

## Middle South Platte River Basin Rationale

**Segment WBID:** COSPMS01

**Segment Number & Description:** 1. Mainstem of the South Platte River from a point immediately below the confluence with Big Dry Creek to the Weld/Morgan County Line.

**Designation:** Use Protected

**Classifications:** Aquatic Life Warm 2  
Recreation 1a  
Water Supply  
Agriculture

**Proposed Changes:** Add Water Supply classification including standards for nitrate, chloride, sulfate, arsenic, chromium III, iron and manganese. Temporary Modifications: Un-ionized  $\text{NH}_3(\text{ch}) = 0.12$  mg/l below the confluence with the Cache la Poudre River with an expiration date of 2/28/2010.

**Rationale:** The addition of the Water Supply classification is to protect several public water supply wells recently identified as pumping water from the South Platte River alluvium. To conform to Division policy of adding temporary modification to segments found during assessment as to not meeting water quality standards.

**Important Conditions:** Colorado Monitoring and Evaluation List for Aquatic Life Impairment and from the confluence with Big Dry Creek to HWY 60 impairment for dissolved oxygen during August and September.

**Aquatic Life:** The Colorado Division of Wildlife (CDOW) records indicate the presence of the following species of fish: black crappie, bluegill, bigmouth shiner, brassy minnow, brook stickleback, channel catfish, common carp, creek chub, fathead minnow, Iowa darter, Johnny darter, longnose sucker, largemouth bass, longnose dace, plains killifish, plains topminnow, red shiner, sand shiner, green sunfish, white crappie, white sucker and yellow perch.

**Water Supply:** Several public water supply wells have been identified along the South Platte River that use water from the alluvium. These public drinking water systems identified as using water from this segment are: Ft. Vasquez Visitor Center/Museum (262285), Cities of Ft. Lupton (162291) and Platteville (162615) and the Greeley Camp Ground (162302).

**Recreation:** Recreational activities include fishing and boating.

**Agriculture:** Waters from this segment are used for livestock watering or crop irrigation.

**Point Sources:** COG-640071, City of Brighton; COG-600099, Elsro, Inc.; CO-0020508, City of Evans; CO-0021440, City of Fort Lupton; CO-0041653, Town of Gilcrest; CO-0021644, Town of LaSalle; CO-0040355, Town of Platteville; CO-0001121, Public Service of Colorado-Fort Saint Vrain. COG-500000 (Sand & Gravel) Permits: 3.

**Water Quality:** Water quality data was collected by WQCD #5140 South Platte River at Ft. Lupton (POR 2/1998-3/1999); MWRD SP-FTL South Platte River at CO 52 in Ft. Lupton (POR 2/2001-12/2002); MWRD SP-RD18 South Platte River at Weld County Rd 18 (POR 1/2002-12/2002); MWRD SP-RD28 South Platte River at Weld County Rd 28 (POR 1/2002-12/2002); WQCD #0022 South Platte River at Kersey (POR1/1998-7/2003) and USGS 06754000 South Platte River near Kersey (POR 1/1998-9/2002).

