

WATER QUALITY STATUS REPORT

LITTLE SALMON RIVER

(Adams County)

1976

Idaho Department of Health and Welfare
Division of Environment
Boise, Idaho 83720

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SUMMARY

The findings of this survey indicate that there is negligible impact on the Little Salmon River as a result of the discharge of treated sewage into this waterway.

It should be kept in mind that all flow levels including the municipal discharge were at or near the yearly minimum during the survey.

Tributary streams and natural phenomemon appear to have a greater influence on the river in the area of study than the New Meadows Lagoon discharge.

INTRODUCTION

This survey was conducted to determine the point source impact of treated sewage discharged from the New Meadows Wastewater Treatment lagoons on the Little Salmon River.

The Little Salmon River is designated a Class A stream according to Idaho's water quality standards and is protected for all beneficial uses (IDECS 1973). The stream originates in Northeast Adams County and flows north until the confluence with the Salmon River at Riggins, Idaho.

The population of New Meadows is about 600. The U.S. Geological Survey (1973) estimates the entire Little Salmon River drainage area as 576 square miles. The drainage area influencing the study would be considerably less.

Water is diverted from the Little Salmon River to irrigate approximately 15,300 acres, primarily pasture. Most of this land is within the study area. Nearly all of the diverted water returns to the river in the study area. Station R-2 (located at Highway 95 Bridge at the West edge of New Meadows, see area map) coincides with a former state Network Station. Water quality data for this station was collected semiannually starting in June, 1970 to May, 1975. Some of this data will be used in this report.

MATERIALS AND METHODS

A total of eleven stations (see Table 1 and Figure 1 for location and description) were selected and sampled. There were two stations above and three stations below the New Meadows discharge on the Little Salmon River, and five stations located on major tributaries within this reach (14 RM).*

All chemical samples were collected in clean polyethylene containers. Bacteriological samples were collected in sterilized glass bottles. All samples were preserved, stored and tested in accordance with U.S. Methods for Chemical Analysis of Water and Wastes (June 1974).

Flow measurements (see Figure 2) were determined using a pigmy current meter and wade rod.

Dissolved oxygen, temperature and pH were determined by the use of portable meters. Dissolved oxygen and temperature were obtained using a Model 54A Yellow Springs Instruments dissolved oxygen analyzer. This unit was checked periodically for accuracy and recalibrated when necessary using the modified Winkler procedure.

Temperature readings were cross checked with a glass thermometer certified by National Bureau of Standards each time a station was sampled.

The pH values for all stations were determined by the use of a Photovolt portable pH meter, Model 126A. Calibration checks were made at the same time as D.O.

A Martek Mark V Digital Water Quality Analyzer was used to obtain a 24-hour profile of the D.O., pH, temperature and specific conductance for the Little Salmon River at Station R-3 below the municipal discharge. This unit was calibrated prior to set-up and periodically thereafter. Benthic macro-invertebrate samples were collected at Station R-3, below the discharge.

* Samples were collected once only during low flows on September 29, 1976.

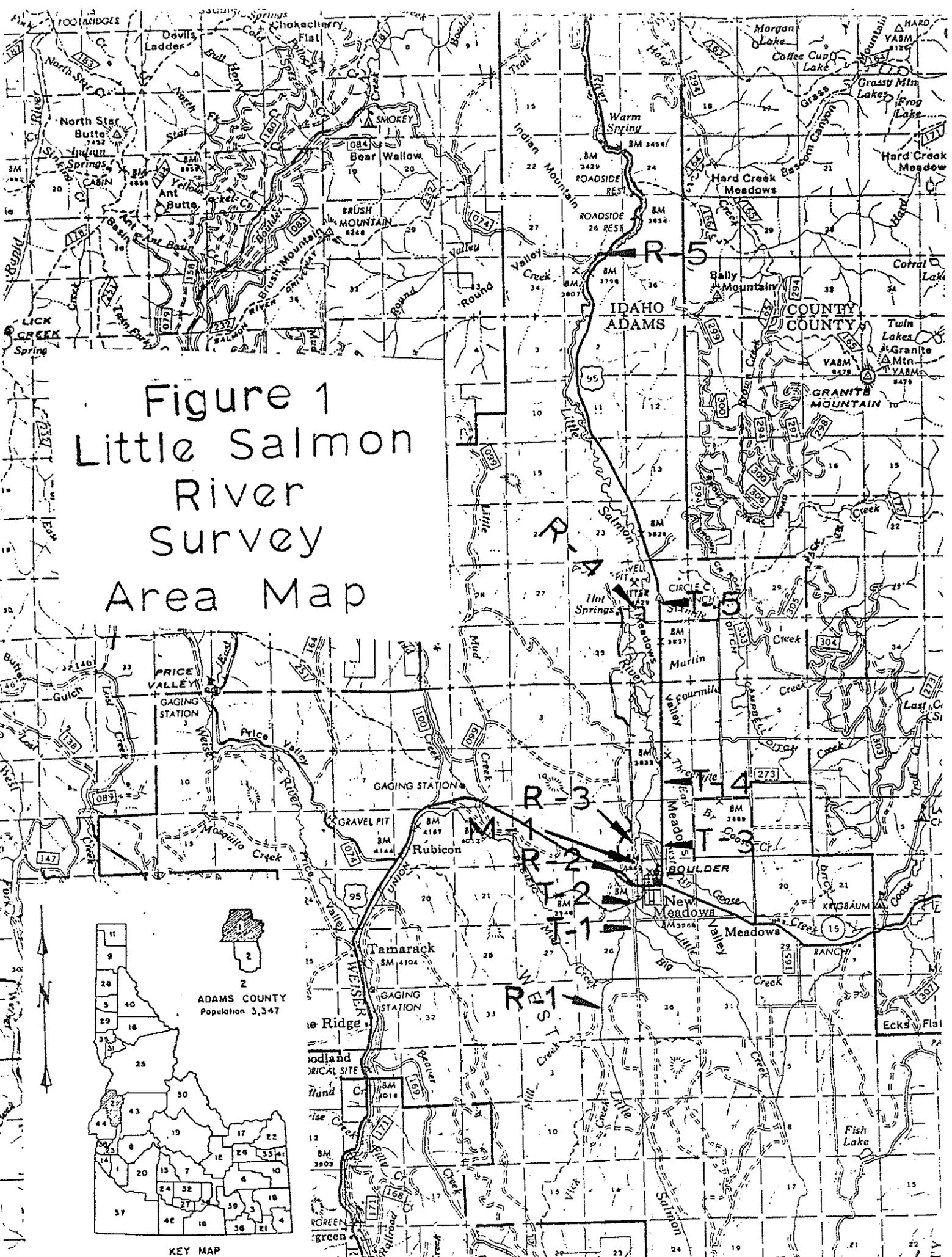


Figure 1
 Little Salmon
 River
 Survey
 Area Map

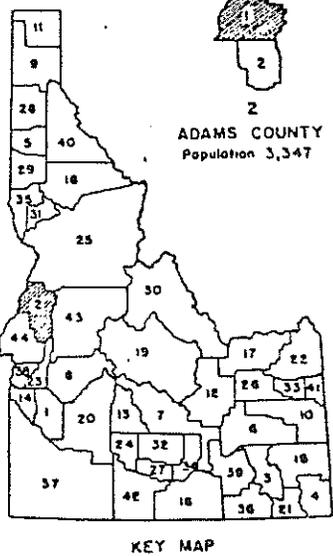


TABLE I
LITTLE SALMON RIVER SURVEY
STATION LOCATIONS AND DESCRIPTIONS

<u>Station No.</u>	<u>Station No.</u>	<u>River Mile</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Township, Range, Section</u>	<u>Description</u>
R-1	2040083	38.9	44°56'47"	116°18'17"	19N, 1E, 35	Little Salmon River 2 mi. S. New Meadows.
R-2	2040086	36.2	44°58'24"	116°17'41"	19N, 1E, 23	Little Salmon River ½ mi. W. New Meadows, Hwy 95 bridge.
R-3	2040088	35.4	44°58'37"	116°17'27"	19N, 1E, 23	Little Salmon River 100 m. below lagoons.
R-4	2040091	33.9	45°07'25"	116°17'21"	20N, 1E, 25	Little Salmon River 1½ mi. N. New Meadows, Nr. Hot Springs.
R-5	2040093	24.7	45°07'25"	116°17'43"	21N, 1E, 26	Little Salmon River 10½ mi. N. New Meadows, Hwy 95 bridge
T-1	2040084	0.4	44°57'27"	116°17'33"	19N, 1E, 26	Big Creek, ½ mi. S. New Meadows
T-2	2040085	0.3	44°58'04"	116°17'33"	19N, 1E, 23	Little Creek, ¼ mi. W. New Meadows
T-3	2040089	1.7	44°58'50"	116°16'10"	19N, 1E, 13	West Branch Goose Creek, ½ mi. N. New Meadows, Hwy 95 bridge
T-4	2040090	0.4	44°59'44"	116°16'10"	19N, 1E, 12	East Branch Goose Cr. ¼ mi. N. New Meadows, Hwy 95 bridge
T-5	2040092	0.3	45°02'28"	116°16'51"	20N, 1E, 25	Six Mile Creek, 3½ mi. N. New Meadows Hwy. 95 Bridge
M-1	2040087	35.5	45°58'32"	116°17'33"	20N, 1E, 23	New Meadows Lagoon

Three replicate Surber samples were collected at the two stations. Macrophyte densities were estimated at each stream station.

WASTE SOURCES

The major known point source in the study area is the municipal discharge from the New Meadows Treatment Lagoons. This treatment facility consists of a standard 3 cell facultative lagoon system. Flow from this unit was approximately 70,000 gpd on September 29, 1976.

The New Meadows Lagoon system is required not to discharge BOD and suspended solids concentrations in excess of 70 mg/L and 105 mg/L respectively. At the time of this survey, the system was meeting these requirements. The following list of effluent limitations was taken from the New Meadows NPDES permit.

<u>Effluent Characteristics</u>	<u>Unit of Measurement</u>	<u>Monthly Average</u>	<u>Weekly Average</u>
<u>Effluent Concentrations</u>			
Biochemical Oxygen Demand (5-day)	mg/l	60	70
Suspended Solids	mg/l	70	105
<u>Effluent Loadings</u>			
Biochemical Oxygen Demand (5-day)	kg/day (1b/day)	30 (66)	45 (99)
Suspended Solids	kg/day (1b/day)	35 (77)	52 (115)

Although there is a hotwater swimming pool discharging into the Little Salmon River within the study area, the over flow from the pool fanned out across pasture ground some distance prior to reaching the river. Station R-4 was just downstream from this source and served as a good monitoring point for this activity.

The main non-point source problems appear to be livestock grazing. The majority of the valley floor through which the river runs is utilized as grass pasture. Livestock, mainly beef cattle, have direct access to either the river or numerous side tributaries. Only the larger tributaries (see map of area) were sampled.

The greatest impact from agricultural activities is expected to occur during the spring when water levels in the valley are the highest.

SURVEY DISCUSSION

BACTERIOLOGICAL

The Fecal Coliform standard of 50/100 ml for primary contact recreation was exceeded at tributary Stations T-1, T-2, T-4 and T-5. Although the tributaries violated state standards, their contribution of bacteria did not cause the Little Salmon River to exceed the standards (Figure 3). The New Meadows discharge also did not cause a violation of the fecal coliform standard during this survey.

The geometric mean for fecal coliform for the period August, 1973 through June, 1975, at Station R-2, the old Network Station, was 49/100 ml. The fecal coliform to fecal streptococcus ratio tends to indicate that animal wastes are the source of bacteria found in the river. Ratios for tributaries, however, indicate human sources (Table 2).

TEMPERATURE

Temperatures in the Little Salmon River and major tributaries did not exceed 19^o C (66^o F) during the survey. There was a 1.1^o C (2^o F) increase between Stations R-3 and R-4; however, tributary flows between these stations more than doubled the size of the river, and therefore the temperature increase

TABLE 2

FC/FS RATIOS
September 29, 1976

<u>STATION #</u>	<u>FECAL COLIFORM NO.</u>	<u>FECAL STREPTOCOCCUS NO.</u>	<u>FC/FS * RATIO</u>	<u>SOURCE INDICATION</u>
R-1	17	60	0.28	Animal
T-1	105	35	3.0	Human
T-2	70	20	3.5	Human
R-2	< 1	20	< 0.2	Animal
M-1	< 100	10	Unknown	Unknown
R-3	30	130	.23	Animal
T-3	3	170	.017	Animal
T-4	60	35	1.7	Unknown
R-4	< 10	10	< 1.0	Probably Animal
T-5	160	15	10.6	Human
R-5	< 10	< 5	Unknown	Unknown

* Explanation

FC/FS Ratio

2.0 and larger
1.0 to 2.0
0.7 and less

Source Indication

Human
Uncertain
Animal

is attributed to natural conditions. The lagoon effluent temperature was about the same as the river stations immediately above R-2 and below R-3.

Water temperature at R-2, the network station for the period August, 1970 to June, 1975, never exceeded 19° C (See Table 3).

DISSOLVED OXYGEN

The dissolved oxygen (D.O.) at all the stations sampled, except M-1, did not drop below the state standard of 6 mg/L (See Figure 4). The lagoon effluent (M-1) at the time of sampling had a D.O. of 3.8 mg/L. At Station R-3 (about 100 meters downstream from M-1) no drop in D.O. level over the upstream station was noted during the mid-afternoon of September 29, 1976.

The diel D.O. values obtained from the Martek located at Station R-3 never dropped below 6.0 mg/L. The range was from a high of 10.4 mg/L at 1630 on September 28, 1976, to a low of 7.1 mg/L at 0600 on September 29, 1976. (See Figure 5). The D.O. saturation did fall below 90% during the morning (Figure 6). Without further study of this phenomenon it would be difficult to state whether this drop is a natural condition for the river or a result of the municipal discharge.

The trend analysis data for Station R-2 from August, 1970 to May, 1975, showed no D.O. levels below 6.0 mg/l (See Table 3). A saturation of 85% was noted on August 19, 1970, for this station. (R-2). The range for D.O. at this station was 7.0 mg/L to 12.2 mg/L.

pH

The state standards for pH are 6.5 to 9.0 SU. During this survey, the pH did not fall outside the standards. The pH as recorded by the Martek varied from 7.7 SU in the evening to 7.1 SU in the morning. The lagoon effluent was 6.9 but did not appear to lower the pH in the river (See Figure 7 for Stations R-2 and R-3).

