Table 1
Comparison of 2006 Big Dry Creek Data to Stream Standards

Parameter		Stream Standard	Unit	# of Instream Samples[1]	# of Exceedances[3]	Does 85th (or 50th) Percentile Value for 2005 Exceed Standard?[4]	% Occurrence of Exceedances	# Sample Days Standard Exceeded	Comment
Physical and Biological									
DO		5	mg/L	96	0	no	0%	0	
pH		6.5-9.0	SU	96	0	no	0%	0	
Fecal Coliform	(Historic Basic Standard, Rec. Class 1b)	325	#/100mL	96	49	no	51%		Fecal coliform has been dropped from the Basic Standards (Reg. 31), but still appears in Reg. 38 for Big Dry Creek.
Fecal Coliform	(Historic Temporary Mod)	380		96	44	no	46%		Fecal coliform has been dropped from the Basic Standards (Reg. 31), but still appears in Reg. 38 for Big Dry Creek.
E. Coli	(Basic Standard, Rec. Class 1b)	205	#/100mL	96	55	yes	57%		
E. Coli	(Temporary Mod)	401		96	35	no	36%		
Ammonia	acute	TVS	mg/L	96	0	no	0%	0	
Ammonia	chronic	0.1	mg/L	96	0	no	0%	0	
Chlorine	acute	0.019	mg/L	0	N/A	N/A	N/A	N/A	
Chlorine	chronic	0.011	mg/L	0	N/A	N/A	N/A	N/A	
Cyanide		0.005	mg/L	32	3	no	9%	1	On 3/9/06 at bdc0.5, bdc1.0 and bdc1.5.
Sulfide		0.002	mg/L	0	N/A	N/A	N/A	N/A	
Boron		0.75	mg/L	96	0	no	0%	0	
Nitrite		4.5	mg/L	96	0	no	0%	0	
Metals (Dissolved unless otherwise noted)[2]									
Arsenic (Trec)	Acute	100	µg/L	32	1	no	3%	1	On 3/9/06 at bdc0.5.
Beryllium	chronic	100	µg/L	0	N/A	N/A	N/A		
Cadmium	Acute	12	µg/L	32	0	no	0%		
Cadmium	Chronic	4.5	µg/L	32	0	no	0%		
Chromium III	Acute	1230	µg/L	32	0	no	0%		
Chromium III	Chronic	160	µg/L	32	0	no	0%		
Chromium VI	Acute	16	µg/L	32	0	no	0%		
Chromium VI	Chronic	11	µg/L	32	0	no	0%		
Copper	Acute	33	µg/L	32	0	no	0%		
Copper	Chronic	20	µg/L	32	1	no	3%	1	On 6/15/06 at bdc3.0.
Iron (Trec)	Chronic	1000	µg/L	96	18	no	19%	5	On 3/9/06 and 9/14/06 at most locations. At a few locations on 7/13/06, 10/19/06 and 12/14/06.
Lead	Acute	177	µg/L	32	0	no	0%		
Lead	Chronic	6.9	µg/L	32	0	no	0%		
Mercury (tot)	Acute	0.01	µg/L	32	1	See note	See note	See note	All samples were below detection limits with the exception of one sample collected at bdc6.0 on September 14, 2006. Mercury has not historically been detected at this site.
Manganese	Acute	4083	µg/L	32	0	no	0%		
Manganese	Chronic	2256	µg/L	32	0	no	0%		
Nickel	Acute	1037	µg/L	32	0	no	0%		
Nickel	Chronic	115	µg/L	32	0	no	0%		
Selenium	Acute	18	µg/L	96	2	yes	2%	2	During 1/12/06 and 2/9/06 at bdc1.5.
Selenium	Chronic (Underlying)	4.6	µg/L	96	48	yes	50%	12	All 12 sampling events included selenium samples at multiple locations above the chronic standard.
Selenium	Chronic (Temp. Mod.)	11.0	µg/L	96	2	no	2%	2	During 1/12/06 and 2/9/06 at bdc1.5.
Silver	Acute	10	µg/L	32	0	no	0%		
Silver	Chronic	1.6	µg/L	32	0	no	0%		
Zinc	Acute	260	µg/L	32	0	no	0%		
Zinc	Chronic	262	µg/L	32	0	no	0%		

[1]Based on data collected at all in-stream sampling locations along Segment 1 of Big Dry Creek.
[2]Hardness value of 256 mg/L used to calculated table value standards based on the hardness value used by CDPHE in calculating effluent limits for the cities of Broomfield and Westminster. A hardness value of 337 mg/L was used by CDPHE for the city of Northglenn. Actual mean hardness for the stream during 2006 was 342 mg/L.
[3]Includes multiple exceedances that occurred on the same day at different stations for some parameters.
[4]The 85th percentile value is used by the CWQCD to assess whether streams attain most water quality standards. The 50th percentile value is used for metals with standards in the total form. Geometric means are used for e. coli/fecal coliform. For regulatory purposes, the last five years of data would be included in calculating the 85th and 50th percentile values.

Table 2. Summary Statistics for Big Dry Creek Instream Samples for 2006

Analyte (reported in mg/L unless otherwise noted)	Number of Samples	Mean (or Geometric Mean)	Max	Min	St. Dev	85th%	50th %	15th%
ALKALINITY	96	152.9	324.0	52.0	62.7	212.0	142.0	92.5
ARSENIC Tot. Rec.	32	0.01011	0.29350	0.00003	0.05172	0.00177	0.00095	0.00028
ARSENIC, D	32	0.00100	0.00253	0.00038	0.00053	0.00138	0.00097	0.00047
BOD	96	2.3	16.0	Non-detect	2.6	4.7	2.5	1.0
BORON	96	0.27	0.53	Non-detect	0.12	0.41	0.26	0.14
CADMIUM, D	32	0.00004	0.00014	Non-detect	0.00003	0.00008	0.00002	0.00002
CALCIUM	96	96.2	186.8	30.8	34.3	131.7	98.9	58.3
CALCIUM AS CACO3	96	241.2	467.0	77.0	86.6	334.3	247.0	145.5
CALCULATED UNIONIZED AMMONIA	88	0.002	0.041	Non-detect	0.005	0.003	0.000	0.000
CHLORIDE	96	113.7	495.9	16.9	83.8	175.3	96.8	47.9
CHLOROPHYLL-a (ug/L)	96	14.3	118.2	Non-detect	17.8	20.9	9.6	4.6
CHLOROPHYLL-a, corrected (ug/L)	94	11.7	105.9	Non-detect	16.0	17.5	7.0	3.7
CHROMIUM, D	32	0.0006	0.0024	Non-detect	0.0004	0.0009	0.0006	0.0003
COLIFORM, FECAL (#/100 mL)	96	231	2510	Non-detect	592	1021	338	50
CONDUCTANCE, SPECIFIC (us/cm)	96	1175	2556	235	552	1778	1183	547
COPPER, D	32	0.0043	0.0230	0.0009	0.0047	0.0052	0.0032	0.0014
CYANIDE	32	0.002	0.007	Non-detect	0.001	0.004	0.002	0.002
DO	96	10.13	14.10	3.50	1.96	12.03	10.35	8.16
E. COLI (#/100 mL)	96	208	2419	Non-detect	457	854	261	48
FLOW (cfs)	55	17.8	59.0	Non-detect	14.2	32.0	16.8	0.5
HARDNESS	96	342.6	696.7	98.0	131.6	482.6	348.8	197.0
IRON, D	96	0.020	0.069	0.003	0.012	0.033	0.017	0.009
IRON, Tot. Rec.	96	0.686	6.103	Non-detect	0.793	1.189	0.484	0.145
LEAD, D	32	0.001	0.0005	Non-detect	0.0000	0.0005	0.0005	0.0005
MAGNESIUM, D	96	24.901	57.400	5.142	11.663	35.889	24.458	12.365
MANGANESE , D	32	0.1009	0.6600	0.0040	0.1439	0.2270	0.0395	0.0113
MERCURY	32	0.00019	0.00310	Non-detect	0.00053	0.00010	0.00010	0.00010
MOLYBDENUM, D	32	0.004	0.008	Non-detect	0.001	0.005	0.004	0.004
NICKEL, D	32	0.002	0.005	Non-detect	0.001	0.003	0.002	0.001
NITROGEN, AMMONIA	96	0.187	2.040	Non-detect	0.366	0.310	0.050	0.020
NITROGEN, NITRITE	96	0.096	0.611	Non-detect	0.128	0.220	0.033	0.007
NITROGEN, NO3+NO2	96	4.288	13.900	0.020	3.978	9.287	3.610	0.295
pH	96	7.52	8.65	6.62	0.34	7.81	7.55	7.16
PHOSPHORUS, TPO4 (Hach)	95	1.02	4.22	0.060	1.00	2.00	0.86000001	0.12
PHOSPHORUS, ORTHOPHOSPHATE as P, D	96	0.658	3.400	Non-detect	0.848	1.348	0.367	0.006
POTASSIUM, D	96	5.649	11.480	1.822	2.584	8.492	5.647	2.742
SELENIUM, D (Broomfield Lab)	32	0.0031	0.0066	Non-detect	0.0017	0.0048	0.0034	0.0008
SELENIUM, D (ACZ Contract Lab)	96	0.0048	0.0210	0.0002	0.0032	0.0069	0.0047	0.0021
SILVER, D	32	0.0001	0.0008	Non-detect	0.0001	0.0001	0.0000	0.0000
SODIUM, D	96	142.9	386.3	16.6	83.4	225.6	136.4	53.9
SULFATE	95	276.5	708.0	41.7	149.2	396.6	266.7	113.4
TDS	96	773	1678	140	373	1144	765	357
TEMP. (C)	96	11.7	23.9	0.8	7.0	20.2	10.1	4.3
TOC	96	6.5	12.0	1.8	2.4	8.8	6.8	3.5
TSS	96	42.2	450.0	2.9	54.0	68.0	28.1	9.3
TURBIDITY	96	44.6	664.0	2.2	74.0	69.1	28.0	8.7
ZINC, D	32	0.0132	0.0640	0.0018	0.0118	0.0214	0.0110	0.0039

Notes: D=dissolved; values below detection limits replaced with one-half of the detection limit to calculate statistics.

Table 3. Big Dry Creek Quality Assurance Analysis 2006

Field Replicates

Trip Start Date	Station ID	Activity Category	ARSENIC, D	ARSENIC, Tot. Rec.	CADMIUM, D	CHROMIUM, D	COPPER, D	E. Coli (#/100 mL)	IRON, Tot. Rec.	LEAD, D	MANGANESE , D	MERCURY, Tot	MOLYBDENUM , D	NICKEL , D	Nitrogen, Ammonia	Nitrogen, NO3+NO2	SELENIUM , D (Broomfield)	SELENIUM, D (ACZ)	SILVER , D	ZINC , D
15-Jun-06	bdc1.5																	0.0023		
15-Jun-06	bdc1.5	Field Replicate																0.0023		
Relative Percent Diff (%)																		0.00%		
15-Jun-06	bdc3.0														0.060	2.93				
15-Jun-06	bdc3.0	Field Replicate													0.070	2.80				
Relative Percent Diff (%)															15.38%	4.54%				
15-Jun-06	bdc5.0								0.239											
15-Jun-06	bdc5.0	Field Replicate							0.337											
Relative Percent Diff (%)									34%											
14-Sep-06	bdc5.0		0.0012	0.00182	*Non-detect	0.0004	0.00267		1.77	*Non-detect	0.010	*Non-detect	0.0048	0.00202	0.010	0.024	0.00443	0.0051	*Non-detect	0.0105
14-Sep-06	bdc5.0	Field Replicate	0.00118	0.00159	*Non-detect	0.0003	0.00277		1.89	*Non-detect	0.010	*Non-detect	0.0049	0.00218	0.020	0.023	0.00443	0.005	*Non-detect	0.0118
Relative Percent Diff (%)			1.68%	13.49%	0.00%	28.57%	3.68%		6.44%	0.00%	0.00%	0.00%	3.92%	7.62%	66.67%	3.00%	0.00%	1.98%	0.00%	11.66%
14-Dec-06	bdc1.5		0.00042		*Non-detect	0.00113	0.00173			*Non-detect	0.040	*Non-detect	0.0040	*Non-detect (0.001)			0.00227	0.0022	0.00007	0.00182
14-Dec-06	bdc1.5	Field Replicate	0.00047		*Non-detect	0.00166	0.00176			*Non-detect	0.038	*Non-detect	0.0039	0.00101			0.00215	0.0021	0.00010	0.00327
Relative Percent Diff (%)			11.24%		0.00%	37.99%	1.72%			0.00%	5.13%	0.00%	1.77%	0.00%			5.43%	4.65%	35.29%	56.97%
14-Dec-06	bdc2.0							119												
14-Dec-06	bdc2.0	Field Replicate						153												
Relative Percent Diff (%)								25.00%												
14-Dec-06	bdc3.0														0.040	3.76				
14-Dec-06	bdc3.0	Field Replicate													0.040	3.76				
Relative Percent Diff (%)															0.00%	0.00%				
14-Dec-06	bdc5.0			0.00103					1.0316											
14-Dec-06	bdc5.0	Field Replicate		0.0011					1.0317											
Relative Percent Diff (%)				6.57%					0.01%											

