

STA 6 Mercury Briefing

Circumstances

- STA 6 Outflow (G607) surface water unfiltered THg and MeHg Exceeded Inflow (G600) on Jan 11, March 16, and September 16, 1998.
- STA 6 Inflow (G600) surface water Exceeded Outflow (G607) on May 11, 1998.
- STA 6 Inflow (G600) Exceeded Outflow (G606) on September 28, 1998.
- STA 6 Outflow (G607) and Interior (C52) mosquitofish Exceeded Inflow mosquitofish on May 22, 1998.
- Mosquitofish data are inconsistent with water quality data at G607 on May 11, 1998, but probably have integrated conditions over the previous 30-90 days.

Analysis

- In terms of statistical significance, several of the total mercury and methylmercury results are below the PQL and near the MDL of the ultra-trace analytical method.
- Antecedent stage-duration and rainfall patterns prior to sample collection are complex, but extended periods of drawdown, low flow, and low production in winter and spring could have combined to produce the observed effect.
- Seven-day average hydraulic retention times during first year of operation are in the range of seven to twenty-one days, although there were periods of extended no discharge from outflow.
- G607 mixes STA 6 discharge with L-4 water being back-pumped to meet U.S. Sugar's agricultural water demand.
- Unfiltered samples of effluent collected at G607 could be contaminated with debris or resuspended solids that are unrepresentative of the quality of the discharge.
- Only unfiltered samples collected, so role of TSS cannot be determined.

Internal Corrective Actions

- Move outflow sampling station to G606 (done 9/8/98).
- Sample for ultra-trace THg and MeHg concurrently with other water quality samples.
- Collect filtered as well as unfiltered samples concurrently to discriminate effect of high TSS.
- Collect follow-up samples 14-28 days later to properly pair inflow and outflow samples for compliance evaluation purposes.
- Resume collection of interior water samples.
- Increase frequency of mosquitofish collection to quarterly and water collection to monthly.

External Corrective Actions

- Complete internal analysis and report to FDEP ASAP.
- Revise Compliance QAPP to reflect changes in collection sites.