STATION R2

TABLE 3
LITTLE SALMON RIVER AT NEW MEADOWS,
NETWORK STATION, 1970-1975

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00011 WATER TEMP FAHR	00070 TURB JKSN JTU	00095 CONDUCTVY AT 25C MICROMHM	00300 DO MG/L	00310 BOD 5 DAY MG/L	00340 COD HI LEVEL MG/L	00315 COD LOWLEVEL MG/L	00400 PH SU	00403 LAB PH SU
70/03/19			16.3	65.0	25.0K		7.0	1.5	82		7.50	
71/03/30			15.3	38.0	29.0			2.4	27			6.6
71/06/16			12.0	54.0	9.0			0.8	25			7.6
72/07/05			18.0		22.0	92	8.4	1.3	27			7.1
73/03/07			1.5		7.0	97	12.2	0.6		19.6		7.1
73/08/08			15.0		2.0	120	10.2	1.3		41.3	7.20	7.4
74/04/30			7.0		9.0	56	8.8	0.1		23.3	7.50	7.2
74/06/13	08 30		12.0		7.0	57	8.7	0.9		8.2	7.70	7.5
74/08/26	09 30		15.0		7.0	74	10.6	1.3		22.0	7.60	7.0
75/03/27			1.0		11.0	101	11.1	0.1K			8.00	7.2
75/05/06			3.5		15.0	61	10.8	1.7		7.3	8.00	7.3

6

DATE FROM TO	TIME OF DAY	DEPTH FEET	00410 T ALK CAC03 MG/L	00500 RESIDUE TOTAL MG/L	00505 RESIDUE TOT VOL MG/L	00515 RESIDUE DISS-105 C MG/L	00520 RESIDUE VOL FLT MG/L	00530 RESIDUE TOT NFLT MG/L	00535 RESIDUE VOL NFLT MG/L	00545 RESIDUE SETTLEBLE ML/L	00600 TOTAL N N MG/L	00625 TOT KJEL N MG/L
70/03/19			76	152								
71/03/30			52	152								
71/06/16			48	32								
72/07/05				260								
73/03/07			56	132								
73/08/08			96	196								
74/04/30			40	90								
74/06/13	08 30		46	100								
74/08/26	09 30		190	148								
75/03/27			58	122								
75/05/06			44	111								

DATE FROM TO	TIME OF DAY	DEPTH FEET	00610 NH3-N TOTAL MG/L	71945 AMMONIA TOT-NH3 MG/L	00450 T PD4 PG/L	00660 ORTHOP04 PD4 MG/L	00665 PHOS-TOT MG/L P	00900 TOT HARD CAC03 MG/L	00915 CALCIUM CA, DISS MG/L	00916 CALCIUM CA-TOT MG/L	00925 MGNSTUM MG, DISS MG/L	00927 MGNSTUM MG, TOT MG/L
70/03/19			0.300			0.07		60	10.0		9.0	
71/03/30			0.200			0.20		76	6.0		14.0	
71/06/16			0.100			0.12		36	8.0		4.0	
72/07/05						0.28						
73/03/07				0.50		0.23						
73/03/08				0.70		0.41						
74/04/30				0.19		0.14						
74/06/13	08 30			0.42		0.29						
74/08/26	09 30			0.49		0.13						
75/03/27				0.29		0.20						
75/05/06				0.26		0.31						

STATION R2

151096
 44 50 00.0 116 17 30.0 3
 LITTLE SALMON R AT NEW MEADOWS
 IDAHO
 PACIFIC NORTHWEST
 LOWER SNAKE RIVER BASIN
 211DAHO 2111204
 0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00929 SODIUM NA, TOT MG/L	00930 SODIUM NA, DISS MG/L	00935 POTASSIUM K, DISS MG/L	00937 POTASSIUM K, TOT MG/L	00940 CHLORIDE CL MG/L	00945 SULFATE SO4-TOT MG/L	00950 FLUORIDE F, DISS MG/L	00956 SILICA TOTAL MG/L	01022 BORON B, TOT UG/L	01025 CADMIUM CD, DISS UG/L
70/08/19				6.00	1.00		4	5	0.01K			
71/03/30				5.00	1.60		4	8	0.01K	5.8		
71/06/16				8.00	1.00		2	3	0.01K	32.8	100K	
72/07/05				3.00	0.20		4					
73/03/07			4.00			0.20	8					
73/08/08			9.00			0.60	3					
74/04/30			3.10			1.70	7	3				
74/05/13	08 30		4.00			1.90	4	7				
74/08/26	09 30		4.70			2.40	5	14				
75/03/27			5.20			2.00	4	10K				
75/05/06			3.50			1.50	2	10K				

DATE FROM TO	TIME OF DAY	DEPTH FEET	01045 IRON FE, TOT UG/L	74010 IRON FE MG/L	01055 MANGNESE MN UG/L	01075 SILVER AG, DISS UG/L	01105 ALUMINUM AL, TOT UG/L
70/08/19			830		10.0K		
71/03/30			2720		40.0		
71/06/16			620		30.0		
72/07/05			1550		120.0		
73/03/07			1		0.01		
73/03/08			460		20.0		
74/04/30			500		10.0K		
74/06/13	08 30		0.3		0.01K		
74/08/26	09 30			0.49	0.01		
75/03/27				0.75	50.0		
75/05/06				0.39	30.0		

DATE FROM TO	TIME OF DAY	DEPTH FEET	31501 TOT CHL PPHENDO /100ML	31505 TOT CHL MPN CONF /100ML	31515 FEC COLI MEM-FCAR /100ML	70300 RESIDUE DISS-180 C MG/L	71850 NITRATE TOT-NDB MG/L	39250 NHAS MG/L	00550 DTL-CAN Se TLT-SXLT MG/L	07199 INVALID TOT-SXLT MG/L	71900 MERCURY HG, TOTAL UG/L	01049 LEAD PB, DISS UG/L
70/06/02				9.13								
70/04/19			195			110	2.5					
71/03/30			120			134	1.5					
71/06/16			480			60	0.5					
72/07/05			7400				1.2					
73/03/07			1124				1.2					
73/08/08			1600				4.5					
74/04/30			200		5		0.1					
74/05/13	08 30		1300		130		0.03					
74/08/26	09 30		550		210		0.2					
75/03/27			2,200		280		1.3					
75/05/06			110		K		0.4					

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TURBIDITY

The turbidity at the Little Salmon River stations was within the range 1.4-8.2 Jackson Turbidity Units (JTU) at the time of this survey. The turbidity of the lagoon effluent was low and did not cause a violation of the turbidity standard. The turbidity that is present is probably due to natural conditions.

INORGANIC TOXICANTS

Trace metals, specifically arsenic, cadmium, copper, lead and mercury, were all found to be below detection limits.

Unionized ammonia (NH_3) for all the stations was well below the safe level established by EPA's 1976 Quality Criteria for Water (see Appendix A). This level of 0.02 mg/l unionized NH_3 was never approached at any of the stations sampled including the lagoon effluent.

NUTRIENTS

Nutrient levels in the river tend to increase downriver. Nitrogen as NO_2 and NO_3 never exceeded 0.3 mg/l. Total Phosphorus did exceed the minimum recommended level of 0.05 mg/l at most stations (see Figure 8).

During this survey, the most noticeable impact on the Little Salmon River contributed by the effluent discharging from the Municipal Lagoon was an increase in nutrients. Nitrate and Total Phosphorus levels were demonstrably higher downstream (Figures 8 and 9). Table 4 shows this dramatic increase in Total Phosphorus at Station R-3 over that observed at R-2. The New Meadows Lagoon effluent does account for most of this increase.

An even larger increase in Total Phosphorus and nitrates can be seen between Stations R-3 and R-4 (see Tables 4 and 5). The limited scope of this survey makes it impossible to determine the cause of these substantial increases in nutrients between the two stations. It has to be assumed that the increase is due in part to agricultural related activities impacting the river and from tributary Stations T-3 and T-4. Nutrient loading along the river peaked at Station R-4 approximately four miles downstream from New Meadows. Overall, the fluctuation noted in the nutrient loadings at all of the stations suggests greater non-point source impact than anticipated and/or very high uptake capabilities by benthic algae and macrophyte communities. A mass water balance is impossible to attain due to these variations. At R-4 and especially R-5 (about ten miles downstream from New Meadows) very profuse macrophyte growths were observed. These growths may help explain the general increase of daytime D.O. % saturation, even to a point of supersaturation, (see Figure 4) and the general lowering of nutrient levels downstream. Both N and P dropped in concentration at the end of the study area.

FLOW

At the time of this survey, the Little Salmon River was providing a dilution factor of nearly 200 to 1 for the lagoon effluent within a distance of one and a half miles downstream. The dilution increases to nearly 500 to 1 by the end of the study area approximately 10 miles downstream.

This large amount of dilution coupled with a moderate rate of travel (about 0.5 m/s) seems to negate most impacts the lagoon effluent has on the river system.

TABLE 4

LITTLE SALMON RIVER SURVEY
NITRATE LOADINGS
September 29, 1976

<u>STATION #</u>	<u>FLOW</u>	<u>NITRATES MG/L</u>	<u>NITRATES LBS.</u>
R-1	4.0 CFS	0.002	0.043
T-1	8.0 CFS	< 0.002	< 0.086
T-2	7.0 CFS	0.014	0.528
R-2	20. CFS	0.002	0.215
M-1	0.1 CFS	0.011	0.0059
R-3	23 CFS	0.009	1.115
T-3	17 CFS	0.002	0.183
T-4	16 CFS	0.002	0.172
R-4	64 CFS	0.034	11.72
T-5	13 CFS	< 0.002	< 0.140
R-5	93 CFS	0.007	3.508

TABLE 5

LITTLE SALMON RIVER SURVEY
TOTAL PHOSPHORUS LOADINGS
September 29, 1976

<u>STATION #</u>	<u>FLOW</u>	<u>TOTAL PHOSPHORUS-MG/L</u>	<u>TOTAL PHOSPHORUS- POUNDS</u>
R-1	4.0 CFS	0.030	0.646
T-1	8.0 CFS	0.090	3.880
T-2	7.0 CFS	0.090	3.395
R-2	20.0 CFS	0.060	6.468
M-1	0.1 CFS	4.0	2.156
R-3	23 CFS	0.08	9.917
T-3	17 CFS	0.03	2.748
T-4	16 CFS	0.05	4.312
R-4	64 CFS	0.09	31.046
T-5	13 CFS	0.05	3.503
R-5	93 CFS	0.03	15.038

BIOLOGICAL

The macrophyte and macroinvertebrate data was summarized by Bill Clark of this Division. Tables 6, 7, and 8 show little difference in aquatic life upstream or downstream from the municipal discharge.

CONCLUSIONS

At the time of the survey, the lagoon effluent was not directly demonstrated to be causing the Little Salmon River to violate any of the State's water quality standards.

In discussing the river downstream from the lagoon effluent over observations made upstream, D.O., pH, temperature, turbidity and bacteria were all virtually unchanged. Bio-chemical oxygen demand (BOD₅) at all stations is low and is considered natural in origin (see Figure 10).

The Total Phosphorus added to the river system as a result of the lagoon discharge at that point is about 35%. The total contribution in relation to all sampled sources (mainly tributaries) is 13%, and approximately 7% from all point and non-point sources (see Tables 4 and 5).

Only nutrients were observed to increase in the study area. A more comprehensive study of the river system is needed before meaningful recommendations can be made.

TABLE 6

Benthic Macroinvertebrates - Little Salmon River, September 29, 1976

Organism	STATION 2				STATION 3			
	#1 0.8' deep Gravel Riffle	#2 0.6' deep Gravel Riffle	#3 0.8' deep Fast Run	Mean	#1 0.4' deep Gravel Riffle	#2 0.7' deep Slow Run	#3 0.6' deep Gravel Riffle	Mean
MOLLUSCA								
Gastropoda								
Physidae								
<u>Physa</u> sp.	0	1	0	.33	1	0	0	.33
Ancyliidae								
<u>Ferrissia</u> sp.	0	0	1	.33	0	1	0	.33
Planorbidae								
<u>Gyraulus</u> sp.	0	0	2	.67	0	11	0	3.67
INSECTA								
EMPHEROPTERA								
Baetidae								
<u>Baetis</u> (nymphs)	2	19	48	23	63	113	16	64
Ephemereilidae (nymphs)	3	0	3	2	2	0	0	.67
Leptophlebiidae (nymphs)	0	0	1	.33	0	2	0	.67
PLECOPTERA								
Perlidae (nymphs)	6	1	5	4	1	1	12	4.67
ODONATA								
Libellulidae (nymphs)	0	2	0	.67				
COLEOPTERA								
Elmidae (larvae)	26	26	19	23.67	8	2	66	25.33
Sp. A (adults)	0	2	1	1	2	0	0	.67
Sp. B (adults)	0	1	0	.33	1	0	0	.33
Haliplidae (adults)	0	1	0	.33	0	2	0	.67
TRICHOPTERA								
Helicopsychidae								
<u>Helicopsyche borealis</u> (Hagen) (larvae)	1	3	1	1.67	0	1	0	.33
Hydropsychidae								
<u>Hydropsyche</u> sp. (larvae)	78	20	40	46	12	0	180	64
Glossomatidae (larvae)	15	0	1	5.33				
DIPTERA								
Chironomidae (larvae)								
(pupae)	15	79	42	45.33	155	39	37	77
	0	1	2	1	0	3	0	1
Simuliidae (larvae)								
(pupae)	3	0	3	2	107	2	25	44.67
					16	0	4	.6.67
Tipulidae (larvae)	0	1	0	.33	2	1	3	2
LEPIDOPTERA								
Pyralidae								
<u>Paragyraactis</u> sp. (larvae)	10	2	2	4.67	0	0	4	1.33
HEMIPTERA								
Corixidae								
					0	2	0	.67
TOTALS	159	159	171	163	370	180	347	299

TABLE 7

Macroinvertebrate Species Diversity - Little Salmon River
Stations 2 and 3, September 29, 1976

<u>STATION</u>	<u>SAMPLE</u>	<u>HABITAT</u>	<u>SPECIES DIVERSITY</u>
2	1	Gravel, riffle	2.34
	2	Gravel, riffle	2.29
	3	Fast Run	2.65
			\bar{x} <u>2.43</u>
3	1	Gravel, riffle	2.13
	2	Slow Run	1.78
	3	Gravel, riffle	2.15
			\bar{x} <u>2.02</u>

TABLE 8

LITTLE SALMON RIVER
MACROPHYTES

<u>STATION #</u>	<u>% MACROPHYTE</u>	<u>SPECIES</u>	<u>NOTES</u>
R-1	(75%)	<u>Elodea canadensis</u>	In Pool 25% coverage of algae in stream
R-2	trace	<u>Elodea canadensis</u>	
R-3	trace	<u>Elodea canadensis</u> <u>Potamogeton sp.</u>	
R-4	trace	?	
R-5	50%	<u>Elodea canadensis</u> <u>Potamogeton sp.</u> <u>Myriophyllum sp.</u> <u>Fontinalis sp.</u> 1 other bryophyte sp.	* (attached algae abundant)
T-1	50%	<u>Potamogeton sp.</u>	
T-2	50%	<u>Potamogeton sp.</u> <u>Myriophyllum spicatum</u>	
T-3	None observed		
T-4	None observed		
T-5	None observed		

* This station is near the area mentioned and illustrated by Falter et al. (1974) in plates 13 and 52 as having nuisance occurrences of Elodea canadensis and Myriophyllum spp., 8 miles downstream of New Meadows, Idaho.

