



MEMORANDUM

TO: Nathan Pence
FROM: Ed Oborny (BIO-WEST)
DATE: **October 17, 2014**
SUBJECT: EA HCP Biological Monitoring – **Week 27**

BIOLOGICAL MONITORING UPDATES

COMAL SYSTEM:

The total system discharge at Comal Springs was 87 cfs (Figure 1) this morning. This week marks the 27th consecutive week below 150 cfs total system discharge, and therefore, the required weekly habitat evaluation was conducted on October 16th. Weekly habitat evaluations and memorandums will continue to occur until total system discharge at Comal Springs/River increases and consistently stays above 150 cfs. HCP species specific low-flow monitoring activities continue to be driven by the <120 cfs trigger. Fall Comprehensive sampling at Comal Springs will be initiated next week. The following activities associated with HCP Biological Monitoring at Comal Springs were completed this week and are anticipated for next week:

COMPREHENSIVE AND CRITICAL PERIOD MONITORING

- October 13-19
 - Weekly photo documentation and habitat evaluation on October 16th.
 - Comal springs riffle beetle counts and cotton lure reset on October 16th.
- October 20-26
 - Weekly photo documentation and habitat evaluation.
 - Flow partitioning transects in the Upper Spring Run area and Landa Lake.
 - Comal Springs salamander sampling.
 - Comal Springs discharge measurements.

SAN MARCOS SYSTEM:

The total system discharge for San Marcos Springs/River is approximately 107 cfs this morning. A Critical Period full sampling event is not triggered until total system discharge declines below 100 cfs. Fall Comprehensive sampling was initiated on Monday, October 13th. To date the following activities associated with San Marcos Comprehensive HCP biological monitoring have been conducted:

- Aquatic vegetation mapping (Spring Lake Dam, City Park, and I-35 study reaches) was initiated.
- Fountain darter presence/absence dip netting (standard and fixed method) was conducted.
- Fountain darter timed dip net surveys were conducted.
- Benthic macroinvertebrate sampling in aquatic vegetation throughout study sections was completed.

San Marcos Comprehensive sampling activities scheduled for next week (October 20-26) include:

- Completion of aquatic vegetation mapping.
- Texas wild-rice physical habitat measurements.
- Fountain darter drop netting at all three study reaches.
- Thermister downloading and fixed-station photography.
- Fish community sampling via seine and SCUBA throughout study reaches.

COMAL SPRINGS/RIVER - WEEK 27 CONDITIONS:

Weekly habitat observations and photo documentation associated with HCP triggered sampling were conducted on Thursday, October 16th.

