WASHINGTON STATE DEPARTMENT OF ECOLOGY

Spokane Basin Data Analysis Report Little Spokane Sub-Basin

Abstract

Ecology's Ambient Monitoring Section monitored several stations in the middle reaches of the Little Spokane River and tributaries monthly from October 1993 to September 1994. Water quality standards were exceeded at several stations, but in general, violations were not severe or pronounced. Nutrients, especially inorganic nitrogen, were particularly high in Dragoon Creek. There was a small declining trend in the mass of total phosphorus passing the mouth of the Little Spokane River between 1978 and 1995, due as much to declining flows as to slight declines in concentration. Phosphorus concentrations since 1986 have been increasing slightly, although flux has been steady, probably also due to declining discharge during the period.

Introduction

Ecology's Eastern Regional Office (ERO) has had several concerns about water quality in the Little Spokane River in recent years. In 1989, the Little Spokane River was placed on Washington's 304(L) mini-list as water quality impaired due to mercury and cyanide contamination. As a consequence, the region asked the Ambient Monitoring Section (AMS) to monitor mercury at several stations in the system. Mercury contamination was not found and the river has not been listed in subsequent reports as having metals contamination. As part of the mercury study, AMS monitored conventional water quality constituents at several stations in the lower river (below river mile (RM) 14) and found water quality standards violations to be relatively common, especially upstream of the Dartford Creek/Waikiki Springs area (RM 10) (Hallock, 1991a). The Little Spokane River is currently listed in Washington's 303(d) list because of results exceeding water quality standards criteria for temperature, pH, and bacteria (Anon., 1994).

In 1991, the region asked AMS to evaluate trends in total phosphorus loading from the Little Spokane River to Long Lake. No significant trends were found, but Hallock (1991b) noted a possible increasing trend and recommended re-evaluation after more data were collected.

Although this report builds on those previous studies, the primary focus of data collection for this study was on the middle reach of the Little Spokane River (RM 12 to 24). This area has been and continues to be developed for private residences. Soltero *et al.* (1987) reported that residential development was implicated in fecal contamination in the lower Little Spokane River. There were three objectives to this study:

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- to re-evaluate total phosphorus trends at our long-term station near the mouth,
- to document water quality conditions prior to additional development, and
- to identify current impacts on water quality which may be attributable to existing development.

Methods

In Wateryear (WY) 1994 (October 1, 1993 through September 30, 1994), AMS collected monthly grab samples from five sites in the Little Spokane system (Table 1 and Figure 1). (Note: The station at Deer Creek near Chattaroy was moved to Dragoon Creek after the October sampling. Deer Creek is not included in the analysis in this report.) Thirteen water quality constituents were measured at each station (Table 2).

Table 1. Ambient monitoring stations in the Little Spokane River basin and method of discharge measurement.

Station	Station Description	River Mile	Discharge Measurement Method
55B070	Little Spokane nr Mouth	1.1	Rated, stage-relationship
55B100	Little Spokane abv Deadman Cr	13.5	Not Available
55B200	Little Spokane at Chattaroy	23.1	Stage-relationship
55C065	Deadman Cr nr Mouth	0.1	"Orange" method (estimate)
55E070	Dragoon Cr nr Chattaroy	0.2	Same-day measurement

Table 2. Water quality constituents measured at ambient monitoring stations.

pH	Turbidity	Nitrate+Nitrite-Nitrogen
Temperature	Total Suspended Solids	Ammonia-Nitrogen
Conductivity	Fecal Coliform Bacteria	Total phosphorus
Oxygen	Total Nitrogen	Soluble Reactive Phosphorus

As indicated in Table 1, discharge was measured or determined from rating curves at the Little Spokane River near the Mouth, Little Spokane at Chattaroy, and Dragoon Creek. Discharge was estimated at Deadman Creek. Analyses based on discharge at this station should also be considered estimates. Methods are discussed in more detail in Hallock and Ehinger (1995).

Statistical analyses and graphs were done with WQHYDRO (Aroner, 1995). Concentrations of total phosphorus less than 0.02 mg/L were replaced with 0.02 for trend analyses to maintain a consistent detection limit. Growing season and post-1986 trend analyses were not corrected for serial correlation because of insufficient data points.

Schematic Representation of Ambient Monitoring Stations on the Little Spokane River

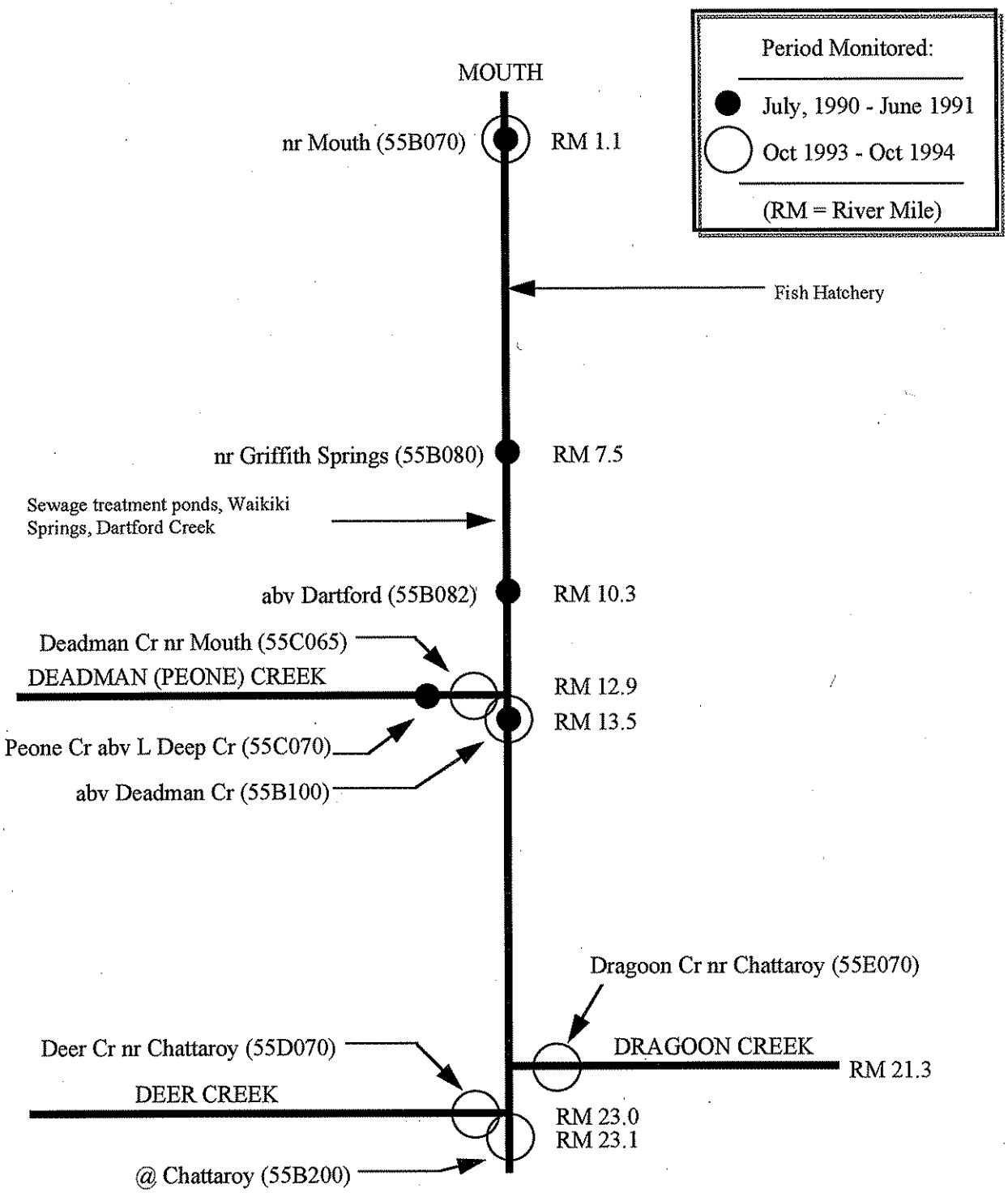

Figure 1. Ambient Monitoring Stations in the Little Spokane River Basin. River miles are to scale.

Quality Control

Data quality was assured by the use of standard protocols in both the field and the laboratory. Field data quality was assessed through field splits, sequentially collected duplicates, and field-processed blanks. Laboratory quality was assessed by laboratory staff through manual review of laboratory quality control charts, check standards, in-house matrix spikes, and laboratory blanks.

