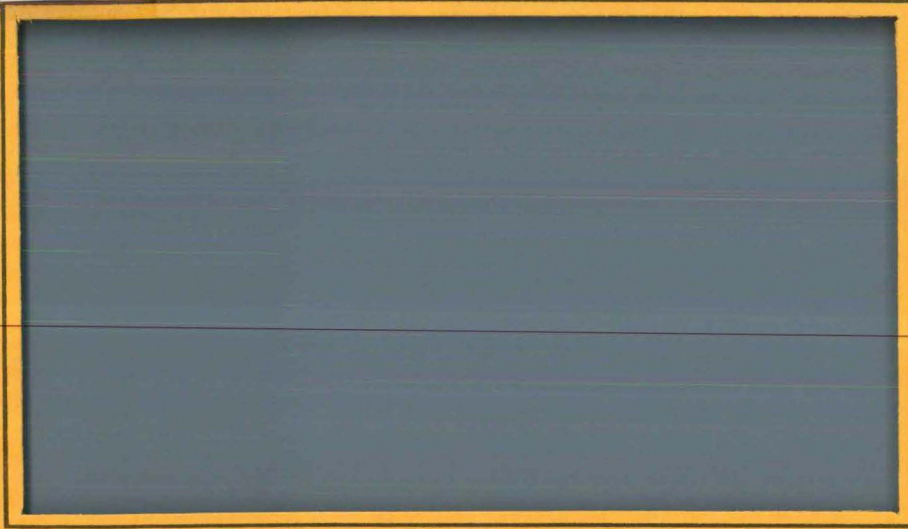


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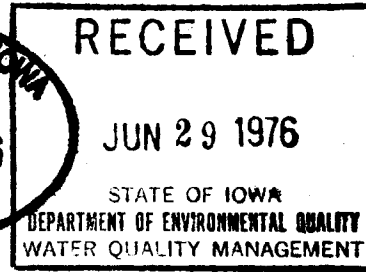
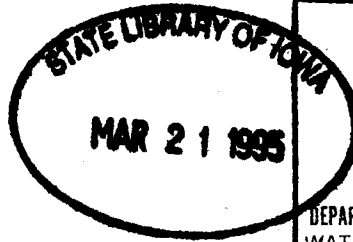
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IOWA RIVER
Winter Water Quality
Survey

#76-25

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Submitted to the Iowa Department of Environmental Quality
by the Limnology Division of the State Hygienic Laboratory.

6 April 1976

INTRODUCTION

The Iowa River originates in north central Iowa (Hancock county) and flows 329 miles before joining the Mississippi River at Toolesboro, Iowa. The Iowa River, Iowa's second largest is an important angling stream. Catfish are predominate throughout its entire reach with the exception of the extreme upper portions.

Excellent smallmouth bass fishing is found in parts of the middle river, with walleye and northern pike found in the fast rocky reaches (ICC).

During this water quality survey, the sampling area encompassed the upper half of the Iowa River. The area under study was from the headwaters to just below Tama, Iowa (Fig.1).

Major tributaries associated with this section of the Iowa River are the South Fork of the Iowa River, Honey Creek, Minerva Creek, Linn Creek and Timber Creek. Principal cities located on the Iowa River are Belmont (pop.2421) Iowa Falls (pop.6454), Eldora (pop.3223) and Marshalltown (pop.26,219).

