

Technical Memorandum BCWA



Date: January 27, 2016
To: Bear Creek Watershed Association
From: Russell N. Clayshulte, Manager

Re: BCWA TM 2015.06 MBCW 2015 Nutrient Summary

Figure 1	MBCW Total Phosphorus	2
Figure 2	Total Phosphorus Loading Pounds/ Day	2
Figure 3	MBCW Nitrate-Nitrogen	3
Figure 4	MBCW Ammonia-Nitrogen	3
Figure 5	MBCW Total Nitrogen	4
Figure 6	Total Nitrogen Loading Pounds/ Day	4
Table 1	MBCW Seasonal Nutrient Averages	1

The BCWA monitors a series of P3 stations located within the middle section of the Bear Creek Watershed. In 2015, samples were collected from May through October. The full data results are contained in the 2015 Bear Creek Master Spreadsheet. These P3 monitoring programs focus on characterizing water quality of surface waters in the Turkey Creek and Bear Creek drainages of the watershed. The monitoring plan is detailed in the *Bear Creek Sample Analysis Plan*, which is updated annually and posted on the Association website monitoring page. The BCWA collects limited flow data at monitoring sites to determine potential nutrient loading problem areas. The nutrient data shows three areas along the mainstem of Bear Creek where elevated nutrients are commonly measured: the mainstem of Bear Creek between Golden Willow and the Keys on the green (Upper Bear Creek), downtown Evergreen, and below Idledale. The Tributaries with elevated nutrient loading are Troublesome drainage, Cub Creek drainage and Mt. Vernon drainage. Upper Bear Creek, Troublesome and Mt. Vernon are addressed in *BCWA WQSD02 Upper Bear*, *BCWA WQSD01 Troublesome* and *BCWA WQSD04 Mt Vernon*. The BCWA has determined that sufficient nitrate and ammonia nitrogen data has been collected in the watershed and will focus beginning in 2016 on total nitrogen and total phosphorus pairs.

Table 1 MBCW Seasonal Nutrient Averages

	Site ID	Site Location by Stream Segment	Seasonal Average			
			TN Ug/l	NO3-NO2 Ug/l	Ammonia Ug/l	T Phos Ug/l
Segment 1a	Site 58	Bear Creek above Singing River Ranch	234	86	10	23
	Site 2a	Golden Willow Road UBC	209	51	14	26
	Site 3a	Above Evergreen Lake at CDOW Site	232	62	20	36
Segment 3	Site 25	Vance Creek (Mt. Evans Wilderness drainage)	209	29	15	26
	Site 77	Witter Gulch	429			57
	Site 78	Buffalo Creek	512			50
Segment 1e	Site 5	Above EMD WWTP, CDOW downtown site	273	85	29	33
	Site 8a	Bear Creek Cabins at CDOW Site	370	124	58	41
	Site 9	O'Fallon Park, west end at CDOW Site	403	191	42	42
	Site 12	Lair o' the Bear Park, at CDOW site	481	285	31	50
	Site 13a	Below Idledale, Shady Lane at CDOW site	501	286	27	69
	Site 14a	Morrison Park west, CDOW Site	475	274	26	46

	Site ID	Site Location by Stream Segment	Seasonal Average			
			TN Ug/l	NO3-NO2 Ug/l	Ammonia Ug/l	T Phos Ug/l
Segment 4a	Site 34	Mt Vernon Drainage, Morrison	1,703	1,364	28	56
Segment 5	Site 35	Cub Creek, Upstream @ Brookforest Inn	325	220	19	34
	Site 50	Cub Creek, Upstream of Cub Creek Park	429	177	36	86
	Site 64	Troublesome at Culvert above West Jeff	640	283	26	58
	Site 79	Upper West Troublesome Below West Jeff	1,370			24
	Site 80	Troublesome below confluence	1,952			81
	site 32	Troublesome Mouth	1,440	825	210	125
Segment 6a	Site 18	South Turkey Creek Aspen Park	665	132	40	69
Segment 6b	Site 19	North Turkey Creek Flying J Ranch Bridge	445	211	19	36

