

**ATAC RESOURCES LTD – RAU PROPERTY**

**2012 WATER LEVEL/ STREAM DISCHARGE DATA**

## **ATAC RESOURCES LTD. Rau Project Water Level / Discharge Monitoring 2012**

Stream flow water levels / discharge monitoring began in May 2011 with ONSET HOBO U20 water level loggers installed at two sites (Rau #1 and Rau #4) on tributary streams draining the Rau Property.

In 2012, additional water level loggers sites were established at three locations , Rau #11, Rau #12 and Rau #13. Loggers for barometric pressure recording were installed at Rau #1, Rau #4 and Rau #11.

All installations were equipped with angle iron posts/ logger tubes and staff gauges.

Two bench marks were established at each site and staff gauge “zero elevation” was surveyed each station visit during open water season.

Water level and water temperature data was recorded during “open water season” from May 13 to October 8, 2012.

Water levels, calculated discharge volumes and water temperatures for each site are listed in the following sections:

### **Stations Visits 2012**

### **Stage / Discharge Curves**

### **Daily Mean Discharge Graphs**

### **Maximum Daily Discharge Graphs**

### **Daily Mean Discharge Table**

### **Daily Mean Water Temperatures**

Data logger problems were encountered at sites:

**Rau #1** resulting in data loss for the period September 8 to October 8.

**Rau #11** resulting in data loss for the period June 13 to July 17.

**Rau #12** resulting in data loss for the period July 16 to September 8

**Rau #13** resulting in no water level data being recovered.

## ATAC RESOURCES - 2012 Discharge Monitoring - Station Visits

### Station : RAU #1

Date	BM1 (m)	BM2 (m)	Gauge Zero (m)	Water Level (m)	Staff Gauge (m)	Time	Q (cms)
13-Mar			under ice				0.01
28-Apr			under ice				
13-May	100.000	99.649	98.547	98.649	0.102	15:20	0.525
14-Jun			98.547	98.694	0.147	16:28	0.629
17-Jul	100.000	99.638	98.545	98.657	0.112	15:05	0.377
08-Sep	100.000	99.630	98.558	98.629	0.071	10:10	0.253
09-Oct	100.000	99.637	98.563	98.609	0.046	16:20	0.16
11-Dec			under ice				

### Station : RAU #4

Date	BM1 (m)	BM2 (m)	Gauge Zero (m)	Water Level (m)	Staff Gauge (m)	Time	Q (cms)
13-Mar			under ice				0.008
28-Apr			under ice				0.0473
13-May	100.000	99.805	98.949	99.135	0.186	10:40	0.097
14-Jun	100.000	99.806	98.950	99.186	0.236	13:50	0.1152
17-Jul	100.000	99.772	98.965	99.221	0.256	11:26	0.0895
08-Sep	100.000	99.872	98.971	99.195	0.224	9:22	0.0622
09-Oct	100.000	99.772	98.969	99.185	0.216		0.0546
11-Dec			under ice				0.050

### Station : RAU #11

Date	BM1 (m)	BM2 (m)	Gauge Zero (m)	Water Level (m)	Staff Gauge (m)	Time	Q (cms)
28-Apr			under ice				<0.0001
13-May	100.000	100.155	99.284	99.284	0		0
14-Jun	100.000	100.155	99.284	99.376	0.092	12:05	0.035
17-Jul	100.000	100.200	99.249	99.307	0.058		0.009
08-Sep	100.000	100.194	99.247	99.249	0.002	12:55	0.0009
09-Oct	100.000	100.196	99.254	99.254	0		<0.0005
11-Dec			under ice				0