Figure 1

Figure STA 6 Collection Sites

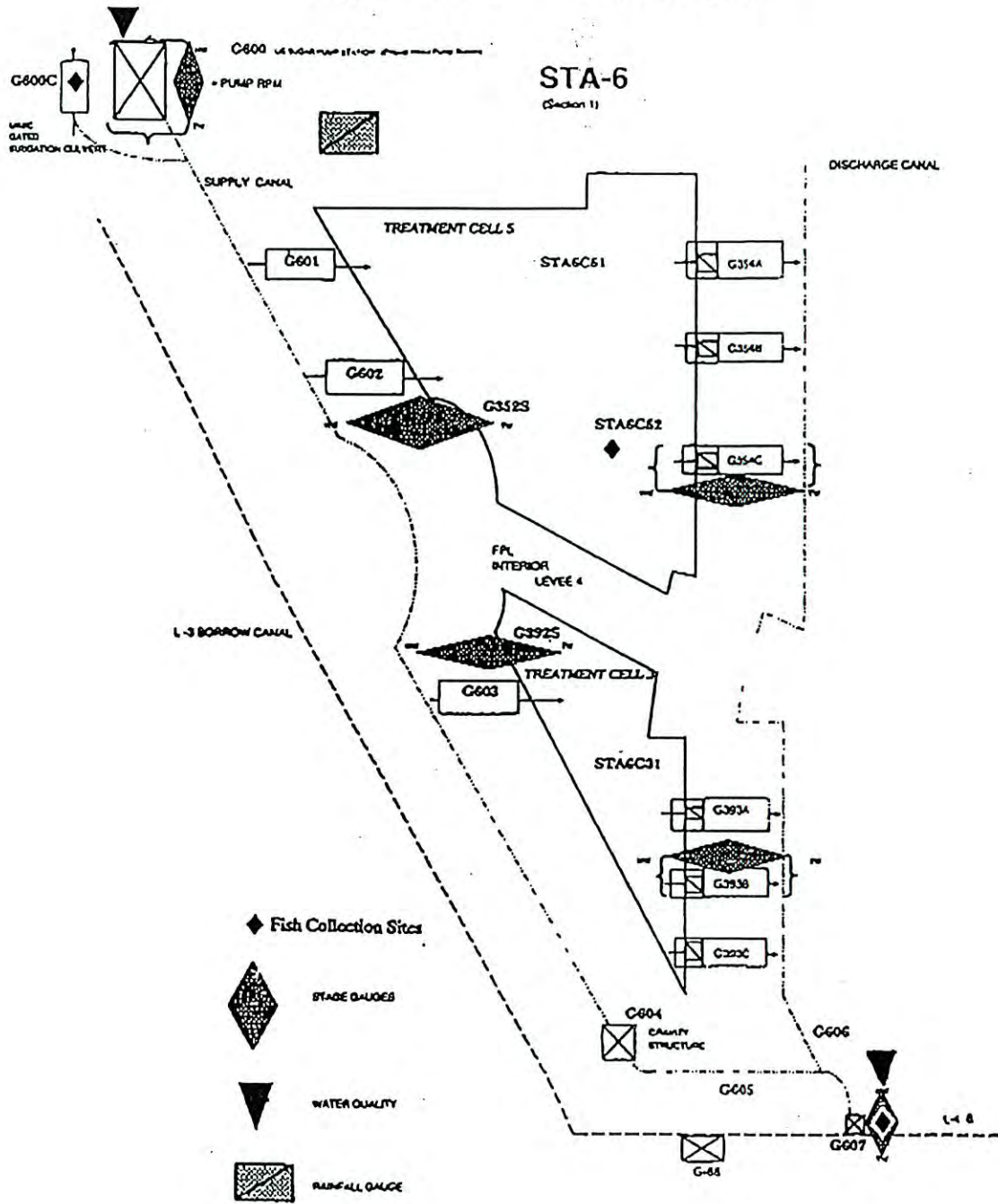
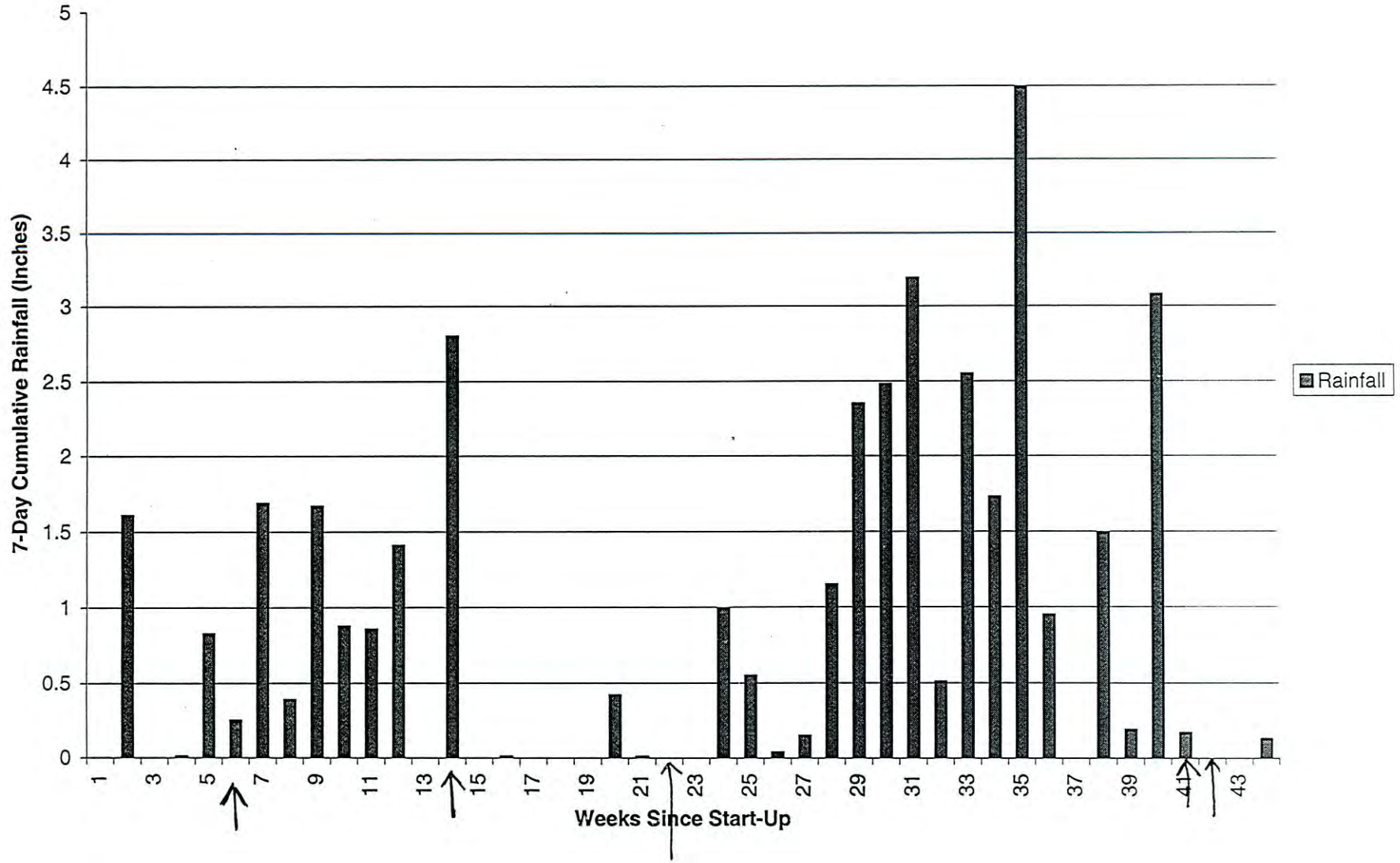