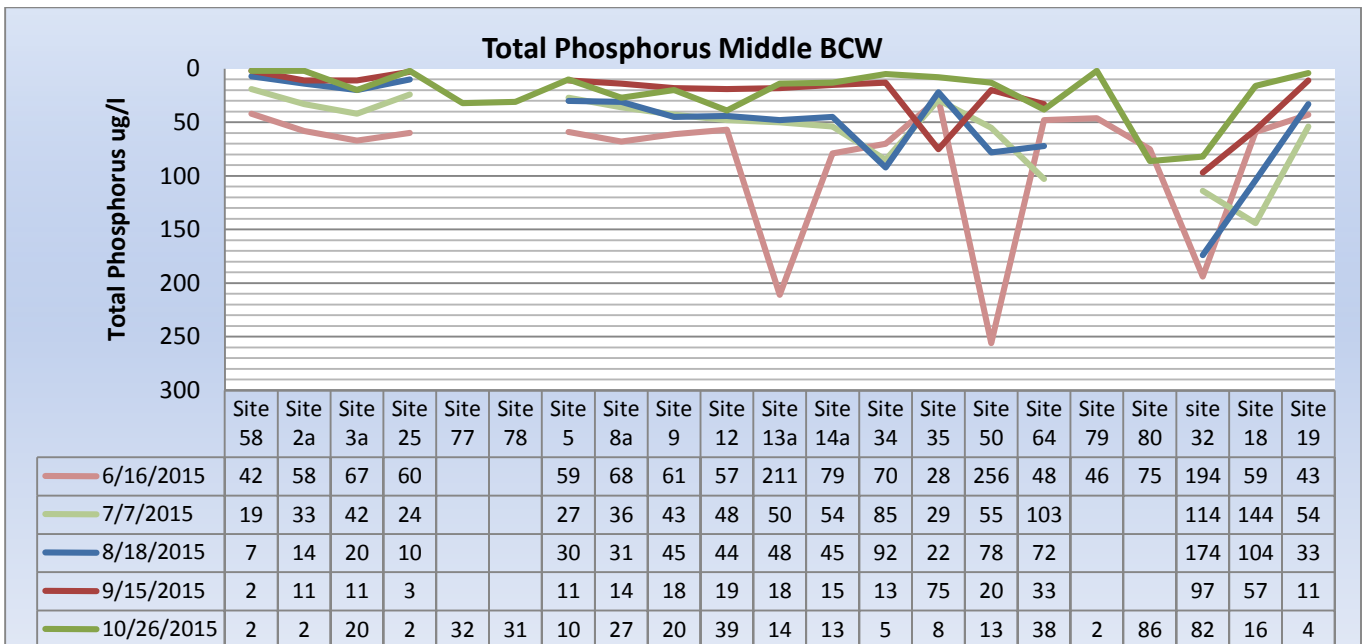


Figure 1 MBCW Total Phosphorus