### Station : RAU #12

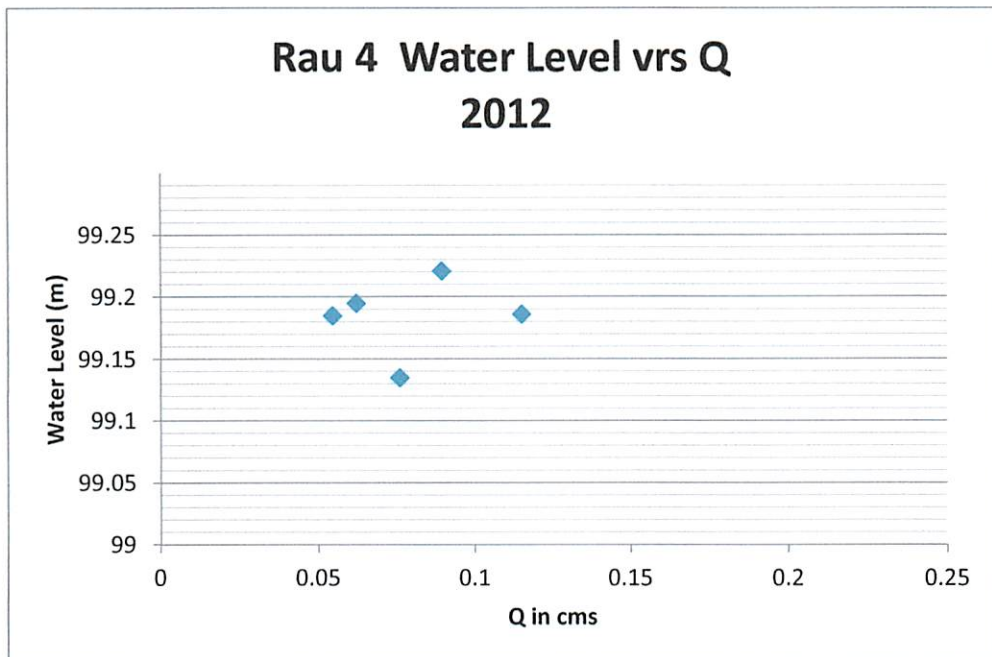
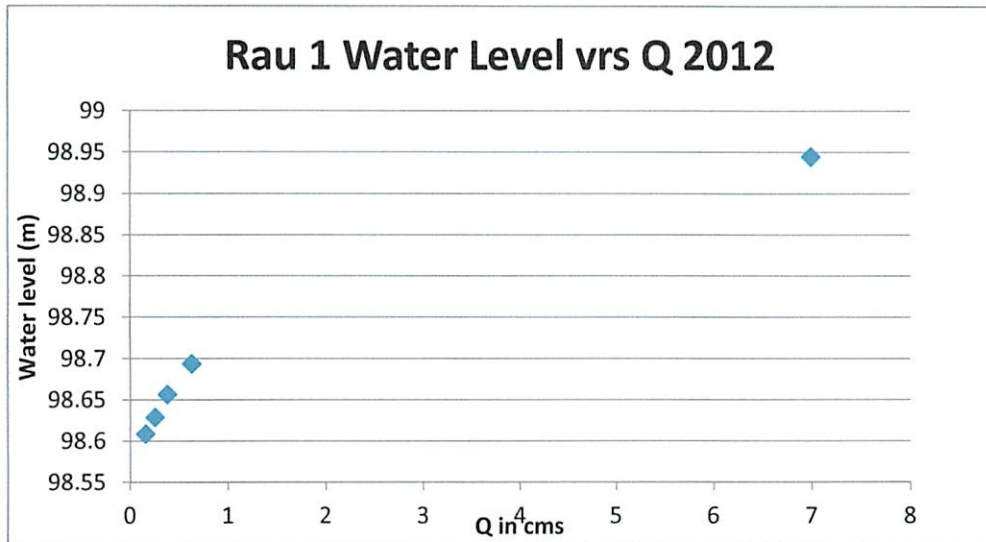
Date	BM1 (m)	BM2 (m)	Gauge Zero (m)	Water Level (m)	Staff Gauge (m)	Time	Q (cms)
28-Apr			under ice				0.0009
13-May	100.000	99.317	98.851	99.008	0.157	8:30	0.0045
14-Jun	100.000	99.315	98.851	99.029	0.178	9:25	0.0103
17-Jul			98.850	99.016	0.166	13:00	0.0076
08-Sep	100.000	99.302	98.849	99.005	0.156	14:00	0.0045
09-Oct	100.000	99.310	98.862	99.007	0.145	12:30	0.0036
11-Dec			under ice				0.0040

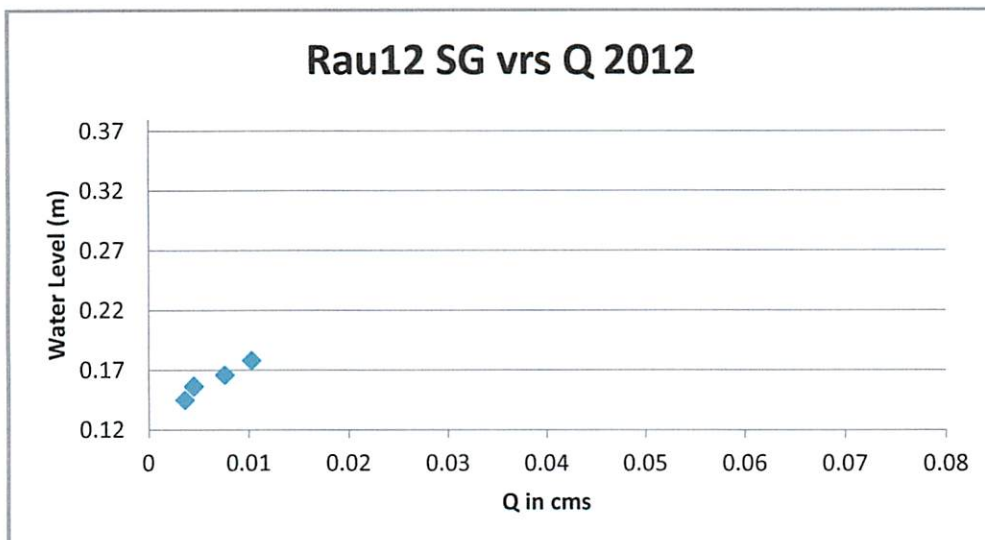
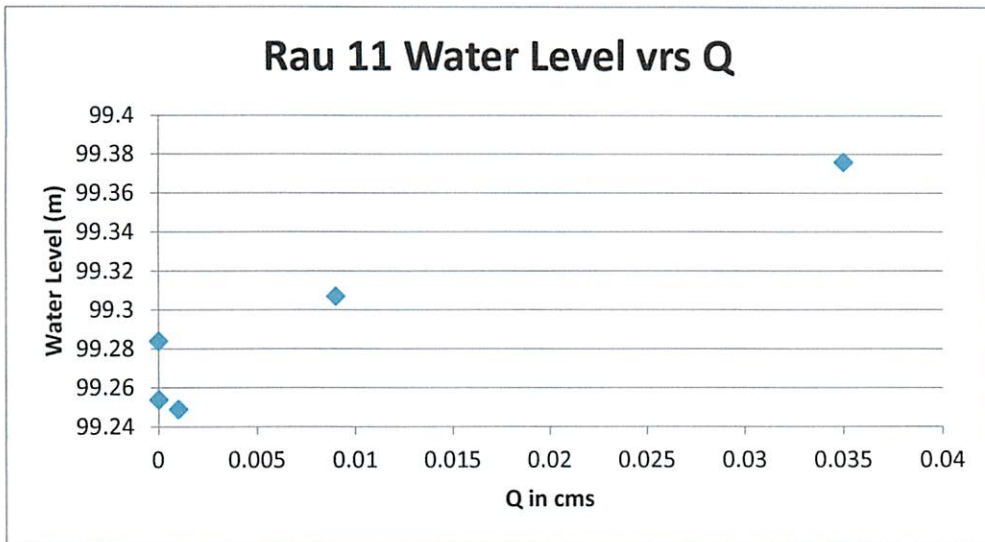
### Station : RAU #13