Results from the WY 1994 River and Stream Ambient Monitoring Program were generally acceptable. There were no substantial measurement or contamination errors due to water collection, processing, or laboratory analysis. Quality control requirements are discussed in more detail in Ehinger (1995) and results are discussed in Hallock and Ehinger (1995).

Results and Discussion

Total Phosphorus Trends in the Little Spokane River near the Mouth

There was a small but significant ($p=0.01$) declining trend in total phosphorus concentration in the Little Spokane River near the mouth (Figure 2) between WY 1978 and WY 1995. Trends in concentration are indicative of changes in instream conditions. These changes may be caused by watershed or climatic changes, or, for flow-related constituents, the trend in concentration may be due to changes in flow. When the effect of flow on phosphorus concentration was removed, the trend was still significant ($p=0.07$). However, most results were only two to four times the detection limit and it is possible the trend in the data is due to improvements in low-level analytical methods since 1991 or to a change in laboratories in mid-1985 rather than to changes in instream concentration. Also, even though the seasonal Kendall test indicated a significant trend, the Sen slope test reported zero slope (this can happen when there are a large number of identical values such as occurs when values below the detection limit are censored). A trend analysis of growing season phosphorus concentrations (June through October) between 1978 and 1995 yielded similar results: a significant trend ($p=0.009$), but zero slope.

Hallock (1991b) reported indications of a small increasing trend in flow-adjusted concentrations of total phosphorus during the growing season between 1986 and 1991. Results for the period 1986 through 1995 were essentially the same. Growing season phosphorus, adjusted for trends in discharge, increased slightly but the increase was not significant. However, there was significant seasonality in the monthly trends and a re-evaluation for trends in July and August identified a significant increasing flow-adjusted trend in phosphorus concentration ($p=0.02$, slope= 0.5 µg/L/yr).

The trend in total phosphorus flux (mass per unit time) had a measurable and significant downward trend of 1.96 lbs/day annually between 1978 and 1995 ($p=0.01$; Figure 3). This trend magnitude equates to a decline of 2.3% of the median flux annually. Trends in flux do not necessarily indicate in-stream conditions, but rather are indicative of changes in loading to a

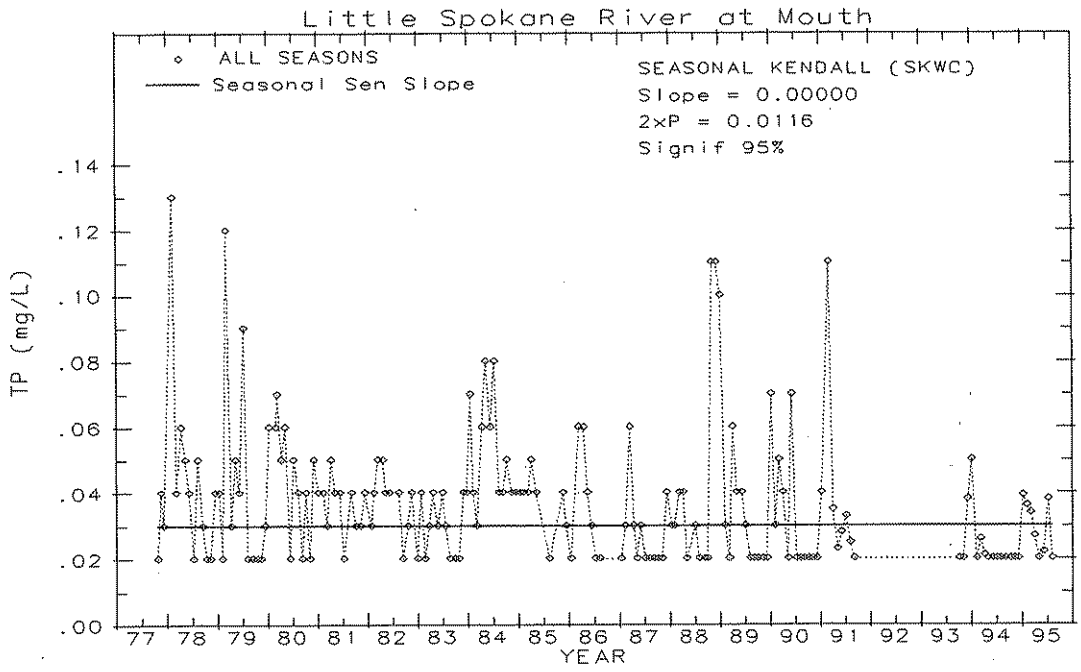

Figure 2. Total phosphorus concentrations in the Little Spokane River. Values below 0.02 mg/L were converted to 0.02 and one value off the scale was deleted from the graph (but not from the statistical calculations).

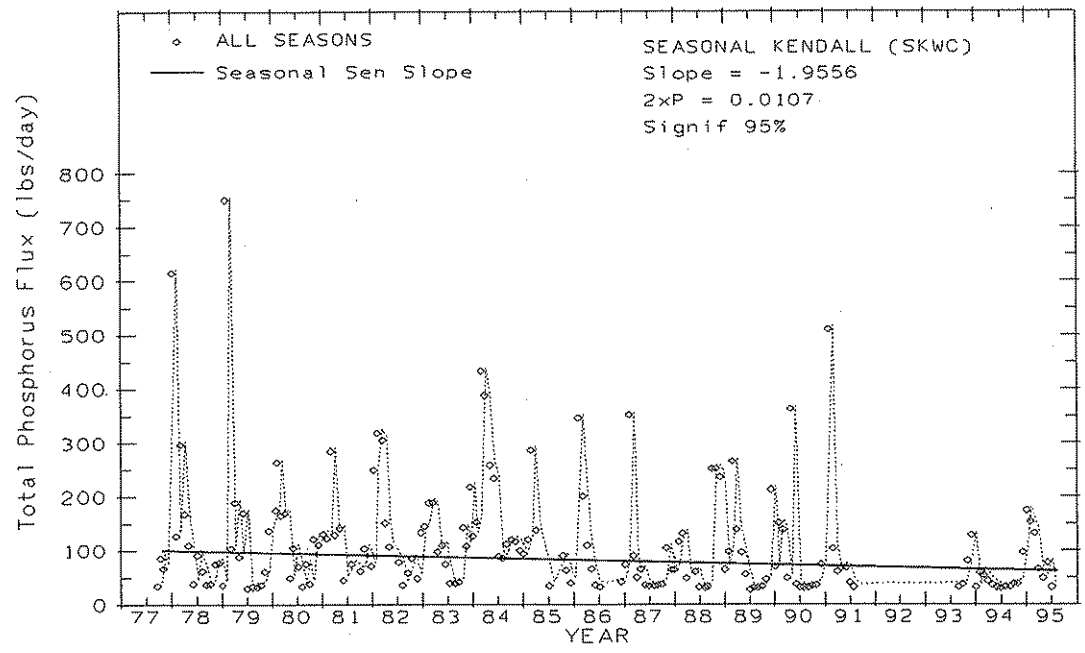

Figure 3. Total phosphorus flux (mass per unit time) in the Little Spokane River. Values below 0.02 mg/L were converted to 0.02 and one value off the scale was deleted from the graph (but not from the statistical calculations).

receiving body. The downward trend in concentration (whether real or an analytical artifact) contributed to the downward trend in flux, but so did a downward trend in discharge (a decline of 3.4 cfs annually; p=0.07). Flux during the growing season declined less than the total annual flux: 0.879 lbs/day or 1.9% of the median concentration for that period.

Hallock (1991b) also reported lower growing-season phosphorus flux after 1986 than before, although the linear trend between 1986 and 1991 was not significant. The trend in flux between 1986 and 1995 was not significant either, however discharge did decline (p=0.04).

In summary, both concentration and flux decreased slightly between 1978 and 1995, however since 1986, concentration has been increasing slightly and there is essentially no trend in flux, perhaps because discharge has been declining. The trend in phosphorus concentration is not great enough or statistically significant enough to warrant concern. The downward trend in discharge may be climatic or it may be due to increased withdrawal or watershed changes. The cause of trends in discharge is beyond the scope of this report. Past trends do not necessarily indicate future trends. Flux may increase if discharge increases, perhaps in response to a wet climatic cycle.

Water Quality Standards

Water quality relative to standards was generally fair in WY 1994; some standards violations were observed (Table 3). As discussed in Hallock (1991a), standards were more likely to be exceeded at upstream stations than at the mouth of the Little Spokane River, probably due to the influence of Griffith and Waikiki Springs.

