Table 1-1. Watershed Model Subwatershed Summary Information.

Subwatershed ID	Subwatershed Land Area (acre)	Minimum Elevation (feet amsl)	Maximum Elevation (feet amsl)
1	2622	4800	4875
2	37733	4800	5190
3	58439	4810	5305
4	523	4856	4974
5	36	4862	4872
6	27	4865	4872
7	1327	4865	4984
8	3325	4869	4984
9	2911	4898	5000
10	4083	4869	4961
11	5248	4888	5003
12	11058	5016	5351
13	22129	4898	5394
14	6212	4925	5033
15	8895	5089	5394
16	2704	4967	5043
17	157	5098	5144
18	908	5007	5085
19	25342	4869	5226
20	1954	5089	5256
21	8472	5020	5545
22	2226	5089	5253
23	13468	5105	5440
24	15985	5098	5486
25	10894	5043	5571
26	15302	5108	5653
27	5153	5174	5778
28	5033	5102	5541
29	392	5095	5154
30	229	5112	5174
31	18186	5108	5482
32	963	5171	5387
33	28019	5108	5876
34	9102	5095	5371
35	71732	5105	6152
36	789	5167	5472
37	34453	5171	6739
38	13354	5180	5823
39	22685	5243	6296
40	13514	5256	7283
41	2190	5256	5535
42	45438	5292	7812

Notes:

amsl: Above Mean Sea Level

Data Source: Subwatershed area and elevation data determined by GIS analysis of subwatershed boundaries provided by ENSR International.

Table 1-2. Land Area, by County, Year 2005.

County	Total Land Area in County (thousands of acres)	Land Area in Barr/Milton Watershed (thousands of acres)	Fraction of Total Watershed Land Area (percent)
Adams	762	157	29%
Arapahoe	514	104	19%
Denver	98	89	16%
Douglas	538	22	4%
Jefferson	494	48	9%
Weld	2,555	130	24%
TOTAL	4,961	550	100%

Table 1-3. Land Ownership in the Barr/Milton Watershed, Year 2007.

Ownership	Total Land Owned (acres)	Fraction of Total Watershed Land Area (percent)
Private	491,275	89%
Fish & Wildlife Service	17,031	3.1%
City	13,973	2.5%
Federal	7,676	1.4%
State Land Board	6,824	1.2%
County	3,966	0.72%
Joint	3,373	0.61%
Metro District	2,751	0.50%
Non-governmental Orgs	1,561	0.28%
School District	896	0.16%
CO Division of Wildlife	411	0.075%
State Parks	190	0.035%
TOTAL	549,928	100%

Data Source:
NREL 2007

Table 1-4. Land Cover in the Barr/Milton Watershed, Year 2001.

Land Cover Type	Land Area (acres)	Fraction of Total Watershed Land Area (percent)
Developed (residential, commercial, industrial)	191,062	35%
Cultivated Crops	154,388	28%
Grasslands/Herbaceous	98,795	17.9%
Developed (open space)	53,453	9.7%
Pasture/Hay	17,214	3.1%
Wetlands	16,007	2.9%
Open Water	9,238	1.7%
Scrub/Shrub	6,984	1.3%
Forest	2,211	0.4%
Barren Land	1,045	0.2%
TOTAL	550,397	100%

Data Source:
USGS 2001

Table 1-5. Active Permitted Dischargers in the Barr/Milton Watershed.

Discharger Name	NPDES Permit No.	Permit Type	Included in Water Quality Model?	Receiving Water	County	Owner	Design Capacity (MGD)	Wastewater Treatment Level
Metro Wastewater	CO0026638	Sewerage Systems	√	South Platte River, Burlington Canal	Adams	Metro Wastewater Reclamation District	227	Secondary + nitrification/denitrification + chlorination and dechlorination
Littleton & Englewood Wastewater	CO0032999	Sewerage Systems	√	South Platte River	Arapahoe	Cities of Littleton and Englewood	36.3	Secondary + NH3 removal + chlorine disinfection + denitrification
Centennial/Marcy Gulch Wastewater	CO0037966	Sewerage Systems	√	Marcy Gulch	Douglas	Centennial Water & Sanitation District	8.48	Secondary + partial denitrification + UV disinfection
South Adams County / Williams Monaco Wastewater	CO0026662	Sewerage Systems	√	South Platte River	Adams	South Adams County Water And Sanitation District	7	Secondary + chlorine disinfection
Aurora/Sand Creek Wastewater	CO0026611	Sewerage Systems	√	Sand Creek	Adams	City of Aurora	5	Tertiary + UV disinfection
Fort Lupton Wastewater	CO0021440	Sewerage Systems	√	South Platte River	Weld	Town of Fort Lupton	2.75	UV disinfection
Brighton Wastewater	CO0021547	Sewerage Systems	√	South Platte River	Adams	City of Brighton	2.63	Secondary + chlorine disinfection
Lochbuie Wastewater	COG650158	Sewerage Systems	√	Beebe Seep Canal	Weld	Town of Lochbuie	1	Secondary + chlorine disinfection
Hudson Wastewater	COG589013	Sewerage Systems	√	Beebe Seep Canal	Weld	Town of Hudson	1	Secondary + chlorine disinfection
Glendale Wastewater	CO0020095	Sewerage Systems	no	Cherry Creek	Arapahoe	City of Glendale	(No longer active as of 2007)	
Arapahoe Station	CO0001091	Electric Services	no	South Platte River	Denver	Public Service Company Of Colorado	--	--
Cherokee Station	CO0001104	Electric Services	no	South Platte River	Denver	Public Service Company Of Colorado	--	--
Zuni Station	CO0001139	Electric Services	no	South Platte River	Denver	Public Service Company Of Colorado	--	--
Suncor Denver Refinery	CO0001147	Petroleum Refining	no	Sand Creek	Adams	Suncor Denver	--	--