14-Sep-06 (other constituents)

Trip Start Date	Station ID	Activity Category	Boron	CALCIUM AS CACO3	CALCIUM	TOC	CHLORIDE	Coliform, Fecal (#/100mL)	CONDUCTANCE, SPECIFIC (us/cm)	BOD	DO	IRON, D	MAGNESIUM, D	Nitrogen, NO3+NO2	pH (SU)	Phosphorous, TPO4 (Hach)	PHOSPHORUS, ORTHOPHOSPHATE AS P, D	POTASSIUM , D	SODIUM, D	TDS	TSS	SULFATE Total	TEMP, (C)	TURBIDITY
14-Sep-06	bdc5.0		0.31	184	73.6	5.6893	61.11	360	1012	*Non-detect	10.64	0.007	24.406	5.9000001	7.88	1.12	0.77	5.60	115.6	649	44	274.9588	19.92	34.9
14-Sep-06	bdc5.0	Field Replicate	0.31	187	74.8	6.021	66.76	430	1012	*Non-detect	10.64	0.008	24.466	6.0500002	7.88	1.12	0.77	5.62	102.6	660	46	271.656	19.92	35.8
Relative Percent Diff (%)			0.0%	1.6%	1.6%	5.7%	8.8%	17.7%	0.0%	0.0%	0.0%	13.3%	0.2%	2.5%	0.0%	0.0%	0.0%	0.3%	11.9%	1.7%	4.4%	1.2%	0.0%	2.5%

Trip Blank: 3/9/2006

Trip Start Date	Station ID	Activity Category	Alkalinity	ARSENIC, D	ARSENIC, Tot. Rec.	Boron, Total	CADMIUM, D	CALCIUM AS CACO3 Total	CALCIUM Total	CARBON, TOTAL ORGANIC Total	CHLORIDE Total	Chlorophyll-a (ug/L)	Chlorophyll-a, corrected (ug/L)	CHROMIUM, D	Coliform, MF, Fecal (C/100mls)	COPPER, D	Cyanide	BOD	E. coli (#/100 mL)	IRON, D	IRON, Tot. Rec.	LEAD, D	MAGNESIUM, D	MANGANESE , D
09-Mar-06	Trip Blank	Trip Blank	1	*Non-detect	*Non-detect	*Non-detect	*Non-detect	0.2	0.08	0.0494	0.2	0.2	0.4	*Non-detect	*Non-detect	0.0002	*Non-detect	*Non-detect	*Non-detect	0.0064	*Non-detect	*Non-detect	*Non-detect	*Non-detect

Trip Start Date	Station ID	Activity Category	MERCURY, Tot.	MOLYBDENUM , D	NICKEL , D	Nitrogen, Ammonia	Nitrite	Nitrate/Nitrite	PHOSPHORUS, ORTHOPHOSPHATE AS P, D	POTASSIUM, D	SELENIUM , D (Broomfield)	SELENIUM, D (ACZ)	SILVER , D	SODIUM, D	TDS	TSS	SULFATE	TURBIDITY	ZINC , D
09-Mar-06	Trip Blank	Trip Blank	*Non-detect	*Non-detect	*Non-detect	*Non-detect	0.000487	*Non-detect	0.00173	0.0313	*Non-detect	0.002	*Non-detect	*Non-detect	*Non-detect	*Non-detect	2.5	0.18	0.009

Figure 1
Sampling Location Map

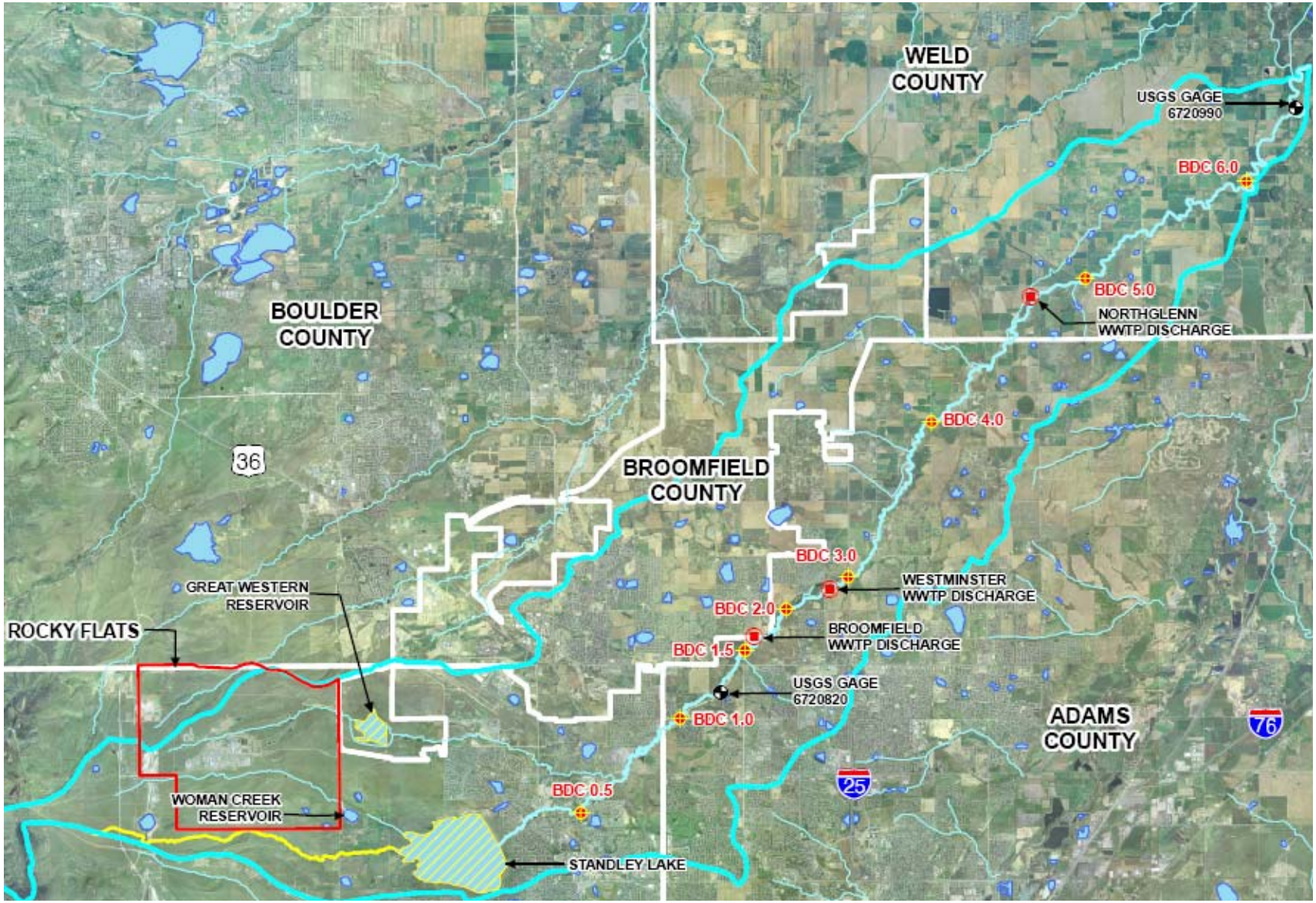


Figure 2
Big Dry Creek Average Hardness 2006

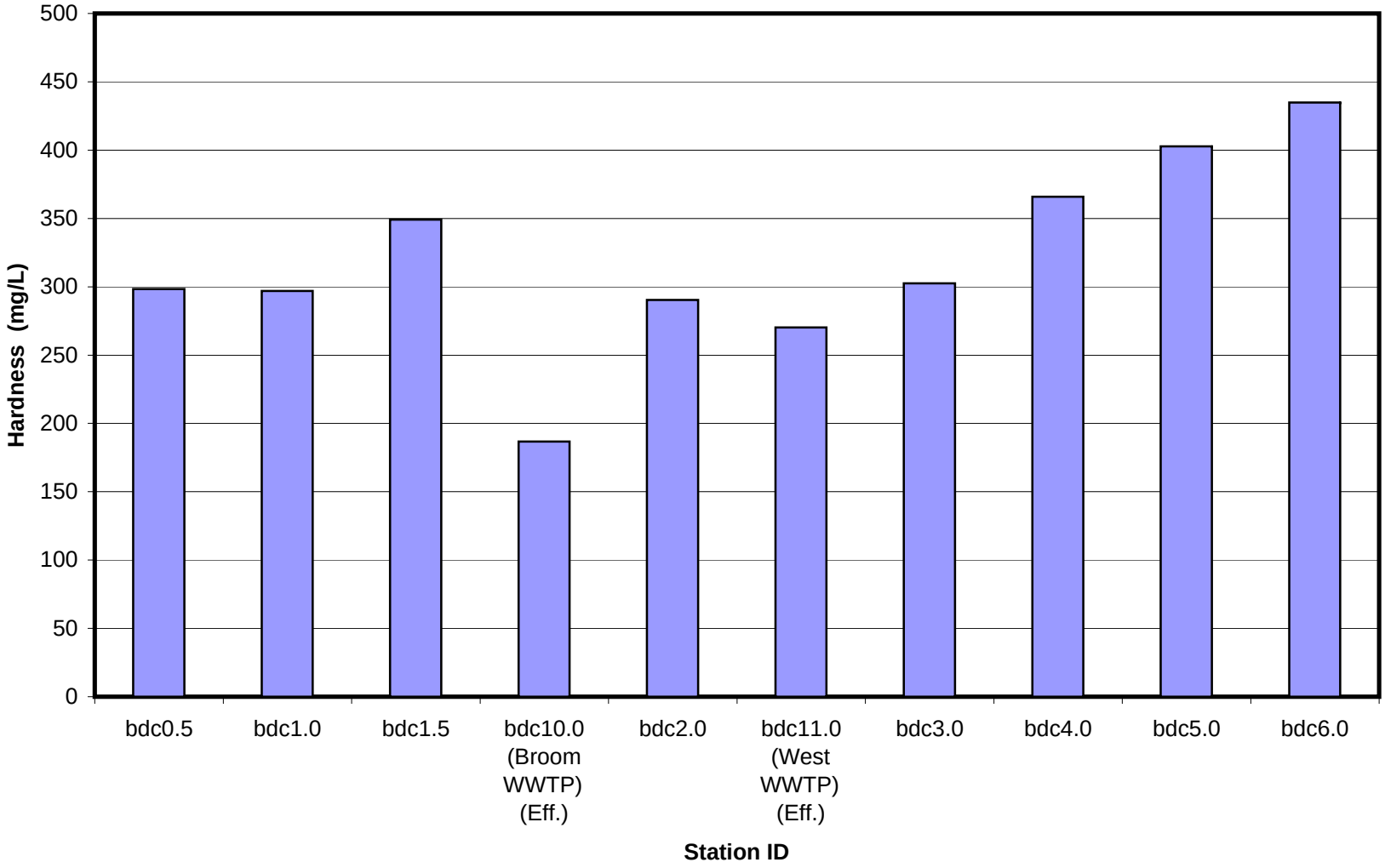


Figure 3
Big Dry Creek Average and 85th Percentile Values for Dissolved Selenium 2006