Table 3. Number of results exceeding water quality criteria (and total number of samples) for monitored stations in the Little Spokane River basin. Tributaries are shaded and placed in river mile order. No results exceeded oxygen or unionized ammonia criteria. All reaches are class "A."

Station Number	Station Name	Temperature 1991	Temperature 1994	pH 1991	pH 1994	Fecal Coliform 1991	Fecal Coliform 1994
Class A Water Quality Criteria:		≤18 °C		6.5<pH<8.5		≤200 org./100mL[a]	
55B070	Little Spokane R nr Mouth	0 (11)	0 (12)	0 (12)	0 (12)	1 (11)	0 (12)
55B080	Little Spokane nr Griffith Springs	0 (11)		0 (12)		3 (9)	
55B082	Little Spokane abv Dartford Cr	2 (11)		3 (12)		2 (8)	
55C065	Deadman Cr nr Mouth		1 (12)		2 (12)		2 (12)
55C070	Deadman Creek abv Little Deep Cr	2 (10)		3 (11)		0 (7)	
55B100	Little Spokane R abv Deadman Cr	2 (11)	1 (12)	0 (12)	0 (12)	2 (9)	0 (12)
55E070	Dragoon Cr nr Chattaroy		1 (11)		1 (12)		1 (12)
55B200	Little Spokane @ Chattaroy		2 (12)		0 (12)		1 (12)

[a]Ninety percent of samples must be below this criteria. (This table lists individual results exceeding the criteria.)

No single tributary or mainstem reach was indicated as being an unusually important contributor to degraded water quality in the mainstem Little Spokane River, based on exceedences of standards criteria. However, Deadman Creek had high pH during both sample periods (WY 1994 and ~WY 1991-actually July 1990 through June 1991) and two high fecal coliform bacteria counts in WY 1994. Deadman Creek's watershed is about 130 square miles and is mostly rural, but includes the town of Mead. Deadman Creek is also the receiving water for an aluminum smelter.

Other noteworthy stations include Dragoon Creek which had an extremely high bacteria count in January (2200 colonies/100 mL; Appendix). Temperatures were high at Little Spokane near Chattaroy, probably due to natural causes -- the Little Spokane River is fed by numerous lakes. Note: Results from the two sample periods should not be compared. Not only were different stations sampled, but there were much higher flows during the first period than in WY 1994 (Appendix).

Nutrients and Sediment

With the exception of Dragoon Creek, nutrient and total suspended solids concentrations were similar to stations monitored statewide in WY 1994 (Table 4). For Dragoon Creek, the 90th percentiles for nutrients were nearly three times higher than the next highest station in the Little Spokane River basin. Nitrate plus nitrite-nitrogen was particularly and consistently high (Figure 4). Other nutrient (and fecal coliform bacteria) concentrations in Dragoon Creek were especially high in January 1994; however, high values were not chronic (Appendix). Conductivity was also higher in Dragoon Creek than at other stations. Dragoon Creek drains a fairly large area (about 180 square miles) which is mostly rural but includes the town of Deer Park.

Deadman Creek had somewhat higher suspended solids concentrations than other stations (Appendix). Except for temperature, most water quality impacts to the Little Spokane River appeared to occur downstream of Chattaroy.

Table 4. Nutrient and sediment 90th percentiles for stations monitored in the Little Spokane River basin in WY 1994 and for all stations statewide monitored in WY 1994. Tributaries are shaded and placed in river mile order. Units are mg/L.

Station Number	Station Name	Total Suspended Solids	Total Phosphorus	Ammonia Nitrogen	Nitrate+ Nitrite Nitrogen	Total Nitrogen
	All Stations in WY 1994	20	0.092	0.044	1.040	1.260
55B070	Little Spokane R nr Mouth	22	0.046	0.037	1.331	1.449
55C065	Deadman Cr nr Mouth	39	0.056	0.038	0.950	1.035
55B100	Lt Spokane abv Deadman	14	0.087	0.043	1.194	1.340
55E070	Dragoon Cr nr Chattaroy	18	0.219	0.181	3.196	3.747
55B200	Little Spokane @ Chattaroy	11	0.039	0.050	0.462	0.783

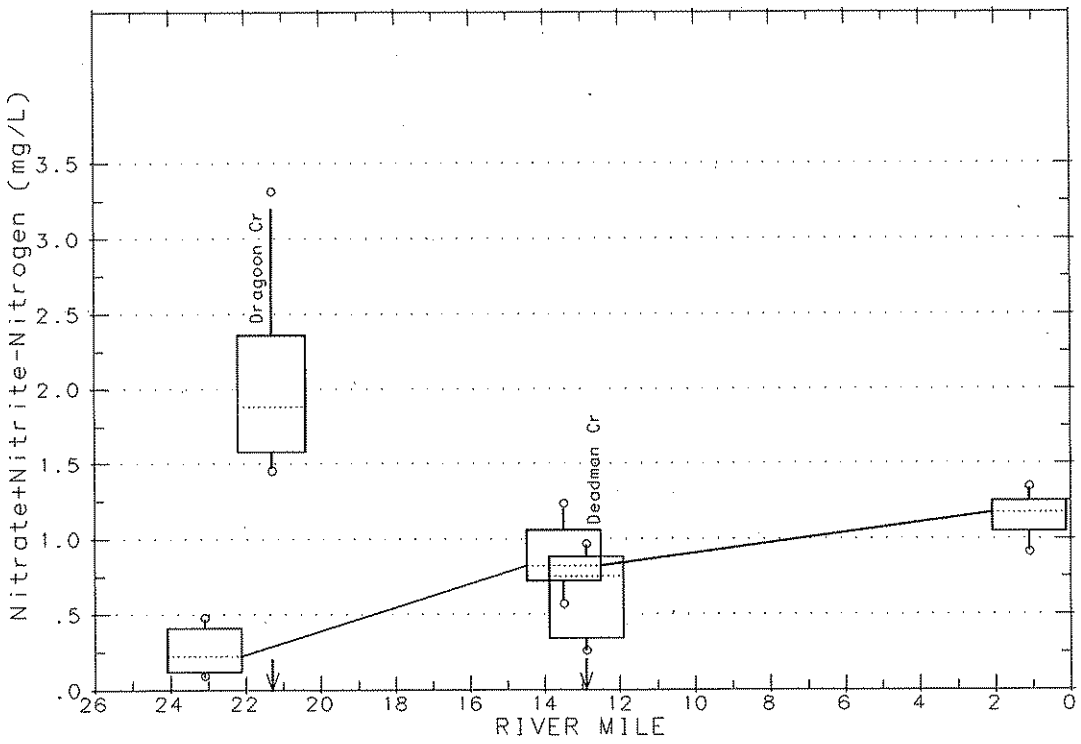

Figure 4. Box plot of nitrate+nitrite nitrogen in the Little Spokane River basin in WY 1994. The line connects medians at mainstem stations. Fifty percent of the data are within the range bounded by the box and the "tails" extend to the 10th and 90th percentiles. Circles indicate data points beyond the tails.

Flux (Concentration per Unit Time)

The flux of material at stations where discharge was measured is shown for selected water quality constituents in Table 5. The average daily flux is indicative of the amount of material being passed downstream while the flux per unit area is of interest in evaluating watershed conditions. These data are presented for comparative purposes only, however. Sampling was not designed to allow an evaluation of "loading." Inter-annual variation from monthly sampling can be extremely high (an order of magnitude is not unusual) and the results reported below are based on a single year.

For the Little Spokane River near the Mouth, flux per unit area was very high relative to other stations, even though most concentrations were low. Mostly, this is a reflection of high discharge per unit area (due to springs) and not watershed sources. Most of the discharge at the mouth (about 300 cfs or 72 percent) was not accounted for at upstream stations. However, the high relative discharge does not explain all of the high flux for nitrate plus nitrite nitrogen, total nitrogen, and, to a lesser extent, suspended solids. For nitrate plus nitrite, 966 kg/day (83 percent of the flux at the mouth) are not accounted for at monitored upstream stations. This equates to an average concentration for the unmeasured sources of 1.4 mg/L. Potential sources upstream of the station at the mouth and downstream of Deadman and Dragoon Creeks and the Chattaroy station include Dartford Creek, residential development, the Fairwood wastewater lagoons, and the Spokane Fish Hatchery. However, groundwater concentrations alone may be sufficient to account for the increase in nitrate plus nitrite. Groundwater concentrations ranged from <1 mg/L below the fish hatchery to > 5 mg/L west of Mead (Molenaar 1988).

