LAT 41 35 22N LONG 094 09 04W)									
NOV 1993					MAY 1994				
15...	1550	437	4.5	589	26...	0745	282	18.0	525
JAN 1994					JUN				
26...	1600	189	0.0	676	30...	1340	357	25.0	575
MAR					AUG				
08...	1255	582	3.0	409	09...	1220	139	25.0	500
APR					SEP				
13...	1530	337	13.5	475	20...	1535	92	24.0	450
05484500 Raccoon River at Van Meter, IA (LAT 41 32 02N LONG 093 56 59W)									
OCT 1993					MAY 1994				
26...	1045	2040	11.0	682	10...	0930	2380	15.0	720
DEC					26...	1030	1330	20.0	572
06...	1130	1030	1.5	710	JUN				
FEB 1994					15...	1000	2060	27.0	617
02...	1135	753	0.0	860	20...	1230	4130	26.0	590
MAR					JUL				
08...	1225	6340	2.0	340	25...	1240	801	25.0	510
23...	1000	1410	12.5	653	AUG				
APR					10...	0830	372	22.0	461
11...	1205	897	10.0	660	SEP				
					12...	1445	515	27.0	538
05484650 Raccoon River at 63rd Street at Des Moines, IA (LAT 41 33 49N LONG 093 42 13W)									
JUL 1994					SEP 1994				
11...	1210	3340	27.0	650	13...	1615	735	29.0	480
28...	1230	1250	24.0	450					
05484800 Walnut Creek at Des Moines, IA (LAT 41 35 14N LONG 093 42 11W)									
NOV 1993					JUN 1994				
16...	1720	35	4.0	753	21...	1650	26	29.0	725
FEB 1994					JUL				
02...	1625	11	0.0	457	11...	1400	6.3	29.0	650
MAR					27...	1400	2.4	23.0	750
10...	1600	40	4.0	750	SEP				
APR					12...	1830	4.1	27.0	704
13...	1300	26	11.0	700					
MAY									
09...	1700	25	22.0	680					
05485500 Des Moines River below Raccoon River at Des Moines, IA (LAT 41 34 30N LONG 093 35 48W)									
MAR 1994					JUL 1994				
08...	1420	20200	1.5	398	08...	1010	3160	25.0	645
APR					25...	1520	13400	25.0	575
11...	1535	3620	10.0	640	SEP				
MAY					14...	1730	1570	28.0	519
10...	1515	89000	17.0	700					
JUN									
20...	1520	13600	25.0	550					

MISCELLANEOUS WATER-QUALITY DATA

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05485640 Fourmile Creek at Des Moines, IA (LAT 41 36 50N LONG 093 32 43W)									
NOV 1993					MAY 1994				
17...	1105	46	5.0	796	10...	1630	33	19.0	740
FEB 1994					JUN				
03...	1640	11	0.0	1020	22...	1400	33	24.0	750
MAR					JUL				
08...	1830	82	1.0	800	27...	1545	5.7	23.0	750
APR					SEP				
13...	1430	30	9.0	840	13...	1745	4.3	28.0	745
05486000 North River near Norwalk, IA (LAT 41 27 25N LONG 093 39 10W)									
FEB 1994					JUN 1994				
03...	1425	59	0.0	1070	22...	0955	155	25.0	290
MAR					JUL				
10...	1330	158	2.0	430	27...	1220	79	23.0	360
APR					SEP				
13...	1055	78	9.0	480	13...	1330	7.3	26.0	452
MAY									
12...	1020	144	17.0	490					
05486490 Middle River near Indianola, IA (LAT 41 25 27N LONG 093 35 09W)									
FEB 1994					JUN 1994				
03...	1130	56	0.0	610	21...	1430	121	29.0	490
MAR					JUL				
10...	1010	250	1.0	420	26...	1520	87	27.0	420
APR					SEP				
12...	1450	107	8.0	525	13...	1125	21	26.0	528
MAY									
11...	1510	252	21.0	490					
05487470 South River near Ackworth, IA (LAT 41 20 14N LONG 093 29 10W)									
NOV 1993					MAY 1994				
16...	0830	136	3.5	252	11...	1125	130	20.0	500
FEB 1994					JUN				
03...	0920	51	0.0	391	21...	1040	940	25.0	280
MAR					JUL				
09...	1350	306	4.0	385	26...	1105	28	27.0	450
APR					SEP				
12...	1145	91	8.0	550	13...	0845	4.5	27.0	536
05487500 Des Moines River near Runnells, IA (LAT 41 29 19N LONG 093 20 17W)									
FEB 1994					JUL 1994				
02...	1330	1820	0.0	390	04...	1450	6190	27.0	640
APR					26...	0950	12100	24.0	590
12...	1020	4080	8.0	650	SEP				
MAY					14...	1040	1920	26.0	600
11...	0830	9480	17.0	700					
JUN									
21...	0945	13700	26.0	645					
05487980 White Breast Creek near Dallas, IA (LAT 41 14 41N LONG 093 16 08W)									
OCT 1993					MAY 1994				
14...	1510	62	13.0	530	04...	0900	59	13.0	554
DEC					JUN				
08...	1545	43	4.5	558	15...	1437	59	28.5	422
MAR 1994					AUG				
17...	1420	94	7.5	544	05...	1055	5.5	22.0	474
05488110 Des Moines River near Pella, IA (LAT 41 21 38N LONG 092 58 23W)									
OCT 1993					MAY 1994				
15...	1025	8050	13.0	670	05...	0930	7560	13.5	590
DEC					JUN				
09...	1015	3260	2.0	686	15...	1110	8460	26.5	575
FEB 1994					JUL				
16...	0955	1460	3.0	800	08...	1300	5670	25.0	546
MAR					AUG				
17...	0945	8900	2.0	420	04...	1730	4100	24.5	605
05488200 English Creek near Knoxville, IA (LAT 41 16 00N LONG 093 05 00W)									
OCT 1993					MAY 1994				
15...	0910	19	12.5	620	04...	1100	9.2	13.5	649
DEC					JUN				
08...	1325	8.7	3.0	658	15...	1245	4.3	29.5	610
MAR 1994					AUG				
17...	1125	22	5.0	604	05...	1635	0.91	25.0	886

MISCELLANEOUS WATER-QUALITY DATA

243

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	TEMPER- ATURE WATER (DEG C) (00010)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	TEMPER- ATURE WATER (DEG C) (00010)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)
05488500 Des Moines River near Tracy, IA (LAT 41 16 53N LONG 092 51 34W)									
OCT 1993					JUN 1994				
19...	1145	106000	14.0	650	14...	1520	8700	25.5	560
DEC					JUL				
08...	1450	3770	2.0	686	08...	1355	6080	25.5	554
MAR 1994					AUG				
16...	1455	9420	3.0	423	04...	1220	4190	27.0	595
MAY									
04...	1335	7020	13.5	594					
05489000 Cedar Creek near Bussey, IA (LAT 41 13 09N LONG 092 54 38W)									
OCT 1993					MAY 1994				
18...	1610	66	12.5	645	04...	1505	71	15.5	616
DEC					JUN				
08...	1600	34	1.5	677	14...	1730	65	30.5	466
MAR 1994					AUG				
16...	1220	118	5.5	597	03...	1745	9.6	25.0	644
05489200 Des Moines River at Eddyville, IA (LAT 41 09 21N LONG 092 38 19W)									
AUG 1994									
30...	1047	2980	22.0	586					
05489500 Des Moines River at Ottumwa, IA (LAT 41 00 39N LONG 092 24 40W)									
OCT 1993					MAY 1994				
12...	0945	12700	13.5	560	02...	1325	6810	14.0	610
DEC					JUN				
16...	0750	5370	2.5	710	20...	1630	14300	26.0	508
MAR 1994					AUG				
11...	1300	22100	0.5	406	09...	1430	2610	27.0	645
05490500 Des Moines River at Keosauqua, IA (LAT 40 43 40N LONG 091 57 34W)									
NOV 1993					JUN 1994				
29...	1420	3900	0.0	691	20...	1320	14500	28.0	551
MAR 1994					JUL				
11...	1610	21800	1.5	414	27...	1220	12700	25.5	632
MAY									
12...	1300	9770	18.0	605					
06483500 Rock River near Rock Valley, IA (LAT 43 12 52N LONG 096 17 39W)									
NOV 1993					JUL 1994				
16...	1250	1150	2.0	800	12...	1400	978	24.0	850
JAN 1994					AUG				
11...	1215	294	0.0	400	16...	1235	1240	23.0	800
APR					SEP				
05...	1140	709	3.0	860	26...	1410	245	16.0	745
JUN									
13...	1530	10700	21.0	280					
14...	0845	23900	23.0	275					

MISCELLANEOUS WATER-QUALITY DATA

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	TEMPER- ATURE WATER (DEG C) (00010)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	TEMPER- ATURE WATER (DEG C) (00010)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)
06486000 Missouri River at Sioux City, IA (LAT 42 29 09N LONG 096 24 49W)									
OCT 1993					JUN 1994				
01...	0620	25100	15.0	690	03...	1110	35800	22.0	770
03...	1000	20500	0.0	550	06...	1215	34700	23.0	820
04...	1010	24400	13.0	860	10...	1135	38900	23.0	870
08...	0935	25400	16.0	820	13...	0915	37400	23.0	780
12...	1550	26000	12.0	800	17...	1230	50300	23.0	750
15...	1000	25400	14.0	782	20...	1905	37500	25.0	750
18...	1015	23100	12.0	800	24...	0840	38300	23.5	698
23...	0815	25600	11.0	830	27...	0845	41600	24.0	750
25...	0950	25600	13.0	772	JUL				
28...	1000	26100	8.0	770	01...	1000	36600	24.0	720
NOV					05...	0930	35600	24.0	800
01...	1035	26700	6.0	800	08...	0950	35100	21.0	720
12...	0800	26200	3.0	860	11...	1340	34100	25.0	800
15...	1530	27200	1.5	850	15...	1040	35400	23.0	750
18...	1145	26100	3.0	800	18...	1145	34600	26.0	780
DEC					22...	1130	31600	23.0	775
07...	1220	19300	0.0	800	25...	1050	31300	25.0	760
20...	1130	21100	0.0	885	29...	0930	30800	21.0	790
FEB 1994					AUG				
15...	1320	19300	1.0	815	02...	1130	33300	26.0	774
MAR					05...	1045	32600	23.5	772
15...	1250	31400	5.0	650	09...	1430	30800	22.0	760
22...	1210	32300	5.0	670	12...	1050	30600	23.0	800
25...	1300	31000	4.0	714	15...	0945	31500	21.0	750
29...	1340	32400	6.0	720	19...	0920	31100	22.0	730
APR					23...	0620	31900	23.0	760
01...	1350	33200	9.0	800	26...	1220	34000	23.0	790
05...	1250	30600	6.0	810	30...	1245	32700	24.0	775
08...	1000	34200	6.0	753	SEP				
12...	0950	34800	7.0	762	02...	1150	32000	20.0	765
15...	1000	35400	9.0	750	06...	1250	31600	22.0	750
19...	1030	33300	13.0	810	09...	1300	31200	23.0	742
21...	1330	30900	11.0	840	13...	1010	32700	26.0	721
26...	1115	30400	12.0	800	23...	1200	32900	15.5	754
MAY					24...	0910	31000	21.0	743
02...	1140	34600	11.0	820	26...	1125	31200	17.0	747
06...	0930	42200	10.0	800	30...	1230	32400	18.0	747
12...	1100	40700	15.0	790					
17...	0630	39200	18.0	880					
23...	1420	35900	21.0	1020					
27...	0935	35600	22.0	800					
31...	1705	37000	22.0	756					
06600000 Perry Creek at 38th Street, Sioux City, IA (LAT 42 32 08N LONG 096 24 39W)									
NOV 1993					MAY 1994				
17...	0810	19	0.0	830	27...	1205	17	0.0	800
MAR 1994					JUL				
02...	1555	45	1.0	790	11...	1450	16	25.0	780
APR					AUG				
04...	1430	20	10.0	800	15...	1125	13	17.0	830
06600100 Floyd River at Alton, IA (LAT 42 58 55N LONG 096 00 03W)									
NOV 1993					JUN 1994				
16...	1440	130	1.0	950	13...	1330	1550	18.5	220
JAN 1994					14...	1140	3710	25.0	280
26...	1115	45	0.0	984	JUL				
MAR					13...	0910	298	17.0	820
02...	1125	130	1.0	800	AUG				
APR					16...	1415	88	22.0	960
05...	1530	107	3.0	870					
MAY									
24...	1555	132	21.0	1060					
06600300 West Branch Floyd River near Struble, IA (LAT 42 55 26N LONG 096 10 36W)									
NOV 1993					MAY 1994				
16...	1610	84	1.0	1050	24...	1450	98	20.0	1240
JAN 1994					JUL				
26...	0935	50	0.0	1250	12...	1615	91	25.0	900
APR					AUG				
05...	1400	80	3.0	1080	15...	1615	54	23.0	1200
06600500 Floyd River at James, IA (LAT 42 34 36N LONG 096 18 43W)									
OCT 1993					MAY 1994				
01...	1000	417	13.0	1000	24...	0750	417	21.0	1000
NOV					JUL				
15...	1640	391	2.0	840	13...	1200	628	17.0	830
JAN 1994					AUG				
26...	1710	209	0.0	850	15...	1400	399	17.0	920
APR									
06...	0825	366	3.0	890					

MISCELLANEOUS WATER-QUALITY DATA

245

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	TEMPER- ATURE WATER (DEG C) (00010)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	TEMPER- ATURE WATER (DEG C) (00010)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)
06601200 Missouri River at Decatur, NE (LAT 42 00 26N LONG 096 14 29W)									
OCT 1993					MAY 1994				
06...	1025	25300	14.0	830	04...	1215	40400	13.0	840
13...	1245	26400	12.0	820	10...	1230	38800	25.0	840
18...	1430	28600	12.0	810	18...	1000	38800	19.0	750
27...	1100	27000	10.0	850	23...	1050	36900	20.0	900
NOV					JUN				
03...	0915	27600	6.0	670	01...	1020	37400	21.5	776
10...	0855	25400	3.0	820	07...	1130	36900	23.0	800
15...	1150	27700	3.0	840	15...	1120	39100	24.0	680
24...	1100	24000	0.0	830	20...	1410	37500	25.0	820
DEC					27...	1300	44800	24.0	700
01...	1045	19600	2.0	940	JUL				
FEB 1994					05...	1420	34800	25.0	760
01...	1115	14800	1.0	700	18...	1440	36100	26.0	800
08...	1200	15100	0.0	750	26...	1100	32000	24.0	760
16...	1200	21100	1.0	910	AUG				
22...	1150	30700	0.0	760	03...	0950	33500	26.0	784
MAR					10...	1150	31500	24.0	790
08...	1220	3800	1.0	610	17...	1150	32500	24.0	780
16...	1330	34600	4.0	710	24...	1130	32000	24.5	810
23...	1140	32200	8.0	710	31...	1200	32800	23.0	785
30...	1150	33500	8.0	850	SEP				
APR					07...	1000	32600	22.0	768
06...	1350	32300	8.0	800	14...	0930	33500	23.0	753
13...	0930	37800	6.5	770	21...	1000	31600	22.0	754
20...	1100	31600	13.0	780	27...	1230	32100	17.5	763
26...	1730	32300	14.0	840					
06602020 West Fork Ditch at Hornick, IA (LAT 42 13 37N LONG 096 04 40W)									
NOV 1993					APR 1994				
12...	1205	178	2.0	860	04...	1230	170	10.0	790
JAN 1994					MAY				
04...	1010	131	0.0	1140	23...	1225	161	21.0	960
20...	1020	89	0.0	660	JUL				
25...	1250	133	0.0	800	14...	0850	361	19.5	725
FEB					AUG				
01...	1200	85	0.0	700	17...	1120	153	22.0	810
08...	1040	130	0.0	800					
06602400 Monona-Harrison Ditch near Turin, IA (LAT 41 57 52N LONG 095 59 30W)									
NOV 1993					MAY 1994				
08...	1020	328	2.0	725	17...	1035	269	19.0	710
JAN 1994					JUL				
27...	0835	250	0.0	905	08...	1410	1500	22.5	505
MAR					AUG				
02...	1140	469	15.0	760	23...	1015	213	21.0	802
APR									
04...	1500	262	10.0	790					
06605000 Ocheyedan River near Spencer, IA (LAT 43 07 44N LONG 095 12 37W)									
NOV 1993					JUL 1994				
10...	0820	134	2.0	540	14...	0825	731	18.0	700
MAR 1994					AUG				
17...	1430	412	3.0	565	16...	1550	307	23.0	625
JUN					SEP				
09...	0840	370	15.0	800	29...	0820	92	14.0	750
06605850 Little Sioux River at Linn Grove, IA (LAT 42 53 24N LONG 095 14 30W)									
NOV 1993					JUL 1994				
10...	1210	593	3.0	490	14...	1130	2070	20.0	575
FEB 1994					AUG				
17...	1120	184	0.0	762	17...	0805	1200	22.0	600
MAR					SEP				
18...	0855	2120	3.0	585	29...	1045	376	15.0	725
JUN									
09...	1230	1310	19.0	725					
06606600 Little Sioux River at Correctionville, IA (LAT 42 28 20N LONG 095 47 49W)									
NOV 1993					JUN 1994				
15...	1420	1130	2.0	850	06...	0945	977	23.0	705
MAR 1994					13...	1325	4120	22.0	450
03...	0935	1340	1.0	640	JUL				
24...	0930	1810	7.0	680	13...	1605	2730	24.0	670
APR					AUG				
06...	1130	1360	6.0	690	17...	0940	1550	21.0	615

MISCELLANEOUS WATER-QUALITY DATA

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	TEMPER- ATURE WATER (DEG C) (00010)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	TEMPER- ATURE WATER (DEG C) (00010)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)
06607200 Maple River at Mapleton, IA (LAT 42 09 25N LONG 095 48 35W)									
OCT 1993					JUN 1994				
13...	0950	454	7.0	750	05...	1335	291	23.0	648
MAR 1994					JUL				
03...	1145	512	2.0	607	14...	1050	774	20.0	660
24...	1215	290	6.0	740	AUG				
APR					17...	1230	343	23.0	780
04...	1040	268	9.0	700					
06607500 Little Sioux River near Turin, IA (LAT 41 57 52N LONG 095 58 21W)									
NOV 1993					JUN 1994				
08...	1300	1610	2.0	630	17...	1445	2020	23.5	680
JAN 1994					JUL				
27...	1105	845	0.0	700	08...	1120	4460	22.5	655
MAR					AUG				
10...	1350	7580	1.0	410	23...	1645	1480	26.0	690
APR									
05...	0855	1640	4.5	725					
06608500 Soldier River at Pisgah, IA (LAT 41 49 50N LONG 095 55 52W)									
NOV 1993					MAY 1994				
09...	1200	263	2.0	765	10...	1330	142	21.0	700
JAN 1994					JUL				
24...	1250	200	1.0	750	09...	1000	238	18.5	692
MAR					AUG				
10...	1015	238	2.0	720	22...	1410	141	23.0	722
APR									
04...	1345	177	9.5	740					
06609500 Boyer River at Logan, IA (LAT 41 38 33N LONG 095 46 57W)									
MAR 1994					JUN 1994				
24...	1430	178	8.5	790	02...	0945	210	16.5	665
APR					05...	1130	360	20.0	585
04...	1015	311	8.0	730	JUL				
MAY					09...	1250	379	22.0	682
16...	1055	261	19.0	710	AUG				
					22...	1125	171	22.0	718
06610000 Missouri River at Omaha, NE (LAT 41 15 32N LONG 095 55 20W)									
OCT 1993					MAY 1994				
05...	1045	31800	12.0	870	03...	1020	3700	12.0	830
12...	1115	35200	11.0	800	10...	1050	43900	15.0	860
19...	0830	32300	13.0	815	17...	0835	44300	20.0	780
26...	0840	30500	12.0	830	24...	0930	42200	22.0	875
NOV					31...	1155	41900	23.0	690
02...	0830	31200	5.0	820	JUN				
09...	0935	29700	0.0	800	07...	1250	40800	23.0	770
16...	1415	33200	3.0	720	14...	1440	45500	23.0	790
23...	1100	30700	2.0	840	21...	1210	48000	25.0	700
30...	1135	24000	1.0	830	JUL				
DEC					01...	1415	53000	25.0	690
14...	1150	23900	1.0	920	11...	1100	43400	23.0	793
JAN 1994					19...	1610	44000	26.0	800
11...	1350	22300	1.0	966	25...	1305	39000	26.0	765
25...	1640	25300	0.0	900	AUG				
MAR					01...	0810	35000	24.0	800
01...	0840	30100	2.0	550	08...	1200	36500	24.0	780
18...	1540	39100	12.0	690	16...	1400	37900	23.0	775
22...	1130	36200	8.0	650	23...	1330	36500	24.0	775
28...	0955	33200	6.0	760	29...	1145	36100	24.5	775
APR					SEP				
04...	1500	38600	9.0	750	07...	1225	3690	22.0	795
13...	1025	39200	9.0	740	12...	1030	34900	23.0	753
25...	0915	35500	17.0	780	19...	0910	35000	22.0	758
					26...	1245	38500	18.0	747

MISCELLANEOUS WATER-QUALITY DATA

247

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	TEMPER- ATURE WATER (DEG C) (00010)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	TEMPER- ATURE WATER (DEG C) (00010)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)
06807000 Missouri River at Nebraska City, NE (LAT 40 40 55N LONG 095 50 48W)									
OCT 1993					MAY 1994				
05...	1330	39500	14.0	860	02...	1520	42400	9.0	778
12...	1440	40400	12.0	760	10...	1440	48900	14.0	760
18...	1035	39300	13.5	765	17...	1110	48400	19.0	785
25...	1140	38100	11.0	810	23...	1015	43600	22.0	810
NOV					31...	1340	43700	23.0	760
01...	1140	37400	5.0	850	JUN				
08...	1215	36300	5.0	800	06...	1005	51800	23.0	770
22...	1125	37200	3.0	860	13...	1450	51500	24.0	800
DEC					JUL				
03...	1230	31900	4.0	480	05...	1020	59200	25.5	661
08...	0910	33400	1.0	830	19...	1140	53300	26.0	725
JAN 1994					25...	1510	43000	26.0	735
11...	1200	22400	0.0	747	AUG				
24...	1645	28700	1.0	946	01...	1040	41200	25.5	721
FEB					08...	0940	41300	24.0	700
14...	1310	26100	1.0	850	15...	1250	40700	23.0	750
28...	1300	33200	1.0	720	22...	1230	38800	25.0	750
MAR					29...	1520	38000	25.0	795
07...	1415	88400	1.0	530	SEP				
14...	0125	150	4.0	630	06...	1240	42200	23.0	760
21...	1155	45600	8.0	655	12...	1300	37300	22.0	790
28...	1050	42200	6.0	740	19...	1020	36900	22.0	753
APR					27...	1155	39400	18.0	721
04...	0955	38400	8.5	761					
11...	1130	43500	9.0	768					
18...	1130	48200	17.0	825					
25...	1715	40600	17.0	700					

06807410 West Nishnabotna River at Hancock, IA (LAT 41 23 24N LONG 095 22 17W)

MAR 1994					MAY 1994				
03...	1200	382	2.0	570	19...	0800	146	17.0	426
APR					AUG				
06...	1030	185	1.5	650	24...	1625	130	29.0	631

06808500 West Nishnabotna River at Randolph, IA (LAT 40 52 23N LONG 095 34 48W)

OCT 1993					JUN 1994				
04...	1145	1550	13.0	625	01...	1430	443	21.0	660
NOV					13...	1000	5880	19.0	280
08...	1655	1100	5.0	661	JUL				
MAR 1994					22...	1330	655	24.0	619
07...	1700	1110	4.0	410	SEP				
APR					02...	1350	349	20.0	625
19...	1040	459	16.0	600					

06809210 East Nishnabotna River near Atlantic, IA (LAT 41 20 46N LONG 095 04 36W)

FEB 1994					JUN 1994				
04...	1120	105	0.0	900	18...	1550	120	25.0	535
MAR					23...	1200	1800	21.0	240
03...	1450	270	6.0	420	JUL				
MAY					06...	1235	230	25.5	504
05...	1700	104	5.0	555	AUG				
					24...	1350	73	28.5	538

06809500 East Nishnabotna River at Red Oak, IA (LAT 41 00 31N LONG 095 14 29W)

OCT 1993					MAY 1994				
06...	1545	939	16.5	505	17...	1150	269	19.0	710
NOV					JUN				
08...	1345	593	5.0	547	01...	1205	220	21.0	550
JAN 1994					JUL				
27...	0915	250	0.0	905	08...	1530	1500	22.5	505
MAR					19...	1250	356	27.0	500
02...	1345	469	1.5	760	AUG				
08...	1015	479	3.0	350	23...	1115	213	21.0	802
APR					SEP				
04...	1640	262	10.0	790	01...	1230	180	20.0	474
18...	1245	261	18.0	506					

06810000 Nishnabotna River above Hamburg, IA (LAT 40 37 57N LONG 095 37 32W)

OCT 1993					JUL 1994				
04...	1500	3360	15.0	515	22...	1150	1270	24.0	509
NOV					AUG				
29...	1300	1600	1.5	583	30...	1150	627	23.0	483
JAN 1994					SEP				
28...	1135	1350	0.0	660	30...	1235	509	20.0	525
MAR									
07...	1400	2210	3.0	300					
31...	1100	1040	6.0	540					

MISCELLANEOUS WATER-QUALITY DATA

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	TEMPER- ATURE WATER (DEG C) (00010)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	TEMPER- ATURE WATER (DEG C) (00010)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)
06813500 Missouri River at Rulo, NE (LAT 40 03 13N LONG 095 25 19W)									
OCT 1993					MAY 1994				
09...	1155	55400	16.0	980	05...	1300	51300	16.0	840
13...	1325	48400	13.0	735	09...	1330	54800	13.0	740
19...	1225	47400	13.0	800	18...	1055	49100	20.0	810
27...	1000	44600	12.5	769	25...	1350	47500	23.0	740
NOV					JUN				
17...	1030	45500	4.0	680	02...	1010	54200	0.0	680
DEC					08...	1150	50200	23.0	690
01...	1010	32200	7.0	600	15...	1135	55600	25.0	750
16...	1110	37600	2.0	825	22...	1110	57600	25.0	700
JAN 1994					29...	1800	66000	26.0	625
03...	1125	33900	0.0	864	JUL				
12...	1035	26100	1.0	972	05...	1200	70000	26.0	660
24...	1220	30600	1.5	927	15...	1210	70400	25.0	710
FEB					20...	1220	57300	25.0	725
14...	1330	29900	1.0	735	27...	1215	44000	25.0	760
22...	1045	70400	1.0	575	AUG				
28...	1340	37200	0.0	810	04...	1240	44300	26.5	735
MAR					11...	1210	43200	25.0	750
07...	1315	91100	3.0	535	18...	1245	42000	25.0	775
17...	1300	50800	10.0	695	25...	1300	41000	26.0	780
24...	1025	48700	12.0	610	SEP				
31...	1330	45900	8.0	800	01...	1245	40000	24.0	760
APR					08...	1200	43400	23.0	694
07...	1205	45200	8.0	825	14...	1050	37900	24.0	732
14...	1000	48500	10.0	770	22...	1300	38500	21.0	745
21...	0945	46100	15.0	760	28...	1010	41200	17.0	725
06817000 Nodaway River at Clarinda, IA (LAT 40 44 19N LONG 095 00 47W)									
NOV 1993					JUN 1994				
09...	1110	346	4.0	466	02...	1130	511	17.0	360
JAN 1994					24...	1135	3210	21.0	220
11...	1330	143	0.0	295	JUL				
MAR					21...	1220	254	24.0	409
08...	1420	358	3.0	295	AUG				
APR					31...	1300	105	21.0	374
19...	1415	184	20.0	390					
06819185 East Fork 102 River at Bedford, IA (LAT 40 39 38N LONG 094 42 59W)									
OCT 1993					MAY 1994				
05...	1115	11	4.0	479	02...	1500	311	15.0	290
FEB 1994					JUL				
04...	0900	5.4	0.0	490	21...	1050	7.1	24.0	362
MAR					AUG				
08...	1700	37	4.0	310	31...	1535	1.5	22.5	329
APR									
01...	1635	6.1	19.0	424					
06897950 Elk Creek near Decatur City, IA (LAT 40 43 18N LONG 093 56 12W)									
OCT 1993					JUN 1994				
05...	1440	6.8	16.0	490	14...	1250	29	29.5	432
NOV					JUL				
09...	1550	5.4	7.0	535	20...	1840	7.3	28.0	498
MAR 1994					21...	0740	3.4	21.0	497
09...	1110	22	3.0	445	AUG				
22...	1500	13	18.5	506	10...	1430	0.06	29.5	556
APR					10...	1455	0.14	0.0	556
19...	1905	4.2	21.0	564	31...	1800	1.8	22.0	407
MAY					SEP				
03...	0840	75	14.0	445	15...	0950	0.05	26.0	601
09...	1215	9.5	23.0	548					
14...	1250	29	29.5	432					
06898000 Thompson River at Davis City, IA (LAT 40 38 25N LONG 093 48 29W)									
NOV 1993					MAY 1994				
10...	0840	147	3.0	527	02...	1900	2350	15.0	240
JAN 1994					JUN				
29...	1140	128	0.0	430	20...	2015	57	27.0	373
MAR					AUG				
09...	0900	495	2.0	295	31...	1950	36	21.0	274
APR									
20...	0730	85	16.0	506					

MISCELLANEOUS WATER-QUALITY DATA

249

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	TEMPER- ATURE WATER (DEG C) (00010)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	TEMPER- ATURE WATER (DEG C) (00010)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)
06903400 Chariton River near Chariton, IA (LAT 40 57 12N LONG 093 15 37W)									
OCT 1993					MAY 1994				
14...	0900	0.0	14.5	190	03...	1115	98	13.5	240
14...	1125	15	10.5	490	03...	1545	30	14.0	484
DEC					JUN				
14...	0900	2230	2.5	196	16...	1300	825	37.0	409
15...	1110	31	15.0	538	AUG				
FEB 1994					10...	1040	21	23.0	265
18...	1118	15	4.0	287	10...	1640	0.44	25.5	456
MAR									
15...	1050	48	5.5	415					
16...	0935	117	5.5	225					
06903700 South Fork Chariton River near Promise City, IA (LAT 40 48 02N LONG 093 11 32W)									
OCT 1993					MAY 1994				
13...	1435	20	10.5	395	03...	1312	34	14.5	505
DEC					JUN				
15...	0855	88	3.5	500	16...	1034	30	32.5	514
MAR 1994					AUG				
14...	1650	43	7.5	495	11...	1115	1.6	20.0	488
06903900 Chariton River near Rathbun, IA (LAT 40 49 22N LONG 092 53 22W)									
DEC 1993					MAY 1994				
14...	0900	2230	2.5	196	03...	1115	98	13.5	240
FEB 1994					JUN				
18...	1120	15	4.0	287	16...	1300	825	37.0	409
MAR					AUG				
16...	0935	117	5.5	225	10...	1040	21	23.0	265
06904010 Chariton River near Moulton, IA (LAT 40 41 30N LONG 092 46 15W)									
OCT 1993					MAY 1994				
12...	1650	1890	15.5	200	03...	0820	203	1.5	351
DEC					JUL				
15...	1425	594	3.0	284	15...	1423	90	26.0	470
MAR 1994					AUG				
15...	1530	1270	5.0	247	09...	1850	36	26.5	376

MISCELLANEOUS WATER-QUALITY DATA

0690367640 CORYDON LAKE, 2150 FT U/S FM DAM, AT CORYDON, IA

WATER-QUALITY DATA, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	TIME	SAMPLE LOCAT. X-SECT. LOOKING UPSTRM. (FT FM R BANK) (000001)	SAM- PLING DEPTH (FEET) (000003)	TEMPER- ATURE WATER (DEG C) (000010)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (000095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	TRANS- PAR- ENCY (SECCHI DISK) (IN) (00077)
OCT 1993								
13...	0925	300	2.00	13.0	209	8.0	12.8	125
13...	0927	300	4.00	13.0	209	8.0	12.1	118
13...	0929	300	5.00	13.0	206	8.0	11.7	114
13...	0935	300	1.00	13.0	208	8.0	13.2	128
NOV								
17...	0908	300	2.00	4.5	229	7.4	9.4	75
17...	0909	300	4.00	4.5	230	7.4	9.4	75
17...	0910	300	5.00	4.5	229	7.4	9.4	75
17...	0915	300	1.00	4.5	229	7.3	9.5	76
DEC								
13...	1223	300	2.00	2.0	238	7.8	13.0	99
13...	1224	300	4.00	2.0	232	7.8	13.1	100
13...	1225	300	5.00	2.0	235	7.8	13.0	99
13...	1230	300	1.00	2.5	237	7.7	12.9	99
JAN 1994								
21...	1218	300	2.00	1.0	282	7.4	17.1	123
21...	1219	300	4.00	3.0	277	7.4	16.1	122
21...	1220	300	5.00	3.0	275	7.4	15.0	115
21...	1230	300	1.00	1.0	277	7.3	16.4	117
FEB								
17...	1148	300	2.00	5.0	270	7.1	17.0	136
17...	1149	300	4.00	4.5	279	7.1	17.5	139
17...	1155	300	1.00	3.5	240	7.2	16.1	124
MAR								
14...	1254	300	2.00	6.5	252	8.7	16.6	141
14...	1255	300	4.00	6.5	250	8.7	16.9	143
14...	1256	300	5.00	6.5	252	8.7	16.8	143
14...	1300	300	1.00	6.5	254	8.6	15.5	133
APR								
19...	1225	300	2.00	16.0	275	7.9	9.9	103
19...	1226	300	4.00	15.0	275	7.8	9.9	102
19...	1227	300	5.00	15.0	275	7.8	9.7	100
19...	1240	300	1.00	16.5	277	7.9	9.9	105
MAY								
16...	1156	300	2.00	20.5	307	8.3	9.9	113
16...	1157	300	4.00	20.5	308	8.4	10	114
16...	1158	300	5.00	20.0	307	8.4	10	113
16...	1210	300	1.00	20.5	307	8.3	9.7	111
JUN								
13...	1326	300	2.00	23.0	293	8.4	9.1	111
13...	1329	300	5.00	22.0	300	7.9	5.6	68
13...	1335	300	1.00	26.0	296	8.4	9.2	118
13...	1350	300	4.00	22.5	298	8.0	6.8	81
JUL								
11...	1735	300	2.00	29.5	258	9.0	14.4	196
11...	1736	300	4.00	26.5	268	8.4	10.6	136
11...	1740	300	1.00	30.5	254	9.2	>15.0	--
11...	1750	300	5.00	25.5	278	8.0	6.6	84
AUG								
15...	1404	300	2.00	24.0	262	9.3	13.6	168
15...	1406	300	5.00	22.5	266	9.2	11.6	139
15...	1410	300	1.00	26.5	267	9.3	12.6	163
15...	1420	300	4.00	22.5	264	9.2	11.5	137
SEP								
12...	1221	300	2.00	23.0	252	8.7	8.6	104
12...	1222	300	4.00	22.5	255	8.7	7.2	86
12...	1235	300	1.00	24.5	253	8.7	9.1	112
12...	1240	300	5.00	22.5	256	8.7	6.8	81

251

DATE	TIME	SAMPLE LOCAT. X-SECT. LOOKING UPSTRM. (FT FM R BANK) (000001)	SAM- PLING DEPTH (FEET) (000003)	SOLIDS, RESIDUE AT 105 DEG. C, TOTAL (MG/L) (00500)	SOLIDS, VOLA- TILE ON IGNI- TION, TOTAL (MG/L) (00505)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN,AM- MONIA + ORGANIC DIS- SOLVED (MG/L AS P) (00623)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)	ALA- CHLOR, WATER, DISS, REC, (UG/L) (46342)
OCT 1993											
13...	0935	300	1.00	238	198	<0.05	0.01	0.6	0.02	9.2	--
NOV 17...	0915	300	1.00	158	117	0.24	0.36	1.1	0.03	--	--
DEC 13...	1230	300	1.00	160	2	0.36	0.31	0.9	0.02	6.9	--
JAN 1994											
21...	1230	300	1.00	196	145	0.49	0.10	0.6	<0.01	7.6	--
FEB 17...	1155	300	1.00	188	111	0.24	0.05	0.5	<0.01	8.5	--
MAR 14...	1300	300	1.00	--	--	0.68	0.04	0.7	0.01	9.4	--
APR 19...	1240	300	1.00	193	48	<0.05	0.02	0.6	<0.01	12	--
MAY 16...	1210	300	1.00	202	74	0.41	0.13	0.8	0.01	9.5	<0.05
JUN 13...	1335	300	1.00	219	61	1.00	0.15	--	0.05	10	--
13...	1350	300	4.00	222	81	1.20	0.18	--	0.06	11	--
JUL 11...	1740	300	1.00	179	125	0.08	0.02	--	0.11	--	--
11...	1750	300	5.00	186	128	0.21	0.18	--	0.14	--	--
AUG 15...	1410	300	1.00	191	119	<0.05	0.03	0.9	0.14	12	--
15...	1420	300	4.00	188	130	<0.05	0.04	0.8	0.14	14	--
SEP 12...	1235	300	1.00	186	89	<0.05	0.26	1.7	0.16	15	--
12...	1240	300	5.00	207	88	<0.05	0.31	1.3	0.17	15	--

[illegible]

MISCELLANEOUS WATER-QUALITY DATA

0690367660 CORYDON LAKE, NORTH ARM, AT CORYDON, IA

WATER-QUALITY DATA, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	TIME	SAMPLE LOCAT. X-SECT. LOOKING UPSTRM. (FT FM R BANK) (00001)	SAM- PLING DEPTH (FEET) (00003)	TEMPER- ATURE WATER (DEG C) (00010)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	TRANS- PAR- ENCY (SECCHI DISK) (IN) (00077)
OCT 1993								
13...	1001	200	2.00	13.0	206	8.0	13.0	127
13...	1002	200	4.00	13.0	208	8.0	12.7	124
13...	1003	200	5.00	12.5	206	7.9	12.2	118
13...	1015	200	1.00	13.0	208	8.0	13.1	129
NOV								
17...	0950	200	2.00	4.5	228	7.5	9.7	77
17...	0951	200	4.00	4.5	228	7.5	9.6	77
17...	0952	200	6.00	4.5	229	7.5	9.6	76
17...	1000	200	1.00	4.5	228	7.5	9.7	77
DEC								
13...	1150	200	2.00	2.0	238	7.4	12.9	98
13...	1151	200	4.00	2.0	236	7.4	12.9	98
13...	1152	200	5.00	2.0	237	7.5	12.7	97
13...	1155	200	1.00	2.0	236	7.3	12.9	99
JAN 1994								
21...	1254	200	2.00	2.0	275	7.5	15.4	114
21...	1255	200	4.00	3.0	276	7.5	14.4	109
21...	1256	200	5.00	3.0	275	7.5	14.1	107
21...	1300	200	1.00	2.0	275	7.5	14.6	108
FEB								
17...	1238	200	2.00	4.5	274	7.4	15.8	125
17...	1239	200	4.00	4.5	283	7.4	16.2	129
17...	1240	200	6.00	4.5	285	7.4	16.3	130
17...	1245	200	1.00	3.0	243	7.4	15.2	116
MAR								
14...	1223	200	2.00	6.5	256	8.7	16.8	142
14...	1224	200	4.00	6.5	252	8.7	16.8	142
14...	1225	200	5.00	6.0	252	8.6	16.7	141
14...	1230	200	1.00	6.5	255	8.5	16.3	138
APR								
19...	1151	200	2.00	15.0	279	7.6	9.6	98
19...	1152	200	4.00	15.0	279	7.6	9.5	97
19...	1153	200	5.50	15.0	281	7.6	9.4	96
19...	1205	200	1.00	15.0	279	7.6	9.6	99
MAY								
16...	1127	200	2.00	20.5	306	8.3	9.9	113
16...	1128	200	4.00	20.5	307	8.4	10	114
16...	1129	200	5.00	20.0	306	8.4	10	114
16...	1135	200	1.00	20.5	307	8.1	9.6	110
JUN								
11...	1802	200	2.00	29.5	256	9.0	14.8	201
11...	1805	200	4.00	26.0	265	8.2	8.6	110
11...	1807	200	5.50	25.5	270	7.7	5.3	67
11...	1810	200	1.00	30.0	255	9.1	>15.0	--
JUL								
13...	1248	200	2.00	23.5	295	8.3	8.6	106
13...	1250	200	5.50	22.0	299	7.9	5.6	67
13...	1255	200	1.00	27.5	295	8.3	8.6	114
13...	1305	200	4.00	22.0	298	8.1	6.8	82
AUG								
15...	1433	200	2.00	25.0	267	9.4	13.7	171
15...	1434	200	4.00	23.0	267	9.3	11.9	143
15...	1445	200	1.00	27.0	368	9.4	12.7	164
15...	1455	200	5.00	22.0	275	9.0	8.9	106
SEP								
12...	1257	200	2.00	23.5	252	9.0	8.6	105
12...	1258	200	4.00	23.5	256	9.0	8.6	104
12...	1259	200	5.00	23.5	256	9.0	8.5	103
12...	1315	200	1.00	23.5	252	9.0	8.6	104

MISCELLANEOUS WATER-QUALITY DATA

253

0690367660 CORYDON LAKE, NORTH ARM, AT CORYDON, IA--Continued

DATE	TIME	SAMPLE LOCAT. X-SECT. LOOKING UPSTRM. (FT FM R BANK) (000001)	SAM- PLING DEPTH (FEET) (000003)	SOLIDS, RESIDUE AT 105 DEG. C, TOTAL (MG/L) (00500)	SOLIDS, VOLA- TILE ON IGNI- TION, TOTAL (MG/L) (00505)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, AM- MONIA + ORGANIC DIS- SOLVED (MG/L AS N) (00623)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)	ALA- CHLOR, WATER, DISS, REC, (UG/L) (46342)
OCT 1993											
13...	1015	200	1.00	238	192	<0.05	0.03	0.8	0.03	--	--
NOV											
17...	1000	200	1.00	163	92	0.26	0.35	0.9	0.03	--	--
DEC											
13...	1155	200	1.00	161	53	0.36	0.31	0.9	0.02	7.1	--
JAN 1994											
21...	1300	200	1.00	197	133	0.51	0.11	0.6	<0.01	9.6	--
FEB											
17...	1245	200	1.00	183	116	0.35	0.04	0.5	<0.01	10	--
MAR											
14...	1230	200	1.00	--	--	0.61	0.02	0.7	<0.01	13	--
APR											
19...	1205	200	1.00	194	56	<0.05	0.02	0.6	<0.01	11	--
MAY											
16...	1135	200	1.00	207	62	0.39	0.11	0.8	<0.01	9.9	--
JUN											
13...	1255	200	1.00	214	81	1.00	0.10	--	0.05	11	--
13...	1305	200	4.00	225	81	1.10	0.19	--	0.06	11	--
JUL											
11...	1810	200	1.00	177	128	0.21	0.24	--	0.14	--	--
AUG											
15...	1445	200	1.00	182	118	<0.05	0.02	0.8	0.12	13	--
15...	1455	200	5.00	201	131	<0.05	0.02	0.7	0.14	13	--
SEP											
12...	1315	200	1.00	188	99	0.05	0.24	1.1	0.17	14	--

MISCELLANEOUS WATER-QUALITY DATA

0690367690 CORYDON LAKE 350 FT UPSTREAM OF DAM AT CORYDON, IA

WATER-QUALITY DATA, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	TIME	SAMPLE LOCAT. X-SECT. LOOKING UPSTRM. (FT FM R BANK) (000001)	SAM- PLING DEPTH (FEET) (000003)	TEMPER- ATURE WATER (DEG C) (00010)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00300)	OXYGEN, DIS- SOLVED (MG/L) (00301)	TRANS- PAR- ENCY (SECCHI DISK) (IN) (00077)
OCT 1993									
13...	1037	300	2.00	13.5	207	8.0	11.3	112	15.0
13...	1039	300	4.00	13.5	207	8.0	11.2	111	15.0
13...	1040	300	6.00	13.5	208	7.9	11.0	109	15.0
13...	1041	300	8.00	13.5	208	7.9	11.0	109	15.0
13...	1043	300	10.0	13.5	208	7.9	11.2	111	15.0
13...	1050	300	1.00	13.5	206	7.9	11.8	117	15.0
NOV									
17...	1023	300	2.00	5.0	229	7.5	9.2	74	24.0
17...	1024	300	4.00	5.0	231	7.5	9.2	73	24.0
17...	1025	300	6.00	5.0	230	7.5	9.2	73	24.0
17...	1026	300	8.00	5.0	227	7.5	9.1	73	24.0
17...	1028	300	10.0	5.0	228	7.5	9.1	73	24.0
17...	1035	300	1.00	5.0	228	7.5	9.2	74	24.0
DEC									
13...	1055	300	2.00	2.0	240	7.4	12.4	94	34.5
13...	1056	300	4.00	2.0	243	7.4	12.4	94	34.5
13...	1057	300	6.00	2.0	239	7.5	12.4	95	34.5
13...	1058	300	8.00	2.0	237	7.6	12.3	94	34.5
13...	1059	300	10.0	2.0	239	7.6	12.4	95	34.5
13...	1105	300	1.00	2.0	240	7.3	12.5	95	34.5
JAN 1994									
21...	1136	300	2.00	1.5	273	7.4	11.8	85	37.2
21...	1137	300	4.00	3.5	268	7.3	11.1	85	37.2
21...	1138	300	6.00	3.5	268	7.2	10.7	82	37.2
21...	1139	300	8.00	3.5	268	7.2	10.2	79	37.2
21...	1140	300	10.0	4.0	275	7.2	8.8	69	37.2
21...	1150	300	1.00	2.0	267	7.4	11.6	85	37.2
FEB									
17...	1345	300	2.00	4.0	257	7.6	13.8	109	48.0
17...	1346	300	4.00	4.5	278	7.6	14.0	111	48.0
17...	1350	300	1.00	3.0	241	7.7	13.6	104	48.0
MAR									
14...	1145	300	2.00	6.5	255	7.9	17.1	145	22.5
14...	1146	300	4.00	6.5	256	8.1	17.0	145	22.5
14...	1147	300	6.00	6.5	256	8.2	16.8	142	22.5
14...	1148	300	8.00	6.0	253	8.3	16.6	140	22.5
14...	1149	300	10.0	6.0	256	8.3	16.4	138	22.5
14...	1155	300	1.00	6.5	254	7.4	16.6	141	22.5
APR									
19...	1108	300	2.00	15.5	279	6.7	10	103	25.2
19...	1109	300	4.00	15.5	282	7.1	9.9	102	25.2
19...	1110	300	6.00	15.0	276	7.2	9.6	98	25.2
19...	1111	300	8.00	15.0	280	7.3	9.6	98	25.2
19...	1115	300	1.00	15.5	278	6.7	10	103	25.2
19...	1130	300	10.0	14.0	275	7.2	7.4	73	25.2
MAY									
16...	1046	300	2.00	20.0	307	8.1	9.6	108	28.5
16...	1047	300	4.00	20.0	306	8.1	9.6	108	28.5
16...	1048	300	6.00	19.5	305	8.1	9.5	107	28.5
16...	1050	300	10.0	17.5	310	7.8	4.0	43	28.5
16...	1100	300	1.00	20.0	308	8.1	9.6	108	28.5
16...	1110	300	8.00	18.0	310	7.9	6.5	71	28.5
JUN									
13...	1152	300	2.00	24.0	291	8.4	11.7	144	26.4
13...	1154	300	4.00	23.0	291	8.4	9.5	116	26.4
13...	1157	300	8.00	22.0	300	8.0	5.6	68	26.4
13...	1158	300	10.0	21.0	315	7.7	1.6	18	26.4
13...	1205	300	1.00	25.0	298	8.0	9.5	120	26.4
13...	1220	300	6.00	22.0	300	8.2	7.7	93	26.4
JUL									
11...	1644	300	2.00	27.5	263	8.4	8.9	117	18.0
11...	1645	300	4.00	25.0	272	7.7	4.3	54	18.0
11...	1647	300	8.00	24.5	272	7.3	2.2	28	18.0
11...	1648	300	10.0	24.5	272	7.2	1.2	15	18.0
11...	1700	300	1.00	28.0	263	8.2	11.0	145	18.0
11...	1720	300	6.00	24.5	272	7.4	3.1	38	18.0
AUG									
15...	1312	300	2.00	23.5	267	9.1	10.3	125	20.0
15...	1313	300	4.00	23.0	267	9.0	9.6	117	20.0
15...	1314	300	6.00	23.0	268	9.0	9.9	120	20.0
15...	1315	300	8.00	22.5	265	9.0	10.1	120	20.0
15...	1330	300	1.00	26.0	266	9.1	11.3	144	20.0
15...	1345	300	10.0	22.0	269	9.0	9.2	109	20.0
SEP									
12...	1130	300	2.00	23.0	261	8.8	7.4	88	27.9
12...	1131	300	4.00	23.0	262	8.8	7.3	87	27.9
12...	1132	300	6.00	22.5	261	8.8	4.4	53	27.9
12...	1134	300	10.0	21.0	275	8.2	0.2	2	27.9
12...	1150	300	1.00	23.0	263	8.8	7.4	88	27.9
12...	1200	300	8.00	21.0	266	8.3	0.4	4	27.9

255

DATE	TIME	SAMPLE LOCAT. LOOKING UPSTRM. (FT FM R BANK) (000001)	SAM- PLING DEPTH (FEET) (000003)	SOLIDS, RESIDUE AT 105 DEG. C, TOTAL (MG/L) (000500)	SOLIDS, VOLA- TILE ON IGNI- TION, TOTAL (MG/L) (000505)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (000631)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (000608)	NITRO- GEN,AM- MONIA + ORGANIC DIS. (MG/L AS N) (000623)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (000671)	CARBON, ORGANIC TOTAL (MG/L AS C) (000680)	ALA- CHLOR, WATER, DISS, REC, (UG/L) (46342)
OCT 1993											
13...	1050	300	1.00	--	--	--	--	--	--	9.0	--
NOV											
17...	1035	300	1.00	139	95	0.24	0.37	0.9	0.04	--	--
DEC											
13...	1105	300	1.00	--	--	0.36	0.33	1.0	0.02	--	--
JAN 1994											
21...	1150	300	1.00	183	139	0.48	0.24	0.8	<0.01	8.3	--
FEB											
17...	1350	300	1.00	176	114	0.46	0.08	0.6	<0.01	7.8	--
MAR											
14...	1155	300	1.00	--	--	0.62	0.03	0.6	<0.01	12	--
APR											
19...	1115	300	1.00	184	47	<0.05	0.03	0.5	<0.01	11	--
19...	1130	300	10.0	198	51	<0.05	0.03	0.7	0.03	11	--
MAY											
16...	1100	300	1.00	197	52	0.40	0.12	0.8	0.01	9.4	<0.05
16...	1110	300	8.00	215	51	--	--	--	--	9.9	--
JUN											
13...	1205	300	1.00	215	81	1.5	0.09	--	0.04	10	--
13...	1220	300	6.00	224	82	1.2	0.20	--	0.05	10	--
JUL											
11...	1700	300	1.00	149	123	0.21	0.07	--	0.13	--	<0.01
11...	1720	300	6.00	131	127	0.20	0.45	--	0.16	--	--
AUG											
15...	1330	300	1.00	174	121	<0.05	0.04	0.8	0.13	13	--
15...	1345	300	10.0	206	123	<0.05	0.04	0.7	0.14	14	--
SEP											
12...	1150	300	1.00	186	93	<0.05	0.26	1.2	0.18	14	--
12...	1200	300	8.00	207	156	<0.05	0.58	1.8	0.22	15	--

[illegible]

MISCELLANEOUS WATER-QUALITY DATA

06903677 CORYDON LAKE AT SPILLWAY, CORYDON, IA

WATE-QUALITY DATA, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	TIME	SAMPLE LOCAT. X-SECT. LOOKING UPSTRM. (FT FM R BANK) (000001)	SAM- PLING DEPTH (FEET) (000003)	TEMPER- ATURE WATER (DEG C) (00010)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	TRANS- PAR- ENCY (SECCHI DISK) (IN) (00077)	
JUN 1994 13...	1410	--	1.00	25.5	292	8.7	9.1	117	--

DATE	TIME	SAMPLE LOCAT. X-SECT. LOOKING UPSTRM. (FT FM R BANK) (000001)	SAM- PLING DEPTH (FEET) (000003)	SOLIDS, RESIDUE AT 105 DEG. C, TOTAL (MG/L) (00500)	SOLIDS, VOLA- TILE ON IGNI- TION, TOTAL (MG/L) (00505)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, AM- MONIA + ORGANIC DIS- SOLVED (MG/L AS N) (00623)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)	ALA- CHLOR, WATER, DISS, REC, (UG/L) (46342)
JUN 1994 13...	1410	--	1.00	225	79	1.1	0.08	--	0.05	11	--

ADAMS COUNTY

405731094480801. Local number, 71-34-07 DCCD.

LOCATION.--Lat 40°57'31", long 94°48'08", Hydrologic Unit 10240010, on the west side of county road, approximately .5 mi south of the Town of Brooks. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Alluvial: in sand and gravel of Holocene age.

WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 2 in., depth 40 ft, cased to 35 ft, screened 35-40 ft, gravel packed.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,094 ft above sea level, from topographic map. Measuring point: Top of casing, 2.10 ft above land-surface datum.

REMARKS.--Well SW-72.

PERIOD OF RECORD.--October 1987 to November 1987, June 1990, and November 1992 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 18.85 feet below land-surface datum, August 5, 1993; lowest measured, 22.95 ft below land-surface datum, February 4, 1994.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEARS OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 29	19.22	FEB 04	22.95	MAY 05	22.65	JUL 27	22.60

WATER YEAR 1994 HIGHEST 19.22 OCT 29, 1993 LOWEST 22.95 FEB 04, 1994

410247094324801. Local number, 72-32-09 CBCC.

LOCATION.--Lat 41°02'48", long 94°32'48", Hydrologic Unit 10240010, on the east side of county road, approximately 4 mi northeast of the City of Prescott. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Glacial drift: in glacial material of Pleistocene age.

WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 2 in., depth 276 ft, cased to 276 ft, slotted 266-276 ft, gravel packed.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,220 ft above sea level, from topographic map. Measuring point: Top of casing, 1.40 ft above land-surface datum.

REMARKS.--Well SW-78.

PERIOD OF RECORD.--October 1987 to November 1987, June 1990, and November 1992 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 1.46 feet below land-surface datum, October 29, 1993; lowest measured, 2.40 ft below land-surface datum, July 27, 1994.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEARS OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 29	1.46	FEB 03	2.18	MAY 05	2.05	JUL 27	2.40

WATER YEAR 1994 HIGHEST 1.46 OCT 29, 1993 LOWEST 2.40 JULY 27, 1994

410248094324801. Local number, 72-32-09 CCBB.

LOCATION.--Lat 41°02'48", long 94°32'48", Hydrologic Unit 10240010, on the east side of county road, approximately 4 mi northeast of the City of Prescott. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Glacial drift: in glacial material of Pleistocene age.

WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 2 in., depth 136 ft, cased to 136 ft, slotted 130-136 ft, gravel packed.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,220 ft above sea level, from topographic map. Measuring point: Top of casing, 2.65 ft above land-surface datum.

REMARKS.--Well SW-83.

PERIOD OF RECORD.--August 1988, June 1990, and November 1992 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 3.72 feet below land-surface datum, February 3, 1994; lowest measured, 5.17 ft below land-surface datum, June 14, 1990.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEARS OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 29	4.82	FEB 03	3.72	MAY 05	4.80	JUL 27	4.94

WATER YEAR 1994 HIGHEST 3.72 FEB 03, 1994 LOWEST 4.94 JUL 27, 1994

ADAMS COUNTY--Continued

410317094324801. Local number, 72-32-09 BBCC.

LOCATION.--Lat 41°03'17", long 94°32'48", Hydrologic Unit 10240010, on the east side of county road, approximately 4 mi northeast of the City of Prescott. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Alluvial: in sand and gravel of Holocene age.

WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 2 in., depth 40 ft, cased to 35 ft, screened 35-40 ft, gravel packed.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,168 ft above sea level, from topographic map. Measuring point: Top of casing, 2.20 ft above land-surface datum.

REMARKS.--Well SW-77.

PERIOD OF RECORD.--October 1987 to November 1987, June 1990, and November 1992 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 1.16 feet below land-surface datum, May 7, 1993; lowest measured, 3.60 ft below land-surface datum, February 3, 1994.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEARS OCTOBER 1993 TO SEPTEMBER 1994

<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>
OCT 29	1.59	FEB 03	3.60	MAY 05	2.05	JUL 27	3.04

WATER YEAR 1994 HIGHEST 1.59 OCT 29, 1993 LOWEST 3.60 FEB 03, 1994

410548094452101. Local number, 73-34-27 BCBB.

LOCATION.--Lat 41°05'48", long 94°45'21", Hydrologic Unit 10240009, on the east side of State Highway 148, approximately 1.5 mi southwest of the Town of Mount Etna. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Alluvial: in sand and gravel of Holocene age.

WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 2 in., depth 30 ft, cased to 25 ft, screened 25-30 ft, gravel packed.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,108 ft above sea level, from topographic map. Measuring point: Top of casing, 1.90 ft above land-surface datum.

REMARKS.--Well SW-71.

PERIOD OF RECORD.--October 1987 to November 1987, June 1990, and August 1992 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 14.11 feet below land-surface datum, June 14, 1990; lowest measured, 18.27 ft below land-surface datum, August 9, 1990.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>
OCT 29	16.77	FEB 03	16.93	MAY 05	17.27	JUL 27	17.59

WATER YEAR 1994 HIGHEST 16.77 OCT 29, 1993 LOWEST 17.59 JUL 27, 1994

AUDUBON COUNTY

413044094565601. Local number, 78-36-35 ADCC1.

LOCATION.--Lat 41°30'44", long 94°56'56", Hydrologic Unit 10240003, 2.5 mi south of the Town of Brayton on Highway 71, and 0.3 mi west on the north side of County Road F-67. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Dakota: in sandstone of Cretaceous age.

WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 115 ft, cased to 115 ft, slotted from 94-101 ft, gravel-packed.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,230 ft above sea level, from topographic map. Measuring point: Top of casing, 2.37 ft above land-surface datum.

REMARKS.--Well WC-69.

PERIOD OF RECORD.--June 1982 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 29.43 ft below land-surface datum, August 11, 1993; lowest measured, 53.55 ft below land-surface datum, April 12, 1990.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>
NOV 04	33.75	FEB 04	41.68	MAY 04	44.29	JUL 27	45.08

WATER YEAR 1994 HIGHEST 33.75 NOV 04, 1993 LOWEST 45.08 JUL 27, 1994

AUDUBON COUNTY--Continued

413843094541701. Local number, 79-35-15 DCDD.

LOCATION.--Lat 41°38'43", long 94°54'17", Hydrologic Unit 10240003, approximately 1.5 mi south of the Town of Hamlin and 0.5 mi west of Highway 71. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--East Nishnabotna alluvial: in sand and gravel of Holocene age.

WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 2 in., depth 32 ft, cased to 30 ft, slotted from 25-30 ft, open hole 30-32 ft, gravel-packed.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,245 ft above sea level, from topographic map. Measuring point: Top of casing, 1.50 ft above land-surface datum.

REMARKS.--Well WC-75.

PERIOD OF RECORD.--June 1982 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 11.28 ft below land-surface datum, May 3, 1983; lowest measured, 18.81 ft below land-surface datum, October 19, 1988.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 04	16.72	FEB 04	17.69	MAY 04	18.33	JUL 27	18.16

WATER YEAR 1994 HIGHEST 16.72 NOV 04, 1993 LOWEST 18.33 MAY 04, 1994

413958094544501. Local number, 79-35-10 CABB.

LOCATION.--Lat 41°39'58", long 94°54'45", Hydrologic Unit 10240003, approximately 0.3 mi west of the Town of Hamlin, on the south side of Highway 44. Owner: Geological Survey Bureau/DNR and U.S. Geological Survey.

AQUIFER.--Dakota: in sandstone of Cretaceous age.

WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 221 ft, cased to 210 ft, slotted from 168-188 ft, open hole 210-221 ft, gravel-packed.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,280 ft above sea level, from topographic map. Measuring point: Top of casing, 3.70 ft above land-surface datum.

REMARKS.--Well WC-17.

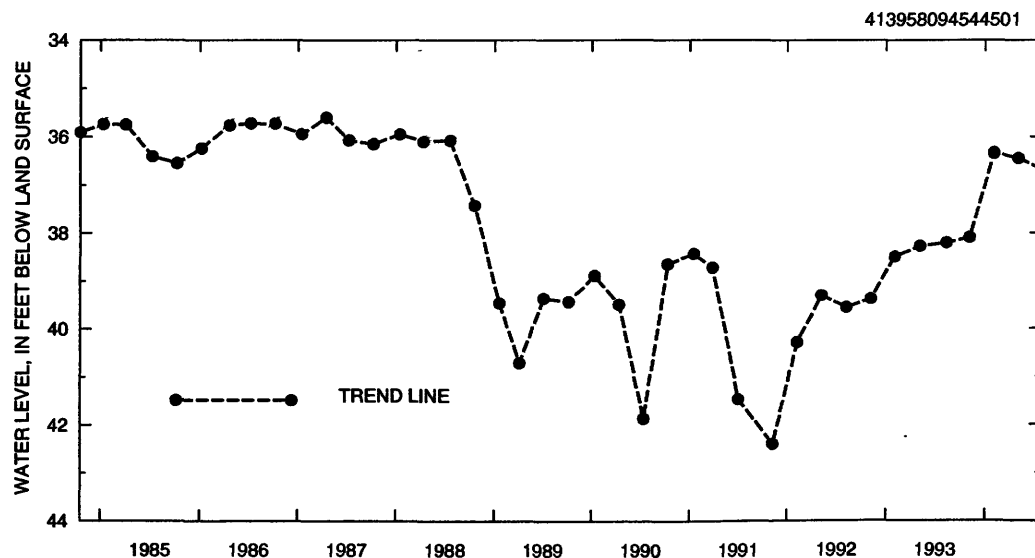
PERIOD OF RECORD.--August 1981 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 35.60 ft below land-surface datum, April 15, 1987; lowest measured, 42.40 ft below land-surface datum, November 8, 1991.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 04	38.09	FEB 04	36.33	MAY 04	36.45	JUL 27	36.68

WATER YEAR 1994 HIGHEST 36.33 FEB 04, 1994 LOWEST 38.09 NOV 04, 1993



AUDUBON COUNTY--Continued

415023094593801. Local number, 81-36-12 CBCA

LOCATION.--Lat 41°50'23", long 94°59'38", Hydrologic Unit 10240002, approximately 0.5 mi west of the Town of Gray on the east side of County Road N-14, south of the Gray Cemetery. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Dakota: in sandstone of Cretaceous age.

WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 315 ft, cased to 315 ft, slotted from 279-295 ft, gravel-packed.

INSTRUMENTATION.--Quarterly measurement with chalked tape or electric line by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,393 ft above sea level, from topographic map. Measuring point: Top of casing, 1.40 ft above land-surface datum.

REMARKS.--Well WC-18.

PERIOD OF RECORD.--August 1981 to current year.

REVISION.--Measuring point revised February 13, 1990 to August 4, 1992.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 160.31 ft below land-surface datum, February 26, 1992; lowest measured, 168.52 ft below land-surface datum, October 6, 1987.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>
NOV 04	162.46	FEB 04	160.37	MAY 04	160.49	JUL 27	160.65

WATER YEAR 1994 HIGHEST 160.37 FEB 04, 1994 LOWEST 162.46 NOV 04, 1993

BENTON COUNTY

415211092164101. Local number, 82-12-31 DAAD1.

LOCATION.--Lat 41°52'11", long 92°16'41", Hydrologic Unit 07080208, approximately 0.6 mi north of the Iowa River, west side of Iowa Highways 21 and 212, approximately 1.2 mi south of the Town of Belle Plaine. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Iowa alluvial: in sand and gravel of Holocene age.

WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 2 in., depth 26 ft, cased to 23 ft, screen 23 to 26 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 770 ft above sea level, from topographic map. Measuring point: Top of casing, 3.00 ft above land-surface datum.

REMARKS.--Well IRA-16A.

PERIOD OF RECORD.--October 1984 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 0.18 ft below land-surface datum, May 28, 1991; lowest measured, 7.50 ft below land-surface datum, October 6, 1988.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>
NOV 10	3.26	FEB 03	4.89	MAY 03	4.01	AUG 02	4.20

WATER YEAR 1994 HIGHEST 3.26 NOV 10, 1993 LOWEST 4.89 FEB 03, 1994

BENTON COUNTY--Continued

415211092164102. Local number, 82-12-31 DAAD2.

LOCATION.--Lat 41°52'11", long 92°16'41", Hydrologic Unit 07080208, approximately 0.6 mi north of the Iowa River, west side of Iowa Highways 21 and 212, approximately 1.2 mi south of the Town of Belle Plaine. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Iowa alluvial: in sand and gravel of Holocene age.

WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 2 in., depth 15 ft, cased to 12 ft, slotted 12 to 15 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 770 ft above sea level, from topographic map. Measuring point: Top of casing, 2.92 ft above land-surface datum.

REMARKS.--Well IRA-16B.

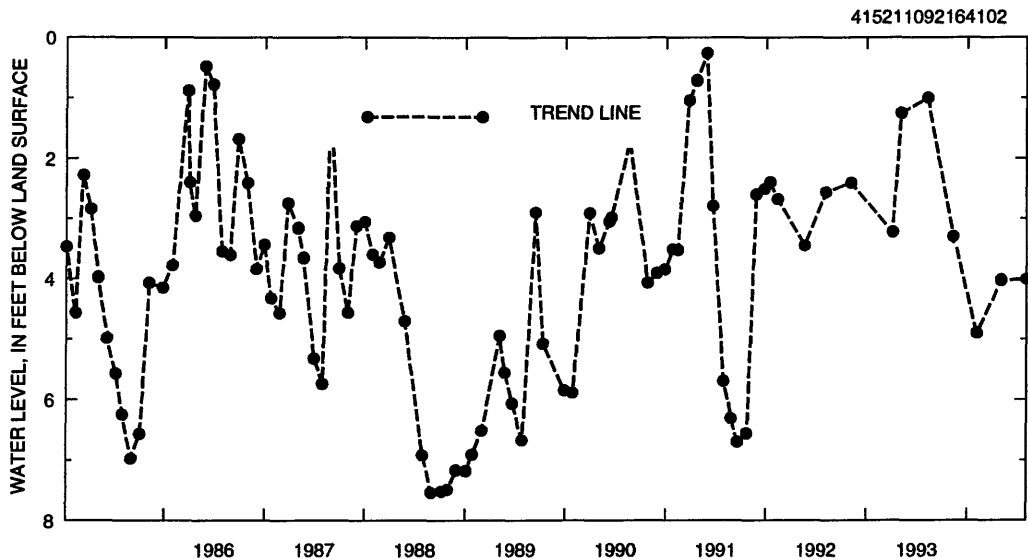
PERIOD OF RECORD.--October 1984 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 0.26 ft below land-surface datum, May 28, 1991; lowest measured, 7.54 ft below land-surface datum, August 29, 1988.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 10	3.30	FEB 03	4.90	MAY 03	4.03	AUG 02	4.01

WATER YEAR 1994 HIGHEST 3.30 NOV 10, 1993 LOWEST 4.90 FEB 03, 1994



BENTON COUNTY--Continued

420319091540102. Local number, 84-09-28 DBCC2.

LOCATION.--Lat 42°03'19", long 91°54'01", Hydrologic Unit 07080205, approximately 3 mi south and 1.5 mi west of the Town of Shellsburg.

Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Silurian-Devonian: in dolomite of Silurian age and limestone of Devonian age.

WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 7 in. to 173 ft, 5 in. to 590 ft, depth 590 ft, cased to 260 ft, open hole 265-590 ft. Cement plug 260-265 ft. Well open to 59.7 ft of Devonian rock reported to yield little, if any, water.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 915 ft above sea level, from topographic map. Measuring point: Top of casing, 2.28 ft above land-surface datum.

REMARKS.--Parker's Grove Cemetery well.

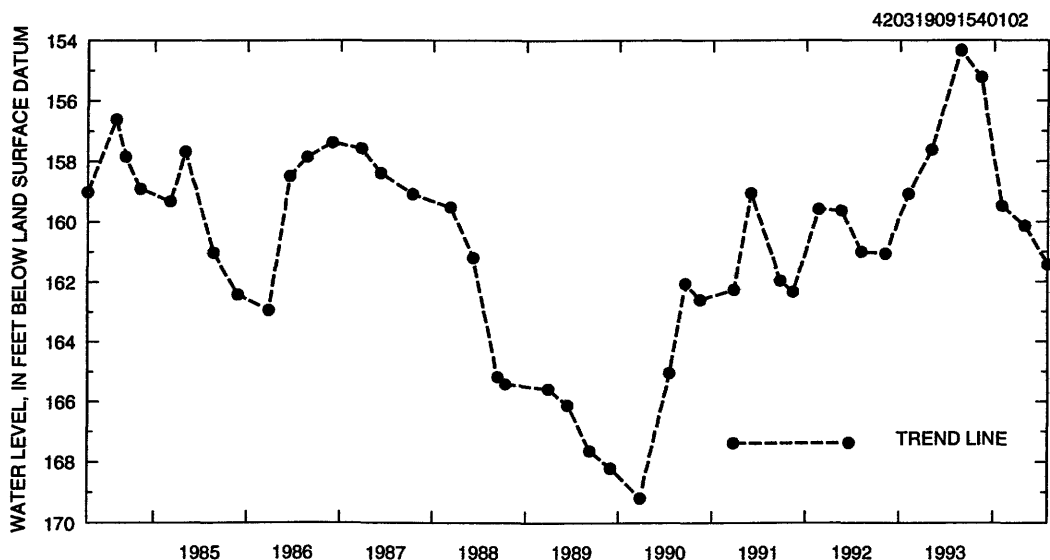
PERIOD OF RECORD.--April 1975 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 150.73 ft below land-surface datum, April 14, 1975; lowest measured, 169.18 ft below land-surface datum, March 26, 1990.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 12	155.22	FEB 03	159.48	MAY 03	160.15	AUG 01	161.43

WATER YEAR 1994 HIGHEST 155.22 NOV 12, 1993 LOWEST 161.43 AUG 01, 1994



420731092083801. Local number, 85-11-33 CCBC1.

LOCATION.--Lat 42°07'31", long 92°08'38", Hydrologic Unit 07080205, approximately 1 mi south of the Town of Garrison, just east of County Road V-56. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Devonian: in Cedar Valley limestone of Middle Devonian age.

WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 0.75 in., depth 237 ft, cased to 170 ft, slotted below cement plug, open hole 170 to 237 ft. Cement plugs from 97-100 ft and 237- 240 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 905 ft above sea level, from topographic map. Measuring point: Top of 6 in. casing, 2.20 ft above land-surface datum.

REMARKS.--Garrison 170 well.

PERIOD OF RECORD.--June 1977 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 60.18 ft below land-surface datum, April 19, 1983; lowest measured, 87.50 ft below land-surface datum, August 2, 1994.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 10	85.40	FEB 03	82.98	MAY 04	62.73	AUG 02	87.50

WATER YEAR 1994 HIGHEST 62.73 MAY 04, 1994 LOWEST 87.50 AUG 02, 1994

BENTON COUNTY--Continued

420731092083803. Local number, 85-11-33 CCBC3.

LOCATION.--Lat 42°07'31", long 92°08'38", Hydrologic Unit 07080205, approximately 1 mi south of the Town of Garrison, just east of County Road V-56. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Devonian: in Cedar Valley limestone of Middle Devonian age.

WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 6 in., depth 97 ft, cased to 90 ft, open hole 90 to 97 ft. Cement plug from 97-100 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 905 ft above sea level, from topographic map. Measuring point: Top of 6 in. casing, 2.20 ft above land-surface datum.

REMARKS.--Garrison 109 well.

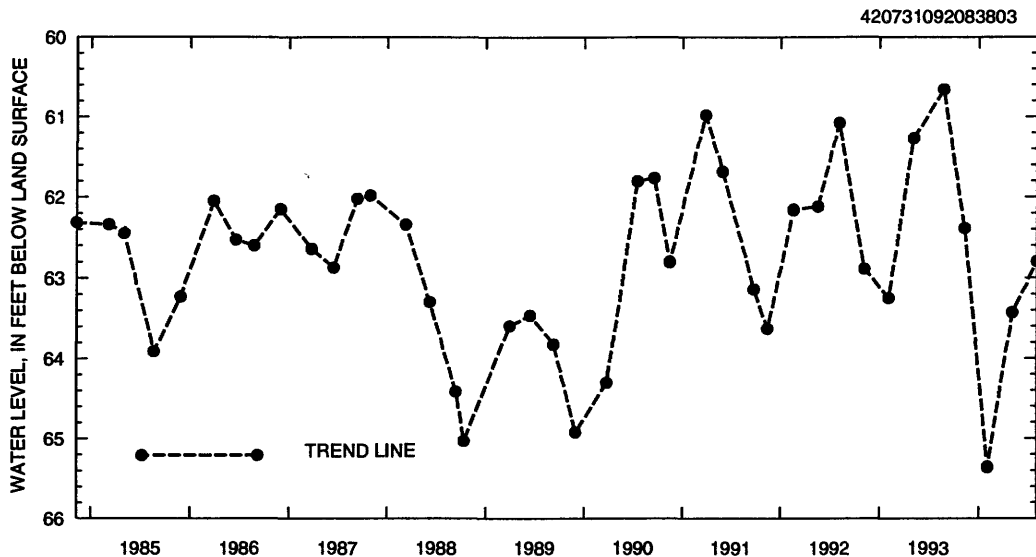
PERIOD OF RECORD.--June 1977 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 60.63 ft below land-surface datum, March 23, 1979; lowest measured, 65.36 ft below land-surface datum, February 3, 1994.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 10	62.39	FEB 03	65.36	MAY 04	63.43	AUG 02	62.80

WATER YEAR 1994 HIGHEST 62.39 NOV 10, 1993 LOWEST 65.36 FEB 03, 1994



BUENA VISTA COUNTY

424023095571401. Local number, 91-35-26 BCCC.

LOCATION.--Lat 42°40'23", long 94°57'14", Hydrologic Unit 07100006, approximately 2.7 mi west and 0.5 mi north of the Village of Varina. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Dakota: in sandstone of Cretaceous age.

WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 357 ft, cased to 357 ft, perforated 338-347 ft. Paleozoic rock present at 347 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape or electric line by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,291 ft above sea level, from topographic map. Measuring point: Top of casing, 2.00 ft above land-surface datum.

REMARKS.--Well D-24.

PERIOD OF RECORD.--December 1978 to current year.

REVISION.--Period of record December 1978 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 18.40 ft below land-surface datum, January 7, 1980; lowest measured, 95.30 ft below land-surface datum, December 12, 1978.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 03	94.31	MAY 03	94.13	AUG 02	93.87		

WATER YEAR 1994 HIGHEST 93.87 AUG 02, 1994 LOWEST 94.31 NOV 03, 1993

BUENA VISTA COUNTY--Continued

425233094545001. Local number, 93-35-13 ADAA.

LOCATION.--Lat 42°52'33", long 94°54'50", Hydrologic Unit 07100006, south of the Chicago, Rock Island and Pacific Railroad track, approximately 3.5 mi east and 0.75 mi north of the Town of Marathon. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Dakota: in sandstone of Cretaceous age.

WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 1.50 in., depth 381 ft, cased to 381 ft, perforated 350-360 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape or electric line by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,330 ft above sea level, from topographic map. Measuring point: Top of casing, 3.00 ft above land-surface datum.

REMARKS.--Well D-36.

PERIOD OF RECORD.--February 1980 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 115.06 ft below land-surface datum, January 31, 1994; lowest measured, 133.85 ft below land-surface datum, September 18, 1990.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 03	132.34	JAN 31	115.06	MAY 03	132.42	AUG 02	131.77

WATER YEAR 1994 HIGHEST 115.06 JAN 31, 1994 LOWEST 132.42 MAY 03, 1994

CALHOUN COUNTY

422812094383501. Local number, 88-33-01 BACD.

LOCATION.--Lat 42°28'12", long 94°38'35", Hydrologic Unit 07100006, located approximately 4.5 mi north of Rockwell City, in a trailer park at the south end of North Twin Lake in Twin Lakes State Park. Owner: Pauline Goins.

AQUIFER.--Glacial drift: in material of Pleistocene age.

WELL CHARACTERISTICS.--Dug unused water-table well, diameter 24 in., depth 35 ft, casing interval unknown.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,222 ft above sea level, from topographic map. Measuring point: Top of casing, 1.12 ft above land-surface datum.

REMARKS.--Twin Lakes (33F2) well.

PERIOD OF RECORD.--May 1989 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 1.86 ft below land-surface datum, April 19, 1991; lowest measured, 16.96 ft below land-surface datum, February 28, 1990.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 04	8.98	FEB 02	9.45	MAY 05	7.99	AUG 02	9.54

WATER YEAR 1994 HIGHEST 7.99 MAY 05, 1994 LOWEST 9.54 AUG 02, 1994

CARROLL COUNTY

415658094462601. Local number, 82-34-02 ABBB.

LOCATION.--Lat 41°56'58", long 94°46'26", Hydrologic Unit 07100007, on county road approximately 1 mi west of the Town of Carrollton. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Middle Raccoon alluvial: in sand and gravel of Holocene age.

WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 2 in., depth 105 ft, cased to 105 ft, slotted from 87-96 ft, gravel packed.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,170 ft above sea level, from topographic map. Measuring point: Top of casing, 2.15 ft above land-surface datum.

REMARKS.--Well WC-149.

PERIOD OF RECORD.--August 1992 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 2.61 feet below land-surface datum, August 11, 1993; lowest measured, 8.33 ft below land-surface datum, August 3, 1994.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 04	5.73	FEB 01	7.27	MAY 05	7.90	AUG 03	8.33

WATER YEAR 1994 HIGHEST 5.73 NOV 04, 1993 LOWEST 8.33 AUG 03, 1994

CARROLL COUNTY--Continued

420230094455101. Local number, 84-34-35 DAAA.

LOCATION.--Lat 42°02'30", long 94°45'51", Hydrologic Unit 07100007, on the south side of county road, approximately 1 mi east of Arthur N. Neu County Airport. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Middle Raccoon alluvial and glacial drift: in alluvial sand and gravel of Quaternary age.

WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 2 in., depth 40 ft, cased to 40 ft, slotted from 28-40 ft, gravel packed. Glacial till penetrated 31-36 ft and 37-40 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,185 ft above sea level, from topographic map. Measuring point: Top of casing, 2.35 ft above land-surface datum.

REMARKS.--Well WC-146.

PERIOD OF RECORD.--August 1992 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 1.99 feet below land-surface datum, November 2, 1992; lowest measured, 5.48 ft below land-surface datum, August 3, 1994.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 04	4.31	FEB 01	5.35	MAY 05	4.87	AUG 03	5.48

WATER YEAR 1994 HIGHEST 4.31 NOV 04, 1993 LOWEST 5.48 AUG 03, 1994

420233094475901. Local number, 83-35-34 BCDC.

LOCATION.--Lat 42°02'33", long 94°47'59", Hydrologic Unit 07100007, approximately 3.5 mi west and 1.5 mi south of the Town of Glidden near the airport, west of County Road N-38. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Dakota: in sandstone of Cretaceous age.

WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 100 ft, cased to 99 ft, slotted from 72-76 ft; gravel packed, open hole 99-100 ft. Pennsylvanian rock 80-100 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,225 ft above sea level, from topographic map. Measuring point: Top of casing, 2.70 ft above land-surface datum.

REMARKS.--Well WC-148.

PERIOD OF RECORD.--October 1982 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 15.56 ft below land-surface datum, May 4, 1983; lowest measured, 22.32 ft below land-surface datum, October 11, 1991.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 04	19.70	FEB 01	20.62	MAY 05	21.26	AUG 08	21.61

WATER YEAR 1994 HIGHEST 19.70 NOV 04, 1993 LOWEST 21.61 AUG 08, 1994

420643094403701. Local number, 84-33-03 CADA.

LOCATION.--Lat 42°06'43", long 94°40'37", Hydrologic Unit 07100006, 3.5 mi north and 2.5 mi east of the Town of Glidden, on the west side of County Road N-50. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--North Raccoon alluvial: in alluvial sand and gravel of Pleistocene age.

WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 2 in., depth 15 ft, cased to 15 ft, slotted from 13-15 ft, gravel-packed.

INSTRUMENTATION.--Quarterly measurement with chalked tape or electric line by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,090 ft above sea level, from topographic map. Measuring point: Top of casing, 2.31 ft above land-surface datum.

REMARKS.--Well WC-131.

PERIOD OF RECORD.--September 1982 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 7.06 ft below land-surface datum, July 10, 1990; lowest measured, 11.92 ft below land-surface datum, January 7, 1986.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 04	9.73	FEB 01	10.93	MAY 05	10.87	AUG 03	11.52

WATER YEAR 1994 HIGHEST 9.73 NOV 04, 1993 LOWEST 11.52 AUG 03, 1994

CARROLL COUNTY--Continued

420705094394501. Local number, 84-33-02 BDBA.

LOCATION.--Lat 42°07'05", long 94°39'45", Hydrologic Unit 07100006, 3.75 mi north and 3.25 mi east of the Town of Glidden, east of County Road N-50 and the Kendal Bridge. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Dakota: in sandstone of Cretaceous age.

WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 76 ft., cased to 76 ft, slotted from 73-76 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape or electric line by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,110 ft above sea level, from topographic map. Measuring point: Top of casing, 2.00 ft above land-surface datum.

REMARKS.--Well WC-132.

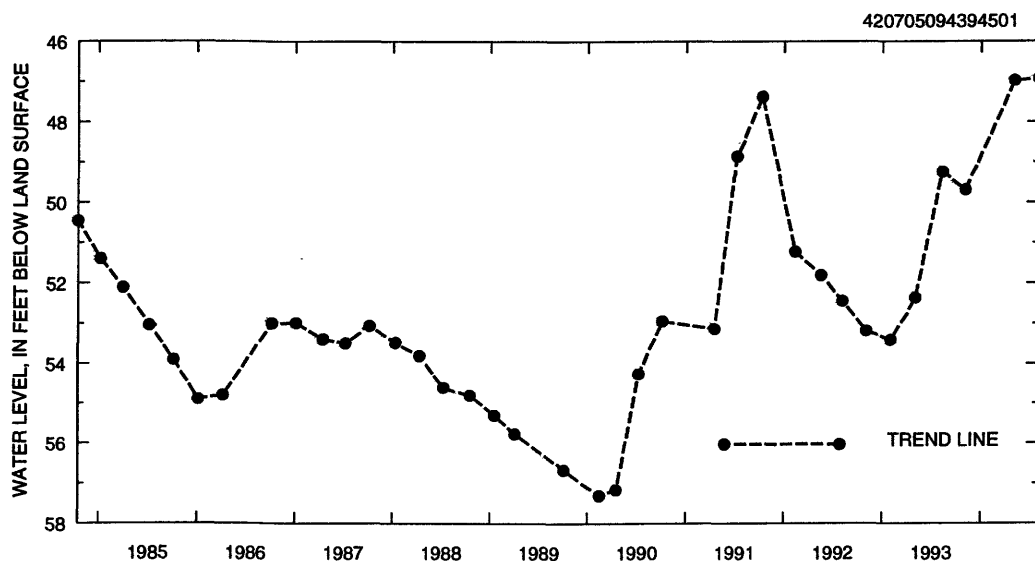
PERIOD OF RECORD.--September 1982 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 46.93 ft below land-surface datum, August 3, 1994; lowest measured, 57.30 ft below land-surface datum, February 13, 1990.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 04	49.69	MAY 05	46.98	AUG 03	46.93

WATER YEAR 1994 HIGHEST 46.93 AUG 03, 1994 LOWEST 46.69 NOV 04, 1993



421058094582701. Local number, 85-35-07 CCCC.

LOCATION.--Lat 42°10'58", long 94°58'27", Hydrologic Unit 07100006, approximately 1 block north of Iowa Highway 217, next to the town maintenance building, Breda. Owner: Town of Breda.

AQUIFER.--Dakota: in sandstone of Cretaceous age.

WELL CHARACTERISTICS.--Drilled municipal artesian water well, diameter 10 in., depth 340 ft, cased to 320 ft, screen 320-340 ft. Original depth 349 ft.

INSTRUMENTATION.--Quarterly measurement with chalked taped by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,362 ft above sea level, from topographic map. Measuring point: Vent pipe, 1.60 ft above land-surface datum.

REMARKS.--Town well No. 2. Water levels affected by pumping.

PERIOD OF RECORD.--March 1942 to August 1966, March 1968 to November 1971, June 1975 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 187.70 ft below land-surface datum, March 25, 1948; lowest measured, 250.40 ft below land-surface datum, May 24, 1977.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 04	205.12	FEB 01	216.65	MAY 05	213.20	AUG 03	215.59

WATER YEAR 1994 HIGHEST 205.12 NOV 04, 1993 LOWEST 216.65 FEB 01, 1994

CASS COUNTY

41117095091901. Local number, 74-37-30 BBBB1.

LOCATION.--Lat 41°11'17", long 95°09'19", Hydrologic Unit 10240003, on south side of county road approximately 1.75 mi south of the Town of Kirkman. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--East Nishnabotna alluvial: in sand and gravel of Holocene age.

WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 2 in., depth 42 ft, cased to 42 ft, slotted from 37-42 ft, gravel packed.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,090 ft above sea level, from topographic map. Measuring point: Top of casing, 2.35 ft above land-surface datum.

REMARKS.--Well SW-16A(U).

PERIOD OF RECORD.--June 1990 and November 1991 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 12.97 feet below land-surface datum, August 5, 1993; lowest measured, 20.84 ft below land-surface datum, November 20, 1991.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 29	15.62	FEB 03	18.65	MAY 05	19.23	JUL 27	18.50

WATER YEAR 1994 HIGHEST 15.62 OCT 29, 1993 LOWEST 19.23 MAY 05, 1994

41117095091902. Local number 74-37-30 BBBB2.

LOCATION.--Lat 41°11'17", long 95°09'19", Hydrologic Unit 10240003, approximately 3 mi south of the Town of Griswold, and 1 mi west of Highway 48 on the Pottawattamie County-Cass County border. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--East Nishnabotna alluvial: in sand and gravel of Holocene age.

WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 2 in., depth 70 ft, cased to 70 ft, slotted 59-70 ft, gravel packed.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,090 ft above sea level, from topographic map. Measuring point: Top of casing, 2.10 ft above land-surface datum.

REMARKS.--Well SW-16B(L).

PERIOD OF RECORD.--July 1986 to current year.

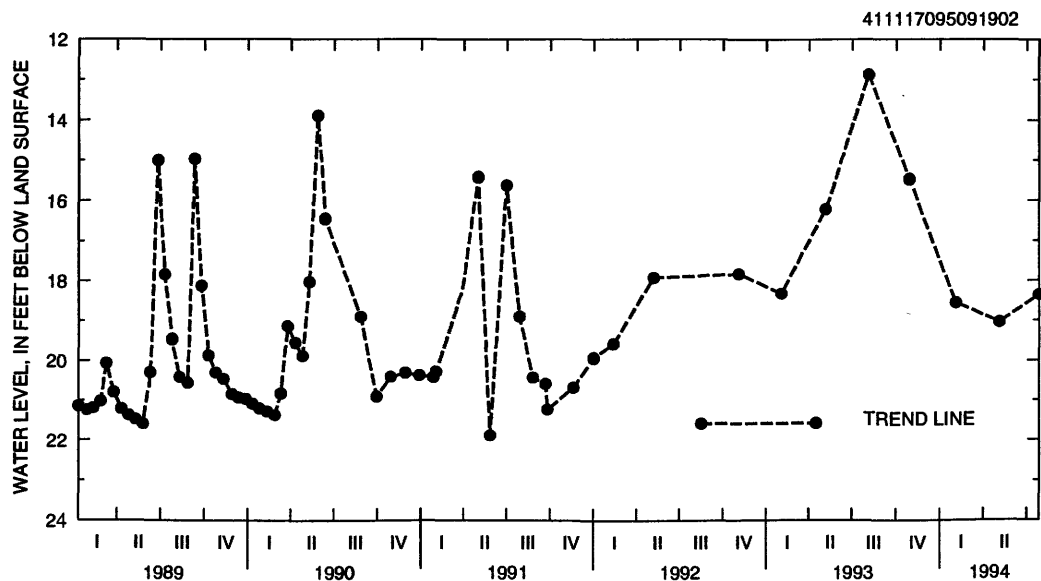
REVISION.--Measuring point revised June 13, 1990 to May 7, 1993.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 11.62 ft below land-surface datum, June 1, 1987; lowest measured, 21.89 ft below land-surface datum, May 27, 1991.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 29	15.47	FEB 03	18.56	MAY 05	19.04	JUL 27	18.36

WATER YEAR 1994 HIGHEST 15.47 OCT 29, 1993 LOWEST 19.04 MAY 05, 1994



CASS COUNTY--Continued

411900094530101. Local number, 75-35-07 BBAB.

LOCATION.--Lat 41°19'00", long 94°55'30", Hydrologic Unit 10240003, approximately 3 mi north and 2.9 mi west of the Town of Cumberland, 2 mi south of County Road G-35 and 2.9 mi west of County Road N-28. Owner: Geological Survey Bureau/DNR and U.S. Geological Survey.

AQUIFER.--Dakota: in sandstone of Cretaceous age.

WELL CHARACTERISTICS.--Drilled observation artesian well, diameter 2 in., depth 218 ft, cased to 189 ft, slotted 189-209 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,295 ft above sea level, from topographic map. Measuring point: Top of casing, 2.35 ft above land-surface datum.

REMARKS.--Well SW-17.

PERIOD OF RECORD.--July 1986 to October 1987, February 1990 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 111.65 ft below land-surface datum, August 5, 1993; lowest measured, 125.75 ft below land-surface datum, March 14, 1990.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>
OCT 29	111.90	FEB 03	114.26	MAY 05	115.48	JUL 27	115.13

WATER YEAR 1994 HIGHEST 111.90 OCT 29, 1993 LOWEST 115.48 MAY 05, 1994

412832095033501. Local number, 77-37-13 BBBB.

LOCATION.--Lat 41°28'32", long 95°03'35", Hydrologic Unit 10240003, approximately 1 mi south of U.S. Interstate 80, and east of Highway 173. Approximately 2 mi north and 3 mi east of the Town of Mame. Owner: Geological Survey Bureau/DNR and U.S. Geological Survey.

AQUIFER.--Buried channel: in sand of Pleistocene age.

WELL CHARACTERISTICS.--Drilled observation artesian well, diameter 2 in., depth 201 ft, cased to 196 ft, slotted 196-201 ft. Open to Pennsylvanian limestone, 196-201'.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,298 ft above sea level, from topographic map. Measuring point: Top of casing, 2.20 ft above land-surface datum.

REMARKS.--Well SW-18.

PERIOD OF RECORD.--July 1986 to October 1987, February 1990 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 113.50 ft below land-surface datum, November 4, 1993; lowest measured, 128.40 ft below land-surface datum, March 14, 1990.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>
NOV 04	113.50	FEB 11	114.73	MAY 04	117.45	JUL 27	118.17

WATER YEAR 1994 HIGHEST 113.50 NOV 04, 1993 LOWEST 118.17 JUL 27, 1994

CERRO GORDO COUNTY

430757093131801. Local number, 96-20-17 DAAD.

LOCATION.--Lat 43°07'57", long 93°13'18", Hydrologic Unit 07080203, in southwest Mason City, 1 mi west of Highway 65 and south of the Iowa Terminal Railway. Owner: AMPI Creamery (formerly State Brand Creameries).

AQUIFER.--Cambrian-Ordovician: in sandstone of Late Cambrian and sandy dolomite of Early Ordovician age.

WELL CHARACTERISTICS.--Unused drilled industrial artesian water well, diameter 10 in., depth 1,336 ft, cased from 0-1,080 ft, open hole from 1,080-1,336 ft.

INSTRUMENTATION.--Quarterly measurement with electric line by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,162 ft above sea level, from topographic map. Measuring point: Top of casing, 1.50 ft above land-surface datum.

REMARKS.--State Brand Creameries Well #1. Records for 1968-1971 and 1973-1989 are unpublished and available in the files of the Iowa District Office.

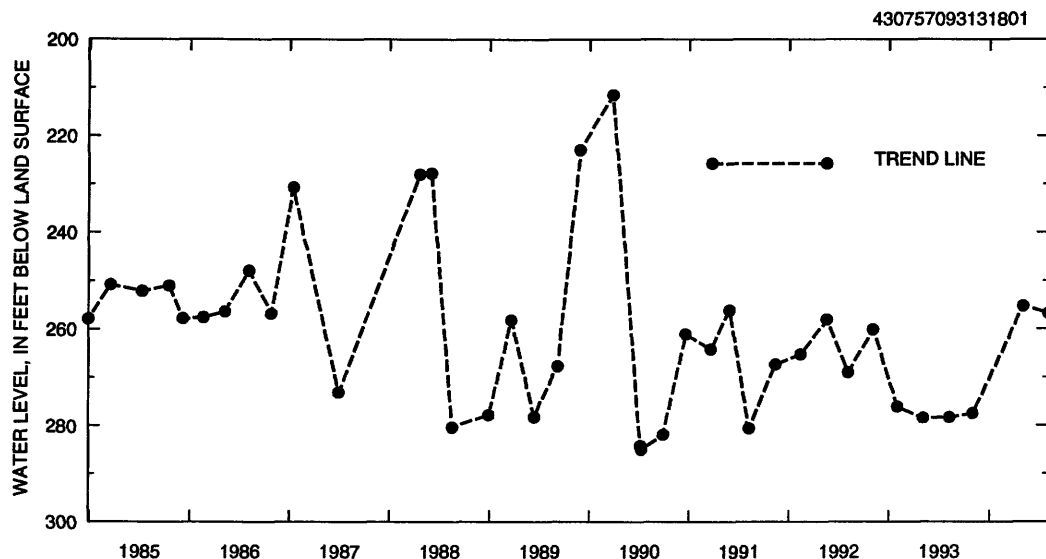
PERIOD OF RECORD.--October 1968 to March 1971, and March 1973 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 170.80 ft below land-surface datum, August 4, 1977; lowest measured, 298.80 ft below land-surface datum, October 22, 1968.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 01	277.53	JAN 31	267.68	MAY 02	255.33	AUG 02	256.83

WATER YEAR 1994 HIGHEST 255.33 MAY 02, 1994 LOWEST 277.53 NOV 01, 1993



430806093164501. Local number, 96-21-13 BCCB.

LOCATION.--Lat 43°08'06", long 93°16'45", Hydrologic Unit 07080203, south of the County Home, just north of Iowa Highway 106, east of the City of Clear Lake. Owner: Mason City and Clear Lake Railroad.

AQUIFER.--Devonian: in Cedar Valley limestone of Middle Devonian age.

WELL CHARACTERISTICS.--Drilled unused artesian water well, diameter 5 in., depth 198 ft. Casing information is not available.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,165 ft above sea level, from topographic map. Measuring point: Top of well curb, 1.30 ft above land-surface datum.

PERIOD OF RECORD.--November 1940 to August 1971, March 1973 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 1.44 ft below land-surface datum, February 12, 1982; lowest measured, 17.26 ft below land-surface datum, November 18, 1955.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 01	6.10	JAN 31	6.93	MAY 02	7.64	AUG 02	5.85

WATER YEAR 1994 HIGHEST 5.85 AUG 02, 1994 LOWEST 7.64 MAY 02, 1994

GROUND-WATER LEVELS

CHEROKEE COUNTY

423833095365701. Local number, 90-40-06 BDCD.

LOCATION.--Lat 42°38'33", long 95°36'57", Hydrologic Unit 10230003, approximately 3.1 mi west of U.S. Highway 59 and 0.55 mi north of Iowa Highway 31 along the Illinois Central Railroad track. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Dakota: in sandstone of Cretaceous age.

WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 1.25 in., depth 253 ft, cased to 252 ft, sandpoint 252-253 ft.

INSTRUMENTATION.--Quarterly measurements with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,182 ft above sea level, from topographic map. Measuring point: Top of casing, 3.93 ft above land-surface datum.

REMARKS.--Well D-6.

PERIOD OF RECORD.--December 1978 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 28.38 ft below land-surface datum, August 27, 1983; lowest measured, 40.85 ft below land-surface datum, January 15, 1991.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>
NOV 02	30.79	FEB 08	32.53	MAY 03	32.64	JUL 27	32.27

WATER YEAR 1994 HIGHEST 30.79 NOV 02, 1993 LOWEST 32.64 MAY 03, 1994

424039095342801. Local number, 91-40-21 CDDD1.

LOCATION.--Lat 42°40'39", long 95°34'28", Hydrologic Unit 10230003, on north side of county road, approximately 4.5 mi northeast of the City of Quimby. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Little Sioux River alluvial: in sand and gravel of Holocene age.

WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 2 in., depth 23 ft, cased to 23 ft, slotted 20-23 ft, gravel packed.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,165 ft above sea level, from topographic map. Measuring point: Top of casing, 2.20 ft above land-surface datum.

REMARKS.--Well LSR-20U.

PERIOD OF RECORD.--August 1992 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 1.52 feet below land-surface datum, August 4, 1993; lowest measured, 16.90 ft below land-surface datum, August 6, 1992.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>
NOV 02	16.07	FEB 08	16.65	MAY 03	16.70	JUL 27	16.40

WATER YEAR 1994 HIGHEST 16.07 NOV 02, 1993 LOWEST 16.70 MAY 03, 1994

424039095342802. Local number, 91-40-21 CDDD2.

LOCATION.--Lat 42°40'39", long 95°34'28", Hydrologic Unit 10230003, on north side of county road, approximately 4.5 mi northeast of the City of Quimby. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Little Sioux River alluvial: in sand and gravel of Holocene age.

WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 2 in., depth 48 ft, cased to 48 ft, slotted 42-48 ft, gravel packed.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,165 ft above sea level, from topographic map. Measuring point: Top of casing, 2.00 ft above land-surface datum.

REMARKS.--Well LSR-20L.

PERIOD OF RECORD.--August 1992 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 1.55 feet below land-surface datum, August 4, 1993; lowest measured, 16.34 ft below land-surface datum, May 4, 1994.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>
NOV 02	15.40	FEB 08	16.21	MAY 04	16.34	JUL 27	16.04

WATER YEAR 1994 HIGHEST 15.40 NOV 02, 1993 LOWEST 16.34 MAY 04, 1994

CHEROKEE COUNTY--Continued

424132095480211. Local number, 91-42-16 DDDD11.

LOCATION.--Lat 42°41'32", long 95°48'02", Hydrologic Unit 10230004, approximately 2 mi north of the Village of Fielding at the junction of County Roads L-36 and C-44. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Dakota: in sandstone of Cretaceous age.

WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 390 ft, cased to 390 ft, perforated 386-390 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,320 ft above sea level, from topographic map. Measuring point: Top of casing, 1.50 ft above land-surface datum.

REMARKS.--Well D-11.

PERIOD OF RECORD.--March 1980 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 141.67 ft below land-surface datum, May 5, 1993; lowest measured, 156.20 ft below land-surface datum, January 10, 1990.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 02	153.32	FEB 08	153.12	MAY 03	153.12	JUL 28	152.72

WATER YEAR 1994 HIGHEST 152.72 JUL 28, 1994 LOWEST 153.32 NOV 02, 1993

424348095231601. Local number, 91-39-01 ADAD1.

LOCATION.--Lat 42°43'48", long 95°23'16", Hydrologic Unit 10230005, approximately 2 mi east and 0.5 mi north of the Town of Aurelia at the Larson Lake County Park. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Cambrian-Ordovician: in sandstone of Cambrian age and dolomite of Ordovician age.

WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 6 in. to 236 ft, 5 in. to 486 ft, 2 in. to 1,545 ft, depth 1,545 ft, cased to 1,126 ft, open hole 1,126 to 1,545 ft.

INSTRUMENTATION.--Quarterly measurement with electric line or chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,370 ft above sea level, from topographic map. Measuring point: Top of casing, 1.55 ft above land-surface datum.

REMARKS.--Well D-28.

PERIOD OF RECORD.--September 1979 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 189.65 ft below land-surface datum, December 19, 1984; lowest measured, 194.73 ft below land-surface datum, February 3, 1993.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 02	193.10	MAY 03	193.06	JUL 27	193.31

WATER YEAR 1994 HIGHEST 193.06 MAY 03, 1994 LOWEST 193.31 JUL 27, 1994

424348095231602. Local number, 91-39-01 ADAD2.

LOCATION.--Lat 42°43'48", long 95°23'16", Hydrologic Unit 10230005, approximately 2 mi east and 0.5 mi north of the Town of Aurelia at the Larson Lake County Park. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Dakota: in sandstone of Cretaceous age.

WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 4 in., depth 340 ft, cased to 340 ft, perforated 235-240 ft.

INSTRUMENTATION.--Quarterly measurement with electric line or chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,370 ft above sea level, from topographic map. Measuring point: Top of casing, 1.75 ft above land-surface datum.

REMARKS.--Well D-29.

PERIOD OF RECORD.--September 1979 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 188.65 ft below land-surface datum, April 20, 1988; lowest measured, 194.15 ft below land-surface datum, August 24, 1982.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 02	190.31	MAY 03	190.08	JUL 27	190.30		

WATER YEAR 1994 HIGHEST 190.08 MAY 03, 1994 LOWEST 190.31 NOV 02, 1993

CHEROKEE COUNTY--Continued

424459095322411. Local number, 92-40-26 CCDD11.

LOCATION.--Lat 42°44'59", long 95°32'24", Hydrologic Unit 10230003, in the City of Cherokee, to the north of County Road C-38 and east of Highway 59 near the old pumping station. Owner: City of Cherokee.

AQUIFER.--Cambrian-Ordovician: in sandstone of Late Cambrian age and sandy dolomite of Early Ordovician age

WELL CHARACTERISTICS.--Unused drilled municipal artesian test water well, diameter 8 in., depth 1,055 ft, cased to 965 ft, open hole from 965-1055 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,180 ft above sea level, from topographic map. Measuring point: Top of casing, 3.53 ft above land-surface datum.

REMARKS.--City of Cherokee Test #1.

PERIOD OF RECORD.--November 1987 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 15.33 ft below land-surface datum, November 5, 1992; lowest measured, 27.21 ft below land-surface datum, July 12, 1990.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 02	15.89	FEB 08	17.53	MAY 03	17.58	JUL 27	16.83

WATER YEAR 1994 HIGHEST 15.89 NOV 02, 1993 LOWEST 17.58 MAY 03, 1994

424523095313101. Local number, 92-40-26 ADDD1.

LOCATION.--Lat 42°45'23", long 95°31'31", Hydrologic Unit 10230003, on the northwest corner of a T-intersection of county roads, approximately 1 mi west of the City of Cherokee. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Little Sioux River alluvial: in sand and gravel of Holocene age.

WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 2 in., depth 22.5 ft, cased to 22.5 ft, slotted 20.5-22.5 ft, gravel packed.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,180 ft above sea level, from topographic map. Measuring point: Top of casing, 2.20 ft above land-surface datum.

REMARKS.--Well LSR-35U.

PERIOD OF RECORD.--August 1992 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 6.65 feet below land-surface datum, May 5, 1993; lowest measured, 14.06 ft below land-surface datum, February 8, 1994.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 02	12.28	FEB 08	14.06	MAY 03	11.77	JUL 27	10.00

WATER YEAR 1994 HIGHEST 10.00 JUL 27, 1994 LOWEST 14.06 FEB 08, 1994

424523095313102. Local number, 92-40-26 ADDD2.

LOCATION.--Lat 42°45'23", long 95°31'31", Hydrologic Unit 10230003, on the northwest corner of a T-intersection of county roads, approximately 1 mi west of the City of Cherokee. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Little Sioux River alluvial: in sand and gravel of Holocene age.

WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 2 in., depth 37.5 ft, cased to 37.5 ft, slotted 33.5-37.5 ft, gravel packed.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,180 ft above sea level, from topographic map. Measuring point: Top of casing, 2.30 ft above land-surface datum.

REMARKS.--Well LSR-35M.

PERIOD OF RECORD.--August 1992 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 6.32 feet below land-surface datum, May 5, 1993; lowest measured, 13.73 ft below land-surface datum, February 8, 1994.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 02	11.98	FEB 08	13.73	MAY 03	11.45	JUL 27	9.74

WATER YEAR 1994 HIGHEST 9.74 JUL 27, 1994 LOWEST 13.73 FEB 08, 1994

CHEROKEE COUNTY--Continued

424523095313103. Local number, 92-40-26 ADDED3.

LOCATION.--Lat 42°45'23", long 95°31'31", Hydrologic Unit 10230003, on the northwest corner of a T-intersection of county roads, approximately 1 mi west of the City of Cherokee. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Little Sioux River alluvial: in sand and gravel of Holocene age.

WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 2 in., depth 52 ft, cased to 52 ft, slotted 48-52 ft, gravel packed.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,180 ft above sea level, from topographic map. Measuring point: Top of casing, 2.00 ft above land-surface datum.

REMARKS.--Well LSR-35L.

PERIOD OF RECORD.--August 1992 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 6.39 feet below land-surface datum, May 5, 1993; lowest measured, 13.83 ft below land-surface datum, February 8, 1994.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 02	12.05	FEB 08	13.83	MAY 03	11.53	JUL 27	9.81

WATER YEAR 1994 HIGHEST 9.81 JUL 27, 1994 LOWEST 13.83 FEB 08, 1994

424802095331201. Local number, 92-40-10 BDDD.

LOCATION.--Lat 42°48'02", long 95°33'12", Hydrologic Unit 10230003, west of U.S. Highway 59, approximately 2.5 mi north of the City of Cherokee. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Dakota: in sandstone of Cretaceous age.

WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2.50 in., depth 300 ft, cased to 300 ft, perforated 114-118 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,210 ft above sea level, from topographic map. Measuring point: Top of casing, 2.80 ft above land-surface datum.

REMARKS.--Well D-5.

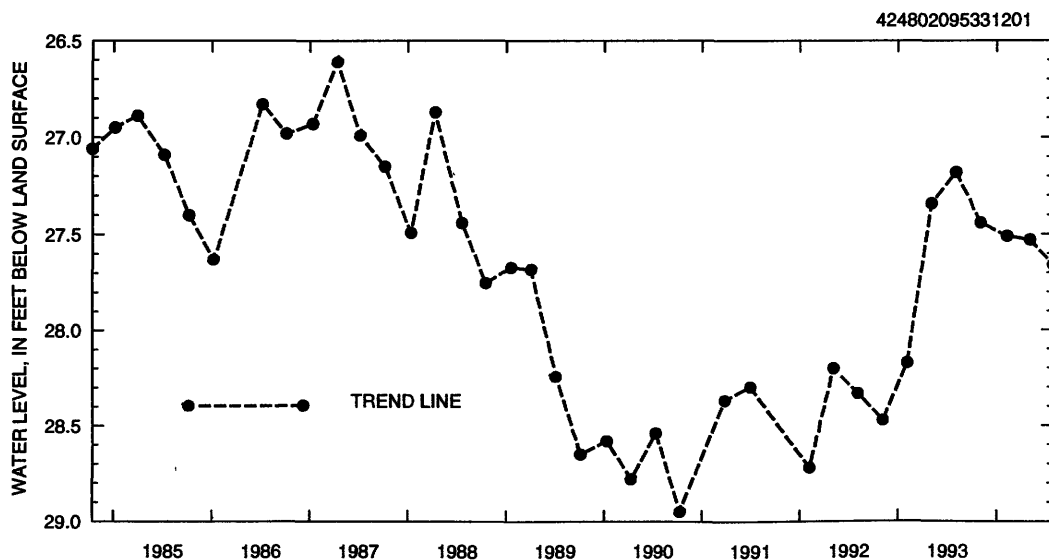
PERIOD OF RECORD.--April 1980 to October 1980, May 1982 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 26.05 ft below land-surface datum, June 27, 1984; lowest measured, 29.20 ft below land-surface datum, November 7, 1991.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 02	27.44	FEB 08	27.51	MAY 03	27.53	JUL 27	27.66

WATER YEAR 1994 HIGHEST 27.44 NOV 02, 1993 LOWEST 27.66 JUL 27, 1994



CLAY COUNTY

431316095135201. Local number, 97-37-17 ADDA1.

LOCATION.--Lat 43°13'16", long 95°13'52", Hydrologic Unit 10230003, on the west side of a county road, .5 mi north of County Road B-17, approximately 3.5 mi south and west of the Town of Fostoria. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Little Sioux River alluvial: in sand and gravel of Holocene age.

WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 2 in., depth 17 ft, cased to 17 ft, slotted 14.8-17 ft, gravel packed.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,353 ft above sea level, from topographic map. Measuring point: Top of casing, 2.35 ft above land-surface datum.

REMARKS.--Well LSR-1U.

PERIOD OF RECORD.--July 1990 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 6.22 feet below land-surface datum, August 10, 1993; lowest measured, 13.01 ft below land-surface datum, July 27, 1990.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>
NOV 03	8.85	MAY 03	10.53	AUG 02	9.14

WATER YEAR 1994 HIGHEST 8.85 NOV 03, 1993 LOWEST 10.53 MAY 03, 1994

431316095135202. Local number, 97-37-17 ADDA2.

LOCATION.--Lat 43°13'16", long 95°13'52", Hydrologic Unit 10230003, on the west side of a county road, .5 mi north of County Road B-17, approximately 3.5 mi south and west of the Town of Fostoria. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Little Sioux River alluvial: in sand and gravel of Holocene age.

WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 2 in., depth 90 ft, cased to 90 ft, slotted 85 ft to 90 ft, gravel packed.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,353 ft above sea level, from topographic map. Measuring point: Top of casing, 2.10 ft above land-surface datum.

REMARKS.--Well LSR-1L.

PERIOD OF RECORD.--July 1990 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 9.06 feet below land-surface datum, November 3, 1993; lowest measured, 15.76 ft below land-surface datum, July 27, 1990.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>
NOV 03	9.06	MAY 03	13.00	AUG 02	11.00

WATER YEAR 1994 HIGHEST 9.06 NOV 03, 1993 LOWEST 13.00 MAY 03, 1994

CLAYTON COUNTY

424023091291201. Local number, 91-05-30 BBBB.

LOCATION.--Lat 42°40'23", long 91°29'12", Hydrologic Unit 07060006, 5 mi northwest of the City of Edgewood, or 2 mi northwest of the junction of Iowa Highways 3 and 13, east of Strawberry Point. Owner: Harold Knight.

AQUIFER.--Glacial drift: in material of Pleistocene age.

WELL CHARACTERISTICS.--Dug unused water-table well, diameter 36 in., depth 36 ft. Casing information not available.

INSTRUMENTATION.--Intermittent measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,233 ft above sea level, from topographic map. Measuring point: Hole in pump base at land-surface datum.

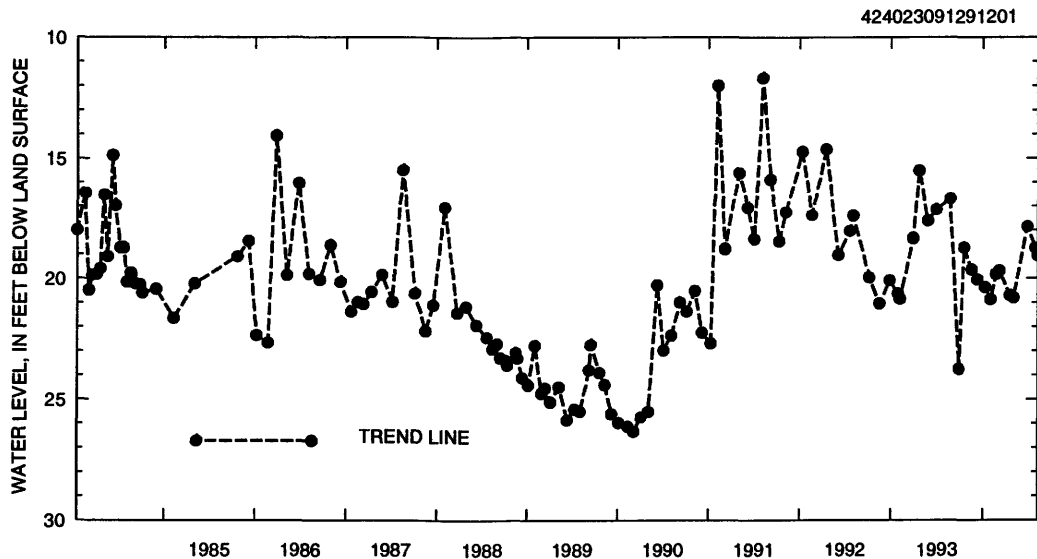
PERIOD OF RECORD.--June 1957 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 11.68 ft below land-surface datum, August 7, 1991; lowest measured, 30.68 ft below land-surface datum, January 12, 1959.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 18	18.74	JAN 31	20.87	APR 18	20.70	JUL 29	18.75
NOV 17	19.65	FEB 22	19.83	MAY 02	20.80	AUG 08	19.09
DEC 10	20.06	MAR 07	19.69	JUN 27	17.87	SEP 20	20.02
JAN 10	20.38						

WATER YEAR 1994 HIGHEST 17.87 JUN 27, 1994 LOWEST 20.87 JAN 31, 1994



424057091320001. Local number, 91-06-22 ACAC.

LOCATION.--Lat 42°40'57", long 91°32'00", Hydrologic Unit 07060006, southeast corner of the junction of Iowa Highways 3 and 13, Strawberry Point. Owner: City of Strawberry Point.

AQUIFER.--Cambrian-Ordovician and Silurian-Devonian: in dolomite of Late Ordovician and Silurian age.

WELL CHARACTERISTICS.--Drilled unused artesian water well, diameter 16 in., depth 492 ft, cased to 161 ft with 16 in., 12 in. 130-161 ft; 10 in. liner 229-370 ft, open hole 161-229 ft and 370-492 ft.

INSTRUMENTATION.--Intermittent measurement with chalked tape by USGS personnel. Graphic water-level recorder March 1963 to October 1987.