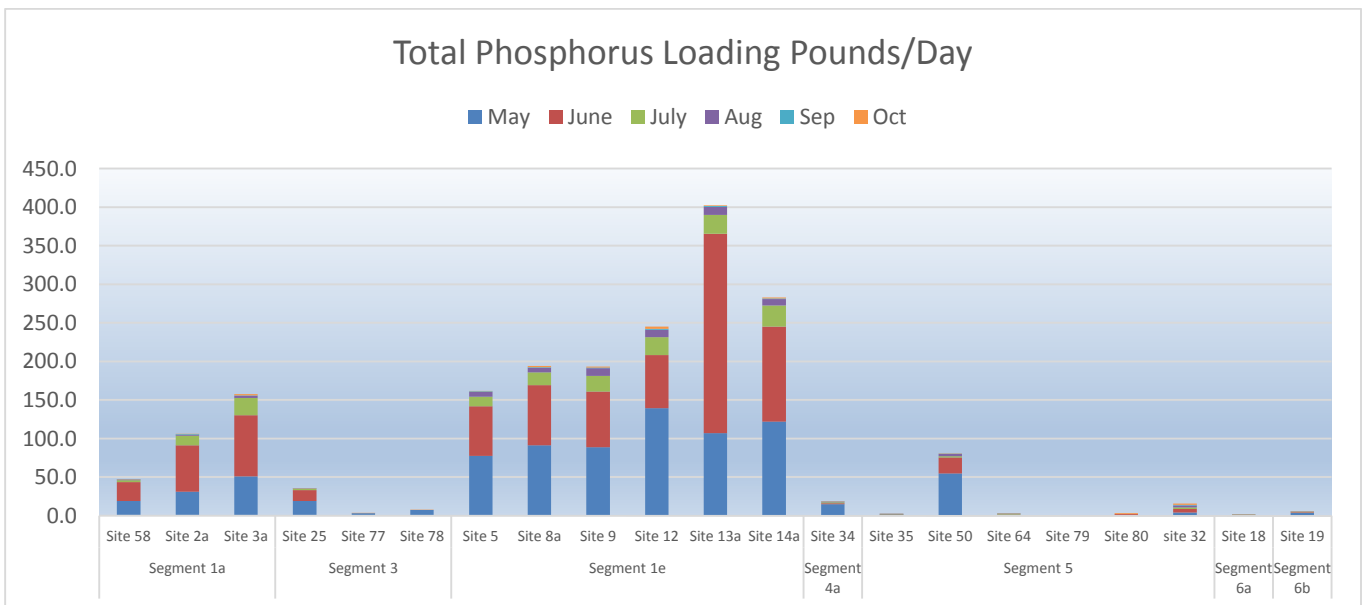


Figure 2 Total Phosphorus Loading Pounds/ Day

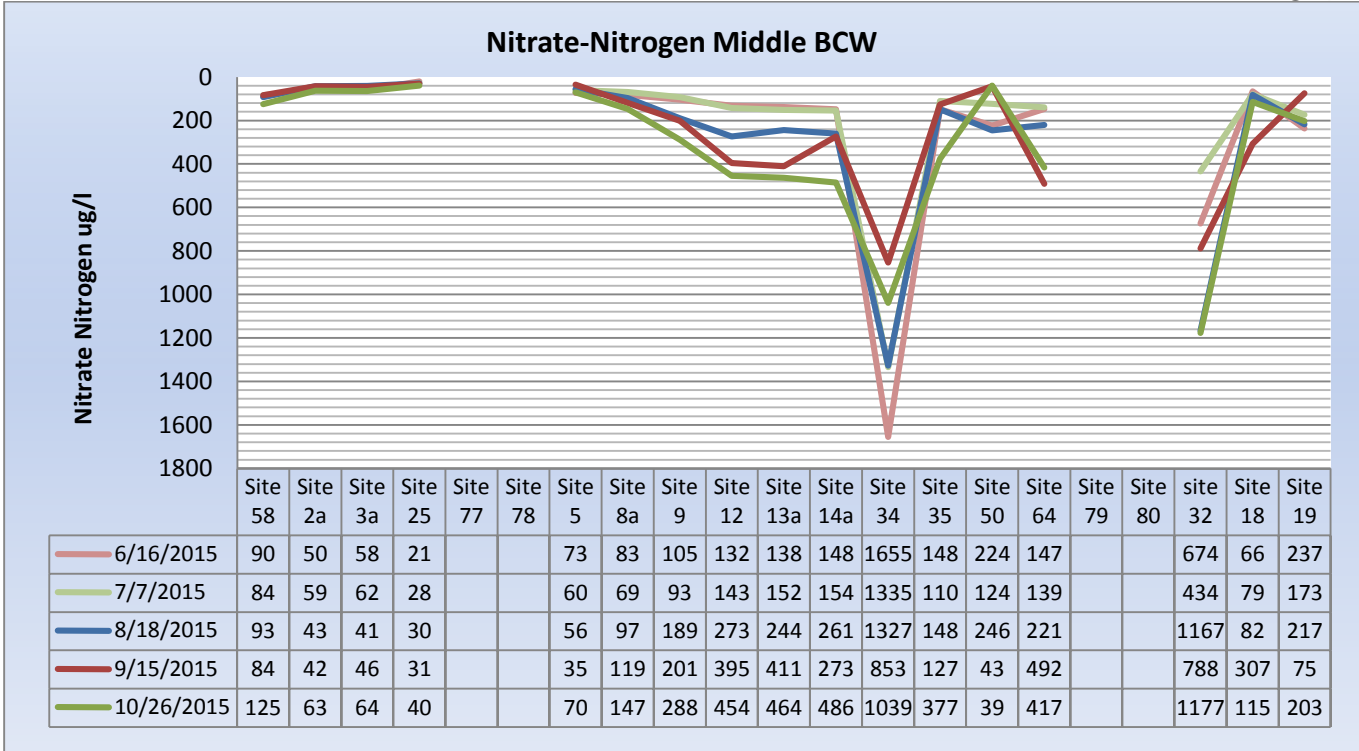