Table 1-5. Active Permitted Dischargers in the Barr/Milton Watershed.

Discharger Name	NPDES Permit No.	Permit Type	Included in Water Quality Model?	Receiving Water	County	Owner	Design Capacity (MGD)	Wastewater Treatment Level
City of Denver Municipal Stormwater Discharge	COS-000001	MS4 (Phase I)	no	Sand Creek, Cherry Creek, Bear Creek, South Platte River	Denver	City of Denver	--	--
City of Aurora Municipal Stormwater Discharge	COS-000003	MS4 (Phase I)	no	Sand Creek, Cherry Creek, First Creek, Tollgate Creeks	Adams	City of Aurora	--	--
City of Lakewood Municipal Stormwater Discharge	COS-000002	MS4 (Phase I)	no	Clear Creek	Jefferson	City of Lakewood	--	--

Notes:
MGD Million Gallons per Day
MS4 Municipal Separate Storm Sewer System
-- Not applicable.
n/a Data not available.

Table 1-6. Hydrologic Features in the Barr/Milton Watershed.

Waterbody Type	Total Length of Waterbody Type (miles)	Fraction of Total Waterbody Length in Watershed (percent)
Streams, rivers	504	47%
Canals, ditches, connectors	546	51%
Pipelines	25	2%
TOTAL	1,075	100%

Data Source:
ESRI 2005

Table 1-7. Federal and State Threatened and Endangered Species in the Barr/Milton Watershed Counties, by Species

Common Name	Scientific Name	Number of Counties				Notes Relevant to Potential Occurence in Watershed
		Federally Endangered	State Endangered	Federally Threatened	State Threatened	
Least Tern	*Sterna antillarum*	**6**	0	--	--	Casual to rare spring and summer visitor/fall migrant to northeastern plains.
Pallid Sturgeon	*Scaphirhynchus albus*	**6**	0	--	--	Colorado not within published range.
Whooping Crane	*Grus americana*	**6**	0	--	--	Casual migrant on eastern plains - recorded use of reservoir mudflats.
Southwestern Willow Flycatcher	*Empidonax traillii extimus*	**5**	0	--	--	Nests in willows with cottonwood overstory in riparian areas.
Black-footed Ferret	*Mustela nigripes*	**4**	0	--	--	Extirpated in Colorado.
Plains Sharp-tailed Grouse	*Tympanuchus phasianellus jamesii*	0	**6**	--	--	Rare to uncommon resident - Douglas County.
Wolverine	*Gulo gulo*	0	**3**	--	--	Habitat is boreal forest and tundra - status in Colorado unknown.
Bald Eagle	*Haliaeetus leucocephalus*	--	--	**6**	0	Habitat includes reservoirs, rivers, locally in grasslands especially near prairie dog towns.
Piping Plover	*Charadrius melodus*	--	--	**6**	0	Very rare spring/fall migrant on eastern plains. Observed at Prewitt Reservoir near Sterling, CO.
Preble's Meadow Jumping Mouse	*Zapus hudsonius preblei*	--	--	**6**	0	Critical habitat designated in western portion of watershed.
Ute Ladies'-tresses	*Spiranthes diluvialis*	--	--	**6**	0	Critical habitat designated in western portion of watershed.
Mexican Spotted Owl	*Strix occidentalis lucida*	--	--	**5**	0	Habitat: rocky outcrops, mixed conifer forest - critical habitat designation in Douglas County.
Colorado Butterfly Plant	*Gaura neomexicana ssp. coloradensis*	--	--	**3**	0	No critical habitat designation within watershed.
Pawnee Montane Skipper	*Hesperia leonardus montana*	--	--	**2**	0	Occurs in ponderosa pine woodlands between 6,000 to 7,500' elevation.
Canada Lynx	*Lynx canadensis*	--	--	**1**	0	Jefferson County only - restricted to extremely isolated areas of the mountains.
Greenback Cutthroat Trout	*Oncorhynchus clarki stomias*	--	--	**1**	0	Douglas County only - found only in headwater streams.
Western Burrowing Owl	*Athene cunicularia*	--	--	0	**6**	Summer resident of eastern Colorado.
Northern River Otter	*Lutra canadensis*	--	--	0	**2**	Possible occurrence in Poudre and Laramie river drainages.

Notes:

-- Indicates not applicable

Data Souces: CO DOW 2006; USFWS 2006

Table 1-8: Complete List of Waterbody Segments in BMW Watershed, Including Impairment Listings.