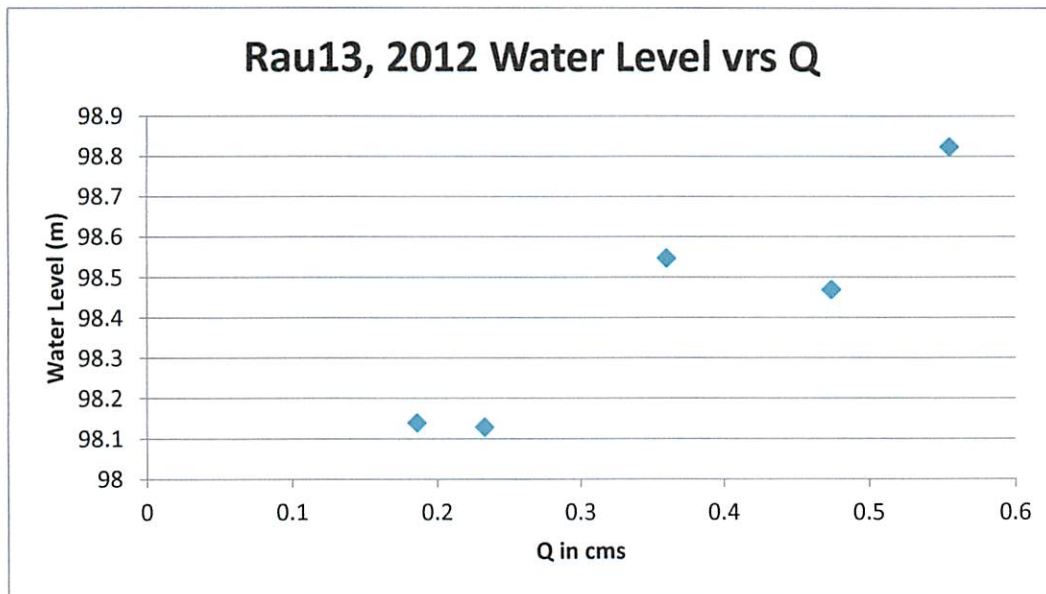
Date	BM1 (m)	BM2 (m)	Gauge Zero (m)	Water Level (m)	Staff Gauge (m)	Time	Q (cms)
28-Apr			under ice				0.078
13-May	100.000	99.642			0.186		0.555
14-Jun	100.000	99.642			0.342		0.474
17-Jul	100.000	99.675			0.291		0.359
08-Sep	100.000	99.636			0.228		0.233
09-Oct	100.000	99.615			0.202		0.186
11-Dec			under ice				0.100