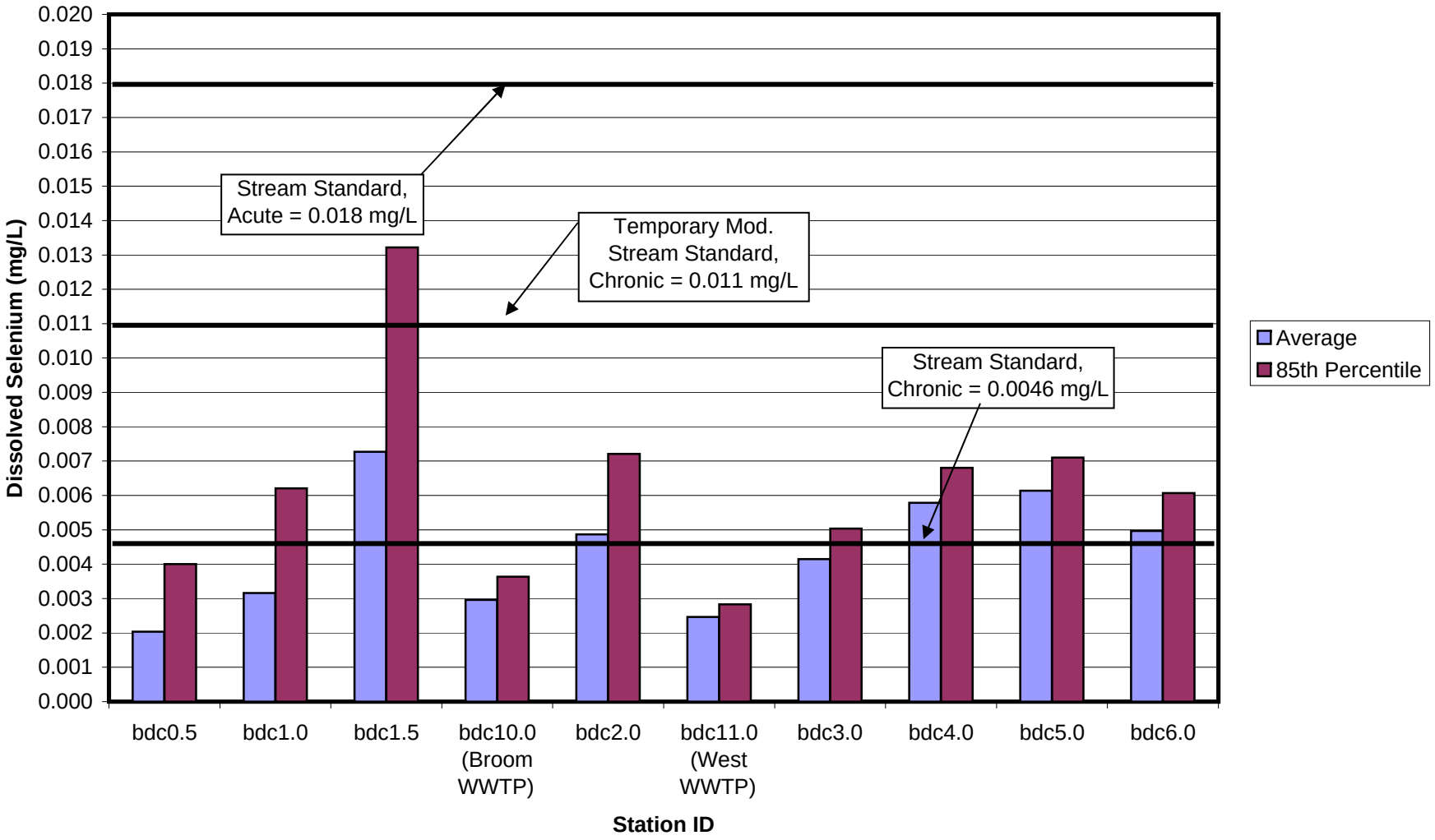


Figure 4a
2006 Dissolved Selenium (mg/L) During the Irrigation Season

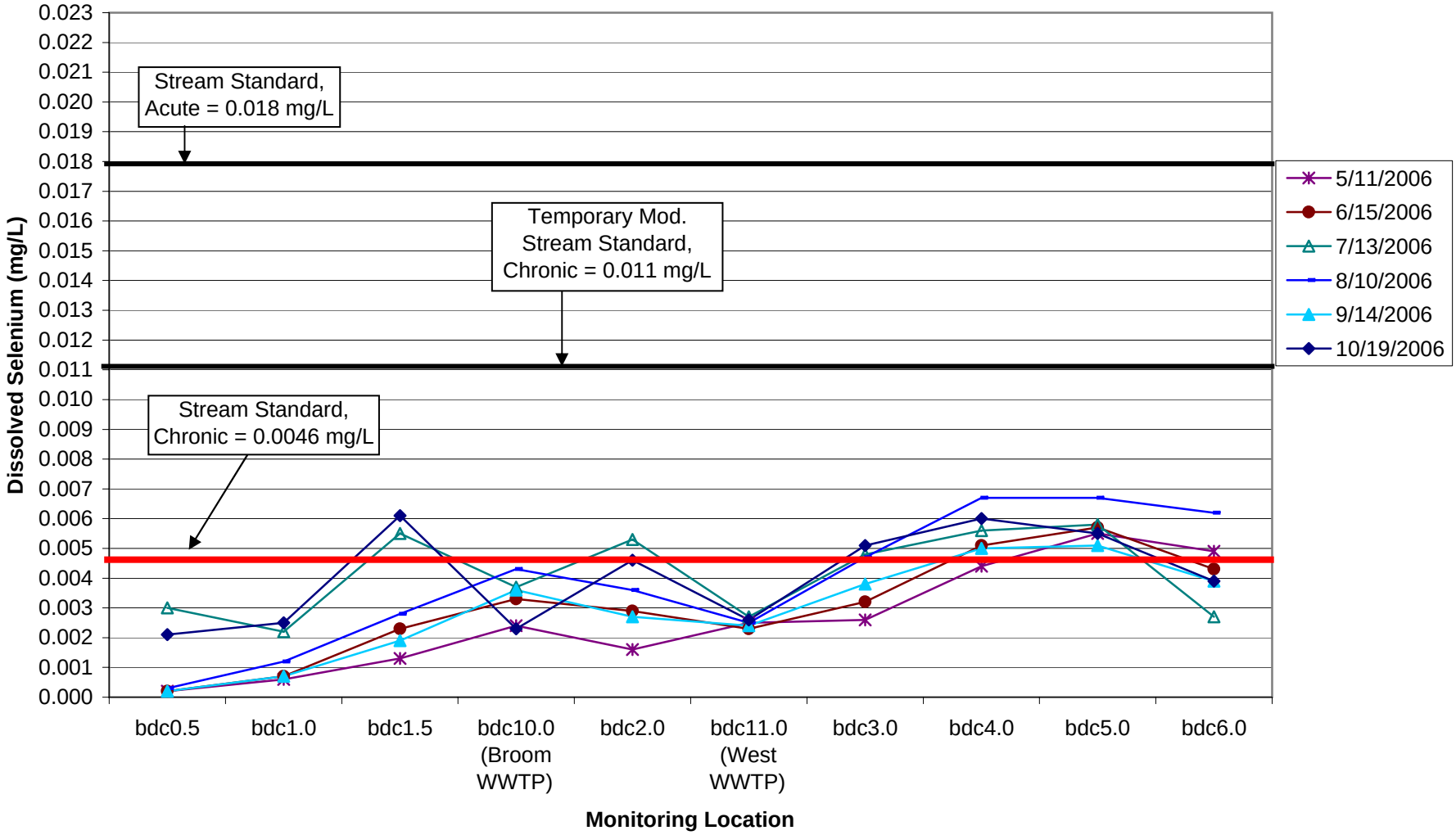


Figure 4b
2006 Dissolved Selenium (mg/L) During the Non-Irrigation Season

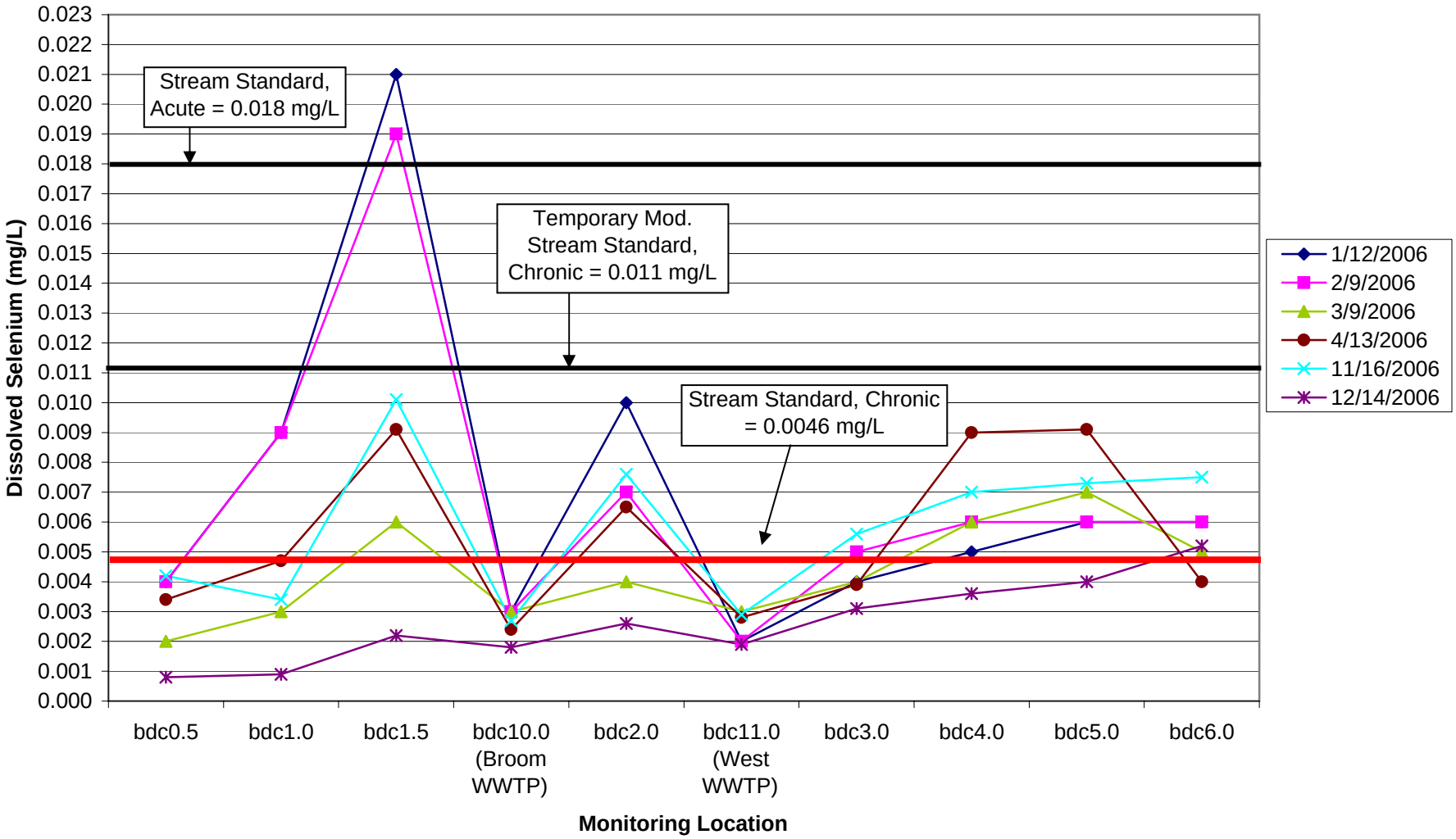
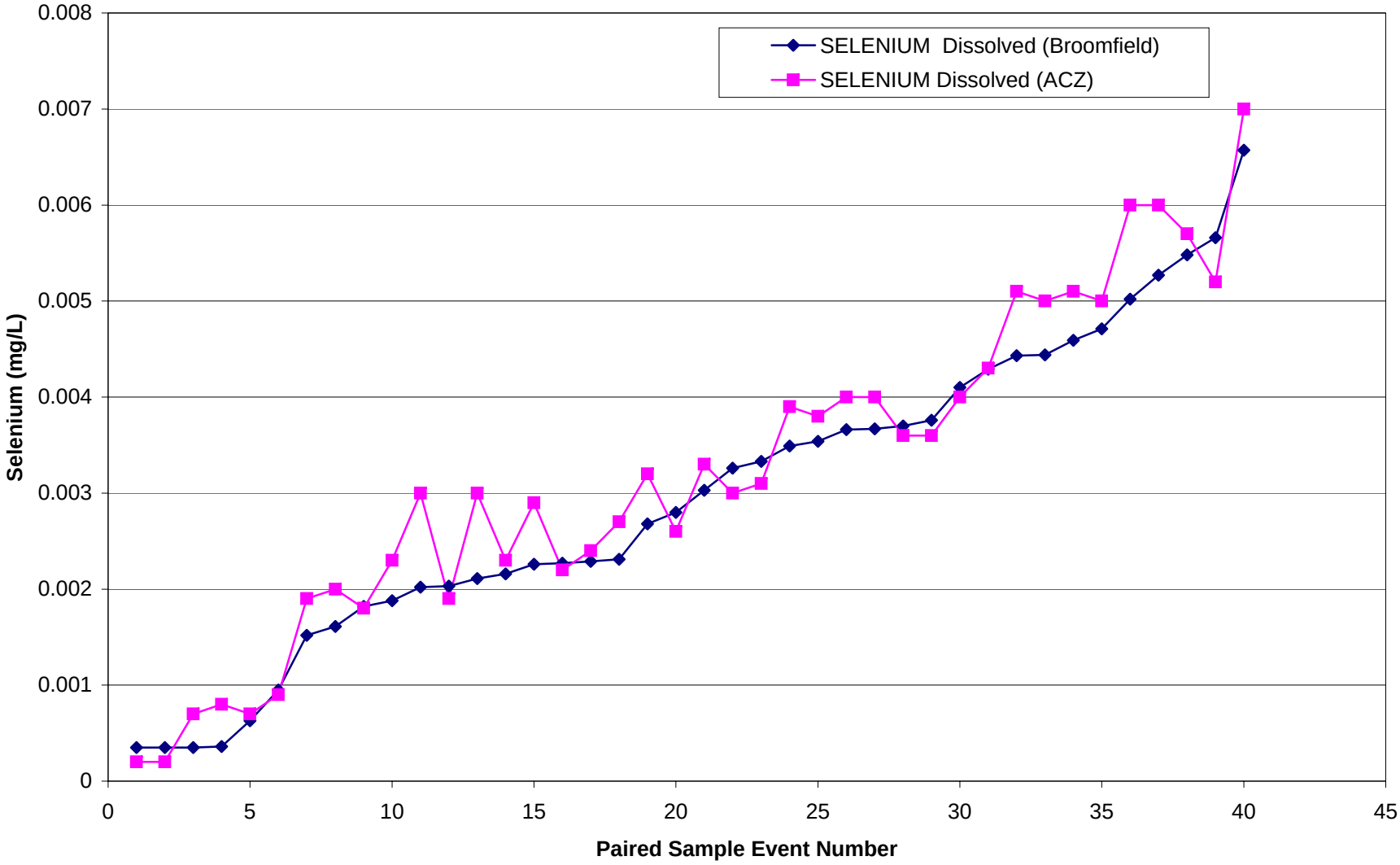