BASIN	SEGMENT NO.	DESCRIPTION	USE DESIGNATION	USE CLASSIFICATION	303(d) LISTING	IMPAIRED PARAMETER
Middle South Platte	4	Barr Lake and Milton Reservoir	UP	Aq Life Warm 2 Recreation 1a Water Supply Agriculture	Yes	pH
Middle South Platte	1a	Mainstem South Platte River from point immediately below confluence with Big Dry Creek to confluence with St. Vrain Creek	UP	Aq Life Warm 2 Recreation 1a Water Supply Agriculture	No	
Upper South Platte	15	Mainstem South Platte River from Burlington Ditch diversion to a point immediately below confluence with Big Dry Creek	UP	Aq Life Warm 2 Recreation 1a Water Supply Agriculture	Yes	E. coli
Upper South Platte	14	Mainstem South Platte River from Bowles Avenue to the Burlington Ditch diversion	UP	Aq Life Warm 1 Recreation 1a Water Supply Agriculture	Yes	E. coli
Upper South Platte	16a	Mainstem Sand Creek from confluence of Murphy and Coal Creek to the confluence with the South Platte River	UP	Aq Life Warm 2 Recreation 1a Agriculture	Yes	E. coli Selenium
Upper South Platte	16c	All tributaries to South Platte River including all lakes, reservoirs, and wetlands from outlet of Chatfield Reservoir to point immediately below confluence with Big Dry Creek	UP	Aq Life Warm 2 Recreation 1a Agriculture	Yes	Selenium
Upper South Platte	16d	Second Creek from source to O'Brian Canal	UP	Aq Life Warm 2 Recreation 1a Agriculture	No	
Upper South Platte	16e	Third Creek from source to O'Brian Canal	UP	Aq Life Warm 2 Recreation 1a Agriculture	No	
Upper South Platte	16g	Marcy Gulch, including all lakes, reservoirs, and wetlands from source to confluence with South Platte River	UP	Aq Life Warm 2 Recreation 1a Agriculture	No	
Upper South Platte	6c	Mainstem South Platte River from outlet of Chatfield Reservoir to Bowles Avenue		Aq Life Cold 1 Recreation 1a Water Supply Agriculture	No	
Big Dry Creek	1	Mainstem of Big Dry Creek, including all tributaries, lakes, reservoirs and wetlands from source to confluence with South Platte River	UP	Aq Life Warm 2 Recreation 1b Agriculture	Yes	Iron (total recoverable) E. coli Selenium
Clear Creek	15	Mainstem of Clear Creek from Youngfield Street to confluence with South Platte River	UP	Aq Life Warm 1 Recreation 1a Water Supply Agriculture	Yes	E. coli Aquatic Life Use (org. sediment)
Clear Creek	14b	Mainstem Clear Creek from Denver Water conduit #16 crossing to Youngfield Street	UP	Aq Life Warm 2 Recreation 1a Water Supply Agriculture	Yes	Aquatic Life Use (org. sediment)
Clear Creek	16b	All tributaries to Clear Creek from Farmers Highline Canal diversion to confluence with South Platte River	UP	Aq Life Warm 2 Recreation 2 Agriculture	No	
Clear Creek	18a	Mainstem Ralston Creek, including all lakes and reservoirs, from outlet Arvada Reservoir to confluence with Clear Creek	UP	Aq Life Warm 2 Recreation 1a Water Supply Agriculture	Yes	E. coli

Table 1-8: Complete List of Waterbody Segments in BMW Watershed, Including Impairment Listings.

BASIN	SEGMENT NO.	DESCRIPTION	USE DESIGNATION	USE CLASSIFICATION	303(d) LISTING	IMPAIRED PARAMETER
Clear Creek	18b	Mainstem Leyden Creek and Van Biber Creek from source to confluence with Ralston Creek. Mainstem Little Dry Creek from source to confluence with Clear Creek	UP	Aq Life Warm 2 Recreation 2 Water Supply Agriculture	No	
Bear Creek	2	Mainstem Bear Creek from outlet Bear Creek Reservoir to confluence with South Platte River	UP	Aq Life Warm 1 Recreation 1a Water Supply Agriculture	No	
Bear Creek	3	All tributaries to Bear Creek including all lakes, reservoirs and wetlands from source to point immediately below confluence with Cub Creek	UP	Aq Life Cold 1 Recreation 1a Water Supply Agriculture	No	
Bear Creek	4a	All tributaries to Bear Creek including all lakes, reservoirs and wetlands from point immediately below confluence with Cub Creek to confluence with South Platte River	UP	Aq Life Warm 2 Recreation 1a Water Supply Agriculture	No	
Cherry Creek	3	Mainstem Cherry Creek from outlet of Cherry Creek Reservoir to confluence with South Platte River	UP	Aq Life Warm 2 Recreation 1a Water Supply Agriculture	No	

Notes:

UP = Use protected.

Data Souce: Colorado Department of Public Health and Environment 2004 303(d) List (CDPHE 2004b)

Table 1-9. Summary of Known and Likely Animal Feeding Operations in Counties in the Barr/Milton Watershed.