Figure 3 MBCW Nitrate-Nitrogen

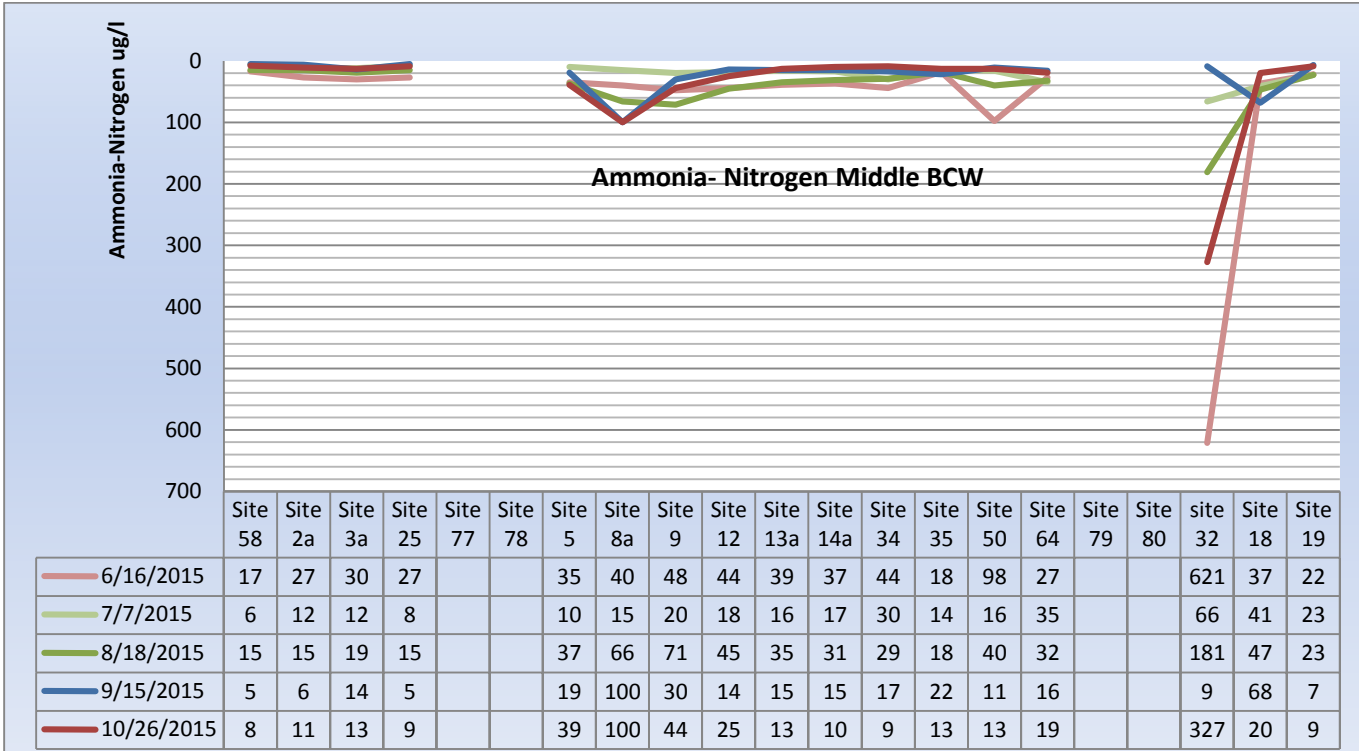