Dragoon Creek also had very high nitrate plus nitrite and total nitrogen flux, especially given its relatively low discharge per unit area. Joy (1981) reported nitrate plus nitrite flux of 14 kg/day at RM 15.3 and 38 kg/day at RM 14.5 from a synoptic survey. Joy was uncertain whether the source of nitrates was agricultural or geologic (*i.e.*, groundwater). Juul (1991) sampled two stations on Dragoon Creek (both in Stevens County, well upstream of our station) and attributed higher nutrients at the lower station to "1) a residual effect from the load entering the stream above the [upper] station, 2) manure that was applied to fields between the two sampling stations, and 3) the concentration of dairies between the [upper] and [lower] sample stations." Median nitrate plus nitrite concentrations at Juul's lower station were one quarter those found in our study near the mouth.

Conclusions

1. Temperature, pH, and fecal coliform bacteria exceeded water quality criteria at several stations in the Little Spokane River basin. However, there were only three instances where criteria were exceeded more than once: temperature at Little Spokane at Chattaroy, pH at Deadman Creek, and fecal coliform bacteria, also at Deadman Creek.

2. High temperatures in the mainstem Little Spokane may be attributable to natural causes (lakes in the drainage).

Table 5. Average flux for selected water quality constituents in WY 1994. The flux calculation is the average of one sample per month, weighted by the number of days represented by the sample.

Station Number	Station Name	Watershed Area (sq. mi.)	Avg. Daily Flux (kg/day)	Avg. Daily Flux/Area (flux/sq. mi.)	Number of Samples
	DISCHARGE				
55B070	Little Spokane R nr Mouth	700	417.3[a]	0.60	12
55B200	Little Spokane @ Chattaroy	300	83.2[a]	0.28	12
55C065	Deadman Cr nr Mouth	133	28.7[a]	0.22	12
55E070	Dragoon Cr nr Chattaroy	177	22.7[a]	0.13	10
	SUSPENDED SOLIDS				
55B070	Little Spokane R nr Mouth	700	9484.42	13.5	12
55B200	Little Spokane @ Chattaroy	300	1077.92	3.6	12
55C065	Deadman Cr nr Mouth	133	1122.87	8.4	12
55E070	Dragoon Cr nr Chattaroy	177	323.30	1.8	10
	TOTAL PHOSPHORUS				
55B070	Little Spokane R nr Mouth	700	20.76	0.030	12
55B200	Little Spokane @ Chattaroy	300	4.51	0.015	12
55C065	Deadman Cr nr Mouth	133	3.03	0.023	12
55E070	Dragoon Cr nr Chattaroy	177	4.14	0.023	10
	NITRATE+NITRITE				
55B070	Little Spokane R nr Mouth	700	1166.94	1.67	12
55B200	Little Spokane @ Chattaroy	300	55.70	0.19	12
55C065	Deadman Cr nr Mouth	133	33.14	0.25	12
55E070	Dragoon Cr nr Chattaroy	177	112.04	0.63	10
	AMMONIA				
55B070	Little Spokane R nr Mouth	700	17.11	0.024	12
55B200	Little Spokane @ Chattaroy	300	4.02	0.013	12
55C065	Deadman Cr nr Mouth	133	1.28	0.010	12
55E070	Dragoon Cr nr Chattaroy	177	2.01	0.011	10
	TOTAL NITROGEN				
55B070	Little Spokane R nr Mouth	700	1211.82	1.73	12
55B200	Little Spokane @ Chattaroy	300	98.03	0.33	12
55C065	Deadman Cr nr Mouth	133	42.72	0.32	12
55E070	Dragoon Cr nr Chattaroy	177	123.29	0.70	9

[a] Discharge has units of cubic feet per second.

3. The source of the high pH in Deadman Creek is unknown.

4. Nitrate plus nitrite nitrogen and total nitrogen were higher than expected at the Little Spokane River at the mouth given upstream conditions, possibly due to high groundwater concentrations.

5. Most nutrients, but especially nitrate plus nitrite nitrogen, were higher than expected at Dragoon Creek. Sources of nutrients to Dragoon Creek should be investigated further and ambient monitoring stations on Dragoon Creek are a possibility for "basin stations" during the next data collection effort in the Spokane basin (WY 1999).

6. Nonpoint sources may be responsible for higher than expected suspended solids at Deadman Creek and the Little Spokane at the mouth and for occasional high fecal coliform bacteria counts. With the possible exception of Dragoon Creek, serious nonpoint source problems were not evident in WY 1994, however.

7. There was a declining trend in the flux of total phosphorus between 1978 and 1995 at the Little Spokane River near the mouth due as much to declining flows as to slight declines in concentration. Concentrations since 1986 have been increasing slightly, although flux has been steady, probably also due to declining discharge during the period.

Acknowledgments

Special thanks to Mr. Barry Davidson who let me walk across his property once each month to collect my sample. Thank you also to Greg Baca of Spokane Community College, who provided discharge measurements for the Little Spokane River at Chattaroy. Ken Merrill, Ken Dzinbal, and Will Kendra reviewed the report. Kim Douglas polished it.

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Appendix

Data listed in this appendix are available in electronic format by contacting

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Ambient monitoring data from the most recent complete wateryear will soon be available over the internet on Ecology's web page (http://www.wa.gov/ecology/).

Station No.: 55B070 LITTLE SPOKANE R NR MOUTH Water Class: A Latitude: 47 47 00.0
Water Body No.: WA-55-1010 River Mile: 1.10 Longitude: 117 31 43.0

Date	Time	Temp (C)	Flow (CFS)	Conduc-tivity (umhos)	Oxygen (mg/L)	Oxygen Satur. (%)	pH (units)	Suspend Solids (mg/L)	TPN (mg/L)	NH3+NH4 Nitrog. (mg/L)	Total Phosph. (mg/L)	Dissol. Ortho P (mg/L)	Hardnes (mg/L)	Turbid-ity (NTU)	Fecal Colif. (#/100ml)
89/10/03	1450	10.2	349.0	278	10.6	98.8	8.3	4.0		0.010 K	0.020	0.010 K	140	0.7	6
89/11/07	1440	8.3	376.0	272	10.5	93.8	8.5	5.0		0.010	0.020	0.010 K	140	1.1	15
89/12/05	1445	7.0	503.0	261	10.3	88.5	8.0	13.0		0.020	0.020	0.010 K	126	2.5	88 S
90/01/09	1550	6.9	585.0	243	10.2	88.8	7.7				0.070	0.030	114	7.7	120 S
90/02/06	1510	6.1	477.0	260	10.9	92.6	7.7	7.0		0.010	0.030	0.020	114	2.2	4
90/03/06	1510	6.9	585.0	252	10.8	92.8	7.8	15.0		0.030	0.050	0.030	111	5.2	14
90/04/03	1610	11.8	676.0	208	9.7	93.9	7.9 J	17.0		0.020	0.040	0.010	94	3.6	22
90/05/08	1425	11.4	516.0	235	10.4	99.5	8.2	8.0		0.010 K	0.020	0.010 K	108	1.2	2
90/06/05	1540	12.7	981.0	170	8.5	84.3	7.6	24.0		0.030	0.070	0.030	79	11.0	160
90/07/10	1350	16.5	410.0	287	9.7	104.3	8.3	6.0		0.010 K	0.020	0.010 K	129	1.2	32
90/08/07	1420	16.3	361.0	238	9.3	99.8	8.4				0.020	0.010	133	1.0 K	33
90/09/04	1320	14.1	359.0	281	9.4	95.5	8.3	2.0		0.010	0.010	0.010 K	137	1.0 K	45
90/10/09	1335	9.9	359.0	290	10.3	95.5	8.4	5.0		0.014	0.020	0.012	137	1.0 K	14
90/11/06	1345	7.7	389.0	272	10.5	91.0	8.3	3.0		0.010 K	0.020	0.010	136	1.0 K	4
90/12/04	1405	7.0	402.0	268	10.4	90.6	7.8	6.0		0.010	0.020	0.010	131	1.2	41
91/01/08	1440	5.7	376.0	271	10.8	90.3	8.1	15.0		0.020	0.040	0.010	134	2.3	75
91/02/05	1520	3.5	1040.0	174	10.9	85.6	7.7	600.0 J		0.374			71	178.0	520
91/03/05	1415	6.2 J	871.0	203	10.4	88.7	7.5	100.0		0.080	0.110	0.040	92	25.0	140
91/04/02	1350	10.3	587.0	230	9.5	88.9	8.2	22.0		0.013	0.035	0.013	106	3.0	23
91/05/07	1405	11.9	549.0	233	9.4	91.5	8.0	12.0		0.013	0.023	0.010 K	108	2.4 H	
91/06/04	1400	14.1	497.0	255	9.6	97.8	8.3	12.0		0.111	0.028	0.013	126	2.2	16
91/07/09	1555	16.2	420.0	259	8.8	94.9	8.2	11.0		0.010 K	0.033	0.010 K	123	4.4	42
91/08/06	1525	15.8	357.0	279	9.3	99.3	7.5	7.0		0.010 K	0.025	0.010 K	133	4.2	49
91/09/03	1610	14.1	358.0	290	10.0	101.4	8.4	5.0		0.010 K	0.018	0.010 K	139	1.5	19
93/10/05	1350	10.9	373.0	263	9.4	89.9	8.3	7.0	1.260	0.010 K	0.010 K	0.010 K		1.4	27
93/11/02	1345	8.5	410.0	257	10.4	92.7	8.1	3.0	1.310	0.010 K	0.010	0.010 K		1.6	25
93/12/07	1340	5.5	427.0	257	10.1	85.3	8.2	8.0	1.400	0.016	0.038	0.023		3.6	34 S
94/01/04	1400	6.8	501.0	239	9.8	85.7	8.0	26.0	1.470	0.041	0.050	0.029		13.0	92 S
94/02/08	1345	4.6	361.0	278 J	10.8	87.6	8.4	7.0	1.180	0.013	0.020	0.013		2.4	5
94/03/08	1350	5.7 J	470.0	248	10.6	88.1	8.1	13.0	1.130	0.028	0.026	0.016		4.7	11
94/04/05	1355	8.3	535.0	231	10.1	90.5	8.3	13.0	1.080	0.010	0.021	0.012		3.6	21
94/05/03	1410	11.2	465.0	230	10.0	95.7	8.4	8.0	0.963	0.010 K	0.015	0.010		2.4	9
94/06/07	1450	12.7	394.0	248	10.0	98.7	8.3	7.0	1.080	0.023	0.010 K	0.010 K		1.6	36
94/07/06	1450	14.8	361.0	266	9.4	97.0	8.1	5.0	1.050	0.012	0.010 K	0.010 K		1.7	5
94/08/02	1445	15.7	339.0	233	9.9	105.6	8.1	3.0	1.190	0.010 K	0.010 K	0.010 K		0.9	30