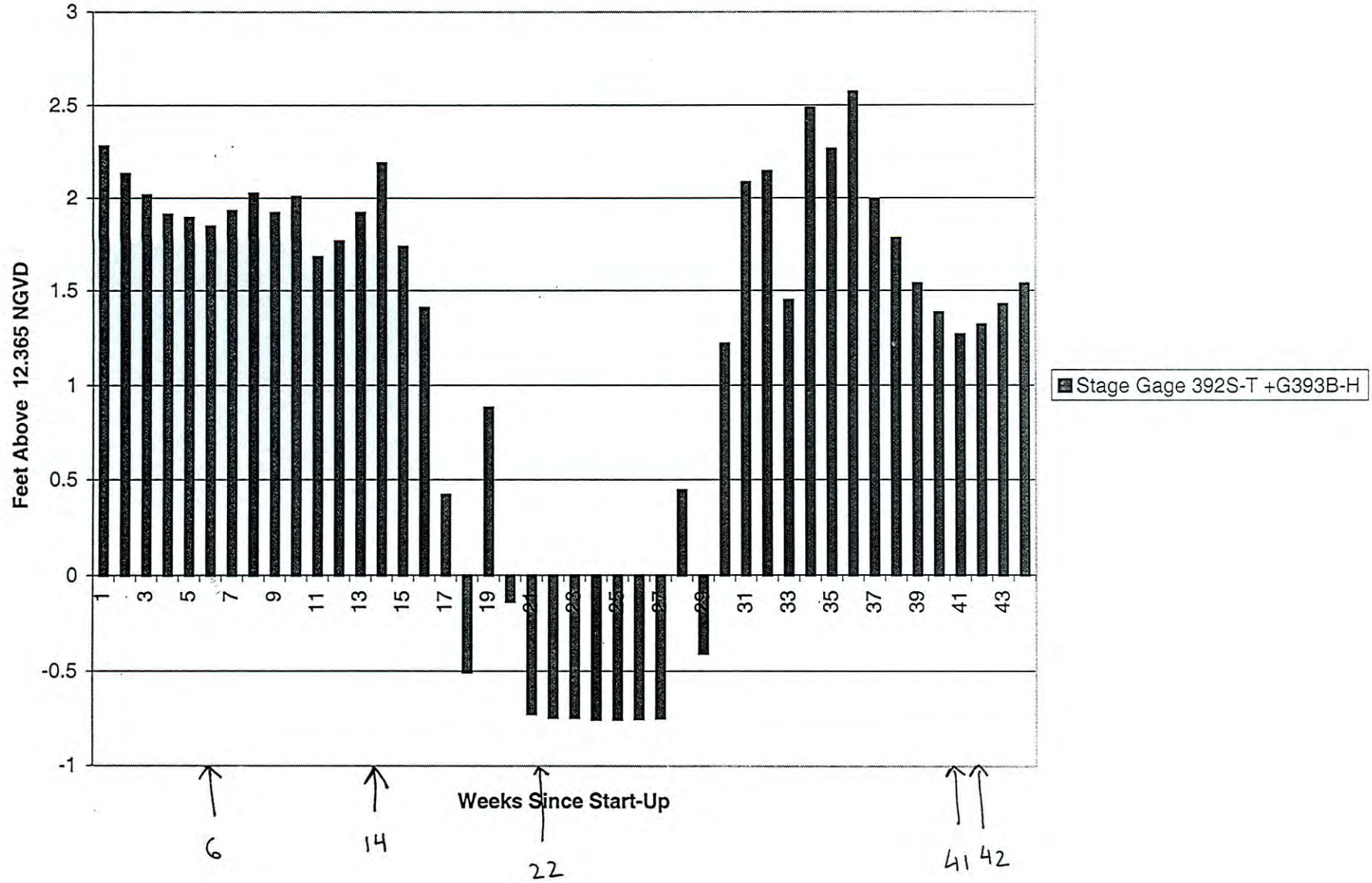
Table A-1. inflow and interior water quality data for STA-6.Units are ng/l.