DATUM.--Elevation of land-surface datum is 1,219 ft above sea level, from topographic map. Measuring point: Top of pipe nipple, 2.55 ft above land-surface datum.

REMARKS.--City well No. 2.

PERIOD OF RECORD.--March 1963 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 101.13 ft below land-surface datum, August 23, 1993; lowest recorded, 134.76 ft below land-surface datum, August 1, 1989.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 17	119.20	JAN 31	122.30	MAY 02	120.85	AUG 10	121.34

WATER YEAR 1994 HIGHEST 119.20 NOV 17, 1993 LOWEST 122.30 JAN 31, 1994

CLAYTON COUNTY--Continued

425433091285001. Local number, 94-05-31 DACC1.

LOCATION.--Lat 42°54'33", long 91°28'50", Hydrologic Unit 07060004, located at entrance to Big Spring Fish Hatchery 4.5 mi west and 1.25 mi south of the Town of St. Olaf. Owner: Geological Survey Bureau, DNR, and U.S. Geological Survey.

AQUIFER.--Alluvial: in sand and gravel of Holocene age.

WELL CHARACTERISTICS.--Drilled observation water-table well, diam. 5 in., depth 36 ft, cased with steel to 33 ft, screened 33-36 ft.

INSTRUMENTATION.--Intermittent measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 855 ft above sea level, from topographic map. Measuring point: Top of recorder platform, 2.50 ft above land-surface datum.

REMARKS.--Well BS1-A. Historical water-level data published in OFR 91-63 and OFR 92-67.

PERIOD OF RECORD.--December 1988 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 2.45 ft below land-surface datum, August 26, 1989; lowest daily mean water level recorded, 14.87 ft below land-surface datum, August 15-21, 1989.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>
NOV 17	13.00	FEB 02	13.13	MAY 02	13.10	AUG 08	13.33
DEC 08	13.17						

WATER YEAR 1994 HIGHEST 13.00 NOV 17, 1993 LOWEST 13.33 AUG 08, 1994

425433091285002. Local number, 94-05-31 DACC2.

LOCATION.--Lat 42°54'33", long 91°28'50", Hydrologic Unit 07060004, located at entrance to Big Spring Fish Hatchery 4.5 mi west and 1.25 mi south of the Town of St. Olaf. Owner: Geological Survey Bureau, DNR, and U.S. Geological Survey.

AQUIFER.--Cambrian-Ordovician: in Galena dolomite of Middle Ordovician age.

WELL CHARACTERISTICS.--Drilled observation artesian water well, diam. 5 in., depth 85 ft, cased with steel to 61 ft, open hole 61-85 ft.

INSTRUMENTATION.--Intermittent measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 855 ft above sea level, from topographic map. Measuring point: Top of recorder platform, 2.60 ft above land-surface datum.

REMARKS.--Well BS1-B. Historical water-level data published in OFR 91-63 and OFR 92-67.

PERIOD OF RECORD.--December 1988 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 0.62 ft above land-surface datum, August 20, 1993 (revised); lowest water level recorded 10.38 ft below land-surface datum, July 20, 1989.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>
NOV 17	5.48	FEB 02	6.28	MAY 02	5.12	AUG 08	6.06
DEC 08	5.83						

WATER YEAR 1994 HIGHEST 5.12 MAY 02, 1994 LOWEST 6.28 FEB 02, 1994

CLAYTON COUNTY--Continued

425940091194701. Local number, 95-04-32 DDDD.

LOCATION.--Lat 42°59'40", long 91°19'47", Hydrologic Unit 07060004, 1 mi west of the junction of U.S. Highway 52 and Iowa Highway 13, or northeast of the Town of Farmersburg. Owner: Milton and Willis Meier.

AQUIFER.--Cambrian-Ordovician: in St. Peter sandstone of Middle Ordovician age.

WELL CHARACTERISTICS.--Drilled stock artesian water well, diameter 6 in., depth 380 ft (reported). Casing information not available.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,090 ft above sea level, from topographic map. Measuring point: Plug in pump base, 1.00 ft above land-surface datum.

PERIOD OF RECORD.--October 1957 to current year.

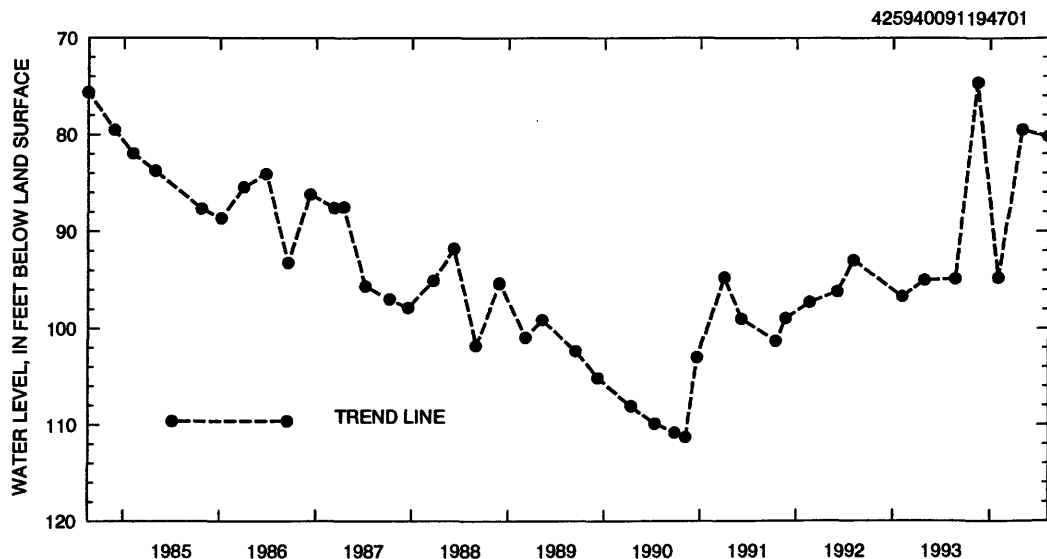
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 74.08 ft below land-surface datum, July 10, 1984; lowest measured, 126.56 ft below land-surface datum, January 13, 1969.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 15	74.61*	JAN 31	94.73	MAY 02	79.46	AUG 08	80.19

* Recently pumped.

WATER YEAR 1994 HIGHEST 79.46 MAY 02, 1994 LOWEST 94.73 JAN 31, 1994



430156091182901. Local number, 95-04-22 BCBD.

LOCATION.--Lat 43°01'56", long 91°18'29", Hydrologic Unit 07060001, approximately 2 mi north of the junction of U.S. Highway 18 and U.S. Highway 52-Iowa Highway 13, near Spook Cave. Owner: Gerald Mielke.

AQUIFER.--Cambrian-Ordovician: in St. Peter sandstone of Middle Ordovician age.

WELL CHARACTERISTICS.--Drilled unused artesian water well, diameter 6 in., depth 49 ft. Casing information not available.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 940 ft above sea level, from topographic map. Measuring point: Top of casing, 1.00 ft above land-surface datum.

PERIOD OF RECORD.--October 1957 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 13.98 ft below land-surface datum, December 7, 1983; lowest measured, 27.88 ft below land-surface datum, March 4, 1968.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 15	23.43	FEB 01	22.64	MAY 03	23.15	AUG 08	23.76

WATER YEAR 1994 HIGHEST 22.64 FEB 01, 1994 LOWEST 23.76 AUG 08, 1994

CRAWFORD COUNTY

415512095313801. Local number, 82-40-17 ABBC.

LOCATION.--Lat 41°55'12", long 95°31'38", Hydrologic Unit 10230007, approximately 1.75 mi west of the Town of Dow City on County Road E-5L, north of U.S. Highway 30. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Boyer alluvial: in sand and gravel of Holocene age.

WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 2 in., depth 46 ft, cased to 46 ft, slotted from 40-46 ft, gravel-packed.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,122 ft above sea level, from topographic map. Measuring point: Top of casing, 1.60 ft above land-surface datum.

REMARKS.--Well WC-188.

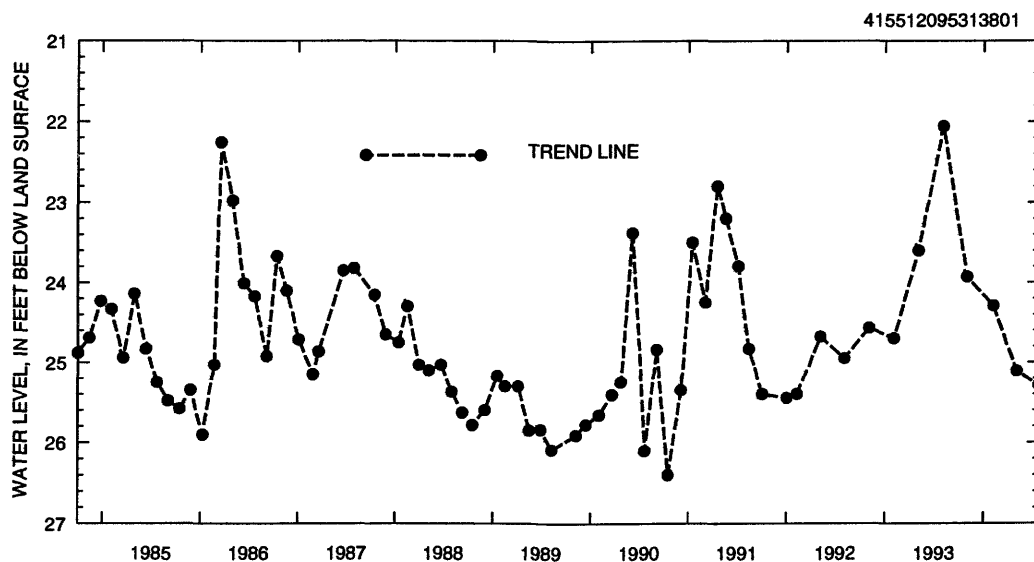
PERIOD OF RECORD.--May 1983 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 21.55 ft below land-surface datum, May 30, 1984; lowest measured, 26.40 ft below land-surface datum, October 17, 1990 and November 25, 1991.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 01	23.93	FEB 07	24.29	MAY 04	25.11	JUL 27	25.29

WATER YEAR 1994 HIGHEST 23.93 NOV 01, 1993 LOWEST 25.29 JUL 27, 1994



415514095312001. Local number, 82-40-17 AABB.

LOCATION.--Lat 41°55'14", long 95°31'20", Hydrologic Unit 10230007, approximately 1.5 mi west of the Town of Dow City on the south side of U.S. Highway 30. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Dakota: in sandstone of Cretaceous age

WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 141 ft, cased to 141 ft, slotted from 123-141 ft, gravel-packed.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,150 ft above sea level, from topographic map. Measuring point: Top of casing, 2.50 ft above land-surface datum.

REMARKS.--Well WC-9.

PERIOD OF RECORD.--June 1981 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 38.15 ft below land-surface datum, May 3, 1983; lowest measured, 43.86 ft below land-surface datum, June 11, 1981.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 01	40.40	FEB 07	40.87	MAY 04	41.57	JUL 27	41.81

WATER YEAR 1994 HIGHEST 40.40 NOV 01, 1993 LOWEST 41.81 JUL 27, 1994

CRAWFORD COUNTY--Continued

420147095161301. Local number, 83-38-04 DABC.

LOCATION.--Lat 42°01'47", long 95°16'13", Hydrologic Unit 10230007, on the northeast corner of State Route 30 and county road, approximately 4.25 mi east of the City of Denison. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Boyer River alluvial: in sand and gravel of Holocene age.

WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 2 in., depth 29 ft, cased to 29 ft, slotted 20-29 ft, gravel packed.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,220 ft above sea level, from topographic map. Measuring point: Top of casing, 2.00 ft above land-surface datum.

REMARKS.--Well WC #63.

PERIOD OF RECORD.--June 1982 to July 1984, July 1990, and August 1992 to present.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 4.96 feet below land-surface datum, August 6, 1993; lowest measured, 12.59 ft, revised, below land-surface datum, February 9, 1983.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 01	6.06	FEB 07	8.44	MAY 04	9.50	JUL 27	10.05

WATER YEAR 1994 HIGHEST 6.06 NOV 01, 1993 LOWEST 10.05 JUL 27, 1994

420608095111701. Local number, 84-37-08 BCCB.

LOCATION.--Lat 42°06'08", long 95°11'17", Hydrologic Unit 10230007, approximately 3 mi north of the Town of Vail on the east side of County Road E-25. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Fremont buried channel: in sand and gravel of Pleistocene age.

WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 541 ft, cased to 541 ft, slotted from 527-541 ft, gravel-packed. Open to Pennsylvanian limestone 539-541 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape or electric line by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,380 ft above sea level, from topographic map. Measuring point: Top of casing, 1.65 ft above land-surface datum.

REMARKS.--Well WC-226.

PERIOD OF RECORD.--August 1983 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 208.35 ft below land-surface datum, July 17, 1988; lowest measured, 212.90 ft below land-surface datum, January 9, 1991.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 01	211.14	FEB 07	211.15	MAY 04	211.24	JUL 27	211.44

WATER YEAR 1994 HIGHEST 211.14 NOV 01, 1993, LOWEST 211.44 JUL 27, 1994

421005095342801. Local number, 85-41-13 CCCC.

LOCATION.--Lat 42°10'05", long 95°34'28", Hydrologic Unit 10230001, approximately 7 mi west of the Town of Schleswig, northeast of the junction of County Roads L-51 and E-16. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Dakota and glacial drift: in sandstone of Cretaceous age and sand and gravel of Pleistocene age.

WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 361 ft, cased to 322 ft, slotted from 307-322 ft, gravel-packed. Open to Dakota Formation from 320-361 ft.

INSTRUMENTATION.--Quarterly measurement with electric line or chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,375 ft above sea level, from topographic map. Measuring point: Top of casing, 3.49 ft above land-surface datum.

REMARKS.--Well WC-6.

PERIOD OF RECORD.--May 1981 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 244.23 ft below land-surface datum, July 28, 1981; lowest measured, 249.05 ft below land-surface datum, February 5, 1982.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 01	245.47	FEB 07	244.87	MAY 04	245.39	JUL 27	245.82

WATER YEAR 1994 HIGHEST 244.87 FEB 07, 1994 LOWEST 245.82 JUL 27, 1994

CRAWFORD COUNTY--Continued

421031095225601. Local number, 85-39-16 ADDD1.

LOCATION.--Lat 42°10'31", long 95°22'56", Hydrologic Unit 10230007, approximately 2.5 mi east and 0.5 mi north of the Town of Schleswig on the west side of County Road M-27. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Dakota: in sandstone of Cretaceous age.

WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 5 in., depth 351 ft, cased to 351 ft, slotted from 315-330 ft, gravel-packed. Open to Pennsylvanian rock from 344-351 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape or electric line by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,370 ft above sea level, from topographic map. Measuring point: Top of casing, 3.14 ft above land-surface datum.

REMARKS.--Well WC-7A.

PERIOD OF RECORD.--June 1981 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 232.61 ft below land-surface datum, October 7, 1986; lowest measured, 238.35 ft below land-surface datum, June 10, 1981.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>
NOV 01	233.79	FEB 07	233.70	MAY 04	233.85	JUL 27	233.90

WATER YEAR 1994 HIGHEST 233.70 FEB 07, 1994 LOWEST 233.90 JUL 27, 1994

421031095225602. Local number, 85-39-16 ADDD2.

LOCATION.--Lat 42°10'31", long 95°22'56", Hydrologic Unit 10230007, approximately 2.5 mi east and 0.5 mi north of the Town of Schleswig on the west side of County Road M-27. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Mississippian: in limestone of Mississippian age.

WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 561 ft, cased to 561 ft, perforated 543-561 ft, gravel-packed.

INSTRUMENTATION.--Quarterly measurement with chalked tape or electric line by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,370 ft above sea level, from topographic map. Measuring point: Top of casing, 3.14 ft above land-surface datum.

REMARKS.--Well WC-7B.

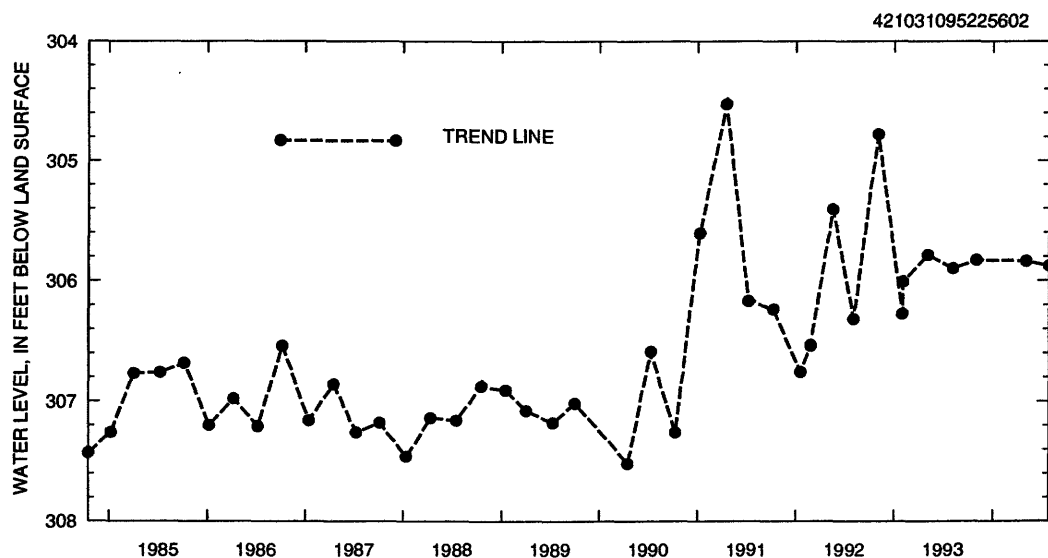
PERIOD OF RECORD.--June 1981 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 304.53 ft below land-surface datum, April 18, 1991, lowest measured, 307.64 ft below land-surface datum, October 4, 1983.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>
NOV 01	305.83	FEB 07	305.92	MAY 04	305.84	JUL 27	305.88

WATER YEAR 1994 HIGHEST 305.83 NOV 01, 1993 LOWEST 305.92 FEB 07, 1994



CRAWFORD COUNTY--Continued

421106095125501. Local number, 85-38-12 DCBA.

LOCATION.--Lat 42°11'06", long 95°12'55", Hydrologic Unit 10230007, approximately 5.5 mi east of the Town of Kiron on the south side of County Road E-16 near the Town of Boyer. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Fremont buried channel: in sand and gravel of Pleistocene age.

WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 341 ft, cased to 315 ft, slotted from 300-310 ft, gravel-packed open hole from 315-341 ft. Open to Pennsylvanian limestone and shale from 331-341 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape or electric line by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,225 ft above sea level, from topographic map. Measuring point: Top of casing, 3.70 ft above land-surface datum.

REMARKS.--Well WC-14.

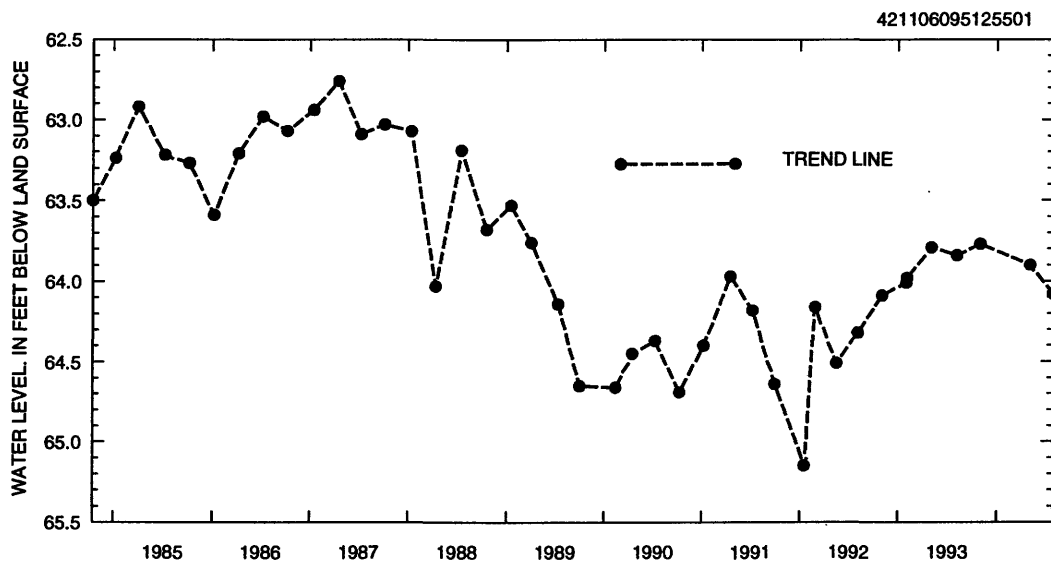
PERIOD OF RECORD.--July 1981 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 62.76 ft below land-surface datum, April 16, 1987; lowest measured, 65.15 ft below land-surface datum, January 19, 1992.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 01	63.77	FEB 07	63.75	MAY 04	63.90	JUL 27	64.08

WATER YEAR 1994 HIGHEST 63.75 FEB 07, 1994 LOWEST 64.08 JUL 27, 1994



DELAWARE COUNTY

422029091144302. Local number, 87-03-18 CBCD2.

LOCATION.--Lat 42°20'37", long 91°14'47", Hydrologic Unit 07060006, behind the municipal utilities building in downtown Hopkinton. Owner: Town of Hopkinton.

AQUIFER.--Silurian: in dolomite of Silurian age.

WELL CHARACTERISTICS.--Drilled unused artesian water well, diameter 8 in., depth 86 ft. Casing information not available.

INSTRUMENTATION.--Quarterly measurement with chalked tape by observer.

DATUM.--Elevation of land-surface datum is 863 ft above sea level, from topographic map. Measuring point: Nipple welded to plate on top of casing, 2.46 ft above land-surface datum.

REMARKS.--Hopkinton #1 well. Water levels affected by pumping of a nearby well.

PERIOD OF RECORD.--December 1984 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 10.74 ft below land-surface datum, August 10, 1994; lowest measured, 27.19 ft below land-surface datum, December 30, 1989.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 08	15.19	FEB 02	19.90	MAY 04	21.14	AUG 10	10.74

WATER YEAR 1994 HIGHEST 10.74 AUG 10, 1994 LOWEST 21.14 MAY 04, 1994

FLOYD COUNTY

430200092435301. Local number, 95-16-22 BCA1.

LOCATION.--Lat 43°02'00", long 92°43'53", Hydrologic Unit 07080201, approximately 2 mi southwest of Charles City, 1.7 mi south of Highway 14 on County Road T47. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Glacial drift: in material of Pleistocene age.

WELL CHARACTERISTICS.--Drilled observation well, diameter 2 in., depth 29 ft, cased 29 ft, perforated 10-29 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,105 ft above sea level, from topographic map. Measuring point: Top of casing, 1.92 ft above land-surface datum.

REMARKS.--Well FM-3 (T).

PERIOD OF RECORD.--August 1992 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 1.98 ft above land-surface datum, May 6, 1993; lowest measured, 4.78 ft below land-surface datum, February 1, 1993.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>
AUG 04, 1992	4.67	FEB 01, 1993	4.78	AUG 23, 1993	2.07	MAY 02, 1994	4.08
NOV 04, 1992	2.16	MAY 06, 1993	1.98	NOV 01, 1993	4.74	AUG 02, 1994	3.82

WATER YEAR 1994 HIGHEST 3.82 AUG 02, 1994 LOWEST 4.78 NOV 01, 1993

430200092435303. Local number, 95-16-22 BCA3.

LOCATION.--Lat 43°02'00", long 92°43'53", Hydrologic Unit 07080201, approximately 2 mi southwest of Charles City, 1.7 mi south of Highway 14 on County Road T47. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Devonian: in dolomite of Devonian age.

WELL CHARACTERISTICS.--Drilled observation well, diameter 1 in., depth 103 ft, cased 103 ft, perforated 91-103 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,105 ft above sea level, from topographic map. Measuring point: Top of casing, 2.94 ft above land-surface datum.

REMARKS.--Well FM-3 (1).

PERIOD OF RECORD.--August 1992 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 61.46 ft above land-surface datum, August 23, 1993; lowest measured, 74.35 ft below land-surface datum, May 2, 1994.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>
AUG 04, 1992	74.00	MAY 06, 1993	62.55	NOV 01, 1993	71.51	MAY 02, 1994	74.35
NOV 04, 1992	65.84	AUG 23, 1993	61.46	JAN 31, 1994	68.94	AUG 02, 1994	71.04
FEB 01, 1993	73.83						

WATER YEAR 1994 HIGHEST 68.94 JAN 31, 1994 LOWEST 74.35 MAY 02, 1994

430200092435304. Local number, 95-16-22 BCA4.

LOCATION.--Lat 43°02'00", long 92°43'53", Hydrologic Unit 07080201, approximately 2 mi southwest of Charles City, 1.7 mi south of Highway 14 on County Road T47. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Devonian: in dolomite of Devonian age.

WELL CHARACTERISTICS.--Drilled observation well, diameter 1.5 in., depth 207 ft, cased 207 ft, perforated 167-207 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,105 ft above sea level, from topographic map. Measuring point: Top of casing, 2.77 ft above land-surface datum.

REMARKS.--Well FM-3 (2).

PERIOD OF RECORD.--August 1992 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 56.05 ft above land-surface datum, August 23, 1993; lowest measured, 78.97 ft below land-surface datum, August 4, 1992.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>
AUG 04, 1992	78.97	MAY 06, 1993	58.57	NOV 01, 1993	73.70	MAY 02, 1994	78.19
NOV 04, 1992	70.34	AUG 23, 1993	56.05	JAN 31, 1994	75.51	AUG 02, 1994	75.30
FEB 01, 1993	78.31						

WATER YEAR 1994 HIGHEST 73.70 NOV 01, 1993 LOWEST 78.19 MAY 02, 1994

FLOYD COUNTY--Continued

430200092435305. Local number, 95-16-22 BCA5.

LOCATION.--Lat 43°02'00", long 92°43'53", Hydrologic Unit 07080201, approximately 2 mi southwest of Charles City, 1.7 mi south of Highway 14 on County Road T47. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Devonian: in dolomite of Devonian age.

WELL CHARACTERISTICS.--Drilled observation well, diameter 1.5 in., depth 297 ft, cased 297 ft, perforated 257-297 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,105 ft above sea level, from topographic map. Measuring point: Top of casing, 2.73 ft above land-surface datum.

REMARKS.--Well FM-3 (3).

PERIOD OF RECORD.--August 1992 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 55.21 ft above land-surface datum, August 23, 1993; lowest measured, 76.63 ft below land-surface datum, November 1, 1993.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
AUG 04, 1992	73.84	MAY 06, 1993	57.85	NOV 01, 1993	76.63	MAY 02, 1994	74.14
NOV 04, 1992	63.86	AUG 23, 1993	55.21	JAN 31, 1994	72.66	AUG 02, 1994	70.77
FEB 01, 1993	73.72						

WATER YEAR 1994 HIGHEST 70.77 AUG 02, 1994 LOWEST 76.63 NOV 01, 1993

430200092435306. Local number, 95-16-22 BCA6.

LOCATION.--Lat 43°02'00", long 92°43'53", Hydrologic Unit 07080201, approximately 2 mi southwest of Charles City, 1.7 mi south of Highway 14 on County Road T47. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Devonian: in dolomite of Devonian age.

WELL CHARACTERISTICS.--Drilled observation well, diameter 1.5 in., depth 360 ft, cased 360 ft, perforated 340-360 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,105 ft above sea level, from topographic map. Measuring point: Top of casing, 2.53 ft above land-surface datum.

REMARKS.--Well FM-3 (4).

PERIOD OF RECORD.--August 1992 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 56.23 ft above land-surface datum, August 23, 1993; lowest measured, 78.99 ft below land-surface datum, August 4, 1992.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
AUG 04, 1992	78.99	MAY 06, 1993	58.59	NOV 01, 1993	73.77	MAY 02, 1994	78.24
NOV 04, 1992	70.53	AUG 23, 1993	56.23	JAN 31, 1994	76.88	AUG 02, 1994	75.34
FEB 01, 1993	78.35						

WATER YEAR 1994 HIGHEST 73.77 NOV 01, 1993 LOWEST 78.24 MAY 02, 1994

FRANKLIN COUNTY

423332093034302. Local number, 90-19-35 CDCC.

LOCATION.--Lat 42°33'32", long 90°19'35", Hydrologic Unit 07080205, 0.25 mi west of intersection of U.S. Highway 20 and County Road S-56, on the north side of U.S. Highway 20 adjacent to the canning plant Owner: City of Ackley.

AQUIFER.--Devonian: in limestone and dolomite of Devonian age.

WELL CHARACTERISTICS.--Drilled unused public-supply artesian well, diameter 10 in., depth 175 ft, cased to 159 ft, perforated 145-165 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,008 ft above sea level, from topographic map. Measuring point: Top of casing, 1.85 ft above land-surface datum.

REMARKS.--Ackley No. 1 well, formerly Marshall Canning Co. No. 2.

PERIOD OF RECORD.--September 1988 to present.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 24.17 ft below land-surface datum, August 23, 1993; lowest measured, 34.58 ft below land-surface datum, August 5, 1992.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEARS OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 01	28.69	JAN 31	30.68	MAY 02	30.83	AUG 02	30.90

WATER YEAR 1994 HIGHEST 28.69 NOV 01, 1993 LOWEST 30.90 AUG 02, 1994

FREMONT COUNTY

404946095344801. Local number, 70-41-32 AAB1.

LOCATION.--Lat 40°49'46", long 95°34'48", Hydrologic Unit 10240002, on the south side of county road, approximately 2.25 mi northeast of the Town of Anderson. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Alluvial: in sand and gravel of Holocene age.

WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 2 in., depth 38 ft, cased to 38 ft, slotted 35-38 ft, gravel packed.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 960 ft above sea level, from topographic map. Measuring point: Top of casing, 2.25 ft above land-surface datum.

REMARKS.--Well SW-38A.

PERIOD OF RECORD.--June 1990 and August 1992 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 12.83 feet below land-surface datum, August 5, 1993; lowest measured, 19.96 ft below land-surface datum, May 5, 1994.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>
OCT 29	15.75	FEB 04	18.74	MAY 05	19.96	JUL 26	18.99

WATER YEAR 1994 HIGHEST 15.75 OCT 29, 1993 LOWEST 19.96 MAY 05, 1994

404946095344802. Local number, 70-41-32 AAB2.

LOCATION.--Lat 40°49'46", long 95°34'48", Hydrologic Unit 10240002, on the south side of county road, approximately 2.25 mi northeast of the Town of Anderson. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Alluvial: in sand and gravel of Holocene age.

WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 2 in., depth 55 ft, cased to 50 ft, screened 50-55 ft, gravel packed.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 960 ft above sea level, from topographic map. Measuring point: Top of casing, 2.05 ft above land-surface datum.

REMARKS.--Well SW-38B.

PERIOD OF RECORD.--June 1990 and August 1992 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 12.87 feet below land-surface datum, August 5, 1993; lowest measured, 19.90 ft below land-surface datum, May 5, 1994.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>
OCT 29	14.34	FEB 04	18.70	MAY 05	19.90	JUL 26	18.95

WATER YEAR 1994 HIGHEST 14.34 OCT 29, 1993 LOWEST 19.90 MAY 05, 1994

GREENE COUNTY

415448094163401. Local number, 82-29-18 CBAA.

LOCATION.--Lat 41°54'48", long 94°16'34", Hydrologic Unit 07100006, approximately 3.75 west and 1.5 mi south of the Town of Rippey, south of County Road E-57 on the west edge of the North Raccoon River. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--North Raccoon alluvial: in sand and gravel of Holocene age.

WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 2 in., depth 34 ft, cased to 30 ft, slotted from 20-30 ft, gravel-packed. Open hole from 30-34 ft into glacial till.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 965 ft above sea level, from topographic map. Measuring point: Top of casing, 1.45 ft above land-surface datum.

REMARKS.--Well WC-115.

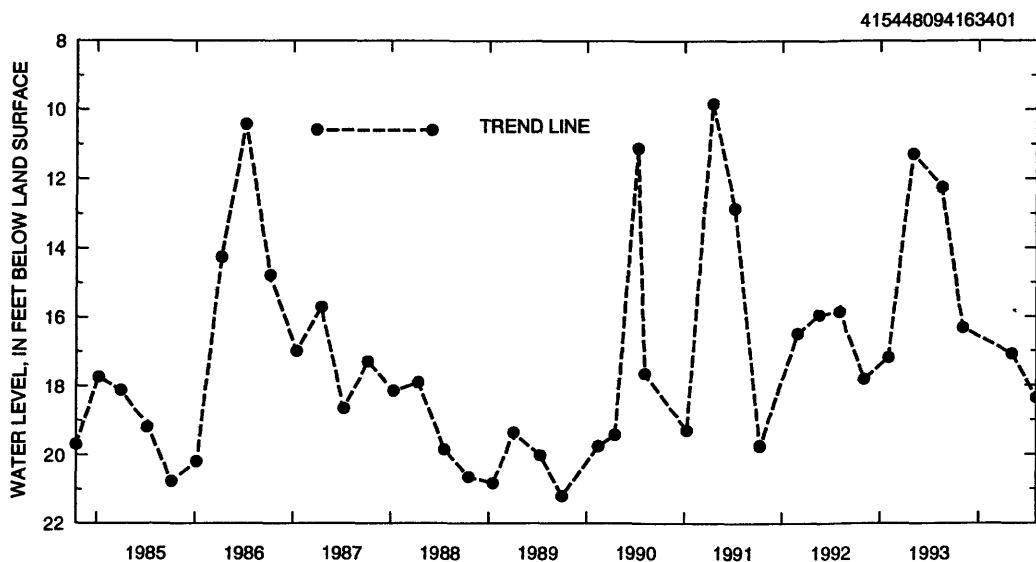
PERIOD OF RECORD.--August 1982 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 7.84 ft below land-surface datum, July 5, 1983; lowest measured, 21.21 ft below land-surface datum, October 2, 1989.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 04	16.32	MAY 04	17.09	AUG 03	18.37

WATER YEAR 1994 HIGHEST 16.32 NOV 04, 1993 LOWEST 35.47 AUG 03, 1994



415449094155601. Local number, 82-29-18 DBAA.

LOCATION.--Lat 41°54'49", long 94°15'56", Hydrologic Unit 07100006, approximately 3.25 mi west and 1.5 mi south of the Town of Rippey, south of County Road E-57. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Glacial drift: in sand and gravel of Pleistocene age.

WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 90 ft, cased to 75 ft, slotted 65-75 ft, gravel-packed; open hole from 75-90 ft. Pleistocene glacial till open from 75-86 ft, and Pennsylvanian shale and siltstone open from 86-90 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,005 ft above sea level, from topographic map. Measuring point: Top of casing, 1.85 ft above land-surface datum.

REMARKS.--Well WC-117.

PERIOD OF RECORD.--August 1982 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 32.2 ft below land-surface datum, Aug. 17, 1993; lowest measured, 40.13 ft below land-surface datum, February 13, 1990.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 04	33.07	MAY 04	35.08	AUG 03	35.47

WATER YEAR 1994 HIGHEST 17.09 MAY 04, 1994 LOWEST 33.07 NOV 04, 1993

GREENE COUNTY--Continued

415449094161501. Local number, 82-29-18 CAAA1.

LOCATION.--Lat 41°54'49", long 94°16'15", Hydrologic Unit 07100006, approximately 0.5 mi south and 4 mi east of the Village of Cooper and just south of County Road E-57. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Pennsylvanian: in sandstone of Pennsylvanian age.

WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 101 ft, cased to 100 ft, perforated 89-100 ft, gravel-packed; open hole 100-101 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 960 ft above sea level, from topographic map. Measuring point: Top of casing, 2.00 ft above land-surface datum.

REMARKS.--Well WC-116.

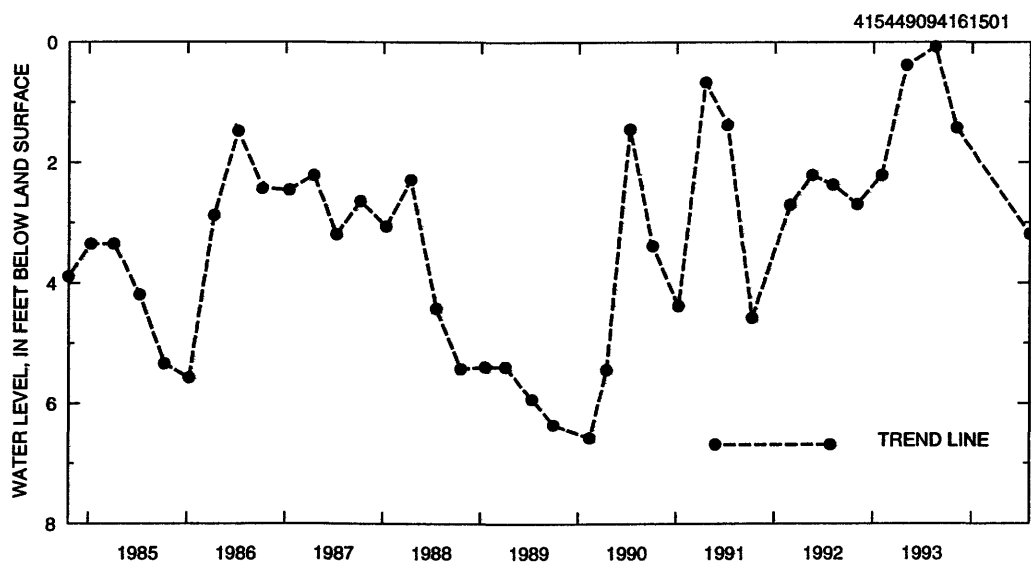
PERIOD OF RECORD.--September 1982 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 0.41 ft above land-surface datum, July 5, 1983; lowest measured, 6.57 ft below land-surface datum, February 13, 1990.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>
NOV 04	1.43	MAY 04	2.54	AUG 03	3.19

WATER YEAR 1994 HIGHEST 1.43 NOV 04, 1993 LOWEST 3.19 AUG 03, 1994



415449094173201. Local number, 82-30-13 CABA.

LOCATION.--Lat 41°54'49", long 94°17'32", Hydrologic Unit 07100006, approximately 0.5 mi south and 3 mi east of the Village of Cooper and just south

of County Road E-57. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Pennsylvanian: in sandstone of Pennsylvanian age.

WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 230 ft, cased to 230 ft, perforated 209-230 ft, gravel-packed.

Original depth 245 ft, casing plugged at 230 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,035 ft above sea level, from topographic map. Measuring point: Top of casing, 1.45 ft above land-surface datum.

REMARKS.--Well WC-118.

PERIOD OF RECORD.--September 1982 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 66.79 ft below land-surface datum, July 5, 1983; lowest measured, 73.67 ft below land-surface datum, February 13, 1990.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>
NOV 04	68.60	MAY 04	69.86	AUG 03	70.41

WATER YEAR 1994 HIGHEST 68.60 NOV 04, 1993 LOWEST 70.41 AUG 03, 1994

GREENE COUNTY--Continued

415608094260701. Local number, 82-31-10 AAAA.

LOCATION.--Lat 41°56'08", long 94°26'07", Hydrologic Unit 07100006, approximately 7 mi south and 3.5 mi west of the City of Jefferson, 1.0 mi east of the junction of County Roads E-57 and P-14 on the south side of County Road E-57. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Dakota: in sandstone of Cretaceous age.

WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 125 ft, cased to 125 ft, slotted 111-120, gravel-packed. Open to Pennsylvanian shale and coal 121-125 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,108 ft above sea level, from topographic map. Measuring point: Top of casing, 2.00 ft above land-surface datum.

REMARKS.--Well WC-235.

PERIOD OF RECORD.--September 1983 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 12.03 ft below land-surface datum, July 12, 1984; lowest measured, 14.92 ft below land-surface datum, October 2, 1989.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 04	12.17	MAY 04	12.98	AUG 03	13.23
WATER YEAR 1994 HIGHEST 12.17 NOV 04, 1993 LOWEST 13.23 AUG 03, 1994					

420116094363001. Local number, 83-32-08 BBBC.

LOCATION.--Lat 42°01'16", long 94°36'30", Hydrologic Unit 07100006, approximately 3 mi west of the Town of Scranton, south of U.S. Highway 30. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Hardin Creek buried channel: in sand and gravel of Pleistocene age.

WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 181 ft, cased to 181 ft, slotted 161-171 ft, gravel-packed. Open to Pennsylvanian shale and siltstone, 171-181 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,135 ft above sea level, from topographic map. Measuring point: Top of casing, 2.20 ft above land-surface datum.

REMARKS.--Well WC-229.

PERIOD OF RECORD.--September 1983 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 39.44 ft below land-surface datum, August 19, 1993; lowest measured, 51.03 ft below land-surface datum, July 8, 1985.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 04	39.60	MAY 04	40.28	AUG 03	39.63
WATER YEAR 1994 HIGHEST 39.60 NOV 04, 1993 LOWEST 40.28 MAY 04, 1994					

420146094272301. Local number, 83-31-04 ADDB.

LOCATION.--Lat 42°01'46", long 94°27'23", Hydrologic Unit 07100006, approximately 4 mi west of the City of Jefferson and 0.5 mi south of U.S. Highway 30, on the west side of County Road P-14. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Dakota: in sandstone of Cretaceous age.

WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 54 ft, cased to 51 ft, slotted 40-51 ft, gravel-packed. Open to Pennsylvanian shale 51-54 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,000 ft above sea level, from topographic map. Measuring point: Top of casing, 2.10 ft above land-surface datum.

REMARKS.--Well WC-120.

PERIOD OF RECORD.--August 1982 to July 1987, February 1990 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 6.39 ft below land-surface datum, July 5, 1983; lowest measured, 19.23 ft below land-surface datum, October 7, 1985.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 04	16.68	MAY 04	17.03	AUG 03	17.77
WATER YEAR 1994 HIGHEST 16.68 NOV 04, 1993 LOWEST 17.77 AUG 03, 1994					

GREENE COUNTY--Continued

420149094344701. Local number, 83-32-04 ACCC.

LOCATION.--Lat 42°01'49", long 94°34'47", Hydrologic Unit 07100006, 1.5 mi west of the Town of Scranton south of U.S. Highway 30, adjacent to the Scranton Cemetery. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Dakota: in sandstone of Cretaceous age.

WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 240 ft, cased to 240 ft, slotted 220-240 ft, gravel-packed. Open to Pennsylvanian shale 234-240 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape or electric line by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,202 ft above sea level, from topographic map. Measuring point: Top of casing, 2.10 ft above land-surface datum.

REMARKS.--Well WC-228.

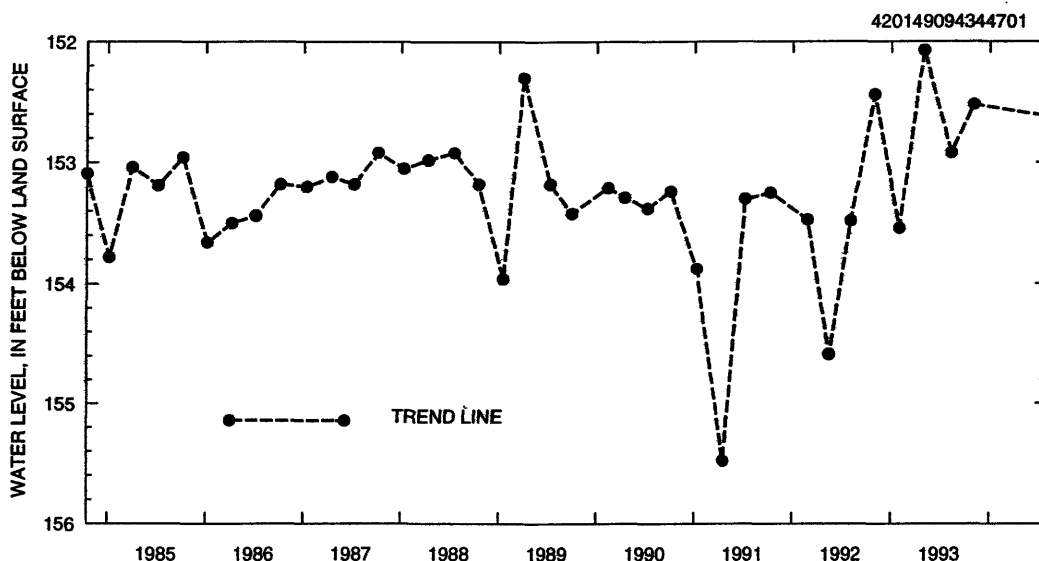
PERIOD OF RECORD.--July 1983 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 152.07 ft below land-surface datum, May 3, 1993; lowest measured, 155.48 ft below land-surface datum, April 17, 1991.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>
NOV 04	152.52	MAY 05	152.85	AUG 03	152.62

WATER YEAR 1994 HIGHEST 152.52 NOV 04, 1993 LOWEST 152.85 MAY 05, 1994



420507094141901. Local number, 84-29-16 CBAB.

LOCATION.--Lat 42°05'07", long 94°14'19", Hydrologic Unit 07100006, approximately 1.5 mi south of the Town of Dana, east of Iowa Highway 144 near the Chicago and Northwestern Railroad. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Beaver buried channel: in sand and gravel of Pleistocene age.

WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 181 ft, cased to 181 ft, slotted 161-176 ft, gravel-packed. Open to Pennsylvanian shale 177-181 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,075 ft above sea level, from topographic map. Measuring point: Top of casing, 1.80 ft above land-surface datum.

REMARKS.--Well WC-233.

PERIOD OF RECORD.--August 1983 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 38.63 ft below land-surface datum, April 2, 1985; lowest measured, 43.28 ft below land-surface datum, October 2, 1989.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>
NOV 04	39.90	MAY 04	40.27	AUG 03	41.99

WATER YEAR 1994 HIGHEST 39.90 NOV 04, 1993 LOWEST 41.99 AUG 03, 1994

GRUNDY COUNTY

422605092560001. Local number, 88-18-15 DBBB.

LOCATION.--Lat 42°26'05", long 92°56'00", Hydrologic Unit 07080205, west of the corner of Monroe and 4th Streets and west of the high school, Wellsburg. Owner: City of Wellsburg.

AQUIFER.--Devonian: in limestone and dolomite of Late Devonian age.

WELL CHARACTERISTICS.--Drilled public-emergency-supply artesian water well, diameter 12 in., depth 280 ft, cased to 128 ft, open hole 128-280 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,060 ft above sea level, from topographic map. Measuring point: Edge of vent pipe, 1.25 ft above land-surface datum.

REMARKS.--Water levels affected by pumping and nearby pumping.

PERIOD OF RECORD.--September 1960 to August 1971, May 1973 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 32.78 ft below land-surface datum, June 18, 1987; lowest measured, 96.81 ft below land-surface datum, September 27, 1960.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 01	39.84	JAN 31	38.47	MAY 02	38.43	AUG 02	40.92

WATER YEAR 1994 HIGHEST 38.43 MAY 02, 1994 LOWEST 40.92 AUG 02, 1994

GUTHRIE COUNTY

413223094150801. Local number, 78-30-24 CAAB

LOCATION.--Lat 41°32'23", long 94°15'08", Hydrologic Unit 07100007, approximately 0.5 mi west and 1.5 north of the Town of Dexter. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Dakota: in sandstone of Cretaceous age.

WELL CHARACTERISTICS.--Drill observation artesian water well, diameter 2 in., depth 72 ft, cased to 72 ft, slotted 60-68 ft, gravel-packed. Open to Pennsylvanian shale 65-72 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,020 ft above sea level, from topographic map. Measuring point: Top of casing, 2.10 ft above land-surface datum.

REMARKS.--Well WC-238.

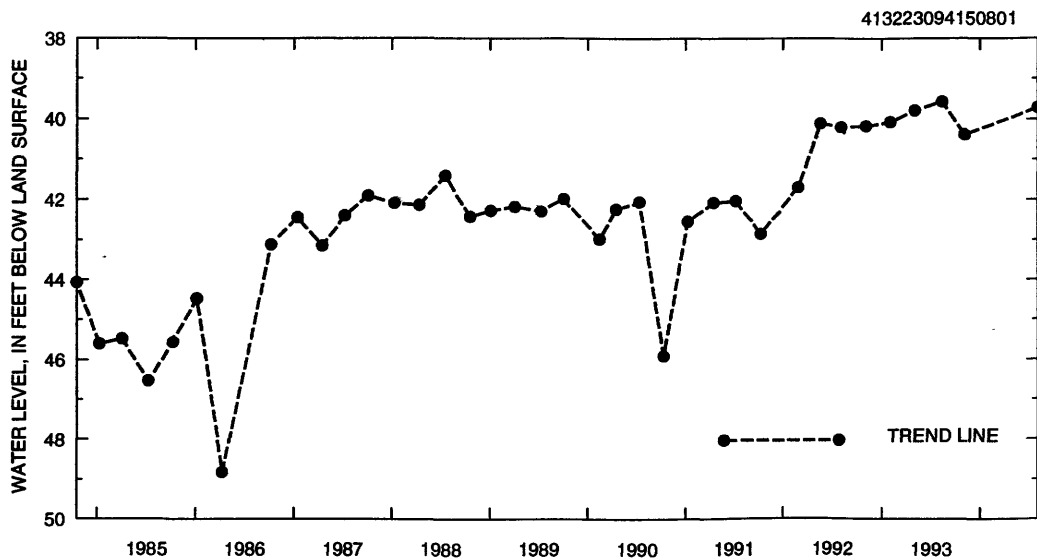
PERIOD OF RECORD.--August 1983 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 39.57 ft below land-surface datum, August 13, 1993; lowest measured, 48.82 ft below land-surface datum, April 10, 1986.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 04	40.39	FEB 02	40.06	MAY 04	39.81	AUG 03	39.72

WATER YEAR 1994 HIGHEST 39.72 AUG 03, 1994 LOWEST 40.39 NOV 04, 1993



GUTHRIE COUNTY--Continued

413248094314301. Local number, 78-32-21 AAAA.

LOCATION.--Lat 41°32'48", long 94°31'43", Hydrologic Unit 07100008, approximately 2.25 mi north of the Town of Casey. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Dakota: in sandstone of Cretaceous age.

WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 161 ft, cased to 135 ft, slotted 125-135 ft, gravel-packed. Open to Pennsylvanian shale 158-161 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,250 ft above sea level, from topographic map. Measuring point: Top of casing, 1.90 ft above land-surface datum.

REMARKS.--Well WC-239.

PERIOD OF RECORD.--August 1983 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 70.50 ft below land-surface datum, January 12, 1988; lowest measured, 74.38 ft below land-surface datum, January 9, 1985.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 04	72.58	FEB 02	72.97	MAY 04	73.28	AUG 03	73.09

WATER YEAR 1994 HIGHEST 72.58 NOV 04, 1993 LOWEST 73.28 MAY 04, 1994

414110094260501. Local number, 79-31-23 BBBB.

LOCATION.--Lat 41°41'10", long 94°26'05", Hydrologic Unit 07100007, approximately 1 mi north of the Town of Monteith on the east side of County Road P-20. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--South Raccoon alluvial: in sand and gravel of Holocene age.

WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 2 in., depth 30 ft, cased to 27 ft, slotted 21-27 ft, gravel-packed. Open to Pennsylvanian shale 27-30 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,037 ft above sea level, from topographic map. Measuring point: Top of casing, 1.50 ft above land-surface datum.

REMARKS.--Well WC-85.

PERIOD OF RECORD.--July 1982 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 3.93 ft below land-surface datum, April 11, 1983; lowest measured, 11.07 ft below land-surface datum, October 19, 1988.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 04	6.59	MAY 04	7.94	AUG 03	8.45

WATER YEAR 1994 HIGHEST 6.59 NOV 04, 1993 LOWEST 8.45 AUG 03, 1994

414652094293301. Local number, 81-31-32 CBCC.

LOCATION.--Lat 41°46'52", long 94°29'33", Hydrologic Unit 07100007, approximately 1 mi west of Springbrook State Park at the junction of Iowa Highways 25 and 384. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Middle Raccoon alluvial: in sand and gravel of Holocene age.

WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 2 in., depth 52 ft, cased to 51 ft, slotted 40-51 ft, gravel-packed, open hole 51-52 ft. Open to Pennsylvanian shale, 49-52 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,090 ft above sea level, from topographic map. Measuring point: Top of casing, 2.03 ft above land-surface datum.

REMARKS.--Well WC-106.

PERIOD OF RECORD.--August 1982 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 29.96 ft below land-surface datum, August 13, 1993; lowest measured, 35.92 ft below land-surface datum, October 6, 1982.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 04	32.95	FEB 01	33.66	MAY 04	35.16	AUG 03	34.44

WATER YEAR 1994 HIGHEST 32.95 NOV 04, 1993 LOWEST 35.16 MAY 04, 1994

GUTHRIE COUNTY--Continued

414728094385301. Local number, 81-33-26 DDDD.

LOCATION.--Lat 41°47'28", long 94°38'53", Hydrologic Unit 07100007, approximately 5 mi south and 1.25 mi east of the Town of Coon Rapids on the north side of County Road F-24. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Dakota: in sandstone of Cretaceous age.

WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 80 ft, cased to 75 ft, slotted 60-65 ft, gravel-packed, open hole 75-80 ft. Open to Pennsylvanian shale 67-80 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,205 ft above sea level, from topographic map. Measuring point: Top of casing, 2.20 ft above land-surface datum.

REMARKS.--Well WC-93.

PERIOD OF RECORD.--July 1982 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 36.76 ft below land-surface datum, May 4, 1994; lowest measured, 40.98 ft below land-surface datum, January 3, 1983.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>
NOV 04	38.19	FEB 01	39.07	MAY 04	36.76	AUG 03	39.74

WATER YEAR 1994 HIGHEST 36.76 MAY 04, 1994 LOWEST 39.74 AUG 03, 1994

414728094392401. Local number, 81-33-35 ABBC.

LOCATION.--Lat 41°47'28", long 94°39'24", Hydrologic Unit 07100007, approximately 5 mi south and 1 mi east of the Town of Coon Rapids, on the south side of County Road F-24. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--South Raccoon alluvial: in sand and gravel of Holocene age.

WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 2 in., depth 41 ft, cased to 35 ft, slotted 26-35 ft gravel-packed, open hole 35-41 ft. Open to Early Cretaceous sandstone and shale 38-41 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,150 ft above sea level, from topographic map. Measuring point: Top of casing, 0.80 ft above land-surface datum.

REMARKS.--Well WC-94.

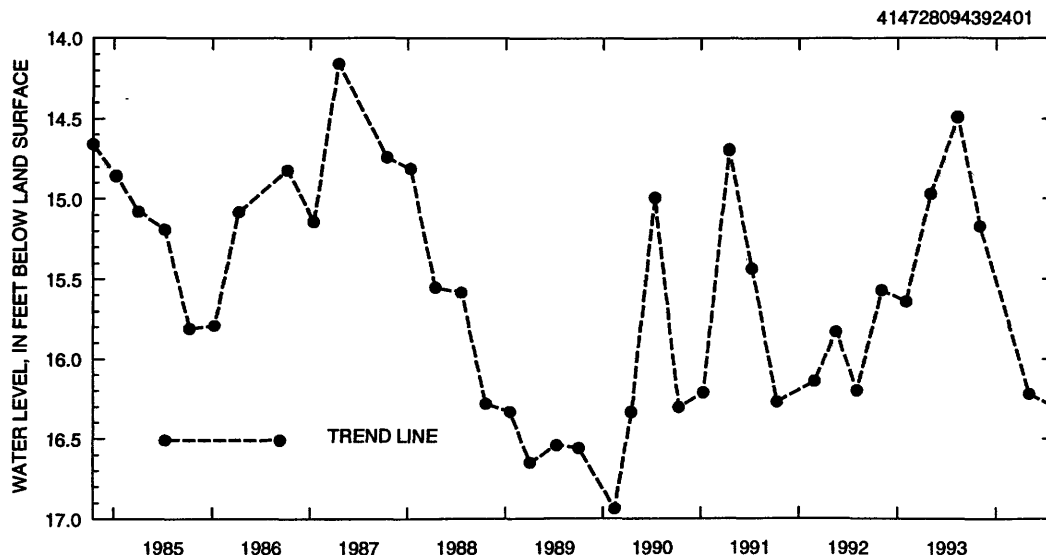
PERIOD OF RECORD.--July 1982 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 12.80 ft below land-surface datum, July 1, 1983; lowest measured, 16.94 ft below land-surface datum, February 14, 1990.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>
NOV 04	15.17	FEB 01	15.44	MAY 04	16.22	AUG 03	16.30

WATER YEAR 1994 HIGHEST 15.17 NOV 04, 1993 LOWEST 16.30 AUG 03, 1994



GUTHRIE COUNTY--Continued

414821094271301. Local number, 81-31-22 CCCC.

LOCATION.--Lat 41°48'21", long 94°27'13", Hydrologic Unit 07100007, approximately 2.5 mi south and 1 mi west of the Town of Bagley, north of Spring Brook State Park. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Dakota: in sandstone of Cretaceous age.

WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 153 ft, cased to 153 ft, slotted 143-153 ft, gravel-packed. Open to Pennsylvanian shale 149-153 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,190 ft above sea level, from topographic map. Measuring point: Top of casing, 2.10 ft above land-surface datum.

REMARKS.--Well WC-105.