Note: SG re installed June 14 after ice flows removed original installation

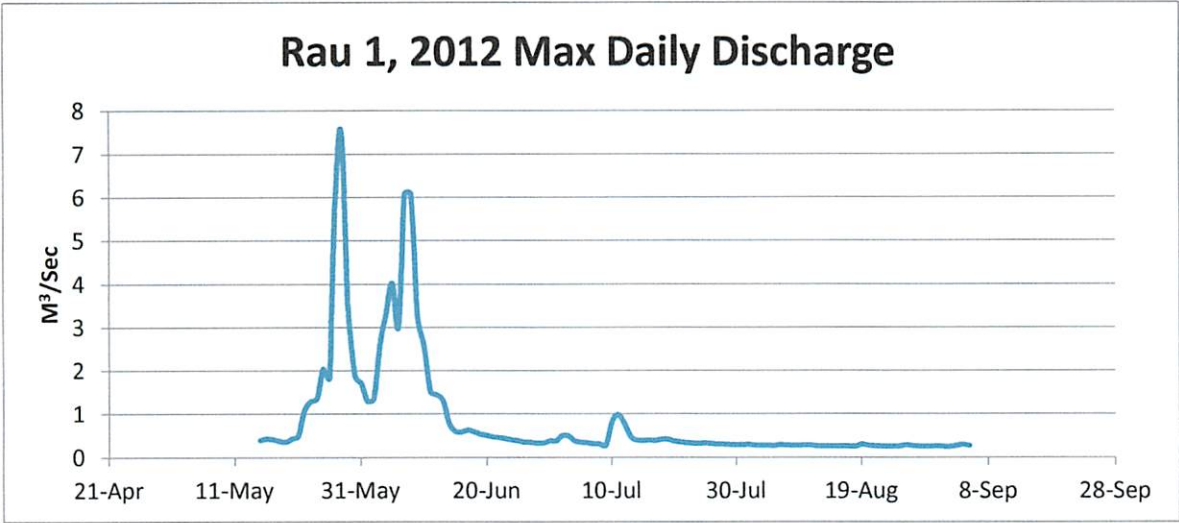
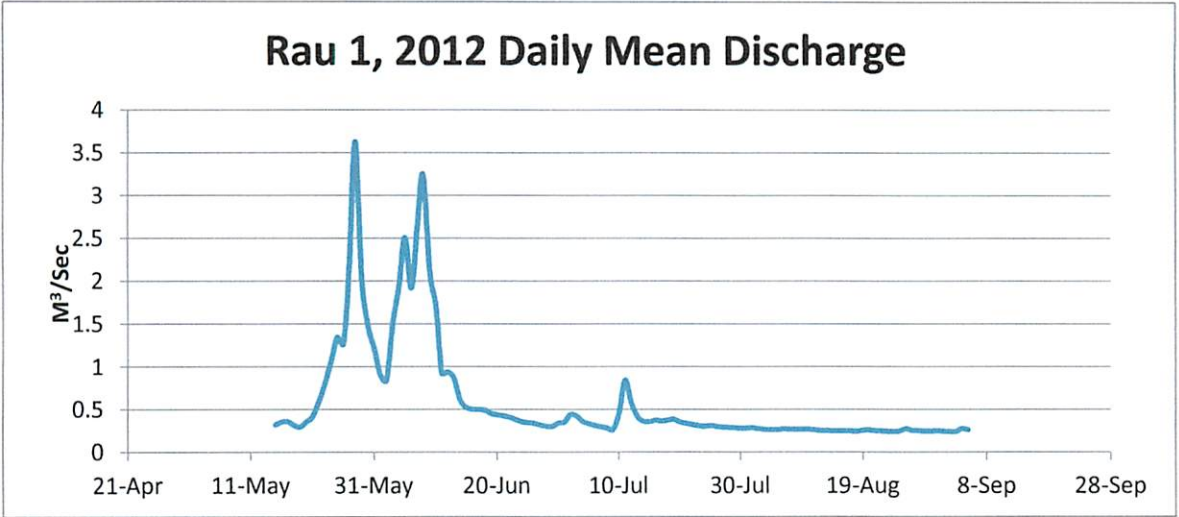
## ATAC RESOURCES - 2012 Discharge Monitoring - Discharge Curves



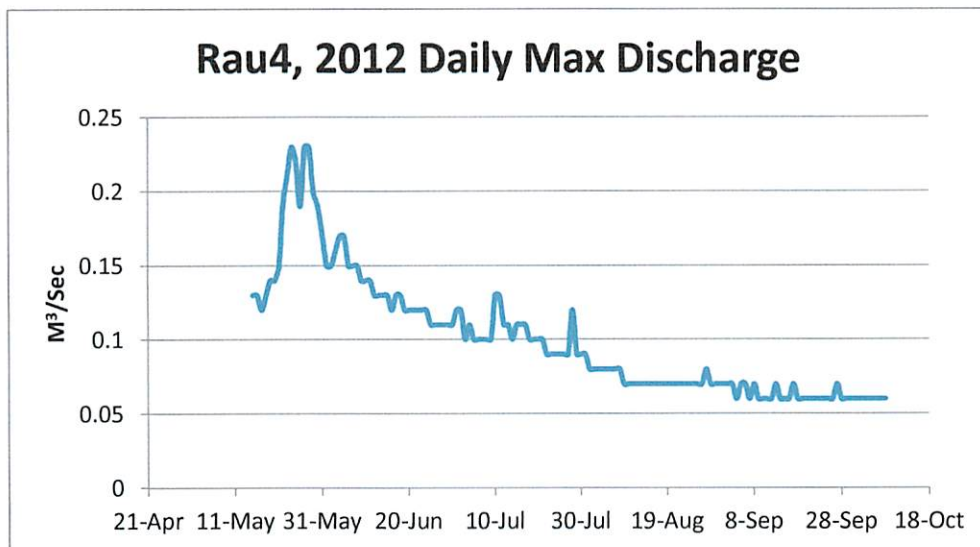
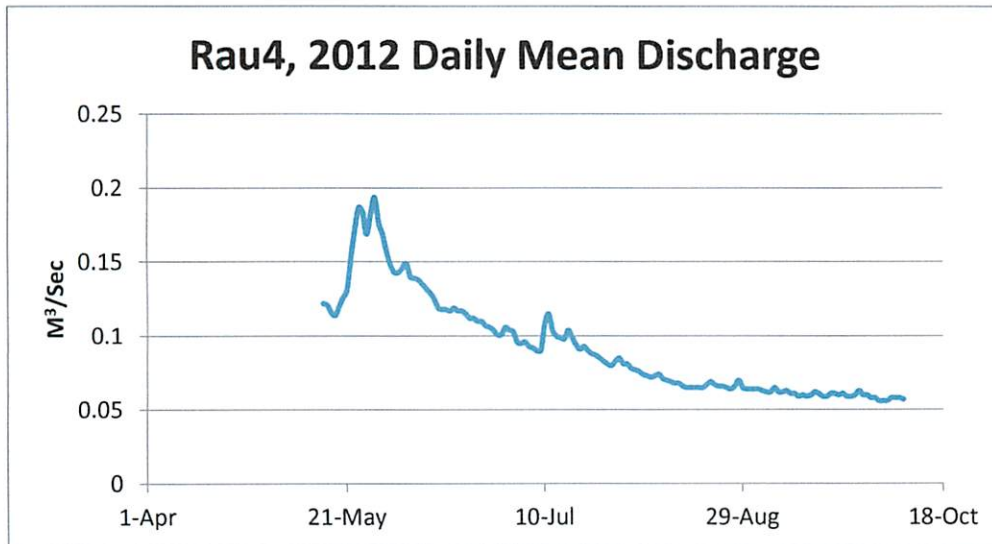