Farm Classification	Species		County			
			Adams	Arapahoe	Denver	Weld
AFO[a]	Beef	Number of Farms				13
		Current Number of Animals				4,081
		Max. Operating Capacity Number of Animals				8,209
	Dairy	Number of Farms				29
		Current Number of Animals				7,991
		Max. Operating Capacity Number of Animals				7,007
	Goats	Number of Farms				1
		Current Number of Animals				250
		Max. Operating Capacity Number of Animals				250
CAFO[b]	Beef	Number of Farms				45
		Current Number of Animals				507,370
		Max. Operating Capacity Number of Animals				247,100
	Dairy	Number of Farms				26
		Current Number of Animals				55,295
		Max. Operating Capacity Number of Animals				44,865
	Dairy calves	Number of Farms				1
		Current Number of Animals				n/a
		Max. Operating Capacity Number of Animals				5,000
	Lambs	Number of Farms				1
		Current Number of Animals				17,000
		Max. Operating Capacity Number of Animals				60,000
	Poultry	Number of Farms				1
		Current Number of Animals				n/a
		Max. Operating Capacity Number of Animals				n/a
	Sheep	Number of Farms				2
		Current Number of Animals				108,000
		Max. Operating Capacity Number of Animals				215,000
Possible AFO[c]	Beef	Number of Farms				1
		Current Number of Animals				100
		Max. Operating Capacity Number of Animals				n/a
Possible CAFO[c]	Beef	Number of Farms	4	3	1	16
		Current Number of Animals	n/a	n/a	n/a	4,500
		Max. Operating Capacity Number of Animals	n/a	n/a	n/a	8,000
	Dairy	Number of Farms	7	1	1	36
		Current Number of Animals	n/a	n/a	n/a	1,400
		Max. Operating Capacity Number of Animals	n/a	n/a	n/a	1,400
	Heifers, Veal Calves	Number of Farms				1
		Current Number of Animals				n/a
		Max. Operating Capacity Number of Animals				n/a
	Poultry	Number of Farms				5
		Current Number of Animals				n/a
		Max. Operating Capacity Number of Animals				n/a
	Swine	Number of Farms	1			
		Current Number of Animals	n/a			
		Max. Operating Capacity Number of Animals	n/a			

Notes:

The data shown here represents all AFOs/CAFOs in the six counties which fall in whole or in part within the Barr/Milton Watershed boundary. The actual number of AFO/CAFO farms in the Barr/Milton Watershed is unknown. Data was not available for Douglas and Jefferson Counties.

n/a: Data not available

Blank cells indicated no known AFOs/CAFOs in the county.

[a] Animal Feeding Operation (AFO) are animal feeding operations that confine less than the animal number threshold for CAFOs. AFOs are considered sources of nonpoint sources of pollution.

[b] Concentrated Animal Feeding Operations (CAFOs) are large animal feeding operations having 1,000 or more animal units. CAFOs are defined as point sources of pollution in the Colorado Water Quality Control Act.

[c] Farm classification (i.e. AFO or CAFO) has not been fully determined due to a lack of available data for current number of animals and current farm operation status (active/inactive).

Data source:

R. Jepson (2007, pers. comm.)

Table 2-1. List of BMW Association 2007 - 2008 Members.

BMW Association 2007 - 2008 Membership
Sustaining Members
City of Thornton
Denver Water
East Cherry Creek Valley
Farmers Reservior & Irrigation Company
Littleton/Englewood Wastewater Treatment Plant
Metro Wastewater Reclamation District
South Adams County Water and Sanitation Dist
South Beebe Draw Metropolitan District (United Water and Sanitation District)
South Platte Coalition for Urban River Evaluation
Active Members
Beebe Draw Farms Metropolitan District #2
Burlington Land and Reservoir Company
City and County of Denver - Wastewater Management
City and County of Denver - Denver International Airport
City of Aurora
Henrylyn Irrigation District
Supporting Members
Barr Lake State Park
Gibralter Equity Investments
Individual Members[a]
North Front Range Water Quality Planning Association
Pelican Lake Ranch
Town of Lochbuie
Tri-County Health Department

[a] Names of individual members are not listed for privacy protection.

Table 3-1. NPDES Permit Holders in the South Platte Watershed Area that Discharge to the Barr/Milton Watershed.