PERIOD OF RECORD.--August 1982 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 46.84 ft below land-surface datum, August 3, 1994; lowest measured, 69.88 ft below land-surface datum, December 9, 1982.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 04	54.00	FEB 01	54.67	MAY 04	46.90	AUG 03	46.84

WATER YEAR 1994 HIGHEST 46.84 AUG 03, 1994 LOWEST 54.67 FEB 01, 1994

HARDIN COUNTY

423310093032802. Local number, 89-19-02 BDAC2.

LOCATION.--Lat 42°33'10", long 93°03'28", Hydrologic Unit 07080205, 0.35 south and 0.10 mi west of the intersection of U.S. Highway 20 and County Road S-56. Well is in a shed at the west end of 2nd Avenue adjacent to railroad tracks. Owner: City of Ackley.

AQUIFER.--Mississippian: in limestone and dolomite of Mississippian age.

WELL CHARACTERISTICS.--Drilled unused public-supply artesian well, diameter 10 in., depth 134 ft, cased to 68 ft, perforated 57-60 ft, open hole 68-134 ft. Open to Devonian rock 131-134 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel. Analog digital water-level recorder, 60 minute punch, to October, 1992.

DATUM.--Elevation of land-surface datum is 1,085 ft above sea level, from topographic map. Measuring point: Top of recorder base, 0.8 ft above land-surface datum.

REMARKS.--Ackley No. 5 well.

PERIOD OF RECORD.--September 1988 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 14.14 ft below land-surface datum, May 4, 1993; lowest measured, 24.15 ft below land-surface datum, February 25, 1990.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 01	17.17	JAN 31	18.90	MAY 02	19.79	AUG 02	19.81

WATER YEAR 1993 HIGHEST 17.17 NOV 01, 1993 LOWEST 19.81 AUG 02, 1994

HARRISON COUNTY

413024095353901. Local number, 78-41-31 DDDD.

LOCATION.--Lat 41°30'24", long 95°35'39", Hydrologic Unit 10230006, approximately 4.5 mi south of the Town of Persia and west of Iowa Highway 191 to the north of the Tri-County High School. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Glacial drift: in sand and gravel of Pleistocene age.

WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 129 ft, cased to 129 ft, slotted 109-119 ft, gravel-packed. Open to Pennsylvanian shale and limestone 118-129 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,158 ft above sea level, from topographic map. Measuring point: Top of casing, 2.05 ft above land-surface datum.

REMARKS.--Well WC-27.

PERIOD OF RECORD.--January 1982 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 55.26 ft below land-surface datum, July 7, 1982; lowest measured, 60.54, July 5, 1989.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 04	55.89	MAY 04	57.20	JUL 29	57.72

WATER YEAR 1994 HIGHEST 55.89 NOV 04, 1993 LOWEST 57.72 JUL 29, 1994

HARRISON COUNTY--Continued

413523095483101. Local number, 78-43-05 ACDD.

LOCATION.--Lat 41°35'23", long 95°48'31", Hydrologic Unit 10230007, approximately 3.25 mi south of the Town of Logan and 1.5 mi east of U.S. Highway 30. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Dakota: in sandstone of Cretaceous age.

WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 179 ft, cased to 179 ft, slotted 168-175 ft, gravel-packed. Open to Pennsylvanian shale 175-179 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,080 ft above sea level, from topographic map. Measuring point: Top of casing, 2.35 ft above land-surface datum.

REMARKS.--Well WC-33.

PERIOD OF RECORD.--May 1982 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 66.20 ft below land-surface datum, March 21, 1990; lowest measured, 74.90 ft below land-surface datum, February 16, 1988.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 01	71.54	FEB 01	71.29	MAY 02	72.26	JUL 29	72.99

WATER YEAR 1994 HIGHEST 71.29 FEB 01, 1994 LOWEST 72.99 JUL 29, 1994

413524095490601. Local number, 78-43-05 BCDD.

LOCATION.--Lat 41°35'24", long 95°49'06", Hydrologic Unit 10230007, approximately 2 mi north and 3.5 mi east of the Town of Missouri Valley and 1 mi east of U.S. Highway 30. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Boyer alluvial: in sand and gravel of Holocene age.

WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 2 in., depth 51 ft, cased to 51 ft, slotted 48-51 ft, gravel-packed.

INSTRUMENTATION.--Monthly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,010 ft above sea level, from topographic map. Measuring point: Top of casing, 3.10 ft above land-surface datum.

REMARKS.--Well WC-32.

PERIOD OF RECORD.--May 1982 to current year.

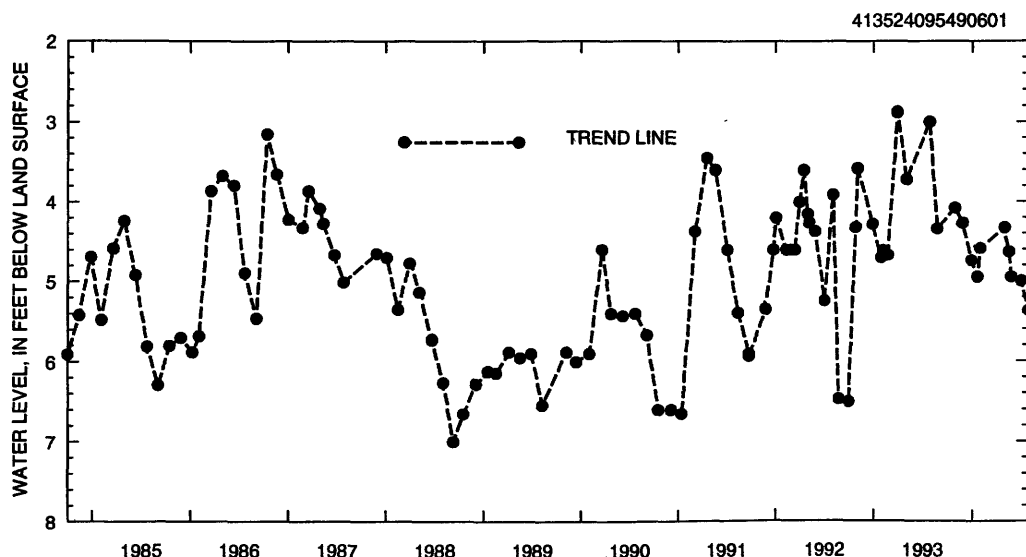
REVISION.--Measuring point revised September 4, 1990 to September 29, 1992.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 2.71 ft below land-surface datum, April 12, 1983; lowest measured, 7.00 ft below land-surface datum, September 9, 1988, October 18, 1990 and December 5, 1990.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 29	4.08	JAN 20	4.95	MAY 02	4.33	JUL 01	5.00
NOV 26	4.27	JAN 31	4.59	MAY 16	4.63	JUL 29	5.37
DEC 29	4.74	APR 04	4.00	MAY 25	4.95		

WATER YEAR 1994 HIGHEST 4.00 APR 04, 1994 LOWEST 5.37 JUL 29, 1994



HARRISON COUNTY--Continued

413838095462001. Local number, 79-42-19 AADB.

LOCATION.--Lat 41°38'38", long 95°46'20", Hydrologic Unit 10230007, approximately 0.5 mi east of the Town of Logan, north of U.S. Highway 30. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Mississippian: in dolomite of Mississippian age.

WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 628 ft, cased to 628 ft, perforated 588-628 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,045 ft above sea level, from topographic map. Measuring point: Top of casing, 4.40 ft above land-surface datum.

REMARKS.--Well WC-22.

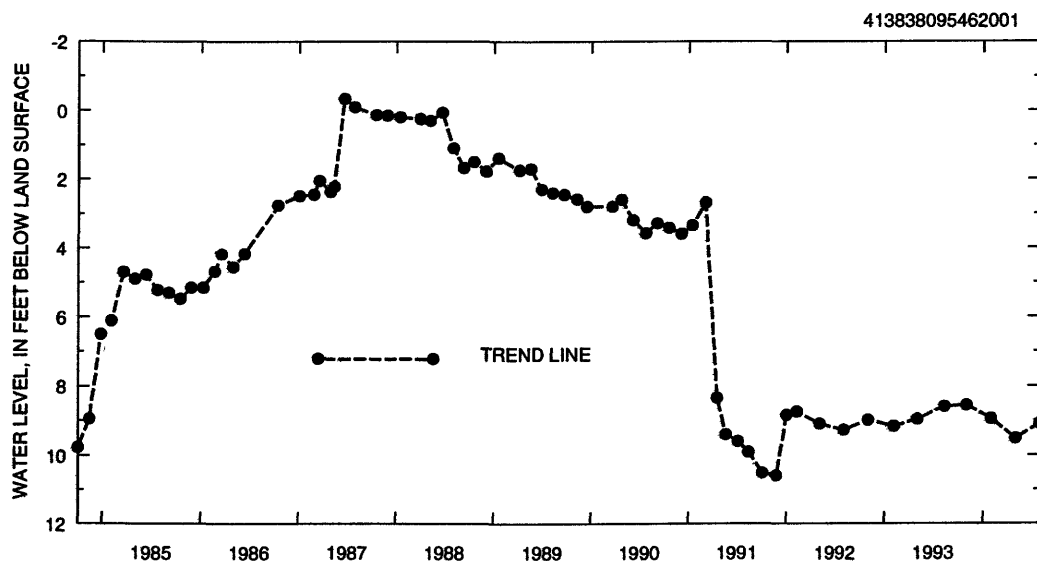
PERIOD OF RECORD.--November 1981 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 0.33 ft above land-surface datum, June 19, 1987; lowest measured, 16.37 ft below land-surface datum, June 3, 1982.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>
NOV 01	8.56	JAN 31	8.95	MAY 02	9.52	JUL 29	9.10

WATER YEAR 1994 HIGHEST 8.56 NOV 01, 1993 LOWEST 9.52 MAY 02, 1994



HARRISON COUNTY--Continued

414149095422401. Local number, 80-42-35 BDCC.

LOCATION.--Lat 41°41'49", long 95°42'24", Hydrologic Unit 10230007, approximately 3 mi south of the Town of Woodbine, on the west side of U.S. Highway 30. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Glacial drift: in sand and gravel of Pleistocene age.

WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 120 ft, cased to 118 ft, slotted 103-105 ft, gravel-packed, open hole 118-120 ft. Open to Pennsylvanian shale 112-120 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,140 ft above sea level, from topographic map. Measuring point: Top of casing, 1.70 ft above land-surface datum.

REMARKS.--Well WC-193.

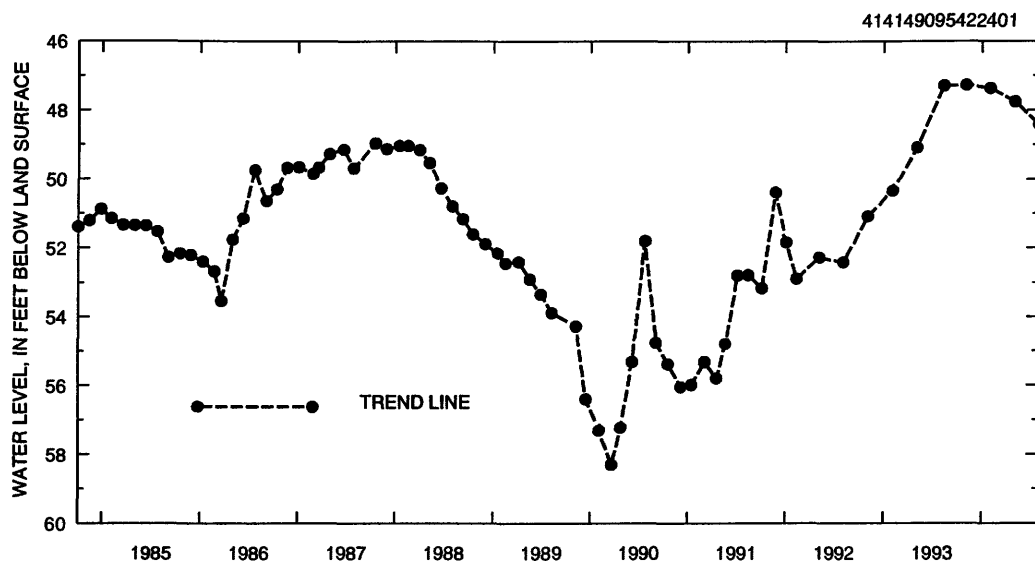
PERIOD OF RECORD.--June 1983 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 47.28 ft below land-surface datum, November 1, 1993; lowest measured, 58.30 ft below land-surface datum, March 21, 1990.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>
NOV 01	47.28	JAN 31	47.37	MAY 02	47.76	JUL 29	48.42

WATER YEAR 1994 HIGHEST 47.28 NOV 01, 1993 LOWEST 48.42 JUL 29, 1994



414213095431602. Local number, 80-42-34 ABBB2.

LOCATION.--Lat 41°42'13", long 95°43'16", Hydrologic Unit 10230007, approximately 2 mi south of the Town of Woodbine and 1 mi west of U.S. Highway 30. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Boyer alluvial: in sand and gravel of Holocene age.

WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 2 in., depth 37 ft, cased to 37 ft, slotted 32-37 ft, gravel-packed.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,045 ft above sea level, from topographic map. Measuring point: Top of casing, 2.30 ft above land-surface datum.

REMARKS.--Well WC-191.

PERIOD OF RECORD.--May 1983 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 4.08 ft below land-surface datum, October 14, 1986; lowest measured, 7.20 ft below land-surface datum, September 9, 1988.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>
NOV 01	4.93	JAN 31	5.44	MAY 02	5.14	JUL 29	6.03

WATER YEAR 1994 HIGHEST 4.93 NOV 01, 1993 LOWEST 6.03 JUL 29, 1994

HARRISON COUNTY--Continued

414517095453401. Local number, 80-42-08 ACCC.

LOCATION.--Lat 41°45'17", long 95°45'34", Hydrologic Unit 10230007, approximately 2.75 mi west and 1 mi north of the City of Woodbine, on the north side of County Road F2OL. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Pennsylvanian: in sandstone of Pennsylvanian age.

WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 336 ft, cased to 336 ft, slotted 311-336 ft, gravel-packed.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,220 ft above sea level, from topographic map. Measuring point: top of casing, 1.26 ft above land-surface datum.

REMARKS.--Well WC-3.

PERIOD OF RECORD.--May 1981 to current year.

REVISION.--Measuring point revised October 10, 1990 to August 3, 1992.

EXTREMES FOR PERIOD OF RECORD.-- Highest water level measured, 146.60 ft below land-surface datum, January 6, 1986; lowest water level measured, 292.54 ft below land-surface datum, May 7, 1981.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1994

<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>
NOV 01	158.43	FEB 01	156.19	MAY 04	154.33	JUL 29	152.80

WATER YEAR 1994 HIGHEST 152.80 JUL 29, 1994 LOWEST 158.43 NOV 01, 1993

414700095373001. Local number, 81-41-33 CAAA.

LOCATION.--Lat 41°47'00", long 95°37'30", Hydrologic Unit 10230007, approximately 4.5 mi south of the Town of Dunlap, and 2 mi east of U.S. Highway 30. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Dakota: in sandstone of Cretaceous age.

WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 169 ft, cased to 155 ft, slotted 145-154 ft, gravel-packed.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,182 ft above sea level, from topographic map. Measuring point: Top of casing, 2.90 ft above land-surface datum.

REMARKS.--Well WC-52.

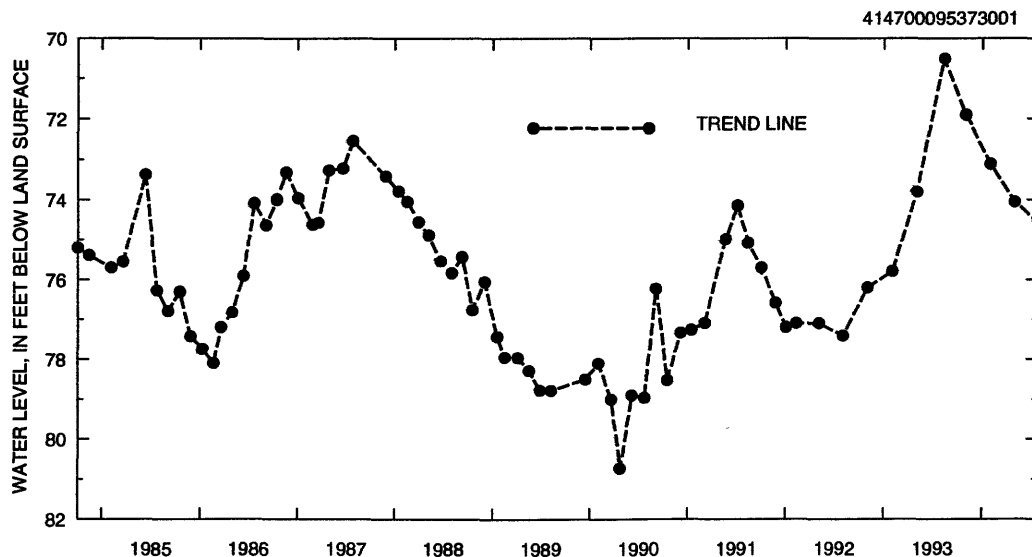
PERIOD OF RECORD.--June 1982 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 70.50 ft below land-surface datum, August 12, 1993; lowest measured, 85.03 ft below land-surface datum, June 4, 1982.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>
NOV 01	71.91	FEB 01	73.11	MAY 02	74.05	JUL 29	74.58

WATER YEAR 1994 HIGHEST 71.91 NOV 01, 1993 LOWEST 74.58 JUL 29, 1994



HARRISON COUNTY --Continued

41495509600601. Local number, 81-44-18 AADA.

LOCATION.--Lat 41°49'55", long 96°00'06", Hydrologic Unit 10230003, approximately 1.8 mi northeast of the Town of Little Sioux, just west of Iowa Highway 301. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Pennsylvanian: in sandstone of Pennsylvanian age.

WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 126 ft, cased to 126 ft, perforated 108-126 ft, gravel-packed. Open to Pleistocene glacial drift 108-112 ft. Original depth 209 ft, casing plugged at 126 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,075 ft above sea level, from topographic map. Measuring point: Top of casing, 2.80 ft above land-surface datum.

REMARKS.--Well WC-23.

PERIOD OF RECORD.--January 1982 to current year.

REVISION.--Measuring point revised January 14, 1991 to August 3, 1992.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 52.33 ft below land-surface datum, July 12, 1984; lowest measured, 65.30 ft below land-surface datum, April 10, 1990.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 03	59.97	FEB 01	62.03	MAY 02	61.93	JUL 29	61.27

WATER YEAR 1994 HIGHEST 59.97 NOV 03, 1993 LOWEST 62.03 FEB 01, 1994

415148095545001. Local number, 81-44-01 ABAB.

LOCATION.--Lat 41°51'48", long 95°54'50", Hydrologic Unit 10230001, approximately 2 mi north of the Town of Pisgah on the west side of Iowa Highway 183. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Soldier alluvial: in sand and gravel of Holocene age.

WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 2 in., depth 61 ft, cased to 58 ft, slotted 53-58 ft, gravel packed, open hole 58-61 ft. Pleistocene glacial drift 57-61 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,065 ft above sea level, from topographic map. Measuring point: Top of casing, 1.80 ft above land-surface datum.

REMARKS.--Well WC-177.

PERIOD OF RECORD.--May 1983 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 7.13 ft below land-surface datum, April 11, 1984; lowest measured, 12.12 ft below land-surface datum, October 17, 1988.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 03	8.84	FEB 01	8.89	MAY 02	9.76	JUL 29	10.53

WATER YEAR 1994 HIGHEST 8.84 NOV 03, 1993 LOWEST 10.53 JUL 29, 1994

HENRY COUNTY

405010091424901. Local number, 70-07-30 BCDD.

LOCATION.--Lat 40°50'10", long 91°42'49", Hydrologic Unit 07080107, in the Hillsboro City Park adjacent to water tower. Owner: City of Hillsboro.

AQUIFER.--Mississippian: in limestone of Mississippian age.

WELL CHARACTERISTICS.--Drilled unused test hole, diameter 6 in., depth 365 ft, cased to 74.8 ft, open hole 74.8-365 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 733 ft above sea level, from topographic map. Measuring point: Hole in top of casing, 1.15 ft above land-surface datum.

REMARKS.--Hillsboro Test 1.

PERIOD OF RECORD.--August 1989 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 70.28 ft below land-surface datum, November 9, 1993, May 6, 1994; lowest measured, 77.21 ft below land-surface datum, October 27, 1989.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 09	70.28	FEB 01	70.54	MAY 06	70.28	AUG 01	70.60

WATER YEAR 1994 HIGHEST 70.28 NOV 09, 1993, MAY 06, 1994 LOWEST 70.60 AUG 01, 1994

HENRY COUNTY--Continued

410852091394301. Local number, 73-07-09 AABD.

LOCATION.--Lat 41°08'52", long 91°39'43", Hydrologic Unit 07080107, north of Main Street near the water tower, Wayland. Owner: Town of Wayland.

AQUIFER.--Glacial drift: in material of Pleistocene age.

WELL CHARACTERISTICS.--Dug unused water-table well, diameter 4 ft, depth 52 ft. Casing information not available.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 735 ft above sea level, from topographic map. Measuring point: Top of cement cover, 0.21 ft above land-surface datum.

PERIOD OF RECORD.--September 1960 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 2.30 ft below land-surface datum, September 1, 1965; lowest measured, 14.69 ft below land-surface datum, February 15, 1977.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 09	9.96	FEB 01	10.00	MAY 06	9.80	AUG 01	11.17

WATER YEAR 1994 HIGHEST 9.80 MAY 06, 1994 LOWEST 11.17 AUG 01, 1994

HUMBOLDT COUNTY

424039094103601. Local number, 91-28-20 CAAA.

LOCATION.--Lat 42°40'39", long 94°10'36", Hydrologic Unit 07100004, approximately 3 mi south of the Town of Dakota City, on the west side of County Road P-56. Owner: Elmer Gravdlund.

AQUIFER.--Glacial drift: in material of Pleistocene age.

WELL CHARACTERISTICS.--Unused water-table well, diameter 3 ft, cribbed with field stone, depth 24.5 ft, casing information unavailable.

INSTRUMENTATION.--Monthly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,135 ft above sea level, from topographic map. Measuring point: Top of casing, 0.30 ft above land-surface datum.

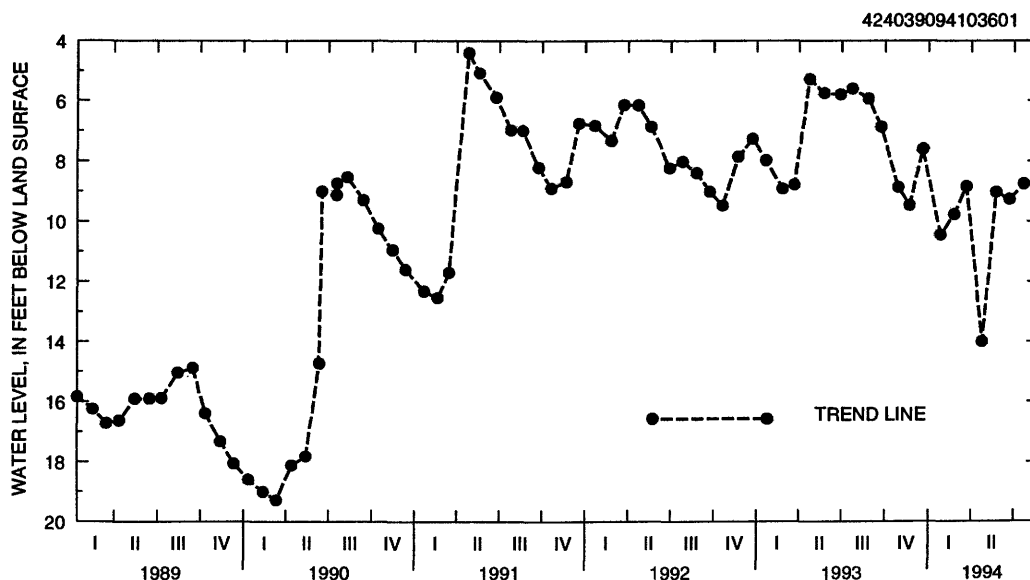
PERIOD OF RECORD.--July 1988 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 4.40 ft below land-surface datum, April 26, 1991; lowest measured, 19.29 ft below land-surface datum, March 12, 1990.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 29	8.87	JAN 26	10.45	APR 25	14.00	JUL 22	8.75
NOV 22	9.47	FEB 24	9.77	MAY 24	9.03	AUG 22	8.96
DEC 20	7.60	MAR 22	8.84	JUN 21	9.27	SEP 23	9.32

WATER YEAR 1994 HIGHEST 7.60 DEC 20, 1993 LOWEST 14.00 APR 25, 1994



HUMBOLDT COUNTY--Continued

424736094244701. Local number, 92-30-08 CDAA1.

LOCATION.--Lat 42°47'36", long 94°24'47", Hydrologic Unit 07100002, approximately .5 mi south of Bradgate, at junction of County Road P19 and Highway 26. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Des Moines Alluvial: in sands and gravel of Holocene age.

WELL CHARACTERISTICS.--Drilled observation well, diameter 2 in., depth 8 ft, cased 8 ft, perforated 5-8 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,116 ft above sea level, from topographic map. Measuring point: Top of casing, 2.80 ft above land-surface datum.

REMARKS.--Well WD-16U.

PERIOD OF RECORD.--August 1992 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 0.34 ft above land-surface datum, May 3, 1993; lowest measured, 4.97 ft below land-surface datum, February 4, 1993.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
AUG 07, 1992	2.88	FEB 04, 1993	4.97	AUG 18, 1993	1.08	MAY 03, 1994	3.92
NOV 05, 1992	3.08	MAY 03, 1993	0.34	NOV 22, 1993	4.42	AUG 02, 1994	3.89

WATER YEAR 1994 HIGHEST 3.89 AUG 02, 1994 LOWEST 4.42 NOV 22, 1993

424736094244702. Local number, 92-30-08 CDAA2.

LOCATION.--Lat 42°47'36", long 94°24'47", Hydrologic Unit 07100002, approximately .5 mi south of Bradgate, at junction of County Road P19 and Highway 26. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Des Moines Alluvial: in sands and gravel of Holocene age.

WELL CHARACTERISTICS.--Drilled observation well, diameter 2 in., depth 14.5 ft, cased 14.5 ft, perforated 13-14.5 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,116 ft above sea level, from topographic map. Measuring point: Top of casing, 2.60 ft above land-surface datum.

REMARKS.--Well WD-16L.

PERIOD OF RECORD.--August 1992 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 0.34 ft above land-surface datum, May 3, 1993; lowest measured, 7.60 ft below land-surface datum, December 20, 1993.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
AUG 07, 1992	2.89	MAY 03, 1993	0.34	NOV 22, 1993	4.41	MAY 03, 1994	3.98
NOV 05, 1992	2.96	AUG 18, 1993	1.11	DEC 20, 1993	7.60	AUG 02, 1994	3.89
FEB 04, 1993	4.98						

WATER YEAR 1994 HIGHEST 3.89 AUG 02, 1994 LOWEST 7.60 DEC 20, 1993

IDA COUNTY

422215095390811. Local number, 87-41-05 CCCC11.

LOCATION.--Lat 42°22'15", long 95°39'08", Hydrologic Unit 10230005, approximately 0.75 mi east and 6.5 mi south of the Village of Cushing. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Dakota: in sandstone of Cretaceous age.

WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 490 ft, cased to 490 ft, perforated 301-305 ft. Original depth 510 ft, cemented back to 490 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,344 ft above sea level, from topographic map. Measuring point: Top of casing, 2.72 ft above land-surface datum.

REMARKS.--Well D-10.

PERIOD OF RECORD.--June 1980 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 202.55 ft below land-surface datum, June 4, 1980; lowest measured, 206.50 ft below land-surface datum, May 7, 1982.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 01	203.25	FEB 08	204.28	MAY 04	204.15	JUL 27	204.75

WATER YEAR 1994 HIGHEST 203.25 NOV 01, 1993 LOWEST 204.75 JUL 27, 1994

IDA COUNTY--Continued

423107095383201. Local number, 89-41-13 CCCC.

LOCATION.--Lat 42°31'07", long 95°38'32", Hydrologic Unit 10230003, at a roadside park on County Road D-15, approximately 1.5 mi east and 3.5 mi north of the Village of Cushing. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Mississippian: in limestone of Mississippian age.

WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 469 ft, cased to 465 ft, sand point 465-468 ft, open hole 468-469 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,320 ft above sea level, from topographic map. Measuring point: Top of casing, 2.11 ft above land-surface datum.

REMARKS.--Well D-9.

PERIOD OF RECORD.--December 1978 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 180.97 ft below land-surface datum, July 27, 1994; lowest measured, 244.55 ft below land-surface datum, July 9, 1980.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 01	183.17	FEB 08	181.43	MAY 04	181.38	JUL 27	180.97

WATER YEAR 1994 HIGHEST 180.97 JUL 27, 1994 LOWEST 183.17 NOV 01, 1993

423131095442601. Local number, 89-41-18 CBBB.

LOCATION.--Lat 42°31'31", long 95°44'26", Hydrologic Unit 10230003, on the southwest corner of the intersection of State Route 31 and County Road D-15, approximately 4.5 mi northeast of the City of Correctionville. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Little Sioux River alluvial: in sand and gravel of Holocene age.

WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 2 in., depth 26 ft, cased to 26 ft, slotted 23-26 ft, gravel packed.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,134 ft above sea level, from topographic map. Measuring point: Top of casing, 2.30 ft above land-surface datum.

REMARKS.--Well LSR-22.

PERIOD OF RECORD.--August 1992 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 8.64 feet below land-surface datum, August 4, 1993; lowest measured, 14.40 ft below land-surface datum, May 3, 1994.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEARS OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 01	12.02	FEB 08	13.98	MAY 03	14.40	JUL 27	13.42

WATER YEAR 1994 HIGHEST 12.02 NOV 01, 1993 LOWEST 14.40 MAY 03, 1994

IOWA COUNTY

414709091515801. Local number, 81-09-35 BCAA.

LOCATION.--Lat 41°47'09", long 91°51'58", Hydrologic Unit 07080208, approximately 400 ft northwest of the Iowa River, east of Iowa Highway 149, and approximately 1.1 mi south of the Village of Amana. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Iowa alluvial: in sand and gravel of Holocene age.

WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 10 in, depth 27 ft, cased to 18 ft, screened 18-27 ft.

INSTRUMENTATION.--Quarterly measurements with chalked tape by USGS personnel. Analog digital water-level recorder--60 minute punch. Graphic water-level recorder December 1984 to June 1991.

DATUM.--Elevation of land-surface datum is 710 ft above sea level, from topographic map. Measuring point: Top of casing, 4.0 ft above land-surface datum.

REMARKS.--Well IRA-24.

PERIOD OF RECORD.--December 1984 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 0.30 ft above land-surface datum, May 31, 1991; lowest recorded, 12.45 ft below land-surface datum, December 31, 1988, and January 3, 1989.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
LOWEST VALUES

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 10	7.66	FEB 03	8.62	MAY 03	7.99	AUG 02	7.58

WATER YEAR 1994 HIGHEST 7.58 AUG 02, 1994 LOWEST 8.62 FEB 03, 1994

IOWA COUNTY--Continued

414816092053401. Local number, 81-11-23 DCCC.

LOCATION.--Lat 41°48'16", long 92°05'34", Hydrologic Unit 07080208, approximately 0.75 mi west of the Town of Marengo, 0.5 mi north of Iowa Highway 212 and 0.5 mi south of the Iowa River. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Iowa alluvial: in sand and gravel of Holocene age.

WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 2 in., depth 31 ft, cased to 28 ft, screened 28-31 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 745 ft above sea level, from topographic map. Measuring point: Top of casing, 2.30 ft above land-surface datum.

REMARKS.--Well IRA-4A. Records for October 1984 to July 1986 are available in the files of the Iowa District Office.

PERIOD OF RECORD.--October 1984 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 0.85 ft below land-surface datum, May 28, 1991; lowest measured, 9.33 ft below land-surface datum, January 26, 1990.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 10	3.66	FEB 03	5.38	MAY 03	4.76	AUG 05	5.29

WATER YEAR 1994 HIGHEST 3.66 NOV 10, 1993 LOWEST 5.38 FEB 03, 1994

JACKSON COUNTY

420842090165701. Local number, 85-6E-29 ACAD1.

LOCATION.--Lat 42°08'42", long 90°16'57", Hydrologic Unit 07060005, 1 mi east of U.S. Highway 52, 2 mi southeast of the Village of Green Island beside the Chicago, Milwaukee, St. Paul and Pacific Railroad tracks in the Upper Mississippi River Wildlife and Fish Refuge. Owner: U.S. Geological Survey.

AQUIFER.--Dresbach: in Mt. Simon sandstone of Early Cambrian age.

WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in. depth 1,804 ft, cased to 1,705 ft, screened 1,705-1,725 ft, open hole 1,725-1,804 ft.

INSTRUMENTATION.--Quarterly measurement with engineers rule by USGS personnel.

DATUM.--Elevation of land-surface datum is 610 ft above sea level, from topographic map. Measuring point: Mark on angle iron attached to well house, 6.05 ft above land-surface datum.

REMARKS.--Flowing well. Green Island #1.

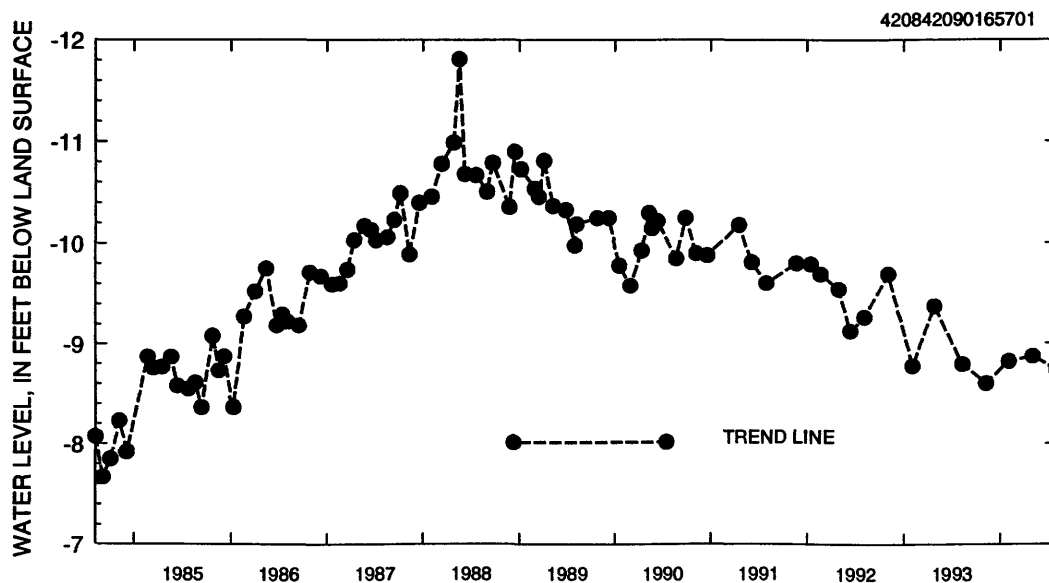
PERIOD OF RECORD.--May 1983 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 11.81 ft above land-surface datum, May 16, 1988; lowest measured, 8.87 ft above land-surface datum, May 3, 1994.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
(MEASUREMENTS ABOVE LAND SURFACE INDICATED BY "+")

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 08	+8.60	FEB 02	+8.22	MAY 03	8.87	AUG 01	8.73

WATER YEAR 1994 HIGHEST +8.82 FEB 02, 1994 LOWEST 8.87 MAY 03, 1994



JACKSON COUNTY--Continued

420842090165702. Local number, 85-06E-29 ACAD2.

LOCATION.--Lat 42°08'42", long 90°16'57", Hydrologic Unit 07060005, 1 mi east of U.S. Highway 52, 2 mi southeast of the Village of Green Island beside the Chicago, Milwaukee, St. Paul and Pacific Railroad tracks in the Upper Mississippi River Wildlife and Fish Refuge. Owner: U.S. Geological Survey.

AQUIFER.--Cambrian-Ordovician, in Wonewoc sandstone of Late Cambrian age.

WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 1,275 ft, cased to 1,204.4 ft, screened 1,204.4 to 1,224.4 ft, open hole 1,224.4 to 1,275 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 610 ft above sea level, from topographic map. Measuring point: Top of casing, 2.0 ft above land-surface datum.

REMARKS.--Green Island No. 2 well. Well pumped during winter to supply water to goose pond. Water levels water years 1986 to 1989 affected by oil in the well.

PERIOD OF RECORD.--July 1982 to November 1983, September 1986 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 1.84 ft above land-surface datum, May 21, 1987; lowest measured, 3.88 below land-surface datum, November 4, 1982.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEARS OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 08	1.30	FEB 02	0.86	MAY 03	0.67	AUG 01	0.90

WATER YEAR 1994 HIGHEST 0.67 MAY 03, 1994 LOWEST 1.30 NOV 08, 1993

420842090165703. Local number, 85-6E-29 ACAD3

LOCATION.--Lat 42°08'42", long 90°16'57", Hydrologic Unit 07060005, 1 mi east of U.S. Highway 52, 2 mi southeast of the Village of Green Island beside the Chicago, Milwaukee, St. Paul and Pacific Railroad tracks in the Upper Mississippi River Wildlife and Fish Refuge. Owner: U.S. Geological Survey.

AQUIFER.--Cambrian-Ordovician: in Prairie du Chien dolomite of Early Ordovician age and St. Peter sandstone of Middle Ordovician age.

WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 910 ft, cased to 604.2 ft, screened 604.2-624.2 ft, open hole 624.2-910 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 610 ft above sea level, from topographic map. Measuring point: Top of casing, 2.00 ft above land-surface datum.

REMARKS.--Green Island No. 3.

PERIOD OF RECORD.--May 1982 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 5.19 ft below land-surface datum, January 8, 1986; lowest measured 9.90 ft below land-surface datum, August 31, 1983.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 08	7.96	FEB 02	6.95	MAY 03	6.98	AUG 01	7.07

WATER YEAR 1994 HIGHEST 6.95 FEB 02, 1994 LOWEST 7.96 NOV 08, 1993

JACKSON COUNTY--Continued

420842090165704. Local number, 85-6E-29 ACAD4.

LOCATION.--Lat 42°08'42", long 90°16'57", Hydrologic Unit 07060005, 1 mi east of U.S. Highway 52, 2 mi southeast of the Village of Green Island beside the Chicago, Milwaukee, St. Paul and Pacific Rail- road tracks in the Upper Mississippi River Wildlife and Fish Refuge. Owner: U.S. Geological Survey.

AQUIFER.--Cambrian-Ordovician: in Galena dolomite of Middle Ordovician age.

WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 400 ft, cased to 299.6 ft, screened 299.6-319.6 ft, open hole 319.6-400 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 610 ft above sea level, from topographic map. Measuring point: Top of casing, 2.00 ft above land-surface datum.

REMARKS.--Green Island No. 4.

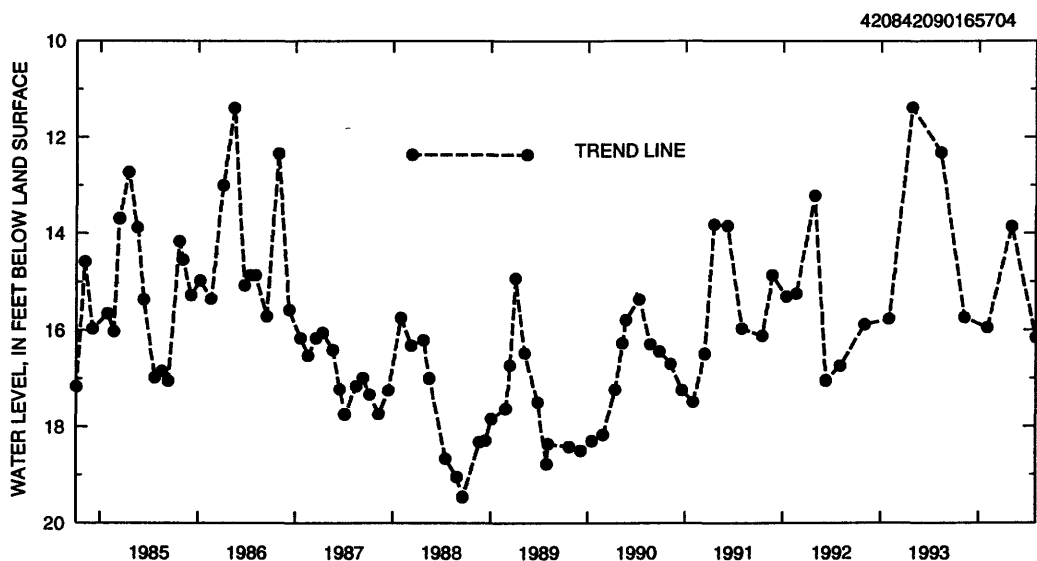
PERIOD OF RECORD.--May 1982 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 11.39 ft below land-surface datum April 27, 1993; lowest measured, 19.46 ft below land-surface datum, September 20, 1988.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 08	15.74	FEB 02	15.95	MAY 03	13.86	AUG 01	16.16

WATER YEAR 1994 HIGHEST 13.86 MAY 03, 1994 LOWEST 16.16 AUG 01, 1994



JASPER COUNTY

414147093035401. Local number, 80-19-33 ACAC.

LOCATION.--Lat 41°41'50", long 93°03'53", Hydrologic Unit 07080105, 231 West 10th Street, Newton. Owner: John Coppess.

AQUIFER.--Cambrian-Ordovician: in sandstone and sandy dolomite of Late Cambrian and Early Ordovician age.

WELL CHARACTERISTICS.--Drilled unused private artesian water well, diameter 12 to 6 in., depth 2,567 ft, cased to 1,750 ft, open hole 1,750-2,567 ft. Open to 461 ft of Early Ordovician Prairie du Chien formation, 262 ft of Late Cambrian St. Lawrence formation, and 94 ft of Middle Cambrian Franconia formation.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 915 ft above sea level, from topographic map. Measuring point: Plug in cement well cover, 0.50 ft above land-surface datum.

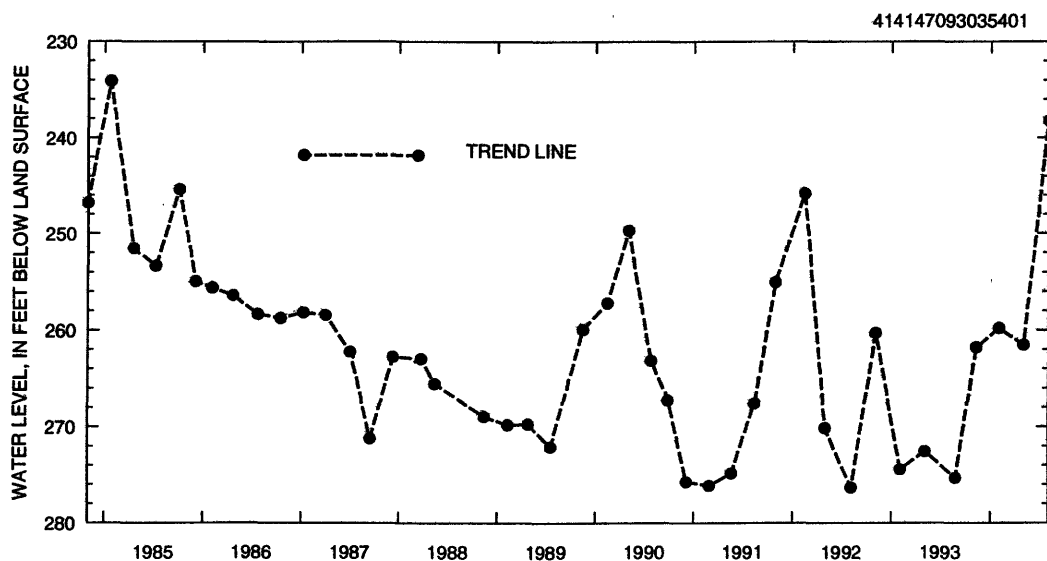
PERIOD OF RECORD.--September 1963 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 98.43 ft below land-surface datum, June 14, 1966; lowest measured, 276.35 ft below land-surface datum, August 6, 1992.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 10	261.80	FEB 03	259.80	MAY 04	261.54	AUG 03	238.25

WATER YEAR 1994 HIGHEST 213.25 AUG 03, 1994 LOWEST 261.80 NOV 10, 1993



414210092592001. Local number, 80-18-31 ABBS.

LOCATION.--Lat 41°42'10", long 92°59'20", Hydrologic Unit 07080105, approximately 3 mi east of the City of Newton just south of U.S. Highway 6. Owner: P.W. Beukema.

AQUIFER.--Glacial drift: in material of Pleistocene age.

WELL CHARACTERISTICS.--Dug stock water-table well, diameter 36 in., depth 37 ft, cribbed with brick.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 940 ft above sea level, from topographic map. Measuring point: Top of cement platform, 0.70 ft above land-surface datum.

PERIOD OF RECORD.--February 1940 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 2.67 ft below land-surface datum, June 10, 1947; lowest measured, 27.15 ft below land-surface datum, December 18, 1948.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 10	6.36	FEB 03	11.16	MAY 04	9.74	AUG 03	10.11

WATER YEAR 1994 HIGHEST 6.36 NOV 10, 1994 LOWEST 11.16 FEB 03, 1994

JOHNSON COUNTY

413925091324001. Local number, 79-06-09 DDBC.

LOCATION.--Lat 41°39'34", long 91°32'42", Hydrologic Unit 07080209, at the Quadrangle Dormitory, University of Iowa, Iowa City. Owner: University of Iowa.

AQUIFER.--Silurian: in dolomite of Silurian age.

WELL CHARACTERISTICS.--Drilled unused artesian water well, diameter 12 in., depth 430.5 ft, cased to 225 ft, open hole 225-430.5 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 714 ft above sea level, from topographic map. Measuring point: Nipple welded to plate on top of casing, 1.81 ft above land-surface datum.

REMARKS.--Water levels affected by nearby wells pumping in late spring, summer, and early fall.

PERIOD OF RECORD.--April 1975 to current year.

REVISED RECORDS.--WDR IA-84-1, WDR IA-88-1.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 74.63 ft below land-surface datum, March 21, 1979; lowest measured, 168.89 ft below land-surface datum, August 2, 1994.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 12	140.27	FEB 04	127.06	MAY 03	147.44	AUG 02	168.89

WATER YEAR 1994 HIGHEST 127.06 FEB 04, 1994 LOWEST 168.89 AUG 02, 1994

414107091322901. Local number, 79-06-04 AAAA.

LOCATION.--Lat 41°41'07", long 91°32'29", Hydrologic Unit 07080209, at Forest View Trailer Court, northern edge of Iowa City. Owner: Forest View Trailer Court.

AQUIFER.--Silurian: in limestone of Silurian age.

WELL CHARACTERISTICS.--Drilled unused artesian water well, diameter 6 in., depth 280 ft, cased to 96 ft, open hole 96-280 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel. Graphic water-level recorder May 1971 to October 1986.

DATUM.--Elevation of land-surface datum is 735 ft above sea level, from topographic map. Measuring point: Nipple on plate welded to top of casing, 1.62 ft above land-surface datum.

REMARKS.--Water levels affected by wells in the area pumping in late spring, summer, and early fall.

PERIOD OF RECORD.--May 1971 to current year.

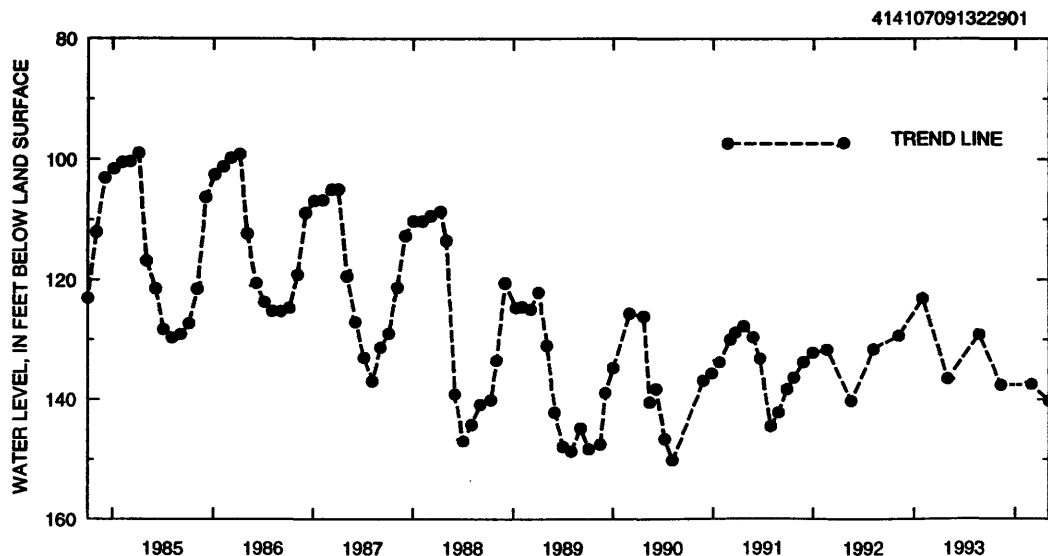
REVISED RECORDS.--WDR IA-84-1.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 96.93 ft below land-surface datum, March 23, 1979; lowest measured, 150.14 ft below land-surface datum, August 6, 1990.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 12	137.55	FEB 28	137.42	MAY 03	140.20

WATER YEAR 1994 HIGHEST 137.42 FEB 28, 1994 LOWEST 140.20 MAY 03, 1994



JOHNSON COUNTY--Continued

414132091345501. Local number, 80-06-31 ADAC1.

LOCATION.--Lat 41°41'44", long 91°34'52 "

AQUIFER.--Silurian: in dolomite of Silurian age.

WELL CHARACTERISTICS.--Drilled observation artesian water well, depth 500 ft, cased from 0-130 ft with 5 in. diameter steel, 0-300 ft with 2 in. diameter PVC, open hole 300-500 ft.

INSTRUMENTATION.--Monthly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 795 ft above sea level, from topographic map. Measuring point: top of casing, 0.70 ft above land-surface datum.

REMARKS.--Coralville Observation No. 2, East.

PERIOD OF RECORD.--June 1988 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 192.75 ft below land-surface datum, March 20, 1990; lowest water level measured, 259.48 ft below land-surface datum, July 22, 1994.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEARS OCTOBER 1993 TO SEPTEMBER 1994

<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>
OCT 28	243.50	JAN 25	229.56	APR 19	231.63	JUL 22	259.48
NOV 30	224.36	FEB 28	248.06	MAY 25	248.10	AUG 25	254.11
DEC 28	222.23	MAR 29	229.45	JUN 24	254.76	SEP 27	251.60

WATER YEAR 1994 HIGHEST 224.36 NOV 30, 1993 LOWEST 259.48 JUL 22, 1994

414132091345502. Local number, 80-06-31 ADBC1.

LOCATION.--Lat 41°41'45", long 91°34'58", Hydrologic Unit 07080209, located in the City of Coralville, approximately 0.25 mi north of U.S. Interstate 80. Owner: City of Coralville.

AQUIFER.--Silurian: in dolomite of Silurian age.

WELL CHARACTERISTICS.--Drilled observation artesian water well, depth 500 ft, cased 0-130 ft with 5 in. diameter steel, 0-300 ft with 2 in. diameter PVC, open hole 300-500 ft.

INSTRUMENTATION.--Monthly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 795 ft above sea level, from topographic map. Measuring point: top of casing, 1.03 ft above land-surface datum.

REMARKS.--Coralville Observation No. 3, North.

PERIOD OF RECORD.--June 1988 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest level measured, 169.04 ft below land-surface datum, June 21, 1988; lowest water level measured, 251.34 ft. below land-surface datum, July 22, 1994.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEARS OCTOBER 1993 TO SEPTEMBER 1994

<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>
OCT 28	235.54	JAN 25	221.24	APR 19	223.45	JUL 22	251.34
NOV 30	216.12	FEB 28	240.00	MAY 25	239.87	AUG 25	245.89
DEC 28	210.88	MAR 29	230.10	JUN 24	246.77	SEP 27	243.27

WATER YEAR 1994 HIGHEST 216.12 NOV 30, 1993 LOWEST 251.34 JUL 22, 1994

414132091345503. Local number, 80-06-31 ADBD1.

LOCATION.--Lat 41°41'44", long 91°34'35", Hydrologic Unit 07080209, located in the City of Coralville, north of U.S. Interstate 80. Owner: City of Coralville.

AQUIFER.--Silurian: in dolomite of Silurian age.

WELL CHARACTERISTICS.--Drilled public-supply water well, 12 in. diameter, depth 500 ft, cased 0-200 ft, open hole 200-500 ft.

INSTRUMENTATION.--Monthly airline measurement by USGS personnel.

DATUM.--Elevation of land-surface datum is 795 ft above sea level, from topographic map. Measuring point: airline gauge, 2.88 ft above land-surface datum.

REMARKS.--Coralville Production No. 9.

PERIOD OF RECORD.--June 1988 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 204 ft below land-surface datum, July 25, 1988; lowest water level measured, 291 ft below land-surface datum, July 22, 1994.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEARS OCTOBER 1993 TO SEPTEMBER 1994

<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>
OCT 28	273	JAN 25	259	APR 19	259	JUL 22	291
NOV 30	251	FEB 28	278	MAY 25	277	AUG 25	285
DEC 28	223	MAR 29	265	JUN 24	287	SEP 27	283

WATER YEAR 1994 HIGHEST 251 NOV 30, 1993 LOWEST 291 JUL 22, 1994

JOHNSON COUNTY--Continued

414221091361101. Local number, 80-07-25 DBAC1.

LOCATION.--Lat 41°42'24", long 91°36'16", Hydrologic Unit 07080209, located at the Iowa Department of Natural Resources/Geological Survey Bureau's Oakdale core repository. Owner: Geological Survey Bureau/DNR.

AQUIFER.--Silurian: in dolomite of Silurian age.

WELL CHARACTERISTICS.--Drilled observation artesian water well, depth 532 ft, cased 0-164 ft with 6 in., 0-319 ft of 5 in., 319-361.5 ft of 4 in. diameter pipe, and liner set 310-361.5 ft. Open hole 361.5-532 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 790 ft above sea level, from topographic map. Measuring point: top of recorder platform, 2.65 ft above land-surface datum.

REMARKS.--Oakdale No. 1 (ODW-1).

PERIOD OF RECORD.--April 1990 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 210.34 ft below land-surface datum, February 4, 1993; lowest water level measured, 245.93 ft below land-surface datum, July 26, 1991.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 12	220.19	FEB 04	214.80	MAY 03	221.02	AUG 02	233.82

WATER YEAR 1994 HIGHEST 214.80 FEB 04, 1994 LOWEST 233.82 AUG 02, 1994

414221091361102. Local number, 80-07-25 DBAC2.

LOCATION.--Lat 41°42'24", long 91°36'16", Hydrologic Unit 07080209, located at the Iowa Department of Natural Resources/Geological Survey Bureau's Oakdale core repository. Owner: Geological Survey Bureau/DNR.

AQUIFER.--Devonian: in limestone and dolomite of Devonian age.

WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 5 in., depth 301 ft, cased 0-175 ft, open hole 175-301 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 790 ft above sea level, from topographic map. Measuring point: top of recorder platform, 2.55 ft above land-surface datum.

REMARKS.--Oakdale No. 2, (ODW-2).

PERIOD OF RECORD.--April 1990 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 201.16 ft below land-surface datum, February 4, 1993; lowest water level measured, 227.09 ft below land-surface datum, August 28, 1991.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 12	208.37	FEB 04	204.23	MAY 03	210.20	AUG 04	221.47

WATER YEAR 1994 HIGHEST 204.23 FEB 04, 1994 LOWEST 221.47 AUG 04, 1994

414221091361103. Local number, 80-07-25 DBAD1.

LOCATION.--Lat 41°42'24", long 91°36'16", Hydrologic Unit 07080209, located at the Iowa Department of Natural Resources/Geological Survey Bureau's Oakdale core repository. Owner: Geological Survey Bureau/DNR.

AQUIFER.--Buried channel: in sand and gravel of Pleistocene age.

WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 4 in., depth 171 ft, cased 0-171 ft, slotted 153-171 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 790 ft above sea level, from topographic map. Measuring point: top of recorder platform, 2.55 ft above land-surface datum.

REMARKS.--Oakdale No. 3 (ODW-3).

PERIOD OF RECORD.--April 1990 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 124.43 ft below land-surface datum, February 4, 1994; lowest water level measured, 128.74 ft below land-surface datum, April 12, 1992.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 12	124.56	FEB 04	124.43	MAY 03	125.82	AUG 04	126.27

WATER YEAR 1994 HIGHEST 124.43 FEB 04, 1994 LOWEST 126.27 AUG 04, 1994

JOHNSON COUNTY--Continued

414315091252001. Local number, 80-05-22 CBCB1.

LOCATION.--Lat 41°43'15", long 91°25'20", Hydrologic Unit 07080209, along the Chicago, Rock Island and Pacific Railroad track, southeast of the overpass on Rapid Creek Road over the track, approximately 5.5 mi northeast of the junction of Interstate 80 and Iowa Highway 1.
Owner: Chicago, Rock Island and Pacific Railroad Co.

AQUIFER.--Glacial drift: in material of Pleistocene age.

WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 2.25 in., depth 18.43 ft, cased to 18 ft, screened 18-20 ft. Depth originally 20 ft, re-measured June 23, 1989.

INSTRUMENTATION.--Monthly measurement with chalked tape by USGS personnel. Graphic water-level recorder February 1942 to October 1965.

DATUM.--Elevation of land-surface datum is 753 ft above sea level, from topographic map. Measuring point: Nipple welded to casing, 4.47 ft above land-surface datum.

REMARKS.--At the site of the former Elmira depot.

PERIOD OF RECORD.--May 1941 to September 1956, January 1958 to current year.

REVISED RECORDS.--WDR IA-88-1.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 4.84 ft below land-surface datum, April 29, 1947 (revised); lowest measured, dry, November 10, 15, 20, 25, and 30, 1964, December 5, 10, 15, 20, 25 and 31, 1964, December 1 and 10, 1975, October 21, 1976, November 23, 1976, December 17, 1976, January 20, 1977, and February 18, 1977.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 28	8.58	JAN 25	8.98	APR 19	9.36	JUL 22	10.35
NOV 30	8.72	FEB 28	9.20	MAY 25	9.65	AUG 25	10.84
DEC 28	8.82	MAR 29	9.27	JUN 24	10.04	SEP 27	11.36

WATER YEAR 1994 HIGHEST 8.58 OCT 28, 1993 LOWEST 11.36 SEP 27, 1994

414315091252002. Local number, 80-05-22 CBCB2.

LOCATION.--Lat 41°43'15", long 91°25'20", Hydrologic Unit 07080209, along the Chicago, Rock Island and Pacific Railroad track, southeast of the overpass on Rapid Creek Road over the track, approximately 5.5 mi northeast of the junction of Interstate 80 and Iowa Highway 1.
Owner: Chicago, Rock Island and Pacific Railroad Co.

AQUIFER.--Devonian: in Cedar Valley limestone of Middle Devonian age.

WELL CHARACTERISTICS.--Drilled unused artesian water well, diameter 5 in., depth 82 ft. Casing information not available.

INSTRUMENTATION.--Monthly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 753 ft above sea level, from topographic map. Measuring point: Nipple welded to plate on top of casing, 4.01 ft above land-surface datum.

REMARKS.--At the site of the former Elmira depot.

PERIOD OF RECORD.--December 1941 to current year.

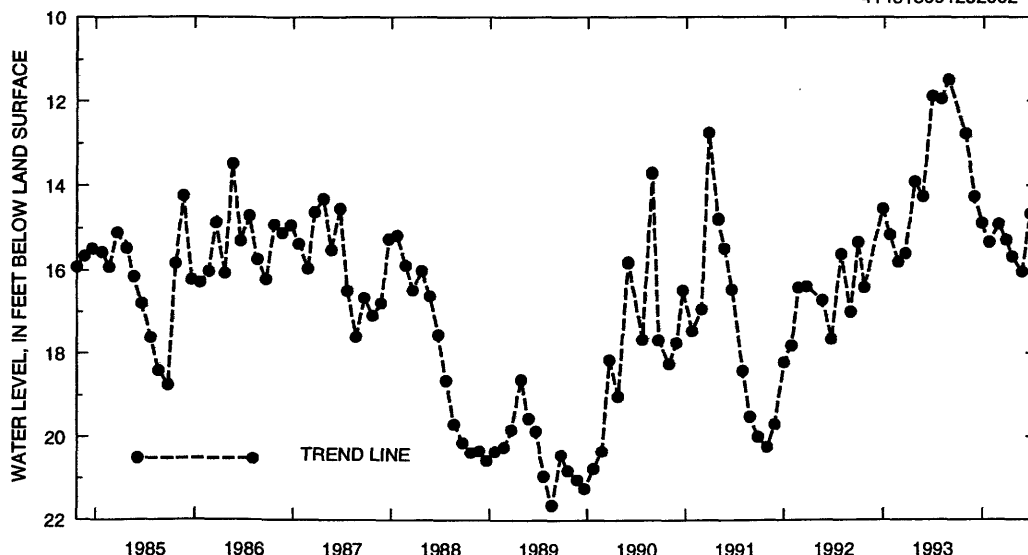
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 5.58 ft below land-surface datum, November 27, 1992; lowest measured, 21.65 ft below land-surface datum, August 21, 1989.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 28	12.77	JAN 25	15.33	APR 19	15.67	JUL 22	16.30
NOV 30	14.24	FEB 28	14.90	MAY 25	16.03	AUG 25	17.11
DEC 28	14.87	MAR 29	15.28	JUN 24	14.66	SEP 27	17.15

WATER YEAR 1994 HIGHEST 12.77 OCT 28, 1993 LOWEST 17.15 SEP 27, 1994

414315091252002



JOHNSON COUNTY--Continued

414853091425101. Local number, 81-07-19 BCBB1.

LOCATION.--Lat 41°48'53", long 91°42'51", Hydrologic Unit 07080208, approximately 0.75 mi west and 2.25 mi south of the Town of Swisher.

Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Silurian-Devonian: in dolomite of Silurian age and limestone and dolomite of Devonian age.

WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 6 in., depth 535 ft, cased to 130 ft, open hole 130-535 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel. Graphic water-level recorder November 1976 to October 1989.

DATUM.--Elevation of land-surface datum is 745 ft above sea level, from topographic map. Measuring point: Top of casing, 3.50 ft above land-surface datum.

REMARKS.--Plum Creek well.

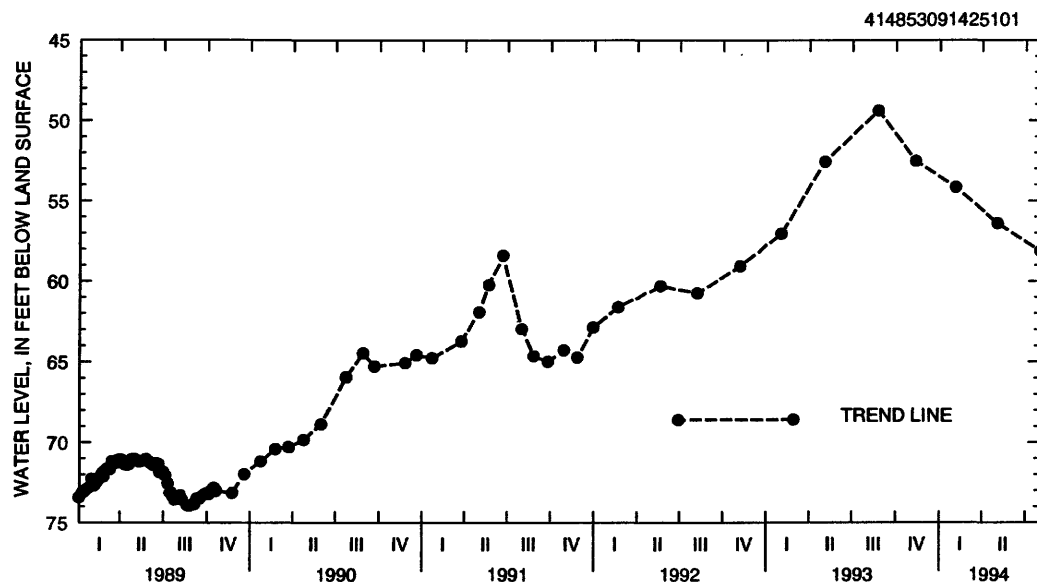
PERIOD OF RECORD.--November 1976 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 49.39 ft below land-surface datum, August 24, 1993; lowest recorded, 76.97 ft below land-surface datum, October 6, 1988.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 12	52.53	FEB 04	54.15	MAY 03	56.40	AUG 01	58.13

WATER YEAR 1994 HIGHEST 52.53 NOV 12, 1993 LOWEST 58.13 AUG 01, 1994



JONES COUNTY

415808091160501. Local number, 83-04-25 CBBB.

LOCATION.--Lat 41°58'08", long 91°16'05", Hydrologic Unit 07080103, 4 mi north of the Town of Mechanicsville and 1 mi west of County Road X-40. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Silurian: in dolomite of Silurian age.

WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 6 in. to 41 ft, 5 in. to 517 ft, depth 517 ft, cased to 41 ft, open hole 41 to 517 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 811 ft above sea level, from topographic map. Measuring point: Nipple welded to plate on top of casing, 2.16 ft above land-surface datum.

REMARKS.--White Oak Creek well.

PERIOD OF RECORD.--July 1976 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 0.78 ft below land-surface datum, May 3, 1993; lowest measured, 6.21 ft below land-surface datum, September 11, 1989.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 12	2.71	FEB 02	3.85	MAY 04	3.71	AUG 01	4.44

WATER YEAR 1994 HIGHEST 2.71 NOV 12, 1993 LOWEST 4.44 AUG 01, 1994

KEOKUK COUNTY

412030092121601. Local number, 76-12-35 DBDC.

LOCATION.--Lat 41°20'30", long 92°12'16", Hydrologic Unit 07080106, approximately 0.25 mi north of the town of Sigourney, 0.25 mi north of Highway 92. Owner: City of Sigourney.

AQUIFER.--Mississippian: in limestone and dolomite of Mississippian age.

WELL CHARACTERISTICS.--Drilled unused public-supply artesian well, diameter 14 in., depth 300 ft, cased to 128 ft, open hole 128-300 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel. Analog digital water-level recorder January 1989 to September 1992.

DATUM.--Elevation of land-surface datum is 769 ft above sea level, from topographic map. Measuring point: Top of recorder base, 1.50 ft above land-surface datum.

REMARKS.--Sigourney South Rock Island No. 1 well. Water levels affected by nearby pumping.

PERIOD OF RECORD.--July 1988 to present.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 81.15 ft below land-surface datum, March 29, 1991; lowest measured, 118.29 ft below land-surface datum, August 31, 1991.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>
NOV 09	83.83	FEB 01	94.26	MAY 05	81.44	AUG 01	82.56

WATER YEAR 1994 HIGHEST 81.44 MAY 05, 1994 LOWEST 94.26 FEB 01, 1994

LINN COUNTY

415343091360101. Local number, 82-07-25 AAAB.

LOCATION.--Lat 41°53'43", long 91°36'01", Hydrologic Unit 07080208, 0.5 mi northwest of the Town of Ely at the southwest corner of the junction of County Roads E-70 and W-6E. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Silurian: in limestone and dolomite of Silurian age.

WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 6 in., depth 401 ft, cased to 121.5 ft, open hole 121.5-401 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel. Graphic water-level recorder April 1978 to October 1979. Intermittent measurement with chalked tape by USGS personnel May 1976 to April 1978.

DATUM.--Elevation of land-surface datum is 772 ft above sea level, from topographic map. Measuring point: Top of casing, 1.76 ft above land-surface datum.

REMARKS.--Ely (Northwest) Railroad well. Records for May 1976 to September 1988 are unpublished and available in the files of the Iowa District Office.

PERIOD OF RECORD.--May 1976 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 3.03 ft below land-surface datum, August 26, 1993; lowest measured, 19.96 ft below land-surface datum, June 14, 1977.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>
NOV 12	6.89	FEB 02	8.99	MAY 03	11.24	AUG 01	11.97

WATER YEAR 1994 HIGHEST 6.89 NOV 12, 1993 LOWEST 11.97 AUG 01, 1994

LINN COUNTY--Continued

415422091422601. Local number, 82-07-18 CDCD.

LOCATION.--Lat 41°54'22", long 91°42'26", Hydrologic Unit 07080205, on 76th Avenue SW, approximately 1.5 mi west of U.S. Highway 218, Cedar Rapids. Owner: Edwin J. Hynek.

AQUIFER.--Glacial drift: in material of Pleistocene age.

WELL CHARACTERISTICS.--Dug unused water-table well, diameter 4 ft, depth 13.5 ft, cribbed with brick.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel. Graphic water-level recorder July 1959 to September 1987.

DATUM.--Elevation of land-surface datum is 835 ft above sea level, from topographic map. Measuring point: Base of recorder shelter, 0.37 ft above land-surface datum.

REMARKS.--Well previously owned by Lester Petrak.

PERIOD OF RECORD.--July 1959 to current year.

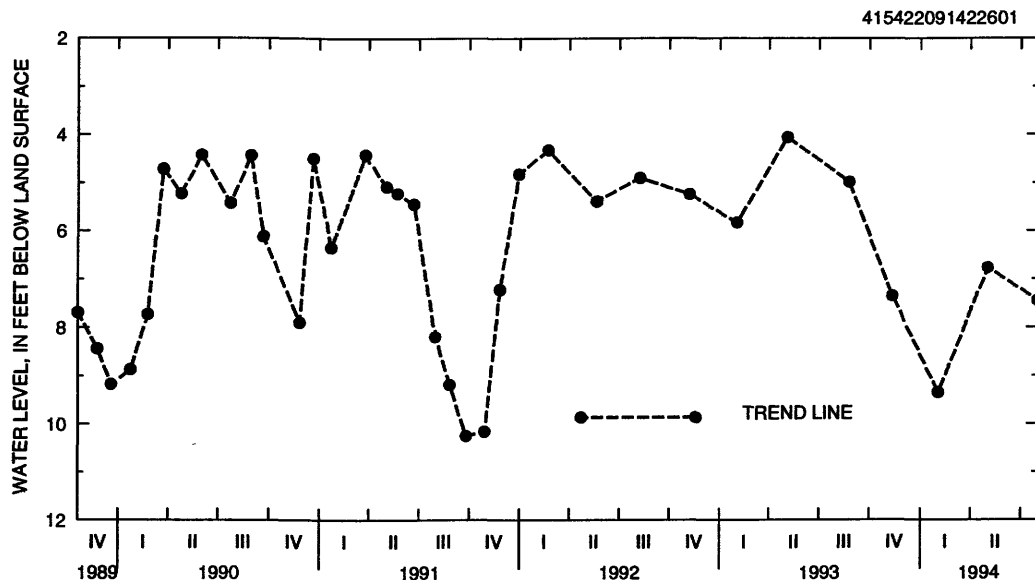
REVISED RECORDS.--WDR IA-84-1.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 1.09 ft below land-surface datum, August 4, 1968; lowest recorded, 11.75 ft below land-surface datum, February 8, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 12	7.36	FEB 02	9.35	MAY 03	6.77	AUG 01	7.45

WATER YEAR 1994 HIGHEST 6.77 MAY 03, 1994 LOWEST 9.35 FEB 02, 1994



415509091461801. Local number, 82-08-20 ACBB.

LOCATION.--Lat 41°55'09", long 91°46'18", Hydrologic Unit 07080205, approximately 1.5 mi southwest of the Town of Fairfax, just northwest of Iowa Highway 149. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Silurian-Devonian: in dolomite of Silurian age and limestone and dolomite of Devonian age.

WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 5 in., depth 569 ft, cased to 100.5 ft, open hole 100.5-569 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel. Graphic water-level recorder February 1974 to July 1978. Intermittent measurement with chalked tape by USGS personnel March 1973 to February 1974.

DATUM.--Elevation of land-surface datum is 842 ft above sea level, from topographic map. Measuring point: Nipple welded to plate on top of casing, 2.39 ft above land-surface datum.

REMARKS.--Rock Pile well.

PERIOD OF RECORD.--March 1973 to current year.

REVISED RECORDS.--WDR IA-84-1.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 96.70 ft below land-surface datum, June 21, 1974; lowest measured, 109.17 ft below land-surface datum, September 11, 1989.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 12	101.70	FEB 04	101.49	MAY 03	104.28	AUG 01	104.82

WATER YEAR 1994 HIGHEST 101.49 FEB 04, 1994 LOWEST 104.82 AUG 01, 1994

LINN COUNTY--Continued

415725091410101. Local number, 83-07-32 ACDC.

LOCATION.--Lat 41°57'25", long 91°41'01", Hydrologic Unit 07080205, northwest corner of 22nd Avenue SW and 11th Street SW, Cedar Rapids. Owner: Floyd Fetter.

AQUIFER.--Silurian: in limestone of Silurian age.

WELL CHARACTERISTICS.--Drilled unused artesian water well, diameter 5 in., depth 282 ft. Casing information not available.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 805 ft above sea level, from topographic map. Measuring point: Plug in well cover at land-surface datum.

REMARKS.--Water levels may be affected by pumping of near by wells.

PERIOD OF RECORD.--July 1940 to current year.

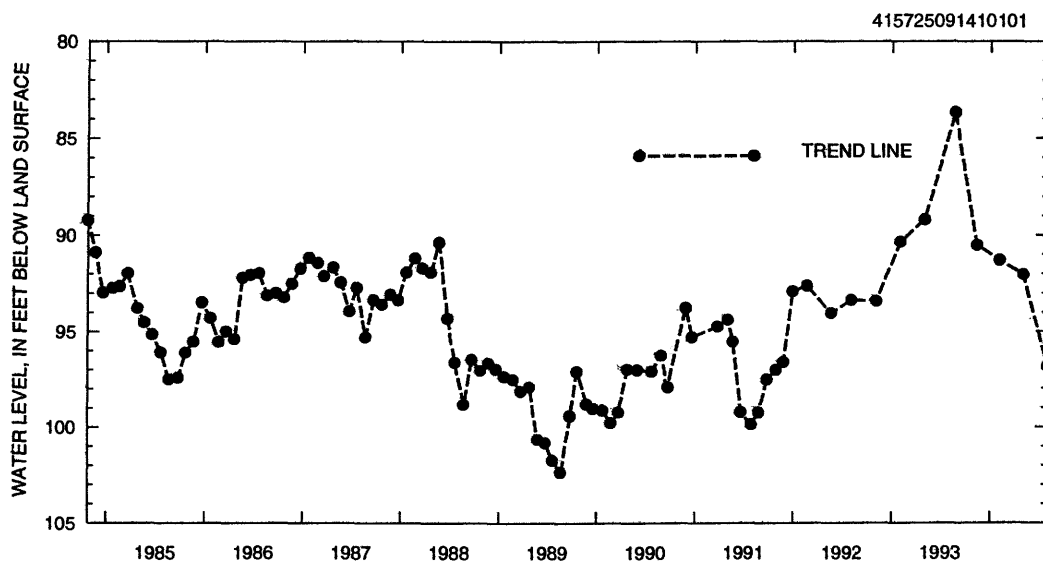
REVISED RECORDS.--WDR IA-88-1.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 75.88 ft below land-surface datum, January 26, 1942; lowest measured, 107.00 ft below land-surface datum, September 16, 1976.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>
NOV 12	90.52	FEB 04	91.32	MAY 03	92.05	AUG 01	96.87

WATER YEAR 1994 HIGHEST 90.52 NOV 12, 1993 LOWEST 96.87 AUG 01, 1994



LINN COUNTY--Continued

415834091351601. Local number, 83-06-30 ABBA.

LOCATION.--Lat 41°58'34", long 91°35'16", Hydrologic Unit 07080206, approximately 200 ft west of 5201 Mount Vernon Road SE, Cedar Rapids. Owner: Vulcan Auto Yard. Formerly owned by B.L. Anderson.

AQUIFER.--Silurian-Devonian: in dolomite of Silurian and limestone and dolomite of Devonian age.

WELL CHARACTERISTICS.--Drilled unused artesian water well, diameter 6 in., depth 76.5 ft. Casing information not available. Devonian rock reported to yield little, if any, water.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 755 ft above sea level, from topographic map. Measuring point: Hole in pump base, 0.50 ft above land-surface datum.

REMARKS.--Katz well.

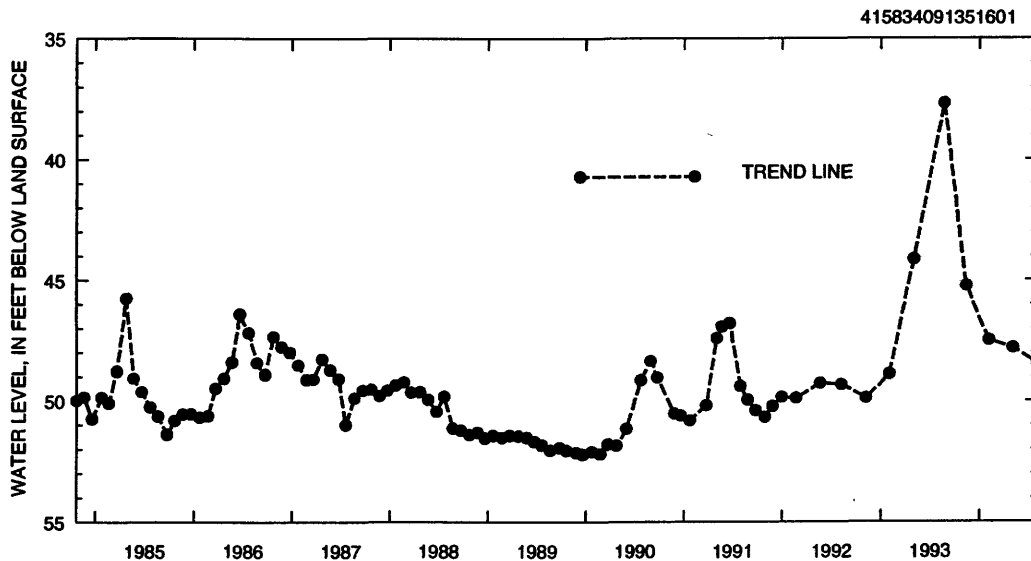
PERIOD OF RECORD.--May 1940 to current year.

EXTREMES OF PERIOD OF RECORD.--Highest water level measured, 37.68 ft below land-surface datum, August 24, 1993; lowest measured, 53.90 ft below land-surface datum, December 21, 1970.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 12	45.23	FEB 04	47.49	MAY 03	47.81	AUG 01	48.46

WATER YEAR 1994 HIGHEST 45.23 NOV 12, 1993 LOWEST 48.46 AUG 01, 1994



420300091325801. Local number, 84-06-33 ABBB.

LOCATION.--Lat 42°03'00", long 91°32'58", Hydrologic Unit 07080206, near the City of Marion on the east side of Iowa Highway 13, approximately 1 mi north of U.S. Highway 151. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Silurian: in dolomite of Silurian age.

WELL CHARACTERISTICS.--Drilled observation artesian well, diameter 6 in., depth 481 ft, cased to 142 ft, open hole 142-481 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 838 ft above sea level, from topographic map. Measuring point: Top of casing, 0.90 ft above land-surface datum.

REMARKS.--Marion well.

PERIOD OF RECORD.--June 1976 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 42.15 ft below land-surface datum, June 18, 1986; lowest measured, 50.26 ft below land-surface datum, December 1, 1989.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 12	44.17	FEB 03	46.01	MAY 03	46.13	AUG 01	45.92

WATER YEAR 1994 HIGHEST 44.17 NOV 12, 1993 LOWEST 46.13 MAY 03, 1994

LINN COUNTY--Continued

420320091472201. Local number, 84-08-28 CBDD.

LOCATION.--Lat 42°03'20", long 91°47'22", Hydrologic Unit 07080205, 0.5 mi southeast of the Town of Palo, 0.25 mi east of Iowa Highway 94. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Silurian: in dolomite of Silurian age.

WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 5 in., depth 442 ft, cased to 148 ft, open hole 148-442 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel. Graphic water-level recorder April 1976 to December 1979.

DATUM.--Elevation of land-surface datum is 743 ft above sea level, from topographic map. Measuring point: Top of casing, 3.08 ft above land-surface datum.

REMARKS.--Palo well. Records for April 1976 to September 1988 are unpublished and available in the files of the Iowa District Office.

PERIOD OF RECORD.--April 1976 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 3.64 ft below land-surface datum, April 5, 1979; lowest measured, 13.26 ft below land-surface datum, July 17, 1977.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 12	7.60	FEB 03	8.87	MAY 03	8.69	AUG 01	8.12

WATER YEAR 1994 HIGHEST 7.60 NOV 12, 1993 LOWEST 8.87 FEB 03, 1994

420508091395811. Local number, 84-07-16 DBBB.

LOCATION.--Lat 42°05'16", long 91°40'02", Hydrologic Unit 07080205, approximately 0.5 mi south of County Road E-34, north of the Town of Robins. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Silurian: in dolomite of Silurian age.

WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 5 in., depth 520 ft, cased to 173 ft, open hole 173-520 ft, 18 ft of Devonian rock open.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel. Graphic water-level recorder November 1975 to September 1979. Intermittent measurement with chalked tape by USGS personnel April 1975 to November 1975.

DATUM.--Elevation of land-surface datum is 873 ft above sea level, from topographic map. Measuring point: Top of casing, 1.20 ft above land-surface datum.

REMARKS.--Robins well. Records for April 1975 to September 1988 are unpublished and available in the files of the Iowa District Office.

PERIOD OF RECORD.--April 1975 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 36.33 ft below land-surface datum, August 24, 1993; lowest measured, 57.50 ft below land-surface datum, December 1, 1989.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 12	43.30	FEB 03	47.28	MAY 03	46.87	AUG 01	45.23

WATER YEAR 1994 HIGHEST 43.30 NOV 12, 1993 LOWEST 47.28 FEB 03, 1994

LINN COUNTY--Continued

420526091370701. Local number, 84-07-13 BCBB.

LOCATION.--Lat 42°05'26", long 91°37'07", Hydrologic Unit 07080206, approximately 0.25 mi south of the junction of County Roads W-58 and E-34, on the east side of the road, or approximately 3.75 mi north of the City of Marion. Owner: U.S. Geological Survey.

AQUIFER.--Glacial drift: in material of Pleistocene age.

WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 1.25 in., depth 17 ft, cased to 15 ft, screened 15-17 ft.

INSTRUMENTATION.--Monthly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 882 ft above sea level, from topographic map. Measuring point: Nipple welded to casing, 1.24 ft above land-surface datum.

REMARKS.--USGS13E2 well.

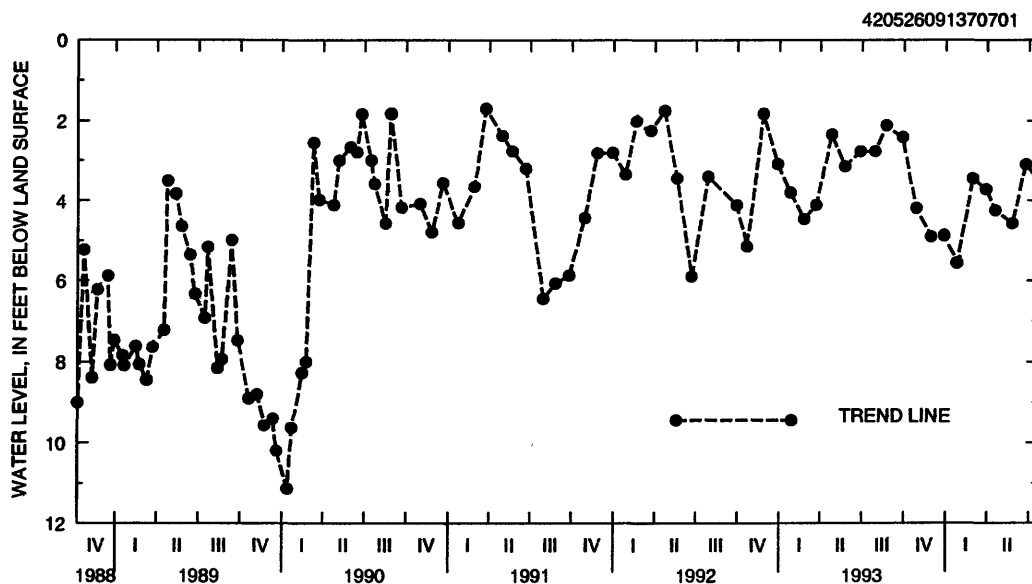
PERIOD OF RECORD.--September 1948 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 0.93 ft below land-surface datum, May 18, 1982; lowest measured, 15.19 ft below land-surface datum, January 20, 1977.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 28	4.19	JAN 25	5.56	APR 19	4.25	JUL 22	3.50
NOV 30	4.90	FEB 28	3.45	MAY 25	4.57	AUG 25	4.97
DEC 28	4.87	MAR 29	3.72	JUN 24	3.10	SEP 27	3.53

WATER YEAR 1994 HIGHEST 3.10 JUN 24, 1994 LOWEST 5.56 JAN 25, 1994



420730091490401. Local number, 85-08-31 DDCD1.

LOCATION.--Lat 42°07'30", long 91°49'04", Hydrologic Unit 07080205, at the fenced north end of Pleasant Creek Reservoir near the beach house in the beach area. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Silurian: in dolomite of Silurian age.

WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 5 in., depth 481 ft, cased to 214 ft, open hole 214-481 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel. Graphic water-level recorder May 1975 to December 1979.

DATUM.--Elevation of land-surface datum is 833 ft above sea level, from topographic map. Measuring point: Top of casing, 1.17 ft above land-surface datum.

REMARKS.--Pleasant Creek Reservoir/Silurian well. Records for May 1975 to September 1988 are unpublished and available in the files of the Iowa District Office.

PERIOD OF RECORD.--May 1975 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 84.17 ft below land-surface datum, April 5, 1976; lowest measured, 108.11 ft below land-surface datum, December 1, 1989.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 16	95.02	FEB 04	101.01	MAY 03	98.53	AUG 01	106.42

WATER YEAR 1994 HIGHEST 95.02 NOV 16, 1993 LOWEST 106.42 AUG 01, 1994

LINN COUNTY--Continued

420730091490402. Local number, 85-08-31 DDCD2.

LOCATION.--Lat 42°07'30", long 91°49'04", Hydrologic Unit 07080205, at the fenced north end of Pleasant Creek Reservoir near the beach house in the beach area. Owner: Geological Survey Bureau, DNR, and U.S. Geological Survey.

AQUIFER.--Devonian: in limestone and dolomite of Devonian age.

WELL CHARACTERISTICS.--Drilled observation artesian well, diameter 5 in., depth 205 ft, cased to 52 ft, open hole 52 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel. Graphic water-level recorder May 1975 to December 1979.

DATUM.--Elevation of land-surface datum is 841 ft above sea level, from topographic map. Measuring point: Top of casing, 2.38 ft above land-surface datum.

REMARKS.--Pleasant Creek Reservoir/Devonian well. Records for May 1975 to September 1989 are unpublished and available in the Iowa District Office.

PERIOD OF RECORD.--May 1975 to May 1980, April 1984 to present.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 14.60 ft below land-surface datum, May 31, 1991; lowest measured, 48.55 ft below land-surface datum, November 12, 1976.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 16	16.80	FEB 04	17.33	MAY 03	16.88	AUG 01	17.12

WATER YEAR 1994 HIGHEST 16.80 NOV 16, 1993 LOWEST 17.33 FEB 04, 1994

421149091403301. Local number, 85-07-04 CCCC.

LOCATION.--Lat 42°11'49", long 91°40'33", Hydrologic Unit 07080205, approximately 5 mi east of the Town of Center Point, north side of County Road E-16. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Silurian-Devonian: in dolomite of Silurian age and limestone and dolomite of Devonian age.

WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 6 in., depth 435 ft, cased to 41 ft, 5 in. liner 129-147 ft, open hole 41-129 ft and 147-435 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel. Graphic water-level recorder March 1974 to December 1979. Intermittent measurement with chalked tape by USGS personnel July 1973 to March 1974.

DATUM.--Elevation of land-surface datum is 912 ft above sea level, from topographic map. Measuring point: Nipple welded to plate on top of casing, 1.21 ft above land-surface datum.

REMARKS.--Alice well.

PERIOD OF RECORD.--July 1973 to current year.

REVISED RECORDS.--WDR IA-84-1.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 17.06 ft below land-surface datum, June 10, 1974; lowest measured, 34.27 ft below land-surface datum, December 1, 1989.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 12	25.03	FEB 03	27.99	MAY 03	28.68	AUG 01	28.14

WATER YEAR 1994 HIGHEST 25.03 NOV 12, 1993 LOWEST 28.68 MAY 03, 1994

LYON COUNTY

431713096140501. Local number, 98-46-24 CCCC1.

LOCATION.--Lat 43°17'13", long 96°14'05", Hydrologic Unit 10170204, on the northeast corner of the intersection of County Roads K-42 and A-44, approximately .5 mi northwest of the Town of Doon. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Alluvial: in sand and gravel of Holocene age.

WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 2 in., depth 17 ft, cased to 17 ft, slotted 16-17 ft, gravel packed.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,274 ft above sea level, from topographic map. Measuring point: Top of casing, 3.10 ft above land-surface datum.

REMARKS.--Well RR-5U.

PERIOD OF RECORD.--July 1990 and August 1992 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 7.38 feet below land-surface datum, August 3, 1993; lowest measured, 14.72 ft below land-surface datum, July 26, 1990.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEARS OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 02	11.00	FEB 10	12.57	MAY 03	11.39	JUL 29	11.74

WATER YEAR 1994 HIGHEST 11.00 NOV 02, 1993 LOWEST 12.57 FEB 10, 1994

LYON COUNTY--Continued

431713096140502. Local number, 98-46-24 CCCC2.

LOCATION.--Lat 43°17'13", long 96°14'05", Hydrologic Unit 10170204, on the northeast corner of the intersection of County Roads K-42 and A-44, approximately .5 mi northwest of the Town of Doon. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Alluvial: in sand and gravel of Holocene age.

WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 2 in., depth 29 ft, cased to 29 ft, slotted 26-29 ft, gravel packed.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,274 ft above sea level, from topographic map. Measuring point: Top of casing, 2.70 ft above land-surface datum.

REMARKS.--Well RR-5L.

PERIOD OF RECORD.--July 1990 and November 1992 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 7.55 feet below land-surface datum, August 3, 1993; lowest measured, 14.80 ft below land-surface datum, July 26, 1990.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEARS OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 02	11.09	FEB 10	12.67	MAY 03	11.47	JUL 28	11.81

WATER YEAR 1994 HIGHEST 11.09 NOV 02, 1993 LOWEST 12.67 FEB 10, 1994

431812096302701. Local number, 98-48-16 DDAD.

LOCATION.--Lat 43°18'12", long 96°30'27", Hydrologic Unit 10170203, approximately 3.5 mi east of the City of Canton, S.D., south of U.S. Highway 18. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Dakota: in sandstone of Cretaceous age.

WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 358 ft, cased to 358 ft, perforated 335-355 ft. Open to Late Precambrian Sioux quartzite from 353-358 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,268 ft above sea level, from topographic map. Measuring point: Top of casing, 2.00 ft above land-surface datum.

REMARKS.--Well D-20.

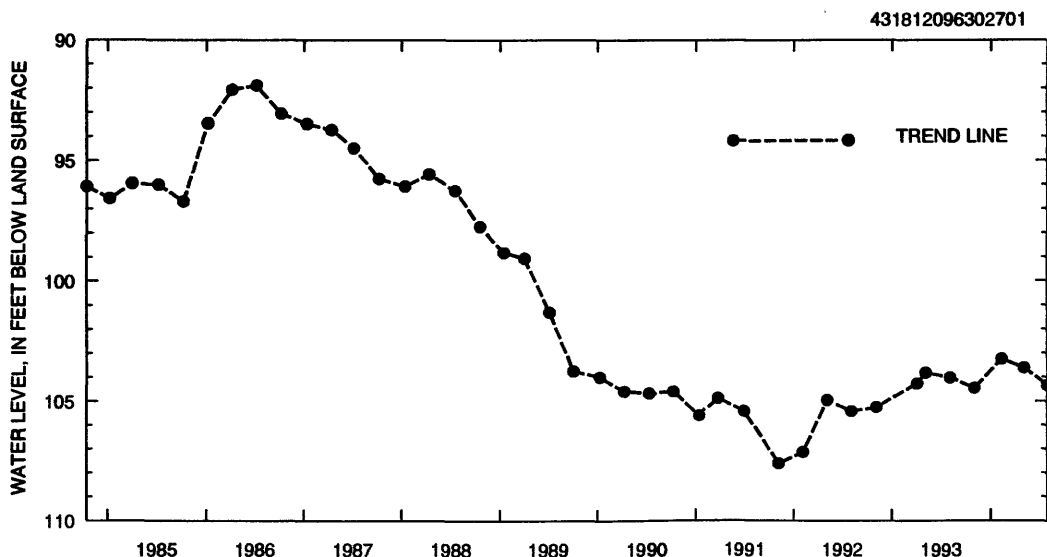
PERIOD OF RECORD.--December 1978 to December 1980, May 1982 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 91.89 ft below land-surface datum, July 8, 1986; lowest measured, 107.60 ft below land-surface datum, November 7, 1991.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 02	104.44	FEB 10	103.24	MAY 03	103.61	JUL 28	104.34

WATER YEAR 1994 HIGHEST 103.24 FEB 10, 1994 LOWEST 104.44 NOV 02, 1993



LYON COUNTY--Continued

432140095595301. Local number, 99-44-26 DDDD.

LOCATION.--Lat 43°21'40", long 95°59'53", Hydrologic Unit 10170204, 1 mi north of the City of George, west of Iowa Highway 339. Owner: State of Iowa.

AQUIFER.--Glacial drift: in material of Pleistocene age.

WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 20 in., depth 38 ft, lined with tile.

INSTRUMENTATION.--Intermittent measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,400 ft above sea level, from topographic map. Measuring point: Plug in well cover, 2.01 ft above land-surface datum.

PERIOD OF RECORD.--October 1940 to June 1943, May 1947 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 0.41 ft above land-surface datum, May 9, 1979; lowest measured, 9.74 ft below land-surface datum, October 24, 1940.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 02	0.82	MAY 03	0.11	JUL 28	1.52	AUG 16	1.54
FEB 11	1.55	MAY 24	0.19				

WATER YEAR 1994 HIGHEST 0.11 MAY 03, 1994 LOWEST 1.55 FEB 11, 1994

432553096105701. Local number, 99-45-05 ABAC.

LOCATION.--Lat 43°25'53", long 96°10'55", Hydrologic Unit 10170204, 0.05 mi south of Iowa Highway 9 on 2nd Street, Rock Rapids. Owner: City of Rock Rapids.

AQUIFER.--Dakota: in sandstone of Cretaceous age.

WELL CHARACTERISTICS.--Drilled unused artesian water well, diameter 10 in., depth 375 ft, cased to 296 ft, open hole 296-375 ft.

INSTRUMENTATION.--Intermittent measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,368 ft above sea level, from topographic map. Measuring point: Plug in cover over casing, 1.00 ft above land-surface datum.

REMARKS.--City test well No. 3.

PERIOD OF RECORD.--August 1960 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 100.08 ft below land-surface datum, July 27, 1964; lowest measured, 115.76 ft below land-surface datum, February 11, 1992.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 16	115.47	MAR 02	115.40	JUL 28	115.58

WATER YEAR 1994 HIGHEST 115.40 MAR 02, 1994 LOWEST 115.58 JUL 28, 1994

LYON COUNTY --Continued

432601096335511. Local number, 100-48-31 CCCC11.

LOCATION.--Lat 43°26'01", long 96°33'55", Hydrologic Unit 10170203, 0.5 mi west and 2.5 mi south of the Village of Granite. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Dakota: in sandstone of Cretaceous age.

WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 657 ft, cased to 657 ft, perforated 450-455 ft and 630-650 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,417 ft above sea level, from topographic map. Measuring point: Top of casing at land-surface datum.

REMARKS.--Well D-19.

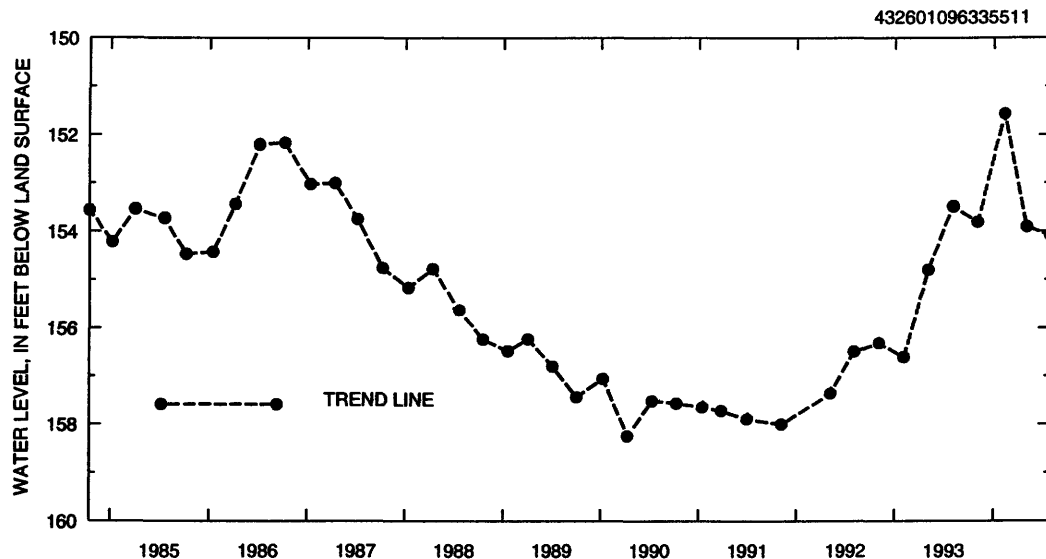
PERIOD OF RECORD.--December 1978 to December 1980, May 1982 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 151.57 ft below land-surface datum, February 11, 1994; lowest measured, 164.00 ft below land-surface datum, Feb. 5, 1992 (revised).

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 02	153.81	FEB 11	151.57	MAY 03	153.91	JUL 28	154.09

WATER YEAR 1994 HIGHEST 151.57 FEB 11, 1994 LOWEST 154.09 JUL 28, 1994



432834096102701. Local number, 100-45-21 BBBB1.

LOCATION.--Lat 43°28'34", long 96°10'27", Hydrologic Unit 10170204, on the southwest corner of the intersection of county roads, approximately 3 mi north of the City of Rock Rapids. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Alluvial: in sand and gravel of Holocene age.

WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 2 in., depth 12.5 ft, cased to 12.5 ft, slotted 10.5-12.5 ft, gravel packed.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,360 ft above sea level, from topographic map. Measuring point: Top of casing, 2.25 ft (revised, effective July 26, 1990) above land-surface datum.

REMARKS.--Well RR-1U.

PERIOD OF RECORD.--July 1990 and August 1992 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 6.87 feet below land-surface datum, August 3, 1993; lowest measured, 9.83 ft below land-surface datum, July 26, 1990.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEARS OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 02	7.48	FEB 11	8.09	MAY 03	7.19	JUL 28	7.71

WATER YEAR 1994 HIGHEST 7.19 MAY 03, 1994 LOWEST 8.09 FEB 11, 1994

LYON COUNTY --Continued

432834096102702. Local number, 100-45-21 BBBB2.

LOCATION.--Lat 43°28'34", long 96°10'27", Hydrologic Unit 10170204, on the southwest corner of the intersection of county roads, approximately 3 mi north of the City of Rock Rapids. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Alluvial: in sand and gravel of Holocene age.

WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 2 in., depth 23 ft, cased to 23 ft, slotted 19.5-23 ft, gravel packed.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,360 ft above sea level, from topographic map. Measuring point: Top of casing, 2.10 ft (revised, effective July 26, 1990) above land-surface datum.

REMARKS.--Well RR-1L.

PERIOD OF RECORD.--July 1990 and August 1992 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 6.87 feet below land-surface datum, August 3, 1993; lowest measured, 9.73 ft below land-surface datum, July 26, 1990.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEARS OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 02	7.48	FEB 11	8.05	MAY 03	7.15	JUL 28	7.67

WATER YEAR 1994 HIGHEST 7.15 MAY 03, 1994 LOWEST 8.05 FEB 11, 1994

MADISON COUNTY

411727093483001. Local number, 75-26-23 AAAC.

LOCATION.--Lat 41°17'27", long 93°48'30", Hydrologic Unit 07100008, near the shelter house in the city park, St. Charles. Owner: City of St. Charles.

AQUIFER.--Mississippian: in limestone of Mississippian age.

WELL CHARACTERISTICS.--Drilled unused artesian water well, diameter 8 in., depth 867 ft, cased to 657 ft, open hole 657-867 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,067 ft above sea level, from topographic map. Measuring point: Plug in well cover, 1.20 ft above land-surface datum.

REMARKS.--City well No. 1.

PERIOD OF RECORD.--November 1962 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 261.76 ft below land-surface datum, November 20, 1962; lowest measured, 277.34 ft below land-surface datum, July 27, 1994.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
JAN 28	276.91	APR 20	277.30	JUL 27	277.34

WATER YEAR 1994 HIGHEST 276.91 JAN 28, 1994 LOWEST 277.34 JUL 27, 1994

MAHASKA COUNTY

411912092273601. Local number, 75-14-10 BAAC.

LOCATION.--Lat 41°19'12", long 92°27'30", Hydrologic Unit 07080106, approximately 0.5 mi south of Iowa Highway 92 in the town of Rose Hill. Owner: City of Rose Hill.

AQUIFER.--Mississippian: in limestone and dolomite of Mississippian age.

WELL CHARACTERISTICS.--Drilled unused public-supply artesian well, diameter 6 in., depth 370 ft, casing interval unknown.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel. Analog digital water-level recorder July 1990 to October 1992. Intermittent measurement with chalked tape by USGS personnel May 1989 to June 1989.

DATUM.--Elevation of land-surface datum is 815 ft above sea level, from topographic map. Measuring point: Top of recorder platform, 1.63 ft above land-surface datum.

REMARKS.--Rose Hill No. 2 well.

PERIOD OF RECORD.--May 1989 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 100.69 ft below land-surface datum, July 30, 1992; lowest measured, 103.61 ft below land-surface datum, March 5, 6, 7, and 8, 1990.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 09	101.47	FEB 01	101.27	MAY 04	101.23	AUG 01	101.15

WATER YEAR 1994 HIGHEST 101.15 AUG 01, 1994 LOWEST 101.47 NOV 09, 1993

MAHASKA COUNTY--Continued

411914092274701. Local number, 75-14-10 BABC.

LOCATION.--Lat 41°19'14", long 92°27'47", Hydrologic Unit 07080106, approximately 0.45 mi south of Iowa Highway 92, behind City Hall in the Town of Rose Hill. Owner: City of Rose Hill.

AQUIFER.--Mississippian: in limestone and dolomite of Mississippian age.

WELL CHARACTERISTICS.--Drilled unused public-supply artesian well, diameter 5 in., depth 273 ft, casing interval unknown.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 817 ft above sea level, from topographic map. Measuring point: Top of casing, 1.53 ft above land-surface datum.

REMARKS.--Rose Hill No. 4 well.

PERIOD OF RECORD.--September 1988 to current year.

REVISION.--Site identification number. Previously published as 411914092273001.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 100.79 ft below land-surface datum, August 1, 1994; lowest measured, 103.20 ft below land-surface datum, October 26, 1989.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 09	101.17	FEB 01	101.08	MAY 04	100.87	AUG 01	100.79

WATER YEAR 1994 HIGHEST 100.79 AUG 01, 1994 LOWEST 101.17 NOV 09, 1993

412002092470301. Local number, 75-17-02 BAAB.

LOCATION.--Lat 41°20'02", long 92°47'03", Hydrologic Unit 07100009, just south of County Road G-39, in a field at the south end of Main Street in the Town of Leighton. Owner: Royce Pierson.

AQUIFER.--Pennsylvanian: in sandstone of Pennsylvanian age.

WELL CHARACTERISTICS.--Drilled unused private semi-confined well, diameter 12 in., depth 50 ft, cased to 30.25 ft, open 30.25 to 50 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 780 ft above sea level, from topographic map. Measuring point: Top of casing, 2.38 ft above land-surface datum.

REMARKS.--Formerly Leighton No. 2 well.

PERIOD OF RECORD.--October 1988 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 5.88 ft below land-surface datum, May 6, 1993; lowest measured, 15.41 ft below land-surface datum, January 3, 1990.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 10	7.44	FEB 01	7.97	MAY 04	8.48	AUG 01	7.95

WATER YEAR 1994 HIGHEST 7.44 NOV 10, 1993 LOWEST 8.48 MAY 04, 1994

412020092471002. Local number, 76-17-35 CADB.

LOCATION.--Lat 41°20'20", long 92°47'10", Hydrologic Unit 07100009, 150 ft east of the old treatment plant near a retirement village on the north end of the Town of Leighton. Owner: Town of Leighton.

AQUIFER.--Cambrian-Ordovician: in sandstone of Late Cambrian and sandstone and sandy dolomite of Early Ordovician age.

WELL CHARACTERISTICS.--Drilled unused public-supply artesian well, diameter 8 in., depth 2200 ft, cased to 1778 ft, open 1778-2200 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 820 ft above sea level, from topographic map. Measuring point: Top of casing, 5.43 ft above land-surface datum.

REMARKS.--Leighton No. 4 well.

PERIOD OF RECORD.--May 1989 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 215.38 ft below land-surface datum, May 11, 1989; lowest measured, 253.47 ft below land-surface datum, August 11, 1993.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 10	255.71	FEB 01	258.38	MAY 03	259.70	AUG 01	259.00

WATER YEAR 1994 HIGHEST 255.71 NOV 10, 1993 LOWEST 259.70 MAY 03, 1994

MAHASKA COUNTY--Continued

412023092471201. Local number, 76-17-35 CADB.

LOCATION.--Lat 41°20'23", long 92°47'12", Hydrologic Unit 07100009, inside the old treatment plant at the north end of the Town of Leighton. Owner: Town of Leighton.

AQUIFER.--Mississippian: in limestone and dolomite of Mississippian age.

WELL CHARACTERISTICS.--Drilled unused public-supply artesian well, diameter 6 in., depth 210 ft, cased 0-210 ft, perforated 140-210 ft. Open to Pleistocene sand and gravel 140-142 ft.

INSTRUMENTATION.-- Quarterly measurement with chalked tape by USGS personnel. Analog digital water-level recorder July 1989 to September 1992.

DATUM.--Elevation of land-surface datum is 823 ft above sea level, from topographic map. Measuring point: Top of recorder platform, 2.06 ft above land-surface datum.

REMARKS.--Leighton No. 1 well.

PERIOD OF RECORD.--May 1989 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 75.84 ft below land-surface datum, August 11, 1993; lowest measured, 84.15 ft below land-surface datum, September 6 and 7, 1989.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 10	75.85	FEB 01	76.37	MAY 04	76.84	AUG 01	77.48

WATER YEAR 1994 HIGHEST 75.85 NOV 10, 1993 LOWEST 77.48 AUG 01, 1994

MARION COUNTY

411323093142601. Local number, 74-21-11 DBCB1.

LOCATION.--Lat 41°13'23", long 93°14'26", Hydrologic Unit 07100008, north of the water tower in the town square, Melcher. Owner: Town of Melcher.

AQUIFER.--Glacial drift: in material of Pleistocene age.

WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 18 in., depth 9.7 ft, lined with tile. Depth originally 25 ft, re-measured in 1981 to a depth of 12.2 ft, re-measured in 1991.

INSTRUMENTATION.--Monthly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 948 ft above sea level, from topographic map. Measuring point: Top of tile casing at land-surface datum.

REMARKS.--Town well No. 2.

PERIOD OF RECORD.--March 1950 to current year.

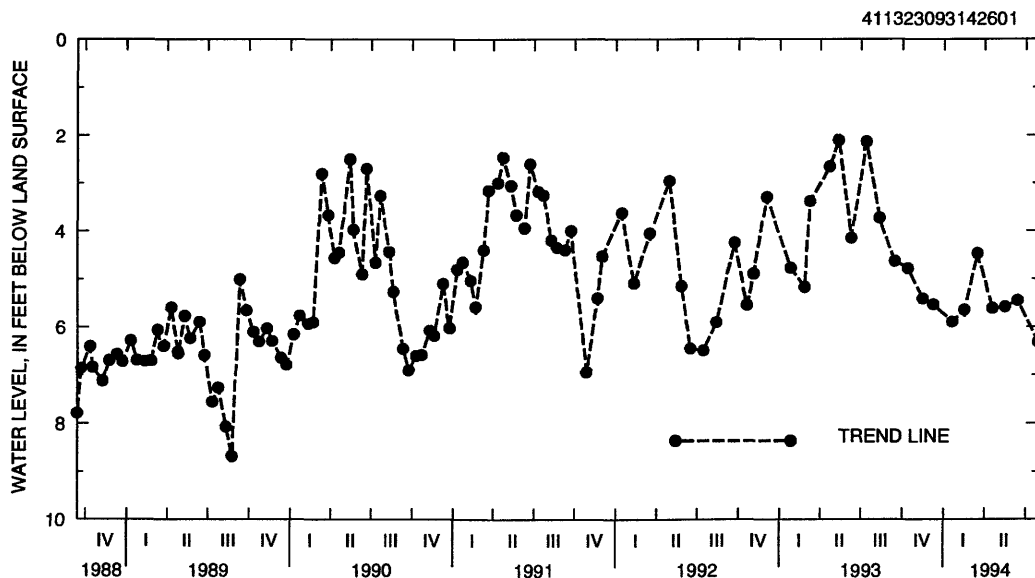
REVISION.--Highest water level measured, 0.20 ft below land-surface datum, October 10, 1973; lowest measured, 15.27 ft below land-surface datum, October 22, 1953.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 0.20 ft below land-surface datum, October 10, 1973; lowest measured, 15.27 ft below land-surface datum, October 22, 1953.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 14	4.78	JAN 20	5.89	APR 19	5.61	JUL 29	6.32
NOV 16	5.41	FEB 16	5.65	MAY 17	5.58	SEP 01	6.97
DEC 09	5.53	MAR 17	4.47	JUN 14	5.45	SEP 14	6.73

WATER YEAR 1994 HIGHEST 4.47 MAR 17, 1994 LOWEST 6.97 SEP 01, 1994



MARION COUNTY--Continued

411328093143503. Local number, 74-21-11 CAAD3.

LOCATION.--Lat 41°13'28", long 93°14'35", Hydrologic Unit 07100008, northeast corner of the junction of West 1st Street and North A Street, Melcher. Owner: Town of Melcher.

AQUIFER.--Glacial drift: in sand of Pleistocene age.

WELL CHARACTERISTICS.--Drilled unused artesian water well, diameter 1.25 in., depth 96.5 ft, cased to 80 ft, screened 80-82 ft, open hole 82-96.5 ft.

INSTRUMENTATION.--Monthly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 944 ft above sea level, from topographic map. Measuring point: Nipple welded to casing, 0.51 ft above land-surface datum.

REMARKS.--Town well No. 5, well 11L1.

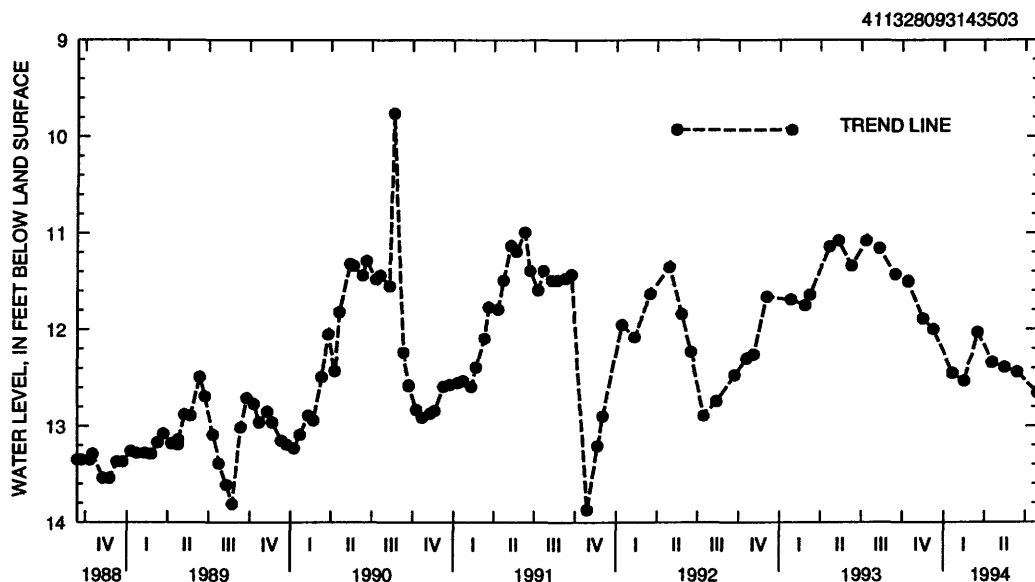
PERIOD OF RECORD.--August 1953 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 9.09 ft below land-surface datum, May 8, 1958; lowest measured (nearby well pumping), 55.16 ft, revised, below land-surface datum, March 4, 1954.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 14	11.50	JAN 21	12.45	APR 19	12.34	JUL 29	12.66
NOV 16	11.89	FEB 16	12.53	MAY 17	12.39	SEP 01	13.25
DEC 09	12.00	MAR 17	12.03	JUN 14	12.44	SEP 14	13.26

WATER YEAR 1994 HIGHEST 11.50 OCT 14, 1993 LOWEST 13.26 SEP 14, 1994



411329093142902. Local number, 74-21-11 DBBB2.

LOCATION.--Lat 41°13'29", long 93°14'29", Hydrologic Unit 07100008, southeast corner of the T junction of North B Street and Main Street, Melcher. Owner: Town of Melcher.

AQUIFER.--Glacial drift: in sand and gravel of Pleistocene age.

WELL CHARACTERISTICS.--Drilled unused artesian water well, diameter 6 in., depth 119 ft, cased to 76 ft, open hole 76-119 ft. Sand and gravel 103-117 ft. Pennsylvanian shale 117-119 ft.

INSTRUMENTATION.--Monthly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 943 ft above sea level, from topographic map. Measuring point: Nipple welded to plate on top of casing, 1.82 ft above land-surface datum.