REFERENCES CITED

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- U. S. Environmental Protection Agency. 1976. Quality Criteria for Water. U. S. Environmental Protection Agency, Washington, D.C. 256 pp.
- U. S. Geological Survey. 1974. Water Resources Data for Idaho 1973. Part I. Surface Water Records. U. S. Geological Survey, Washington, D.C. 289 pp.

APPENDIX A

FIELD DATA

STATION R-3
 LITTLE SALMON RIVER SURVEY
 Field Parameters
 9/28/76 to 9/29/76

<u>TIME</u>	<u>1976 DATE</u>	<u>D.O. Mg/l</u>	<u>pH S.U.</u>	<u>SPECIFIC CONDUCTANCE umhos/LM</u>	<u>TEMPERATURE °C.</u>
16:30	9/28	10.4	7.55	32	14.6
17:00	9/28	9.75	7.55	32	14.6
17:30	9/28	9.70	7.70	32	14.6
18:00	9/28	9.35	7.70	32	14.5
18:30	9/28	9.30	7.70	32	14.5
19:00	9/28	9.00	7.70	32	14.5
19:30	9/28	8.65	7.70	32	14.5
20:00	9/28	8.55	7.70	32	14.5
20:30	9/28	8.40	7.55	32	14.5
21:00	9/28	8.2	7.55	32	14.5
21:30	9/28	7.9	7.55	32	14.6
22:00	9/28	7.9	7.40	32	14.6
22:30	9/28	7.8	7.40	32	14.6
23:00	9/28	7.75	7.40	32	14.6
23:30	9/28	7.75	7.40	32	14.6
24:00	9/28	7.75	7.40	32	14.6
00:30	9/29	7.70	7.40	32	14.6
1:00	9/29	7.70	7.40	32	14.6
1:30	9/29	7.4	7.40	32	14.5
2:00	9/29	7.4	7.40	32	14.5
2:30	9/29	7.4	7.4	32	14.3
3:00	9/29	7.4	7.3	32	14.3
3:30	9/29	7.20	7.3	32	14.3
4:00	9/29	7.20	7.3	32	14.2
4:30	9/29	7.20	7.2	32	14.1
5:00	9/29	7.4	7.2	30	14.0
5:30	9/29	7.2	7.2	30	14.0
6:00	9/29	7.1	7.2	30	13.9
6:30	9/29	7.2	7.2	30	13.8
7:00	9/29	7.4	7.2	30	13.7
7:30	9/29	7.4	7.1	30	13.5
8:00	9/29	7.4	7.1	28	13.4
8:30	9/29	7.7	7.1	28	13.2
9:00	9/29	7.75	7.1	28	13.1
9:30	9/29	7.90	7.1	28	13.1
10:00	9/29	8.40	7.2	28	13.2
10:30	9/29	8.55	7.2	30	13.3
11:00	9/29	8.55	7.3	30	13.5
11:30	9/29	8.60	7.3	30	13.9
12:00	9/29	8.65	7.3	32	14.0
12:30	9/29	8.85	7.4	32	14.2
13:00	9/29	8.90	7.4	34	14.4
13:30	9/29	9.40	7.4	34	14.6
14:00	9/29	9.25	7.55	34	14.7
14:30	9/29	9.70	7.55	34	14.7
15:00	9/29	9.40	7.70	34	14.7
15:30	9/29	9.70	7.70	34	14.7
16:00	9/29	9.70	7.70	34	14.7

REF

STORET RETRIEVAL DATE 78/08/22

2040083
44 56 47.0 116 10 17.0 5
LITTLE SALMON RIVER S. NEW MEADOW
16003 IDAHO
PACIFIC NORTHWEST 130803
LOWER SNAKE RIVER BASIN
211LSURV 770120
0000 FEET DEPTH CLASS 00

STATION R1

/TYP4/AMNT/STREAM

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP LENT	00061 STREAM FLOW, DIST-CFS	00300 DO MG/L	00301 DO SATUR PERCENT	00375 COD LIQUID LEVEL MG/L	00400 PH SU	31501 TOT COLI MP/100ML	31616 FEC COLI MPN-FCRM /100ML	31679 FECSTREP MF H-ENT /100ML	00610 NH3-N TOTAL MG/L
76/07/22	08 30	0001	9.0	4	9.8	98.0	9.2	7.10	900	17	60	0.008

STORET RETRIEVAL DATE 78/08/23

2040083
44 56 47.0 116 10 17.0 5
LITTLE SALMON RIVER S. NEW MEADOW
16003 IDAHO
PACIFIC NORTHWEST 130803
LOWER SNAKE RIVER BASIN
211LSURV 770120
0000 FEET DEPTH CLASS 00

/TYP4/AMNT/STREAM

DATE FROM TO	TIME OF DAY	DEPTH FEET	00615 NO2-N TOTAL MG/L	00620 NO3-N TOTAL MG/L	00625 TOT KjEL N MG/L	70507 PHOS-T OR PPH MG/L P	00665 PHOS-TOT MG/L P	00669 PHOS-TOT HYDRO MG/L P	00095 CONDUCTIVY AT 25C MICROMHM	00530 RESIDUE TOT HFLI MG/L	00500 RESIDUE TOTAL MG/L	00535 RESIDUE VOL NFLI MG/L
76/09/22	08 30	0001	0.001	0.002	0.100K	0.016	0.030	0.030	145	11	127	2

STORET RETRIEVAL DATE 78/08/23

2040083
44 56 47.0 116 10 17.0 5
LITTLE SALMON RIVER S. NEW MEADOW
16003 IDAHO
PACIFIC NORTHWEST 130803
LOWER SNAKE RIVER BASIN
211LSURV 770120
0000 FEET DEPTH CLASS 00

/TYP4/AMNT/STREAM

DATE FROM TO	TIME OF DAY	DEPTH FEET	00070 TURB JKSN JIU	00410 T ALK CACO3 MG/L	00940 CHLORIDE CL MG/L	00945 SULFATE SO4-TOT MG/L	01002 ARSENIC AS, TOT MG/L	01027 CADMIUM CD, TOT MG/L	01042 COPPER CU, TOT MG/L	01051 LEAD PB, TOT MG/L	01092 ZINC ZN, TOT MG/L	71900 MERCURY HG, TOTAL MG/L
76/09/22	08 30	0001	1.4	70	2K		10K	5K	10K	10K	3	5.0K

A-2

STORET RETRIEVAL DATE 78/08/23

STATION T1

/TYPN/AMBIT/STREAM

2040084
44 57 27.0 116 17 33.0 5
BIG CREEK .5MI SO. OF NEW MEADOW
16003 IDAHO
PACIFIC NORTHWEST 130803
LOWER SNAKE RIVER BASIN
211DSURV 770120
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00061 STREAM FLOW, INST-CFS	00100 DO MG/L	00301 DO SATUR PERCENT	00335 CONDUCTIVITY MG/L	00400 PH SU	31501 TOT COLI /100ML	31616 FEC COLI /100ML	31679 FECSTRCP /100ML	00610 NH3-N TOTAL MG/L
76/09/23	09 00	0001	6.0	8	9.8	93.0	10.4	7.50	578	105	35	0.025

STORET RETRIEVAL DATE 78/08/23

A-3

/TYPN/AMBIT/STREAM

2040084
44 57 27.0 116 17 33.0 5
BIG CREEK .5MI SO. OF NEW MEADOW
16003 IDAHO
PACIFIC NORTHWEST 130803
LOWER SNAKE RIVER BASIN
211DSURV 770120
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00615 NH2-N TOTAL MG/L	00620 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	70507 PHOS-T ORTHO MG/L P	00665 PHOS-TOT MG/L P	00669 PHOS-TOT HYDRO MG/L P	00095 CONDUCTIVY AT 25C MICROMHO	00530 RESIDUE TOT NFLI MG/L	00500 RESIDUE TOTAL MG/L	00535 RESIDUE VOL NFLI MG/L
76/09/23	09 09	0001	0.002	0.002K	0.640	0.039	0.070	0.080		16	135	2

STORET RETRIEVAL DATE 78/08/23

/TYPN/AMBIT/STREAM

2040084
44 57 27.0 116 17 33.0 5
BIG CREEK .5MI SO. OF NEW MEADOW
16003 IDAHO
PACIFIC NORTHWEST 130803
LOWER SNAKE RIVER BASIN
211DSURV 770120
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00970 TURB JKSN JIU	00410 T ALK CALCIU MG/L	00740 CHLORIDE LL MG/L	00745 SULFATE SO4-TOT MG/L	01002 ARSENIC AS, TOT UG/L	01027 CALCIUM CD, TOT UG/L	01042 COPPER CU, TOT UG/L	01051 LEAD PB, TOT UG/L	01092 ZINC ZN, TOT UG/L	71900 MERCURY HG, TOTAL UG/L
76/09/23	09 00	0001	5.7	76	27	27	10K	5K	10K	10K	2	5.0K

STORET RETRIEVAL DATE 78/08/23

STATION T2

/1YPA/AMBIT/STREAM

2040085
 44 58 04.0 116 17 33.0 5
 LITTLE CREEK WEST OF NEW MEADOWS
 16003 IDAHO
 PACIFIC NORTHWEST 130803
 LOWER SNAKE RIVER BASIN
 2115SURV 770120
 0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CFMT	00061 STREAM FLOW INST-CFS	00100 DO MG/L	00101 DO SATUR PERCENT	00335 COU LEVEL MG/L	00400 PH SU	31501 TOT COLI MFIMENDU /100ML	31616 FEC COLI MFH-FCRR /100ML	31679 FECSTREP MF H-ENT /100ML	00610 NH3-N TOTAL MG/L
76/09/29	09 45	0001	9.5	7	9.7	99.0	15.8	7.50	1500	70	20	0.008

STORET RETRIEVAL DATE 78/08/23

A-4

/1YPA/AMBIT/STREAM

2040085
 44 58 04.0 116 17 33.0 5
 LITTLE CREEK WEST OF NEW MEADOWS
 16003 IDAHO
 PACIFIC NORTHWEST 130803
 LOWER SNAKE RIVER BASIN
 2115SURV 770120
 0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00615 NO2-N TOTAL MG/L	00620 NO3-N TOTAL MG/L	00625 TOT NFEI N MG/L	70507 PHOS-T ORTHO MG/L P	00665 PHOS-TOT MG/L P	00669 PHOS-TOT HYDRO MG/L P	00095 CONDUCTIVY AT 25C MICROMHO	00530 RESIDUE TOT NFEI MG/L	00500 RESIDUE TOTAL MG/L	00535 RESIDUE VOL NFEI MG/L
76/09/29	09 45	0001	0.003	0.014	0.950	0.026	0.090	0.070	77	2	76	2K

STORET RETRIEVAL DATE 78/08/23

/1YPA/AMBIT/STREAM

2040085
 44 58 04.0 116 17 33.0 5
 LITTLE CREEK WEST OF NEW MEADOWS
 16003 IDAHO
 PACIFIC NORTHWEST 130803
 LOWER SNAKE RIVER BASIN
 2115SURV 770120
 0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00070 TURB JKSN JTU	00410 T ALK CALCS MG/L	00940 CHLORIDE CL MG/L	00945 SULFATE SO4-TOT MG/L	01002 ARSENIC AS,TOT UG/L	01027 CADMIUM CD,TOT UG/L	01042 COPPER CU,TOT UG/L	01051 LEAD PB,TOT UG/L	01092 ZINC ZN,TOT UG/L	71900 MERCURY HG,TOTAL UG/L
76/09/29	09 45	0001	5.7	38	2K		10K	5K	10K	10K	4	5.0K

STORET RETRIEVAL DATE 78/08/21

STATION R2

2040086 151096
44 58 24.0 116 17 41.0 5
LITTLE SALMON R. HWY 95 BRIDGE
16003 IDAHO
PACIFIC NORTHWEST 130803
LOWER SNAKE RIVER BASIN
2116SURV 770120
0000 FEET DEPTH CLASS 00

/TTPA/AMBIT/STREAM

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CLM	00061 STREAM FLOW INST-CFS	00300 DO MG/L	00301 DO SATUR PERCENT	00335 COB LOW LEVEL MG/L	00400 PH SU	31501 TOT COLI MFIMENDU /100ML	31616 FEC COLI MFH-FCRR /100ML	31679 FECSTALP MF H-FHT /100ML	00610 NH3-N TOTAL MG/L	
76/09/29	10	15	0001	11.0	20	9.1	99.0	11.2	7.50	800	1K	20	0.008

STORET RETRIEVAL DATE 78/08/23

2040086 151096
44 58 24.0 116 17 41.0 5
LITTLE SALMON R. HWY 95 BRIDGE
16003 IDAHO
PACIFIC NORTHWEST 130803
LOWER SNAKE RIVER BASIN
2116SURV 770120
0000 FEET DEPTH CLASS 00