Figure 5
Comparison of Selenium Analysis (Broomfield vs. ACZ Contract Laboratory)



2006 Plotsrev.xls
5ChartCompareSe

Wright Water Engineers, Inc.
5/11/2007

Des. by: jkc
Ckd. by: erw

Figure 6
Big Dry Creek E. coli Geometric Means (2006) and
E. coli Geometric Mean for Last Five Years (2002-2006)

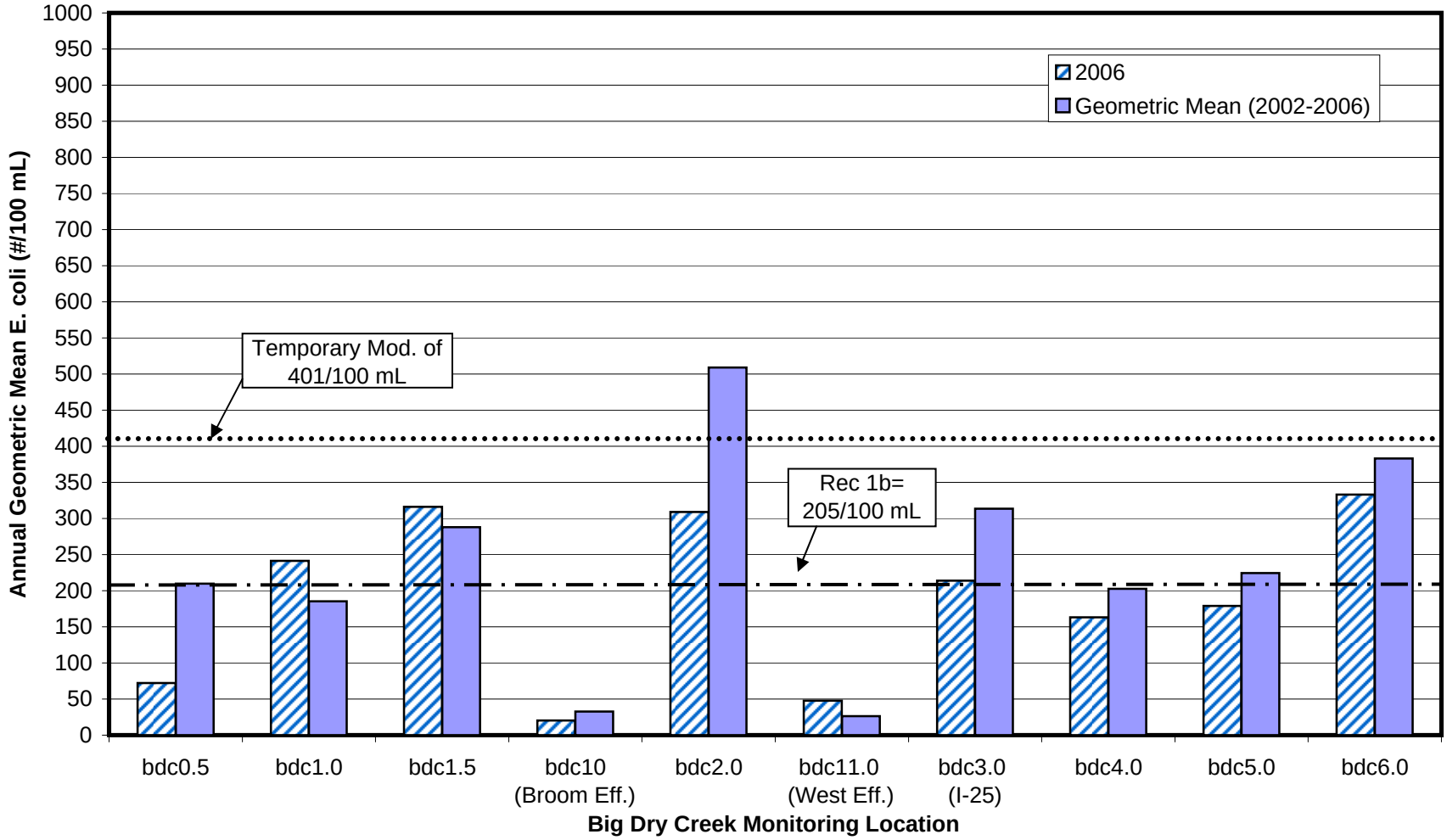


Figure 7
Big Dry Creek E. coli Geometric Means (2002-2006)

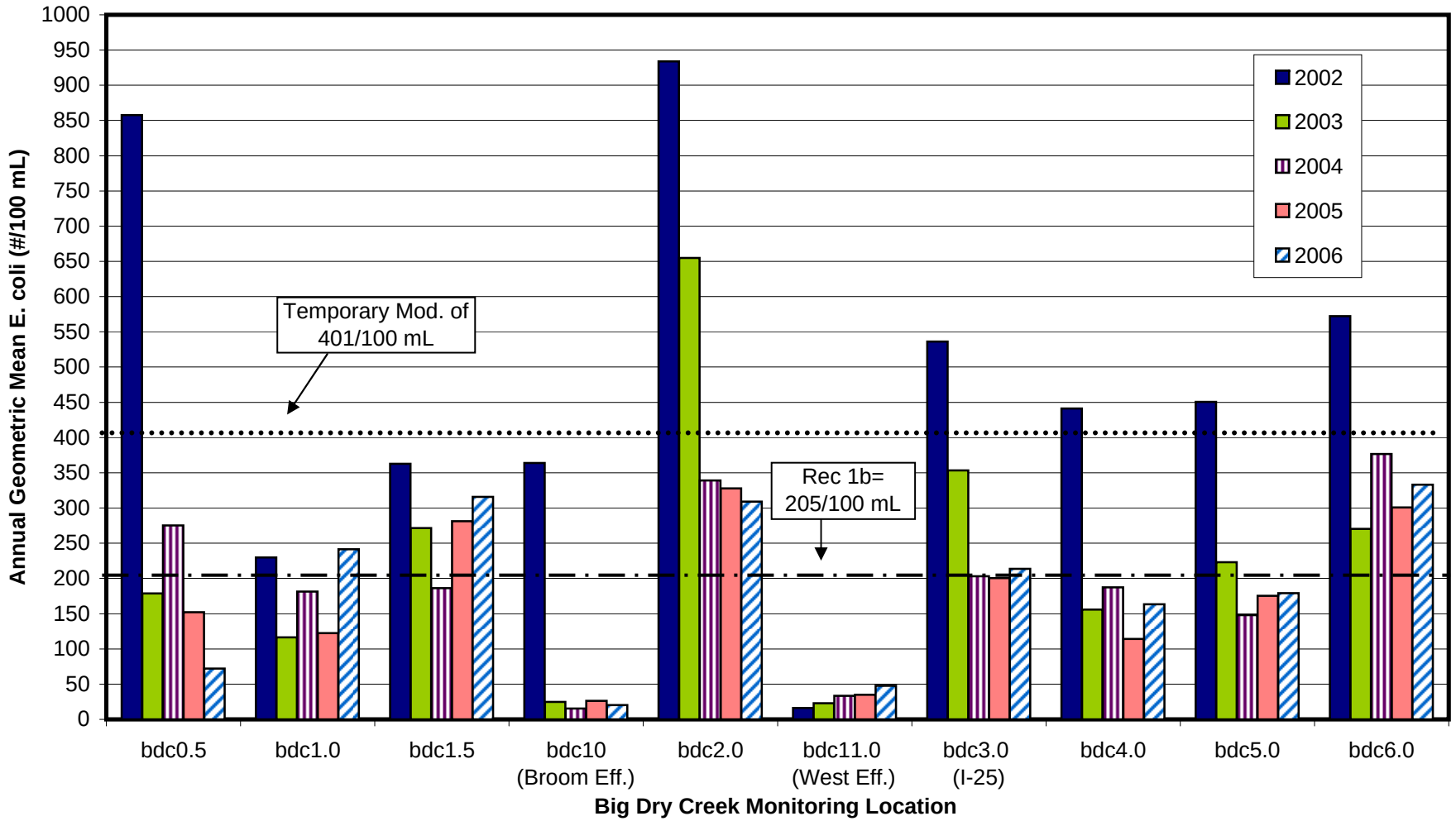


Figure 8
Big Dry Creek Geometric Mean Fecal Coliform 2002 Through 2006

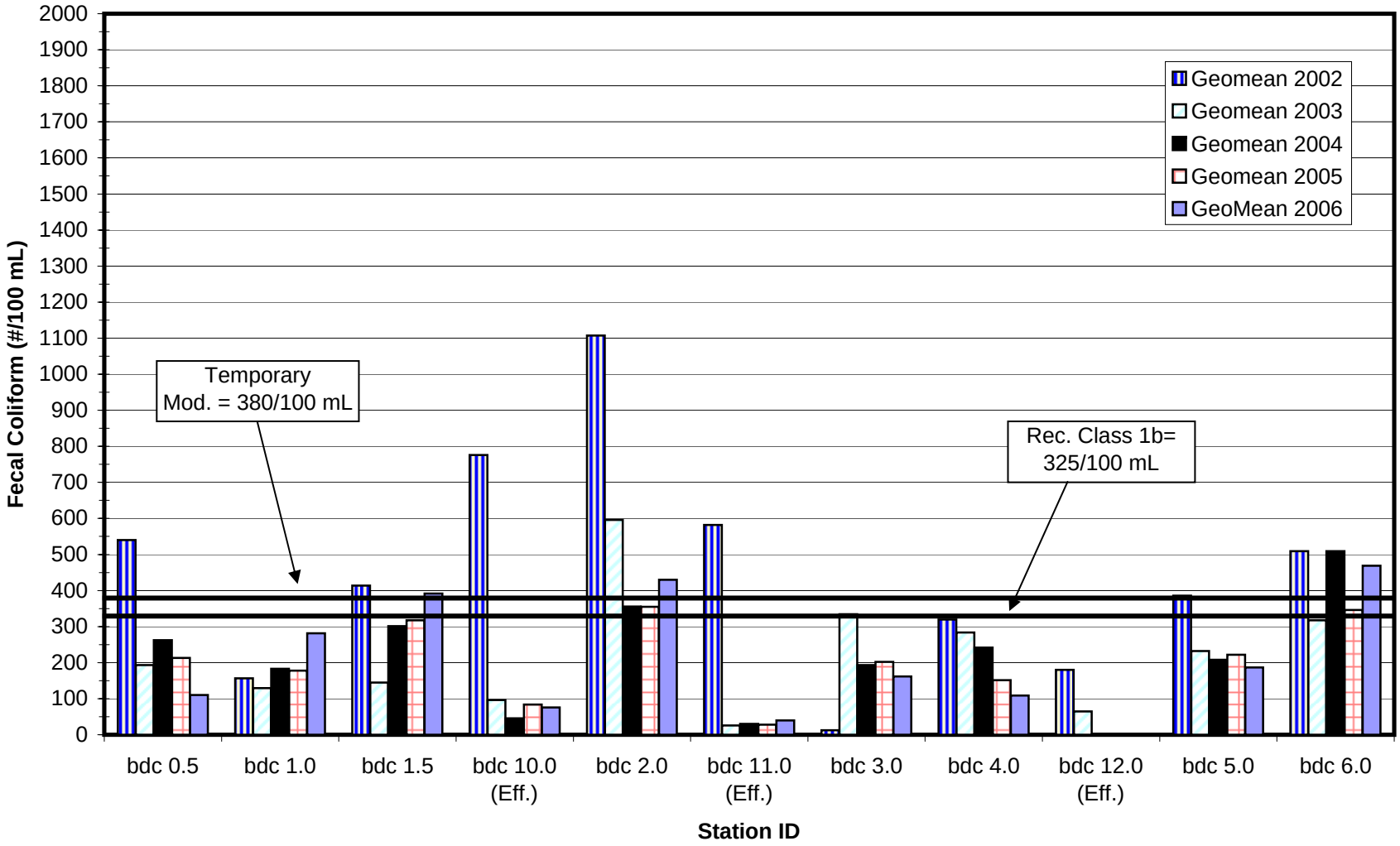
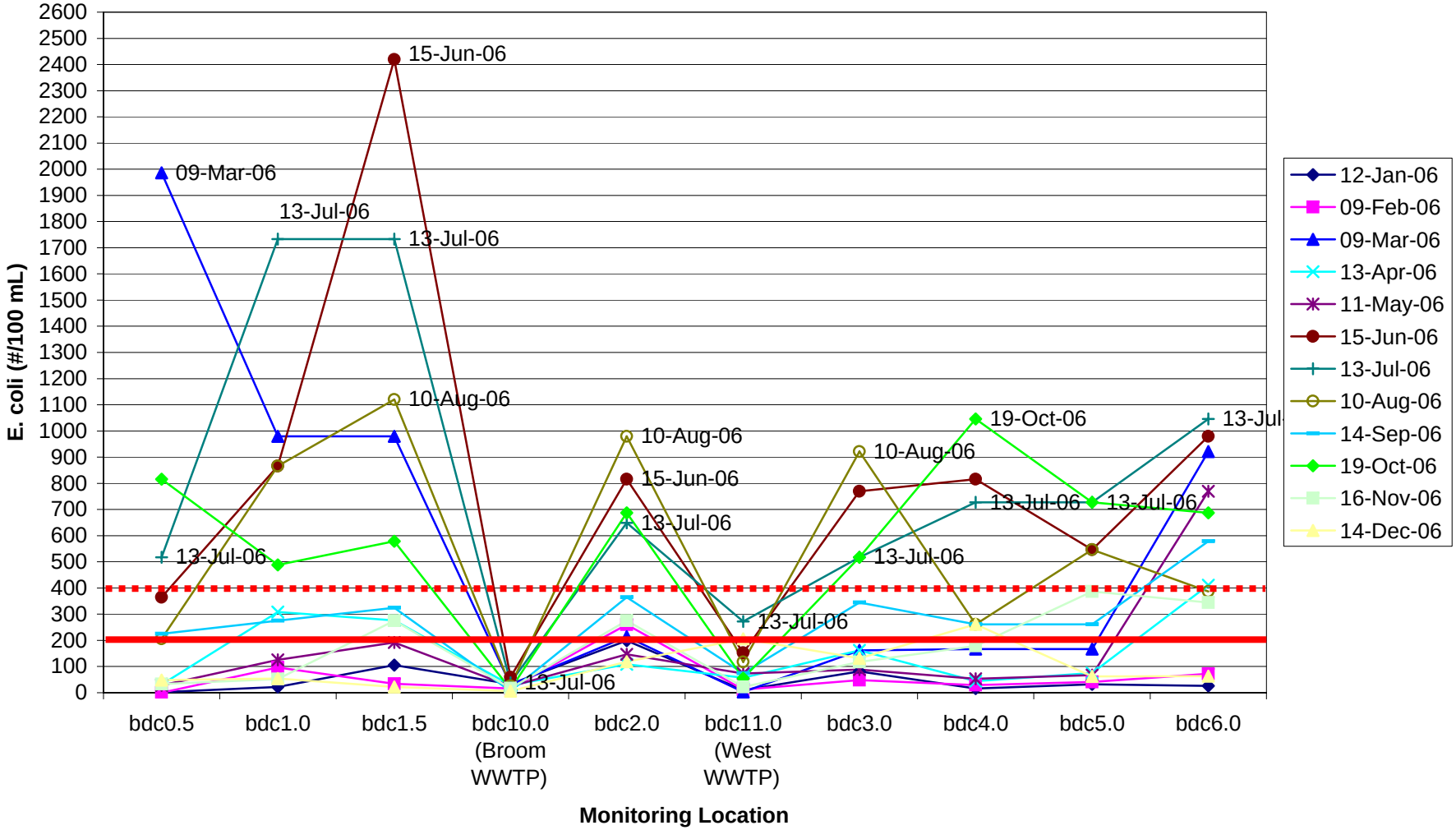