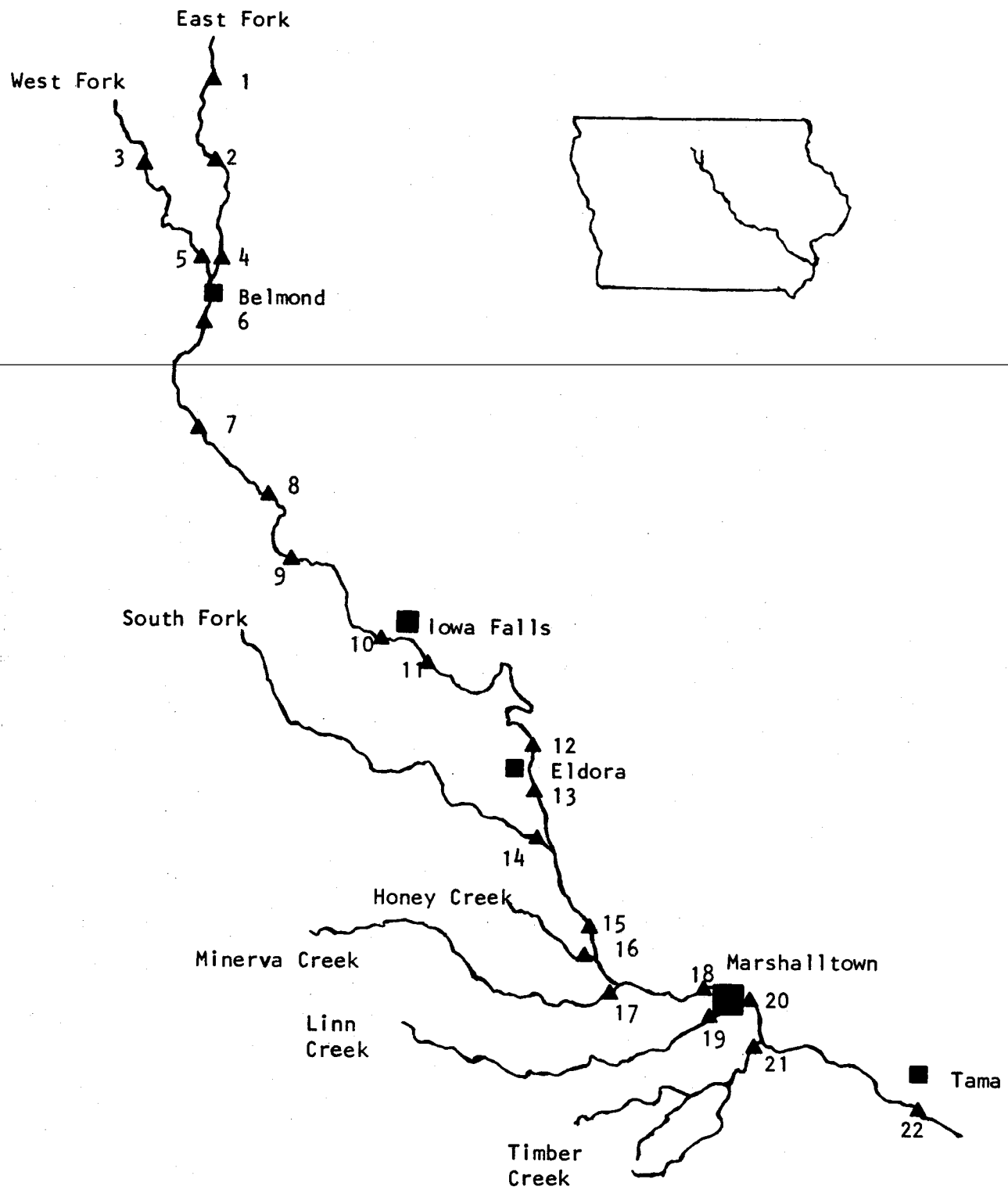


Fig. 1 Map of Iowa River and Tributaries Showing Sampling Locations

TABLE I
Iowa River Sampling Stations
January 1976

STATION	LOCATION
1	East Fork Iowa River Hancock Co. Rd. Bridge B-40, T95N, R24W, Sec. 12.
2	East Fork Iowa River Hancock Co. Rd. Bridge, T95N, R24W, Sec. 36.
3	West Fork Iowa River Hancock Co. Rd. Bridge, T94N, R24W, Sec. 16 & 21.
4	East Fork Iowa River Wright Co. Rd. Bridge, T93N, R23W, Sec. 7 & 18.
5	West Fork Iowa River Wright Co. Rd. Bridge, T93N, R24W, Sec. 12 & 13.
6	Iowa River Wright Co. Hwy 69 Bridge, T92N, R24W, Sec. 1.
7	Iowa River Wright Co. Rd. C-38 Bridge, T92N, R24W, Sec. 24.
8	Iowa River Wright Co. Rd. S-13 Bridge, T91N, R23W, Sec. 24
9	Iowa River Wright Co. Rd. Bridge, T90N, R23W, Sec. 13.
10	Iowa River Hardin Co. Hwy 20 Bridge, T89N, R21W, Sec. 15.
11	Iowa River Hardin Co. Rd. Bridge, T89N, R20W, Sec. 34.
12	Iowa River Hardin Co. Old Dam Site, East edge of Eldora.
13	Iowa River Hardin Co. Rd. D-53 Bridge, T87N, R19W, Sec. 16.
14	South Fork Iowa River Hardin Co. Hwy 215 Bridge, T86N, R19W, Sec. 5.
15	Iowa River Hardin Co. Rd. D-65 Bridge, T86N, R19W, Sec. 22.
16	Honey Creek Marshall Co. Rd. Bridge, T85N, R19W, Sec. 21.
17	Minerva Creek Marshall Co. Rd. Bridge, T84N, R19W, Sec. 3.
18	Iowa River Marshall Co. Site of Old Water Works.
19	Linn Creek Marshall Co. Rd. E-35 Bridge, T84N, R17W, Sec. 30.
20	Iowa River Marshall Co. Rd. E-35 Bridge, T84N, R17W, Sec. 28.
21	Timber Creek Marshall Co. Rd. Bridge, T83N, R17W, Sec. 4.
22	Iowa River Tama Co. Hwy 63 Bridge, T83N, R15W, Sec. 34.