A-5

/TTPA/AMBIT/STREAM

DATE FROM TO	TIME OF DAY	DEPTH FEET	00615 NH2-N TOTAL MG/L	00620 NH3-N TOTAL MG/L	00625 TOT NJEL N MG/L	70567 PHOS-T ORTHO MG/L P	00665 PHOS-TOT MG/L P	00669 PHOS-TOT HYDRD MG/L P	00095 CONDUCTVY AT 25C MICROMHO	00530 RESIDUE TOT NFLI MG/L	00500 RESIDUE TOTAL MG/L	00535 RESIDUE VOL NFLI MG/L	
76/09/29	10	15	0001	0.002	0.002	0.530	0.020	0.060	0.050	125	9	113	2

STORET RETRIEVAL DATE 78/08/23

2040086 151096
44 58 24.0 116 17 41.0 5
LITTLE SALMON R. HWY 95 BRIDGE
16003 IDAHO
PACIFIC NORTHWEST 130803
LOWER SNAKE RIVER BASIN
2116SURV 770120
0000 FEET DEPTH CLASS 00

/TTPA/AMBIT/STREAM

DATE FROM TO	TIME OF DAY	DEPTH FEET	00076 TURB JKSI JIU	00410 TALK CALCO3 MG/L	00940 CHLORIDE CL MG/L	00945 SULFATE SO4-TOT MG/L	01002 ARSENIC AS,TOT MG/L	01027 CADMIUM CD,TOT MG/L	01042 COPPER CU,TOT MG/L	01051 LEAD PB,TOT UG/L	01092 ZINC ZN,TOT UG/L	71900 MERCURY HG,TOTAL UG/L
76/09/29	10	15	0001	4.7	64	2K	10K	5K	10K	10K	5	5.0K

STORET RETRIEVAL DATE 78/08/23

STATION M1

/TYP/AMBNT/STREAM

2040087 100023159
 44 59 32.0 116 17 33.0 5
 NEW MEADOWS LAGOON
 16003 IDAHO
 PACIFIC NORTHWEST 130804
 LOWER SNAKE RIVER BASIN
 2115SURV 770131
 0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00061 STREAM FLOW, INST-CFS	00300 DO MG/L	00301 DO SATUR PERCENT	00335 COD MG/L	00400 PH SU	31501 TIT COLI /100ML	31616 FEC COLI MFM-FCBK /100ML	31679 FECSTREP MF M-LNT /100ML	00610 NH3-N TOTAL MG/L
76/09/29	11 00	0001	12.0	0.1	3.0	40.0		6.90	1000	100K	10	2.390

STORET RETRIEVAL DATE 78/08/23

/TYP/AMBNT/STREAM

2040087 100023159
 44 58 32.0 116 17 33.0 5
 NEW MEADOWS LAGOON
 16003 IDAHO
 PACIFIC NORTHWEST 130803
 LOWER SNAKE RIVER BASIN
 2115SURV 770131
 0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00615 NO2-N TOTAL MG/L	00620 NO3-N TOTAL MG/L	00625 TOT KJEL N MG/L	70507 PHOS-T ORTHO MG/L P	00665 PHOS-TOT MG/L P	00669 PHOS-TOT HYDRO MG/L P	00095 CONDUCTVY AT 25C MICROMHO	00530 RESIDUE TOT NFLT MG/L	00500 RESIDUE TOTAL MG/L	00535 RESIDUE VOL NFLT MG/L
76/09/29	11 00		0.005	0.011	2.340	3.830	4.000	3.720	394	13	303	7

STORET RETRIEVAL DATE 78/08/23

/TYP/AMBNT/STREAM

2040087 100023159
 44 58 32.0 116 17 33.0 5
 NEW MEADOWS LAGOON
 16003 IDAHO
 PACIFIC NORTHWEST 130803
 LOWER SNAKE RIVER BASIN
 2115SURV 770131
 0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00070 TURB JRSN JIU	00410 T ALK CACD3 MG/L	00940 CHLORIDE CL MG/L	00945 SULFATE SO4-TOT MG/L	01002 ARSENIC AS, TOT UG/L	01027 CADMIUM CD, TOT UG/L	01042 COPPER CU, TOT UG/L	01051 LEAD PB, TOT UG/L	01092 ZINC ZN, TOT UG/L	71900 MERCURY HG, TOTAL UG/L	
76/09/29	11 00			4.2	107	21	76	10K	5K	10K	10K	43	5.0K

START RETRIEVAL DATE 7/8/08/23

STATION R3

7/11/08/AMBT/STREAM

2040088
 44 58 37.0 116 17 27.0 5
 LITTLE SALMON R. 100M. BL LAGOON
 16003 IDAHO
 PACIFIC NORTHWEST 130803
 LOWER SNAKE RIVER BASIN
 211DSURV 7/0120
 0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00061 STREAM FLOW INST-CFS	00300 TDI HG/L	00361 DO SATUR PERCENT	00335 COD LOWLEVEL MG/L	00400 PH SU	31501 TOT COLI MF/100ML	31616 FEC COLI MF/100ML	31679 FECST/FP MF/100ML	00610 NH3-N TOTAL MG/L
76/09/28	16	30	14.6		10.4			7.55				
	17	00	14.6		9.8			7.55				
	17	30	14.6		9.7			7.70				
	18	00	14.5		9.3			7.70				
	18	30	14.5		9.3			7.70				
	19	00	14.5		9.0			7.70				
	19	30	14.5		8.6			7.70				
	20	00	14.5		8.5			7.70				
	20	30	14.5		8.4			7.55				
	21	00	14.5		8.2			7.55				
	21	30	14.6		7.9			7.55				
	22	00	14.6		7.9			7.40				
	22	30	14.6		7.8			7.40				
	23	00	14.6		7.8			7.40				
	23	30	14.6		7.8			7.40				
	24	00	14.6		7.8			7.40				
76/09/29	00	30	14.6		7.7			7.40				
	01	00	14.6		7.7			7.40				
	01	30	14.5		7.4			7.40				
	02	00	14.5		7.4			7.40				
	02	30	14.3		7.4			7.40				
	03	00	14.3		7.4			7.30				
	03	30	14.3		7.2			7.30				
	04	00	14.2		7.2			7.30				
	04	30	14.1		7.2			7.20				
	05	00	14.0		7.4			7.20				
	05	30	14.0		7.2			7.20				
	06	00	13.9		7.1			7.20				
	06	30	13.8		7.2			7.20				
	07	00	13.7		7.4			7.20				
	07	30	13.5		7.4			7.10				
	08	00	13.4		7.4			7.10				
	08	30	13.2		7.7			7.10				
	09	00	13.1		7.8			7.10				
	09	30	13.1		7.9			7.10				
	10	00	13.2		8.4			7.20				

A-7

SECRET RETRIEVAL DATE 70/06/23

STATION R3

/TYPN/AMNT/STREAM

2040RP
 44 5R 37.0 116 17 27.0 5
 LITTLE SALMON R. 100M. BL LAGOON
 14003 ID-AND
 PACIFIC NORTHWEST 130803
 LOWER SNAKE RIVER BASIN
 211LSURV 770120
 5000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00061 STREAM FLOW, INST-CFS	00300 DO MG/L	00301 PH SATUR PERCENT	00335 CO2 LOWLEVEL MG/L	00400 PH SU	31501 TOT COLI MF/100ML	31616 FEC COLI MFH-FCBH /100ML	31679 FECSTREP MF N-ENT /100ML	00610 NH3-N TOTAL MG/L
76/09/29	10	10	13.3		8.5			7.20				
	11	00	13.5		8.5			7.30				
	11	30	13.9		8.6			7.30				
	11	45	12.0	23	9.6	103.0	10.4	7.70				0.025
	12	00	14.0		8.6			7.30				
	12	30	14.2		8.8			7.40				
	13	00	14.4		8.9			7.40				
	13	30	14.6		9.4			7.40				
	14	00	14.7		9.3			7.55				
	14	30	14.7		9.7			7.55				
	15	00	14.7		9.4			7.70				
	15	30	14.7		9.7			7.70				
	16	00	14.7		9.7			7.70				

A-8

0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00615 NH2-N TOTAL MG/L	00620 NH3-N TOTAL MG/L	00625 TOT N, JGL N MG/L	70501 PHOS-T ORTHO MG/L P	00665 PHOS-TOT MG/L P	00669 PHOS-TOT HYDRO MG/L P	00095 CONDUCTIV AT 25C MICROHM	00530 RESISTUE TOT NFLI MG/L	00500 RESISTUE TOTAL MG/L	00535 RESISTUE VOL NFLI MG/L
76/09/29	11	45	0.002	0.009	0.210	0.033	0.080	0.080	125	11	111	2

/TYPN/AMNT/STREAM

211LSURV 770120
 5000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00070 TURB JKSJN JTU	00410 T ALK CACUJ MG/L	00940 CHLORIDE CL MG/L	00945 SULFATE SO4-TOT MG/L	01002 ARSENIC AS, TOT UG/L	01027 CADMIUM CD, TOT UG/L	01042 COPPER CU, TOT UG/L	01051 LEAD PB, TOT UG/L	01022 ZINC ZN, TOT UG/L	71900 MERCURY HG, TOTAL UG/L
76/09/29	11	45	5.4	64	2K		10K	5K	10K	10K	1	5.0K

STORET RETRIEVAL DATE 78/08/23

STATION T3

/TYP/AMNT/STREAM

2040089
44 58 50.0 116 16 10.0 5
WEST BRANCH GOOSE CR. 95 BRIDGE
16003 IDAHO
PACIFIC NORTHWEST 130803
LOWER SNAKE RIVER BASIN
211DSURV 770120
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00061 STREAM FLOW, INST-CFS	00300 DO MG/L	00301 DO SATUR PERCENT	00335 COD LIMLEVEL MG/L	00400 PH SU	31501 TOT COLI MF/MENDD /100ML	31616 FCC COLI MFN-FCBR /100ML	31679 FECSTREP MF H-ENT /100ML	00610 NH3-N TOTAL MG/L	
76/09/29	12	30	0001	12.0	17	10.0	107.0	9.6	7.30	400	3	170	0.008

STORET RETRIEVAL DATE 78/08/23

A-9

/TYP/AMNT/STREAM

2040089
44 58 50.0 116 16 10.0 5
WEST BRANCH GOOSE CR. 95 BRIDGE
16003 IDAHO
PACIFIC NORTHWEST 130803
LOWER SNAKE RIVER BASIN
211DSURV 770120
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00615 NH2-N TOTAL MG/L	00620 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	70507 PHOS-T ORTHO MG/L P	00665 PHOS-TOT MG/L P	00669 PHOS-TOT HYDRO MG/L P	00095 CONDUCTVY AT 25C MICROMHO	00530 RESIDUE TOT NFLT MG/L	00500 RESIDUE TOTAL MG/L	00535 RESIDUE VOL NFLT MG/L	
76/09/29	12	30	0001	0.001K	0.002	0.740	0.003	0.030	0.030	40	4	40	2

STORET RETRIEVAL DATE 78/08/23

/TYP/AMNT/STREAM

2040089
44 58 50.0 116 16 10.0 5
WEST BRANCH GOOSE CR. 95 BRIDGE
16003 IDAHO
PACIFIC NORTHWEST 130803
LOWER SNAKE RIVER BASIN
211DSURV 770120
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00070 TURB JKSN JIU	00410 T ALK CACCN MG/L	00940 CHLORIDE CL MG/L	00945 SULFATE SO4-TOT MG/L	01002 ARSENIC AS,TOT UG/L	01027 CADMIUM CD,TOT UG/L	01042 COPPER CU,TOT UG/L	01051 LEAD PB,TOT UG/L	01092 ZINC ZN,TOT UG/L	71900 MERCURY HG,TOTAL UG/L
76/09/29	12	30	0001	1.1	20	2K	10K	5K	10K	10K	2	5.0K

STREET RETRIEVAL DATE 78/08/23

2040090
44 51 44.0 116 16 10.0 5
EAST BRANCH GOOSE CR. 95 BRIDGE
16003 IDAHO
PACIFIC NORTHWEST 130803
LOWER SNAKE RIVER BASIN
21105URY 770120
0000 FEET DEPTH CLASS 00

STATION T4

/TYPN/APRNT/STREAM

DATE FROM TO	TIME OF DAY	DEPTH FEET	00016 WATER TEMP CENT	00061 STREAM FLOW, INST-CFS	00300 DO MG/L	00301 DO SATUR PERCENT	00335 CO2 LEVEL MG/L	00400 PH SU	31501 TOT COLI MF/MENDDO /100ML	31616 FEC COLI MFH-FCHK /100ML	31679 FEC STREP MF M-FNT /100ML	00610 NH3-N TOTAL MG/L
76/09/29	13 30	0004	11.5	16	10.2	112.0	2.9K	7.70	750	60	35	0.025

STREET RETRIEVAL DATE 78/08/23

2040090
44 59 44.0 116 16 10.0 5
EAST BRANCH GOOSE CR. 95 BRIDGE
16003 IDAHO
PACIFIC NORTHWEST 130803
LOWER SNAKE RIVER BASIN
21105URY 770120
0000 FEET DEPTH CLASS 00

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/TYPN/APRNT/STREAM

DATE FROM TO	TIME OF DAY	DEPTH FEET	00615 NO2-N TOTAL MG/L	00620 NO3-N TOTAL MG/L	00625 TOT KJEL N MG/L	70507 PHOS-T ORTHO MG/L P	00665 PHOS-TOT MG/L P	00669 PHOS-TOT HYDRO MG/L P	00095 CONDUCTV AT 25C MICROMHO	00530 RESIDUE TOT NFLT MG/L	00500 RESIDUE TOTAL MG/L	00535 RESIDUE VOL NFLT MG/L
76/09/29	13 30		0.001	0.002	0.106K	0.036	0.030	0.050	58	2		56

STREET RETRIEVAL DATE 78/08/23

2040090
44 59 44.0 116 16 10.0 5
EAST BRANCH GOOSE CR. 95 BRIDGE
16003 IDAHO
PACIFIC NORTHWEST 130803
LOWER SNAKE RIVER BASIN
21105URY 770120
0000 FEET DEPTH CLASS 00