Management and/or Operating Agency	Permit No.	Facility Size	Hydraulic Design Capacity (mgd)
Upper South Platte*			
Chatfield Watershed Authority	N/A	N/A	N/A
Cherry Creek*			
Cherry Creek Basin Watershed Authority	N/A	N/A	N/A
Bear Creek*			
Bear Creek Watershed Authority	N/A	N/A	N/A
Clear Creek			
Beaver Brook	Proposed	Major	
Black Hawk/Central City	CO-0023949	Major	1.125
Black Hawk/Central City - New	Proposed	Major	2
CDOT - Eisenhower	CO-0026096	Minor	0.072
Central Clear Creek	CO-0030121	Major	0.1
Clear Creek Convenience	COG-584027	Minor	0.002
Clear Creek Skiing Corp	CO-0040835	Minor	0.03
Cyprus Amax Minerals	CO-0041467	Major	
Empire, Town of	CO-0020575	Major	0.06
Georgetown, Town of	CO-0027961	Major	0.58
Idaho Springs, Town of	CO-0041068	Major	0.6
Mt. Vernon Country Club	COG-630061	Minor	0.007
Reverends Ridge Campground	COG-630066	Minor	0.0155
Schwayder Camp WWTF	COG-584009	Minor	0.001831
St. Mary's Glacier	CO-0023094	Minor	0.125/.60
Big Dry Creek			
Broomfield, City of	CO-0026409	Major	5.4
Denver North Campground	CO-0035793	Minor	0.0105
Northglenn, City of	CO-0036757	Major	13.1
Rocky Flats	CO-0001333	Major	0.5
Westminster, City of	CO-0024171	Major	7.5
South Platte Urban			
Arvada Reuse	Proposed		
Barr Lake R.V. Park	COG-030019	Minor	0.015
Clear Creek Valley	CO-0020206	Major	2.8
Coors/Golden	CO-0001163	Major	7
Foxridge Farms Mobile	CO-0028908	Major	0.13
Hi Land Acres Water and Sanitation	CO-0022594	Major	0.069
OEA, Inc.	CO-0042196	Minor	0.0833
Racing Association of Colorado	COG-582026	Minor	0.03
Rangeview Metro District	COG-582042	Major	0.13
Rocky Mountain Arsenal	CO-0021202	Major	0.07
Tomahawk Truck Stop	CO-0042421	Minor	0.012
Upper Sand Creek	Proposed	Major	8

Notes:

* Wastewater flows in these sub-watersheds are intercepted by major reservoirs. Quality of effluent discharges are implemented through control regulations. Entities responsible for management of the control regulation are listed in lieu of individual permit holders.

Data Souce: Data from DRCOG 2006.