Figure 4 MBCW Ammonia-Nitrogen

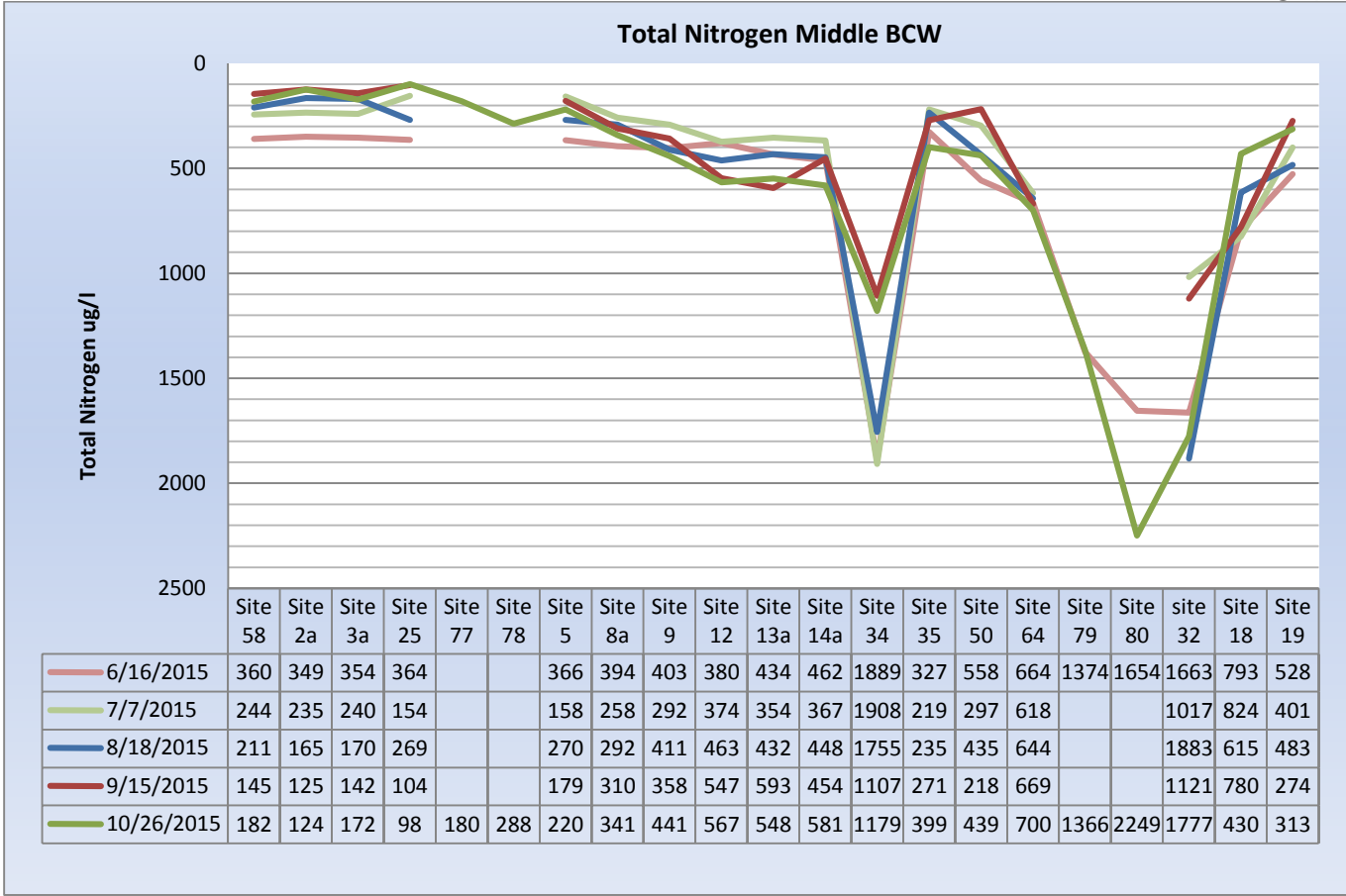


Figure 5 MBCW Total Nitrogen