The Iowa River is classified as a class B fresh warmwater stream from its mouth to within Hancock county. Three (3) mainstream impoundments located at Steamboat Rock, Iowa Falls and Alden are classified for primary contact recreation (class A waters).

Samples for water quality analysis were collected on January 26 and 27, 1976. In conjunction with the stream sampling, staff from the Iowa Department of Environmental Quality conducted surveys on several municipal wastewater treatment plants that discharge into the Iowa River.

Provisional flow data for January 26 and 27 was obtained from the U.S. Geological Survey and are listed below with the 7 day Q_{10} for each gauge station. All values are in cubic feet per second (cfs).

	Jan. 26	7 day Q_{10}
East Branch of Iowa River at Kleme	3.7	0.76
Iowa River at Rowan	17	4.6
Iowa River at Marshalltown	100	22

January 27 flows are approximately 4 to 5 times greater than the 7 day Q_{10} .

RESULTS AND DISCUSSION

Selected chemical and bacteriological data for the sampling stations on the Iowa River will be found in Table 2.

Iowa River

Fecal Coliforms ranged from less than 10/100ml to 4300/100ml. The higher fecal coliform values were obtained at sampling stations downstream of Iowa Falls, Eldora and Marshalltown.

Chloride values, quite often an indicator of gross organic contamination, were consistent throughout the entire reach, ranging from 10 to 29mg/L.

Specific Conductance was also quite uniform throughout the entire river (range 670-810 micromhos).

The dissolved oxygen ranged from 9.9 to 20.4 mg/L, levels adequate to maintain aquatic life during winter conditions.

Ten out of seventeen sampling stations on the Iowa River had BOD's of less than 1. The highest BOD recorded - 2mg/L - was at station 1.

Probably the two most persistent parameters found in winter associated with organic wastes are ammonia-N and phosphate. Ammonia-N values ranged from 0.01 to 1.2 mg/L. Ammonia-N levels in the upper reach

TABLE 11
 SELECTED CHEMICAL AND BACTERIOLOGICAL DATA*

Iowa River
 January 1976

<u>Station</u>	<u>Fecal Coliform/100 ml</u>	<u>Chloride</u>	<u>Specific Conductance</u>	<u>Ammonia N</u>	<u>Phosphate</u>		<u>DO</u>	<u>BOD</u>
					<u>Soluble</u>	<u>Total</u>		
1	400	25	800	0.29	0.11	0.13	10.4	2
2	400	29	810	0.08	0.11	0.12	17.3	1
3	90	17	750	<0.01	0.04	0.04	20.4	<1
4	20	22	690	0.10	0.12	0.13	20.0	<1
5	<10	10	700	<0.01	0.03	0.03	15.4	<1
6	370	17	730	0.34	0.26	0.30	16.6	1
7	60	16	670	0.08	0.24	0.24	17.8	1
8	10	15	690	0.08	0.24	0.24	16.6	<1
9	120	16	700	0.06	0.26	0.26	16.2	1
10	<10	16	720	0.03	0.19	0.19	15.8	<1
11	800	23	770	1.2	0.45	0.48	15.8	1
12	2100	24	810	0.82	0.37	0.56	12.4	<1
13	3500	23	810	0.84	0.38	0.39	12.4	1
15	1200	23	780	0.69	0.36	0.39	12.7	<1
18	140	21	730	0.46	0.25	0.27	11.2	<1
20	2300	24	760	1.0	0.42	0.44	11.1	<1
22	4300	21	710	0.96	0.35	0.35	9.9	<1

*All values in mg/L unless designated otherwise.

(headwaters to Iowa Falls) were consistently low and at expected background levels. Below Iowa Falls (station 11) a rise in ammonia-N was observed (1.2 mg/L). The elevated ammonia-N persisted through Eldora and was declining (0.46 mg/L) upstream of Marshalltown. Below Marshalltown the ammonia-N level was 1.0 mg/L and 0.96 at Tama. Phosphate followed a similar pattern, and as noted in previous winter reports, almost all of the total phosphate was soluble phosphate.