Water Quality Data – COSPMS01

<u>Parameter</u>	<b>TVS @ 400</b>	WQCD 5140	Metro SP- FTL	Metro SP- RD18	Metro SP- RD28	WQCD 0022	USGS 0675400 0	Combined Sample Locations
pH s.u.	6.5-9.0	7.1-7.7 (4)	7.6-7.7 (45)	7.6-7.8 (24)	7.6-7.8 (24)	6.6-8.0 (49)	8.0-8.3 (63)	
D.O. mg/l	5	5.5 (2)	5.2 (45)	6.3 (24)	7.0 (24)	6.4 (53)	7.4 (63)	
Hardness*	NA	207 (3)	256 (45)	278 (24)	286 (24)	411 (53)	567 (238)	
f. coli**	200							
<i>E. coli</i> ***	126	41 (3)	87 (44)	<b>198</b> (24)	<b>150</b> (24)	81 (22)		112 (117)
Cd (dis) µg/l	6.2	0.4 (3)	0.5 (45)	0.6 (24)	0.4 (24)	0.0 (55)		
Cu (dis) µg/l	29.3	8.2 (3)	7.0 (45)	7.6 (24)	7.0 (24)	4.0 (53)		
Fe (dis) µg/l	WS/300	284 (3)	292 (45)	262 (24)	170 (24)	36.7 (70)	15.9 (55)	
Fe (trec) µg/l	1000	1320 (4)				410 (53)		
Pb (dis) µg/l	10.9	1.4 (2)	0.0 (23)	0.0 (12)	0.0 (12)	0.0 (55)		
Mn (dis) µg/l	WS/50	215 (3)	234 (45)	261 (24)	257 (24)	71.0 (55)	40.3 (47)	
Se (dis) µg/l	4.6	2.7 (3)	2.0 (41)	1.6 (24)	2.0 (24)	4.0 (55)		
Zn (dis) µg/l	382	56 (3)	0.0 (45)	30 (24)	30.0 (24)	31.0 (55)		
NH <sub>3</sub> mg/l	0.1	0.02 (3)	0.03 (45)	0.02 (24)	0.01 (24)	0.02 (47)	<b>0.12</b> (63)	
NO <sub>3</sub> mg/l	10	8.1 (4)	6.2 (45)	6.6 (24)	6.6 (24)	7.5 (54)	7.2 (71)	

\* Hardness measured as CaCO<sub>3</sub> mg/l  
 \*\* f. coli measured as #/100 ml of water  
 \*\*\* *E. coli* measured as #/100 ml of water

**Segment WBID:** COSPMS02

**Segment Number & Description:** 2. Previously Deleted.

**Segment WBID:** COSPMS03

**Segment Number & Description:** 3. All tributaries to the South Platte River, including all lakes, reservoirs, and wetlands from a point immediately below the confluence with Big Dry Creek to the Weld/Morgan County line, except for specific listings in the subbasins of the South Platte River, and in Segments 4 and 5.

**Designation:** Use Protected

**Classifications:** Aquatic Life Warm 2  
 Recreation 1a  
 Agriculture

**Aquatic Life:** The Colorado Division of Wildlife (CDOW) records indicate the presence of the following species of fish: bigmouth shiner, common carp, creek chub, fathead minnow, longnose sucker, longnose dace, plains killifish, red shiner, sand shiner, white sucker, black bullhead, brassy minnow, brook stickleback, Johnny darter, central stoneroller, green sunfish, Iowa darter, and plains topminnow.

**Water Supply:** No water supply is currently identified.

**Recreation:** There are documented or potential Recreation 1a uses in this segment.

**Agriculture:** Waters from this segment are used for livestock watering or crop irrigation.

**Point Sources:** COG-582018, Town of Bennett; COG-582027, Town of Elizabeth; COG-582033, Town of Elizabeth, COG-582012, City of Evans; CO-0043320, Galeton Water & Sanitation District; COG-581014, Town of Hudson; CO-0041254, Town of Keenesburg; CO-0021954, Kersey Sanitation District; COG-581001, Town of Lochbuie; CO-0001121, Public Service Company-Fort Saint Vrain; COG-582017, Thomas Lake Subdivision; COG-581005, Weld County School District RE-3J; COG-500000 (Sand & Gravel) Permits: 1.

**Water Quality:** Water quality data was collected by Colorado Division of Wildlife at SP0854, Willow Creek Reservoir at Pawnee National Grassland, POR 6/21/2001.

Metro Wastewater Reclamation District collected data on Horse Creek Reservoir in 2002-2003. The Division used Carlson Trophic State Index (TSI) to determine the trophic status of the reservoir. TSI scores are presented in the table. The TSI indicates the reservoir is hypertrophic.