Figure 9
Monthly E. coli During 2006



Example from 2005 Plots
10monthly E. coli

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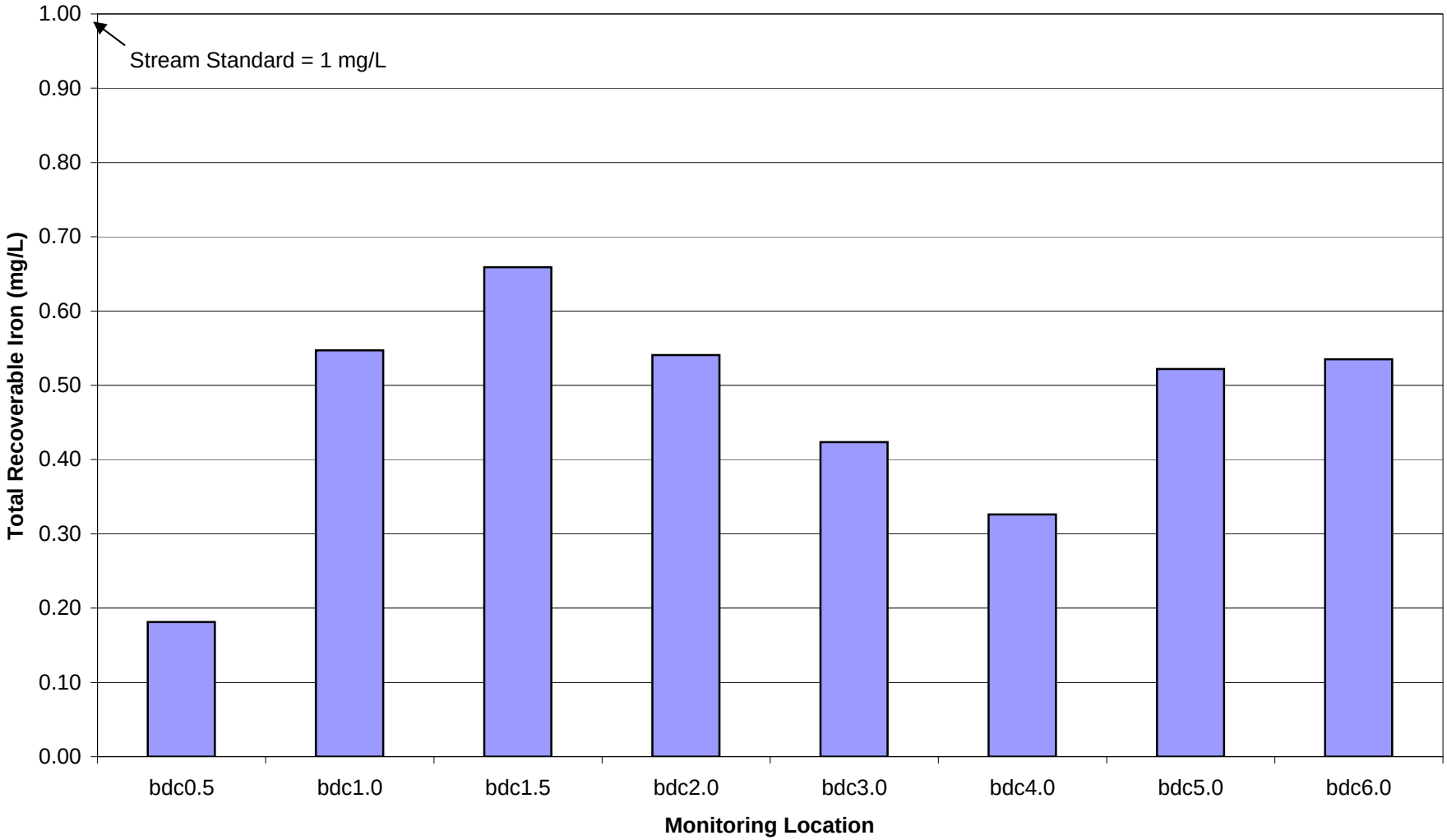
3/1/2007

Des. by: jkc
Ckd. by: erw

Figure 10
50th Percentile Values for Total Recoverable Iron 2006



Example from 2005 Plots
13 50th % Iron

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3/1/2007

Des. by: jkc
Ckd. by: erw

Figure 11
2006 Total Recoverable Iron by Date and Location

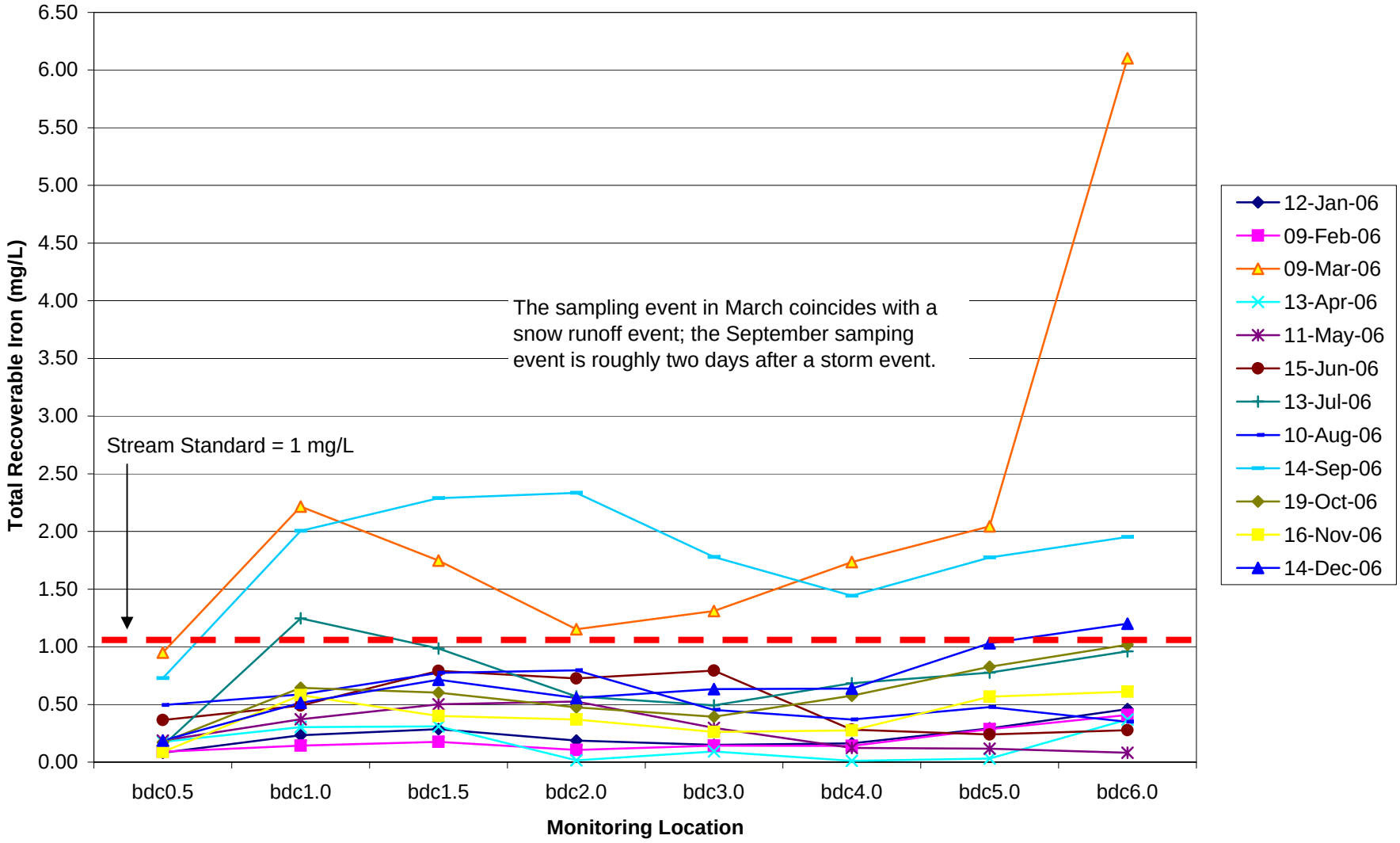
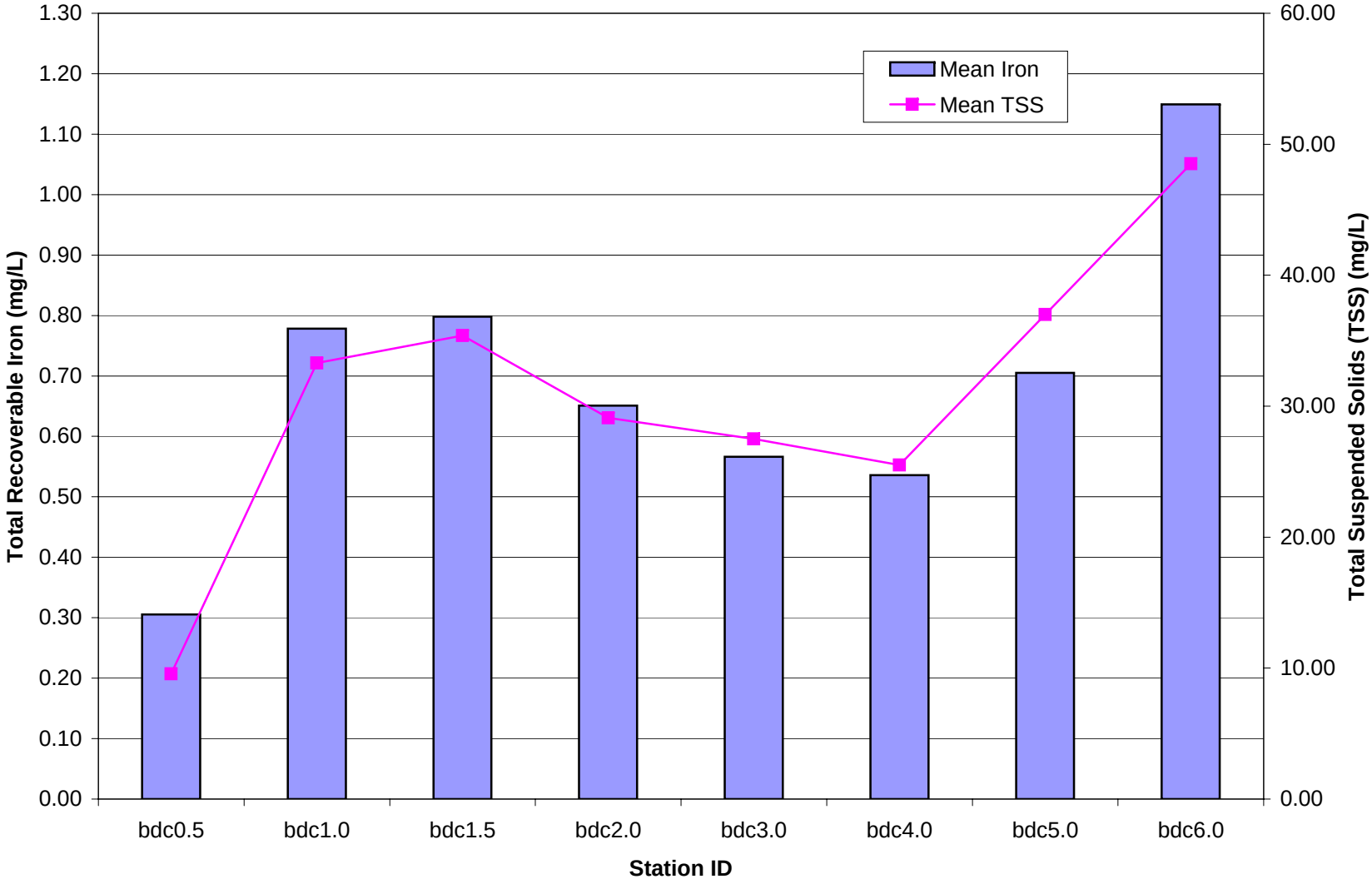