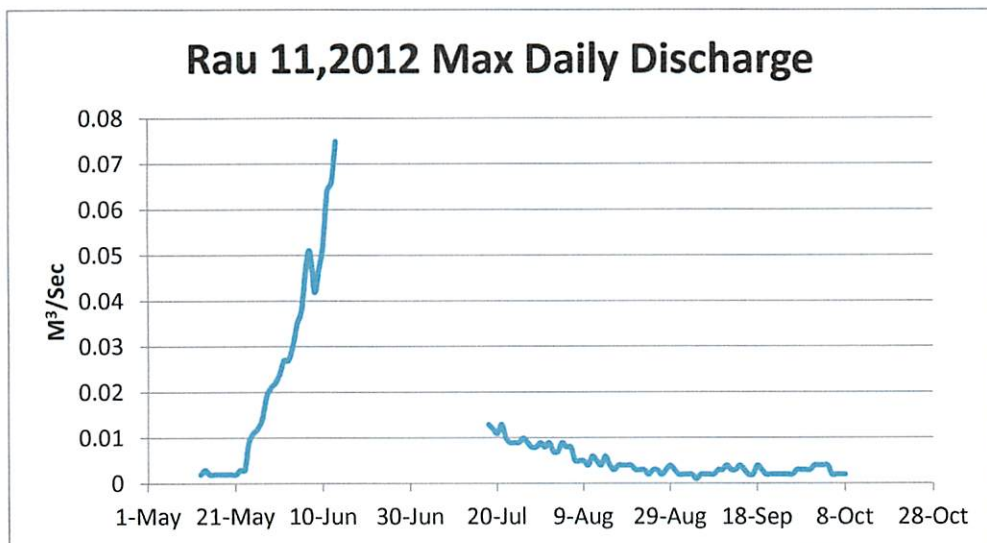
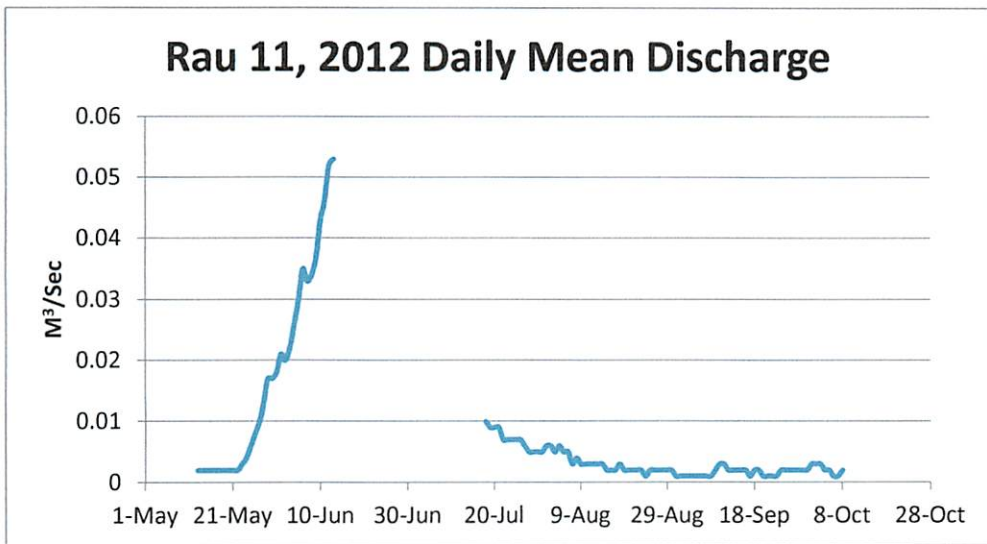
Station RAU #1 2012