Parameter	TVS	DOW SP0854
pH s.u.	6.5-9.0	9.2 (1)
D.O. mg/l	6	
Hardness*	NA	82 (1)
f. coli**	200	
<i>E. coli</i> ***	126	
Cd (dis) µg/l	1.9	0.2 (1)
Cu (dis) µg/l	7.6	1.4 (1)
Fe (trec) µg/l	1000	296 (1)
Pb (dis) µg/l	2.0	0.0 (1)
Mn (dis) µg/l	1544	61 (1)
Se (dis) µg/l	4.6	2.4 (1)
Zn (dis) µg/l	100	0.0 (1)
NH <sub>3</sub> mg/l	0.1	
NO <sub>3</sub> mg/l	100	

\* Hardness measured as CaCO<sub>3</sub> mg/l  
 \*\* f. coli measured as #/100 ml of water  
 \*\*\* *E. coli* measured as #/100 ml of water

Water Quality Data – COSPMS03

Parameter	TVS	Horse Creek Reservoir
pH s.u.	6.5-9.0	8-9.1 (97)
D.O. mg/l		4.9 (97)
Hardness*	NA	233 (8)
f. coli**		
<i>E. coli</i> ***		
Cd (dis) µg/l		
Cu (dis) µg/l		
Fe (dis) µg/l	WS/300	
Fe (trec) µg/l	1000	610 (5)
Pb (dis) µg/l		
Mn (dis) µg/l	WS/50	
Se (dis) µg/l	4.6	
Zn (dis) µg/l		
NH <sub>3</sub> mg/l		.03 (8)
NO <sub>3</sub> mg/l	10	0.6 (8)
Chl a TSI		82
SD TSI		55
TP TSI		86

- \* Hardness measured as CaCO<sub>3</sub> mg/l
- \*\* f. coli measured as #/100 ml of water
- \*\*\* *E. coli* measured as #/100 ml of water

**Segment WBID:** COSPMS04

**Segment Number & Description:** 4. Barr Lake and Milton Reservoir.

**Designation:** Use Protected

**Classifications:** Aq Life Warm 2  
 Recreation 1a  
Water Supply  
 Agriculture

**Proposed Changes:** Add Milton Reservoir to this segment. Add Water Supply classification to the segment including all numeric standards associated with the water supply classification.

**Rationale:** Milton Reservoir was moved into this segment because both reservoirs are off channel reservoirs that store water from the same source and both reservoirs have the same uses. Milton Reservoir and Barr Lake have been proposed as drinking water reservoirs by FRICO, a local water/irrigation company.

**Important Conditions:** Barr Lake and Milton Reservoirs are on the 303d List as impaired for pH.

**Aquatic Life:** The Colorado Division of Wildlife (CDOW) records indicate the presence of the following fish species: common carp, black crappie, fathead minnow, white sucker, largemouth bass, smallmouth bass, yellow perch, channel catfish, tiger muskie, bluegill, walleye, gizzard shad, white crappie, rainbow trout, and wiper.

**Water Supply:** Aurora and Douglas County intend to use water from Barr Lake and Milton Reservoirs for municipal water supply.

**Recreation:** There are documented or potential Recreation 1a uses in this segment.

**Agriculture:** Waters from this segment are used for livestock watering or crop irrigation.

**Point Sources:** None known.

**Water Quality:** Data have been collected on Barr Lake from 1995-2003, and on Milton Reservoir from 1998-2003. The data used for this water quality assessment were provided by Mountain River Associates (MRA) and Metro Wastewater Reclamation District (MWRD). Annual data were used to assess pH, dissolved oxygen, nutrients, and metals. Full water column data, when available, were used to calculate existing water quality. High pH values frequently are observed during the summer due to high rates of photosynthesis. The 85<sup>th</sup> percentile for pH data exceeds the upper range of 9.0 for both lakes. A mean hardness of 284 was used for hardness based equations (TVS). The trophic status of the lakes was evaluated using Carlson Trophic State Index. TSI scores are provided in the table. The TSI's indicates the lake is hyper-eutrophic.