Date	Time	Site	Sample No.	Bottle #	QC	TOTHG	remark	MMH G	remark	MDL-TOTHG	MDL-MMHG	PQL	PQL
19971124	1144	G600C	00013	SFW122		1.57		0.157	J4	0.220	0.022		
19971124	1147	G600C	00014	SFW052		1.56		0.151	A	0.220	0.022		
19971124	1424	STA6C52	00015	SFW027		0.92		0.053	J4,I	0.220	0.022		
19980120	1035	G600	00020	CLB498		0.89		0.127	J4	0.14	0.012		
19980120	1210	G607	00022	CMC326		1.12		0.289	J4	0.14	0.012		
19980316	1105	G600	00027	SFW277		0.61	I	0.080	I	0.18	0.024		
19980316	1147	STA6C52	00028	SFW540		1.11	J3	0.168		0.16	0.024		
19980316	1312	G607	00030	SFW261		0.86		0.204		0.18	0.024		
19980511	1050	G600	00035	SFW372		1.30	I	0.038	J4,U	0.33	0.038		
19980511	1222	G607	00037	SFW222		0.81	I	0.038	J4,U	0.33	0.038		
19980914	1146	G600	00044	SFW368		1.40	?	0.199		0.06	0.01	0.23	0.04
19980914	1146	G607	00042	SFW456		1.81	?	0.454		0.06	0.01	0.23	0.04
19980928	1046	G600	00049	SFW476		1.45	?	0.300	J AV2	0.06	0.23	0.01	0.05
19980928	1157	G606	00051	SFW522		1.47	?	0.218	J	0.06	0.23	0.01	0.05