/TYPN/APRNT/STREAM

DATE FROM TO	TIME OF DAY	DEPTH FEET	00070 TURB JKSJ JIU	00410 T ALK CALCI MG/L	00940 CHLORIDE CL MG/L	00945 SULFATE SO4-TOT MG/L	01002 ARSENIC AS, TOT MG/L	01027 CADMIUM CD, TOT MG/L	01042 COPPER CU, TOT MG/L	01051 LEAD PB, TOT UG/L	01092 ZINC ZN, TOT UG/L	71900 MERCURY HG, TOTAL UG/L
76/09/29	13 30		2.2	26	2K		10K	5K	10K	10K	234	5.0K

STORET RETRIEVAL DATE 78/08/21

STATION R4

/TYP/AMNT/STREAM

2040091
 45 07 25.0 116 17 21.0 5
 LITTLE SALMON R. NEAR HOT SPRING
 16003 IDAHO
 PACIFIC NORTHWEST 130803
 LOWER SNAKE RIVER BASIN
 2110SURV 770120
 0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00061 STREAM FLOW, INST-CFS	00300 DO MG/L	00301 DO SATUR PERCENT	00335 COD LOWLEVEL MG/L	00400 PH SU	31501 TIT COLI MFIMENDD /100ML	31616 FEC COLI MFM-FERR /100ML	31679 FECSTREP MT M-FNT /100ML	00610 NH3-N TOTAL MG/L
78/09/29	14 20	0001	14.0	64	10.8	120.0	14.1	7.60	700	10K	10	0.016

STORET RETRIEVAL DATE 78/08/23

/TYP/AMNT/STREAM

2040091
 45 07 25.0 116 17 21.0 5
 LITTLE SALMON R. NEAR HOT SPRING
 16003 IDAHO
 PACIFIC NORTHWEST 130803
 LOWER SNAKE RIVER BASIN
 2110SURV 770120
 0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00615 NO2-N TOTAL MG/L	00620 NO3-N TOTAL MG/L	00625 TOT KJEL N MG/L	70507 PHOS-T ORTHO MG/L P	00665 PHOS-TOT MG/L P	00669 PHOS-TOT HYDRO MG/L P	00095 CONDUCTVY AT 25C MICROMHO	00510 RESIDUE TOT NFLI MG/L	00500 RESIDUE TOTAL MG/L	00535 RESIDUE VOL NFLI MG/L
78/09/29	14 20	0001	0.001	0.034	0.210	0.010	0.090	0.100	94	13	87	2

STORET RETRIEVAL DATE 78/06/23

/TYP/AMNT/STREAM

2040091
 45 07 25.0 116 17 21.0 5
 LITTLE SALMON R. NEAR HOT SPRING
 16003 IDAHO
 PACIFIC NORTHWEST 130803
 LOWER SNAKE RIVER BASIN
 2110SURV 770120
 0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00070 TURB JURSN JIU	00410 T ALK CACO3 MG/L	00940 CHLORIDE CL MG/L	00945 SULFATE SO4-TOT MG/L	01002 ARSENIC AS,TOT MG/L	01027 CADMIUM CD,TOT UG/L	01042 COPPER CU,TOT UG/L	01051 LEAD PB,TOT UG/L	01092 ZINC ZN,TOT UG/L	71900 MERCURY HG, TOTAL UG/L
78/09/29	14 20	0001	2.7	44	2		10K	5K	10K	10K	18	5.0K

START RETRIEVAL DATE 73/06/23

STATION T5

/TYP/APPNT/STREAM

2040092
45 02 28.0 116 16 51.0 5
SIX HILL CREEK HWY 95 BRIDGE
16063 IDAHO
PACIFIC NORTHWEST 130003
LOWER SNAKE RIVER BASIN
2116SURV 770120
6000 FEET DEPTH CLASS 00

DATE	TIME	DEPTH	00010	00061	00300	00101	00335	00400	31501	31616	31629	00610	
FROM	OF	FEET	WATER	STEAP	DO	DO	CON	PH	TOT COLI	FEC COLI	FECSTREP	ML3-N	
TO	DAY	FEET	TEMP	FLOW	SATUR	SATUR	LOWLEVEL	50	MEMEND0	MEM-FCR0	MEM-FIT	TOTAL	
			CENT	INST-CFS	MG/L	PERCENT	MG/L		/100ML	/100ML	/100ML	MG/L	
16/09/29	14	45	0001	15.5	11	9.5	110.0	10.0	7.50	850	160	15	0.004

START RETRIEVAL DATE 78/08/23

2040092
45 02 28.0 116 16 51.0 5
SIX HILL CREEK HWY 95 BRIDGE
16063 IDAHO
PACIFIC NORTHWEST 130003
LOWER SNAKE RIVER BASIN
2116SURV 770120
6000 FEET DEPTH CLASS 00

/TYP/APPNT/STREAM

DATE	TIME	DEPTH	00615	00620	00625	70507	00665	00667	00095	00530	00500	00535
FROM	OF	FEET	NO2-N	NO3-N	TOT NITR	PHOS-T	PHOS-TOT	PHOS-TOT	CONDUCTVY	RESIDUE	RESIDUE	RESIDUE
TO	DAY	FEET	TOTAL	TOTAL	N	OR TTD	MG/L P	MG/L P	AT 25C	TOT NFLI	TOTAL	VOL NFLI
			MG/L	MG/L	MG/L	MG/L P	MG/L P	MG/L P	MICROMHM	MG/L	MG/L	MG/L
16/09/29	14	45	0001	0.001	0.0028	0.420	0.010	0.050	0.050	41	45	2

START RETRIEVAL DATE 78/08/23

2040092
45 02 28.0 116 16 51.0 5
SIX HILL CRLEK HWY 95 BRIDGE
16063 IDAHO
PACIFIC NORTHWEST 130003
LOWER SNAKE RIVER BASIN
2116SURV 770120
6000 FEET DEPTH CLASS 00

/TYP/APPNT/STREAM

DATE	TIME	DEPTH	00070	00410	00550	00945	01002	01027	01042	01051	01092	71900
FROM	OF	FEET	TURB	T ALK	CHLORIDE	SULFATE	ARSENIC	CADMIUM	COPPER	LEAD	ZINC	MERCURY
TO	DAY	FEET	JKSN	CALC3	CL	SO4-TOT	AS,TOT	CD,TOT	CU,TOT	PB,TOT	ZN,TOT	HG,TOTAL
			ITU	MG/L	MG/L	MG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L
16/09/29	14	45	0001	3.5	22	2	10K	5K	10K	10K	0	5.0K

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STOPPE RETRIEVAL DATE 78/08/23

STATION R5

/TYPA/AMBIT/STREAM

2040093
45 07 25.0 116 17 43.0 5
LITTLE SALMON R. 10MI. AB N. MEADOW
16003 IDAHO
PACIFIC NORTHWEST 130803
LOWER SNAKE RIVER BASIN
2115SURV 770120
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00061 STREAM FLOW, INST-CFS	00300 DO MG/L	00301 DO SATUR PERCENT	00335 LOW LEVEL MG/L	00400 PH SU	31501 TOT COLI CF/100ML	31616 FEC COLI CF/100ML	31679 FECSTREP MF M-ENT /100ML	00610 NH3-N TOTAL MG/L	
76/09/29	15	10	0001	15.0	93	10.6	120.0	11.2	7.60	120	10K	5K	0.008

STOPPE RETRIEVAL DATE 78/08/23

/TYPA/AMBIT/STREAM

2040093
45 07 25.0 116 17 43.0 5
LITTLE SALMON R. 10MI. AB N. MEADOW
16003 IDAHO
PACIFIC NORTHWEST 130803
LOWER SNAKE RIVER BASIN
2115SURV 770120
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00615 NH2-N TOTAL MG/L	00620 NH3-N TOTAL MG/L	00625 TOT N KjEL N MG/L	70507 PHOS-T ORTHO MG/L P	00665 PHOS-TOT MG/L P	00669 PHOS-TOT HYDRO MG/L P	00095 CONDUCTVY AT 25C MICRONHO	00530 RESIDUE TOT NFLI MG/L	00500 RESIDUE TOTAL MG/L	00535 RESIDUE VOL NFLI MG/L	
76/09/29	15	10	0001	0.001	0.007	0.850	0.003K	0.030	0.040	89	7	02	2

STOPPE RETRIEVAL DATE 78/08/23

/TYPA/AMBIT/STREAM

2040093
45 07 25.0 116 17 43.0 5
LITTLE SALMON R. 10MI. AB N. MEADOW
16003 IDAHO
PACIFIC NORTHWEST 130803
LOWER SNAKE RIVER BASIN
2115SURV 770120
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00070 TURB JKSN THU	00410 T ALK CALCS MG/L	00940 CHLORIDE CL MG/L	00945 SULFATE SO4-TOT MG/L	01002 ARSENIC AS, TOT UG/L	01027 CADMIUM CD, TOT UG/L	01042 COPPER CU, TOT UG/L	01051 LEAD PB, TOT UG/L	01092 ZINC ZN, TOT UG/L	71900 MERCURY HG, TOTAL UG/L
76/09/29	15	10	0001	3.2	42	2K	10K	5K	10K	10K	7	5.0K

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APPENDIX B

FIGURES

FIGURE 2: Stream Flow (cfs) at Little Salmon River, Sept. 29, 1976.

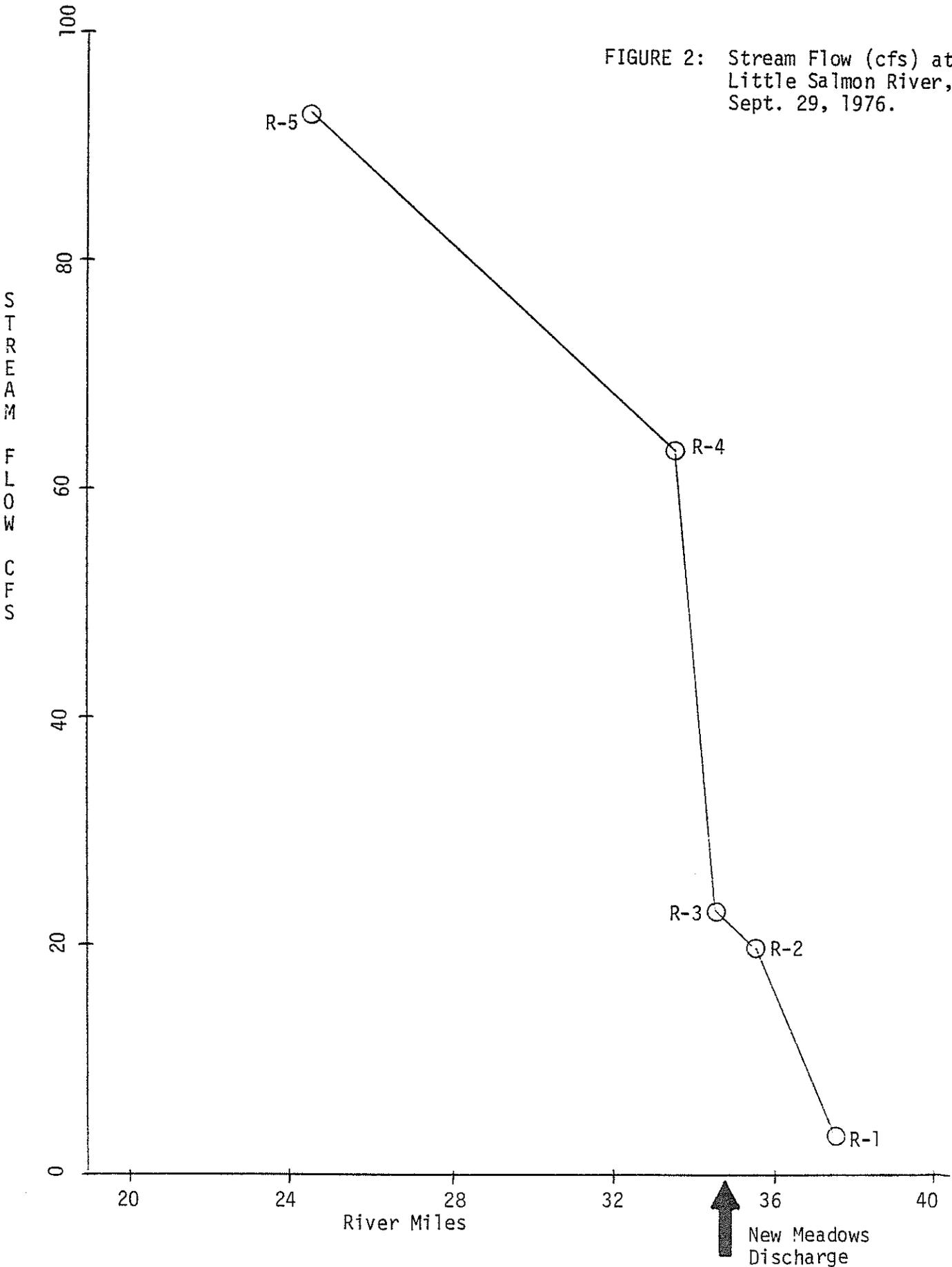


FIGURE 3: Fecal Coliform Bacteria (per 100 ml) at Little Salmon River, Sept. 29, 1976.