Remarks codes: U,K - Below reporting limits; B - analyte found in blank; X - many background organisms; J - Estimate; S - Spreader colony.

55B070 Little Spokane R nr Mouth continued: more dates.

Date	Time	Temp (C)	Flow (CFS)	Conduc-tivity (umhos)	Oxygen (mg/L)	Oxygen Satur. (%)	pH (units)	Suspend Solids (mg/L)	TPN (mg/L)	NH3+NH4 Nitrog. (mg/L)	Total Phosph. (mg/L)	Dissol. Ortho P (mg/L)	Hardnes (mg/L)	Turbid-ity (NTU)	Fecal Colif. (#/100ml)
94/09/06	1420	13.5	367.0	282	10.1	102.0	8.4	3.0	1.100	0.010 K	0.010 K	0.010		1.2	27
94/10/10	1535	10.6	367.0	271	9.8	92.9	8.1	2.0	1.460	0.010 K	0.010 K	0.010 K		0.8	23
94/11/07	1510	8.1	418.0	267	10.4	92.4	8.0	2.0	1.190	0.010 K	0.010 U	0.010 K		0.9	15
94/12/05	1550	3.9	414.0	260	11.0	88.3	8.1	6.0	1.220	0.010 U	0.018	0.011		2.0	24
95/01/09	1455	6.0	491.0	252	10.4	89.1	7.9	8.0	1.290	0.021	0.039	0.013		3.2	34
95/02/06	1505	5.8	934.0	184	10.5	88.0	7.6	28.0	0.942	0.019	0.036	0.030		15.0	12
95/03/06	1525	5.6	873.0	188	10.9	90.9	7.8	18.0	0.907	0.010 U	0.034	0.017		8.5	5
95/04/03	1540	9.3	955.0	183	10.4	95.2	7.9	11.0	0.833	0.010 U	0.027	0.020		6.9	35
95/05/02	1550	11.6	673.0	217	9.4	91.2	8.0	10.0				0.015		3.4	73
95/06/05	1455	13.8	465.0	247	8.8	89.0	8.1	7.0	1.180	0.036	0.022	0.010		2.2	84
95/07/10	1345	15.6	414.0	283	8.9	92.5	8.1	7.0	1.340	0.024	0.038	0.011		3.1	100
95/08/07	1500	14.1	361.0	297	9.4	96.5	8.3	2.0	1.420	0.020	0.019	0.015		1.2	200
95/09/05	1330	13.4	342.0	283	9.4	92.8	8.4	5.0	1.330	0.010 U	0.010 U	0.005 U		1.5	69

55B070 Little Spokane R nr Mouth continued: more parameters.

Date	Time	Unioniz Ammonia (mg/L)	NO2+NO3 Nitrog. (mg/L)	Dissol. Nitrite (mg/L)
89/10/03	1450	.3E-3 K	1.190	0.010 K
89/11/07	1440	.4E-3	1.220	0.010 K
89/12/05	1445	.2E-3	1.090	0.010 K
90/01/09	1550		1.030	0.010 K
90/02/06	1510	.6E-4	1.070	0.010 K
90/03/06	1510	.2E-3	1.130	0.010 K
90/04/03	1610	.3E-3	0.760	0.010 K
90/05/08	1425	.3E-3 K	0.900	0.010 K
90/06/05	1540	.2E-3	0.500	0.010 K
90/07/10	1350	0.001 K	0.940	0.010 K
90/08/07	1420		1.040	
90/09/04	1320	.4E-3	1.130	0.010 K
90/10/09	1335		1.072	0.009
90/11/06	1345	.2E-3 K	1.200	0.010 K
90/12/04	1405	.9E-4	1.210	0.010 K

Remarks codes: U,K - Below reporting limits; B - analyte found in blank; X - many background organisms; J - Estimate; S - Spreader colony.

55B070 Little Spokane R nr Mouth continued: more dates.

Date	Time	Unioniz Ammonia (mg/L)	NO2+NO3 Nitrog. (mg/L)	Dissol. Nitrite (mg/L)
91/01/08	1440	.3E-3	1.360	0.010 K
91/02/05	1520	0.002	0.774	0.010 K
91/03/05	1415	.3E-3	0.950	0.010 K
91/04/02	1350	.3E-3	0.894	0.001
91/05/07	1405		0.859	0.010 K
91/06/04	1400		0.890	0.010 K
91/07/09	1555		1.041	0.010 K
91/08/06	1525		1.100	0.010 K
91/09/03	1610		1.120	0.010 K
93/10/05	1350		1.200	
93/11/02	1345		1.310	
93/12/07	1340		1.250	
94/01/04	1400		1.120	
94/02/08	1345		1.340	
94/03/08	1350		1.130	
94/04/05	1355		0.970	
94/05/03	1410		0.906	
94/06/07	1450		1.020	
94/07/06	1450		1.250	
94/08/02	1445		1.230	
94/09/06	1420		1.140	
94/10/10	1535		1.260	
94/11/07	1510		1.170	
94/12/05	1550		1.120	
95/01/09	1455		1.190	
95/02/06	1505		0.783	
95/03/06	1525		0.777	
95/04/03	1540		0.688	
95/05/02	1550			
95/06/05	1455		0.967	
95/07/10	1345		1.120	
95/08/07	1500		1.230	
95/09/05	1330		1.200	

Remarks codes: U,K - Below reporting limits; B - analyte found in blank; X - many background organisms; J - Estimate; S - Spreader colony.