Tributaries

Selected chemical and bacteriological data for the tributaries to the Iowa River are found in Table 3.

TABLE 3*

Station	Fecal Coliform	Ammonia-N	Phosphate		D.O.	BOD
			Soluble	Total		
14 South Fork	310	0.16	0.06	0.07	10.4	1
16 Honey Creek	290	0.20	0.14	0.15	10.4	1
17 Minerva Creek	40	0.40	0.05	0.07	14.0	1
19 Linn Creek	4600	0.20	0.34	0.60	13.6	1
21 Timber Creek	2200	0.46	0.24	0.24	7.9	1

* All values in mg/L unless designated otherwise

In general the water quality of the tributaries was good and values are within expected ranges. The fecal coliform levels on Linn and Timber Creek are higher than expected. Both creeks, especially Linn Creek, pass through Marshalltown urban areas and the high coliform may be a result of poor septic tank location in unsewered areas.

Samples for algal analysis were also collected and are listed below:

Station	Chlorophyll a mg/M ³	cells/ml	Dominate Taxa
1	7.9	1550	pennate diatoms
3	2.6	650	pennate diatoms
6	1.8	1150	pennate diatoms
7	3.1	1650	pennate diatoms
9	3.2	2050	pennate diatoms
12	3.8	600	pennate diatoms
13	2.5	900	pennate diatoms
14*	1.0	150	pennate diatoms
15	4.7	550	pennate diatoms
18	2.2	1200	pennate diatoms
19	2.0	950	pennate diatoms
22	1.9	750	pennate diatoms

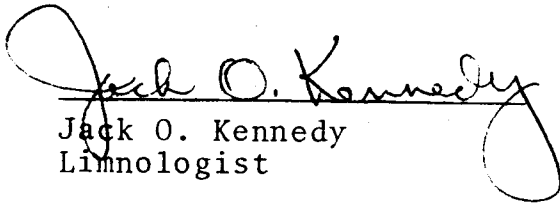
*South Fork


As with many of the other winter surveys, the algal population is quite low as indicated by the low chlorophyll a and low cell counts.

CONCLUSION

Winter water quality samples were collected on the upper reach of the Iowa River and its tributaries. Slight increases in fecal coliforms, ammonia-N, and phosphate occurred downstream of Iowa Falls, Eldora and Marshalltown and are most probably a result of their wastewater

treatment plant discharges. The persistence of ammonia-N over several river miles was observed and can be related to the reduction in nitrification as a result of winter conditions. In general the results indicate that the Iowa River and its tributaries had acceptable water quality under winter conditions and moderate flows.


Jack O. Kennedy
Limnologist


R.L. Morris, PhD
Associate Director and
Principal Chemist

APPENDIX

WATER QUALITY REPORT

STATE HYGIENIC LABORATORY, Des Moines Branch
The University of Iowa
E 7th & Court, Rm 405, Des Moines, Iowa 50309

Town Source Specific Location	East Fork Iowa R. Co. Rd Bridge B 40 T95N R24W Sec.12	East Fork Iowa River Co. Rd. Bridge B-55 T95N R24W Sec. 36	West Fork Iowa River Co. Rd. Bridge B-62 T94N R24W Sec.16&21
Date Collected	26 Jan. 1976	26 Jan. 1976	26 Jan. 1976
Date Received	27 Jan. 1976	27 Jan. 1976	27 Jan. 1976
Lab Number	2853	2854	2855
Collection Time	12:00	FIELD DATA	1:30
pH		12:30	
Temperature	-2°C	-1°C	-1°C
Dissolved Oxygen			
BACTERIOLOGICAL EXAMINATION			
Fecal Coliform/100 ml	400 (>24 hrs)	40 (>24 hrs)	90 (>24 Hrs)
CHEMICAL ANALYSIS (as mg/l unless designated otherwise)			
Conductance (micromhos)	800	810	750
MBAS (as LAS)			
pH (units)	7.45	7.7	7.7
Alkalinity: P	none	none	none
T	282	278	298
NITROGEN: Organic N	0.61	0.47	0.38
Ammonia N	0.29	0.08	40.01
Nitrite N	0.023	0.022	0.008
Nitrate N	2.0	1.9	1.4
Nitrate as NO ₃			
RESIDUE: Total	570	520	500
Fixed	450	400	390
Volatile	120	120	110
Filtrable Residue T	540	520	480
F	440	400	380
V	100	120	100
Nonfiltrable Residue T	14	5	6
F	9	3	1
V	5	2	5
Settleable Matter (ml/l)			
PHOSPHATE: Filtrable P	0.11	0.11	0.04
Total P	0.13	0.12	0.04
Dissolved Oxygen	10.4	17.3	20.4
BOD	2	1	<1
COD	10	6	6
Grease or Oil			
Turbidity (JTU)	5.0	3.9	2.6
Total Hardness (as CaCO ₃)	434	414	402
Calcium (Ca ⁺⁺)			
Magnesium (Mg ⁺⁺)			
Chloride (Cl ⁻)	25	29	17
Sulfate (SO ₄ ⁻)			

