

# Draft Metals TMDLs

Lower Clark Fork River

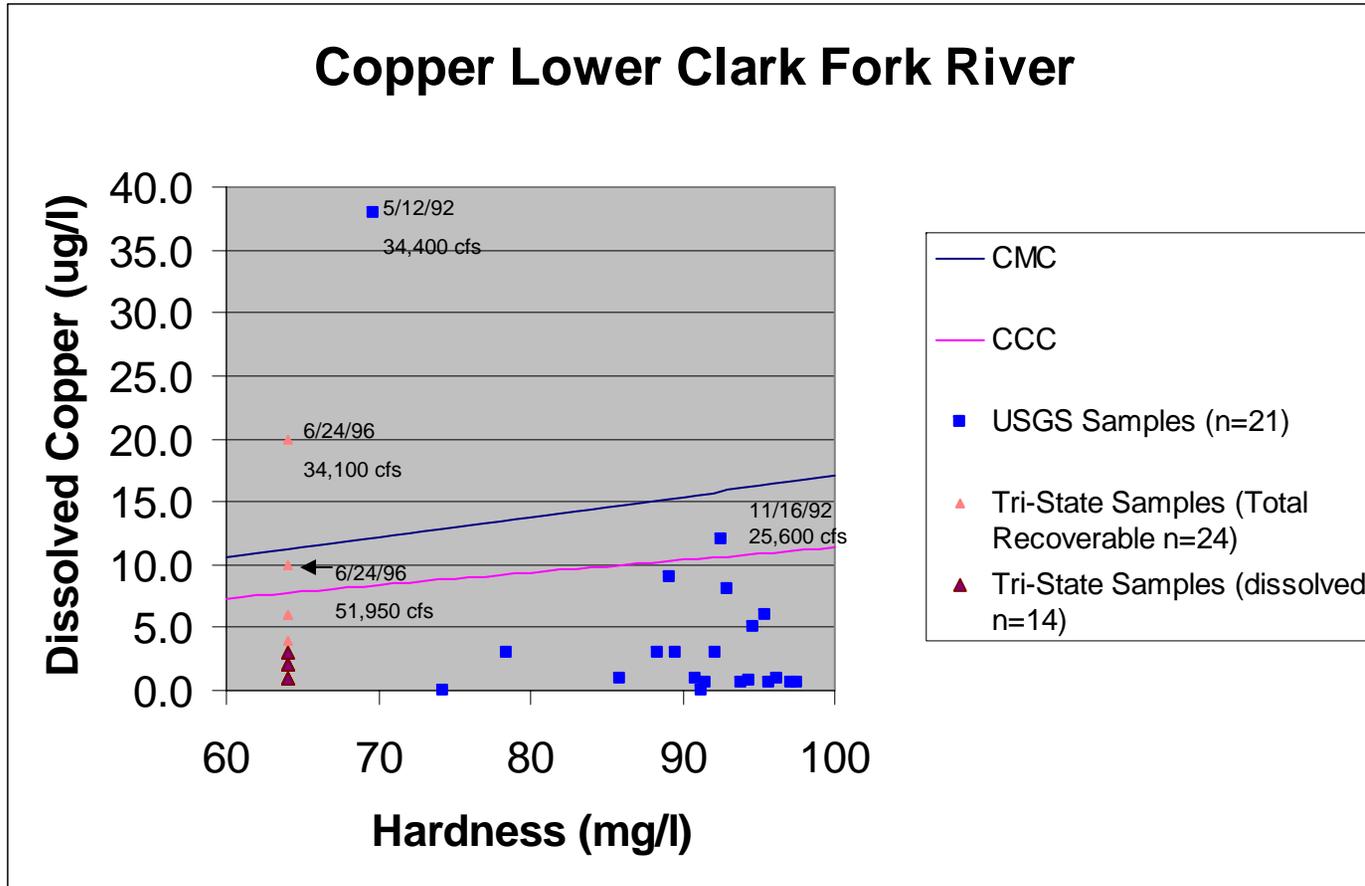
WAG Review

January 11, 2006

# Working Assumptions

- Hardness is correlated with flows, with lower hardness values occurring at higher flows. Minimum Hardness value of 64 ug/l used to calculate Water Quality Target.
- Non-point sources of metals are from upper Clark Fork mining and tailings areas
- Limited instantaneous samples available below Cabinet Gorge dam are representative of overall water quality
  - Note: Sampling does concentrate on peak flow times