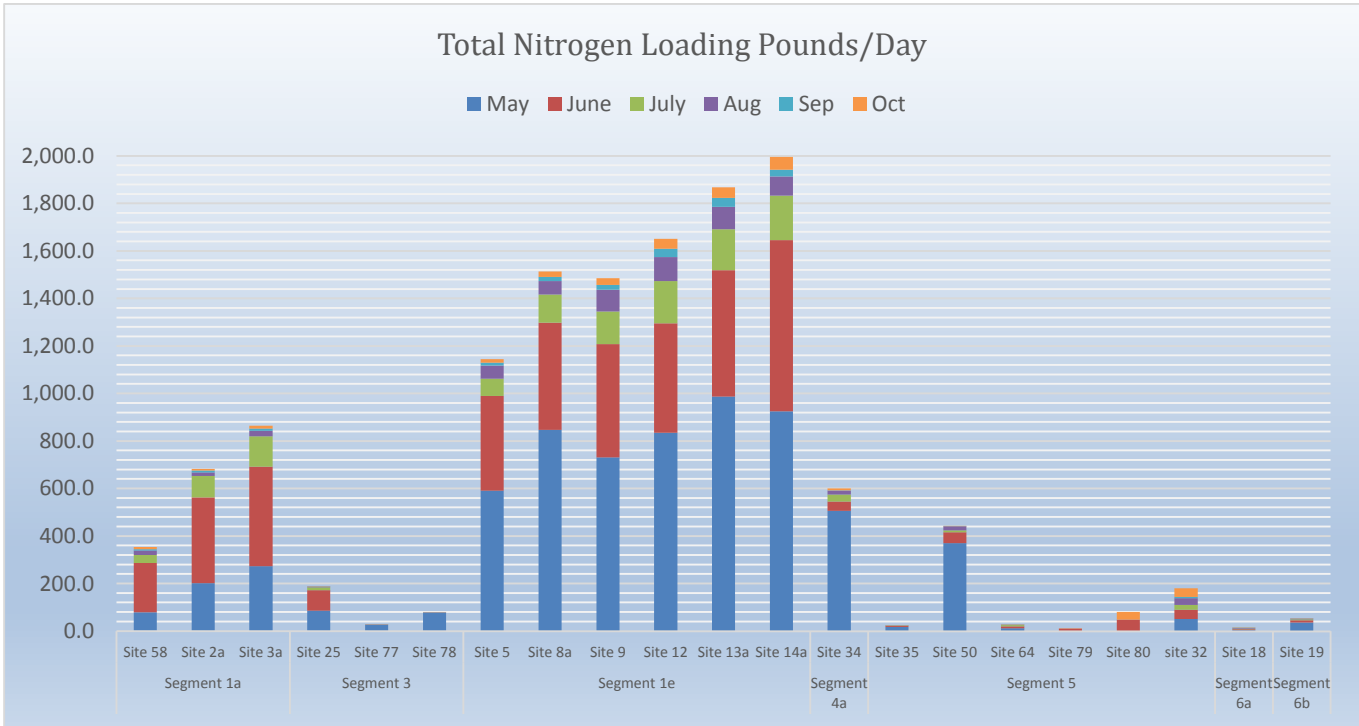


Figure 6 Total Nitrogen Loading Pounds/ Day