Storm Event,
Chalk Creek at Chalk Bluff
November 28-29, 2012

Watershed and monitoring location:
Chalk Bluff is an ephemeral-turned-perennial stream in the NorthWest Reno area. This highly urbanized tributary to the Truckee River has shown elevated levels of Nitrogen, Phosphorus, and Total Dissolved Solids in the past, inspiring a watershed characterization to investigate potential sources (Reeves, 2010). There is not an upstream sampling site for Chalk Creek, due to the absence of perennial waters above the developed areas.

The sampling location at Chalk Bluff is at the monitoring weir constructed on the TMWA treatment plant property, and the Isco was collocated at the sampling point on the weir. This location is downstream of Highway 80, above Fourth Street on a downstream reach of the creek that is mostly upland sagebrush, whitetop, and instream reeds and willow.

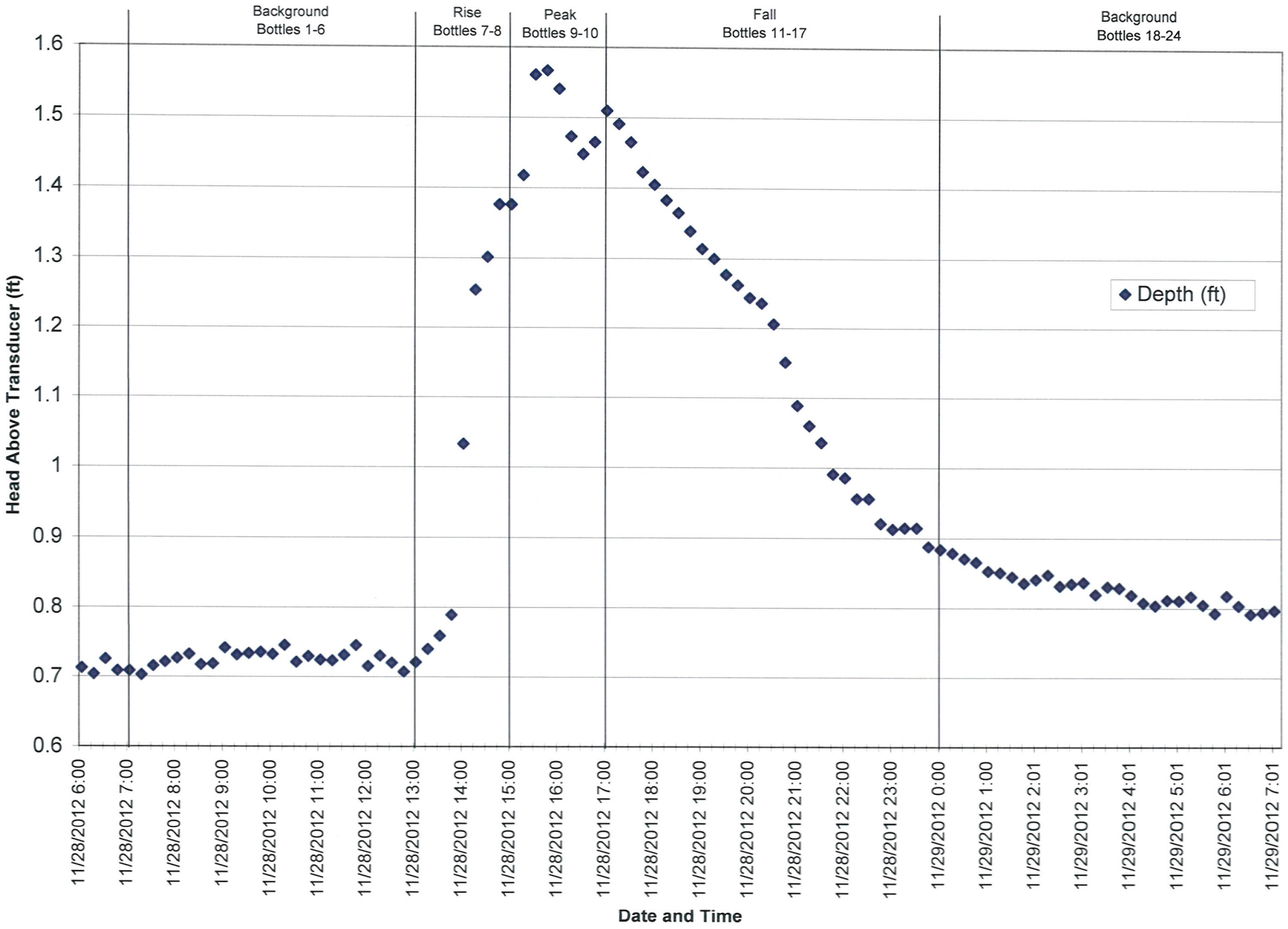
Available on www.truckeeriverinfo.org, the Chalk Creek watershed characterization by JBR exhausted possibilities of a point source discharge, instead highlighting the role the geologic Hunter Creek Sandstone Formation, overlaid with water-loving turf, plays in poor water quality.