Discharge, cubic feet per second

Most recent instantaneous value: 87 10-17-2014 05:45 CDT

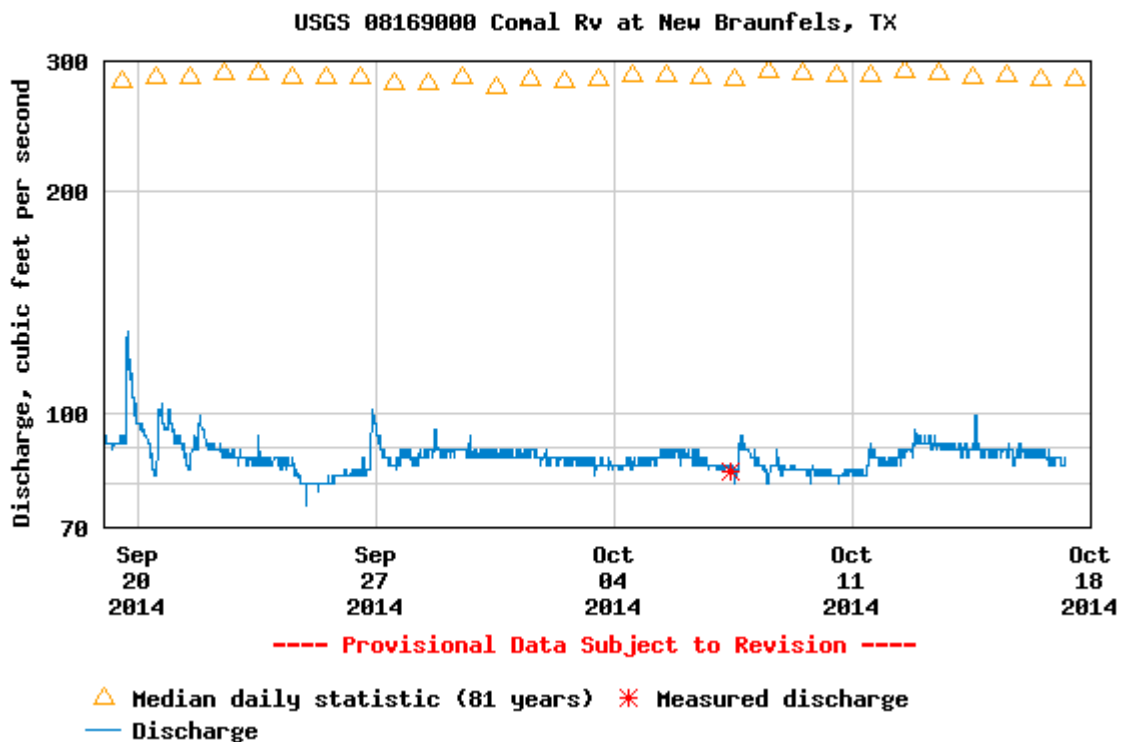


Figure 1: Screen shot of USGS webpage for the *COMAL* gage (08169000) showing total system discharge over the past month.

OBSERVATIONS AND ACTIVITIES:

Discharge exhibited a slight rise throughout the system this past week (Figure 1). As such, surface habitat for the major spring runs, Upper Spring run and Spring Island areas was slightly improved relative to water level and discharge. The main orifices at Spring 1 run continue to be dry on the surface with the exception of one small pool. Increased surface discharge in Spring Run 1 remains evident at the terminus of the newly constructed wall on river left (Figure 2). Algae continues to be prevalent but not extensive in the Upper Spring run reach and exposed substrate is still present in the eastern outfall of Spring Island (Figure 3).