REMARKS: 100% Ice Cover 100% Ice Cover 100% Ice Cover

COLLECTOR Cramer & Kennedy
REPORT TO Limnology Division
 State Hygienic Lab
 Des Moines Ia.

R. L. Morris, Ph.D.
Associate Director & Principal Chemist

FEB 12 1976

LIMNOLOGY SURVEY

WATER QUALITY REPORT

STATE HYGIENIC LABORATORY, Des Moines Branch
 The University of Iowa
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Town Source Specific Location	West Fork Iowa R. Co.Rd. Bridge T93N R24W Sec. 12&13	East Fork Iowa River Co.Rd. Bridge T93N R33W Sec. 7&18	Belmond Iowa River Hwy 69 Bridge T92N R24W Sec.1
Date Collected	26 Jan. 1976	26 Jan. 1976	26 Jan. 1976
Date Received	27 Jan. 1976	27 Jan. 1976	27 Jan. 1976
Lab Number	2856	2857	2858
Collection Time	2:00	2:30	2:35
pH		FIELD DATA	
Temperature	-1°C	-1°C	-1°C
Dissolved Oxygen			
BACTERIOLOGICAL EXAMINATION			
Fecal Coliform/100 ml	<10 (>24 hrs)	20 (>24 hrs)	370 (>24 hrs)
CHEMICAL ANALYSIS (as mg/l unless designated otherwise)			
Conductance (micromhos)	700	690	750
MBAS (as LAS)			
pH (units)	7.65	7.9	7.8
Alkalinity: P	none	none	none
T	307	254	277
NITROGEN: Organic N	0.38	0.42	0.41
Ammonia N	<0.01	0.10	0.34
Nitrite N	0.008	0.011	0.016
Nitrate N	1.4	2.3	2.0
Nitrate as NO ₃			
RESIDUE: Total	480	460	470
Fixed	370	350	370
Volatile	110	110	100
Filtrable Residue T	480	450	470
F	370	340	370
V	110	110	100
Nonfiltrable Residue T	2	1	0
F	0	0	0
V	2	1	0
Settleable Matter (ml/l)			
PHOSPHATE: Filtrable P	0.03	0.12	0.26
Total P	0.03	0.13	0.30
Dissolved Oxygen	15.4	20.0	16.6
BOD	<1	<1	1
COD	2	6	8
Grease or Oil			
Turbidity (JTU)	2.4	2.2	2.2
Total Hardness (as CaCO ₃)	400	364	376
Calcium (Ca ⁺⁺)			
Magnesium (Mg ⁺⁺)			
Chloride (Cl ⁻)	10	22	17
Sulfate (SO ₄ ⁻)			

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REMARKS: 100% Ice Cover 100% Ice Cover 100% Ice Cover

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 State Hygienic Lab

R. L. Morris, Ph.D.
 Associate Director & Principal Chemist

FEB 18 1976

LIMNOLOGY SURVEY

WATER QUALITY REPORT

STATE HYGIENIC LABORATORY, Des Moines Branch
 The University of Iowa
 E 7th & Court, Rm 405, Des Moines, Iowa 50309