As a result of natural soils leaching out from artificial irrigation waters and the clay soil's ability to transport N and P efficiently, Chalk Creek shows a dilution factor during storms with regards to certain pollutants. In this report, data indicating TDS, selenium, nitrate, sulfate, and total nitrogen are diluted by storm flows – reflecting background geology is responsible levels in Chalk Creek. During the characterization, we found that the majority of the TDS in Chalk Creek is indeed present as sulfates.

Discharge results during storm event:
Pollutants found to concentrate during elevated storm flows include Total Kjeldahl Nitrogen and Total Phosphorus, with sample 3 (Peak) having the highest levels. This sample also showed the most color visually (see bottle composition photo).

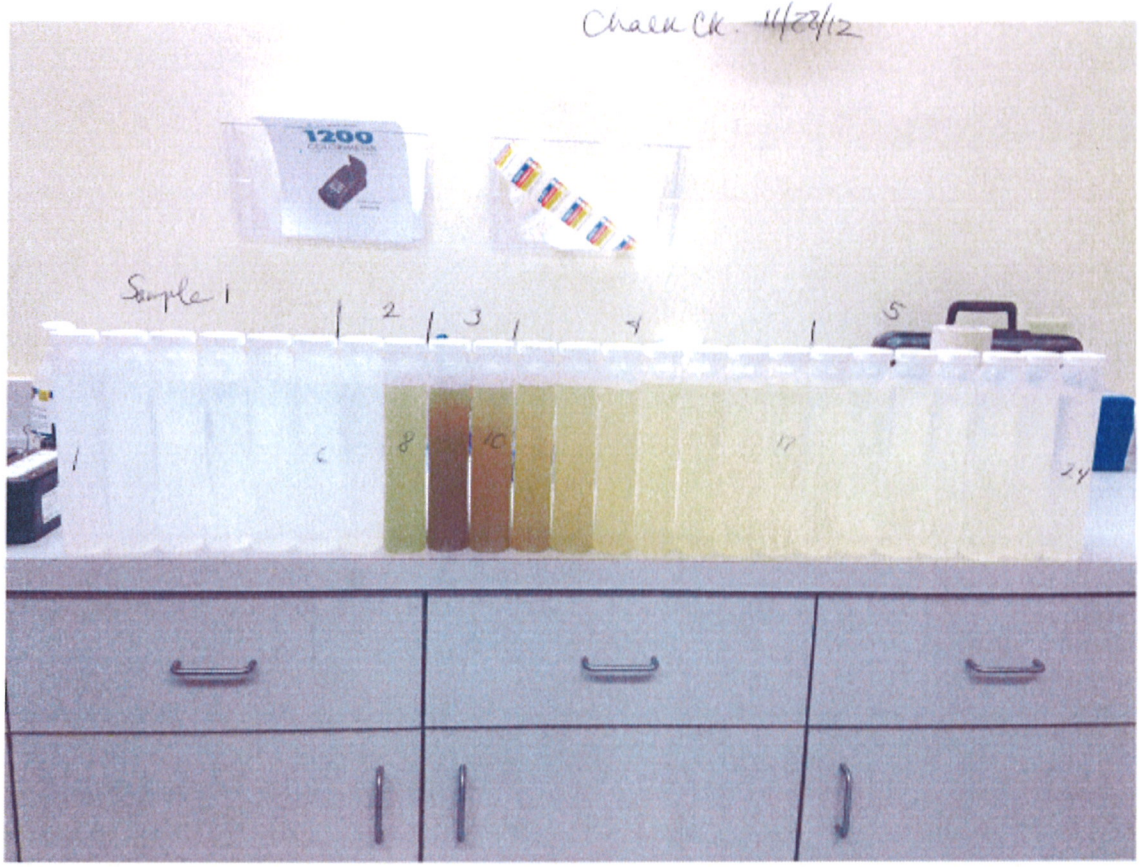
Total nitrogen values indicate the sum of nitrate-N (NO3-N), nitrite-N (NO2-N), ammonia-N (NH3-N) and organically bonded nitrogen. Total Kjeldahl Nitrogen (TKN) is the sum of ammonia-N plus organically bound nitrogen, without nitrate plus nitrite. Nitrite-N was not detected in samples, but nitrate nitrogen was high in background samples and appeared diluted. Deducing from the elevated TKN values during the Peak of the storm, we assume that ammonia and organically bound nitrogen were rinsing through the Chalk Creek system as a result of storm water.