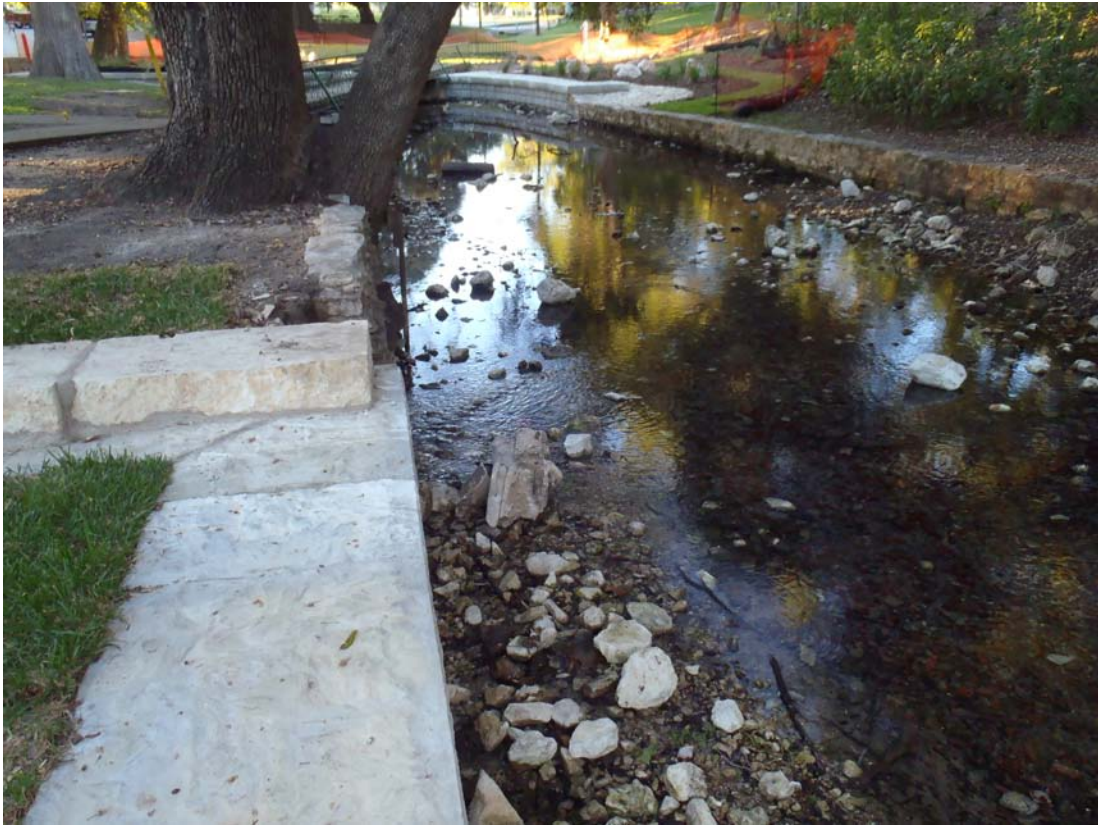


Figure 2: Spring Run 1 surface discharge near terminus of newly constructed wall.



Figure 3: Exposed substrate and red plastic bucket in the eastern outfall of Spring Island.

Figure 4 shows the smiling crew conducting Comal Springs riffle beetle surveys early in the morning in Spring Run 3 of Comal Springs. For the Comal Springs riffle beetle surveys, Table 2 shows the results of counts (adults and larvae) over the past several years of lower than average flows along with the long-term average for all non-critical period sample events. During the October 2014 sampling effort Comal Springs riffle beetle adults and larvae were collected at each of the study locations. As evident in Table 2, counts increased at each study reach over the past month but remained below long-term study averages.



Figure 4: Comal Springs riffle beetle survey in Spring Run 3 of the Comal System.

Table 2: Comal Springs riffle beetle counts (adult and larvae).

Survey Date	Comal Springs Riffle Beetle Counts (Adults and Larvae)			
	Spring Run 3	Western Shoreline	Spring Island	Total – Three sites combined
Long-term average	116	78	75	269
May / June 2013	124	68	97	289
August / Sept. 2013	118	119	100	337
September 2013	109	188	66	363
October 2013	78	63	88	229
April / May 2014	146	104	40	290
May 2014	138	98	42	278
June 2014	119	130	34	283
July 15 th 2014	146	143	*	NA
July 28 th 2014	77	220	57	354
August 13 th 2014	46**	52**	*	NA
September 11, 2014	37	67	30	134
October 16, 2014	71	77	40	188
Lowest count per site since going to cotton lures	37 (Sept. 2014)	20 (May 2012)	20 (May 2010)	--
Lowest Combined Count for all three sites since going to cotton lures (September 2014)				134

*Lures not available for collection during this sample event.

** Six lures at each sample reach had to be moved due to sites becoming too shallow or dry.

Although slightly improved this week with more upwelling areas evident, fountain darter habitat continues to be in poor condition in the Upper Spring Run reach. The condition of floating aquatic vegetation mats in Landa Lake this week was moderate in the upper portion of the lake (Figure 5), heavy in the central portion and almost non-existent in the lower portion of the lake (Figure 6). These mats will continue to need attention during these lower than average flows to prevent unnecessary shading of rooted macrophytes. Quality fountain darter habitat persists in Landa Lake and the New Channel (Figure 7) but not without impacted areas. Figure 8 shows the walls project is in full swing in the New Channel across from the Park Office. The Old Channel continues to support high quality fountain darter habitat with thriving restored native aquatic vegetation (Figure 9).



Figure 5: Floating vegetation mats looking upstream in Landa Lake.



Figure 6: Floating vegetation mats in the downstream portion of Landa Lake.



Figure 7: Large areas of *Cabomba* still present in the New Channel above the confluence with the Old Channel.



Figure 8: Walls construction project in the New Channel.



Figure 9: Restored native aquatic vegetation in Old Channel.

In summary, total system discharge, water level and habitat conditions were all slightly improved this past week. Endangered invertebrate habitat continues to be impacted for surface dwelling invertebrates but it was encouraging to see increased counts of Comal Springs riffle beetles during this month's count. Fountain darter habitat throughout the Comal system continues to support darters, with the restored native aquatic vegetation areas in the Old Channel in excellent condition. Fall Comprehensive sampling is currently underway on the San Marcos system and will be initiated on the Comal System this upcoming week.

Cheers!

Ed