Town	Iowa River	Iowa River	Dows
Source	Iowa River	Iowa River	Iowa River
Specific Location	Co.Rd. Bridge C-38 T92N R24W Sec.24	Co.Rd. Bridge S-13 T91N R23W Sec. 24	Co.Rd. Bridge T90N R23W Sec. 13
Date Collected	26 Jan. 1976	26 Jan. 1976	26 Jan. 1976
Date Received	27 Jan. 1976	27 Jan. 1976	27 Jan. 1976
Lab Number	2859	2860	2861
Collection Time	2:50	3:25	3:50
pH		FIELD DATA	
Temperature	-1°C	-1°C	-1°C
Dissolved Oxygen			
Fecal Coliform/100 ml	60 (>8 hrs)	10 (>8 hrs)	120 (>8 hrs)
BACTERIOLOGICAL EXAMINATION			
CHEMICAL ANALYSIS (as mg/l unless designated otherwise)			
Conductance (micromhos)	670	690	700
MBAS (as LAS)			
pH (units)	7.8	7.75	7.75
Alkalinity: P	none	none	none
T	271	284	289
NITROGEN: Organic N	0.37	0.40	0.50
Ammonia N	0.08	0.08	0.06
Nitrite N	0.016	0.015	0.016
Nitrate N	2.2	2.0	2.0
Nitrate as NO₃			
RESIDUE: Total	450	460	470
Fixed	360	350	370
Volatile	90	110	100
Filtrable Residue T	450	450	450
F	350	350	360
V	100	100	90
Nonfiltrable Residue T	0	0	0
F	0	0	0
V	0	0	0
Settleable Matter (ml/l)			
PHOSPHATE: Filtrable P	0.24	0.24	0.26
Total P	0.24	0.24	0.26
Dissolved Oxygen	17.8	16.6	16.2
BOD	1	1	1
COD	4	6	8
Grease or Oil			
Turbidity (JTU)	1.9	1.9	3.5
Total Hardness (as CaCO₃)	366	374	376
Calcium (Ca⁺⁺)			
Magnesium (Mg⁺⁺)			
Chloride (Cl⁻)	16	15	16
Sulfate (SO₄⁻)			

REMARKS: 100% Ice Cover 100% Ice Cover 100% Ice Cover

COLLECTOR Kennedy & Cramer
REPORT TO Limnology Division
 State Hygienic Lab
 Des Moines, Ia.

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FEB 18 1976

LIMNOLOGY SURVEY

WATER QUALITY REPORT

STATE HYGIENIC LABORATORY, Des Moines Branch
The University of Iowa
E 7th & Court, Rm 405, Des Moines, Iowa 50309

Town	Iowa Falls	Iowa Falls	Iowa River
Source	Iowa River	Iowa River	Iowa River
Specific Location	Hwy 20 Bridge T89N R21W Sec. 15	Co.Rd. bridge, T89N, R20W, Sec.34	Old dam site-east edge of Eldora
Date Collected	26 Jan. 1976	26 January 1976	27 January 1976
Date Received	27 Jan. 1976	27 January 1976	27 January 1976
Lab Number	2862	2863	2864
Collection Time	4:35	FIELD DATA	9:50
pH		5:15	
Temperature	-2°C	-1°C	-1°C
Dissolved Oxygen			
BACTERIOLOGICAL EXAMINATION			
Fecal Coliform/100 ml	<10 (>8 hrs)	800 (>8 hrs.)	2100 (<8 hrs.)
CHEMICAL ANALYSIS (as mg/l unless designated otherwise)			
Conductance (micromhos)	720	770	810
MBAS (as LAS)			
pH (units)	7.9	8.0	7.9
Alkalinity: P	none	None	None
T	297	326	332
NITROGEN: Organic N	0.32	0.60	0.68
Ammonia N	0.03	1.2	0.82
Nitrite N	0.013	0.022	0.017
Nitrate N	1.9	2.4	2.7
Nitrate as NO ₃			
RESIDUE: Total	480	530	520
Fixed	370	410	400
Volatile	110	120	120
Filtrable Residue T	480	510	500
F	370	410	400
V	110	100	100
Nonfiltrable Residue T	0	1	0
F	0	0	0
V	0	1	0
Settleable Matter (ml/l)			
PHOSPHATE: Filtrable P	0.19	0.45	0.37
Total P	0.19	0.48	0.56
Dissolved Oxygen	15.8	15.8	12.4
BOD	<1	1	<1
COD	6	14	6
Grease or Oil			
Turbidity (JTU)	1.7	2.5	1.8
Total Hardness (as CaCO ₃)	394	416	418
Calcium (Ca ⁺⁺)			
Magnesium (Mg ⁺⁺)			
Chloride (Cl ⁻)	16	23	24
Sulfate (SO ₄ ⁻)			

REMARKS: 100% Ice Cover 90% ice cover

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REPORT TO Limnology Division
State Hygienic Lab
Des Moines, Ia.