Station No.: 55B080 LITTLE SPOKANE R NR GRIFFITH SPRING Water Class: A Latitude: 47 46 12.0
Water Body No.: WA-55-1010 River Mile: 7.50 Longitude: 117 27 09.0

Date	Time	Temp (C)	Flow (CFS)	Conduc-tivity (umhos)	Oxygen (mg/L)	Oxygen Satur. (%)	pH (units)	Suspend Solids (mg/L)	TPN (mg/L)	NH3+NH4 Nitrog. (mg/L)	Total Phosph. (mg/L)	Dissol. Ortho P (mg/L)	Hardnes (mg/L)	Turbid-ity (NTU)	Fecal Colif. (#/100ml)
90/07/10	1430	16.9		262	9.1	98.8	8.4	5.0		0.010 K	0.020	0.010	112	1.0	32
90/08/07	1455	16.5		270	8.7	93.8	8.5				0.020	0.010	126	1.0 K	120
90/09/04	1400	14.3		271	9.1	93.0	8.4				0.010	0.010 K	129	1.0 K	53
90/10/09	1410	10.2		280	9.9	92.4	8.5	3.0		0.010 K	0.018	0.016	138	1.0 K	33
90/11/06	1420	7.7		262	10.3	89.3	8.4	3.0		0.010 K	0.020	0.010	131	1.0 K	31
90/12/04	1430	7.0		259	10.0	87.2	8.0	3.0		0.020	0.020	0.010	125	1.0 K	240
91/01/08	1510	5.7		275	10.3	86.2	8.2	8.0		0.020	0.030	0.010	129	1.6	280
91/02/05	1600	1.7		140	11.2	83.8	7.7	640.0 J		0.418	1.060	0.157	58	220.0	700 S
91/03/05	1450	5.4 J		193	10.8	90.3	7.6	89.0		0.070	0.110	0.040	87	22.5	120
91/04/02	1420	10.4		219	9.6	90.1	8.3	19.0		0.012	0.035	0.012	99	3.1	53
91/05/07	1435	12.2		220	9.4	92.1	8.3	9.0		0.012	0.024	0.010 K	103	2.1 H	
91/06/04	1440	14.4		230	9.3	95.4	8.3	11.0		0.010 K	0.029	0.014	109	1.6	23

55B080 Little Spokane R nr Griffith Spring continued: more parameters.

Date	Time	Unioniz Ammonia (mg/L)	NO2+NO3 Nitrog. (mg/L)	Dissol. Nitrite (mg/L)
90/07/10	1430	0.001 K	0.900	0.010 K
90/08/07	1455		0.950	
90/09/04	1400		1.040	
90/10/09	1410		1.028	0.010 K
90/11/06	1420	.3E-3 K	1.100	0.010 K
90/12/04	1430	.2E-3	1.110	0.010 K
91/01/08	1510	.4E-3	1.310	0.010 K
91/02/05	1600	0.002	0.614	0.010 K
91/03/05	1450	.3E-3	0.930	0.010 K
91/04/02	1420	.4E-3	0.769	0.001
91/05/07	1435		0.753	0.010 K
91/06/04	1440		0.790	0.010 K

Remarks codes: U,K - Below reporting limits; B - analyte found in blank; X - many background organisms; J - Estimate; S - Spreader colony.

Station No.: 55B082 LITTLE SPOKANE R ABV DARTFORD CREEK Water Class: A Latitude: 47 47 01.0
Water Body No.: WA-55-1010 River Mile: 10.30 Longitude: 117 24 52.0

Date	Time	Temp (C)	Flow (CFS)	Conduc-tivity (umhos)	Oxygen (mg/L)	Oxygen Satur. (%)	pH (units)	Suspend Solids (mg/L)	TPN (mg/L)	NH3+NH4 Nitrog. (mg/L)	Total Phosph. (mg/L)	Dissol. Ortho P (mg/L)	Hardnes (mg/L)	Turbid-ity (NTU)	Fecal Colif. (#/100ml)
90/07/10	1500	21.1		221	9.1	107.3	8.4	7.0		0.010	0.040	0.020	94	1.2	63
90/08/07	1520	21.0		235	9.3 J	109.8	8.6				0.040	0.020	105	1.0	48
90/09/04	1420	17.5		245	10.1	110.5	8.6				0.020	0.010	115	1.2	116
90/10/09	1435	9.2		256	12.0	109.5	8.7	6.0		0.010 K	0.017	0.013	121	1.2	63
90/11/06	1445	5.2		242	12.6	102.7	8.5	2.0		0.020	0.020	0.010	116	1.0 K	24
90/12/04	1455	4.1		236	12.4	100.5	8.1	5.0		0.020	0.030	0.010	111	1.2	24
91/01/08	1535	1.3		243	13.0	97.0	8.3	8.0		0.020	0.040	0.020	115	1.4	10
91/02/05	1625	0.7		104	12.0	87.4	7.6	510.0 J		0.482	1.100	0.181	39	185.0	1300 S
91/03/05	1515	3.9 J		175	11.8	94.9	7.7	103.0		0.050 L	0.160	0.050	72	24.5	77 S
91/04/02	1440	10.0		183	10.5	97.8	8.1	26.0		0.013	0.042	0.015	80	3.5	210
91/05/07	1455	12.8		178	10.2	101.3	8.3	11.0		0.014	0.032	0.010 K	82	2.5 H	
91/06/04	1500	16.2		189	10.2	108.7	8.4	16.0		0.011	0.037	0.020	88	2.5	49

55B082 Little Spokane R abv Dartford Creek continued: more parameters.

Date	Time	Unioniz Ammonia (mg/L)	NO2+NO3 Nitrog. (mg/L)	Dissol. Nitrite (mg/L)
90/07/10	1500	0.001	0.510	0.010 K
90/08/07	1520		0.630	
90/09/04	1420		0.680	
90/10/09	1435		0.850	0.010 K
90/11/06	1445	0.001	0.910	0.010 K
90/12/04	1455	.2E-3	0.990	0.010 K
91/01/08	1535	.3E-3	1.240	0.010 K
91/02/05	1625	0.002	0.478	0.010 K
91/03/05	1515		0.780 J	0.010 K
91/04/02	1440	.2E-3	0.550	0.002
91/05/07	1455		0.467	0.010 K
91/06/04	1500		0.471	0.010 K

Remarks codes: U,K - Below reporting limits; B - analyte found in blank; X - many background organisms; J - Estimate; S - Spreader colony.

Station No.: 55B100 LITTLE SPOKANE R ABV DEADMAN CREEK Water Class: A Latitude: 47 47 54.0
Water Body No.: WA-55-1010 River Mile: 13.50 Longitude: 117 22 54.0

Date	Time	Temp (C)	Flow (CFS)	Conduc-tivity (umhos)	Oxygen (mg/L)	Oxygen Satur. (%)	pH (units)	Suspend Solids (mg/L)	TPN (mg/L)	NH3+NH4 Nitrog. (mg/L)	Total Phosph. (mg/L)	Dissol. Ortho P (mg/L)	Hardnes (mg/L)	Turbid-ity (NTU)	Fecal Colif. (#/100ml)
90/07/10	1515	21.8		212	9.4	112.5	8.4	6.0		0.010	0.030	0.010	90	1.0	48
90/08/07	1540	21.6		298	9.5	113.7	8.5				0.030	0.020	104	1.0 K	52
90/09/04	1445	17.8		232	10.3	113.4	8.5				0.020	0.010 K	113	1.0 K	36
90/10/09	1455	8.6		251	12.3	110.8	8.3	2.0		0.010 K	0.013	0.010	120	1.0 K	7
90/11/06	1510	4.4		232	13.0	103.9	8.5	2.0		0.010	0.020	0.010 K	116	1.0 K	13
90/12/04	1530	3.3		229	12.7	100.7	8.1	4.0		0.030	0.020	0.010	107	1.0 K	11
91/01/08	1600	0.1		230	13.1	94.6	8.3	13.0		0.030	0.050	0.010	108	2.3	11
91/02/05	1650	0.5		101	12.1	87.6	7.7	250.0 J		0.581	0.905	0.184	32	103.0	2100 S
91/03/05	1535	4.4 J		173	11.9	97.0	7.5	38.0		0.090	0.120	0.050	76	12.0	230
91/04/02	1455	9.7		179	10.7	99.1	8.3	22.0		0.014	0.039	0.012	78	3.1	3
91/05/07	1520	13.0		178	10.2	101.9	8.2	9.0		0.018	0.032	0.010 K	80	2.1 H	
91/06/04	1520	16.6		187	10.1	108.8	8.4	12.0		0.012	0.033	0.014	85	2.3	14
93/10/05	1310	10.6		233	11.0	104.6	8.4	2.0	1.030	0.010 K	0.011	0.010 K		0.6	40
93/11/02	1305	5.6		225	12.6	104.8	8.1	1.0	1.190	0.010 K	0.011	0.010 K		0.9	18
93/12/07	1255	0.6		224	12.7	94.2	8.0	3.0	1.340	0.015	0.052	0.034		2.0	22 S
94/01/04	1310	3.3		212	11.9	95.3	8.1	10.0	1.240	0.053	0.060	0.041		3.5	130 S
94/02/08	1310	0.0		253 J	13.4	96.2	8.4	8.0	1.340	0.020	0.031	0.017		3.0	2
94/03/08	1300	2.2 J		203	12.8	97.4	8.2	6.0	1.020	0.020	0.038	0.019		4.2	2
94/04/05	1320	7.3		188	10.9	95.4	8.2	16.0	0.878	0.017	0.034	0.018		4.9	38
94/05/03	1335	12.0		183	10.9	106.4	8.4	7.0	0.628	0.010 K	0.028	0.015		2.5	8
94/06/07	1405	14.4		206	10.9	111.8	8.4	4.0	0.844	0.010 K	0.019	0.013		1.7	190 J
94/07/06	1415	18.0		230	11.3	124.8	8.5	2.0	0.811	0.012	0.010 K	0.010 K		0.9	17
94/08/02	1400	21.8		221	11.0	132.6	8.4	3.0	0.937	0.010 K	0.018	0.010 K		0.9	84
94/09/06	1350	15.6		266	11.3	119.5	8.4	2.0	0.845	0.011	0.099	0.010 K		0.5	100