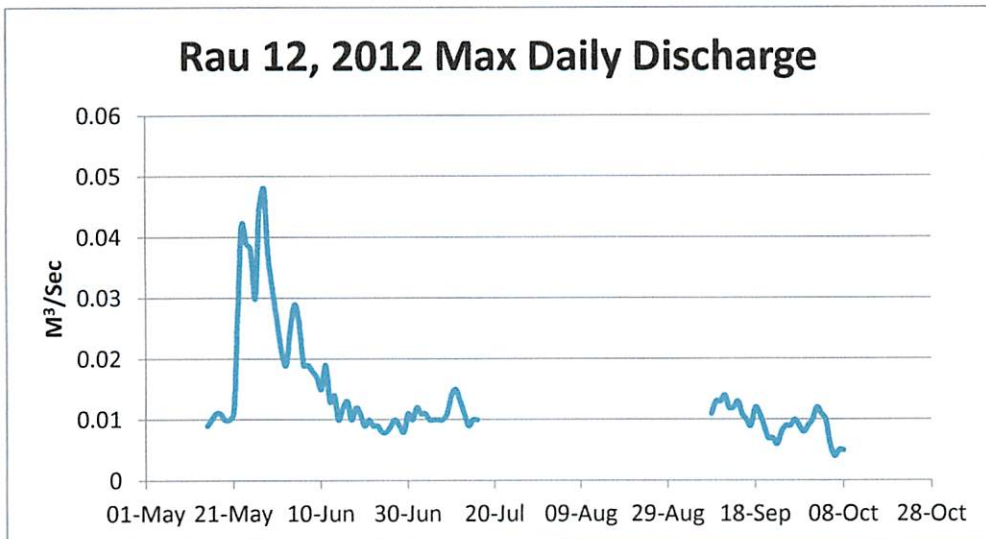
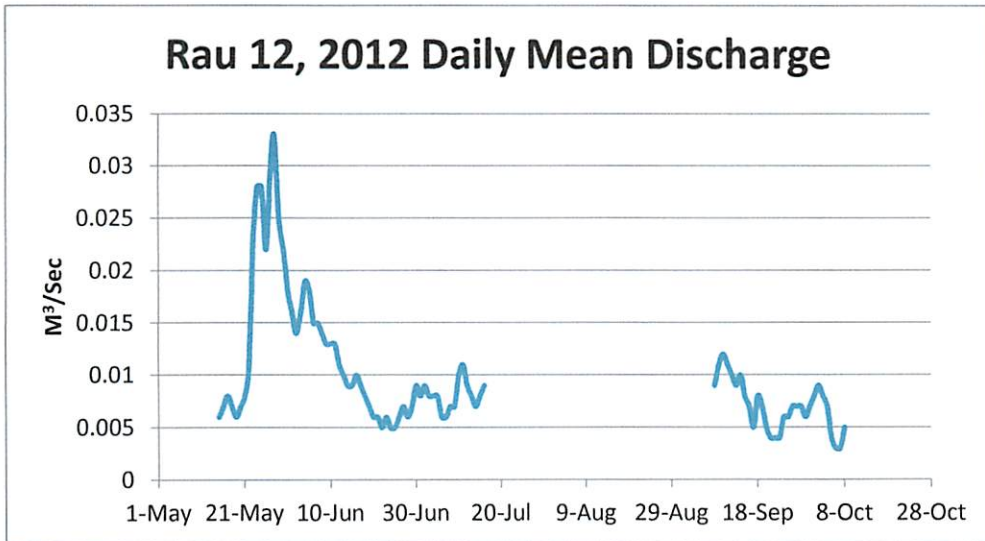
## Station RAU#4, 2012



Station RAU#11, 2012



**Station RAU#12, 2012**



**Station RAU #1, 2012**
**Daily Mean Discharge M<sup>3</sup>/Sec**

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
<b>Date</b>												
1						0.909	0.352	0.286	0.244			
2						0.842	0.44	0.275	0.242			
3						1.52	0.425	0.27	0.24			
4						1.95	0.363	0.265	0.276			
5						2.51	0.335	0.263	0.263			
6						1.92	0.314	0.273				
7						2.62	0.298	0.27				
8						3.25	0.284	0.269				
9						2.12	0.268	0.268				
10						1.71	0.465	0.267				
11						0.928	0.846	0.265				
12						0.947	0.584	0.254				
13						0.866	0.421	0.254				
14						0.613	0.363	0.25				
15					0.322	0.527	0.358	0.25				
16					0.355	0.505	0.375	0.252				
17					0.359	0.501	0.365	0.25				
18					0.317	0.494	0.374	0.245				
19					0.297	0.457	0.387	0.258				
20					0.355	0.44	0.355	0.259				
21					0.417	0.428	0.34	0.254				
22					0.587	0.412	0.326	0.249				
23					0.8	0.385	0.313	0.244				
24					1.07	0.36	0.304	0.241				
25					1.35	0.348	0.312	0.25				
26					1.27	0.34	0.304	0.275				
27					2.25	0.32	0.294	0.256				
28					3.63	0.305	0.293	0.252				
29					1.98	0.301	0.289	0.247				
30					1.47	0.341	0.281	0.245				
31					1.21		0.282	0.251				
<b>Mean</b>					<b>1.061</b>	<b>0.972</b>	<b>0.365</b>	<b>0.258</b>	<b>0.253</b>			
<b>Max</b>					<b>3.630</b>	<b>3.250</b>	<b>0.846</b>	<b>0.286</b>	<b>0.276</b>			
<b>Min</b>					<b>0.297</b>	<b>0.301</b>	<b>0.268</b>	<b>0.241</b>	<b>0.240</b>			