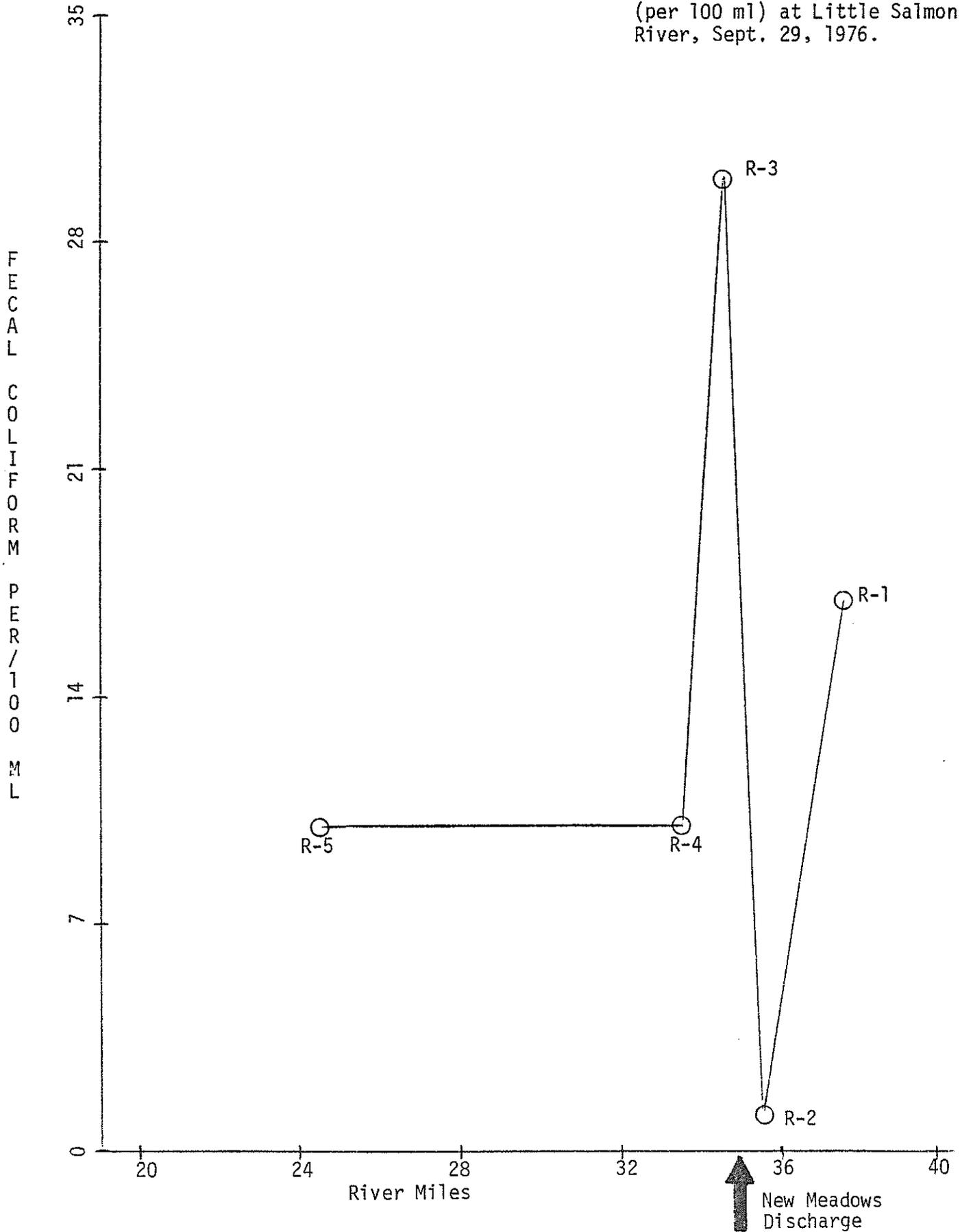


FIGURE 4: Dissolved Oxygen (mg/l)
at Little Salmon River,
Sept. 29, 1976.

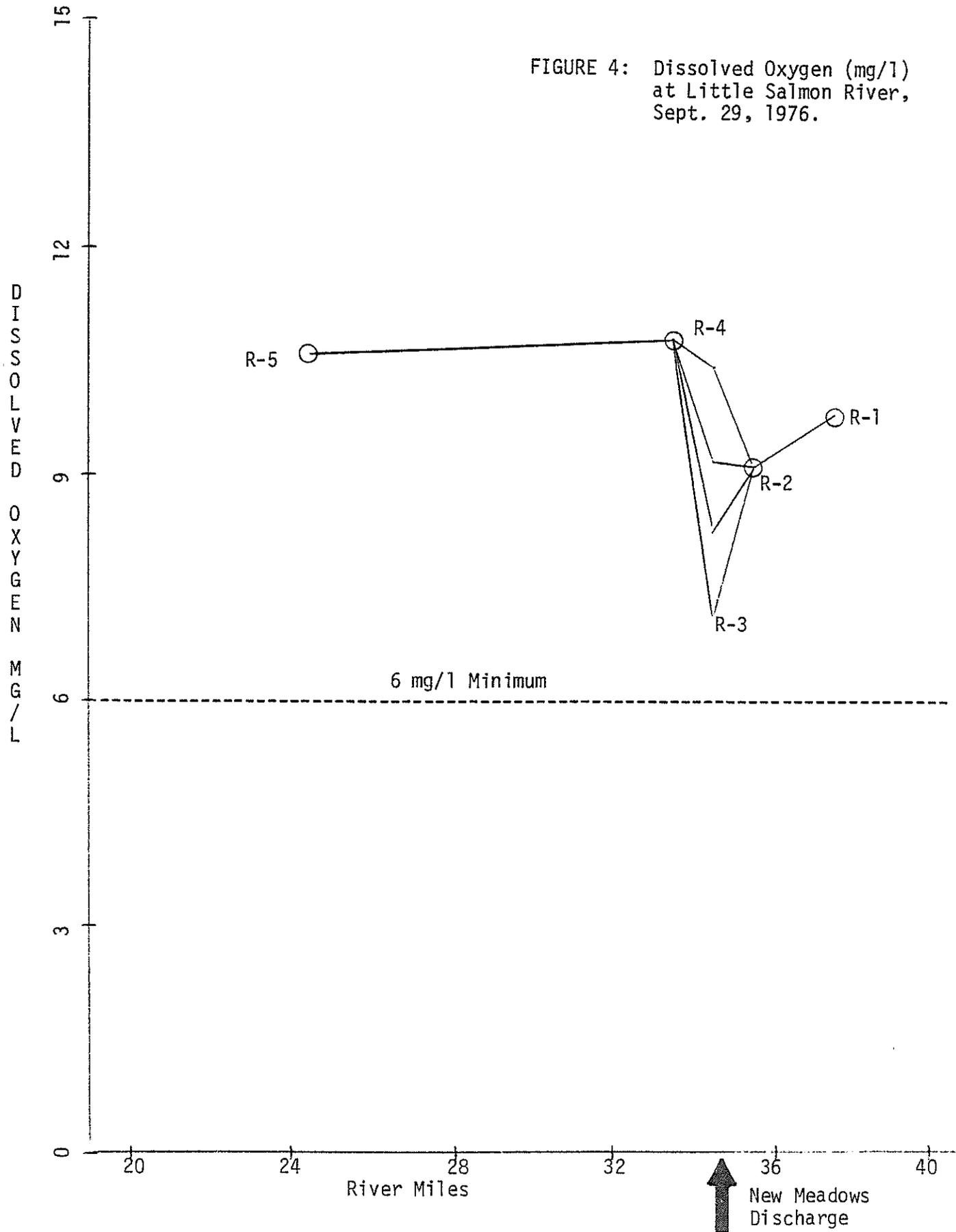


FIGURE 5: Diel Dissolved Oxygen (mg/l) at
Little Salmon River, Sept. 29, 1976.

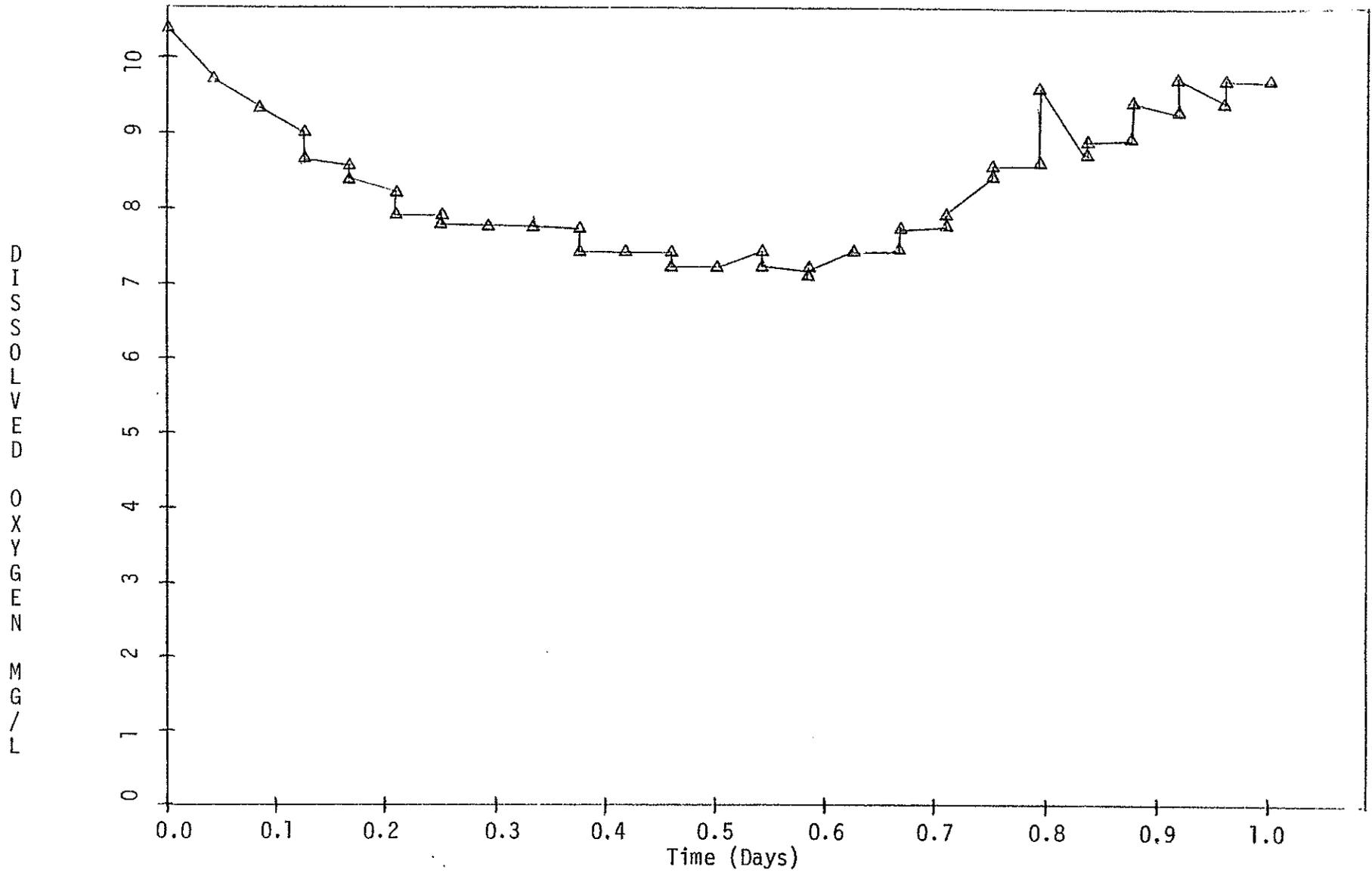


FIGURE 6: Diel Dissolved Oxygen (% Sat.)
at Little Salmon River,
Sept. 29, 1976.

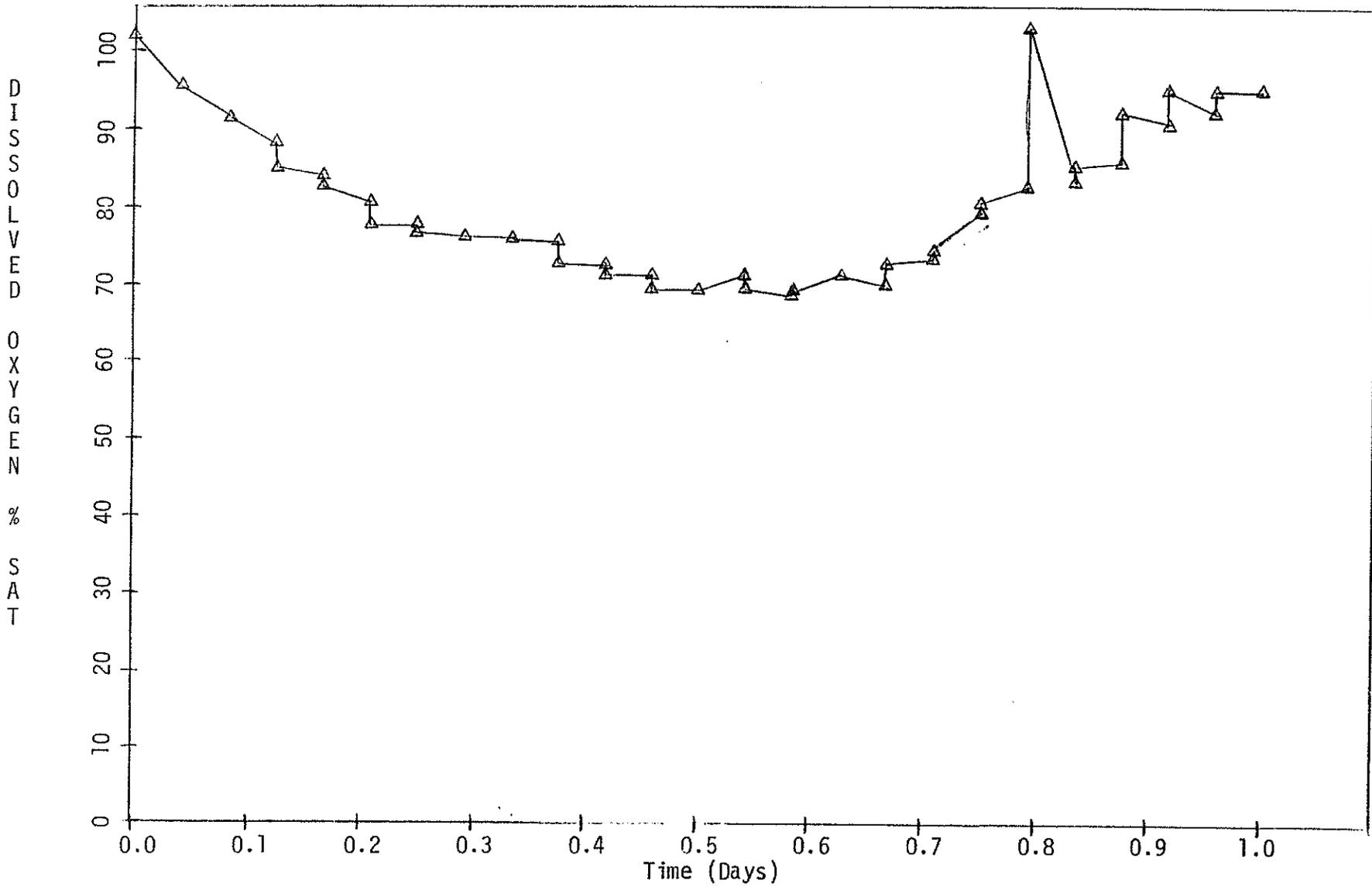


FIGURE 7: pH (Standard Units) at Little Salmon River, Sept. 29, 1976.