Table 3-2. Modeled Dischargers Loading Summary

Inlets / Month	Bear Creek Reservoir (Subbasin #40) (m3/day and kg/day)					Cherry Creek Reservoir (Subbasin #38) (m3/day and kg/day)					Chatfield Reservoir (Subbasin #42) (m3/day and kg/day)					Big Dry Creek (Subbasin #8) (m3/day and kg/day)					Clear Creek (Subbasin #32) (m3/day and kg/day)				
	Flow (divided by 1,000	Organic Phosphorus	Ortho Phosphorus	Nitrate	Ammonia	Flow (divided by 1,000	Organic Phosphorus	Ortho Phosphorus	Nitrate	Ammonia	Flow (divided by 1,000	Organic Phosphorus	Ortho Phosphorus	Nitrate	Ammonia	Flow (divided by 1,000	Organic Phosphorus	Ortho Phosphorus	Nitrate	Ammonia	Flow (divided by 1,000	Organic Phosphorus	Ortho Phosphorus	Nitrate	Ammonia
Jan-03	11	1.3	0.6	2.4	0.4	0	0.0	0.0	0.0	0.0	10	0.9	0.1	0.2	0.5	49	13	65	485	147	3	0.1	0.1	0.5	1.8
Feb-03	10	1.1	0.9	2.1	0.3	0	0.0	0.0	0.0	0.0	5	0.4	0.0	0.1	0.5	51	1	86	668	226	27	1.3	14.9	9.7	21.3
Mar-03	44	7.6	6.0	10.2	1.3	53	9.1	1.2	1.5	2.1	111	19.0	0.6	3.3	5.5	163	101	257	881	946	158	4.7	55.3	61.0	142.2
Apr-03	372	33.5	2.1	632.0	14.9	149	13.4	3.7	2.4	1.5	570	51.3	2.3	36.5	16.0	159	52	139	748	126	116	18.0	34.3	30.1	52.4
May-03	268	21.1	1.3	151.6	4.8	137	10.8	2.8	0.7	9.6	509	39.9	2.0	65.6	44.8	138	51	66	592	81	469	53.9	110.2	105.9	140.6
Jun-03	153	11.8	1.7	40.3	13.0	64	4.9	8.2	2.1	0.5	402	30.9	1.6	14.5	41.0	86	28	44	284	81	1,841	73.6	147.3	553.1	920.5
Jul-03	38	6.1	2.8	5.5	1.0	27	4.3	3.1	0.6	0.7	247	39.7	4.4	8.3	42.3	121	8	72	449	115	446	20.1	29.0	63.5	133.8
Aug-03	46	4.5	1.5	0.2	0.8	14	1.4	0.3	0.1	0.3	186	18.2	0.8	0.9	3.5	60	30	20	313	57	58	5.2	9.6	10.3	15.9
Sep-03	54	7.0	2.0	0.9	0.3	40	5.2	0.6	0.8	1.9	236	30.6	2.7	4.7	1.3	91	84	6	525	118	30	0.6	3.9	6.7	8.3
Oct-03	32	4.2	1.9	3.3	3.9	3	0.3	0.0	0.1	0.2	8	1.1	0.0	0.2	0.1	79	15	72	500	238	20	1.5	2.0	7.5	5.5
Nov-03	21	1.5	1.1	0.4	0.3	0	0.0	0.0	0.0	0.0	5	0.5	0.0	2.9	0.1	119	35	191	1190	183	54	2.1	34.0	40.2	13.4
Dec-03	27	1.9	0.8	1.3	0.3	0	0.0	0.0	0.0	0.0	8	0.7	0.0	0.7	0.2	58	18	87	583	5	38	2.6	29.7	25.1	28.2
Jan-04	44	2.2	0.5	18.7	3.1	16	0.8	0.2	0.3	0.5	32	1.6	0.2	5.2	1.4	63	78	11	824	101	31	1.5	1.5	6.1	21.4
Feb-04	50	2.1	0.6	26.7	2.0	39	1.6	0.4	1.6	3.1	77	3.2	0.4	12.9	6.4	46	13	76	428	46	42	2.1	23.4	15.2	33.4
Mar-04	38	1.9	0.4	24.1	0.4	25	1.3	0.4	1.4	1.1	38	1.9	0.2	0.6	1.9	113	34	191	1013	23	49	1.5	17.3	19.1	44.5
Apr-04	129	7.6	0.9	43.4	1.3	69	4.1	1.2	3.8	0.7	238	14.1	1.2	34.8	21.5	202	35	129	930	115	110	17.0	32.3	28.3	49.3
May-04	168	13.1	0.9	52.4	4.8	47	3.6	1.5	2.6	0.4	242	18.9	1.2	34.6	32.9	120	12	34	383	8	53	6.1	12.6	12.1	16.0
Jun-04	104	9.8	1.0	21.4	5.2	10	0.9	0.1	0.7	0.3	205	19.5	1.1	15.6	20.1	105	50	76	682	24	564	22.5	45.1	169.3	281.8
Jul-04	219	16.0	0.8	51.1	8.0	27	1.9	1.0	0.4	1.5	602	43.9	3.6	94.2	53.2	139	33	65	639	26	256	11.5	16.6	36.4	76.7
Aug-04	171	31.9	2.0	18.1	2.7	168	31.3	17.9	17.5	10.6	368	68.7	2.2	17.9	23.6	113	27	68	563	30	138	12.4	22.8	24.5	38.0
Sep-04	75	7.3	6.4	11.7	3.5	13	1.2	0.6	0.6	1.9	79	7.7	0.4	1.7	3.9	144	51	94	895	27	69	1.4	9.0	15.2	18.9
Oct-04	148	8.4	0.6	16.4	1.1	57	3.3	1.5	0.5	2.8	56	3.2	0.4	0.7	1.3	78	20	34	373	9	103	7.7	10.3	38.2	28.2
Nov-04	80	3.2	0.7	13.0	1.0	64	2.6	1.2	0.4	0.8	84	3.4	0.6	0.4	1.2	78	15	54	640	9	89	3.6	56.7	67.0	22.3
Dec-04	97	3.5	0.6	15.7	5.7	52	1.9	0.8	0.3	0.7	23	0.8	0.2	0.4	0.2	71	8	76	657	6	76	5.3	60.3	51.0	57.3
Total	**2,398**	**209**	**38**	**1,163**	**80**	**1,073**	**104**	**47**	**38**	**41**	**4,340**	**420**	**26**	**357**	**323**	**2,447**	**813**	**2,013**	**15,245**	**2,747**	**4,838**	**277**	**778**	**1,396**	**2,172**
% of Inlets	**15.9%**	**11.4%**	**1.3%**	**6.4%**	**1.5%**	**7.1%**	**5.7%**	**1.6%**	**0.2%**	**0.8%**	**28.7%**	**23.1%**	**0.9%**	**2.0%**	**6.0%**	**16.2%**	**44.6%**	**69.4%**	**83.8%**	**51.2%**	**32.0%**	**15.2%**	**26.8%**	**7.7%**	**40.5%**
% of Total	**7.9%**	**11.4%**	**0.1%**	**0.9%**	**0.1%**	**3.5%**	**5.7%**	**0.1%**	**0.0%**	**0.0%**	**14.2%**	**23.1%**	**0.1%**	**0.3%**	**0.3%**	**8.0%**	**44.6%**	**4.7%**	**11.5%**	**2.3%**	**15.8%**	**15.2%**	**1.8%**	**1.1%**	**1.8%**