11-28-12 Storm Event Sampling
Chalk @ Chalk Bluff Water Level



Sample splits
Chalk Creek at Chalk Bluff
11/28/12-11/29/12
STORM MONITORING

Lab Sample #	Hydrograph	Bottle #	Time Range	Day and Date	Notes
		1	7:00 am - 8:00 am	Weds 11/28/12	Started ISCO 11/28/12 6:00 am
		2	8:00 am - 9:00 am		
1		3	9:00 am - 10:00 am		
	Background	4	10:00 am - 11:00 am		
		5	11:00 am - 12:00 pm		
		6	12:00 pm - 1:00 pm		
2	Rise	7	1:00 pm - 2:00 pm	11/28/2012	
		8	2:00 pm - 3:00 pm		
3	Peak	9	3:00 pm - 4:00 pm	11/28/2012	
		10	4:00 pm - 5:00 pm		
4		11	5:00 pm - 6:00 pm		
		12	6:00 pm - 7:00 pm		
		13	7:00 pm - 8:00 pm	11/28/2012	
	Fall	14	8:00 pm - 9:00 pm		
		15	9:00 pm - 10:00 pm		
		16	10:00 pm - 11:00 pm		
		17	11:00 pm - 12:00 am		
		18	12:00 am - 1:00 am	11/29/2012	
5	Background 2	19	1:00 am - 2:00 am		
		20	2:00 - 3:00 am		
		21	3:00 am-4:00 am	11/29/2012	
		22	4:00 am - 5:00 am		
		23	5:00 am - 6:00 am		
		24	6:00 am - 7:00 am		



Sample results
Chalk Creek at Chalk Bluff
11/28/12-11/29/12

Lab Sample #	Hydro Limb	TDS (mg/L)	Selenium (mg/L)	NO2-N (mg/L)	NO3-N (mg/L)	TKN (mg/L)	TN (mg/L)	SO4 (mg/L)	Ortho-P (mg/L)	Total P (mg/L)
1	Background	2600	0.017	<0.25	4.4	0.43	4.9	1400	<0.50	0.33
2	Rise	2500	0.015	<0.25	4.4	1.1	5.5	1300	<0.50	0.52
3	Peak*	1100	0.016	<0.25	1.7	1.9	3.6	600	<0.50	1.1
4	Fall	2200	0.016	<0.25	1.8	1.5	3.3	1200	<0.50	0.7
5	Background 2	2500	0.015	<0.25	3.4	0.72	4.1	1300	0.53	0.42