R. L. Morris, Ph.D.
Associate Director & Principal Chemist

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LIMNOLOGY SURVEY

WATER QUALITY REPORT

STATE HYGIENIC LABORATORY, Des Moines Branch
 The University of Iowa
 E 7th & Court, Rm 405, Des Moines, Iowa 50309

Town	Eldora	S. Fork Iowa River	Iowa River
Source	Iowa River	Hwy 215 bridge,	Co.Rd. bridge D-65,
Specific Location	Co.Rd. bridge D-53 T87N, R19W, Sec. 16	T86N, R19W, Sec. 5	T86N, R19W, Sec. 22
Date Collected	27 January 1976	27 January 1976	27 January 1976
Date Received	27 January 1976	27 January 1976	27 January 1976
Lab Number	2865	2866	2867
Collection Time	10:15	10:45	11:05
pH			
Temperature	-1°C	-2°C	-1°C
Dissolved Oxygen			
	BACTERIOLOGICAL EXAMINATION		
Fecal Coliform/100 ml	3500 (<8 hrs.)	310 (<8 hrs.)	1200 (<8 hrs.)
	CHEMICAL ANALYSIS (as mg/l unless designated otherwise)		
Conductance (micromhos)	810	660	780
MBAS (as LAS)			
pH (units)	7.9	7.6	7.8
Alkalinity: P	None	None	None
T	334	330	326
NITROGEN: Organic N	0.77	0.39	0.60
Ammonia N	0.84	0.16	0.69
Nitrite N	0.021	0.017	0.023
Nitrate N	2.6	1.5	2.7
Nitrate as NO ₃			
RESIDUE: Total	520	430	510
Fixed	410	330	400
Volatile	110	100	110
Filtrable Residue T	500	410	490
F	410	330	400
V	90	80	90
Nonfiltrable Residue T	0	5	0
F	0	3	0
V	0	2	0
Settleable Matter (ml/l)			
PHOSPHATE: Filtrable P	0.38	0.06	0.36
Total P	0.39	0.07	0.39
Dissolved Oxygen	12.4	10.4	12.7
BOD	1	<1	<1
COD	6	4	6
Grease or Oil			
Turbidity (JTU)	1.7	2.6	2.2
Total Hardness (as CaCO ₃)	416	374	406
Calcium (Ca ⁺⁺)			
Magnesium (Mg ⁺⁺)			
Chloride (Cl ⁻)	23	12	23
Sulfate (SO ₄ ⁻)			

REMARKS: 100% ice cover 100% ice cover 90% ice cover

COLLECTOR
REPORT TO

Cramer & Kennedy
 Limnology Division
 State Hygienic Laboratory
 Des Moines, Iowa

R. L. Morris, Ph.D.
 Associate Director & Principal Chemist

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LIMNOLOGY SURVEY

WATER QUALITY REPORT

STATE HYGIENIC LABORATORY, Des Moines Branch
The University of Iowa
E 7th & Court, Rm 405, Des Moines, Iowa 50309

Town Source Specific Location	Bangor Honey creek Co.Rd. Bridge T85N R19W Sec.21	Albion Minerva Creek Co.Rd. Bridge T84N,R19W Sec.3	Marshalltown Linn Creek Co.Rd. E-35Bridge on E. Edge of City
Date Collected	27 Jan. 1976	27 Jan. 1976	27 Jan. 1976
Date Received	27 Jan. 1976	27 Jan. 1976	27 Jan. 1976
Lab Number	2885	2884	2882
Collection Time	1300	FIELD DATA 12:30	11:20
pH			
Temperature	0°C	0°C	0°C Air 10°C
Dissolved Oxygen			
BACTERIOLOGICAL EXAMINATION			
Fecal Coliform/100 ml	290 (<8 hrs)	40 (<8 hrs)	4600 (<8 hrs)
CHEMICAL ANALYSIS (as mg/l unless designated otherwise)			
Conductance (micromhos)	710	660	640
MBAS (as LAS)			
pH (units)	7.8	7.9	8.0
Alkalinity: P	none	none	none
T	326	301	219
NITROGEN: Organic N	0.60	0.40	0.70
Ammonia N	0.20	0.40	0.20
Nitrite N	0.046	0.029	0.13
Nitrate N	3.9	2.1	3.0
Nitrate as NO ₃			
RESIDUE: Total	500	440	460
Fixed	370	330	340
Volatile	130	110	120
Filtrable Residue T	470	420	410
F	370	330	320
V	100	90	90
Nonfiltrable Residue T	9	1	18
F	7	1	13
V	2	0	5
Settleable Matter (ml/l)			
PHOSPHATE: Filtrable P	0.14	0.05	0.34
Total P	0.15	0.07	0.60
Dissolved Oxygen	10.0	14.0	13.6
BOD	<1	<1	<1
COD	6	3	12
Grease or Oil			
Turbidity (JTU)	4.8	3.1	8.6
Total Hardness (as CaCO ₃)	406	360	318
Calcium (Ca ⁺⁺)			
Magnesium (Mg ⁺⁺)			
Chloride (Cl ⁻)	24	13	19
Sulfate (SO ₄ ⁻)			

REMARKS: Complete Ice Cover Complete Ice Cover Partial Ice Cover

FEB 12 1976

COLLECTOR Geary
REPORT TO Limnology Division
State Hygienic Lab
Des Moines, Ia.