**Station RAU #4, 2012****Daily Mean Discharge M<sup>3</sup>/Sec**

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
<b>Date</b>												
1						0.148	0.104	0.078	0.064	0.058		
2						0.143	0.103	0.077	0.064	0.056		
3						0.143	0.096	0.076	0.063	0.056		
4						0.146	0.095	0.074	0.062	0.056		
5						0.149	0.096	0.073	0.062	0.058		
6						0.14	0.093	0.072	0.065	0.058		
7						0.139	0.092	0.073	0.062	0.058		
8						0.138	0.09	0.074	0.062	0.057		
9						0.135	0.09	0.071	0.063			
10						0.132	0.108	0.07	0.061			
11						0.129	0.115	0.069	0.061			
12						0.125	0.104	0.068	0.059			
13						0.119	0.1	0.068	0.06			
14						0.118	0.099	0.066	0.059			
15					0.122	0.118	0.098	0.065	0.06			
16					0.121	0.117	0.104	0.065	0.062			
17					0.116	0.119	0.099	0.065	0.061			
18					0.114	0.117	0.094	0.065	0.059			
19					0.12	0.117	0.091	0.065	0.059			
20					0.126	0.115	0.093	0.067	0.061			
21					0.131	0.112	0.09	0.069	0.061			
22					0.152	0.112	0.088	0.067	0.06			
23					0.172	0.11	0.087	0.066	0.061			
24					0.187	0.11	0.085	0.066	0.059			
25					0.184	0.107	0.083	0.065	0.059			
26					0.169	0.106	0.081	0.064	0.06			
27					0.183	0.104	0.08	0.066	0.063			
28					0.194	0.101	0.083	0.07	0.06			
29					0.177	0.101	0.085	0.065	0.06			
30					0.169	0.106	0.081	0.064	0.058			
31					0.157		0.081	0.064				
<b>Mean</b>					<b>0.153</b>	<b>0.122</b>	<b>0.093</b>	<b>0.068</b>	<b>0.061</b>	<b>0.057</b>		
<b>Max</b>					<b>0.194</b>	<b>0.149</b>	<b>0.115</b>	<b>0.077</b>	<b>0.065</b>	<b>0.058</b>		
<b>Min</b>					<b>0.114</b>	<b>0.101</b>	<b>0.08</b>	<b>0.064</b>	<b>0.058</b>	<b>0.056</b>		

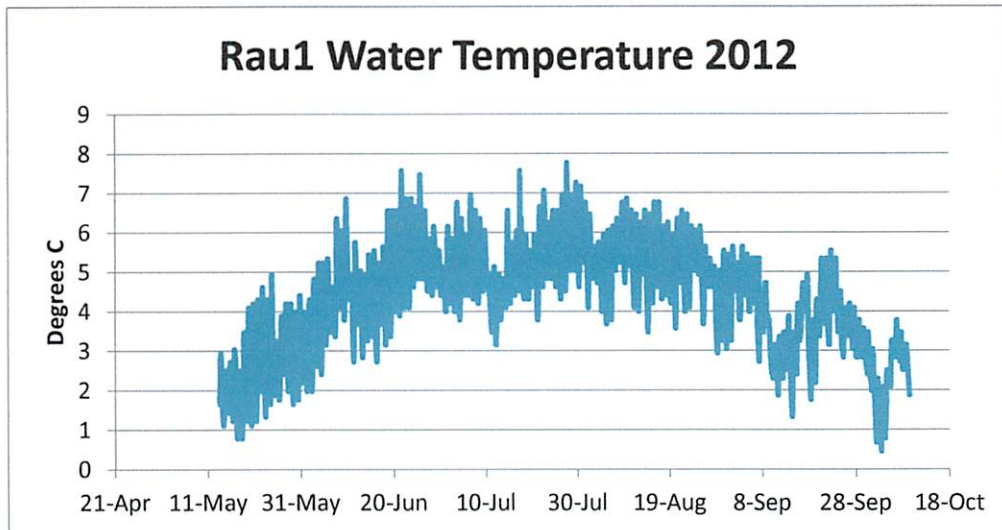
**Station RAU #11, 2012**
**Daily Mean Discharge M<sup>3</sup>/Sec**

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
<b>Date</b>												
1						0.021		0.006	0.001	0.003		
2						0.02		0.006	0.001	0.003		
3						0.022		0.005	0.001	0.003		
4						0.026		0.006	0.001	0.002		
5						0.03		0.005	0.001	0.002		
6						0.035		0.005	0.001	0.001		
7						0.033		0.003	0.001	0.001		
8						0.034		0.004	0.001	0.002		
9						0.037		0.003	0.002			
10						0.043		0.003	0.003			
11						0.046		0.003	0.003			Dry
12						0.052		0.003	0.002			
13					0.002	0.053		0.003	0.002			
14					0.002			0.003	0.002			
15					0.002			0.002	0.002			
16					0.002			0.002	0.002			
17					0.002			0.002	0.001			
18					0.002		0.01	0.003	0.002			
19					0.002		0.009	0.002	0.002			
20					0.002		0.009	0.002	0.001			
21					0.002		0.009	0.002	0.001			
22					0.002		0.007	0.002	0.001			
23					0.003		0.007	0.002	0.001			
24					0.004		0.007	0.001	0.002			
25					0.006		0.007	0.002	0.002			
26					0.008		0.007	0.002	0.002			
27					0.01		0.006	0.002	0.002			
28					0.013		0.005	0.002	0.002			
29					0.017		0.005	0.002	0.002			
30					0.017		0.005	0.002	0.002			
31					0.018		0.005	0.001				
<b>Mean</b>					0.006	0.035	0.007	0.003	0.002			
<b>Max</b>					0.018	0.053	0.01	0.006	0.003			
<b>Min</b>					0.002	0.02	0.005	0.001	0.001			