Remarks codes: U,K - Below reporting limits; B - analyte found in blank; X - many background organisms; J - Estimate; S - Spreader colony.

55B100 Little Spokane R abv Deadman Creek continued: more parameters.

Date	Time	Unioniz Ammonia (mg/L)	NO2+NO3 Nitrog. (mg/L)	Dissol. Nitrite (mg/L)
90/07/10	1515	0.001	0.460	0.010 K
90/08/07	1540		0.580	
90/09/04	1445		0.620	
90/10/09	1455		0.865	0.010 K
90/11/06	1510	.3E-3	0.930	0.010 K
90/12/04	1530	.3E-3	1.010	0.010 K
91/01/08	1600	.4E-3	1.270	0.010 K
91/02/05	1650	0.002	0.447	0.010 K
91/03/05	1535	.3E-3	0.770	0.010
91/04/02	1455	.4E-3	0.561	0.002
91/05/07	1520		0.469	0.010 K
91/06/04	1520		0.455	0.010 K
93/10/05	1310		0.915	
93/11/02	1305		1.060	
93/12/07	1255		1.110	
94/01/04	1310		1.040	
94/02/08	1310		1.230	
94/03/08	1300		0.845	
94/04/05	1320		0.678	
94/05/03	1335		0.565	
94/06/07	1405		0.698	
94/07/06	1415		0.793	
94/08/02	1400		0.796	
94/09/06	1350		0.792	

Remarks codes: U,K - Below reporting limits; B - analyte found in blank; X - many background organisms; J - Estimate; S - Spreader colony.

Station No.: 55B200 LITTLE SPOKANE @ CHATTAROY Water Class: A Latitude: 47 53 22.0
Water Body No.: WA-55-1010 River Mile: 23.10 Longitude: 117 21 19.0

Date	Time	Temp (C)	Flow (CFS)	Conduc-tivity (umhos)	Oxygen (mg/L)	Oxygen Satur. (%)	pH (units)	Suspend Solids (mg/L)	TPN (mg/L)	NH3+NH4 Nitrog. (mg/L)	Total Phosph. (mg/L)	Dissol. Ortho P (mg/L)	Hardnes (mg/L)	Turbid-ity (NTU)	Fecal Colif. (#/100ml)
93/10/05	1130	10.9	58.6	189	9.4	90.0	8.0	2.0	0.397	0.010 K	0.010 K	0.010 K		0.6	6
93/11/02	1210	5.5	68.5	182	12.0	99.8	8.0	1.0	0.475	0.010 K	0.010 K	0.010 K		0.7	4
93/12/07	1155	0.7	93.1	182	12.5	93.2	7.5	4.0	0.643	0.013	0.026	0.010		1.3	9
94/01/04	1210	2.8	118.0	170	11.7	92.5	7.6	12.0	0.791	0.059	0.040	0.020		6.8	230 J
94/02/08	1210	0.0	109.0	201 J	12.7	91.5	8.1	6.0	0.765	0.019	0.024	0.010		2.0	4
94/03/08	1210	2.5 J	58.6	172	12.3	94.6	8.1	5.0	0.526	0.028	0.020	0.010 K		1.7	1
94/04/05	1225	7.8	148.0	148	10.5	93.4	8.1	9.0	0.426	0.018	0.021	0.010 K		2.9	12
94/05/03	1240	12.6	138.0	146	10.5	104.0	8.4	4.0	0.329	0.010 K	0.018	0.010 K		1.6	6
94/06/07	1310	14.5	82.5	158	10.4	107.2	8.4	3.0	0.303	0.010 K	0.037	0.010 K		1.1	51
94/07/06	1310	18.1	48.6	173	10.3	114.2	8.3	2.0	0.186	0.010 K	0.010 K	0.010 K		0.7	33
94/08/02	1300	22.0	30.0	160	10.3	124.7	8.4	2.0	0.253	0.023	0.012	0.010 K		1.0	130 J
94/09/06	1245	15.8	48.6	209	10.5	111.6	8.4	2.0	0.222	0.010 K	0.010 K	0.010 K		0.5 K	23

55B200 Little Spokane @ Chattaroy continued: more parameters.

Date	Time	Unioniz Ammonia (mg/L)	NO2+NO3 Nitrog. (mg/L)	Dissol. Nitrite (mg/L)
93/10/05	1130		0.248	
93/11/02	1210		0.338	
93/12/07	1155		0.434	
94/01/04	1210		0.435	
94/02/08	1210		0.474	
94/03/08	1210		0.324	
94/04/05	1225		0.199	
94/05/03	1240		0.136	
94/06/07	1310		0.170	
94/07/06	1310		0.098	
94/08/02	1300		0.089	
94/09/06	1245		0.116	

Remarks codes: U,K - Below reporting limits; B - analyte found in blank; X - many background organisms; J - Estimate; S - Spreader colony.

Station No.: 55C065 DEADMAN CR NR MOUTH Water Class: A Latitude: 47 47 44.0
Water Body No.: WA-55-1010 River Mile: 0.13 Longitude: 117 22 51.0

Date	Time	Temp (C)	Flow (CFS)	Conduc-tivity (umhos)	Oxygen (mg/L)	Oxygen Satur. (%)	pH (units)	Suspend Solids (mg/L)	TPN (mg/L)	NH3+NH4 Nitrog. (mg/L)	Total Phosph. (mg/L)	Dissol. Ortho P (mg/L)	Hardnes (mg/L)	Turbid-ity (NTU)	Fecal Colif. (#/100ml)
93/10/05	1245	12.0	9.2 J	288	9.8	96.1	8.5	2.0	0.999	0.010 K	0.021	0.024		1.2	37
93/11/02	1245	9.1	10.3 J	272	11.2	101.4	8.3	3.0	0.924	0.010 K	0.034	0.028		2.0	14
93/12/07	1240	4.4	12.0 J	250	11.7	96.2	7.9	10.0	0.885	0.013	0.057	0.035		6.5	19 S
94/01/04	1250	3.4	46.0 J	197	12.0	96.4	8.0	45.0	0.857	0.046	0.032	0.051		48.0	49
94/02/08	1250	3.8	24.0 J	270 J	12.7	101.2	8.6	4.0	0.884	0.010 K	0.039	0.027		2.8	16
94/03/08	1245	3.5 J	45.0 J	183	12.7	100.0	8.3	12.0	0.459	0.021	0.043	0.022		7.3	4
94/04/05	1300	7.2	68.0 J	138	11.2	97.9	8.3	25.0	0.409	0.018	0.053	0.029		13.0	27
94/05/03	1320	11.2	62.0 J	140	10.7	102.5	8.6	8.0	0.390	0.010 K	0.048	0.028		4.2	12
94/06/07	1345	13.7	28.0 J	179	10.3	104.0	8.2	10.0	0.483	0.012	0.049	0.035		5.9	330 J
94/07/06	1340	17.1	17.0 J	260	10.0	108.4	8.4	3.0	0.718	0.010 K	0.045	0.033		1.9	88
94/08/02	1345	18.4	11.0 J	263	9.7	109.5	8.4	3.0	1.050	0.010 K	0.032	0.022		1.2	88
94/09/06	1320	15.2	11.0 J	303	9.7	101.7	8.3	4.0	0.880	0.010 K	0.020	0.021		1.9	500 J

55C065 Deadman Cr nr Mouth continued: more parameters.