# Draft Clark Fork River Copper Data



Note samples below detection limit are not graphed.  
Information subject to review.

# Copper Load Capacity

## Target = Water Quality Standard

<b>Copper Load Capacity</b>					
	Flow (cfs)	Copper CCC (ug/L)	Load Capacity (lb/day)	MOS (lbs/day)	Target Load = Load Capacity - MOS (lbs/day)
7Q10	6054	7.8	254	25	229
10th percentile*	8400	7.8	353	35	318
50th percentile*	16900	7.8	710	71	639
90th percentile*	44600	7.8	1875	187	1688

Flow at Cabinet Gorge is equal to 2,752,457- 10, 500 gallon tanker trucks every day at 44,600 cfs. At 8.33 lbs/gallon, the weight of the water is 240,743,664,000 lbs/day.

Isn't that a lot of metals?  
Some more numbers for Perspective

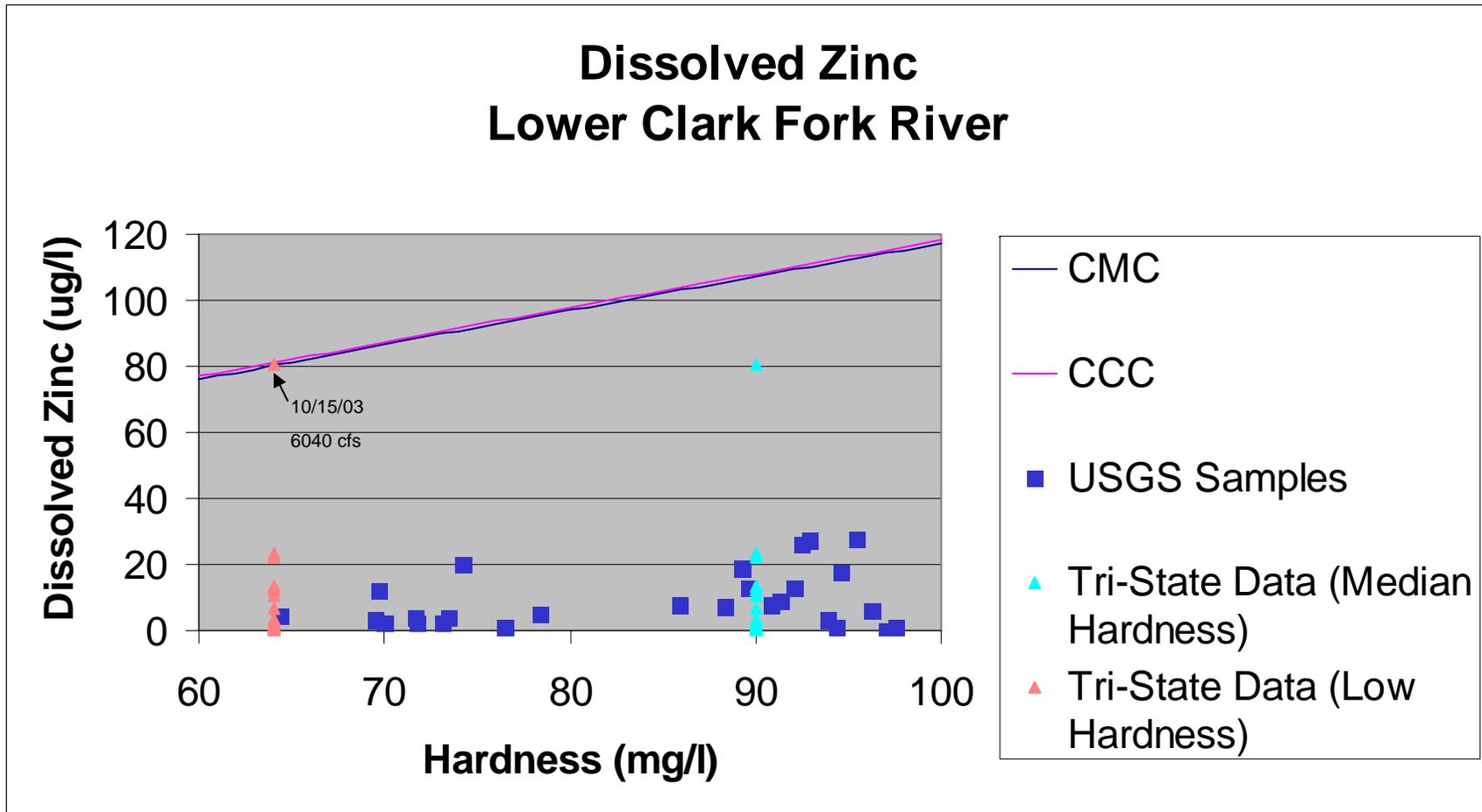
- Target Copper load at maximum flow is: 1688 lbs/day.
- 44,600 cfs flow at Cabinet Gorge is equal to 2,752,457 10,500 gallon tanker trucks every day.
- At 8.33 lbs/gallon, the weight of the water is 240,743,664,000 lbs/day at 44,600 cfs.