Figure 12
2006 Big Dry Creek Iron and TSS



2006 Plotsrev.xls
12Iron v TSs

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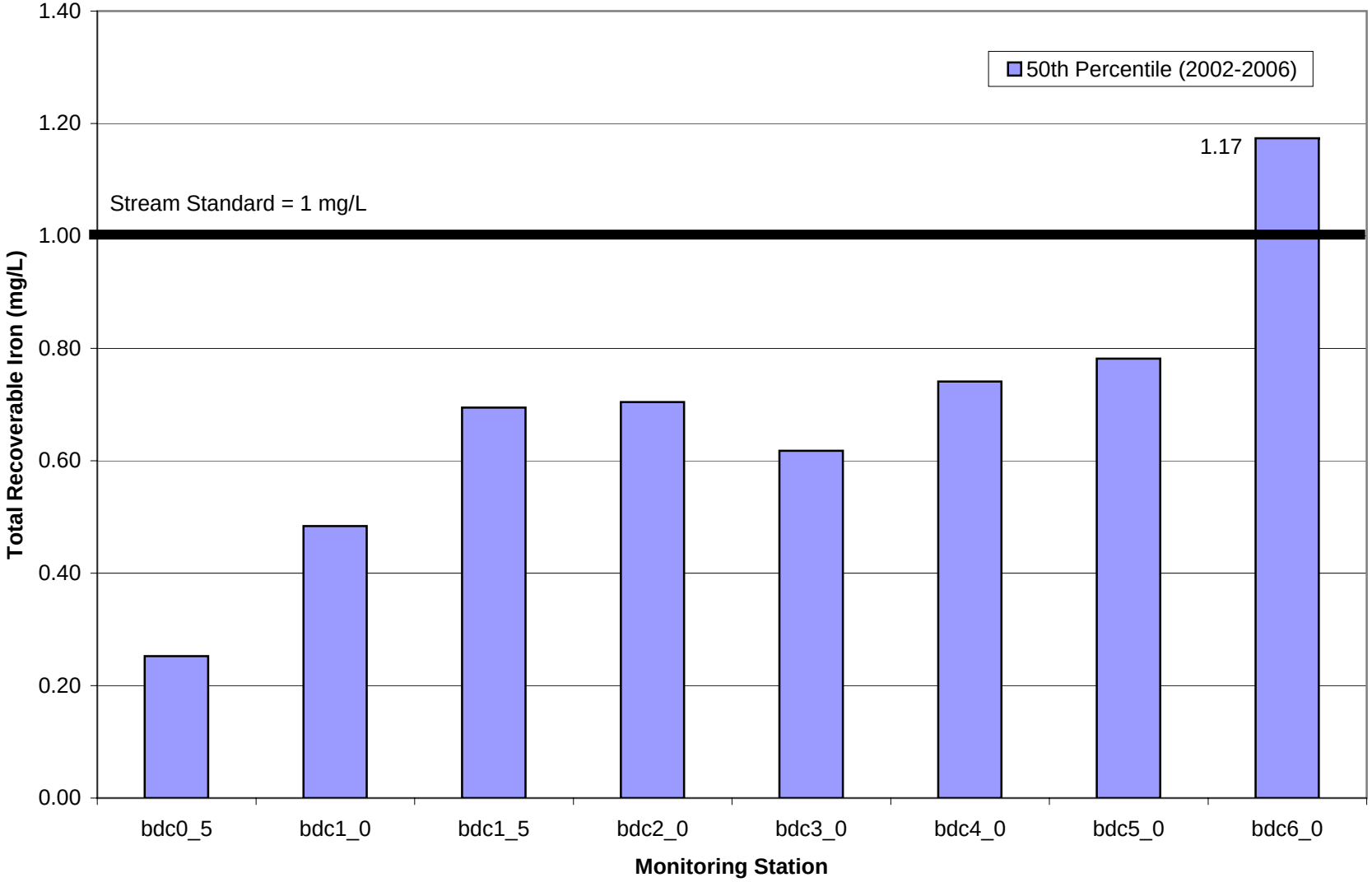
Ckd. by: erw

Figure 13
Big Dry Creek 50th Percentile Values for Total Recoverable Iron (2002-2006)