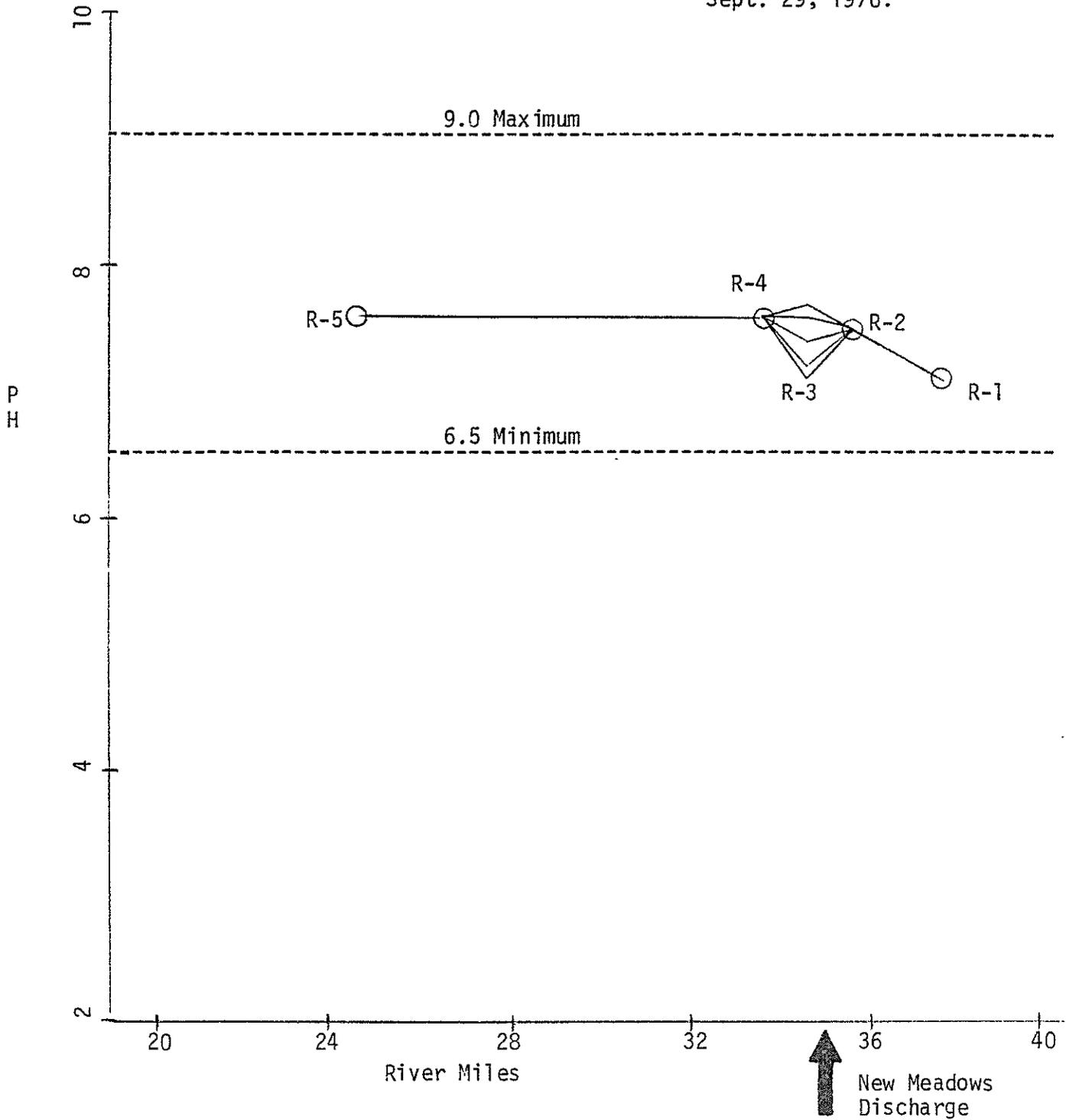


FIGURE 8: Total Phosphorus as P (mg/l)
at Little Salmon River,
Sept. 29, 1976.

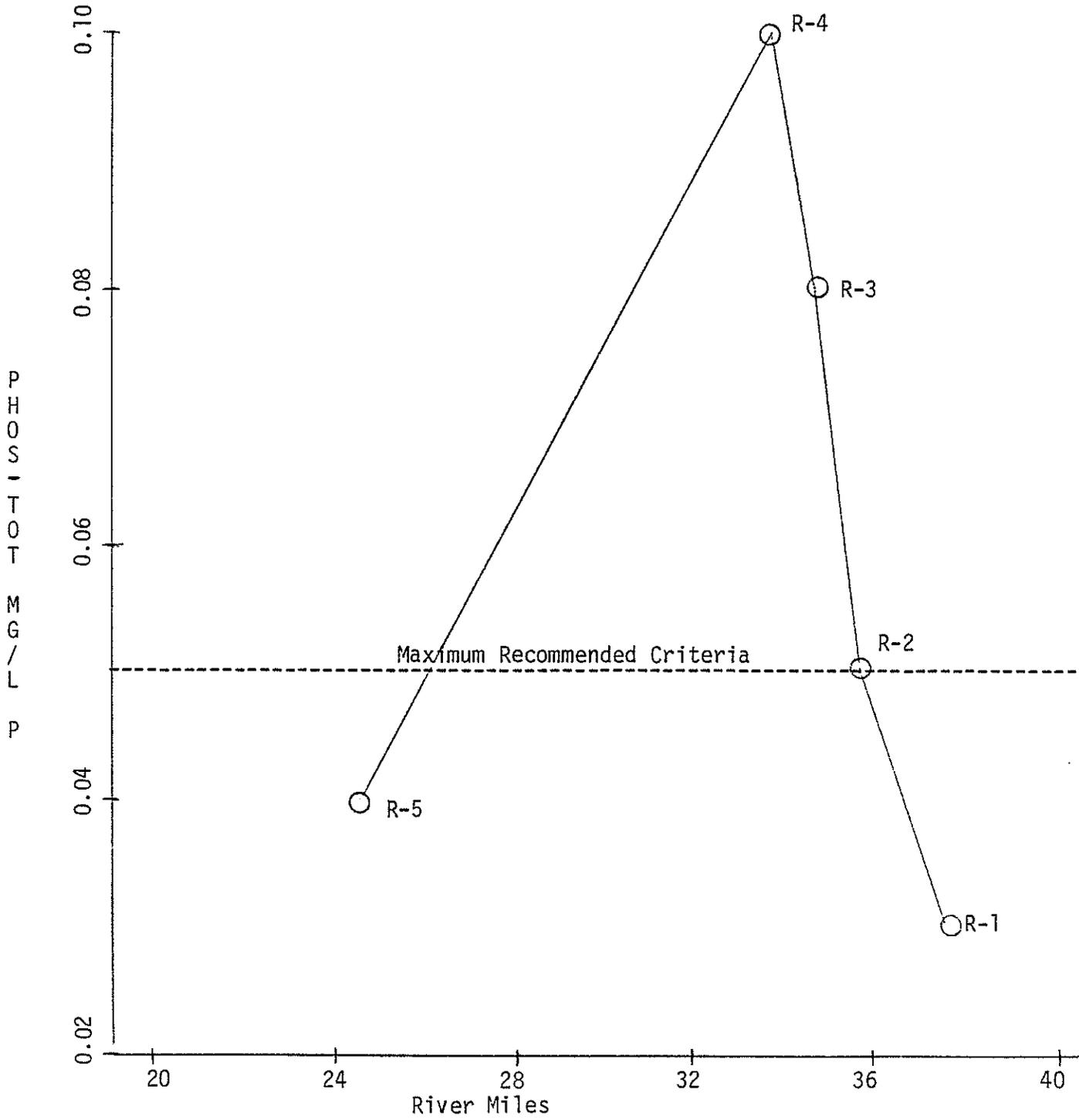
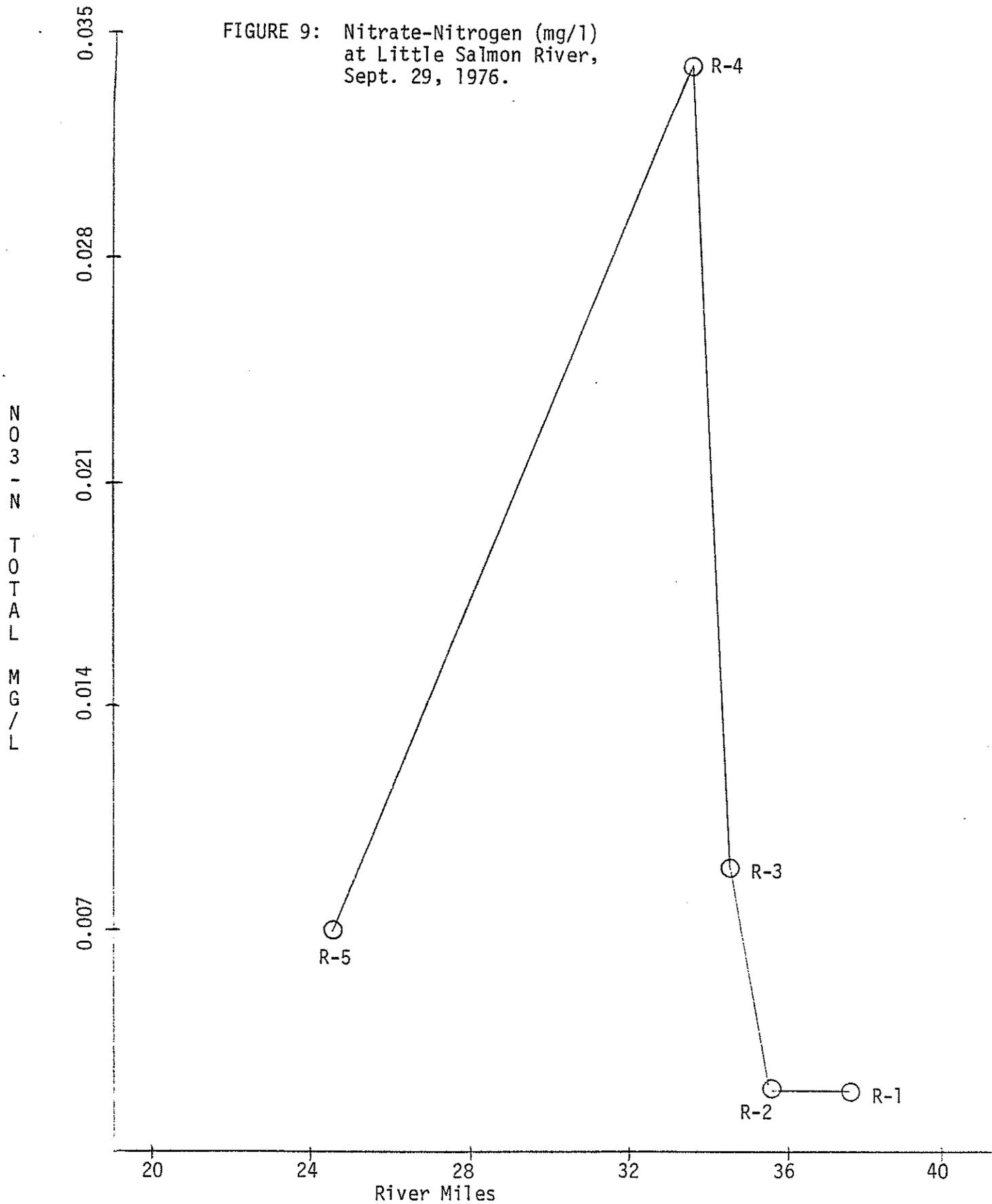
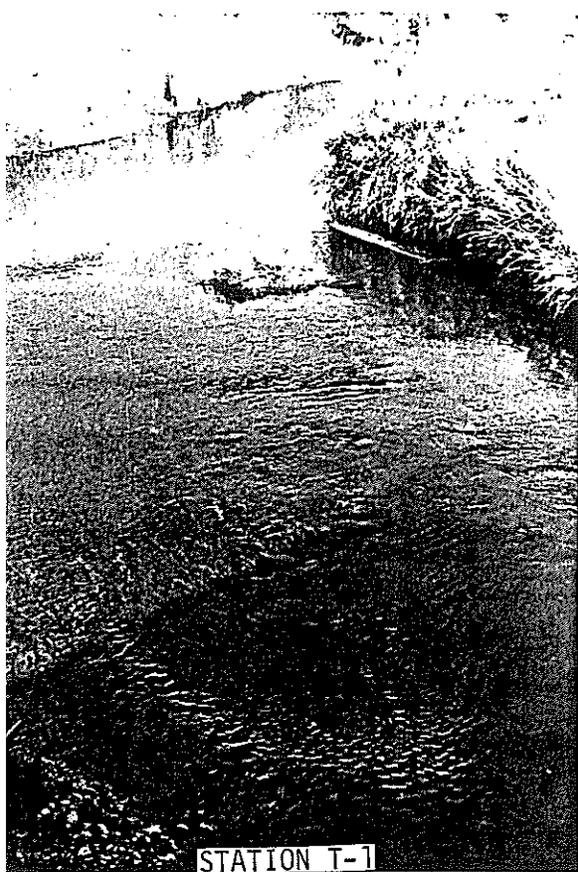


FIGURE 9: Nitrate-Nitrogen (mg/l)
at Little Salmon River,
Sept. 29, 1976.