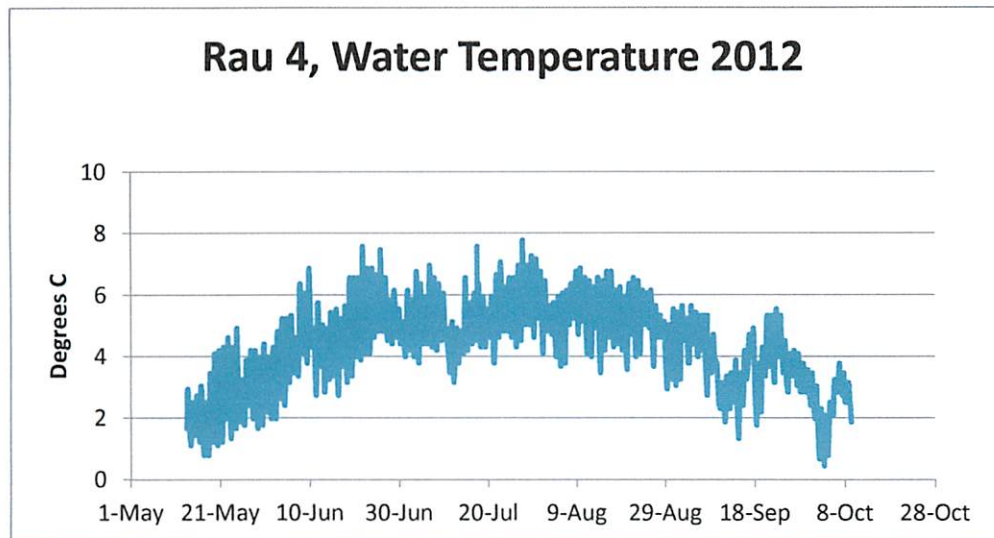
**Station RAU #12, 2012**
**Daily Mean Discharge M<sup>3</sup>/Sec**

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
<b>Date</b>												
1						0.016	0.008			0.008		
2						0.014	0.009			0.009		
3						0.016	0.008			0.008		
4						0.019	0.008			0.007		
5						0.018	0.008			0.004		
6						0.015	0.006			0.003		
7						0.015	0.006			0.003		
8						0.014	0.007			0.005		
9						0.013	0.007		0.009			
10						0.013	0.01		0.011			
11						0.013	0.011		0.012			
12						0.011	0.009		0.011			
13						0.01	0.008		0.01			
14						0.009	0.007		0.009			
15					0.006	0.009	0.008		0.01			
16					0.007	0.01	0.009		0.008			
17					0.008	0.009			0.007			
18					0.007	0.008			0.005			
19					0.006	0.007			0.008			
20					0.007	0.006			0.007			
21					0.008	0.006			0.005			
22					0.011	0.005			0.004			
23					0.023	0.006			0.004			
24					0.028	0.005			0.004			
25					0.028	0.005			0.006			
26					0.022	0.006			0.006			
27					0.029	0.007			0.007			
28					0.033	0.006			0.007			
29					0.025	0.007			0.007			
30					0.022	0.009			0.006			
31					0.018				0.007			
<b>Mean</b>					<b>0.017</b>	<b>0.010</b>	<b>0.008</b>		<b>0.007</b>	<b>0.006</b>		
<b>Max</b>					<b>0.033</b>	<b>0.019</b>	<b>0.011</b>		<b>0.012</b>	<b>0.009</b>		
<b>Min</b>					<b>0.006</b>	<b>0.005</b>	<b>0.006</b>		<b>0.004</b>	<b>0.003</b>		

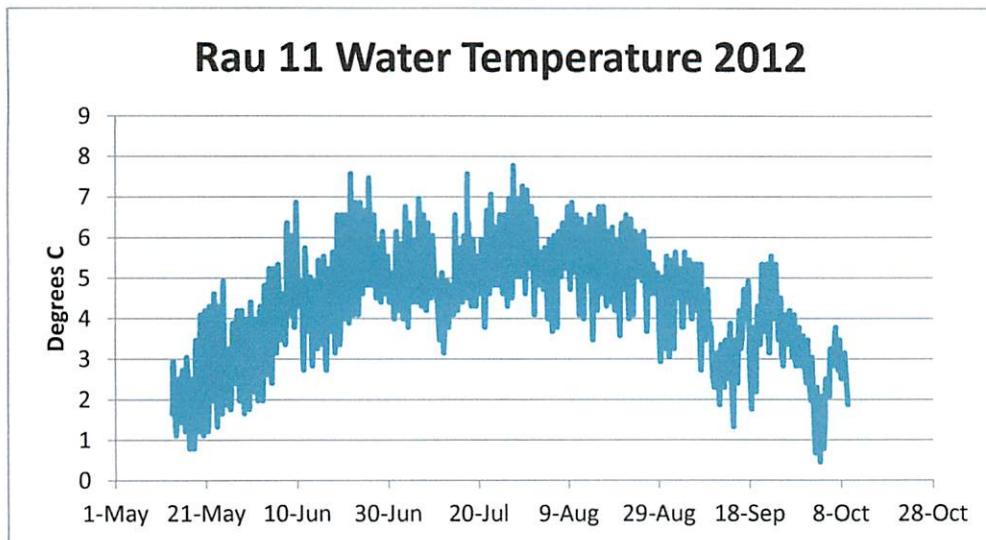
**Station RAU #1 Water Temperatures 2012**



**Station RAU #4 Water Temperatures 2012**



**Station RAU #11 Water Temperatures 2012**



**Station RAU #12 Water Temperatures 2012**