2006 Plotsrev.xls
13 Iron2002-2006

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5/11/2007

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Ckd. by: erw

Figure 14
2006 Big Dry Creek Total Ammonia

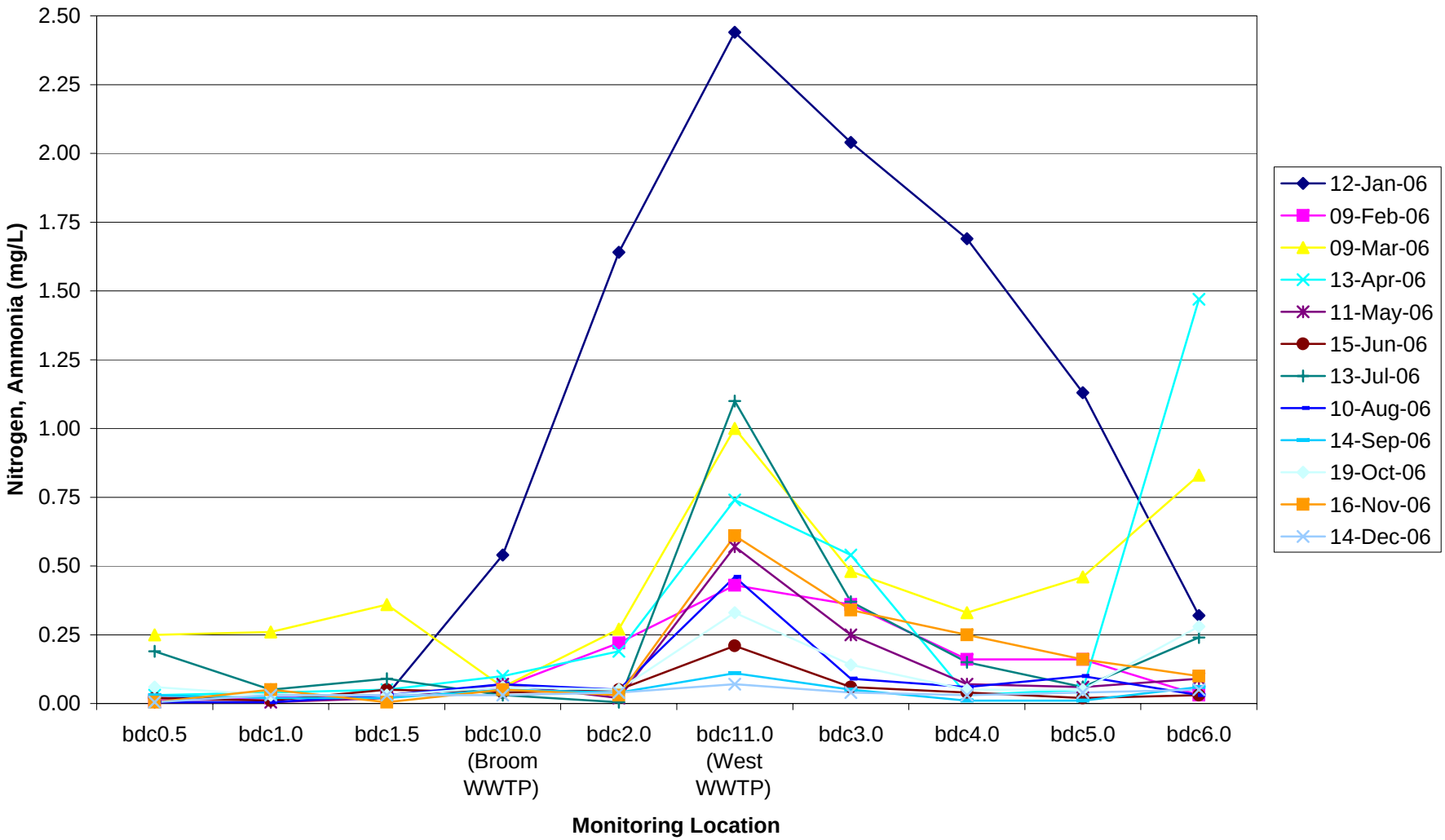


Figure 15
Big Dry Creek Average Unionized Ammonia 2006

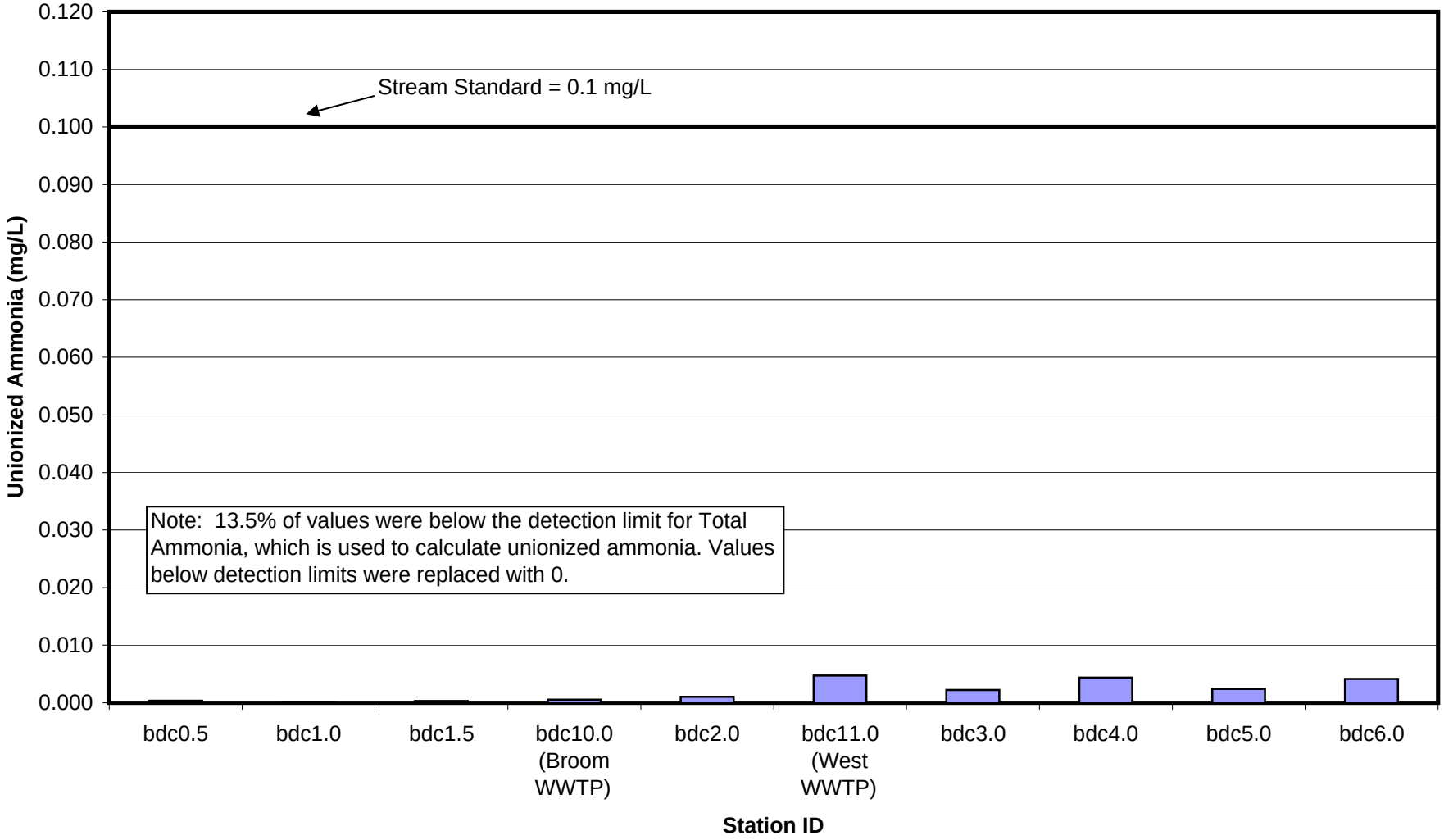


Figure 16
Nitrate/Nitrite Grab Samples at bdc6.0
1997-2006

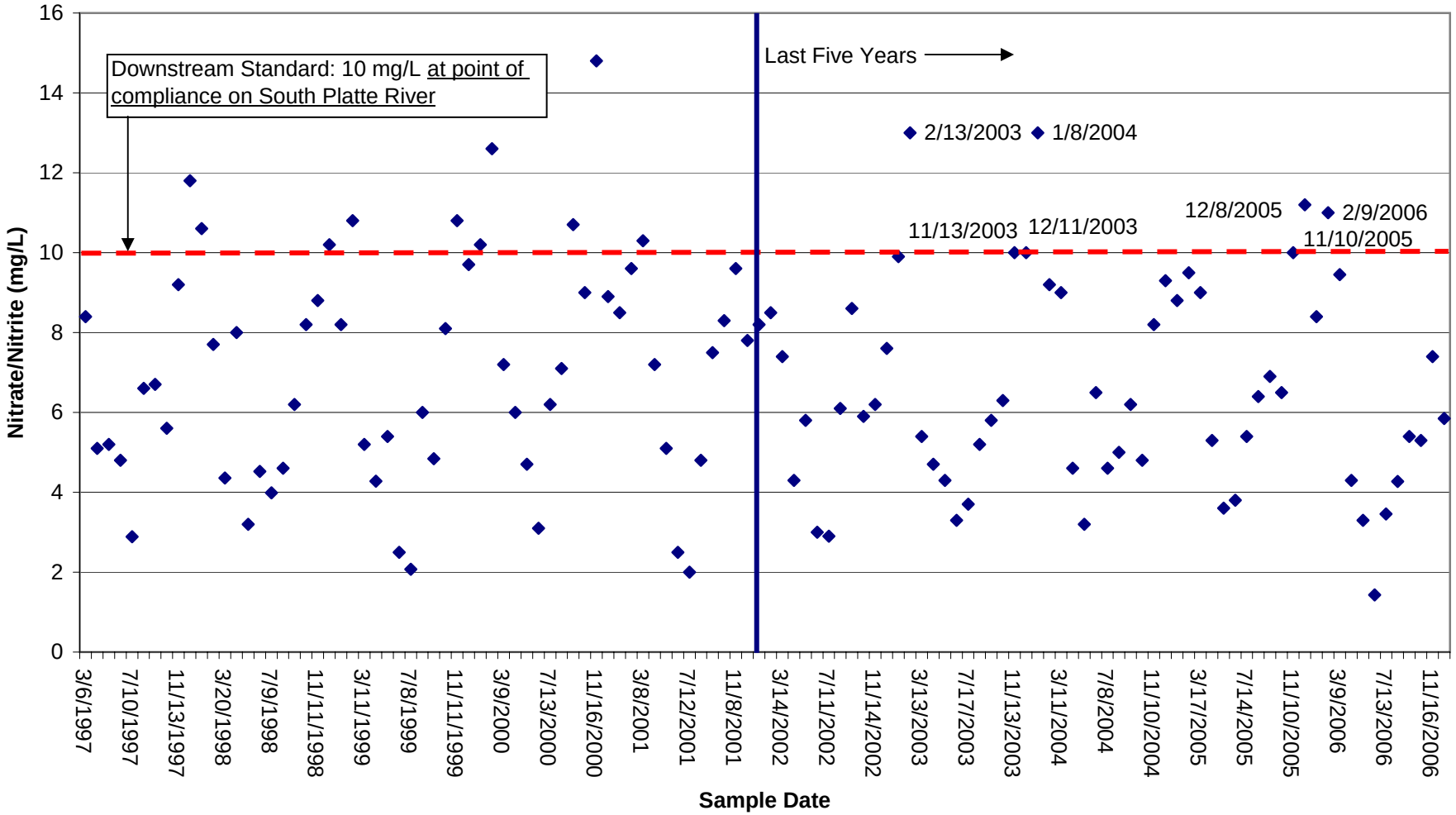


Figure 17
2006 Big Dry Creek Grab Samples Mean Nitrate Concentrations

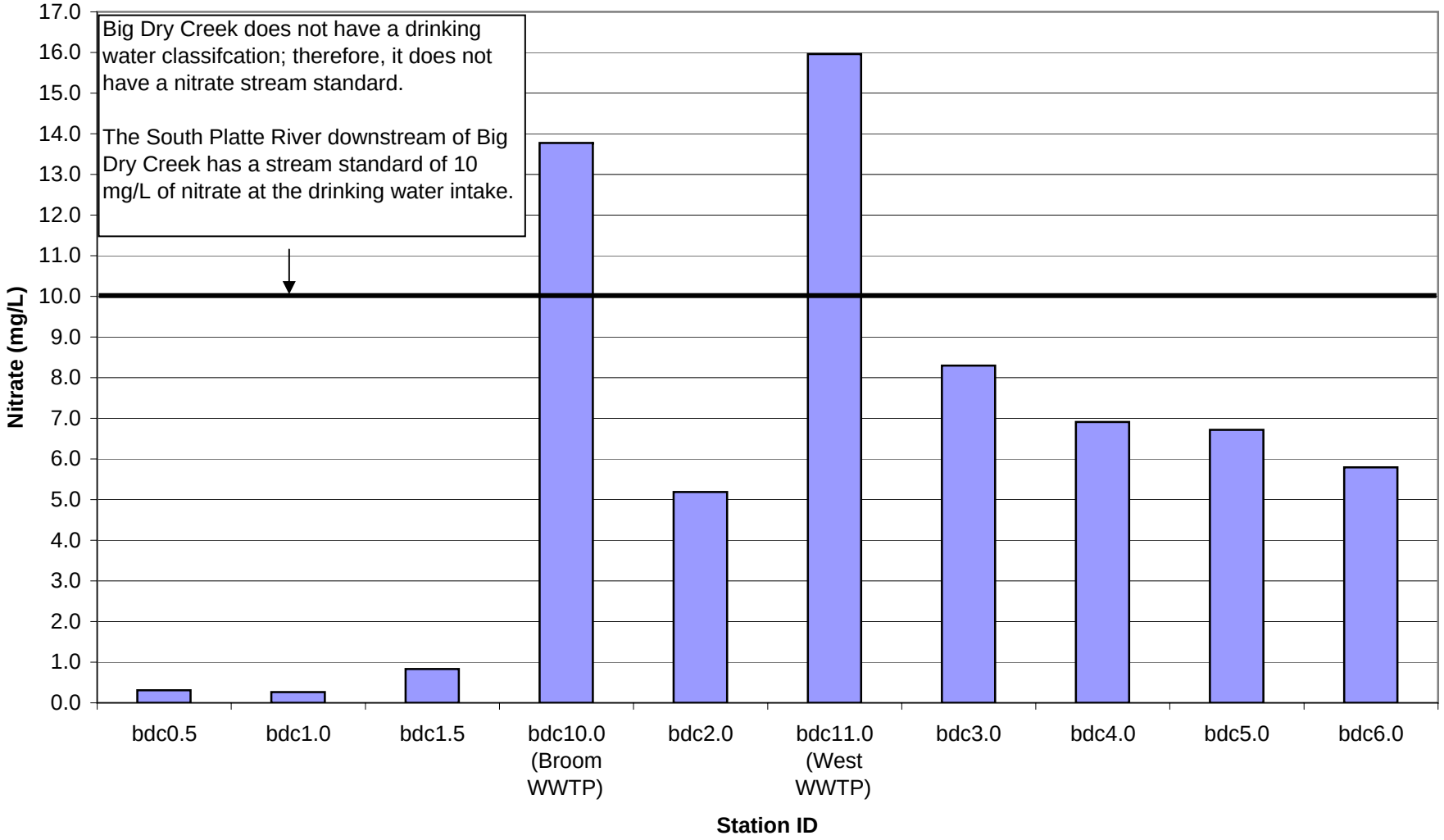
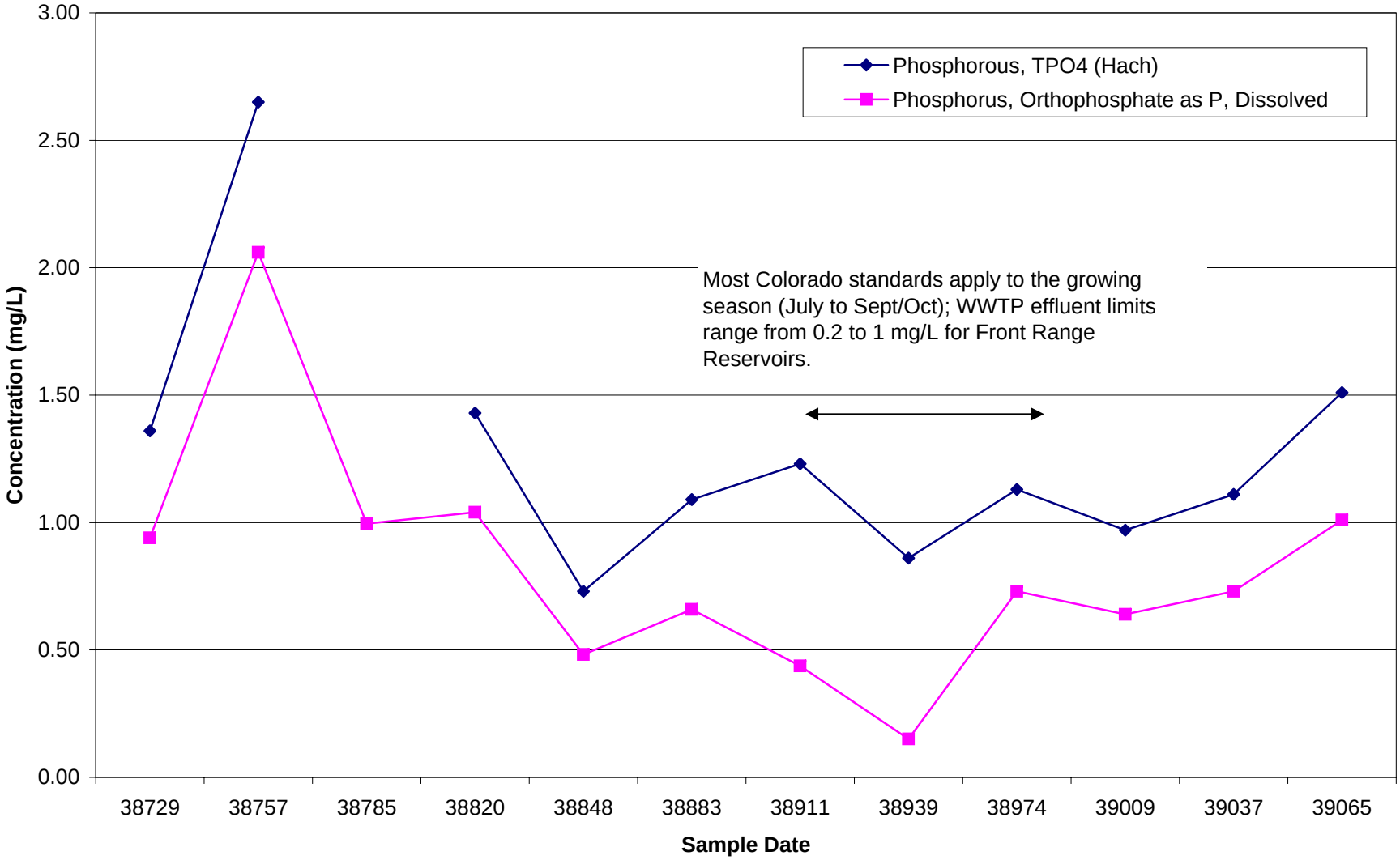


Figure 18
Big Dry Creek Phosphorus Samples Collected at bdc6.0 During 2006



2006 Plotsrev.xls
18P Chart

Wright Water Engineers, Inc.
5/11/2007

Des. by: jkc
Ckd. by: erw

Figure 19a
2006 Big Dry Creek Temperature Variation
(December-February)