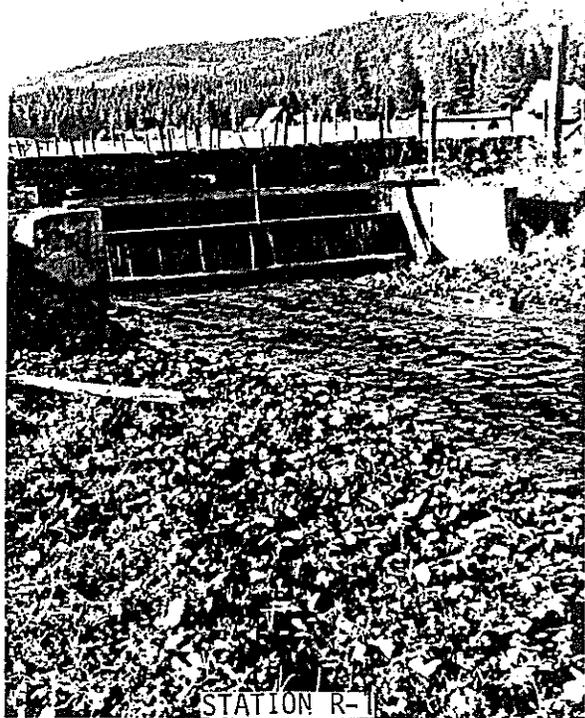


APPENDIX C

STATION PHOTOS



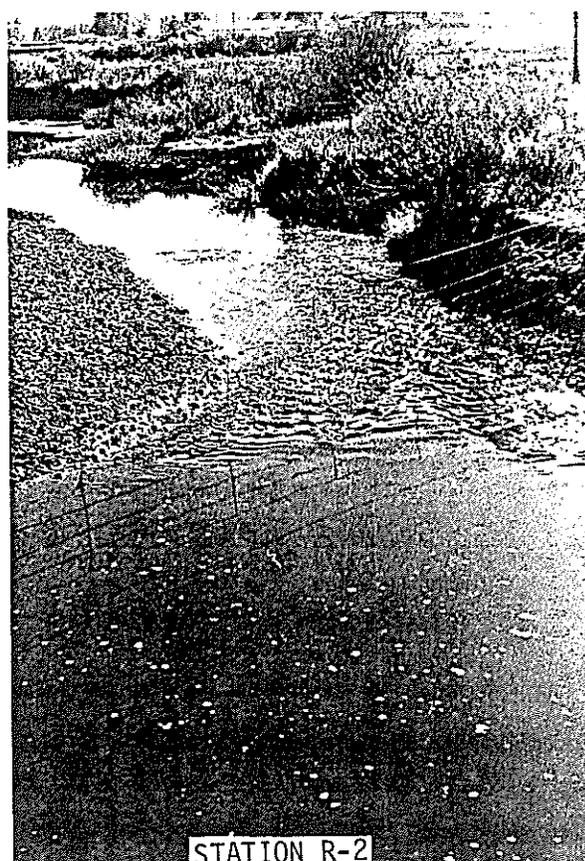
STATION T-1



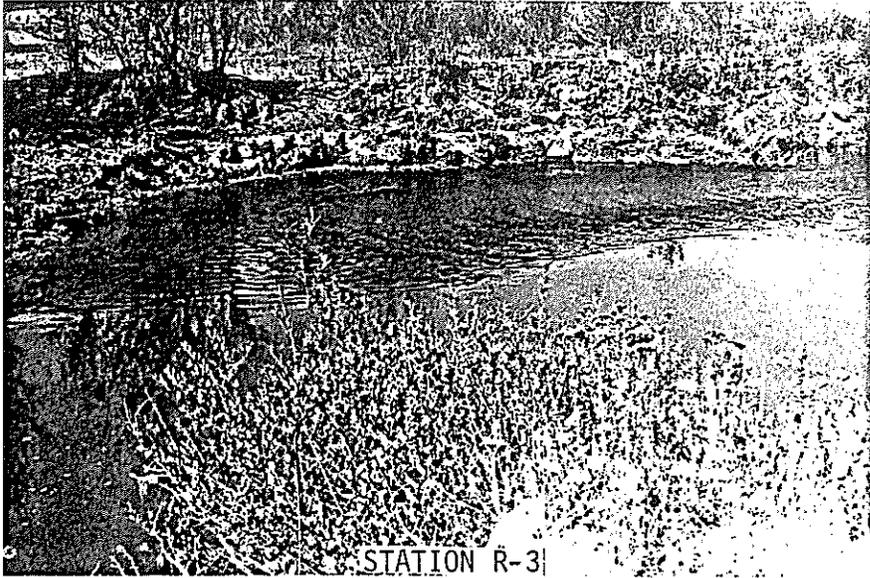
STATION R-1



STATION T-2



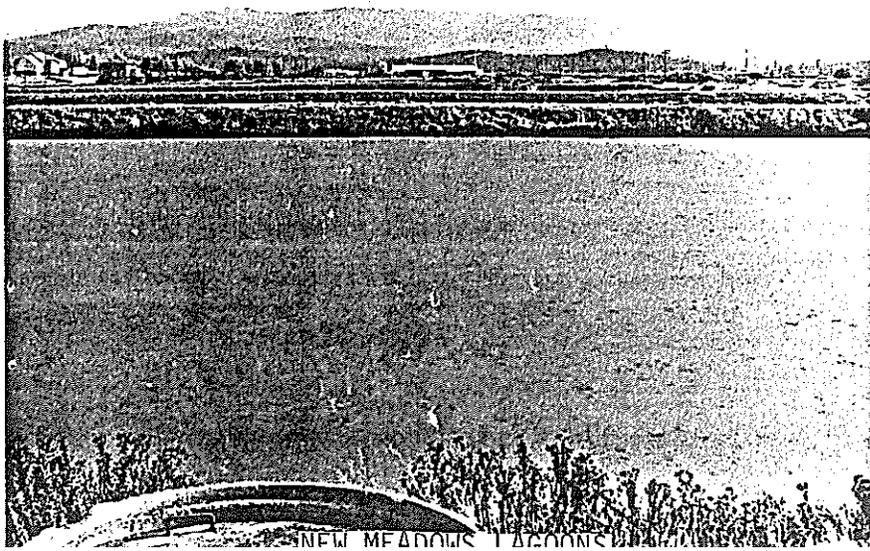
STATION R-2



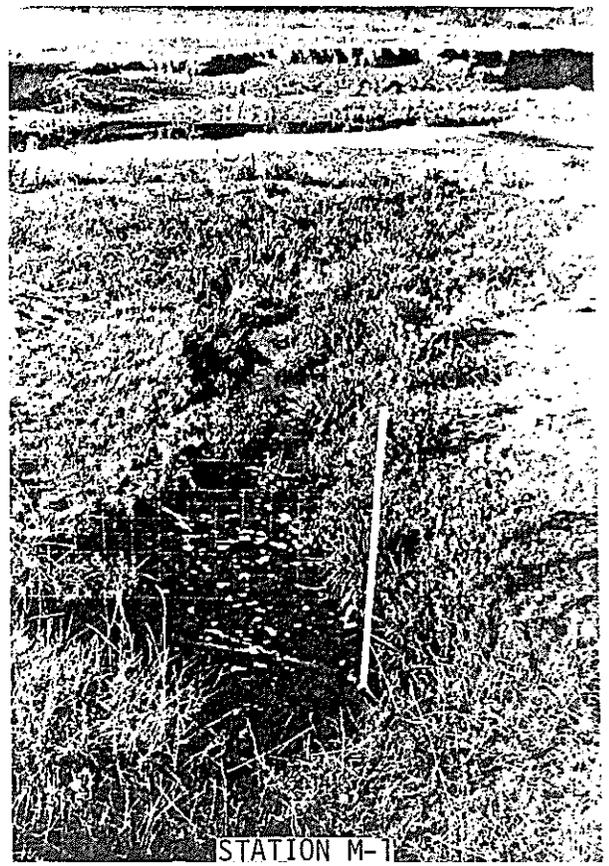
STATION R-3



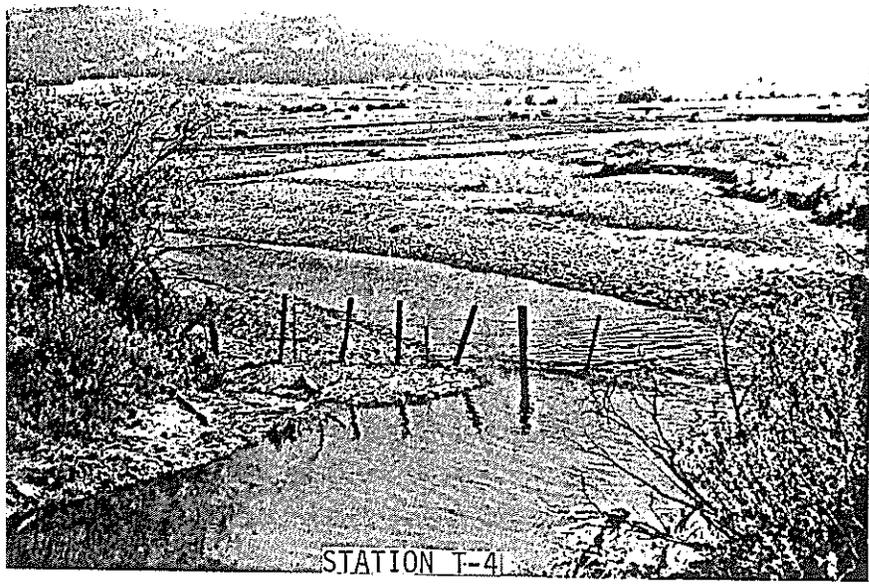
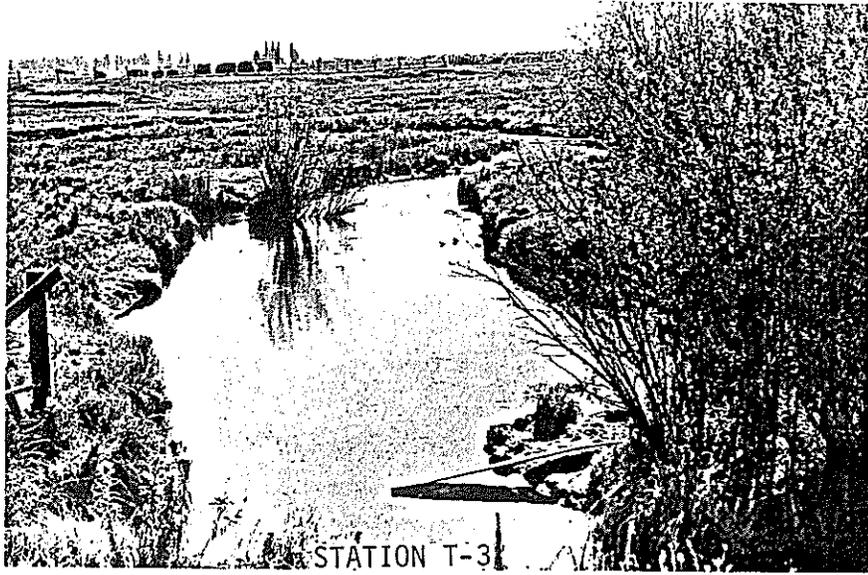
MARTEK SET UP

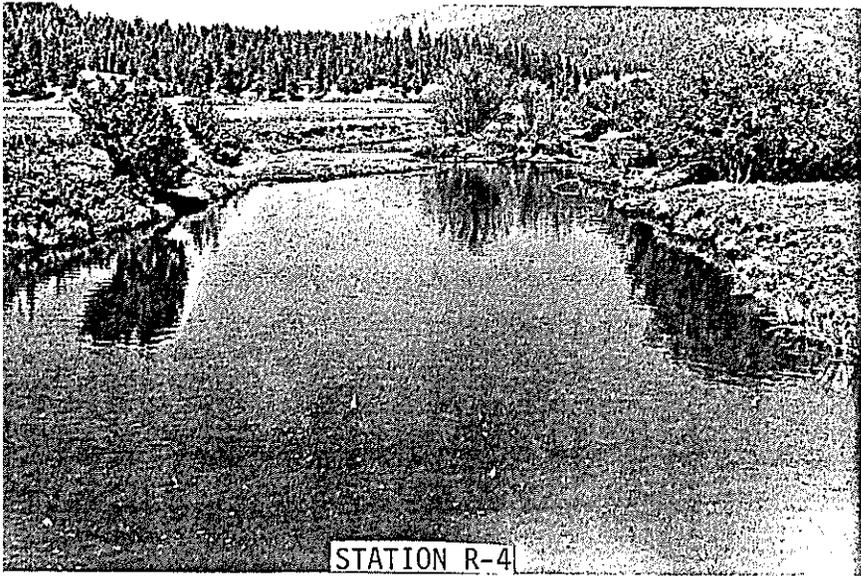


NEW MEADOWS LAGOONS

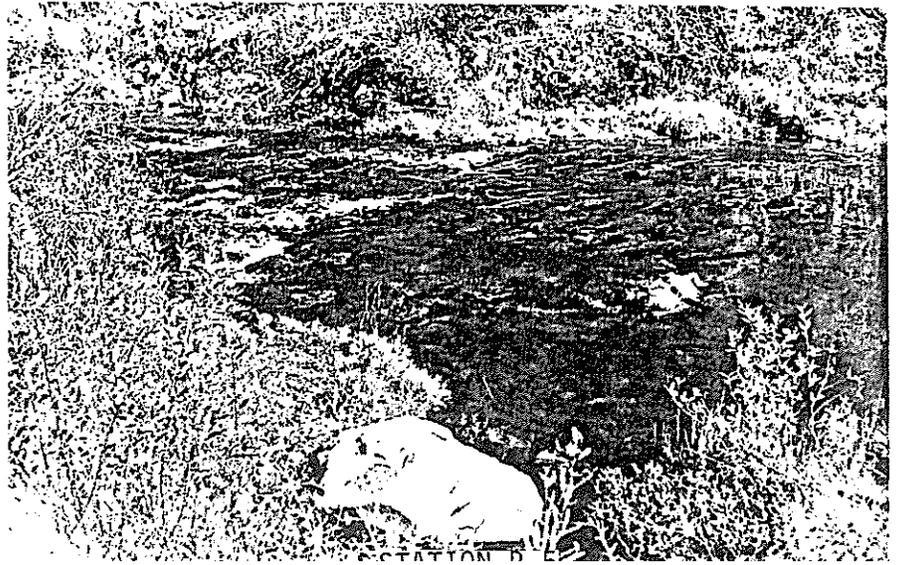


STATION M-1





STATION R-4



STATION R-5