REMARKS.--Town well No. 3, well 11K1.

PERIOD OF RECORD.--July 1945 to December 1955, October 1976 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 13.43 ft below land-surface datum, May 21, 1986; lowest measured (nearby well pumping), 108.85 ft below land-surface datum, December 4, 6-7, 1949.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 14	20.67	JAN 21	21.43	APR 19	21.29	JUL 29	21.60
NOV 16	20.92	FEB 16	21.68	MAY 17	21.28	SEP 01	21.75
DEC 09	20.94	MAR 17	20.86	JUN 14	21.15	SEP 14	21.68

WATER YEAR 1994 HIGHEST 20.67 OCT 14, 1994 LOWEST 21.75 SEP 01, 1994

MARSHALL COUNTY

415640093062101. Local number, 82-19-06 ACCB.

LOCATION.--Lat 41°56'40", long 93°06'21", Hydrologic Unit 07080106, located on the west side of Iowa Highway 395, approximately 0.4 mi south of the junction of Iowa Highway 395 and 330, in the old treatment plant in the City of Melbourne. Owner: City of Melbourne.

AQUIFER.--Silurian: in dolomite of Silurian age.

WELL CHARACTERISTICS.--Drilled unused public-supply artesian well, diameter 10 in., depth 1,340 ft, cased to 1,212 ft, open hole 1,212-1,340 ft. Open to Ordovician rock 1,305-1,340 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,045 ft above sea level, from topographic map. Measuring point: Top of casing, 0.65 ft above land-surface datum.

REMARKS.--Melbourne No. 1 well.

PERIOD OF RECORD.--September 1988 to present.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 201.56 ft below land-surface datum, August 5, 1992; lowest measured, 232.32 ft below land-surface datum, November 1, 1993.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 01	232.32	JAN 31	209.47	MAY 02	208.27		

WATER YEAR 1994 HIGHEST 208.27 MAY 02, 1994 LOWEST 232.32 NOV 01, 1993

420355092534701. Local number, 84-18-24 CDCA.

LOCATION.--Lat 41°03'55", long 92°53'47", Hydrologic Unit 07080208, east of Riverview Park and south of the sewage treatment plant, Marshalltown. Owner: City of Marshalltown.

AQUIFER.--Glacial drift: in sand and gravel of Pleistocene age.

WELL CHARACTERISTICS.--Drilled unused artesian water well, diameter 8 in., depth 200 ft, cased to 190 ft, screened 190-200 ft.

INSTRUMENTATION.--Quarterly measurement with electric line or chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 871 ft above sea level, from topographic map. Measuring point: Top of casing, 0.22 ft above land-surface datum.

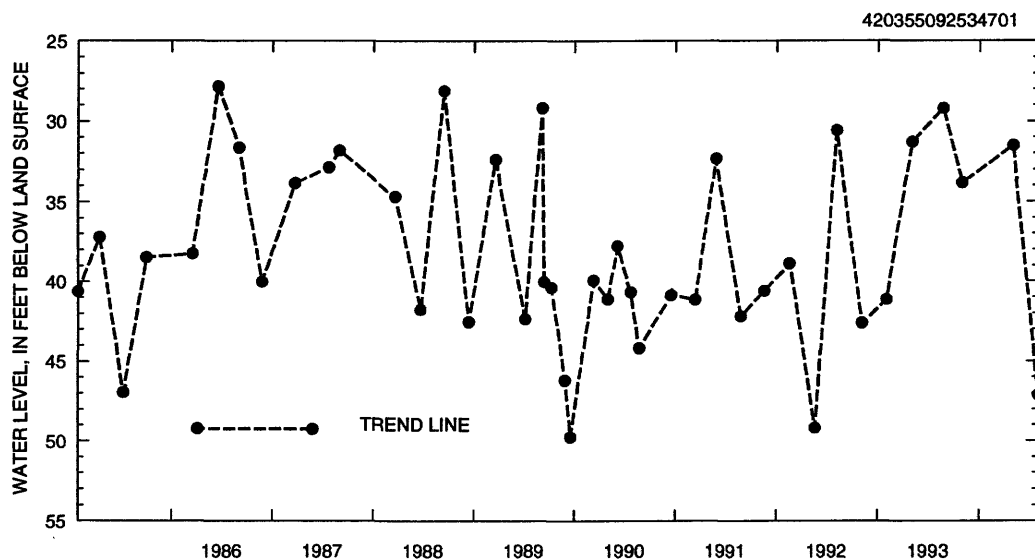
PERIOD OF RECORD.--May 1949 to August 1971, March 1973 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 4.92 ft below land-surface datum, July 13, 1951; lowest measured, 54.95 ft below land-surface datum, May 8, 1981.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 01	33.83	MAY 02	31.52	AUG 02	47.14

WATER YEAR 1994 HIGHEST 31.52 MAY 02, 1994 LOWEST 47.14 AUG 02, 1994



MARSHALL COUNTY--Continued

421120093003001. Local number, 85-19-12 ADCD.

LOCATION.--Lat 41°11'20", long 93°00'30", Hydrologic Unit 07080207, located behind the old City Hall across the street from the Community Center and Fire Station. Owner: City of Liscomb.

AQUIFER.--Mississippian: in limestone and dolomite of Mississippian age.

WELL CHARACTERISTICS.--Drilled unused public-supply artesian well, diameter 8 in., depth 278 ft, cased to 159 ft, perforated 110-159 ft, open hole 159-278 ft. Open to Devonian rock 274-278 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,008 ft above sea level, from topographic map. Measuring point: Top of casing, 0.56 ft above land-surface datum.

REMARKS.--Liscomb No. 1 well.

PERIOD OF RECORD.--September 1988 to present.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 92.48 ft below land-surface datum, August 23, 1993; lowest measured, 101.50 ft below land-surface datum, November 29, 1989.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEARS OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 01	95.51	JAN 31	97.56	MAY 02	97.69	AUG 02	97.87

WATER YEAR 1994 HIGHEST 95.51 NOV 01, 1993 LOWEST 97.87 AUG 02, 1994

MILLS COUNTY

405641095365101. Local number, 71-42-24 AAAA.

LOCATION.--Lat 40°56'41", long 95°36'51", Hydrologic Unit 10240002, at the intersection of County Roads M-16 and H-46, approximately 5 mi southeast of the City of Malvern. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Buried channel: in sand and gravel of Pleistocene age.

WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 2 in., depth 255 ft, cased to 250 ft, slotted 240-250 ft, gravel packed.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,102 ft above sea level, from topographic map. Measuring point: Top of casing, 2.10 ft above land-surface datum.

REMARKS.--Well SW-41.

PERIOD OF RECORD.--June 1990 and August 1992 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 135.50 feet below land-surface datum, August 5, 1993; lowest measured, 144.30 ft below land-surface datum, June 13, 1990.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEARS OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 29	136.04	FEB 04	137.35	MAY 05	138.07	JUL 26	137.89

WATER YEAR 1994 HIGHEST 136.04 OCT 29, 1993 LOWEST 138.07 MAY 05, 1994

405813095433201. Local number, 71-42-07 BBCD.

LOCATION.--Lat 40°58'13", long 95°43'32", Hydrologic Unit 10240001, on the west side of the T-intersection of county roads, approximately 5.5 mi south of the City of Glenwood. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Buried channel: in sand and gravel of Pleistocene age.

WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 2 in., depth 351 ft, cased to 342 ft, slotted 332-342 ft, gravel packed.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,122 ft above sea level, from topographic map. Measuring point: Top of casing, 1.80 ft above land-surface datum.

REMARKS.--Well SW-40.

PERIOD OF RECORD.--August 1992 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 165.70 feet below land-surface datum, August 5, 1993; lowest measured, 170.31 ft below land-surface datum, November 3, 1992.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEARS OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 29	166.56	FEB 04	168.39	MAY 05	169.14	JUL 26	168.64

WATER YEAR 1994 HIGHEST 166.56 OCT 29, 1993 LOWEST 169.14 MAY 05, 1994

MILLS COUNTY--Continued

405911095302301. Local number, 71-41-04 AADA1.

LOCATION.--Lat 40°59'11", long 95°30'23", Hydrologic Unit 10240002, on the west side of county road, approximately 2 mi southeast of the City of Malvern. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Alluvial: in sand and gravel of Holocene age.

WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 2 in., depth 44 ft, cased to 44 ft, slotted 40-44 ft, gravel packed.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 977 ft above sea level, from topographic map. Measuring point: Top of casing, 2.73 ft above land-surface datum.

REMARKS.--Well SW-36A.

PERIOD OF RECORD.--June 1990 and August 1992 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 3.47 feet below land-surface datum (recently pumped), September 21, 1993; lowest measured, 8.43 ft below land-surface datum, June 13, 1990.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEARS OCTOBER 1993 TO SEPTEMBER 1994

<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>
OCT 29	3.57	FEB 04	5.59	MAY 05	5.84	JUL 26	5.33

WATER YEAR 1994 HIGHEST 3.57 OCT 29, 1993 LOWEST 5.84 MAY 05, 1994

405911095302302. Local number, 71-41-04 AADA2.

LOCATION.--Lat 40°59'11", long 95°30'23", Hydrologic Unit 10240002, on the west side of county road, approximately 2 mi southeast of the City of Malvern. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Alluvial: in sand and gravel of Holocene age.

WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 2 in., depth 62 ft, cased to 57 ft, screened 57-62 ft, gravel packed.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 977 ft above sea level, from topographic map. Measuring point: Top of casing, 2.50 ft above land-surface datum.

REMARKS.--Well SW-36B.

PERIOD OF RECORD.--June 1990 and August 1992 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 2.31 feet below land-surface datum, August 5, 1993; lowest measured, 14.44 ft below land-surface datum, June 13, 1990.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEARS OCTOBER 1993 TO SEPTEMBER 1994

<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>
OCT 29	4.65	FEB 04	8.99	MAY 05	10.65	JUL 26	8.89

WATER YEAR 1994 HIGHEST 4.65 OCT 29, 1993 LOWEST 10.65 MAY 05, 1994

MITCHELL COUNTY

432156092484101. Local number, 95-17-23 DAA.

LOCATION.--Lat 43°21'56", long 98°48'41", Hydrologic Unit 07080201, approximately 4 mi southwest of Staceyville, at the intersection of Highway 218 and County Road T40. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Glacial drift: in material of Pleistocene age.

WELL CHARACTERISTICS.--Drilled observation well, diameter 2 in., depth 27 ft, cased 27 ft, perforated 10-27 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,210 ft above sea level, from topographic map. Measuring point: Top of casing, 2.41 ft above land-surface datum.

REMARKS.--Well FM-2T.

PERIOD OF RECORD.--August 1992 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 1.46 ft above land-surface datum, May 6, 1993; lowest measured, 5.07 ft below land-surface datum, January 31, 1994.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>
AUG 04, 1992	3.51	MAY 06, 1993	1.46	NOV 01, 1993	3.40	MAY 02, 1994	2.64
NOV 03, 1992	2.73	AUG 23, 1993	2.43	JAN 31, 1994	5.07	AUG 02, 1994	2.24
FEB 01, 1993	3.50						

WATER YEAR 1994 HIGHEST 2.24 AUG 02, 1994 LOWEST 5.07 JAN 31, 1994

MITCHELL COUNTY--Continued

432156092484102. Local number, 95-17-23 DAA.

LOCATION.--Lat 43°21'56", long 98°48'41", Hydrologic Unit 07080201, approximately 4 mi southwest of Staceyville, at the intersection of

Highway 218 and County Road T40. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Devonian: in dolomite of Devonian age.

WELL CHARACTERISTICS.--Drilled observation well, diameter 1 in., depth 70 ft, cased 70 ft, perforated 55-70 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,210 ft above sea level, from topographic map. Measuring point: Top of casing, 2.58 ft above land-surface datum.

REMARKS.--Well FM-2 (1).

PERIOD OF RECORD.--August 1992 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 6.89 ft above land-surface datum, August 23, 1993; lowest measured, 11.92 ft below land-surface datum, January 31, 1994.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
AUG 04, 1992	9.94	MAY 06, 1993	7.27	NOV 01, 1993	10.46	MAY 02, 1994	10.80
NOV 03, 1992	9.77	AUG 23, 1993	6.89	JAN 31, 1994	11.92	AUG 02, 1994	7.72
FEB 01, 1993	10.73						

WATER YEAR 1994 HIGHEST 7.72 AUG 02, 1994 LOWEST 11.92 JAN 31, 1994

432156092484103. Local number, 95-17-23 DAA.

LOCATION.--Lat 43°21'56", long 98°48'41", Hydrologic Unit 07080201, approximately 4 mi southwest of Staceyville, at the intersection of

Highway 218 and County Road T40. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Devonian: in dolomite of Devonian age.

WELL CHARACTERISTICS.--Drilled observation well, diameter 1.5 in., depth 150 ft, cased 150 ft, perforated 110-150 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,210 ft above sea level, from topographic map. Measuring point: Top of casing, 2.55 ft above land-surface datum.

REMARKS.--Well FM-2 (2).

PERIOD OF RECORD.--August 1992 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 6.78 ft above land-surface datum, August 23, 1993; lowest measured, 12.26 ft below land-surface datum, January 31, 1994.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
AUG 04, 1992	10.48	MAY 06, 1993	6.93	NOV 01, 1993	10.36	MAY 02, 1994	11.66
NOV 03, 1992	10.70	AUG 23, 1993	6.78	JAN 31, 1994	12.26	AUG 02, 1994	8.48
FEB 01, 1993	11.55						

WATER YEAR 1994 HIGHEST 8.48 AUG 02, 1994 LOWEST 12.26 JAN 31, 1994

432156092484104. Local number, 95-17-23 DAA.

LOCATION.--Lat 43°21'56", long 98°48'41", Hydrologic Unit 07080201, approximately 4 mi southwest of Staceyville, at the intersection of

Highway 218 and County Road T40. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Devonian: in dolomite of Devonian age.

WELL CHARACTERISTICS.--Drilled observation well, diameter 1.5 in., depth 250 ft, cased 250 ft, perforated 188-250 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,210 ft above sea level, from topographic map. Measuring point: Top of casing, 2.44 ft above land-surface datum.

REMARKS.--Well FM-2 (3).

PERIOD OF RECORD.--August 1992 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 5.54 ft above land-surface datum, May 6, 1993; lowest measured, 14.92 ft below land-surface datum, January 31, 1994.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
AUG 04, 1992	12.52	MAY 06, 1993	5.54	NOV 01, 1993	11.98	MAY 02, 1994	14.43
NOV 03, 1992	13.88	AUG 23, 1993	7.32	JAN 31, 1994	14.92	AUG 02, 1994	10.81
FEB 01, 1993	14.24						

WATER YEAR 1994 HIGHEST 10.81 AUG 02, 1994 LOWEST 14.92 JAN 31, 1994

MITCHELL COUNTY--Continued

432156092484105. Local number, 95-17-23 DAA.

LOCATION.--Lat 43°21'56", long 98°48'41", Hydrologic Unit 07080201, approximately 4 mi southwest of Staceyville, at the intersection of Highway 218 and County Road T40. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Devonian: in dolomite of Devonian age.

WELL CHARACTERISTICS.--Drilled observation well, diameter 1.5 in., depth 348 ft, cased 348 ft, perforated 278-348 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,210 ft above sea level, from topographic map. Measuring point: Top of casing, 2.37 ft above land-surface datum.

REMARKS.--Well FM-2 (4).

PERIOD OF RECORD.--August 1992 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 10.04 ft above land-surface datum, August 23, 1993; lowest measured, 19.49 ft below land-surface datum, February 1, 1993 and May 2, 1994.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>
AUG 04, 1992	16.85	MAY 06, 1993	11.47	NOV 01, 1993	15.77	MAY 02, 1994	19.49
NOV 03, 1992	19.20	AUG 23, 1993	10.04	JAN 31, 1994	15.35	AUG 02, 1994	16.00
FEB 01, 1993	19.49						

WATER YEAR 1994 HIGHEST 15.35 JAN 31, 1994 LOWEST 19.49 MAY 02, 1994

MONONA COUNTY

415456095414101. Local number, 82-42-14 ADCA.

LOCATION.--Lat 41°54'56", long 95°41'41", Hydrologic Unit 10230007, approximately 6 mi southeast of the Town of Soldier, on the north side of Iowa Highway 37. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Dakota: in sandstone of Cretaceous age.

WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 341 ft, cased to 336 ft, slotted 311-336 ft, gravel-packed.

INSTRUMENTATION.--Quarterly measurement with chalked tape or electric line by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,340 ft above sea level, from topographic map. Measuring point: Top of casing, 2.02 ft above land-surface datum.

REMARKS.--Well WC-4.

PERIOD OF RECORD.--May 1981 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 240.25 ft below land-surface datum, January 10, 1984; lowest measured, 246.69 ft below land-surface datum, July 28, 1981.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>
NOV 03	241.68	FEB 01	242.72	MAY 04	242.78	JUL 29	243.13

WATER YEAR 1994 HIGHEST 241.68 NOV 03, 1993 LOWEST 243.13 JUL 29, 1994

420004095451501. Local number, 83-42-17 ACDD.

LOCATION.--Lat 41°00'04", long 95°45'15", Hydrologic Unit 10230001, approximately 1.75 mi northeast of the Town of Soldier, 0.25 mi west of Iowa Highway 183. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Glacial drift: in material of Pleistocene age.

WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 161 ft, cased to 161 ft, slotted 149-154 ft. Open to 8 ft of Pennsylvanian shale and limestone, 153-161 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,160 ft above sea level, from topographic map. Measuring point: Top of casing, 2.20 ft above land-surface datum.

REMARKS.--Well WC-176.

PERIOD OF RECORD.--May 1983 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 54.50 ft below land-surface datum, November 6, 1991; lowest measured, 64.09 ft below land-surface datum, September 7, 1983.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>
NOV 03	58.96	FEB 01	58.48	MAY 02	58.69	JUL 29	59.03

WATER YEAR 1994 HIGHEST 58.48 FEB 01, 1994 LOWEST 59.03 JUL 29, 1994

MONONA COUNTY--Continued

420004095454801. Local number, 83-42-17 CABB.

LOCATION.--Lat 42°00'04", long 95°45'48", Hydrologic Unit 10230001, on the southwest corner of the intersection of State Highway 183 and county road, approximately 1.25 mi northeast of the City of Soldier. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Soldier River alluvial: in sand of Holocene age.

WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 2 in., depth 37 ft, cased to 37 ft, slotted from 23.5-26 ft, gravel packed.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,140 ft above sea level, from topographic map. Measuring point: Top of casing, 1.75 ft above land-surface datum.

REMARKS.--Well WC-173.

PERIOD OF RECORD.--August 1992 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 16.50 feet below land-surface datum, August 5, 1993; lowest measured, 18.52 ft below land-surface datum, August 6, 1992.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEARS OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 03	17.60	FEB 01	17.23	MAY 02	18.36	JUL 29	18.27

WATER YEAR 1994 HIGHEST 17.23 FEB 01, 1994 LOWEST 18.36 MAY 02, 1994

420139095155701. Local number, 83-43-04 CBCB.

LOCATION.--Lat 41°01'39", long 95°51'57", Hydrologic Unit 10230005, approximately 5.5 mi northwest of the Town of Soldier and 1.5 mi north of Iowa Highway 37. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Dakota: in sandstone of Cretaceous age.

WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 321 ft, cased to 315 ft, slotted 297-315 ft, gravel-packed, open hole 315-321 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,235 ft above sea level, from topographic map. Measuring point: Top of casing, 2.53 ft above land-surface datum.

REMARKS.--Well WC-5.

PERIOD OF RECORD.--May 1981 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 183.60 ft below land-surface datum, November 3, 1993; lowest measured, 189.96 ft below land-surface datum, February 2, 1982.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 03	183.60	FEB 01	184.37	MAY 02	184.67	JUL 29	185.14

WATER YEAR 1994 HIGHEST 183.60 NOV 03, 1993 LOWEST 185.14 JUL 29, 1994

MONONA COUNTY--Continued

420730095510701. Local number, 84-43-04 ABAA.

LOCATION.--Lat 41°07'30", long 95°51'07", Hydrologic Unit 10230005, approximately 4 mi southwest of the Town of Mapleton, on the north side of Iowa Highway 175. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Maple alluvial: in sand and gravel of Holocene age.

WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 2 in., depth 72 ft, cased to 58 ft, slotted 53-58 ft, gravel-packed, open hole 58-72 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,090 ft above sea level, from topographic map. Measuring point: Top of casing, 2.40 ft above land-surface datum.

REMARKS.--Well WC-163.

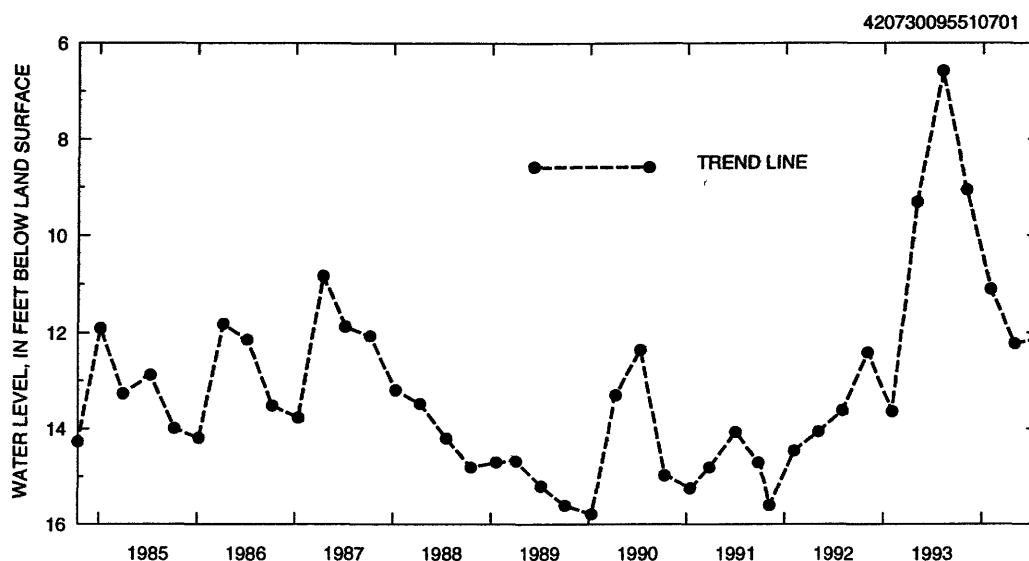
PERIOD OF RECORD.--May 1983 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 6.58 ft below land-surface datum, August 5, 1993; lowest measured, 15.79 ft below land-surface datum, January 11, 1990.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 03	9.06	FEB 01	11.10	MAY 02	12.23	JUL 29	12.13

WATER YEAR 1994 HIGHEST 9.06 NOV 03, 1993 LOWEST 12.23 MAY 02, 1994



421006095580301. Local number, 85-44-16 DCDD.

LOCATION.--Lat 41°10'06", long 95°58'03", Hydrologic Unit 10230003, approximately 0.75 mi west of the Town of Ticonic on the north side of County Road E-16. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Little Sioux alluvial: in sand and gravel of Holocene age.

WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 2 in., depth 43 ft, cased to 40 ft, slotted 35-40 ft, gravel-packed. Open to Dakota sandstone 40-43 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,060 ft above sea level, from topographic map. Measuring point: Top of casing, 2.50 ft above land-surface datum.

REMARKS.--Well WC-156.

PERIOD OF RECORD.--October 1982 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 3.92 ft below land-surface datum, March 10, 1983; lowest measured, 14.90 ft below land-surface datum, October 10, 1990.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 03	9.47	FEB 01	10.26	MAY 02	9.85	JUL 29	9.88

WATER YEAR 1994 HIGHEST 9.47 NOV 03, 1993 LOWEST 10.26 FEB 01, 1994

MONONA COUNTY--Continued

421018095582001. Local number, 85-44-16 CDAA.

LOCATION.--Lat 41°10'18", long 95°58'20", Hydrologic Unit 10230003, approximately 1.25 mi west of the Town of Ticonic on the north side of County Road E-16. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Dakota: in sandstone of Cretaceous age.

WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 81 ft, cased to 77 ft, slotted 67-77 ft, gravel-packed, open hole 77-81 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,060 ft above sea level, from topographic map. Measuring point: Top of casing, 2.25 ft above land-surface datum.

REMARKS.--Well WC-155.

PERIOD OF RECORD.--October 1982 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 4.99 ft below land-surface datum, August 5, 1993; lowest measured, 17.85 ft below land-surface datum, April 10, 1990.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 03	11.02	FEB 01	11.94	MAY 02	11.69	JUL 29	11.83

WATER YEAR 1994 HIGHEST 11.02 NOV 03, 1993 LOWEST 11.94 FEB 01, 1994

421018095591301. Local number, 85-44-17 DCAA.

LOCATION.--Lat 41°10'18", long 95°59'13", Hydrologic Unit 10230003, approximately 2.5 mi southwest of the Town of Rodney on the north side of County Road L-12. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Dakota: in sandstone of Cretaceous age.

WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 135 ft, cased to 135 ft, slotted 115-125 ft, gravel-packed.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,110 ft above sea level, from topographic map. Measuring point: Top of casing, 2.70 ft above land-surface datum.

REMARKS.--Well WC-158.

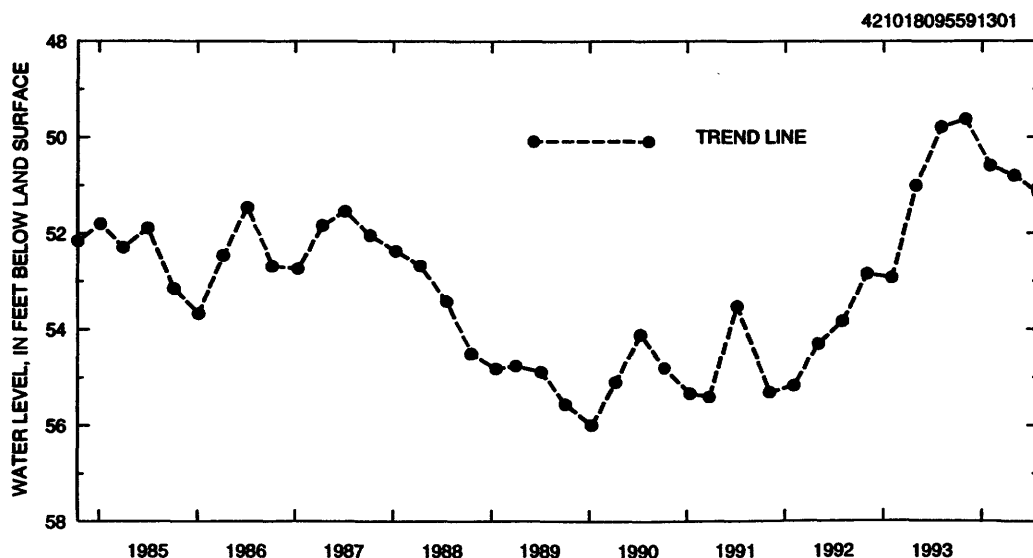
PERIOD OF RECORD.--October 1982 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 49.62 ft below land-surface datum, November 3, 1993; lowest measured, 55.99 ft below land-surface datum, January 11, 1990.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 03	49.62	FEB 01	50.59	MAY 02	50.80	JUL 29	51.16

WATER YEAR 1994 HIGHEST 49.62 NOV 03, 1993 LOWEST 51.16 JUL 29, 1994



MONTGOMERY COUNTY

405403095004401. Local number, 71-36-32 DCCD.

LOCATION.--Lat 40°54'03", long 95°00'44". Hydrologic Unit 10240009, on the east side of County Road J-14, approximately 2 mi southwest of the City of Villisca. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Alluvial: in sand and gravel of Holocene age.

WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 2 in., depth 42 ft, cased to 42 ft, slotted 37-42 ft, gravel packed.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,021 ft above sea level, from topographic map. Measuring point: Top of casing, 2.40 ft above land-surface datum.

REMARKS.--Well SW-65.

PERIOD OF RECORD.--August 1992 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 9.30 feet below land-surface datum, August 5, 1993; lowest measured, 15.49 ft below land-surface datum, May 5, 1994.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEARS OCTOBER 1993 TO SEPTEMBER 1994

<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>
OCT 29	9.83	FEB 04	14.51	MAY 05	15.49	JUL 27	12.60

WATER YEAR 1994 HIGHEST 9.83 OCT 29, 1993 LOWEST 15.49 MAY 05, 1994

405841095012702. Local number, 71-36-06 DADA2.

LOCATION.--Lat 40°58'41", long 95°01'27", Hydrologic Unit 10240009, located east of dam at Viking Lake State Park, approximately 0.3 mi south of Iowa Highway 34 on the west side of road. Owner: Geological Survey Bureau, DNR, and U.S. Geological Survey.

AQUIFER.--Glacial drift: in material of Pleistocene age.

WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 2 in., depth 36 ft, cased to 33 ft, screened 33-36 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by observer and U.S.G.S. personnel.

DATUM.--Elevation of land-surface datum is 1,080 ft above sea level, from topographic map. Measuring point: Top of casing, 2.28 ft above land-surface datum.

REMARKS.--Viking Lake No. 2 (6J2) well.

PERIOD OF RECORD.--June 1989 to present.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 11.51 ft below land-surface datum, September 9, 1989; lowest measured, 17.15 ft below land-surface datum, August 15, 1989.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>	<u>DATE</u>	<u>WATER LEVEL</u>
OCT 29	14.70	FEB 04	15.54	MAY 09	15.27	JUL 26	15.97

WATER YEAR 1994 HIGHEST 14.70 OCT 29, 1993 LOWEST 15.97 JUL 26, 1994

MONTGOMERY COUNTY--Continued

410057095075101. Local number, 72-37-29 BABA.

LOCATION.--Lat 41°00'57", long 95°07'51", Hydrologic Unit 10240005, approximately 4.35 mi east of the City of Red Oak, just south of County Road H-34. Owner: John Ogden.

AQUIFER.--Glacial drift: in material of Pleistocene age.

WELL CHARACTERISTICS.--Bored observation water-table well, diameter 3 in., depth 40 ft, cased to 40 ft, perforated. Interval of perforation not available.

INSTRUMENTATION.--Intermittent measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,275 ft above sea level, from topographic map. Measuring point: Top of casing, 1.00 ft above land-surface datum.

PERIOD OF RECORD.--June 1937 to current year.

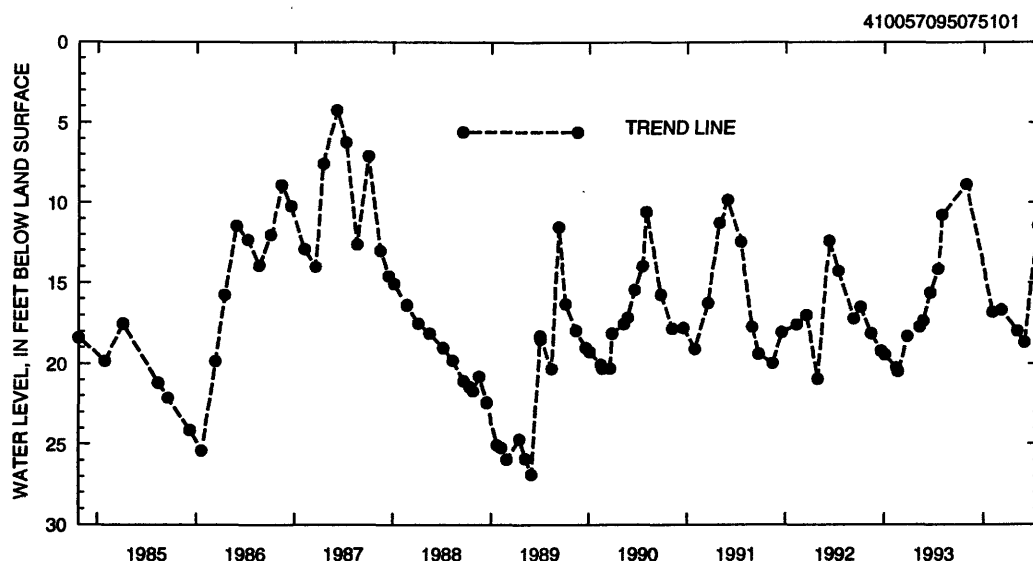
REVISION.--Measuring point revised May 10, 1990 to September 10, 1992.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 1.14 ft below land-surface datum, July 22, 1993; lowest measured, dry, July 8, 1963 and February 3, 1964.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEARS OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 29	8.78	APR 18	17.89	JUN 01	18.70	JUL 27	12.42
FEB 04	16.82	MAY 05	17.99	JUL 19	11.46	SEP 01	17.31
MAR 08	16.69						

WATER YEAR 1994 HIGHEST 8.78 OCT 29, 1993 LOWEST 18.70 JUN 01, 1994



410103095594501. Local number, 72-36-04 CDDD.

LOCATION.--Lat 41°03'33", long 94°59'45", Hydrologic Unit 10240009, on the north side of County Road H-28, approximately 1.5 mi southwest of the Town of Mortons Mill. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Alluvial: in sand and gravel of Holocene age.

WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 2 in., depth 34 ft, cased to 34 ft, slotted 29-34 ft, gravel packed.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,076 ft above sea level, from topographic map. Measuring point: Top of casing, 2.30 ft above land-surface datum.

REMARKS.--Well SW-66.

PERIOD OF RECORD.--October 1987 and August 1992 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 6.78 feet below land-surface datum, August 5, 1993; lowest measured, 15.36 ft below land-surface datum, May 5, 1994.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEARS OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 29	10.31	FEB 09	14.55	MAY 05	15.36	JUL 27	12.92

WATER YEAR 1994 HIGHEST 10.31 OCT 29, 1993, LOWEST 15.36 MAY 05, 1994

MONTGOMERY COUNTY--Continued

410134095141601. Local number, 72-38-20 ACAA1.

LOCATION.--Lat 41°01'34", long 95°14'16", Hydrologic Unit 10240003, on the north side of U.S. Highway 34, approximately .25 mi west of State Highway 48, west of the City of Red Oak. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Alluvial: in sand and gravel of Holocene age.

WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 2 in., depth 17 ft, cased to 17 ft, slotted 14-17 ft, gravel packed.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,038 ft above sea level, from topographic map. Measuring point: Top of casing, 2.90 ft above land-surface datum.

REMARKS.--Well SW-35A.

PERIOD OF RECORD.--June 1990 and November 1992 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 3.25 feet below land-surface datum, August 5, 1993; lowest measured, 9.45 ft below land-surface datum, June 14, 1990.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEARS OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 29	4.50	FEB 04	8.18	MAY 05	9.18	JUL 27	6.71

WATER YEAR 1994 HIGHEST 4.50 OCT 29, 1993 LOWEST 9.18 MAY 05, 1994

410134095141602. Local number, 72-38-20 ACAA2.

LOCATION.--Lat 41°01'34", long 95°14'16", Hydrologic Unit 10240003, on the north side of U.S. Highway 34, approximately .25 mi west of State Highway 48, west of the City of Red Oak. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Alluvial: in sand and gravel of Holocene age.

WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 2 in., depth 27 ft, cased to 27 ft, slotted 22-27 ft, gravel packed.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,038 ft above sea level, from topographic map. Measuring point: Top of casing, 2.58 ft above land-surface datum.

REMARKS.--Well SW-35B.

PERIOD OF RECORD.--June 1990 and November 1992 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 3.22 feet below land-surface datum, August 5, 1993; lowest measured, 9.42 ft below land-surface datum, June 14, 1990.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEARS OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 29	4.44	FEB 04	8.16	MAY 05	9.16	JUL 27	6.68

WATER YEAR 1994 HIGHEST 4.44 OCT 29, 1993 LOWEST 9.16 MAY 05, 1994

MUSCATINE COUNTY

412120091080401. Local number, 76-02-30 CBAA1.

LOCATION.--Lat 41°21'20", long 91°08'04", Hydrologic Unit 07080101, west of the Town of Fruitland on an Iowa State University Agricultural Experiment Farm. Owner: U.S. Geological Survey.

AQUIFER.--Alluvial: in sand and gravel of Holocene age.

WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 6 in., depth 27 ft, cased to 24 ft, screened 24-27 ft.

INSTRUMENTATION.--Intermittent measurement with chalked tape by USGS personnel. Graphic water-level recorder May 1966 to October 1987.

DATUM.--Elevation of land-surface datum is 546 ft above sea level, from topographic map. Measuring point: Base of recorder shelter, 3.40 ft above land-surface datum.

REMARKS.--Fruitland/30M4 well.

PERIOD OF RECORD.--May 1966 to current year.

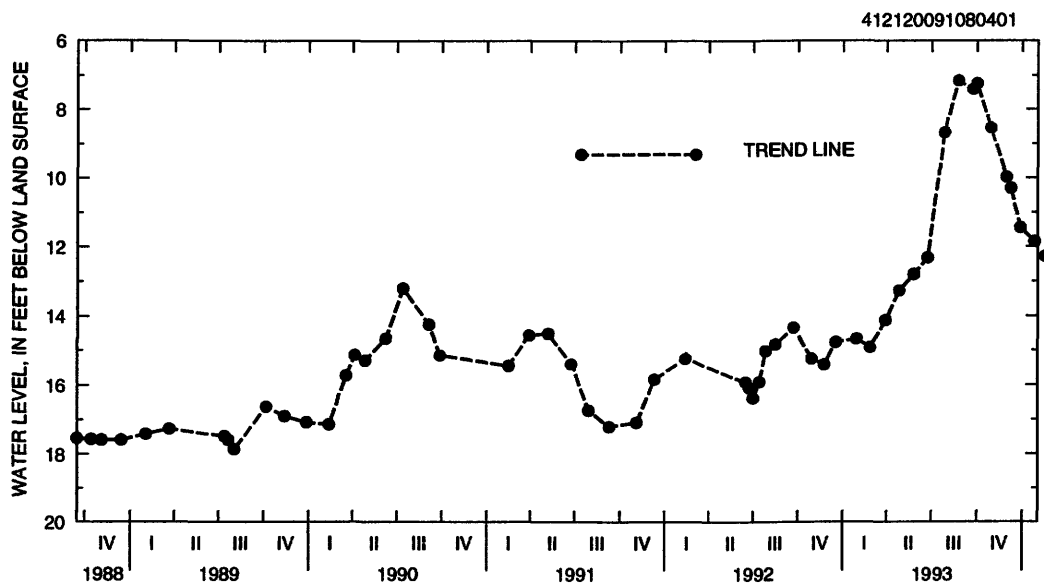
REVISED RECORDS.--WDR IA-84-1.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 7.15 ft below land-surface datum, September 7, 1993; lowest measured, 17.86 ft below land-surface datum, August 2, 1989.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 01	7.25	DEC 28	11.45	MAR 28	12.70	MAY 25	13.79
OCT 29	8.54	JAN 26	11.85	APR 22	13.16	JUN 21	14.26
NOV 30	9.98	FEB 01	12.01	MAY 09	13.47	JUL 01	14.27
DEC 09	10.30	FEB 28	12.59	MAY 18	13.67	AUG 05	15.21

WATER YEAR 1994 HIGHEST 7.25 OCT 01, 1993 LOWEST 15.21 AUG 05, 1994



O'BRIEN COUNTY

425610095250611. Local number, 94-39-26 BADB11.

LOCATION.--Lat 41°56'10", long 95°25'06", Hydrologic Unit 10230003, near a dead-end road just south of the Little Sioux River, 0.9 mi north of Iowa Highway 10, approximately 5 mi southeast of the Town of Sutherland. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Dakota: in sandstone of Cretaceous age.

WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2.50 in., depth 329 ft, cased to 329 ft, perforated 291-295 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,212 ft above sea level, from topographic map. Measuring point: Top of casing, 2.30 ft above land-surface datum.

REMARKS.--Well D-3.

PERIOD OF RECORD.--April 1980 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 35.14 ft below land-surface datum, August 25, 1993; lowest measured, 36.85 ft below land-surface datum, December 15, 1980.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 03	35.24	MAY 03	35.28	AUG 02	35.67

WATER YEAR 1994 HIGHEST 35.24 NOV 03, 1993 LOWEST 35.67 AUG 02, 1994

O'BRIEN COUNTY--Continued

425808095480311. Local number, 94-42-09 DDDD11.

LOCATION.--Lat 41°58'08", long 95°48'03", Hydrologic Unit 10230003, west of Iowa Highway 143, 1 mi west and 1 mi north of the Village of Germantown. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Dakota: in sandstone of Cretaceous age.

WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 638 ft, cased to 638 ft, perforated 516-536 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,440 ft above sea level, from topographic map. Measuring point: Top of casing, 4.00 ft above land-surface datum.

REMARKS.--Well D-42.

PERIOD OF RECORD.--July 1980 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 215.09 ft below land-surface datum, May 6, 1982; lowest measured, 260.64 ft below land-surface datum, July 10, 1980.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 02	252.69	FEB 11	252.24	MAY 03	253.24	JUL 28	253.57

WATER YEAR 1994 HIGHEST 252.24 FEB 11, 1994 LOWEST 253.57 JUL 28, 1994

430930095350401. Local number, 96-40-05 DDDA1.

LOCATION.--Lat 41°09'30", long 95°35'04", Hydrologic Unit 10230003, approximately 3 mi east of the Town of Sanborn and 2 mi south of U.S. Highway 18. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Ordovician and Dakota: in sandy shale of Ordovician age and sandstone of Cretaceous age.

WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 701 ft, cased to 701 ft, perforated 661-701 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,560 ft above sea level, from topographic map. Measuring point: Top of casing, 2.06 ft above land-surface datum.

REMARKS.--Well D-41.

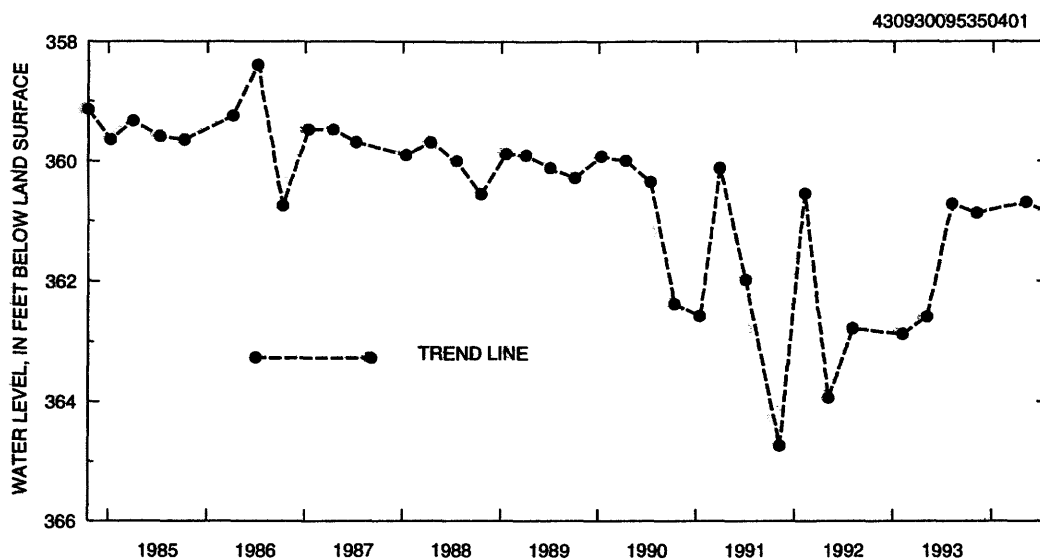
PERIOD OF RECORD.--June 1980 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 358.39 ft below land-surface datum, July 8, 1986; lowest measured, 364.74 ft below land-surface datum, November 7, 1991.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 02	360.87	FEB 11	360.73	MAY 03	360.69	JUL 28	360.88

WATER YEAR 1994 HIGHEST 360.69 MAY 03, 1994 LOWEST 360.88 JUL 28, 1994



OSCEOLA COUNTY

431613095251801. Local number, 98-39-26 CDCC.

LOCATION.--Lat 41°16'13", long 95°25'18", Hydrologic Unit 10230003, 3.5 mi south and 2.5 mi east of the Village of May City. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Dakota: in sandstone of Cretaceous age.

WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 500 ft, cased to 500 ft, perforated 490-500 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape or electric line by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,398 ft above sea level, from topographic map. Measuring point: Top of casing, 2.70 ft above land-surface datum.

REMARKS.--Well D-39.

PERIOD OF RECORD.--June 1980 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 189.99 ft below land-surface datum, June 17, 1980; lowest measured, 196.85 ft (nearby well pumping) below land-surface datum, September 6, 1984.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 03	191.65	JAN 31	192.02	MAY 03	191.77	AUG 02	191.49

WATER YEAR 1994 HIGHEST 191.49 AUG 02, 1994 LOWEST 192.02 JAN 31, 1994

431620095250501. Local number, 98-39-26 CDAD1.

LOCATION.--Lat 41°16'20", long 95°25'05", Hydrologic Unit 10230003, 3.5 mi south and 2.5 mi east of the Village of May City. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Cambrian-Ordovician: in St. Peter sandstone of Middle Ordovician age.

WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 662 ft, cased to 662 ft, perforated 622-662 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape or electric line by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,402 ft above sea level, from topographic map. Measuring point: Top of low pipe, 1.47 ft above land-surface datum.

REMARKS.--Well D-38, Deep Hibbing.

PERIOD OF RECORD.--June 1980 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 192.96 ft below land-surface datum, November 20, 1989; lowest measured, 200.11 ft below land-surface datum, February 12, 1992.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 09	198.93	MAY 03	198.17	AUG 02	198.21

WATER YEAR 1994 HIGHEST 198.17 MAY 03, 1994 LOWEST 198.93 NOV 09, 1993

431620095250511. Local number, 98-39-26 CDAD11.

LOCATION.--Lat 41°16'20", long 95°25'05", Hydrologic Unit 10230003, 3.5 mi south and 2.5 mi east of the Village of May City. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Dakota: in sandstone of Cretaceous age.

WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 345 ft, cased to 345 ft, perforated 335-345 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape or electric line by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,402 ft above sea level, from topographic map. Measuring point: Top of high pipe, 2.60 ft above land-surface datum.

REMARKS.--Well D-38, Shallow Hibbing.

PERIOD OF RECORD.--June 1980 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 192.20 ft below land-surface datum, September 10, 1981; lowest measured, 195.05 ft below land-surface datum, August 6, 1992.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 09	194.70	MAY 03	194.42	AUG 02	194.46

WATER YEAR 1994 HIGHEST 194.42 MAY 03, 1994 LOWEST 194.70 NOV 09, 1993

OSCEOLA COUNTY--Continued

431620095482402. Local number, 98-42-33 AAB2.

LOCATION.--Lat 41°16'20", long 95°48'24", Hydrologic Unit 10170204, approximately 2.75 mi south of the Town of Ashton, west of Iowa Highway 60, near the Chicago and Northwestern Railroad tracks. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Dakota: in sandstone of Cretaceous age.

WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 400 ft, cased to 400 ft, perforated 385-395 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,440 ft above sea level, from topographic map. Measuring point: Top of casing, 2.80 ft above land-surface datum.

REMARKS.--Well D-40.

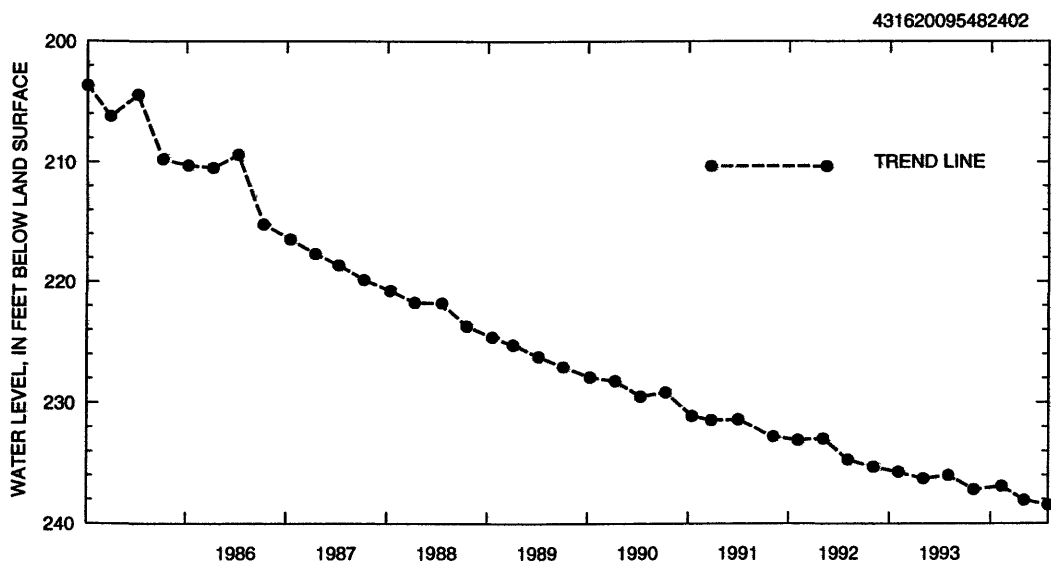
PERIOD OF RECORD.--December 1980 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 195.87 ft below land-surface datum, June 1, 1983; lowest measured, 238.48 ft below land-surface datum, July 28, 1994.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 02	237.18	FEB 11	236.90	MAY 03	238.08	JUL 28	238.48

WATER YEAR 1994 HIGHEST 236.90 FEB 11, 1994 LOWEST 238.48 JUL 28, 1994



432129095315001. Local number, 99-40-26 DCDD1.

LOCATION.--Lat 43°21'29", long 95°31'50", Hydrologic Unit 10230003, on the north side of County Road A-30, approximately 4 mi south of the Town of Ocheyedon. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Alluvial: in sand and gravel of Holocene age.

WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 2 in., depth 9 ft, cased to 9 ft, slotted 7-9 ft, gravel packed.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,452 ft above sea level, from topographic map. Measuring point: Top of casing, 2.20 ft above land-surface datum.

REMARKS.--Well OR-1U.

PERIOD OF RECORD.--July 1990 and August 1992 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 0.80 feet below land-surface datum, May 5, 1993; lowest measured, 8.68 ft below land-surface datum, July 27, 1990.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEARS OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 03	5.33	MAY 03	3.82	AUG 02	4.71

WATER YEAR 1994 HIGHEST 3.82 MAY 03, 1994 LOWEST 5.33 NOV 03, 1993

OSCEOLA COUNTY--Continued

432129095315002. Local number, 99-40-26 DCDD2.

LOCATION.--Lat 43°21'29", long 95°31'50", Hydrologic Unit 10230003, on the north side of County Road A-30, approximately 4 mi south of the Town of Ocheyedun. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Alluvial: in sand and gravel of Holocene age.

WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 2 in., depth 30 ft, cased to 30 ft, slotted 26-30 ft, gravel packed.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,452 ft above sea level, from topographic map. Measuring point: Top of casing, 1.90 ft above land-surface datum.

REMARKS.--Well OR-1M.

PERIOD OF RECORD.--July 1990 and August 1992 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 1.77 feet below land-surface datum, May 5, 1993; lowest measured, 8.70 ft below land-surface datum, July 27, 1990.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEARS OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 03	5.39	MAY 03	4.10	AUG 02	4.80

WATER YEAR 1994 HIGHEST 4.10 MAY 03, 1994 LOWEST 5.39 NOV 03, 1993

432129095315003. Local number, 99-40-26 DCDD3.

LOCATION.--Lat 43°21'29", long 95°31'50", Hydrologic Unit 10230003, on the north side of County Road A-30, approximately 4 mi south of the Town of Ocheyedun. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Alluvial: in sand and gravel of Holocene age.

WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 2 in., depth 58 ft, cased to 58 ft, slotted 54-58 ft, gravel packed.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,452 ft above sea level, from topographic map. Measuring point: Top of casing, 1.70 ft above land-surface datum.

REMARKS.--Well OR-1L.

PERIOD OF RECORD.--July 1990 and August 1992 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 2.02 feet below land-surface datum, May 5, 1993; lowest measured, 8.71 ft below land-surface datum, July 27, 1990.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEARS OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 03	5.90	MAY 03	4.18	AUG 02	4.86

WATER YEAR 1994 HIGHEST 4.18 MAY 03, 1994 LOWEST 5.90 NOV 03, 1993

432828095283611. Local number, 100-39-17 DCCB11.

LOCATION.--Lat 41°28'28", long 95°28'36", Hydrologic Unit 10230003, approximately 2 mi west and 2 mi north of the Town of Harris, east of County Road M-12. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Dakota: in sandstone of Cretaceous age.

WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 5 in. to 461 ft, 4 in. to 760 ft, depth 760 ft, cased to 760 ft, perforated 680-700 ft.

INSTRUMENTATION.--Quarterly measurement with electric line or chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,560 ft above sea level, from topographic map. Measuring point: Top of casing, 3.00 ft above land-surface datum.

REMARKS.--Well D-13.

PERIOD OF RECORD.--July 1980 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 341.80 ft below land-surface datum, August 5, 1980; lowest measured, 344.99 ft below land-surface datum, May 5, 1993.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 03	344.60	JAN 31	344.83	MAY 03	344.75	AUG 02	344.56

WATER YEAR 1994 HIGHEST 344.56 AUG 02, 1994 LOWEST 344.83 JAN 31, 1994

PAGE COUNTY

403446095010701. Local number, 67-36-30 DCCD.

LOCATION.--Lat 40°34'46", long 95°00'58", Hydrologic Unit 10240010, on the north side of County Road J-55, approximately .5 mi southwest of the Town of Braddyville. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Alluvial: in sand and gravel of Holocene age.

WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 2 in., depth 20 ft, cased to 20 ft, slotted 16-20 ft, gravel packed.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 948 ft above sea level, from topographic map. Measuring point: Top of casing, 2.00 ft above land-surface datum.

REMARKS.--Well SW-64.

PERIOD OF RECORD.--September 1987 to November 1987, June 1990, and November 1992 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 0.04 feet below land-surface datum, May 7, 1993; lowest measured, 3.00 ft below land-surface datum, July 26, 1994.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEARS OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 29	0.98	FEB 04	2.75	MAY 05	2.64	JUL 26	3.00

WATER YEAR 1994 HIGHEST 0.98 OCT 29, 1993 LOWEST 3.00 JUL 26, 1994

404257095150801. Local number, 68-38-07 CCAA.

LOCATION.--Lat 40°42'57", long 95°15'08", Hydrologic Unit 10240005, approximately 2 mi south of the Village of Norwich and 1.5 mi west of County Road M-48. Owner: William Brayman.

AQUIFER.--Glacial drift: in material of Pleistocene age.

WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 12 in., depth 44 ft, lined with tile.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,087 ft above sea level, from topographic map. Measuring point: Top of well, 1.20 ft below original land-surface datum.

REMARKS.--Terracing of the farm land surrounding well has lowered the land surface below the original measuring point.

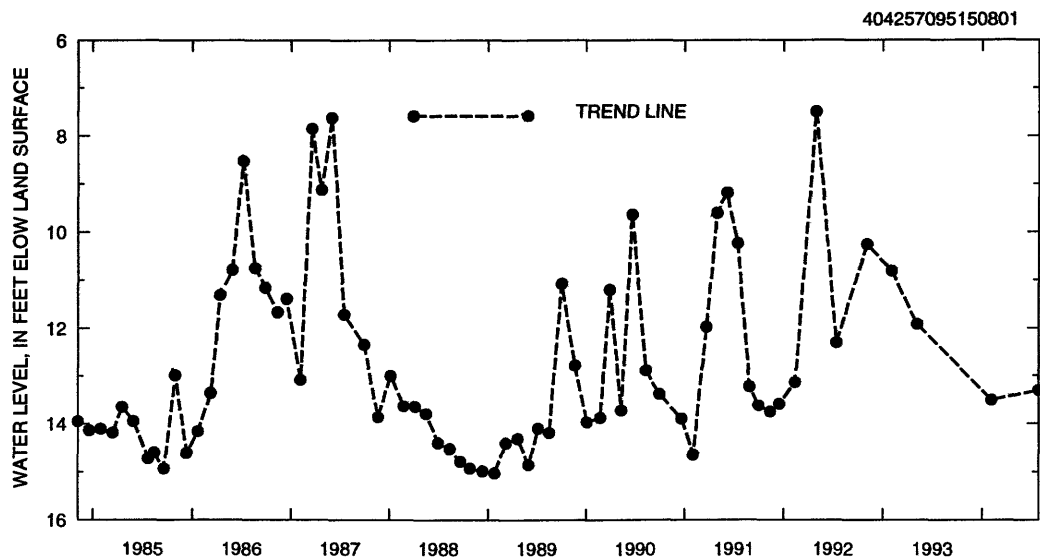
PERIOD OF RECORD.--January 1938 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 2.09 ft below land-surface datum, March 26, 1946; lowest measured, 22.76 ft below land-surface datum, June 23, 1947.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
FEB 04	13.51	MAY 05	10.78	JUL 27	13.31

WATER YEAR 1994 HIGHEST 10.78 MAY 05, 1994 LOWEST 13.51 FEB 04, 1994



PALO ALTO COUNTY

430246094421201. Local number, 95-33-14 ACDD.

LOCATION.--Lat 43°02'46", long 94°42'12", Hydrologic Unit 07100002, approximately 3.5 mi south of Emmetsburg on Highway 4, and 1.25 mi west on road north of County Road B53. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Des Moines alluvial: sand and gravel of Holocene age.