R. L. Morris, Ph.D.
Associate Director & Principal Chemist

LIMNOLOGY SURVEY

WATER QUALITY REPORT

STATE HYGIENIC LABORATORY, Des Moines Branch
The University of Iowa
E 7th & Court, Rm 405, Des Moines, Iowa 50309

Town	Marshalltown	Marshalltown	Marshalltown
Source	Timber Creek	Iowa River	Iowa River
Specific Location	Co.Rd. bridge E of city, T83N, R17W, Sec. 4	Site of old water works	Co.Rd. E-35 bridge 2 mi E of city, T84N, R17W Sec. 25
Date Collected	27 January 1976	27 January 1976	27 January 1976
Date Received	27 January 1976	27 January 1976	27 January 1976
Lab Number	2880	2883	2881
Collection Time	10:35	FIELD DATA 1140	11:05
pH			
Temperature	0°C	0°C	0°C
Dissolved Oxygen			
BACTERIOLOGICAL EXAMINATION			
Fecal Coliform/100 ml	2200 (< 8 hrs.)	140 (< 8 hrs.)	23,000 (< 8 hrs.)
CHEMICAL ANALYSIS (as mg/l unless designated otherwise)			
Conductance (micromhos)	720	730	760
MBAS (as LAS)			
pH (units)	7.5	7.8	7.85
Alkalinity: P	None	None	None
T	259	312	303
NITROGEN: Organic N	0.46	0.56	0.69
Ammonia N	0.46	0.46	1.0
Nitrite N	0.031	0.025	0.044
Nitrate N	3.6	2.7	2.7
Nitrate as NO ₃			
RESIDUE: Total	460	480	480
Fixed	350	370	370
Volatile	110	110	110
Filtrable Residue T	440	460	460
F	340	370	360
V	100	90	100
Nonfiltrable Residue T	2	0	4
F	2	0	0
V	0	0	4
Settleable Matter (ml/l)			
PHOSPHATE: Filtrable P	0.24	0.25	0.42
Total P	0.24	0.27	0.44
Dissolved Oxygen	7.9	11.2	11.1
BOD	1	<1	<1
COD	2	6	6
Grease or Oil			
Turbidity (JTU)	3.5	1.7	5.3
Total Hardness (as CaCO ₃)	348	390	378
Calcium (Ca ⁺⁺)			
Magnesium (Mg ⁺⁺)			
Chloride (Cl ⁻)	23	21	24
Sulfate (SO ₄ ⁻)			

REMARKS: Complete ice cover. Complete ice cover 75% ice cover. above spillway.

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WATER QUALITY REPORT

STATE HYGIENIC LABORATORY, Des Moines Branch
The University of Iowa
E 7th & Court, Rm 405, Des Moines, Iowa 50309

Town	Tama		
Source	Iowa River		
Specific Location	Hwy 63 bridge S of Tama		
Date Collected	27 January 1976		
Date Received	27 January 1976		
Lab Number	2879		
Collection Time	0945	FIELD DATA	
pH			
Temperature	0°C	Air---17°C	
Dissolved Oxygen			
BACTERIOLOGICAL EXAMINATION			
Fecal Coliform/100 ml	4300	(< 8 hrs.)	
CHEMICAL ANALYSIS (as mg/l unless designated otherwise)			
Conductance (micromhos)	710		
MBAS (as LAS)			
pH (units)	7.65		
Alkalinity: P	None		
T	287		
NITROGEN: Organic N	0.54		
Ammonia N	0.96		
Nitrite N	0.023		
Nitrate N	2.5		
Nitrate as NO ₃			
RESIDUE: Total	450		
Fixed	350		
Volatile	100		
Filtrable Residue T	430		
F	340		
V	90		
Nonfiltrable Residue T	0		
F	0		
V	0		
Settleable Matter (ml/l)			
PHOSPHATE: Filtrable P	0.35		
Total P	0.55		
Dissolved Oxygen	9.9		
BOD	<1		
COD	4		
Grease or Oil			
Turbidity (JTU)	2.4		
Total Hardness (as CaCO ₃)	362		
Calcium (Ca ⁺⁺)			
Magnesium (Mg ⁺⁺)			
Chloride (Cl ⁻)	21		
Sulfate (SO ₄ ⁻)			

REMARKS: 95% ice cover

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