Parameter	TVS	Barr (MRA)	Barr (MWRD)	Milton (MRA)	Milton (MWRD)
pH s.u.	6.5-9.0	7.9-9.3 (543)	7.7-9.2 (630)	7.8-9.1 (151)	7.9-9.4 (510)
D.O. mg/l	5.0	6.3 (526)	5.1 (630)	6.9 (145)	5.2 (510)
Hardness*	NA	253 (358)	268 (25)	291 (126)	323 (25)
f. coli**					
E. coli***					
Cd (dis) µg/l					
Cu (dis) µg/l	21.9	0 (353)		0 (127)	
Fe (dis) µg/l	WS/300	0 (353)		10 (127)	
Fe (trec) µg/l	1000		200 (25)		110 (250)
Pb (dis) µg/l	7.7	0 (354)		0 (127)	
Mn (dis) µg/l	WS/50	40 (354)		50 (126)	
Se (dis) µg/l	4.6				
Zn (dis) µg/l	286	2.6 (354)		0 (127)	
NH <sub>3</sub> mg/l	0.1	0.04 (328)	0.19 (103)	0.03 (124)	0.07 (99)
NO <sub>3</sub> mg/l	10	2.93 (61)	6.18 (96)	1.5 (127)	2.69 (88)
Chl a TSI		70	72		66
SD TSI			57		53
TP TSI		92	101	93	93

\* Hardness measured as CaCO<sub>3</sub> mg/l  
 \*\* f. coli measured as #/100 ml of water  
 \*\*\* E. coli measured as #/100 ml of water

**Segment WBID:** COSPMS05

**Segment Number & Description:** 5. Mainstems of Lone Tree Creek, Crow Creek and Box Elder Creek from their sources to their confluences with the South Platte River.

**Designation:** Use Protected

**Classifications:** Aquatic Life Warm 2  
 Recreation 2  
 Agriculture

**Proposed Changes:** Temporary Modification -Lone Tree Creek  
 NH3(ch) = 0.26 mg/l exp 2/28/2010

**Rationale:** The adding a temporary modification is to conform to Division policy of adding temporary modification to segments found during assessment as to not meeting water quality standards.

**Aquatic Life:** The Colorado Division of Wildlife (CDOW) records indicate the presence of the following species of fish: brook trout, bigmouth shiner, common carp, creek chub, fathead minnow, longnose sucker, longnose dace, plains killifish, sand shiner, white sucker, brassy minnow, brook stickleback, Johnny darter and central stoneroller.

**Water Supply:** No water supply is currently identified.

**Recreation:** No new information was found to show documented or potential Recreation 1a uses in this segment. A Recreation UAA is on file from the 2000 hearing.

**Agriculture:** Waters from this segment are used for livestock watering or crop irrigation.

**Point Sources:** COG-130014, Colorado Fisheries, Inc.; CO-0041441, Farr Feeders, Inc.; CO-0027707, Lone Tree Wastewater Treatment Facility (Monfort); COG-600062, Williams Natural Gas Company.

**Water Quality:** Water quality data for Lone Tree Creek is available from the USGS #06753990 (Lonetree Creek near Greeley CO) with a period of record from February 2001 to August 2002. These data (n=30) indicate that the un-ionized ammonia standard is being exceeded. Water quality data is also available from WQCD 5371 (Lone Tree Creek @ HWY 14) with a period of record from September 2002 to August 2003. These data (n=5) indicate that the dissolved oxygen standard may not be met but the sample size is inadequate to determine this.

Water Quality Data – COSPMS05

Parameter	TVS @ 400	WQCD 5371A	USGS 06753990
pH s.u.	6.5-9.0	7.4 – 8.3 (5)	8.2 – 8.5 (30)
D.O. mg/l	5.0	4.5 (5)	10.4 (30)
Hardness*	NA	426 (5)	787 (9)
f. coli**	2000		
<i>E. coli</i> ***	630	41 (5)	
Cd (dis) µg/l	6.2	0.0 (5)	
Cu (dis) µg/l	29.3	7.8 (5)	
Fe (trec) µg/l	1000	450 (5)	
Pb (dis) µg/l	10.9	0.0 (5)	
Mn (dis) µg/l	2618	74.8 (5)	164.6 (9)
Se (dis) µg/l	4.6	2.8 (5)	
Zn (dis) µg/l	382	11.4 (5)	
NH <sub>3</sub> mg/l	0.1	0.0 (5)	0.26 (30)

\* Hardness measured as CaCO<sub>3</sub> mg/l  
 \*\* f. coli measured as #/100 ml of water  
 \*\*\* *E. coli* measured as #/100 ml of water