WELL CHARACTERISTICS.--Drilled observation well, diameter 2 in., depth 8 ft, cased 8 ft, perforated 3-8 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,188 ft above sea level, from topographic map. Measuring point: Top of casing, 2.15 ft above land-surface datum.

REMARKS.--Well WD-9U.

PERIOD OF RECORD.--August 1992 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 0.36 ft above land-surface datum, May 5, 1993; lowest measured, 4.34 ft below land-surface datum, January 31, 1994.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
(MEASUREMENTS ABOVE LAND SURFACE INDICATED BY "+")

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
AUG 07, 1992	+0.10	MAY 05, 1993	+0.36	NOV 02, 1993	1.83	MAY 03, 1994	0.95
NOV 05, 1992	0.00	AUG 10, 1993	0.79	JAN 31, 1994	4.34	AUG 02, 1994	1.99
FEB 04, 1993	2.15						

WATER YEAR 1994 HIGHEST 0.95 MAY 03, 1994 LOWEST 4.34 JAN 31, 1994

430246094421202. Local number, 95-33-14 ACDD.

LOCATION.--Lat 43°02'46", long 94°42'12", Hydrologic Unit 07100002, approximately 3.5 mi south of Emmetsburg on Highway 4, and 1.25 mi west on road north of County Road B53. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Des Moines alluvial: sand and gravel of Holocene age.

WELL CHARACTERISTICS.--Drilled observation well, diameter 2 in., depth 17 ft, cased 17 ft, perforated 15-17 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,188 ft above sea level, from topographic map. Measuring point: Top of casing, 1.45 ft above land-surface datum.

REMARKS.--Well WD-9M1

PERIOD OF RECORD.--July 1990 and August 1992 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 0.53 ft above land-surface datum, May 5, 1993; lowest measured, 6.48 ft below land-surface datum, May 3, 1994, 1994.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
(MEASUREMENTS ABOVE LAND SURFACE INDICATED BY "+")

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
JUL 27, 1990	2.95	FEB 04, 1993	1.94	AUG 10, 1993	0.51	MAY 03, 1994	6.48
AUG 07, 1992	+0.40	MAY 05, 1993	+0.53	NOV 02, 1993	1.59	AUG 02, 1994	1.80
NOV 05, 1992	+0.23						

WATER YEAR 1994 HIGHEST 1.59 NOV 02, 1993 LOWEST 6.48 MAY 03, 1994

430246094421203. Local number, 95-33-14 ACDD.

LOCATION.--Lat 43°02'46", long 94°42'12", Hydrologic Unit 07100002, approximately 3.5 mi south of Emmetsburg on Highway 4, and 1.25 mi west on road north of County Road B53. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Des Moines alluvial: sand and gravel of Holocene age.

WELL CHARACTERISTICS.--Drilled observation well, diameter 2 in., depth 33 ft, cased 33 ft, perforated 30-33 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,188 ft above sea level, from topographic map. Measuring point: Top of casing, 1.30 ft above land-surface datum.

REMARKS.--Well WD-9M2.

PERIOD OF RECORD.--July 1990 and August 1992 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 0.49 ft above land-surface datum, May 5, 1993; lowest measured, 6.14 ft below land-surface datum, May 3, 1994.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
(MEASUREMENTS ABOVE LAND SURFACE INDICATED BY "+")

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
JUL 27, 1990	2.94	FEB 04, 1993	1.99	AUG 10, 1993	0.68	MAY 03, 1994	6.14
AUG 07, 1992	+0.35	MAY 05, 1993	+0.49	NOV 02, 1993	1.68	AUG 02, 1994	1.84
NOV 05, 1992	0.32						

WATER YEAR 1994 HIGHEST 1.68 NOV 02, 1993 LOWEST 6.14 MAY 03, 1994

PALO ALTO COUNTY--Continued

430246094421204. Local number, 95-33-14 ACDD.

LOCATION.--Lat 43°02'46", long 94°42'12", Hydrologic Unit 07100002, approximately 3.5 mi south of Emmetsburg on Highway 4, and 1.25 mi west on road north of County Road B53. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Des Moines alluvial: sand and gravel of Holocene age.

WELL CHARACTERISTICS.--Drilled observation well, diameter 2 in., depth 47 ft, cased 47 ft, perforated 43-47 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,188 ft above sea level, from topographic map. Measuring point: Top of casing, 2.15 ft above land-surface datum.

REMARKS.--Well WD-9L.

PERIOD OF RECORD.--July 1990 and August 1992 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 0.55 ft above land-surface datum, May 5, 1993; lowest measured, 6.14 ft below land-surface datum, May 3, 1994.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994
(MEASUREMENTS ABOVE LAND SURFACE INDICATED BY "+")

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
JUL 27, 1990	2.93	FEB 04, 1993	0.92	AUG 10, 1993	0.51	MAY 03, 1994	6.14
AUG 07, 1992	+0.37	MAY 05, 1993	+0.55	NOV 02, 1993	1.56	AUG 02, 1994	1.76
NOV 05, 1992	0.70						

WATER YEAR 1994 HIGHEST 1.56 NOV 02, 1993 LOWEST 6.14 MAY 03, 1994

431047094415201. Local number, 97-33-36 BCBB.

LOCATION.--Lat 43°10'47", long 94°41'52", Hydrologic Unit 07100002, approximately 3.5 mi north of Emmetsburg on road parallel to and 1 mi west of County Road N40. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Des Moines alluvial: sand and gravel of Holocene age.

WELL CHARACTERISTICS.--Drilled observation well, diameter 2 in., depth 10 ft, cased 10 ft, perforated 6-10 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,225 ft above sea level, from topographic map. Measuring point: Top of casing, 2.40 ft above land-surface datum.

REMARKS.--Well WD-6U.

PERIOD OF RECORD.--July 1990 and August 1992 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 1.08 ft above land-surface datum, May 3, 1994; lowest measured, 9.84 ft below land-surface datum, July 27, 1990.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
JUL 27, 1990	9.84	FEB 04, 1993	6.92	AUG 10, 1993	3.55	MAY 03, 1994	1.08
AUG 07, 1992	5.93	MAY 05, 1993	3.99	NOV 02, 1993	4.42	AUG 02, 1994	5.36
NOV 05, 1992	5.67						

WATER YEAR 1994 HIGHEST 1.08 MAY 03, 1994 LOWEST 5.36 AUG 02, 1994

431047094415202. Local number, 97-33-36 BCBB.

LOCATION.--Lat 43°10'47", long 94°41'52", Hydrologic Unit 07100002, approximately 3.5 mi north of Emmetsburg on road parallel to and 1 mi west of County Road N40. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Des Moines alluvial: sand and gravel of Holocene age.

WELL CHARACTERISTICS.--Drilled observation well, diameter 2 in., depth 20 ft, cased 20 ft, perforated 16-20 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,225 ft above sea level, from topographic map. Measuring point: Top of casing, 2.25 ft above land-surface datum.

REMARKS.--Well WD-6M.

PERIOD OF RECORD.--July 1990 and August 1992 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 1.78 ft above land-surface datum, May 3, 1994; lowest measured, 9.88 ft below land-surface datum, July 27, 1990.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
JUL 27, 1990	9.88	FEB 04, 1993	6.96	AUG 10, 1993	3.60	MAY 03, 1994	1.78
AUG 07, 1992	5.93	MAY 05, 1993	4.03	NOV 02, 1993	4.49	AUG 02, 1994	5.40
NOV 05, 1992	5.94						

WATER YEAR 1994 HIGHEST 1.78 MAY 03, 1994 LOWEST 5.40 AUG 02, 1994

PALO ALTO COUNTY--Continued

431047094415203. Local number, 97-33-36 BCBB.

LOCATION.--Lat 43°10'47", long 94°41'52", Hydrologic Unit 07100002, approximately 3.5 mi north of Emmetsburg on road parallel to and 1 mi west of County Road N40. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Des Moines alluvial: sand and gravel of Holocene age.

WELL CHARACTERISTICS.--Drilled observation well, diameter 2 in., depth 27 ft, cased 27 ft, perforated 24.5-27 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,225 ft above sea level, from topographic map. Measuring point: Top of casing, 1.80 ft above land-surface datum.

REMARKS.--Well WD-6L.

PERIOD OF RECORD.--July 1990 and August 1992 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 1.21 ft above land-surface datum, May 3, 1994; lowest measured, 9.81 ft below land-surface datum, July 27, 1990.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
JUL 27, 1990	9.81	FEB 04, 1993	6.89	AUG 10, 1993	3.52	MAY 03, 1994	1.21
AUG 07, 1992	5.87	MAY 05, 1993	3.94	NOV 02, 1993	4.38	AUG 02, 1994	5.36
NOV 05, 1992	5.73						

WATER YEAR 1994 HIGHEST 1.21 MAY 03, 1994 LOWEST 5.36 AUG 02, 1994

PLYMOUTH COUNTY

424552096141301. Local number, 96-46-23 DDC.

LOCATION.--Lat 42°45'52", long 96°14'13", Hydrologic Unit 10230002, near Burlington Northern railroad tracks on unnamed east-west road, 2 mi. south of Highway 3, approximately 3 mi southwest of Le Mars. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Alluvial: in sands and gravel of Holocene age.

WELL CHARACTERISTICS.--Drilled observation well, diameter 1.25 in., depth 23 ft, cased 23 ft, perforated 20-23 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,187 ft above sea level, from topographic map. Measuring point: Top of casing, 1.90 ft above land-surface datum.

REMARKS.--Well F-16

PERIOD OF RECORD.--November 1992 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 7.25 ft above land-surface datum, May 5, 1993; lowest measured, 9.85 ft below land-surface datum, July 28, 1994.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 05, 1992	9.20	MAY 05, 1993	7.25	NOV 02, 1993	9.19	MAY 03, 1994	8.39
FEB 04, 1993	9.76	AUG 04, 1993	7.55	FEB 10, 1994	9.05	JUL 28, 1994	9.85

WATER YEAR 1994 HIGHEST 8.39 MAY 03, 1994 LOWEST 9.85 JUL 28, 1994

424833096324701. Local number, 92-48-06 DDDA.

LOCATION.--Lat 41°48'33", long 96°32'47", Hydrologic Unit 10170203, just south of the curve on Iowa Highway 3, 1 mi south of the Town of Akron. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Dakota: in sandstone of Cretaceous age.

WELL CHARACTERISTICS.--Drilled observation artesian water well, depth 581 ft, diameter 4 in. to 184 ft, 2 in. to 581 ft, cased to 576 ft, perforated 430-434 ft and 510-515 ft, open hole 576-581 ft. Paleozoic rock open 576-581 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,282 ft above sea level, from topographic map. Measuring point: Top of casing, 4.80 ft above land-surface datum.

REMARKS.--Well D-35.

PERIOD OF RECORD.--December 1979 to December 1980, May 1982 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 136.97 ft below land-surface datum, August 4, 1993; lowest measured, 159.82 ft below land-surface datum, August 6, 1980.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 02	137.07	FEB 10	137.21	MAY 03	137.22	JUL 29	137.51

WATER YEAR 1994 HIGHEST 137.07 NOV 02, 1993 lowest 137.51 JUL 29, 1994

PLYMOUTH COUNTY--Continued

424850096074801. Local number, 92-45-02 CBCB.

LOCATION.--Lat 41°48'50", long 96°07'48", Hydrologic Unit 10230002, approximately 3.8 mi west and 0.6 mi south of the Village of Oyens.

Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Cambrian-Ordovician: in dolomite of Cambrian and Ordovician age.

WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 5 in. to 161 ft, 4 in. to 598 ft, 2 in. to 1,340 ft, depth 1,340 ft, cased to 598 ft, open hole 598-1,340 ft. Well deepened from 1,089 to 1,340 ft in May, 1984. Well penetrates Precambrian-aged rocks.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,245 ft above sea level, from topographic map. Measuring point: Top of casing, 2.80 ft above land-surface datum.

REMARKS.--Well D-21.

PERIOD OF RECORD.--May 1979 to January 1981, May 1982 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 56.56 ft below land-surface datum, February 10, 1994; Lowest measured, 102.10 ft below land-surface datum, August 6, 1980.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 02	56.70	FEB 10	56.56	MAY 02	56.66	JUL 28	56.95

WATER YEAR 1994 HIGHEST 56.56 FEB 10, 1994 LOWEST 56.95 JUL 28, 1994

425249096125001. Local number, 93-46-12 DDDD.

LOCATION.--Lat 41°52'49", long 96°12'50", Hydrologic Unit 10230002, 1 mi west and 1 mi south of the Village of Struble. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Dakota: in sandstone of Cretaceous age.

WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2.5 in., depth 570 ft, cased to 570 ft, perforated 356-360 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,280 ft above sea level, from topographic map. Measuring point: Top of coupling, 2.25 ft above land-surface datum.

REMARKS.--Well D-2.

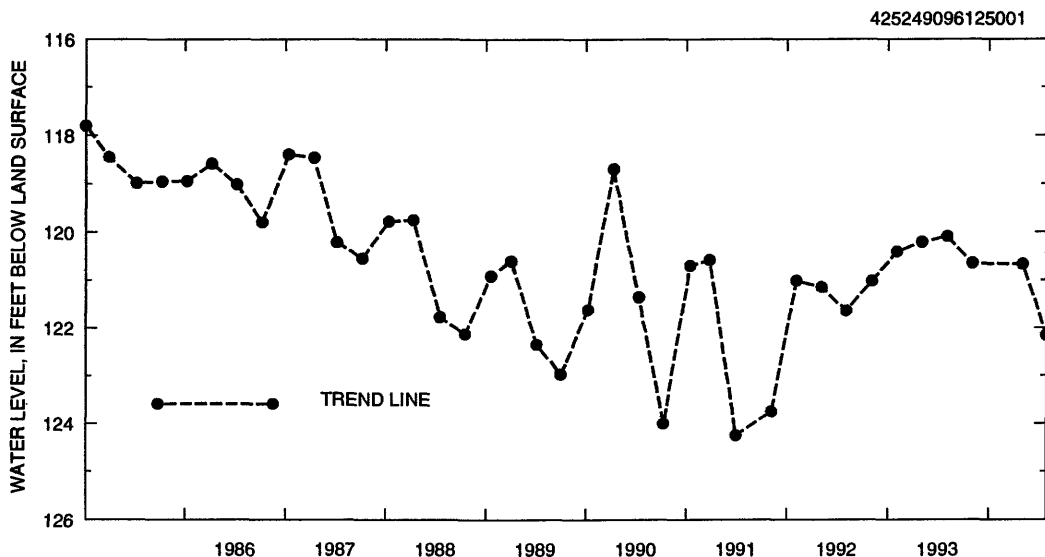
PERIOD OF RECORD.--March 1980 to December 1980, May 1982 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 117.78 ft below land-surface datum, April 9, 1980; lowest measured, 124.25 ft below land-surface datum, July 2, 1991.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 02	120.65	MAY 03	120.67	JUL 28	122.16

WATER YEAR 1994 HIGHEST 120.65 NOV 02, 1993 LOWEST 122.16 JUL 28, 1994



POCAHONTAS COUNTY

425329094272501. Local number, 93-31-12 BABB.

LOCATION.--Lat 42°53'29", long 94°27'25", Hydrologic Unit 07100002, approximately 4 mi. south of West Bend, on Highway 15, 1 mi. east of intersection of Highway 222. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Des Moines Alluvial: in sands and gravel of Holocene age.

WELL CHARACTERISTICS.--Drilled observation well, diameter 2 in., depth 9 ft, cased 9 ft, perforated 5-9 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,138 ft above sea level, from topographic map. Measuring point: Top of casing, 2.25 ft above land-surface datum.

REMARKS.--Well WD-14U.

PERIOD OF RECORD.--July 1990 and August 1992 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 0.34 ft above land-surface datum, May 4, 1993; lowest measured, 4.33 ft below land-surface datum, July 27, 1990.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
JUL 27, 1990	4.33	FEB 04, 1993	3.76	AUG 10, 1993	0.72	MAY 03, 1994	3.49
AUG 07, 1992	1.48	MAY 04, 1993	0.34	NOV 02, 1993	2.60	AUG 02, 1994	2.50
NOV 05, 1992	2.03						

WATER YEAR 1994 HIGHEST 2.50 AUG 02, 1994 LOWEST 3.49 MAY 03, 1994

425329094272502. Local number, 93-31-12 BABB.

LOCATION.--Lat 42°53'29", long 94°27'25", Hydrologic Unit 07100002, approximately 4 mi. south of West Bend, on Highway 15, 1 mi. east of intersection of Highway 222. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Des Moines Alluvial: in sands and gravel of Holocene age.

WELL CHARACTERISTICS.--Drilled observation well, diameter 2 in., depth 31 ft, cased 31 ft, perforated 28-31 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,138 ft above sea level, from topographic map. Measuring point: Top of casing, 1.85 ft above land-surface datum.

REMARKS.--Well WD-14L.

PERIOD OF RECORD.--July 1990 and August 1992 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 0.22 ft above land-surface datum, May 4, 1993; lowest measured, 4.42 ft below land-surface datum, July 27, 1990.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
JUL 27, 1990	4.42	FEB 04, 1993	3.83	AUG 10, 1993	0.58	MAY 03, 1994	3.57
AUG 07, 1992	1.58	MAY 04, 1993	0.22	NOV 02, 1993	2.48	AUG 02, 1994	2.62
NOV 05, 1992	2.07						

WATER YEAR 1994 HIGHEST 2.48 NOV 02, 1993 LOWEST 3.57 MAY 03, 1994

425329094272503. Local number, 93-31-12 BABB.

LOCATION.--Lat 42°53'29", long 94°27'25", Hydrologic Unit 07100002, approximately 4 mi. south of West Bend, on Highway 15, 1 mi. east of intersection of Highway 222. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Des Moines Alluvial: in sands and gravel of Holocene age.

WELL CHARACTERISTICS.--Drilled observation well, diameter 2 in., depth 18 ft, cased 18 ft, perforated 14-18 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,138 ft above sea level, from topographic map. Measuring point: Top of casing, 2.05 ft above land-surface datum.

REMARKS.--Well WD-14M.

PERIOD OF RECORD.--July 1990 and August 1992 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 0.69 ft above land-surface datum, August 10, 1993; lowest measured, 4.31 ft below land-surface datum, July 27, 1990.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
JUL 27, 1990	4.31	FEB 04, 1993	4.23	AUG 10, 1993	0.69	MAY 03, 1994	3.45
AUG 07, 1992	1.45	MAY 04, 1993	1.33	NOV 02, 1993	2.58	AUG 02, 1994	2.50
NOV 05, 1992	2.02						

WATER YEAR 1994 HIGHEST 2.50 AUG 02, 1994 LOWEST 3.45 MAY 03, 1994

POTTAWATTAMIE COUNTY

411024095095501. Local number, 74-38-36 BAAA1.

LOCATION.--Lat 41°10'24", long 95°09'55", Hydrologic Unit 10240003,

approximately 1.5 mi north of the Town of Elliott on the southwest corner of the junction of County Roads M-55 and G-66. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--East Nishnabotna alluvial: in sand and gravel of Holocene age. WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 2 in., depth 25 ft, cased to 20 ft, screened 20-25 ft, gravel packed.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,073 ft above sea level, from topographic map. Measuring point: Top of casing, 2.50 ft above land-surface datum.

REMARKS.--Well SW-34A.

PERIOD OF RECORD.--August 1986 to November 1987 and June 1990 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 2.06 feet below land-surface datum, June 1, 1987; lowest measured, 8.80 ft below land-surface datum, November 20, 1991.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEARS OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 29	4.72	FEB 03	7.45	MAY 05	8.05	JUL 27	7.37

WATER YEAR 1994 HIGHEST 4.72 OCT 29, 1993 LOWEST 8.05 MAY 05, 1994

411024095095502. Local number, 74-38-36 BAAA2.

LOCATION.--Lat 41°10'24", long 95°09'55", Hydrologic Unit 10240003, approximately 1.5 mi north of the Town of Elliott on the southwest corner of the junction of County Roads M-55 and G-66. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--East Nishnabotna alluvial: in sand and gravel of Holocene age.

WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 2 in., depth 39 ft, cased 34-39 ft, gravel-packed. Original depth was 101 ft, back-filled with sand and a bentonite seal to 40 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,073 ft above sea level, from topographic map. Measuring point: Top of casing, 2.20 ft above land-surface datum.

REMARKS.--Well SW-34 B/L.

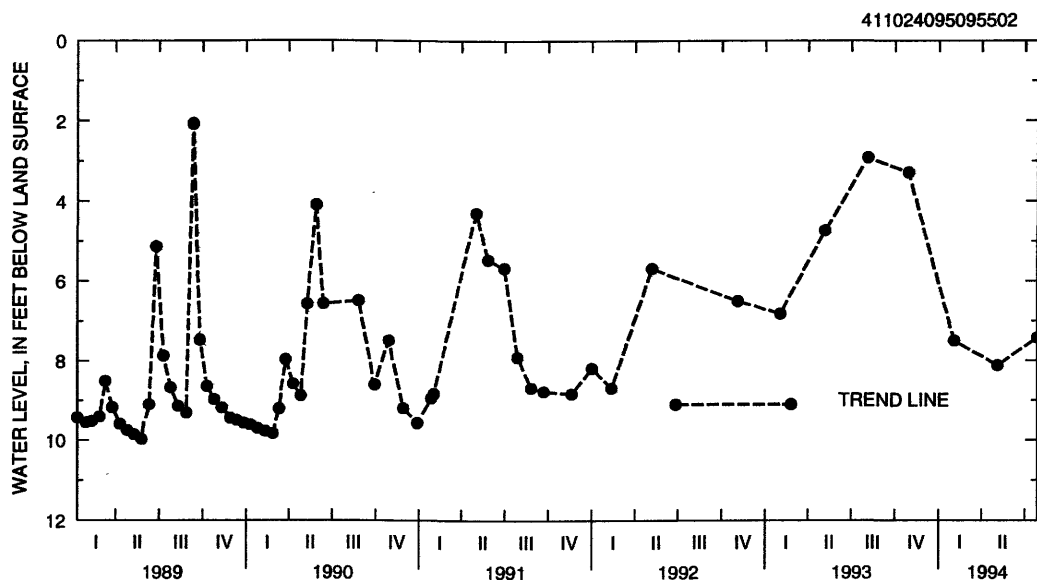
PERIOD OF RECORD.--August 1986 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 2.07 ft below land-surface datum, September 10, 1989; lowest measured, 9.95 ft below land-surface datum, May 25, 1989.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 29	3.29	FEB 03	7.51	MAY 05	8.12	JUL 27	7.43

WATER YEAR 1994 HIGHEST 3.29 OCT 29, 1993 LOWEST 8.12 MAY 05, 1994



POTTAWATTAMIE COUNTY--Continued

411359095171901. Local number, 74-39-01 CCCC.

LOCATION.--Lat 41°13'59", long 95°17'19", Hydrologic Unit 10240002, approximately 6.5 mi east of the Town of Carson, on the northeast corner of the junction of Iowa Highway 92 and County Road M-41. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Buried channel: in sand and gravel of Pleistocene age.

WELL CHARACTERISTICS.--Drilled observation well, diameter 2 in., depth 216 ft, cased to 206 ft, slotted 189-206 ft, gravel-packed, open to Pennsylvanian shale 207-216 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,245 ft above sea level, from topographic map. Measuring point: Top of casing, 2.50 ft above land-surface datum.

REMARKS.--Well SW-21.

PERIOD OF RECORD.--July 1986 to current year.

REVISION.--Lowest water level measured, 129.38 ft below land-surface datum, August 20, 1986.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 124.45 ft below land-surface datum, May 5, 1994; lowest measured, 129.38 ft below land-surface datum, August 20, 1986.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 29	125.17	FEB 03	124.62	MAY 05	124.45	JUL 27	124.52

WATER YEAR 1994 HIGHEST 124.45 MAY 05, 1994 LOWEST 125.17 OCT 29, 1993

SAC COUNTY

422500095084801. Local number, 88-37-22 CCCC.

LOCATION.--Lat 41°25'00", long 95°08'48", Hydrologic Unit 10230007, approximately 3 mi south of the Town of Early or 0.5 mi south of the junction of U.S. Highways 20 and 71. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Pennsylvanian and Dakota: in limestone of Pennsylvanian age and sandstone of Cretaceous age.

WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 435 ft, cased to 435 ft, perforated 417-435 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,320 ft above sea level, from topographic map. Measuring point: Top of casing, 2.50 ft above land-surface datum.

REMARKS.--Well D-16.

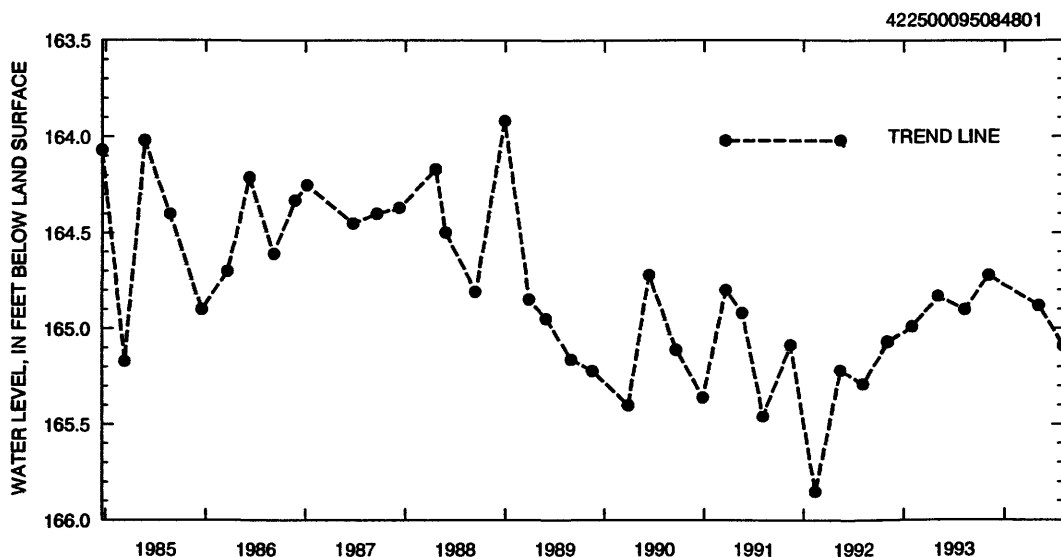
PERIOD OF RECORD.--December 1978 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 163.92 ft below land-surface datum, December 29, 1988; lowest measured, 165.85 ft below land-surface datum, February 12, 1992.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 03	164.72	JAN 31	164.77	MAY 05	164.88	AUG 02	165.09

WATER YEAR 1994 HIGHEST 164.72 NOV 03, 1993 LOWEST 165.09 AUG 02, 1994



SAC COUNTY--Continued

422850095171501. Local number, 89-38-36 CBCC.

LOCATION.--Lat 41°28'50", long 95°17'15", Hydrologic Unit 10230005, just east of Iowa Highway 110, 0.75 mi south of the Town of Schaller and 0.25 mi north of U.S. Highway 20. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Dakota: in sandstone of Cretaceous age.

WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 521 ft, cased to 512 ft, perforated 410-430 ft, open hole 512-521 ft. Open to 9 ft of Paleozoic rock.

INSTRUMENTATION.--Quarterly measurement with electric line or chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,445 ft above sea level, from topographic map. Measuring point: Top of casing, 4.00 ft above land-surface datum.

REMARKS.--Well D-17.

PERIOD OF RECORD.--December 1978 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 233.96 ft below land-surface datum, August 2, 1994; lowest measured, 292.46 ft below land-surface datum, June 12, 1990.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 03	291.85	MAY 05	234.14	AUG 02	233.96

WATER YEAR 1994 HIGHEST 233.96 AUG 02, 1994 LOWEST 291.85 NOV 03, 1993

SCOTT COUNTY

413544090212901. Local number, 78-5E-03 AADA.

LOCATION.--Lat 41°35'44", long 41°21'29", Hydrologic Unit 07080101, at the Bridgeview Elementary School corner of 12th and Davenport Streets, Le Claire. Owner: City of Le Claire.

AQUIFER.--Cambrian-Ordovician: in sandstone of Late Cambrian and sandstone and sandy dolomite of Early Ordovician age.

WELL CHARACTERISTICS.--Drilled unused municipal artesian water well, diameter 16 to 12 in., depth 1,607 ft, cased to 1,128 ft, open hole 1,128-1,607 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel. Graphic water-level recorder July 1975 to December 1984.

DATUM.--Elevation of land-surface datum is 703 ft above sea level, from topographic map. Measuring point: Nipple on plate welded to casing, 2.11 ft above land-surface datum.

REMARKS.--Le Claire Well No. 3.

PERIOD OF RECORD.--July 1975 to current year.

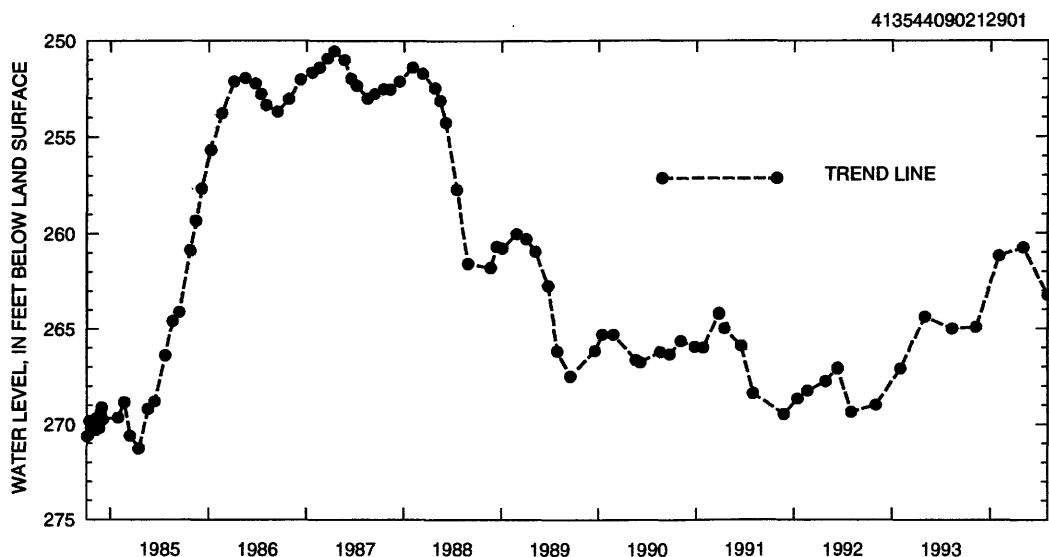
REVISED RECORDS.--WRD IA-84-1, WDR IA-88-1.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 247.46 ft below land-surface datum, July 8, 1975; lowest recorded, 276.86 ft below land-surface datum, September 1, 1978.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 08	264.91	FEB 02	261.18	MAY 03	260.75	AUG 01	263.25

WATER YEAR 1994 HIGHEST 260.75 MAY 03, 1994 LOWEST 264.91 NOV 08, 1993



SHELBY COUNTY

413255095070401. Local number, 78-37-17 DDDD.

LOCATION.--Lat 41°32'55", long 95°07'04", Hydrologic Unit 10240003, 3 mi south and 3 mi west of the Town of Elkhorn on the east side of County Road M-56 near Elkhorn Creek. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Dakota: in sandstone of Cretaceous age.

WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 181 ft, cased to 181 ft, slotted 121-179 ft, gravel-packed, open to Pennsylvanian shale and limestone 140-181 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,208 ft above sea level, from topographic map. Measuring point: Top of casing, 2.80 ft above land-surface datum.

REMARKS.--Well WC-16.

PERIOD OF RECORD.--August 1981 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 36.60 ft below land-surface datum, August 11, 1993; lowest measured, 42.86 ft below land-surface datum, September 24, 1981.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 04	38.59	FEB 07	40.13	MAY 04	41.24	JUL 27	41.41

WATER YEAR 1994 HIGHEST 38.59 NOV 04, 1993 LOWEST 41.41 JUL 27, 1994

413359095182701. Local number, 78-39-11 CCBC.

LOCATION.--Lat 41°33'59", long 95°18'27", Hydrologic Unit 10240002, approximately 5.5 mi south of the City of Harlan, 0.75 mi south of County Road F-58, and 1.5 mi east of U.S. Highway 59. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Fremont buried channel: in sand and gravel of Pleistocene age.

WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 541 ft, cased to 541 ft, slotted 520-535 ft, gravel-packed. Open to Pennsylvanian shale 537-541 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,310 ft above sea level, from topographic map. Measuring point: Top of casing, 1.65 ft above land-surface datum.

REMARKS.--Well WC-227.

PERIOD OF RECORD.--July 1983 to current year.

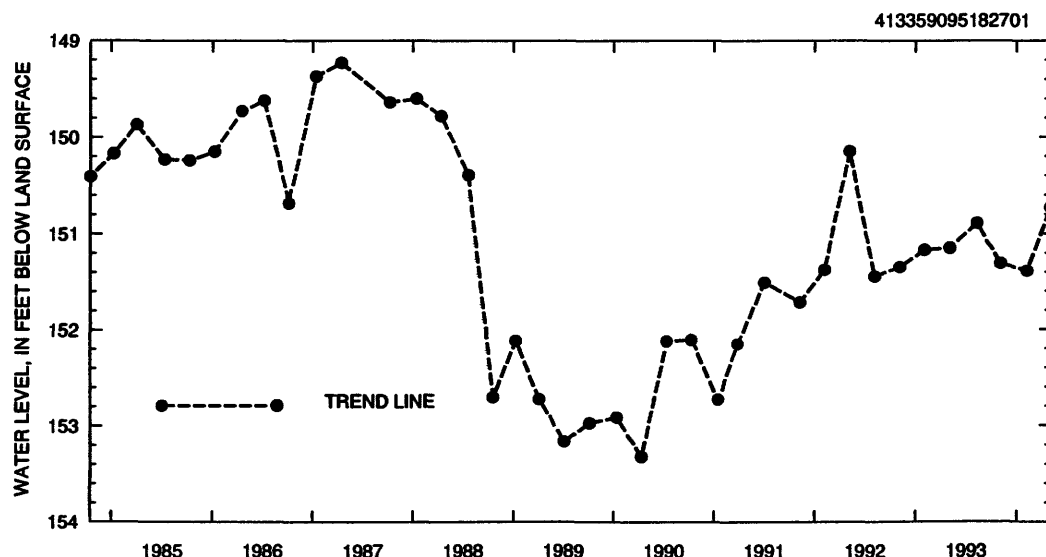
REVISION.--Lowest water level measured, 153.32 ft below land-surface datum, April 12, 1990.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 146.61 ft below land-surface datum, September 6, 1983; lowest measured, 153.32 ft below land-surface datum, April 12, 1990.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 04	151.31	FEB 07	151.39	MAY 04	150.73	JUL 29	151.50

WATER YEAR 1994 HIGHEST 150.73 MAY 04, 1994 LOWEST 151.50 JUL 29, 1994



SHELBY COUNTY--Continued

413442095193101. Local number, 78-39-10 BBBA.

LOCATION.--Lat 41°34'42", long 95°19'31", Hydrologic Unit 10240002, approximately 4.5 mi south of the City of Harlan and 0.25 mi east of the Town of Corely on the north side of County Road F-58. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--West Nishnabotna alluvial: in sand and gravel of Holocene age.

WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 2 in., depth 44 ft, cased to 44 ft, slotted 40-44 ft, gravel-packed.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,168 ft above sea level, from topographic map. Measuring point: Top of casing, 2.50 ft above land-surface datum.

REMARKS.--Well WC-200.

PERIOD OF RECORD.--June 1983 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 18.87 ft below land-surface datum, July 13, 1990; lowest measured, 22.98 ft below land-surface datum, October 19, 1988.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 04	20.15	FEB 07	20.86	MAY 04	21.87

WATER YEAR 1994 HIGHEST 20.15 NOV 04, 1993 LOWEST 21.87 MAY 04, 1994

413953095302601. Local number, 79-40-09 DBCA.

LOCATION.--Lat 41°39'53", long 95°30'26", Hydrologic Unit 10230006, east of State Highway 191, approximately 1 mi northeast of the Town of Portsmouth. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Glacial drift, in sand and gravel of Pleistocene age.

WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 200 ft, cased to 175 ft, slotted from 160-175 ft, gravel packed.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,205 ft above sea level, from topographic map. Measuring point: Top of casing, 4.10 ft above land-surface datum.

REMARKS.--Well WC-15.

PERIOD OF RECORD.--August 1992 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 18.37 feet below land-surface datum, August 12, 1993; lowest measured, 19.28 ft below land-surface datum, November 6, 1992.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 04	18.43	FEB 07	18.58	MAY 04	18.66	JUL 29	18.96

WATER YEAR 1994 HIGHEST 18.43 NOV 04, 1993 LOWEST 18.96 JUL 29, 1994

414211095161701. Local number, 80-38-33 AABB.

LOCATION.--Lat 41°42'11", long 95°16'17", Hydrologic Unit 10240002, on south side of county road approximately 1.75 mi south of the Town of Kirkman. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--West Nishnabotna alluvial: in sand and gravel of Holocene age.

WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 2 in., depth 43 ft, cased to 41 ft, slotted from 36-41 ft, gravel packed.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,225 ft above sea level, from topographic map. Measuring point: Top of casing, 2.10 ft above land-surface datum.

REMARKS.--Well WC-216.

PERIOD OF RECORD.--August 1992 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 15.41 feet below land-surface datum, August 12, 1993; lowest measured, 21.79 ft below land-surface datum, July 29, 1994.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEARS OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 04	17.39	FEB 07	19.55	MAY 04	21.22	JUL 29	21.79

WATER YEAR 1994 HIGHEST 17.39 NOV 04, 1993 LOWEST 21.79 JUL 29, 1994

SHELBY COUNTY--Continued

414624095252301. Local number, 80-39-06 AADC.

LOCATION.--Lat 41°46'24", long 95°25'23", Hydrologic Unit 10230006, west of the Town of Earling on the north side of Iowa Highway 37 near the junction of Iowa Highways 37 and 191. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Dakota: in sandstone of Cretaceous age.

WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 370 ft, cased to 370 ft, slotted 332-347 ft, open to Pennsylvanian sandstone, shale, and limestone 347-370 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,305 ft above sea level, from topographic map. Measuring point: Top of casing, 2.60 ft above land-surface datum.

REMARKS.--Well WC-10.

PERIOD OF RECORD.--June 1981 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 89.91 ft below land-surface datum, April 10, 1984; lowest measured, 131.70 ft below land-surface datum, April 12, 1990.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 04	111.49	FEB 07	110.54	MAY 04	110.80	JUL 27	109.83

WATER YEAR 1994 HIGHEST 109.83 JUL 27, 1994 LOWEST 111.49 NOV 04, 1993

414856095160101. Local number, 81-38-21 ADAD.

LOCATION.--Lat 41°48'56", long 95°16'01", Hydrologic Unit 10240002, approximately 3.75 mi east of the Town of Defiance on the west side of County Road M-36. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Fremont buried channel: in sand and gravel of Pleistocene age.

WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 535 ft, cased to 535 ft, slotted 525-535 ft, gravel-packed. Open to Pennsylvanian shale 530-535 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,370 ft above sea level, from topographic map. Measuring point: Top of casing, 2.90 ft above land-surface datum.

REMARKS.--Well WC-222.

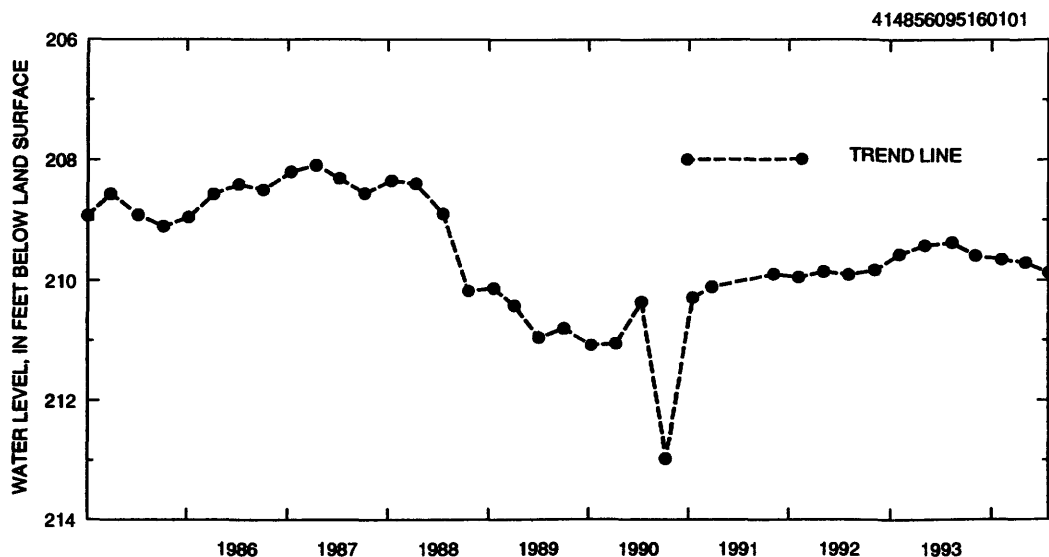
PERIOD OF RECORD.--August 1983 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 208.09 ft below land-surface datum, April 15, 1987; lowest measured, 212.97 ft below land-surface datum, October 11, 1990.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 04	209.59	FEB 07	209.65	MAY 04	209.71	JUL 27	209.88

WATER YEAR 1994 HIGHEST 209.59 NOV 04, 1993 LOWEST 209.88 JUL 27, 1994



SIOUX COUNTY

430140095573101. Local number, 95-43-07 AAAA.

LOCATION.--Lat 41°04'10", long 95°57'32", Hydrologic Unit 10230002, just south of County Road B-40, 1 mi east of the Village of Newkirk.

Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Dakota: in sandstone of Cretaceous age.

WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 681 ft, cased to 681 ft, perforated 641-681 ft. Open to Paleozoic rock from 674-681 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,390 ft above sea level, from topographic map. Measuring point: Top of casing, 3.70 ft above land-surface datum.

REMARKS.--Well D-43.

PERIOD OF RECORD.--July 1980 to December 1980, May 1982 to current year.

REVISED RECORDS.--WDR IA-88-1.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 213.66 ft below land-surface datum, March 13, 1984; lowest measured, 218.56 ft below land-surface datum, November 7, 1991.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 02	217.83	FEB 10	217.91	MAY 03	217.73	JUL 28	218.05

WATER YEAR 1994 HIGHEST 217.73 MAY 03, 1994 LOWEST 218.05 JUL 28, 1994

430913096033201. Local number, 96-44-08 ADAA.

LOCATION.--Lat 41°09'13", long 96°03'32", Hydrologic Unit 10230002, west side of County Road K-64, approximately 2.5 mi west of the

Town of Boyden and approximately 2.2 mi south of U.S. Highway 18. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Dakota: in sandstone of Cretaceous age.

WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 682 ft, cased to 682 ft, perforated 647-667 ft. Open to Paleozoic rock 681-682 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,373 ft above sea level, from topographic map. Measuring point: Top of casing, 3.70 ft above land-surface datum.

REMARKS.--Well D-44.

PERIOD OF RECORD.--August 1980 to December 1980, May 1982 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 187.85 ft below land-surface datum, October 16, 1984; lowest measured, 196.30 ft below land-surface datum, November 7, 1991.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 02	195.20	FEB 10	194.34	MAY 03	195.13	JUL 28	195.41

WATER YEAR 1994 HIGHEST 194.34 FEB 10, 1994 LOWEST 195.41 JUL 28, 1994

431200096221601. Local number, 97-47-23 CCCD.

LOCATION.--Lat 43°12'00", long 96°22'16", Hydrologic Unit 10170204, on the north side of U.S. Highway 18, approximately 3 mi west of the

Town of Rock Valley. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Alluvial: in sand and gravel of Holocene age.

WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 2 in., depth 21.5 ft, cased to 21.5 ft, slotted 16.5-21.5 ft, gravel packed.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,230 ft above sea level, from topographic map. Measuring point: Top of casing, 3.00 ft above land-surface datum.

REMARKS.--Well RR-9.

PERIOD OF RECORD.--July 1990 and August 1992 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 5.41 feet below land-surface datum, August 3, 1993; lowest measured, 9.23 ft below land-surface datum, August 5, 1992.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEARS OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 02	6.83	FEB 10	7.30	MAY 03	6.26	JUL 28	7.93

WATER YEAR 1994 HIGHEST 6.26 MAY 03, 1994 LOWEST 7.93 JUL 28, 1994

STORY COUNTY

420137093361501. Local number, 83-24-02 DABC.

LOCATION.--Lat 41°01'37", long 93°36'15", Hydrologic Unit 07080105, in Ames, north of the Chicago and Northwestern Railroad and County Road E-41, approximately 0.75 mi east of U.S. Highway 69. Owner: City of Ames.

AQUIFER.--Glacial drift: in sand and gravel of Pleistocene age.

WELL CHARACTERISTICS.--Drilled municipal well, depth 124 ft, casing information unavailable.

INSTRUMENTATION.--Quarterly measurement with chalked tape or electric line by USGS personnel.

DATUM.--Elevation of land-surface datum is 926 ft above sea level, from topographic map. Measuring point: Top of casing, 0.82 ft above land-surface datum.

REMARKS.--City well No. 4.

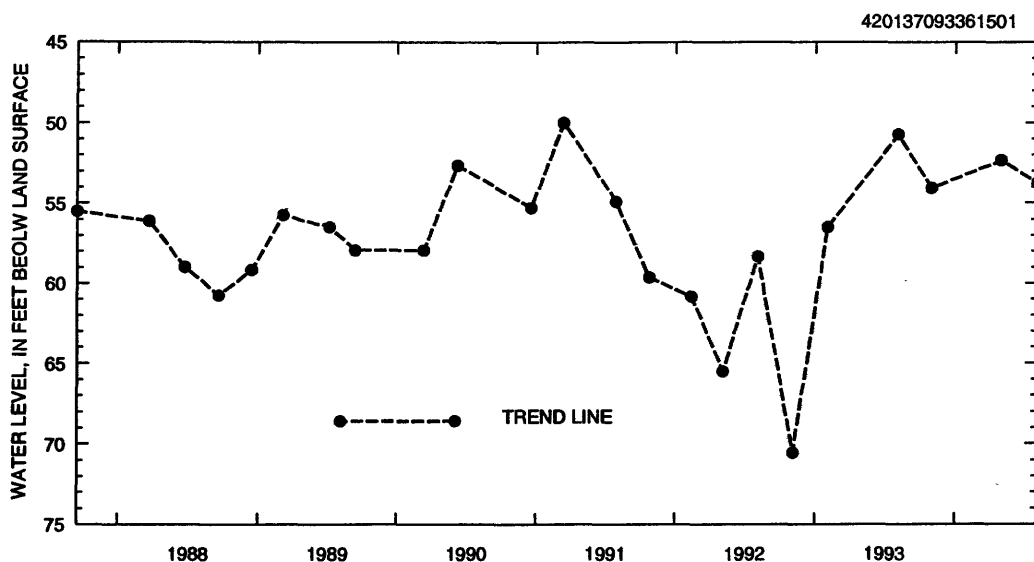
PERIOD OF RECORD.--September 1987 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 49.98 ft below land-surface datum, March 14, 1991; lowest measured, 70.56 ft below land-surface datum, November 4, 1992.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 01	54.08	JAN 31	61.35	MAY 02	52.35	AUG 02	53.76

WATER YEAR 1994 HIGHEST 52.35 MAY 02, 1994 LOWEST 61.35 JAN 31, 1994



VAN BUREN COUNTY

404150091483001. Local number, 68-08-08 CDD.

LOCATION.--Lat 40°41'53", long 91°48'20", Hydrologic Unit 07100009, located at the west end of the park in the City of Bonaparte, south of County Road J-40. Owner: City of Bonaparte.

AQUIFER.--Mississippian: in limestone and dolomite of Mississippian age.

WELL CHARACTERISTICS.--Drilled unused semi-confined public-supply well, diameter 6 in., depth 205 ft, cased to 18 ft, open hole 18-205 ft.

INSTRUMENTATION.--Intermittent measurement with chalked tape by USGS personnel. Graphic water-level recorder December 1988 to July 1990. Intermittent measurement with chalked tape by USGS personnel August 1988 to December 1988.

DATUM.--Elevation of land-surface datum is 552 ft above sea level, from topographic map. Measuring point: Top of recorder platform, 0.65 ft above land-surface datum.

REMARKS.--Bonaparte No. 1 well. Recorder removed July 17, 1990.

PERIOD OF RECORD.--August 1988 to present.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 15.08 ft below land-surface datum, August 10, 1993; lowest measured, 32.13 ft below land-surface datum, August 16, 1989.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
FEB 01	22.11	MAY 06	19.78	AUG 01	23.11

WATER YEAR 1994 HIGHEST 19.78 MAY 06, 1994 LOWEST 23.11 AUG 01, 1994

WASHINGTON COUNTY

411300091320701. Local number, 74-06-15 BDAC.

LOCATION.--Lat 41°13'00", long 91°32'07", Hydrologic Unit 07080107, in the water treatment plant, beneath the water tower in Crawfordsville.

Owner: Town of Crawfordsville.

AQUIFER.--Mississippian: in dolomite of Mississippian age.

WELL CHARACTERISTICS.--Drilled unused municipal artesian water well, diameter 6.5 in., depth 215 ft, cased to 132 ft, open hole 132-215 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 725 ft above sea level, from topographic map. Measuring point: Nipple on plate welded to casing, 1.10 ft above land-surface datum.

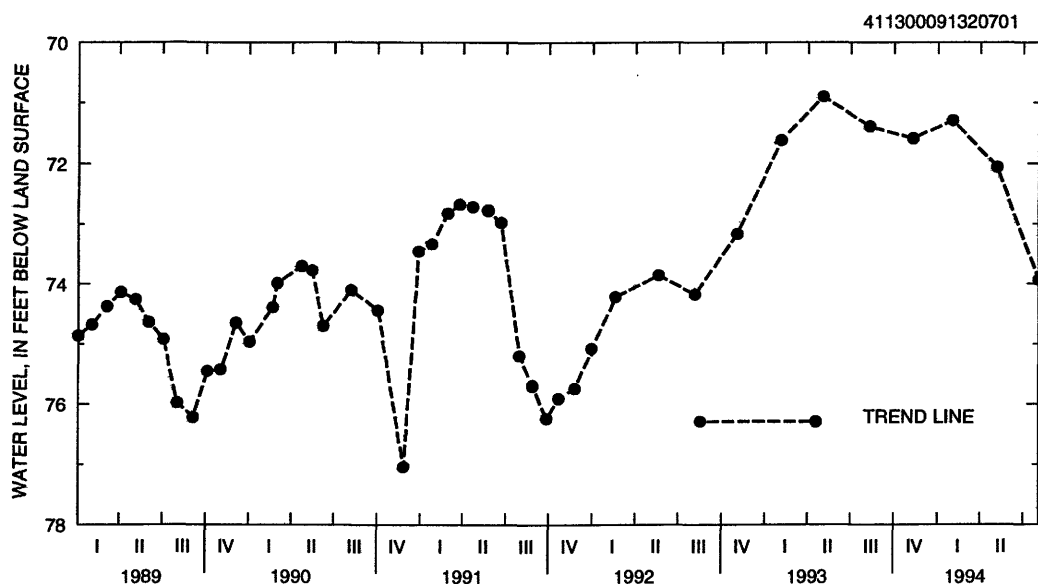
PERIOD OF RECORD.--September 1983, March 1987 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 69.23 ft below land-surface datum, March 25, 1987; lowest measured, 77.04 ft below land-surface datum, November 27, 1990.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 09	71.59	FEB 01	71.29	MAY 06	72.06	AUG 02	73.94

WATER YEAR 1994 HIGHEST 71.29 FEB 01, 1994 LOWEST 73.94 AUG 02, 1994



412037091564701. Local number, 76-09-31 CBBC.

LOCATION.--Lat 41°20'37", long 91°56'47", Hydrologic Unit 07080107, at Pepper Quarry on County Road V-15, 1 mi south of the City of Keota. Owner: River Products Co.

AQUIFER.--Mississippian: in limestone of Mississippian age.

WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 5 in., depth 136 ft, cased to 19 ft, open hole 19-136 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel. Graphic water-level recorder August 1979 to December 1989.

DATUM.--Elevation of land-surface datum is 745 ft above sea level, from topographic map. Measuring point: Top of casing, 2.88 ft above land-surface datum.

REMARKS.--Water levels affected by quarrying operations.

PERIOD OF RECORD.--August 1979 to current year.

REVISED RECORDS.--WDR IA-84-1.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 8.45 ft below land-surface datum, May 3, 1993; lowest recorded, 25.72 ft below land-surface datum, December 10, 1989.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 09	15.78	FEB 01	16.13	MAY 05	16.24	AUG 01	17.80

WATER YEAR 1994 HIGHEST 15.78 NOV 09, 1993 LOWEST 17.80 AUG 01, 1994

WASHINGTON COUNTY--Continued

412750091495201. Local number, 77-09-24 AADA.

LOCATION.--Lat 41°27'54", long 91°49'47", Hydrologic Unit 07080209, north of the city sewage treatment plant and west of First Avenue SE, Wellman. Owner: City of Wellman.

AQUIFER.--Mississippian: in dolomite of Mississippian age.

WELL CHARACTERISTICS.--Drilled unused artesian water well, diameter 8 in., depth 110 ft, cased to 47 ft, open hole 47 to 110 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 695 ft above sea level, from topographic map. Measuring point: Nipple on plate welded to casing, 1.87 ft above land-surface datum.

REMARKS.--City test well No. 1.

PERIOD OF RECORD.--May 1963 to October 1971, May 1973 to current year.

REVISED RECORDS.--WDR IA-84-1, WDR IA-88-1.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 1.38 ft above land-surface datum, May 3, 1993, March 28, 1979, and April 13, 1983; lowest measured, 6.80 ft below land-surface datum, October 20, 1964.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 09	1.77	FEB 01	2.47	MAY 05	2.32	AUG 02	3.49

WATER YEAR 1994 HIGHEST 1.77 NOV 09, 1994 LOWEST 3.49 AUG 02, 1994

421829091304701. Local number, 75-06-14 ABBB.

LOCATION.--Lat 41°18'27", long 91°30'47", Hydrologic Unit 07080209, 1 mi north and 1.5 mi east of the junction of U.S. Highway 218 and Iowa Highway 92. Owner: Mrs. David Armstrong.

AQUIFER.--Glacial drift: in material of Pleistocene age.

WELL CHARACTERISTICS.--Bored unused water-table well, diameter 12 in., depth 45 ft, lined with tile.

INSTRUMENTATION.--Monthly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 745 ft above sea level, from topographic map. Measuring point: Nipple welded to barrel, 4.08 ft above land-surface datum.

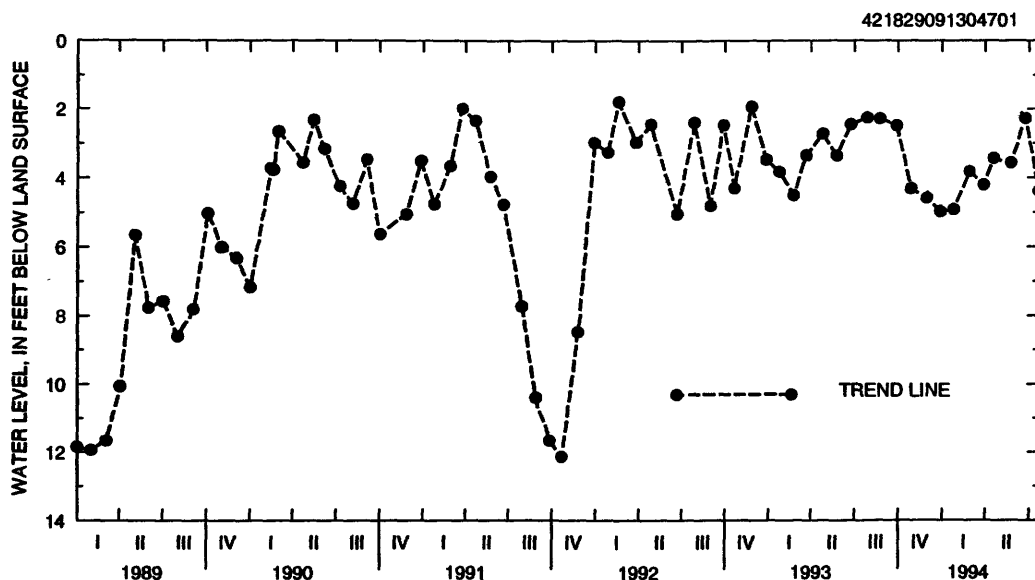
PERIOD OF RECORD.--November 1983 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 1.53 ft below land-surface datum, May 23, 1984; lowest measured, 12.65 ft below land-surface datum, November 1, 1988.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 28	4.31	JAN 25	4.91	APR 19	3.44	JUL 22	4.39
NOV 30	4.58	FEB 28	3.82	MAY 25	3.57	AUG 25	6.39
DEC 28	4.97	MAR 29	4.21	JUN 24	2.27	SEP 27	8.26

WATER YEAR 1994 HIGHEST 2.27 JUN 24, 1994 LOWEST 8.26 SEP 27, 1994



WEBSTER COUNTY

421837094083601. Local number, 87-28-29 CCCD.

LOCATION.--Lat 41°18'37", long 94°08'36", Hydrologic Unit 07100006, 3 mi north and 2 mi east of the Town of Harcourt. Owner: Grace Helms.