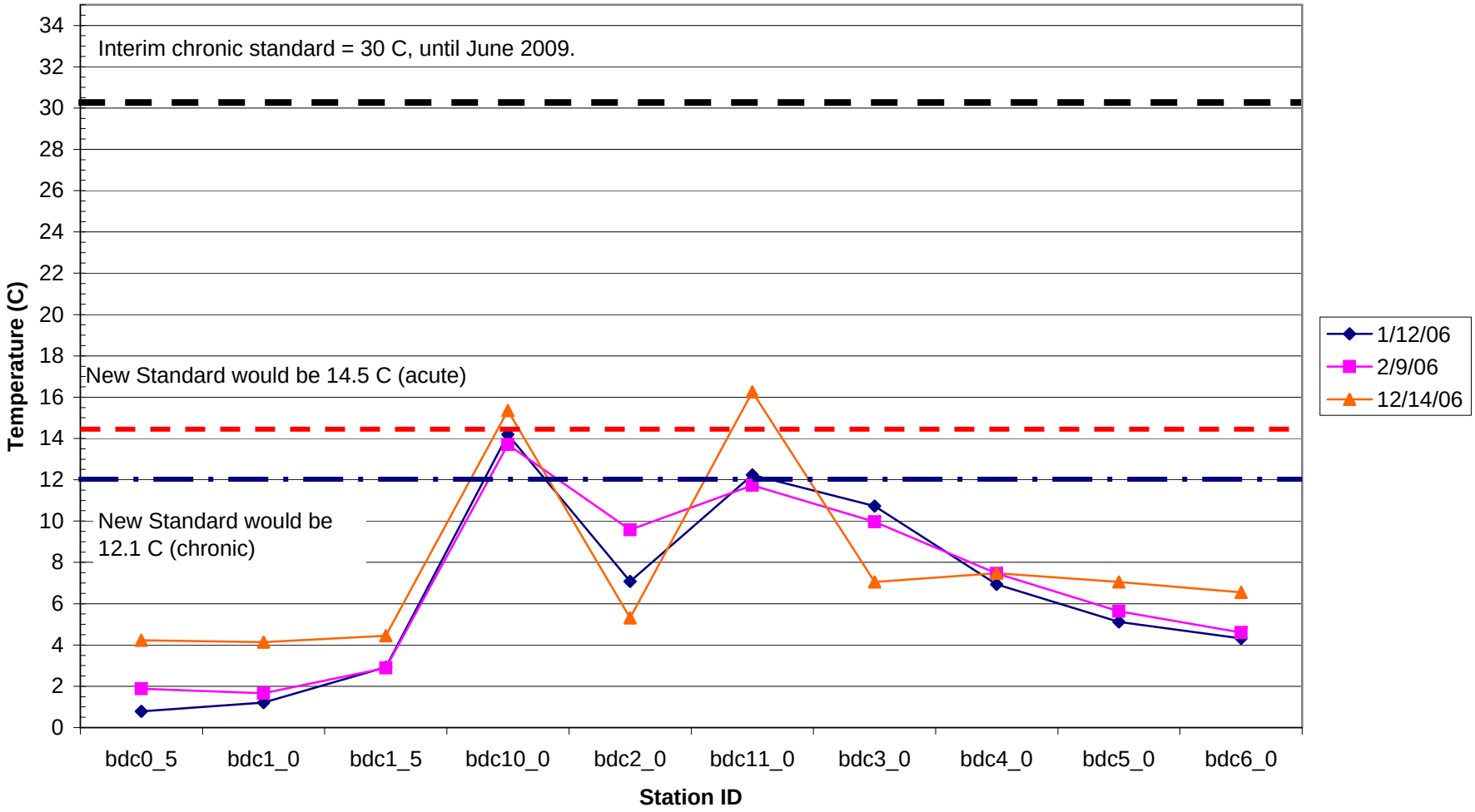


Figure 19b
2006 Big Dry Creek Temperature Variation
(March-November)

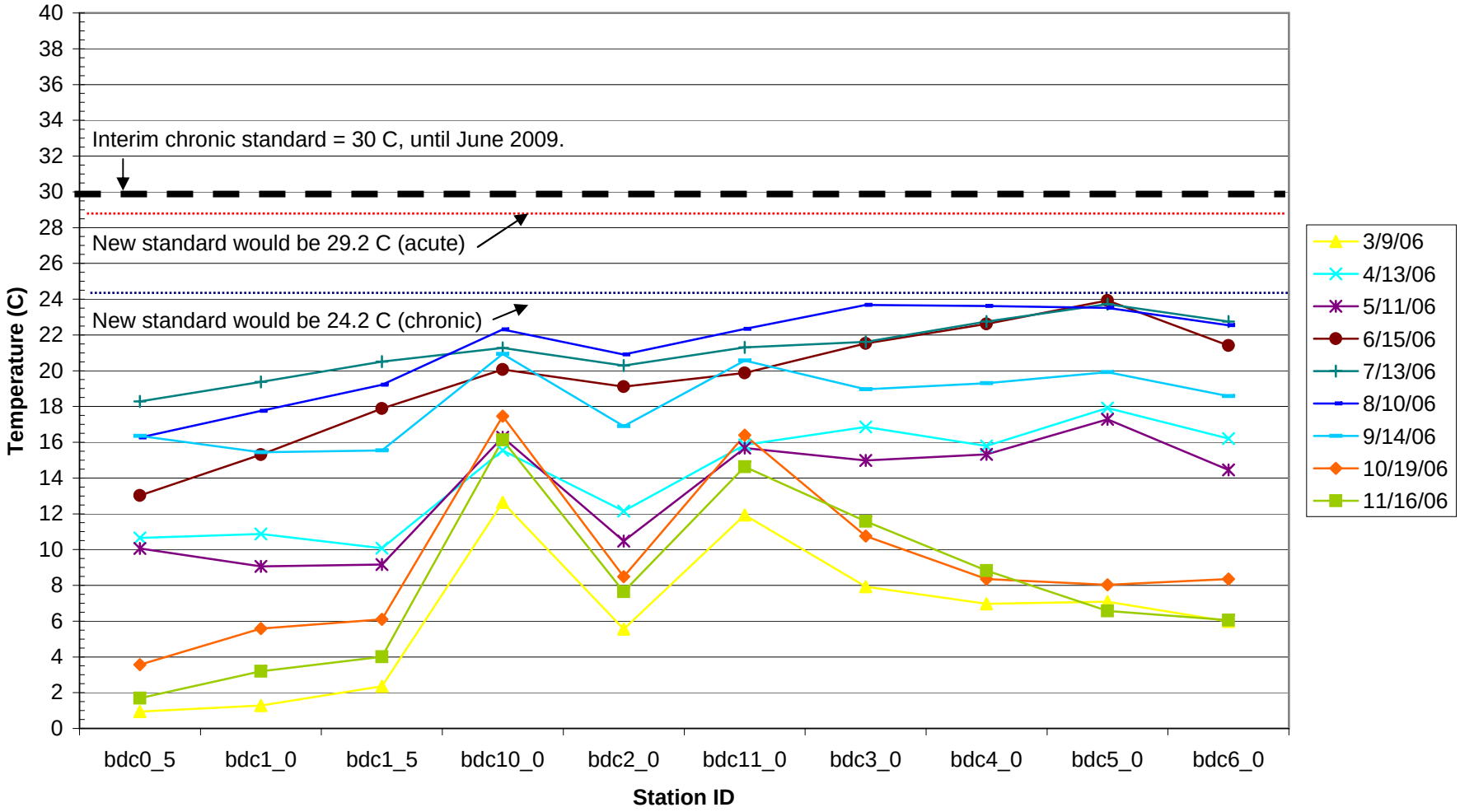
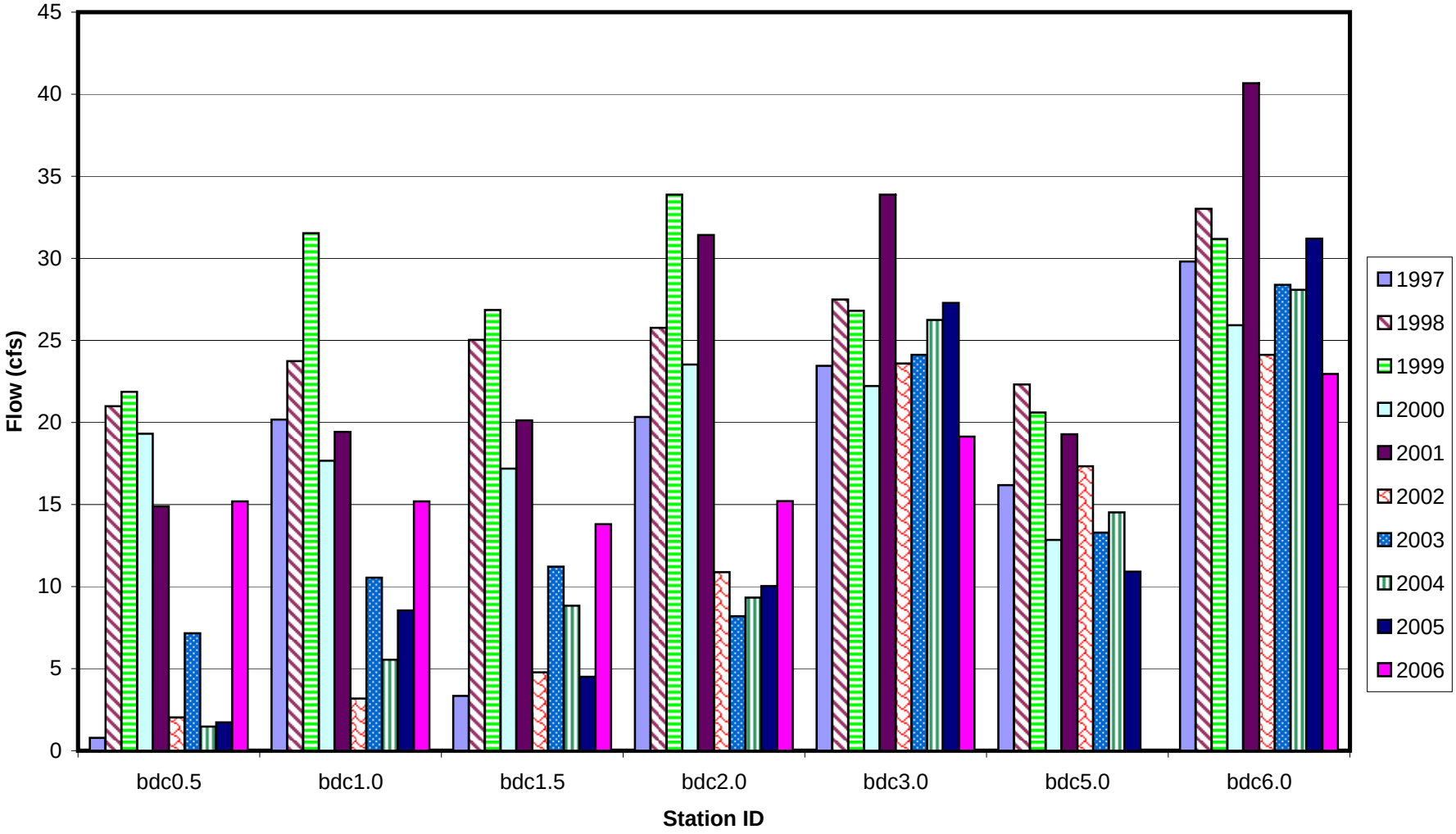


Figure 20
Big Dry Creek Average Streamflow (1997-2006)



Note: These data should not be used for purposes other than observation of general trends. Averages do not include high flow events that precluded safe monitoring conditions and therefore do not fully reflect the range of flow conditions at all locations.

USGS Gage Data for Big Dry Creek 2006

Figure 21

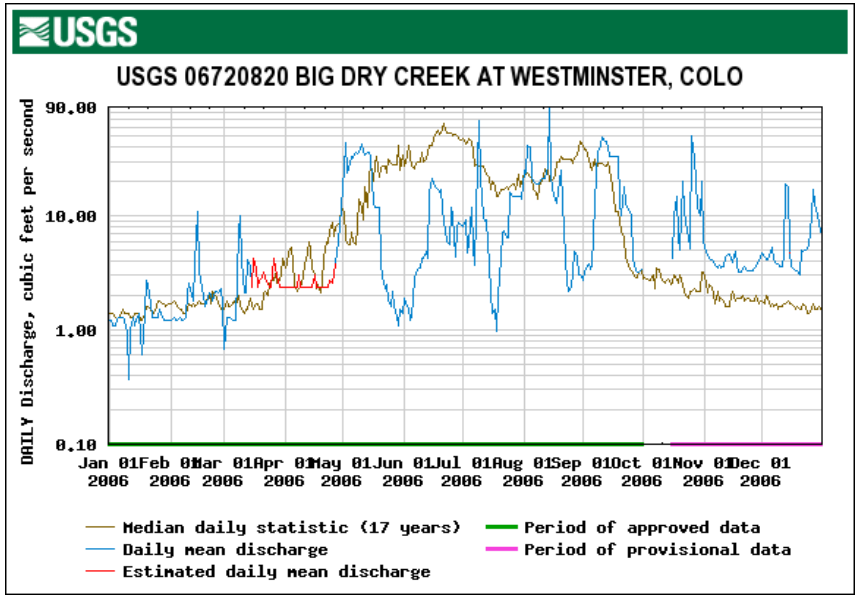


Figure 22