\*Thanks to Tyson Clyne (CDA-DEQ) for the above perspective.

# Draft Copper TMDL

<b>Copper Existing Load</b>					
	Flow (cfs)	Copper (ug/L)	Existing Load (lbs/day)	Existing Load – Target Load = Reduction Required (lbs/day)	% Reduction
7Q10	6054	12	391	162	41.50
10th percentile*	8400	12	543	225	41.50
50th percentile*	16900	12	1093	453	41.50
90th percentile*	44600	12	2884	1197	41.50

# Draft Clark Fork River Zinc data



Note samples below detection limit are not graphed. Information presented subject to review.

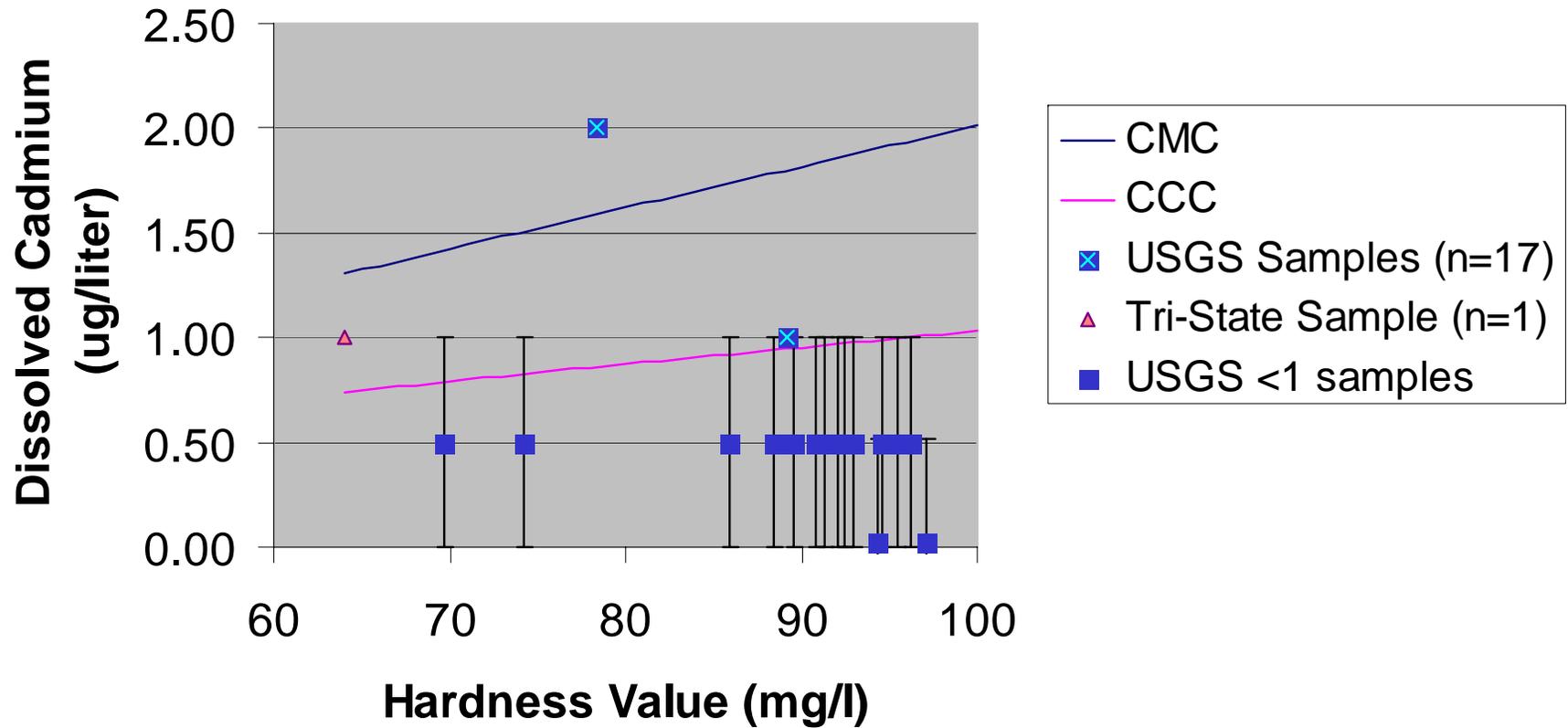
# Zinc Loading Targets

<b>Zinc Load Capacity</b>					
	Flow (cfs)	Zinc CCC (ug/L)	Load Capacity (lb/day)	MOS (lbs/day)	Load Capacity - MOS (lbs/day)
7Q10	6054	80	2610	261	<b>2349</b>
10th percentile*	8400	80	3621	362	<b>3259</b>
50th percentile*	16900	80	7286	729	<b>6557</b>
90th percentile*	44600	80	19228	1923	<b>17305</b>

# Zinc Draft TMDL

Zinc Existing Load					