AQUIFER.--Glacial drift: in material of Pleistocene age.

WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 12 in., depth 42 ft, lined with tile.

INSTRUMENTATION.--Monthly measurement with chalked tape by USGS personnel. Graphic water-level recorder October 1942 to December 1976.

DATUM.--Elevation of land-surface datum is 1,165 ft above sea level, from topographic map. Measuring point: Top of casing, 1.29 ft above land-surface datum.

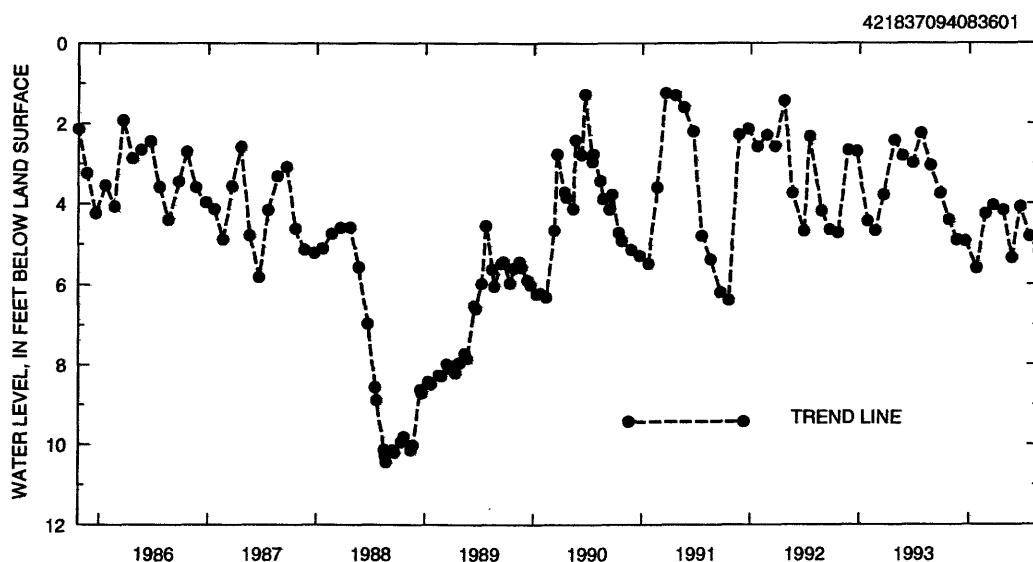
PERIOD OF RECORD.--October 1942 to June 1956, March 1958 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 0.05 ft below land-surface datum, August 1, 1972; lowest measured, 13.62 ft below land-surface datum, March 12, 1956.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 26	4.41	JAN 26	5.60	APR 25	4.17	JUL 22	4.82
NOV 22	4.91	FEB 24	4.26	MAY 25	5.35	AUG 22	5.20
DEC 20	4.94	MAR 22	4.05	JUN 21	4.09	SEP 23	7.00

WATER YEAR 1994 HIGHEST 4.05 MAR 22, 1994 LOWEST 7.00 SEP 23, 1994



423018094214701. Local number, 89-30-23 CCBB.

LOCATION.--Lat 41°30'18", long 94°21'47", Hydrologic Unit 07100004, 75 ft west of the new school addition, Barnum. Owner: Johnson Township Consolidated School.

AQUIFER.--Dakota: in sandstone of Cretaceous age.

WELL CHARACTERISTICS.--Drilled unused artesian water well, diameter 4 in., reported depth 208 ft, cased to 208 ft, perforated 203-208 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,174 ft above sea level, from topographic map. Measuring point: Top of casing at land-surface datum.

PERIOD OF RECORD.--October 1942 to September 1945, May 1947 to current year.

REVISED RECORDS.--WDR IA-88-1.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 30.36 ft below land-surface datum, October 21, 1942; lowest measured, 45.85 ft below land-surface datum, July 28, 1980.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 05	40.27	MAY 05	41.18	AUG 02	41.76

WATER YEAR 1994 HIGHEST 40.27 NOV 05, 1994 LOWEST 41.76 AUG 02, 1994

WOODBURY COUNTY

422058095573701. Local number, 87-44-15 CBBB.

LOCATION.--Lat 41°20'58", long 95°57'37", Hydrologic Unit 10230003, approximately 3.5 mi west and 5.5 mi north of the Village of Oto.

Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Dakota: in sandstone of Cretaceous age.

WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 197 ft, cased to 197 ft, perforated 185-189 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,165 ft above sea level, from topographic map. Measuring point: Top of casing, 1.50 ft above land-surface datum.

REMARKS.--Well D-34.

PERIOD OF RECORD.--April 1980 to December 1980, May 1982 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 53.39 ft below land-surface datum, November 3, 1993; lowest measured, 63.56 ft below land-surface datum, November 2, 1982.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 03	53.39	FEB 08	53.62	MAY 04	53.83	JUL 29	53.97

WATER YEAR 1994 HIGHEST 53.39 NOV 03, 1993 LOWEST 53.97 JUL 29, 1994

422830096000511. Local number, 88-44-16 BAAB11.

LOCATION.--Lat 41°28'30", long 96°00'05", Hydrologic Unit 10230004, approximately 3 mi east and 0.5 mi south of the Town of Merville.

Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Dakota: in sandstone of Cretaceous age.

WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 337 ft, cased to 337 ft, perforated 332-337 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,340 ft above sea level, from topographic map. Measuring point: Top of casing, 3.50 ft above land-surface datum.

REMARKS.--Well D-33.

PERIOD OF RECORD.--October 1979 to December 1980, May 1982 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 199.09 ft below land-surface datum, April 13, 1987; lowest measured, 202.90 ft below land-surface datum, October 17, 1979.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 01	199.73	FEB 08	199.63	MAY 04	199.64	JUL 28	199.45

WATER YEAR 1994 HIGHEST 199.45 JUL 28, 1994 LOWEST 199.73 NOV 01, 1993

422910096135811. Local number, 89-46-36 BBDC11.

LOCATION.--Lat 41°29'10", long 96°13'58", Hydrologic Unit 10230004, approximately 0.75 mi northeast of the Eberly Cemetery or 2.5 mi west and 0.75 mi north of the Village of Lawton. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.

AQUIFER.--Dakota: in sandstone of Cretaceous age.

WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 500 ft, cased to 500 ft, perforated 358-362 ft.

INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 1,268 ft above sea level, from topographic map. Measuring point: Top of casing, 3.00 ft above land-surface datum.

REMARKS.--Well D-30.

PERIOD OF RECORD.--April 1980 to December 1980, May 1982 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 128.10 ft below land-surface datum, July 28, 1994; lowest measured, 135.35 ft below land-surface datum, November 2, 1982.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 01	128.49	FEB 08	128.44	MAY 02	128.26	JUL 28	128.10

WATER YEAR 1994 HIGHEST 128.10 JUL 28, 1994 LOWEST 128.49 NOV 01, 1993

QUALITY OF GROUND WATER

WATER-QUALITY DATA, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

STATION NUMBER	LOCAL WELL NUMBER	DATE	LOCAL WELL NAME	COUNTY	SAMPLE DATE	SAMPLE TIME	GEO-LOGIC UNIT	DEPTH OF WELL, TOTAL (FEET)
411246094402401	07533W32CDDDB	1967	Bridgewater 2	Adair	07-01-94	0820	*111HLCN	43
405631094560802	071N35W20AACA	1978	Nodaway 3	Adams	06-30-94	1020	111ALVM	36
413234094552401	07835W19BCDB	1976	Brayton 1	Audubon	06-27-94	1430	111ENRV	41
420451093561301	08427W13DCAA	1940	Boone 20	Boone	07-13-94	1500	111ALVM	63.7
421025094063001	08528W16DABA	1932	Boxholm 2	Boone	07-13-94	1300	112PLSC	49
424708094570801	09235W14BCCC	1949	Albert City 1	Buena Vista	07-18-94	1500	112PLSC	190
425344095090401	09337W01DDDD	1977	Sioux Rapids 2	Buena Vista	07-18-94	1700	111ALVM	54
411622094520901	07535W27BBAB	1921	Cumberland 1	Cass	06-27-94	1615	112PLSC	155
414652090153201	08106E33ADA	1956	Camanche 2	Clinton	07-11-94	1400	111ALVM	61.2
420336095115601	08437W30BDAD	1936	Vail 1	Crawford	06-28-94	1045	111ALVM	32
412924094072203	078N28W13BCBC	1986	Earlham 6	Dallas	07-20-94	1145	111ALVM	39
415057094065301	081N28W09ABBB	1987	Perry 9R	Dallas	07-20-94	1400	111ALVM	45
423135090383201	08903E18AADD	1969	Dubueque 9	Dubuque	07-19-94	1530	111ALVM	125
432348094285201	09931W14BBBD	1981	Armstrong 5	Emmet	07-19-94	1300	112PLSC	130
425341093132501	09320W05DDDD	1956	Sheffield 2	Franklin	07-12-94	1530	110QRNR	27
404327095284801	068N40W07BCAA	1980	Farragut 79-2 (North)	Fremont	06-29-94	1730	111ALVM	65
414236096012501	08045W25DABD	1951	Mondamin 2, South	Harrison	06-29-94	0750	111ALVM	90
422109095275401	08740W14ABDC	1948	Ida Grove 2	Ida	06-28-94	1235	112PLSC	70
422915095323504	089N39W33CDDD	1985	Holstein 3	Ida	06-28-94	1420	111ALVM	54
414520092112001	08012W12AC	1952	Ladora 1	Iowa	07-18-94	1100	112PLSC	72.5
413907093070501	07920W13ADDC	1952	Newton 7	Jasper	07-14-94	1030	111ALVM	54
403745091174701	067N04W02CBBC	1991	Fort Madison 4	Lee	07-12-94	1520	111ALVM	147
420005091431201	08308W13ACDB	1970	Cedar Rapids S6	Linn	07-15-94	1010	111ALVM	65
411644091110703	07503W22DCBD	1975	Grandview 3	Louisa	07-13-94	1215	112AFNN	174
432608096201501	10047W36DCBD	1988	Lester (4) 2	Lyon	06-22-94	1920	111ALVM	32
420405092545601	084N18W23CACA	1977	Marshalltown 8	Marshall	07-11-94	0945	112PLSC	223
410656095380201	07342W23AAAC	1978	Silver City 3	Mills	06-29-94	1540	111ALVM	60
420955095475601	08543W24BDBA	1973	Mapleton 5	Monona	06-28-94	1600	111ALVM	63.5
431157095502901	09742W29BBBC	1949	Sheldon 5	O'Brien	07-19-94	1545	112PLSC	24
403906095015001	06737W01AAAA	1985	Shambaugh 3	Page	06-30-94	0800	111ALVM	26
423537095583901	09043W19CCBB	1956	Kingsley 1	Plymouth	07-18-94	1220	110QRNR	37
411501095251301	075N40W35CBCA	1975	Carson (5) 3	Pottawattamie	07-01-94	1545	111ALVM	25
413049095254501	07839W34ACCD	1968	Shelby 5	Shelby	06-27-94	1245	111ALVM	48.5
430017096285301	09548W35BDDC	1931	Hawarden 2	Sioux	06-22-94	1700	110QRNR	36
415252093411401	08224W30DCBB	1945	Slater 1	Story	07-14-94	0830	112PLSC	180
415417092180101	08213W24AAAD	1961	Belle Plaine 4	Tama	06-29-94	1040	111ALVM	42
415753092350201	08315W27CDD	1966	Tama 5	Tama	06-29-94	1230	111ALVM	43
403659094285301	06732W12CAAD	1960	Blockton 1	Taylor	06-30-94	1240	112PLSC	271
410907092375101	07315W06CADD	1970	Eddyville 2	Wapello	07-12-94	1145	112PLSC	30
411820093441201	07525W16ABA	1959	Saint Marys 1	Warren	07-14-94	1330	112PLSC	29
413040093290501	07823W34DDBD	1979	Carlisle 5	Warren	07-14-94	1230	111ALVM	30
412849091343301	07706W17BBDD	1973	Riverside 6	Washington	07-13-94	1430	111ALVM	225
431828091473201	098N08W16ACBC	1972	Decorah 6	Winneshiek	07-19-94	1120	111ALVM	82
422831095465102	08942W34DDDD	1927	Correctionville 1 W	Woodbury	07-18-94	1015	111ALVM	26
423954093535801	09126W27CAAD	1952	Eagle Grove 3	Wright	07-13-94	1040	112PLSC	70

*Geologic unit abbreviations used in this table are:

110QRNR	Quaternary-Cretaceous undifferentiated	111HLCN	Quaternary Holocene series
110QRNR	Quaternary system	112AFNN	Quaternary Aftonian interglacial deposits
111ALVM	Quaternary alluvium	112PLSC	Quaternary Pleistocene series
111ENRV	Quaternary East Nishnabotna River alluvium		

QUALITY OF GROUND WATER

359

STATION	NUMBER	DATE	FLOW RATE (G/M) (00058)	PUMP OR FLOW PERIOD PRIOR TO SAM- PLING (MIN) (72004)	TEMPER- ATURE WATER (DEG C) (00010)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH (STAND- ARD UNITS) (00400)	OXYGEN, DIS- SOLVED (MG/L) (00300)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	ALKA- LINITY LAB (MG/L AS CACO3) (90410)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)
411246094402401		07-01-94	>18	>20	11.0	274	6.3	8.6	120	57	168	<.1
405631094560802		06-30-94	20	>30	12.0	596	6.5	.4	280	164	348	.2
413234094552401		06-27-94	100	>30	12.0	878	6.8	.6	400	318	506	<.1
420451093561301		07-13-94	260	120	15.0	718	7.0	--	390	280	498	.1
421025094063001		07-13-94	32	25	11.0	1,090	6.5	--	530	363	706	1.7
424708094570801		07-18-94	130	20	10.0	1,380	7.2	1.0	660	393	982	1.8
425344095090401		07-18-94	286	>20	10.5	898	7.0	3.1	470	306	576	<.1
411622094520901		06-27-94	30	30	13.0	342	6.8	3.1	160	168	178	<.1
414652090153201		07-11-94	215	>60	13.0	447	7.6	6.0	--	--	--	<.1
420336095115601		06-28-94	180	20	12.5	911	7.1	1.8	410	287	574	<.1
412924094072203		07-20-94	120	25	13.0	631	6.5	--	340	280	388	.2
415057094065301		07-20-94	300	40	11.0	810	6.8	--	430	294	536	.1
423135090383201		07-19-94	700	>360	12.5	418	7.4	.3	170	160	260	.4
432348094285201		07-19-94	250	20	10.0	1,140	7.3	.5	540	436	746	1.0
425341093132501		07-12-94	45	35	11.0	580	7.1	--	300	229	382	<.1
404327095284801		06-29-94	165	>30	13.0	649	6.8	.9	310	243	338	.3
414236096012501		06-29-94	160	>30	12.5	1,230	7.1	.4	580	538	724	1.5
422109095275401		06-28-94	160	>30	12.0	904	7.1	5.6	410	298	580	.1
422915095323504		06-28-94	100	30	11.0	833	7.1	5.4	400	268	502	.1
414520092112001		07-18-94	75	>30	13.5	1,040	7.8	.5	330	380	614	4.9
413907093070501		07-14-94	350	>120	17.0	731	7.0	--	380	282	488	.1
403745091174701		07-12-94	600	>30	14.0	517	7.3	.8	240	242	248	5.5
420005091431201		07-15-94	900	>360	16.5	533	7.6	2.9	250	206	300	<.1
411644091110703		07-13-94	60	30	14.0	454	7.4	.4	230	243	248	.7
		06-22-94	45	>30	9.5	1,185	7.3	.4	650	304	856	.5
420405092545601		07-11-94	860	120	10.5	759	7.4	.4	--	--	--	1.2
410656095380201		06-29-94	100	20	11.5	919	7.1	8.2	450	289	522	.4
420955095475601		06-28-94	350	>30	11.5	851	7.1	4.2	410	317	524	<.1
431157095502901		07-19-94	50	>20	10.5	974	7.1	.2	510	387	626	.4
403906095015001		06-30-94	30	>30	11.0	482	6.3	.4	210	134	272	.2
423537095583901		07-18-94	220	30	10.0	891	7.1	4.4	440	320	554	<.1
411501095251301		07-01-94	40	20	11.0	758	7.1	.5	410	318	408	.2
413049095254501		06-27-94	15	>30	10.5	576	7.0	8.6	260	193	356	<.1
430017096285301		06-22-94	150	>30	11.5	950	7.3	7.0	460	307	632	<.1
415252093411401		07-14-94	90	30	12.0	805	7.1	--	280	420	460	7.5
415417092180101		06-29-94	225	20	15.5	697	6.6	6.8	340	230	420	--
415753092350201		06-29-94	--	25	12.0	662	7.6	4.8	310	224	386	--
403659094285301		06-30-94	40	20	13.0	1,770	7.8	.4	150	413	1,020	2.8
410907092375101		07-12-94	--	>45	14.5	786	7.4	1.5	410	244	514	<.1
411820093441201		07-14-94	20	>60	11.0	363	7.0	--	180	123	278	<.1
413040093290501		07-14-94	220	<25	11.0	602	7.3	--	310	220	414	<.1
412849091343301		07-13-94	230	>60	14.0	717	8.0	.2	330	382	402	4.4
431828091473201		07-19-94	425	>45	12.0	634	7.4	1.9	320	270	378	<.1
422831095465102		07-18-94	30	>20	11.5	767	7.2	7.2	400	266	476	.1
423954093535801		07-13-94	300	>90	11.5	767	7.1	--	380	395	446	1.1

QUALITY OF GROUND WATER

STATION	NUMBER	DATE	NITRO- GEN, NO ₂ +NO ₃ DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, ORGANIC DIS- SOLVED (MG/L AS N) (00607)	NITRO- GEN, AM- MONIA + ORGANIC DIS- SOLVED (MG/L AS N) (00623)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)	TRIAZIN SCREEN (ELISA) WAT, WH REC, AS ATRAZIN (UG/L) (34757)	ALA- CHLOR (ELISA) WAT FLT 0.7 U GF, REC (UG/L) (82695)	ATRA- ZINE WATER UNFLTRD REC (UG/L) (39630)	CYAN- AZINE TOTAL (UG/L) (81757)
411246094402401		07-01-94	8.5	<.1	<.1	.1	<1.0	<.10	<.12	--	--
405631094560802		06-30-94	.1	<.1	.2	.2	<1.0	<.10	<.12	--	--
4113234094552401		06-27-94	<.1	<.1	<.1	.2	1.3	<.10	<.10	--	--
420451093561301		07-13-94	4.4	.1	.2	.1	2.2	.30	.13	--	--
421025094063001		07-13-94	<.1	<.1	1.6	.2	1.8	<.10	<.12	--	--
424708094570801		07-18-94	<.1	<.1	1.8	<.1	2.8	<.10	<.12	--	--
425344095090401		07-18-94	8.8	<.1	.1	<.1	1.4	.90	.14	.30	<.10
411622094520901		06-27-94	<.1	<.1	<.1	<.1	1.2	<.10	<.10	--	--
414652090153201		07-11-94	5.3	<.1	<.1	<.1	<1.0	<.10	<.10	--	--
420336095115601		06-28-94	7.6	<.1	<.1	.1	<1.0	<.10	<.10	--	--
412924094072203		07-20-94	.4	<.1	.2	.1	1.5	<.10	<.12	--	--
415057094065301		07-20-94	.1	<.1	.2	<.1	1.9	<.10	<.12	--	--
423135090383201		07-19-94	<.1	.2	.6	.4	3.5	<.10	.14	<.10	<.10
432348094285201		07-19-94	<.1	<.1	1.0	<.1	2.1	<.10	<.12	--	--
425341093132501		07-12-94	12.0	<.1	<.1	<.1	<1.0	.40	<.12	<.10	<.10
404327095284801		06-29-94	1.2	<.1	.3	.2	<1.0	<.10	<.12	--	--
414236096012501		06-29-94	<.1	.2	1.7	.4	3.1	<.10	<.10	--	--
422109095275401		06-28-94	8.6	<.1	.1	<.1	<1.0	<.10	<.10	--	--
422915095323504		06-28-94	16.0	<.1	.2	<.1	1.1	.60	.12	.40	<.10
414520092112001		07-18-94	<.1	.2	5.1	.3	3.5	<.10	<.12	<.10	<.10
413907093070501		07-14-94	5.2	<.1	.1	<.1	1.1	<.10	<.12	--	--
403745091174701		07-12-94	<.1	.1	5.6	.9	5.2	<.10	.35	<.10	<.10
420005091431201		07-15-94	2.5	.2	.2	<.1	1.7	1.0	.59	1.0	.13
411644091110703		07-13-94	<.1	<.1	.7	.3	1.1	<.10	<.10	<.10	<.10
		06-22-94	<.1	<.1	.5	.2	1.4	<.10	.12	<.10	<.10
420405092545601		07-11-94	<.1	<.1	1.2	<.1	1.4	<.10	.17	<.10	<.10
410656095380201		06-29-94	<.1	.1	.5	.2	1.3	<.10	<.12	--	--
420955095475601		06-28-94	11.0	<.1	<.1	<.1	<1.0	<.10	<.10	--	--
431157095502901		07-19-94	.5	<.1	.4	<.1	2.4	<.10	<.12	--	--
403906095015001		06-30-94	<.1	<.1	.2	.3	1.6	<.10	<.12	--	--
423537095583901		07-18-94	12.0	<.1	.2	.1	1.2	<.10	<.12	--	--
411501095251301		07-01-94	<.1	.2	.4	<.1	<1.0	<.10	<.12	--	--
413049095254501		06-27-94	15.0	<.1	<.1	<.1	<1.0	<.10	<.10	--	--
430017096285301		06-22-94	9.2	<.1	<.1	<.1	1.3	<.10	<.10	--	--
415252093411401		07-14-94	<.1	<.1	7.5	<.1	16	<.10	<.12	--	--
415417092180101		06-29-94	8.4	<.1	.1	<.1	1.2	<.10	.26	<.10	<.10
415753092350201		06-29-94	4.0	<.1	.2	.1	<1.0	<.10	<.10	<.10	<.10
403659094285301		06-30-94	<.1	.3	3.1	.4	13	<.10	<.12	--	--
410907092375101		07-12-94	1.7	<.1	<.1	<.1	<1.0	<.10	<.10	--	--
411820093441201		07-14-94	9.1	<.1	<.1	<.1	<1.0	<.10	<.12	--	--
413040093290501		07-14-94	1.8	<.1	<.1	<.1	<1.0	<.10	<.12	<.10	<.10
412849091343301		07-13-94	<.1	<.1	4.4	.3	2.5	<.10	<.10	--	--
431828091473201		07-19-94	2.5	<.1	<.1	<.1	1.0	.20	<.12	.20	<.10
422831095465102		07-18-94	17.0	<.1	.2	<.1	1.4	.30	<.12	<.10	<.10
423954093535801		07-13-94	<.1	<.1	.9	<.1	1.2	<.10	<.12	--	--

361

[illegible]

QUALITY OF GROUND WATER

STATION	NUMBER	DATE	BENZENE TOTAL (UG/L) (34030)	CARBON- TETRA- CHLO- RIDE TOTAL (UG/L) (32102)	1,2-DI- CHLORO- ETHANE TOTAL (UG/L) (32103)	ETHYL- BENZENE TOTAL (UG/L) (34371)	METHYL- ENE CHLO- RIDE TOTAL (UG/L) (34423)	TETRA- CHLORO- ETHYL- ENE TOTAL (UG/L) (34475)	TOLUENE TOTAL (UG/L) (34010)	1,1,1- TRI- CHLORO- ETHANE TOTAL (UG/L) (34506)	XYLENE TOTAL WATER WHOLE TOT REC (UG/L) (81551)
411246094402401		07-01-94	<0.5	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5
405631094560802		06-30-94	<0.5	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5
413234094552401		06-27-94	<0.5	<0.5	0.5	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5
420451093561301		07-13-94	<0.5	<0.1	<0.5	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5
421025094063001		07-13-94	<0.5	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5
424708094570801		07-18-94	<0.5	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5
425344095090401		07-18-94	<0.5	<0.5	<0.5	1.5	<1.0	<0.5	<0.5	<0.5	8.6
411622094520901		06-27-94	<0.5	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5
414652090153201		07-11-94	<0.5	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5
420336095115601		06-28-94	<0.5	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5
412924094072203		07-20-94	<0.5	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5
415057094065301		07-20-94	<0.5	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5
423135090383201		07-19-94	<0.1	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5
432348094285201		07-19-94	<0.5	<0.5	<0.5	0.6	<1.0	<0.5	<0.5	<0.5	3.5
425341093132501		07-12-94	<0.5	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5
404327095284801		06-29-94	<0.5	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5
414236096012501		06-29-94	<0.5	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5
422109095275401		06-28-94	<0.5	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5
422915095323504		06-28-94	<0.5	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5
414520092112001		07-18-94	<0.5	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5
413907093070501		07-14-94	<0.5	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5
403745091174701		07-12-94	<0.5	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5
420005091431201		07-15-94	<0.5	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5
411644091110703		07-13-94	<0.5	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5
		06-22-94	<0.5	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5
420405092545601		07-11-94	<0.5	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5
410656095380201		06-29-94	<0.5	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5
420955095475601		06-28-94	<0.5	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5
431157095502901		07-19-94	<0.5	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5
403906095015001		06-30-94	<0.5	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5
423537095583901		07-18-94	<0.5	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5
411501095251301		07-01-94	<0.5	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5
413049095254501		06-27-94	<0.5	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5
430017096285301		06-22-94	<0.5	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5
415252093411401		07-14-94	<0.5	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5
415417092180101		06-29-94	<0.5	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5
415753092350201		06-29-94	<0.5	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5
403659094285301		06-30-94	<0.5	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5
410907092375101		07-12-94	<0.5	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5
411820093441201		07-14-94	<0.5	2.1	<0.5	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5
413040093290501		07-14-94	<0.5	<0.5	<0.5	<0.5	<1.0	1.7	<0.5	<0.5	<0.5
412849091343301		07-13-94	<0.5	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5
431828091473201		07-19-94	<0.5	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5
422831095465102		07-18-94	<0.5	<0.5	<0.5	1.7	<1.0	<0.5	<0.5	<0.5	9.1
423954093535801		07-13-94	<0.5	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5

PRECIPITATION WATER-QUALITY DATA

363

MCNAY RESEARCH STATION NEAR CHARITON, IOWA

LOCATION.--Lat 40°57'47", long 93°23'34", in SW1/4 NE1/4 sec. 9, T.71 N., R.23 W., Lucas County, Hydrologic Unit 10280201, 3.1 mi east and 2.0 mi north of Derby, Iowa, 3.4 mi west and 2.8 mi south of Chariton, Iowa.

OWNER.--U.S. Geological Survey.

PERIOD OF RECORD.--September 1984 to current year.

INSTRUMENTATION.--Wet/dry precipitation collector, weighing-bucket type recording rain gage with alter wind shield and event recorder. National Weather Service standard 8-inch rain and snow gage (back-up only).

REMARKS.--None.

EXTREMES FOR PERIOD OF RECORD.--Maximum field pH, 7.07, April 19- 26, 1988; minimum field pH, 3.84, February 12-19, 1985.

EXTREMES FOR CURRENT YEAR.--Maximum field pH, 6.5, June 1-8; minimum field pH, 4.0, February 9-16.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS N) (00618)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)
OCT 05-12	4.5	15	0.13	0.01	0.02	0.04	0.23	0.28	0.08	1.4	<0.007
OCT 12-19	4.7	20	0.43	0.02	0.03	0.02	0.54	0.58	0.08	2.2	<0.007
OCT 19-26	--	--	0.04	0.00	0.00	0.10	0.02	0.04	0.13	0.04	<0.007
OCT 26-NOV 02	--	--	--	--	--	--	--	--	--	--	--
NOV 02-09	--	--	--	--	--	--	--	--	--	--	--
NOV 09-16	5.5	5	0.23	0.02	0.01	0.03	0.26	0.14	0.05	0.58	<0.007
NOV 16-23	--	--	--	--	--	--	--	--	--	--	--
NOV 23-30	4.7	32	0.94	0.07	0.08	0.15	1.38	1.04	0.18	4.7	<0.007
NOV 30-DEC 07	--	--	--	--	--	--	--	--	--	--	--
DEC 07-14	4.7	13	0.32	0.02	0.02	0.04	0.22	0.34	0.07	1.2	0.002
DEC 14-21	4.2	43	0.33	0.03	0.04	0.11	0.89	1.08	0.22	3.3	<0.001
DEC 21-28	--	--	--	--	--	--	--	--	--	--	--
DEC 28 1993- JAN 04 1994	5.1	5	0.22	0.01	0.01	0.05	0.20	0.19	0.07	0.47	<0.001
JAN 04-11	--	--	--	--	--	--	--	--	--	--	--
JAN 11-18	--	--	--	--	--	--	--	--	--	--	--
JAN 18-25	--	--	--	--	--	--	--	--	--	--	--
JAN 25-FEB 01	--	--	0.29	0.02	0.04	0.09	0.08	0.12	0.12	0.55	0.001
FEB 01-08	--	--	--	--	--	--	--	--	--	--	--
FEB 08-15	4.7	22	0.97	0.07	0.05	0.22	0.58	1.08	0.14	1.8	0.002
FEB 15-22	4.9	6	0.07	0.01	0.00	0.04	0.30	0.18	0.03	0.83	<0.001
FEB 22-MAR 01	4.7	9	0.14	0.01	0.00	0.03	0.15	0.33	0.04	0.35	<0.001
MAR 01-08	5.2	14	0.45	0.03	0.03	0.07	0.87	0.63	0.11	1.2	0.001
MAR 08-15	--	--	0.15	0.01	0.01	0.15	0.06	0.04	0.13	0.07	0.002
MAR 15-22	--	--	6.0	0.38	0.36	0.47	1.91	1.84	0.47	6.6	0.006
MAR 22-29	--	--	0.15	0.01	0.04	0.06	0.13	0.04	0.15	0.04	0.002
APR 05-12	5.0	13	0.64	0.05	0.03	0.06	0.63	0.44	0.09	2.0	0.002
APR 12-19	5.5	9	0.12	0.01	0.02	0.06	0.64	0.22	0.06	0.53	<0.001
APR 19-26	6.7	17	0.98	0.10	0.12	0.05	0.99	0.56	0.10	2.4	0.037
APR 26-MAY 03	6.1	13	0.60	0.16	0.34	0.06	1.23	0.30	0.09	1.1	0.176
MAY 03-10	5.8	12	0.27	0.12	0.36	0.02	1.19	0.28	0.07	1.2	0.231
MAY 10-17	5.1	10	0.41	0.06	0.12	0.04	0.58	0.45	0.11	1.2	<0.001
MAY 17-24	5.1	21	1.3	0.15	0.45	0.04	1.21	0.46	0.13	2.6	0.038

PRECIPITATION WATER-QUALITY DATA

MCNAY RESEARCH STATION NEAR CHARITON, IOWA--Continued

DATE	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS N) (00618)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)
MAY											
24-31	6.2	16	1.0	0.09	0.09	0.05	1.14	0.57	0.08	0.96	0.003
MAY 31-											
JUN 07	6.8	43	0.38	0.29	1.4	0.11	4.27	0.23	0.44	1.9	1.05
JUN											
07-14	5.5	9	0.27	0.02	0.03	0.02	0.44	0.28	0.05	0.98	<0.001
JUN											
14-21	4.7	23	0.91	0.07	0.32	0.07	0.73	0.49	0.25	3.8	<0.122
JUN											
21-28	4.9	15	0.58	0.04	0.06	0.02	0.64	0.38	0.10	2.4	<0.001
JUN 28-											
JUL 05	7.1	35	0.65	0.11	0.81	0.03	3.47	0.55	0.24	1.7	0.315
JUL											
05-12	5.1	10	0.45	0.05	0.04	0.21	0.42	0.38	0.29	1.3	<0.001
JUL											
12-19	--	--	1.6	0.08	0.05	0.08	0.33	0.41	0.13	3.8	<0.001
JUL											
19-26	5.4	8	0.61	0.05	0.04	0.09	0.35	0.33	0.13	0.92	<0.001
JUL 26-											
AUG 02	5.4	8	0.78	0.07	0.05	0.03	0.34	0.31	0.08	0.59	0.001
AUG											
02-09	4.7	14	0.37	0.02	0.03	0.06	0.44	0.45	0.11	1.4	<0.001
AUG											
09-16	5.5	15	0.94	0.06	0.08	0.08	0.78	0.71	0.14	1.6	0.002
AUG											
16-23	--	--	0.11	0.01	0.05	0.08	0.10	0.04	0.13	0.07	0.002
AUG											
23-30	4.8	15	0.45	0.03	0.02	0.08	0.42	0.39	0.12	1.5	<0.001
AUG 30-											
SEP 06	4.6	11	0.07	0.01	0.01	0.03	0.12	0.16	0.05	0.97	<0.001
SEP											
06-13	--	--	0.06	0.00	0.02	0.09	0.11	0.09	0.11	0.07	0.003
SEP											
13-20	5.0	10	0.49	0.04	0.04	0.13	0.21	0.31	0.13	1.1	0.001
SEP											
20-27	4.6	16	0.19	0.01	0.02	0.01	0.40	0.30	0.05	1.9	<0.001
SEP 27-											
OCT 04	4.1	40	0.42	0.05	0.03	0.02	0.54	0.57	0.09	4.4	<0.001

PRECIPITATION WATER-QUALITY DATA

365

BIG SPRING FISH HATCHERY NEAR ELKADER, IOWA

LOCATION.--Lat 42°54'35", long 91°28'11", in SE1/4 SE1/4 sec. 31, T.94 N., R.5 W., Clayton County, Hydrologic Unit 07060004, 3.0 mi north and 2.8 mi west of Elkader, Iowa.

OWNER.--U.S. Geological Survey.

PERIOD OF RECORD.--August 1984 to current year.

INSTRUMENTATION.--Wet/dry precipitation collector, weighing-bucket type recording rain gage with alter wind shield and event recorder and National Weather Service standard 8-inch rain and snow gage (back-up only).

REMARKS.--None.

EXTREMES FOR PERIOD OF RECORD.--Maximum field pH, 7.3, May 11-18; minimum field pH, 3.83, July 30 to August 6, 1985.

EXTREMES FOR CURRENT YEAR.--Maximum field pH, 7.3, May. 11-18; minimum field pH, 4.1, Mar. 30 to Apr. 6.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994

DATE	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS N) (00618)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)
OCT 05-12	5.0	13	0.61	0.13	0.30	0.07	<0.02	0.28	0.16	1.5	<0.007
OCT 12-19	4.9	18	0.66	0.08	0.04	0.05	0.77	0.61	0.09	2.7	<0.007
OCT 19-26	4.6	19	0.23	0.06	0.05	0.04	0.66	0.74	0.07	1.6	<0.007
OCT 26--											
NOV 02	--	--	--	--	--	--	--	--	--	--	--
NOV 02-09	--	--	--	--	--	--	--	--	--	--	--
NOV 09-16	5.1	13	0.30	0.08	0.02	0.02	0.68	0.40	0.07	1.6	<0.007
NOV 16-23	--	--	--	--	--	--	--	--	--	--	--
NOV 23-30	4.3	30	0.11	0.02	0.02	0.02	0.37	0.48	0.05	2.4	<0.007
NOV 30--											
DEC 07	--	--	1.3	0.13	0.07	0.26	2.70	1.48	0.37	4.6	<0.001
DEC 07-14	4.8	16	0.67	0.15	0.02	0.06	0.37	0.32	0.11	2.5	<0.001
DEC 14-21	4.4	24	0.19	0.02	0.09	0.08	0.13	0.50	0.14	2.1	0.002
DEC 21-28	6.0	6	0.69	0.11	0.02	0.06	0.18	0.17	0.10	0.32	0.002
DEC 28 1993--											
JAN 04 1994	5.8	7	0.68	0.12	0.01	0.06	0.26	0.33	0.09	0.50	<0.001
JAN 04-11	4.4	24	0.29	0.04	0.02	0.08	0.38	0.71	0.22	1.3	0.002
JAN 11-18	4.5	23	0.57	0.09	0.02	0.08	0.12	0.75	0.24	0.94	0.004
JAN 18-25	4.4	20	0.28	0.03	0.03	0.08	0.23	0.59	0.17	0.95	0.011
JAN 25--											
FEB 01	4.4	22	0.09	0.02	0.01	0.03	0.17	0.30	0.07	1.8	<0.001
FEB 01-08	4.9	10	0.16	0.02	0.01	0.06	0.24	0.32	0.09	0.48	<0.001
FEB 08-15	4.2	33	0.27	0.05	0.03	0.11	0.11	0.99	0.42	0.51	0.005
FEB 15-22	5.6	21	0.68	0.08	0.07	0.30	1.24	0.58	0.26	2.6	<0.001
FEB 22--											
MAR 01	5.2	7	0.36	0.06	0.01	0.02	0.10	0.29	0.05	0.39	<0.001
MAR 01-08	--	--	--	--	--	--	--	--	--	--	--
MAR 08-15	--	--	0.94	0.09	0.06	0.13	0.75	0.22	0.16	1.2	<0.003
MAR 17-22	5.7	35	1.2	0.22	0.09	0.14	2.16	0.95	0.20	5.2	0.004
MAR 22-29	--	--	4.1	0.19	0.12	0.16	1.52	0.72	0.19	3.2	0.004
MAR 29--											
APR 05	6.5	19	1.3	0.11	0.05	0.03	1.16	0.36	0.06	1.7	0.003
APR 05-12	6.7	50	3.8	0.48	0.21	0.22	1.68	1.39	0.29	7.9	<0.001
APR 12-19	5.2	14	0.55	0.07	0.12	0.05	0.53	0.41	0.08	2.2	0.002
APR 19-26	6.4	20	1.6	0.33	1.7	0.12	0.69	0.38	0.38	2.3	0.254
APR 26--											
MAY 03	5.8	20	0.11	0.02	0.02	0.02	0.49	0.38	0.06	1.4	<0.001
MAY 03-10	5.9	12	0.28	0.08	0.02	0.02	0.85	0.50	0.04	1.2	<0.001
MAY 10-17	5.3	20	0.42	0.09	0.05	0.05	1.22	0.80	0.11	2.6	<0.001

PRECIPITATION WATER-QUALITY DATA

BIG SPRING FISH HATCHERY NEAR ELKADER, IOWA--Continued

DATE	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS N) (00618)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)
MAY 17-24	6.2	20	1.2	0.17	0.19	0.03	0.97	0.46	0.06	2.4	<0.001
MAY 24-31	6.5	11	0.44	0.09	0.06	0.02	0.82	0.38	0.03	0.74	<0.001
MAY 31- JUN 07	--	--	--	--	--	--	--	--	--	--	--
JUN 07-14	6.5	9	0.47	0.08	0.04	0.04	0.53	0.29	0.04	0.71	<0.001
JUN 14-21	4.5	27	0.71	0.22	0.02	0.03	0.61	0.53	0.13	4.1	<0.001
JUN 21-28	4.7	10	0.03	0.01	0.00	0.02	0.12	0.19	<0.03	0.72	<0.001
JUN 28- JUL 05	5.0	10	0.35	0.05	0.03	0.05	0.31	0.35	0.10	1.2	<0.001
JUL 05-12	5.1	7	0.29	0.03	0.03	0.08	0.19	0.23	0.12	0.82	<0.001
JUL 12-19	5.1	19	1.0	0.12	0.04	0.02	0.72	0.70	0.08	3.1	0.001
JUL 19-26	5.9	7	0.45	0.05	0.04	0.07	0.30	0.23	0.08	1.0	<0.001
JUL 26- AUG 02	--	--	3.0	0.26	0.12	0.06	0.65	1.24	0.22	3.2	0.001
AUG 02-09	--	--	2.3	0.30	0.42	0.16	0.58	0.52	0.29	1.8	<0.001
AUG 09-16	4.4	27	0.29	0.05	0.02	0.03	0.51	0.48	0.09	3.1	<0.001
AUG 16-23	6.6	14	1.3	0.11	0.07	0.03	0.54	0.41	0.08	1.6	<0.001
AUG 23-30	5.3	9	0.59	0.08	0.08	0.04	0.24	0.32	0.06	1.3	<0.001
AUG 30- SEP 06	4.8	12	0.35	0.06	0.02	0.02	0.27	0.36	0.06	1.3	<0.001
SEP 06-13	6.8	15	1.3	0.22	0.71	0.04	0.26	0.44	0.19	0.86	0.023
SEP 13-20	6.7	11	1.3	0.16	0.07	0.05	0.25	0.14	0.07	0.80	0.001
SEP 20-27	5.2	8	0.45	0.04	0.02	0.01	0.25	0.23	0.06	1.3	<0.001
SEP 27- OCT 04	4.3	42	1.2	0.11	0.09	0.05	0.82	0.92	0.14	5.0	0.001

Page

Page

A

Acre-foot, definition of	41
Annual 7-day minimum, definition of	42
Aquifer, definition of	41
Artesian, definition of	41

B

Bacteria, definition of	41
Beaver Creek (tributary to Des Moines River), near Grimes	139, 240
near Woodward	239
Beaver Creek (tributary to Iowa River) at New Hartford	100, 236
Bed load discharge, definition of	44
Bed load, definition of	44
Bed material, definition of	41
Big Bear Creek at Ladora	82, 234
Big Sioux River at Akron	171
Big Sioux River basin, crest-stage partial-record stations in	225
gaging-station records in	170
Big Spring Fish Hatchery near Elkader	233
gaging station records	63
precipitation water quality data for	365
Black Hawk Creek at Hudson	103, 236
Bloody Run Creek near Marquette	51, 231
Bloody Run Site No. 2 near Giard	231
Bloody Run tributary at Spook Cave near Froelich	231
Boone River, near Goldfield	239
near Webster City	132, 239
Bottom material, definition of	41
Boyer River at Logan	191, 246
Boyer River basin, crest-stage partial-record stations in	227
gaging-station records in	191
Butterick Creek near Jefferson	240

C

Cedar Creek (tributary to Des Moines River) near Bussey	166, 243
Cedar Creek (tributary to Skunk River) near Oakland Mills	121, 238
Cedar River, at Cedar Rapids	105, 237
at Cedar Falls	101, 236
at Charles City	93, 236
at Janesville	95, 236
at Waterloo	104, 237
Little Cedar, near Ionia	94
near Conesville	106, 237
West Fork, at Finchford	96, 236
Chariton River basin, crest-stage partial-record stations in ..	230
gaging-station records in	212
Chariton River, near Chariton	212, 249
near Moulton	217, 249
near Rathbun	215, 249
South Fork, near Promise City	213, 249
Clear Creek, near Coralville	87, 235
near Oxford	235
Clear Lake at Clear Lake	98
Contents, definition of	41
Control structure, definition of	41
Control, definition of	41
Cooperation	3

Coralville Lake near Coralville	84
Corydon Lake, at spillway, Corydon	256
2150 ft u/s from dam, at Corydon	250
350 ft upstream of dam, at Corydon	254
North arm, at Corydon	252

Crest-stage stations, maximum stage and discharge, made at ..	
partial-record stations in	218
Crow Creek at Bettendorf	71, 233
Crow Creek basin, gaging-station records in	71
Cubic feet per second per square mile, definition of	41
Cubic feet per second, definition of	41
Cubic foot per second day, definition of	41

D

Deer Creek near Toledo	234
Definition of terms	41
Des Moines River basin, crest-stage partial-record stations in ..	223
gaging-station records in	128
Des Moines River, at Estherville	128, 238
at Des Moines	240
at Eddyville	243
at Emmetsburg	238
at Fort Dodge	131, 239
at Humboldt	129, 239
at Keosauqua	169, 243
at Ottumwa	167, 243
below Racoon River, at Des Moines	155, 241
East Fork, at Dakota City	130, 239
near Pella	163, 242
near Runnells	160, 242
near Saylorville	135, 239
near Stratford	133, 239
near Tracy	165, 243
Discharge, definition of	42
Dissolved, definition of	42
Dissolved-solids concentration, definition of	42
Downstream order system	25
Drainage area, definition of	42
Drainage basin, definition of	42

E

East Branch Iowa River near Klemme	72
East Fork Des Moines River at Dakota City	130, 239
East Fork One Hundred and Two River at Bedford	207, 248
East Nishnabotna River, at Red Oak	203, 247
near Atlantic	202, 247
Elk Creek near Decatur City	208, 248
English Creek near Knoxville	164, 242
English River at Kalona	91, 235

F

Fecal coliform bacteria, definition of	41
Fecal streptococcal bacteria, definition of	41
Floyd River basin, crest-stage partial-record stations in	226
gaging-station records in	177
Floyd River, at Alton	177, 244
at James	179, 244
West Branch, near Struble	178, 244

	Page		Page
Fourmile Creek at Des Moines	156, 242	Little Cedar River near Ionia	94, 236
Fox River basin, crest-stage partial-record stations in	225	Little Maquoketa River basin, crest-stage partial-record stations in	218
G			
Gage height (G.H.), definition of	42	Little Sioux River basin, crest-stage partial-record stations in	226
Gaging station, definition of	42	gaging-station records in	183
Grand River basin, gaging-station records in	208	Little Sioux River, at Correctionville	187, 245
Ground-water level data, by county	257	at Linn Grove	186, 245
Ground-water levels, records of	36	near Turin	189, 246
Data collection and computation	37	M	
Data presentation	37	Maple River at Mapleton	188, 246
Ground-water quality data, by county	358	Maquoketa River basin, crest-stage partial-record stations in	219
Ground-water quality, records of	38	Maquoketa River near Maquoketa	67, 233
Data presentation	38	McNay Research Station near Chariton, precipitation water-quality data for	363
Explanation of descriptive headings	39	Mean concentration, definition of	45
H			
Hardness, definition of	42	Mean discharge, definition of	42
Hazelbrush Creek near Maple River	143, 240	Measuring point (MP), definition of	43
Hydrologic Benchmark Network, definition of	42	Micrograms per gram (mg/g), definition of	43
Hydrologic conditions, summary of	4	Micrograms per liter (UG/L, mg/L), definition of	43
Ground water	12	Middle Raccoon River, at Panora	149, 241
Ground-water quality	19	near Bayard	147, 241
Surface water	4	Middle River near Indianola	158, 242
Surface-water quality	18	Milligrams per liter (MG/L, mg/L), definition of	43
Suspended sediment	8	Mississippi River basin, crest-stage partial-record stations in	218
Hydrologic unit, definition of	42	Mississippi River, Main Stem	55
I			
Indian Creek near Mingo	118, 238	at Clinton	68, 233
Instantaneous discharge, definition of	42	at Keokuk	127, 238
Introduction	1	at McGregor	55, 231
Iowa River basin, crest-stage partial-record stations in	220	Missouri River basin, gaging station records in	170
gaging-station records in	72	Missouri River Main Stem	172
Iowa River, at Iowa City	88, 235	Missouri River, at Decatur, Nebraska	180, 245
at Columbus Junction	237	at Nebraska City, Nebraska	196, 247
at Marengo	83, 234	at Omaha, Nebraska	192, 246
at Marshalltown	74, 234	at Rulo, Nebraska	205, 248
at Wapello	107, 237	at Sioux City	172, 244
below Coralville Dam near Coralville	85, 235	Monona-Harrison Ditch basin, crest-stage partial-record stations in	226
East Branch, near Klemme	72, 234	gaging-station records in	181
near Lone Tree	92, 235	Monona-Harrison Ditch near Turin	182, 245
near Rowan	73, 234	Mosquito Creek basin, crest-stage partial-record stations in	227
L			
Lake Panorama at Panora	148	N	
Lake Red Rock near Pella	162	National Geodetic Vertical Datum (NGVD), definition of ..	43
Lakes and Reservoirs		National Stream Quality Accounting Network (NASQAN), definition of	43
Clear Lake at Clear Lake	98	National Trends Network (NTN), definition of	43
Coralville Lake near Coralville	84	data presentation	363
Panorama, Lake, at Panora	148	Nishnabotna River above Hamburg	204, 247
Rathbun Lake near Rathbun	214	Nishnabotna River basin, crest-stage partial-record stations in	229
Red Rock, Lake, near Pella	162	gaging-station records in	200
Saylorville Lake near Saylorville	134	Nodaway River at Clarinda	206, 248
Spirit Lake near Orleans	183	Nodaway River basin, crest-stage partial-record stations in	229
West Okoboji Lake at Lakeside Laboratory near Milford	184	gaging-station records in	206
Lamont Creek basin, crest-stage partial-record stations in ..	219	North Cedar Creek near Clayton	232
Land-surface datum, definition of	42	North Fork English River near Parnell	235
		North Raccoon River, near Jefferson	142, 240
		near Lanesboro	240

Page

Page

near Newell	140, 240
near Perry	240
near Sac City	141, 240
North River near Norwalk	157, 242
North Skunk River near Sigourney	120, 238
Numbering system for wells	27

O

Ocheyedan River near Spencer	185, 245
Old Mans Creek near Iowa City	90, 235

P

Parameter code, definition of	43
Partial-record station, definition of	43
Partial-record stations and miscellaneous discharges at	218
Particle-size classification, definition of	44
Particle-size, definition of	43
Perry Creek at 38th Street, Sioux City	176, 244
Perry Creek basin, crest-stage partial-record stations in	226
gaging-station records in	176
Pesticides, definition of	44
Picocurie (PC, pCi), definition of	44
Pilot Creek near Bradgage	238
Platte River basin, crest-stage partial-record stations in	230
gaging-station records in	207
Prairie Creek downstream of Blairstown	237
Precipitation water-quality data	363
Publications on techniques of water-resources investigations	47

R

Raccoon River, at 63rd Street, at Des Moines	241
at Van Meter	151, 241
Radiochemical program, definition of	44
Rapid Creek near Iowa City	86, 235
Rathbun Lake near Rathbun	214
Records, explanation of	25
Recoverable from bottom material, definition of	44
Return period, definition of	44
Richland Creek near Haven	79, 234
Roberts Creek above Saint Olaf	65, 233
Rock River near Rock Valley	170, 243
Runoff in inches, definition of	44

S

Salt Creek near Elberon	80, 234
Saylorville Lake near Saylorville	134
Sea level, definition of	44
Sediment, definition of	44
7-day 10-year low flow, definition of	45
Shell Rock River at Shell Rock	99, 236
Silver Creek near Luana	64, 233
Skunk River at Augusta	122, 238
Skunk River basin, crest-stage partial-record stations in	223
gaging station records in	112

Sny Magill Creek, near Clayton	59, 232
No. 2 Site, near Clayton	232

No. 3 Site, near Clayton	231
West Fork, near Clayton	232
Sny Magill tributary near Clayton	232
Sodium adsorption ratio (SAR), definition of	45
Soldier River at Pisgah	190, 246
Soldier River basin, gaging station records in	190
Solute, definition of	45
South Branch Ralston Creek at Iowa City	89, 235
South Fork Chariton River near Promise City	213, 249
South Raccoon River at Redfield	150, 241
South River near Ackworth	159, 242
South Skunk River, at Colfax	115, 237
below Squaw Creek, near Ames	114, 237
near Ames	112, 237
near Oskaloosa	119, 238
Special networks and programs	25
Hydrologic Benchmark Network	25
National Stream Quality Accounting Network (NASQAN)	25
National Trends Network (NTN)	25
Radiochemical program	25
Tritium Network	25
Specific conductance, definition of	45
Spirit Lake near Orleans	183
Squaw Creek at Ames	113, 237
Stage and water discharge, records of	27
Accuracy of the records	33
Data collection and computation	28
Data presentation	29
Identifying estimated daily discharge	32
Other records available	33
Stage-discharge relation, definition of	45
Station identification numbers	25
Downstream order system	25
Latitude-longitude system	26
Streamflow, definition of	45
Surface area, definition of	45
Surface-water quality, records of	33
Arrangement of records	33
Classification of records	33
Data presentation	35
Laboratory measurements	35
On-site measurements and sample collection	34
Remark codes	36
Sediment	34
Water temperature and specific conductance	34
Surficial bed material, definition of	45
Suspended sediment, definition of	45
Suspended, definition of	46
Suspended, recoverable, definition of	46
Suspended, total, definition of	46
Suspended-sediment concentration, definition of	45
Suspended-sediment discharge, definition of	45
Suspended-sediment load, definition of	45

T

Tarkio River basin, crest-stage partial-record stations in	229
Thermograph, definition of	46

	Page		Page
Thompson River at Davis City	211, 248	Grundy County	289
Timber Creek near Marshalltown	78, 234	Guthrie County	289
Time-weighted average, definition of	46	Hardin County	292
Tons per acre-foot, definition of	46	Harrison County	292, 358
Tons per day (T/DAY), definition of	46	Henry County	297
Total discharge, definition of	46	Humboldt County	298
Total recoverable, definition of	47	Ida County	299, 358
Total sediment discharge, definition of	45	Iowa County	300, 358
Total, definition of	46	Jackson County	301
Total-sediment load, definition of	45	Jasper County	304, 358
Tritium network, definition of	47	Johnson County	305
Turkey River at Garber	66, 233	Jones County	309
Turkey River basin, crest-stage partial-record stations in	218	Keokuk County	310
gaging-station records in	63	Lee County	358
TWRI (Techniques of Water-Resources Investigations), list of		Linn County	310, 358
publications	47	Louisa County	358
U			
Upper Iowa River basin, crest-stage partial-record stations in	218	Lyon County	316, 358
gaging-station records in	50	Madison County	320
Upper Iowa River near Dorchester	50, 231	Mahaska County	320
W			
Walnut Creek, at Des Moines	154, 241	Marion County	322
near Hartwick	81, 234	Marshall County	324, 358
Wapsipinicon River basin, crest-stage partial-record stations in	219	Mills County	325, 358
gaging station records in	69	Mitchell County	326
Wapsipinicon River, at Independence	69, 233	Monona County	328, 358
near De Witt	70, 233	Montgomery County	332
Water year, definition of	47	Muscatine County	335
Water-quality, miscellaneous analyses	231	O'Brien County	335, 358
WATSTORE data, access to	40	Osceola County	337
WDR, definition of	47	Page County	340, 358
Weighted average, definition of	47	Palo Alto County	341
Wells, ground water, levels and quality of water data, by county		Plymouth County	343, 358
Adair County	358	Pocahontas County	345
Adams County	257, 358	Pottawattamie County	346, 358
Audubon County	258, 358	Sac County	347
Benton County	260	Scott County	348
Boone County	358	Shelby County	349
Buena Vista County	263, 358	Sioux County	352, 358
Calhoun County	264	Story County	353, 358
Carroll County	264	Tama County	358
Cass County	267, 358	Taylor County	358
Cerro Gordo County	269	Van Buren County	353
Cherokee County	270	Wapello County	358
Clay County	274	Warren County	358
Clayton County	275	Washington County	354, 358
Clinton County	358	Webster County	356
Crawford County	278, 358	Winneshiek County	358
Dallas County	358	Woodbury County	357, 358
Delaware County	281	Wright County	358
Dubuque County	358	West Branch Floyd River near Struble	178
Emmet County	358	West Fork Cedar River at Finchford	96, 236
Floyd County	282	West Fork Ditch at Hornick	181, 245
Franklin County	283, 358	West Nishnabotana River, at Hancock	200
Fremont County	284, 358	at Randolph	247
Greene County	285	West Nishnabotna River, at Hancock	247
		at Randolph	201
		West Okoboji Lake at Lakeside Laboratory near Milford ...	184
		White Breast Creek near Dallas	161, 242
		Winnebago River at Mason City	97, 236
		WSP, definition of	47

CONVERSION FACTORS AND VERTICAL DATUM

Multiply	By	To obtain
<i>Length</i>		
inch (in.)	2.54×10^1	millimeter
	2.54×10^{-2}	meter
foot (ft)	3.048×10^{-1}	meter
mile (mi)	1.609×10^0	kilometer
<i>Area</i>		
acre	4.047×10^3	square meter
	4.047×10^{-1}	square hectometer
	4.047×10^{-3}	square kilometer
square mile (mi ²)	2.590×10^0	square kilometer
<i>Volume</i>		
gallon (gal)	3.785×10^0	liter
	3.785×10^0	cubic decimeter
	3.785×10^{-3}	cubic meter
million gallons (Mgal)	3.785×10^3	cubic meter
	3.785×10^{-3}	cubic hectometer
cubic foot (ft ³)	2.832×10^1	cubic decimeter
	2.832×10^{-2}	cubic meter
cubic-foot-per-second day [(ft ³ /s) d]	2.447×10^3	cubic meter
	2.447×10^{-3}	cubic hectometer
acre-foot (acre-ft)	1.233×10^3	cubic meter
	1.233×10^{-3}	cubic hectometer
	1.233×10^{-6}	cubic kilometer
<i>Flow</i>		
cubic foot per second (ft ³ /s)	2.832×10^1	liter per second
	2.832×10^1	cubic decimeter per second
	2.832×10^{-2}	cubic meter per second
gallon per minute (gal/min)	6.309×10^{-2}	liter per second
	6.309×10^{-2}	cubic decimeter per second
	6.309×10^{-5}	cubic meter per second
million gallons per day (Mgal/d)	4.381×10^1	cubic decimeter per second
	4.381×10^{-2}	cubic meter per second
<i>Mass</i>		
ton (short)	9.072×10^{-1}	megagram or metric ton

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

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