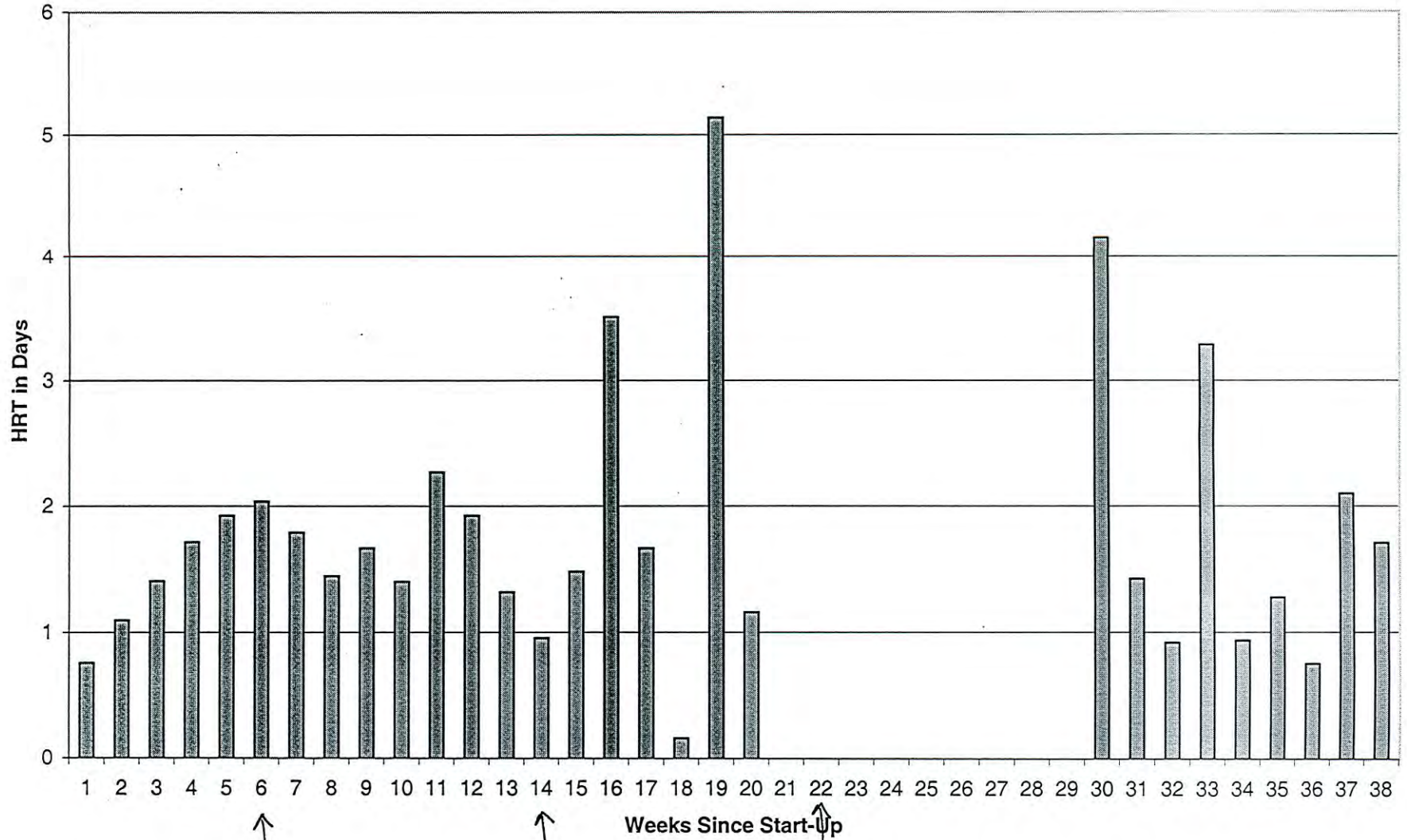
STA 6 Rainfall



STA 6 Cell 5 Mean Depth



STA 6 Hydraulic Residence Time



↑ ↑
41 42

STA 6 Hg Sampling To Date

All water sample values in ng/L

All fish sample values in ng/g

		G600	G600	G600	Interior	C52	G606 ⁽¹⁾	G606 ⁽¹⁾	G606
Date	Sample Type	Un-filtered THg Water	Un-filtered MeHg Water	Fish THg	Water Or Fish	Water	Un-filtered THg	Un-filtered MeHg	Fish THg
					THg	MeHg			
Nov 24, 1998	Start-Up	1.57	0.157	NA	0.92	0.053			
Jan 20, 1998	Routine	0.89	0.127				1.12	0.289	
Mar 16, 1998	Routine	0.61	0.08		1.1	0.168	0.86	0.204	
May 11, 1998	Routine	1.30	< 0.038				0.81	<0.038	
May 22, 1998	Routine			35.88	66.91 fish				41.12
Sep 16, 1998	Routine	1.40	0.199				1.81	0.454	
Sep 28, 1998	Re-sample	1.45	0.311 (0.279)*				1.47	0.218	
Nov 3, 1998				32.68 282.35 (n=10)	6.05 fish 726.5 (n=17)				55.1 628.8 (n=20)

* Duplicate

(1) G607 sampled until 09/28/98