	Flow (cfs)	Zinc (ug/L)	Existing Load (lbs/day)	Reduction Required (lbs/day)	% Reduction
7Q10	6054	80.8	2636	287	10.89
10th percentile*	8400	80.8	3658	398	10.89
50th percentile*	16900	80.8	7359	801	10.89
90th percentile*	44600	80.8	19420	2115	10.89

## Lower Clark Fork River Dissolved Cadmium



# Cadmium Target

<b>Cadmium Load Capacity</b>					
	Flow (cfs)	Cadmium CCC (ug/L)	Load Capacity (lb/day)	MOS (lbs/day)	Load Capacity - MOS (lbs/day)
7Q10	6054	0.74	24	2.4	21.6
10th percentile*	8400	0.74	33	3.3	29.7
50th percentile*	16900	0.74	67	6.7	60.3
90th percentile*	44600	0.74	178	17.8	160.2

# Cadmium Draft TMDL

<b>Cadmium Existing Load</b>					
	Flow (cfs)	Cadmium (ug/L)	Load (lb/day)	Reduction Required (lb/day)	% Reduction
7Q10	6054	1	32.6247	10.90	33.40
10th percentile*	8400	1	45.2671	15.12	33.40
50th percentile*	16900	1	91.0731	30.42	33.40
90th percentile*	44600	1	240.3469	80.28	33.40