Point Sources / Month	Brighton WWTP (Subbasin #9) (m3/day and kg/day)					Metro WWTP (Subbasin #30) (m3/day and kg/day)					South Adams WWTP (Subbasin #25) (m3/day and kg/day)					Fort Lupton WWTP (Subbasin #8) (m3/day and kg/day)					Littleton-Englewood WWTP (Subbasin #39) (m3/day and kg/day)				
	Flow (divided by 1,000	Organic Phosphorus	Ortho Phosphorus	Nitrate	Ammonia	Flow (divided by 1,000	Organic Phosphorus	Ortho Phosphorus	Nitrate	Ammonia	Flow (divided by 1,000	Organic Phosphorus	Ortho Phosphorus	Nitrate	Ammonia	Flow (divided by 1,000	Organic Phosphorus	Ortho Phosphorus	Nitrate	Ammonia	Flow (divided by 1,000	Organic Phosphorus	Ortho Phosphorus	Nitrate	Ammonia
Jan-03	7.0	0	4.7	68	26	390	0	1060	1770	3270	9.2	0	43	131	78	7.8	0	5.3	77	3.7	81	0	236	2360	350
Feb-03	6.8	0	4.6	66	30	480	0	1310	1990	4000	9.0	0	41	106	77	7.8	0	5.3	77	3.7	83	0	242	2220	380
Mar-03	6.9	0	4.7	68	48	510	0	1410	2150	3380	9.2	0	41	113	88	7.8	0	5.3	77	3.7	90	0	262	2390	300
Apr-03	7.7	0	5.2	75	44	520	0	1420	2160	3710	9.2	0	40	92	79	7.8	0	5.3	77	3.7	93	0	270	2350	230
May-03	7.9	0	5.4	78	30	550	0	1510	2300	4610	9.7	0	42	57	95	7.8	0	5.3	77	3.7	89	0	257	2430	250
Jun-03	7.9	0	5.3	77	14	530	0	1450	2200	4420	9.5	0	42	87	102	7.8	0	5.3	77	3.7	84	0	243	2310	260
Jul-03	7.6	0	5.2	75	8	520	0	1420	2170	4360	9.8	0	46	81	105	7.8	0	5.3	77	3.7	82	0	238	2360	220
Aug-03	8.1	0	5.5	79	40	510	0	1390	2110	4250	9.9	0	47	57	66	7.8	0	5.3	77	3.7	82	0	238	2080	180
Sep-03	7.8	0	5.3	76	21	500	0	1380	2090	4200	9.7	0	46	95	20	7.8	0	5.3	77	3.7	83	0	239	1720	200
Oct-03	7.2	0	4.9	70	5	480	0	1330	2020	4050	9.9	0	47	66	86	7.8	0	5.3	77	3.7	81	0	235	2280	240
Nov-03	7.3	0	4.9	71	8	300	0	820	1240	3050	11.6	0	47	122	119	7.8	0	5.3	77	3.7	85	0	248	2170	290
Dec-03	7.0	0	4.7	68	7	280	0	770	1160	2690	11.5	0	57	117	136	7.8	0	5.3	77	3.7	84	0	244	2260	470
Jan-04	7.0	0	4.7	68	26	290	0	800	1220	2980	11.7	0	21	116	138	7.8	0	5.3	77	3.7	81	0	234	2320	350
Feb-04	6.8	0	4.6	66	30	410	0	1120	1700	4210	11.5	0	72	146	90	7.8	0	5.3	77	3.7	81	0	234	2150	370
Mar-04	6.9	0	4.7	68	48	450	0	1250	1900	3820	11.5	0	51	120	38	7.8	0	5.3	77	3.7	81	0	235	1990	270
Apr-04	7.7	0	5.2	75	44	470	0	1300	1980	3990	11.7	0	61	128	49	7.8	0	5.3	77	3.7	87	0	251	2620	210
May-04	7.9	0	5.4	78	30	480	0	1330	2030	4070	11.6	0	65	73	36	7.8	0	5.3	77	3.7	86	0	250	2400	240
Jun-04	7.9	0	5.3	77	14	490	0	1340	2040	4100	11.9	0	55	56	54	7.8	0	5.3	77	3.7	86	0	250	2070	260
Jul-04	7.6	0	5.2	75	8	500	0	1380	2100	4220	11.9	0	51	207	63	7.8	0	5.3	77	3.7	82	0	238	1830	220
Aug-04	8.1	0	5.5	79	40	510	0	1410	2150	4320	12.2	0	48	53	90	7.8	0	5.3	77	3.7	86	0	250	1920	190
Sep-04	7.8	0	5.3	76	21	480	0	1330	2020	4050	12.3	0	69	78	28	7.8	0	5.3	77	3.7	83	0	242	2030	200
Oct-04	7.2	0	4.9	70	5	490	0	1350	2060	4130	11.8	0	53	61	46	7.8	0	5.3	77	3.7	89	0	258	1960	260
Nov-04	7.3	0	4.9	71	8	320	0	880	1340	2640	12.1	0	53	83	35	7.8	0	5.3	77	3.7	87	0	254	1890	300
Dec-04	7.0	0	4.7	68	7	350	0	970	1480	3030	12.0	0	50	88	37	7.8	0	5.3	77	3.7	85	0	246	2100	470
Total	**178**	**0**	**121**	**1,744**	**560**	**10,810**	**0**	**29,730**	**45,380**	**91,550**	**260**	**0**	**1,186**	**2,334**	**1,758**	**187**	**0**	**127**	**1,837**	**89**	**2,032**	**0**	**5,893**	**52,210**	**6,710**
% of Points	**1.2%**	**#DIV/0!**	**0.3%**	**1.5%**	**0.5%**	**70.0%**	**#DIV/0!**	**73.6%**	**39.7%**	**78.8%**	**1.7%**	**#DIV/0!**	**2.9%**	**2.0%**	**1.5%**	**1.2%**	**#DIV/0!**	**0.3%**	**1.6%**	**0.1%**	**13.2%**	**#DIV/0!**	**14.6%**	**45.7%**	**5.8%**
% of Total	**0.6%**	**0.0%**	**0.3%**	**1.3%**	**0.5%**	**35.4%**	**0.0%**	**68.7%**	**34.2%**	**75.4%**	**0.9%**	**0.0%**	**2.7%**	**1.8%**	**1.4%**	**0.6%**	**0.0%**	**0.3%**	**1.4%**	**0.1%**	**6.7%**	**0.0%**	**13.6%**	**39.4%**	**5.5%**