Date	Time	Unioniz Ammonia (mg/L)	NO2+NO3 Nitrog. (mg/L)	Dissol. Nitrite (mg/L)
93/10/05	1245		0.960	
93/11/02	1245		0.877	
93/12/07	1240		0.740	
94/01/04	1250		0.533	
94/02/08	1250		0.764	
94/03/08	1245		0.325	
94/04/05	1300		0.255	
94/05/03	1320		0.278	
94/06/07	1345		0.388	
94/07/06	1340		0.779	
94/08/02	1345		0.928	
94/09/06	1320		0.880	

Remarks codes: U,K - Below reporting limits; B - analyte found in blank; X - many background organisms; J - Estimate; S - Spreader colony.

Station No.: 55C070 PEONE (DEADMAN) CREEK ABV L DEEP CR Water Class: A Latitude: 47 47 37.0
Water Body No.: WA-55-1010 River Mile: 0.50 Longitude: 117 22 33.0

Date	Time	Temp (C)	Flow (CFS)	Conduc-tivity (umhos)	Oxygen (mg/L)	Oxygen Satur. (%)	pH (units)	Suspend Solids (mg/L)	TPN (mg/L)	NH3+NH4 Nitrog. (mg/L)	Total Phosph. (mg/L)	Dissol. Ortho P (mg/L)	Hardnes (mg/L)	Turbid-ity (NTU)	Fecal Colif. (#/100ml)
90/07/10	1530	20.6		209	8.5	99.5	8.4	5.0		0.010 K	0.080	0.050	88	2.0	100
90/08/07	1600	20.7		275	8.7	102.3	8.6				0.190	0.160	125	1.7	84
90/09/04	1510	17.9		288	9.4	103.9	8.7				0.040	0.030	133	1.1	37
90/10/09	1515	13.2		300	10.0	100.1	8.6	9.0		0.010 K	0.037	0.034	136	1.0 K	10
90/11/06	1530	8.8		262	11.1	99.0	8.4	4.0		0.020	0.040	0.030	124	1.1	3
90/12/04	1545	7.0		239	11.3	98.5	8.2	6.0		0.010 K	0.050	0.030	108	1.6	7
91/01/08	1620	5.9		268	11.6	97.8	8.4	14.0		0.030	0.100	0.050	125	3.6	27
91/02/05	1715														
91/03/05	1550	3.8 J		135	11.9	95.5	7.7	373.0		0.040 L	0.160	0.060	58	53.0	14 S
91/04/02	1510	10.7		168	10.3	97.5	8.2	33.0		0.010	0.055	0.024	65	5.2	5
91/05/07	1530	12.0		139	10.2	99.8	8.1	15.0		0.013	0.049	0.024	60	2.2 H	
91/06/04	1545	15.6		170	9.5	100.2	8.3	15.0		0.010 K	0.066	0.042	77	2.1	31

55C070 Peone (Deadman) Creek abv L Deep Cr continued: more parameters.

Date	Time	Unioniz Ammonia (mg/L)	NO2+NO3 Nitrog. (mg/L)	Dissol. Nitrite (mg/L)
90/07/10	1530	0.001 K	0.470	0.010 K
90/08/07	1600		0.710	
90/09/04	1510		0.670	
90/10/09	1515		0.819	0.014
90/11/06	1530	0.001	0.730	0.010 K
90/12/04	1545	.2E-3 K	0.620	0.010
91/01/08	1620	0.001	0.780	0.020
91/02/05	1715			
91/03/05	1550		0.880 J	0.010 K
91/04/02	1510	.2E-3	0.263	0.003
91/05/07	1530		0.253	0.010 K
91/06/04	1545		0.357	0.010 K

Remarks codes: U,K - Below reporting limits; B - analyte found in blank; X - many background organisms; J - Estimate; S - Spreader colony.

Station No.: 55D070 DEER CR NR CHATTAROY Water Class: A Latitude: 47 53 18.0
Water Body No.: WA-55-1010 River Mile: 0.06 Longitude: 117 21 13.0

Date	Time	Temp (C)	Flow (CFS)	Conduc-tivity (umhos)	Oxygen (mg/L)	Oxygen Satur. (%)	pH (units)	Suspend Solids (mg/L)	TPN (mg/L)	NH3+NH4 Nitrog. (mg/L)	Total Phosph. (mg/L)	Dissol. Ortho P (mg/L)	Hardnes (mg/L)	Turbid-ity (NTU)	Fecal Colif. (#/100ml)
93/10/05	1150	6.8	0.4 J	130	11.0	95.6	8.1	2.0	0.581	0.010 K	0.020	0.024		0.6	16

55D070 Deer Cr nr Chattaroy continued: more parameters.

Date	Time	Unioniz Ammonia (mg/L)	NO2+NO3 Nitrog. (mg/L)	Dissol. Nitrite (mg/L)
93/10/05	1150		0.533	

Remarks codes: U,K - Below reporting limits; B - analyte found in blank; X - many background organisms; J - Estimate; S - Spreader colony.

Station No.: 55E070 DRAGOON CR NR CHATTAROY Water Class: A Latitude: 47 52 35.6
Water Body No.: WA-55-1010 River Mile: 0.20 Longitude: 117 22 20.2

Date	Time	Temp (C)	Flow (CFS)	Conduc-tivity (umhos)	Oxygen (mg/L)	Oxygen Satur. (%)	pH (units)	Suspend Solids (mg/L)	TPN (mg/L)	NH3+NH4 Nitrog. (mg/L)	Total Phosph. (mg/L)	Dissol. Ortho P (mg/L)	Hardnes (mg/L)	Turbid-ity (NTU)	Fecal Colif. (#/100ml)
93/11/02	1150	4.2	18.7 J	304	12.4	99.7	8.2	1.0	2.660	0.010 K	0.012	0.010 K		0.8	86
93/12/07	1135	0.0		288	13.2	96.8	8.0	3.0	3.090	0.019	0.141	0.112		2.3	68
94/01/04	1145	1.8	25.0 J	235	12.4	95.6	7.9	21.0	2.780	0.222	0.238	0.182		8.9	2200 J
94/02/08	1155	0.0	36.0 J	358 J	13.7	98.7	8.2	1.0	3.820	0.013	0.058	0.046		1.6	3
94/03/08	1155	0.6 J	43.7	228	13.2	96.5	8.1	5.0	1.760	0.016	0.070	0.045		7.7	1 K
94/04/05	1205	6.4	33.5 J	259	11.3	97.3	8.4	8.0		0.013	0.066	0.043		4.4	60
94/05/03	1220	10.3	25.5 J	261	10.9	102.6	8.6	3.0	1.670	0.010 K	0.064	0.035		1.5	7
94/06/07	1250	13.0	19.1 J	287	10.1	100.8	8.4	5.0	1.700	0.010 K	0.048	0.042		2.1	200 J
94/07/06	1240	16.7	8.8 J	305	9.5	102.3	8.4	3.0	2.090	0.015	0.031	0.016		1.3	160
94/08/02	1235	21.0	8.0 J	263	8.8	104.5	8.5	3.0	1.860	0.010 K	0.043	0.032		1.3	140
94/09/06	1220	13.6	9.7 J	327	10.0	101.4	8.4	2.0	1.890	0.010 K	0.016	0.010		0.8	40

55E070 Dragoon Cr nr Chattaroy continued: more parameters.

Date	Time	Unioniz Ammonia (mg/L)	NO2+NO3 Nitrog. (mg/L)	Dissol. Nitrite (mg/L)
93/11/02	1150		2.740	
93/12/07	1135		2.360	
94/01/04	1145		1.750	
94/02/08	1155		3.310	
94/03/08	1155		1.580	
94/04/05	1205		1.450	
94/05/03	1220		1.580	
94/06/07	1250		2.120	
94/07/06	1240		2.200	
94/08/02	1235		1.760	
94/09/06	1220		1.880	

Remarks codes: U,K - Below reporting limits; B - analyte found in blank; X - many background organisms; J - Estimate; S - Spreader colony.