Point Sources / Month	Lochbuie WWTP (Subbasin #3) (m3/day and kg/day)					Hudson WWTP (Subbasin #3) (m3/day and kg/day)					Pump Works (FRICO) (Subbasin #34) (m3/day and kg/day)					Aurora WWTP (Subbasin #35) (m3/day and kg/day)					Centennial WWTP (Subbasin #42) (m3/day and kg/day)				
	Flow (divided by 1,000	Organic Phosphorus	Ortho Phosphorus	Nitrate	Ammonia	Flow (divided by 1,000	Organic Phosphorus	Ortho Phosphorus	Nitrate	Ammonia	Flow (divided by 1,000	Organic Phosphorus	Ortho Phosphorus	Nitrate	Ammonia	Flow (divided by 1,000	Organic Phosphorus	Ortho Phosphorus	Nitrate	Ammonia	Flow (divided by 1,000	Organic Phosphorus	Ortho Phosphorus	Nitrate	Ammonia
Jan-03	2.8	0	1.9	16	3.8	3.8	0	2.6	37	2.0	89	0	250	180	1220	15	0	2.3	101.6	2.3	19	0.0	21.3	220.6	11.8
Feb-03	2.8	0	1.9	16	3.8	3.8	0	2.6	37	2.0	0	0	0	0	0	16	0	2.1	105.0	2.2	20	0.0	8.7	220.0	26.4
Mar-03	2.8	0	1.9	16	3.8	3.8	0	2.6	37	2.0	16	0	40	30	170	16	0	2.6	98.7	4.4	22	0.0	14.4	246.0	11.4
Apr-03	2.8	0	1.9	16	3.8	3.8	0	2.6	37	2.0	32	0	90	60	360	16	0	2.4	117.7	5.0	23	0.0	8.1	166.5	2.5
May-03	2.8	0	1.9	16	3.8	3.8	0	2.6	37	2.0	0	0	0	0	0	14	0	1.4	102.6	1.4	22	0.0	18.5	180.6	5.3
Jun-03	2.8	0	1.9	16	3.8	3.8	0	2.6	37	2.0	0	0	0	0	0	11	0	3.1	81.7	1.1	22	0.0	4.2	183.9	2.9
Jul-03	2.8	0	1.9	16	3.8	3.8	0	2.6	37	2.0	0	0	0	0	0	5	0	1.8	41.5	1.2	18	0.0	7.4	101.1	28.2
Aug-03	2.8	0	1.9	16	3.8	3.8	0	2.6	37	2.0	0	0	0	0	0	7	0	0.9	66.9	0.7	18	0.0	18.7	205.0	5.8
Sep-03	2.8	0	1.9	16	3.8	3.8	0	2.6	37	2.0	0	0	0	0	0	11	0	0.9	94.3	1.1	19	0.0	11.8	133.7	2.9
Oct-03	2.8	0	1.9	16	3.8	3.8	0	2.6	37	2.0	0	0	0	0	0	11	0	4.0	99.1	1.1	19	0.0	14.0	213.0	5.6
Nov-03	2.8	0	1.9	16	3.8	3.8	0	2.6	37	2.0	187	0	510	340	2900	11	0	7.5	109.3	1.2	19	0.0	10.3	275.4	24.5
Dec-03	2.8	0	1.9	16	3.8	3.8	0	2.6	37	2.0	199	0	550	360	3000	11	0	1.6	126.6	1.1	19	0.0	17.8	189.2	65.9
Jan-04	2.8	0	1.9	16	3.8	3.8	0	2.6	37	2.0	177	0	490	320	2700	17	0	2.4	134.7	2.6	18	0.0	24.4	208.5	36.3
Feb-04	2.8	0	1.9	16	3.8	3.8	0	2.6	37	2.0	60	0	170	110	920	17	0	2.7	117.8	8.5	19	0.0	27.6	257.0	22.6
Mar-04	2.8	0	1.9	16	3.8	3.8	0	2.6	37	2.0	0	0	0	0	0	12	0	1.4	99.5	1.2	19	0.0	9.3	209.5	8.8
Apr-04	2.8	0	1.9	16	3.8	3.8	0	2.6	37	2.0	0	0	0	0	0	13	0	1.6	102.7	1.3	20	0.0	11.6	198.4	2.2
May-04	2.8	0	1.9	16	3.8	3.8	0	2.6	37	2.0	0	0	0	0	0	10	0	1.1	72.4	1.0	20	0.0	9.4	205.6	6.4
Jun-04	2.8	0	1.9	16	3.8	3.8	0	2.6	37	2.0	0	0	0	0	0	9	0	1.6	69.2	7.1	20	0.0	7.9	210.7	2.1
Jul-04	2.8	0	1.9	16	3.8	3.8	0	2.6	37	2.0	0	0	0	0	0	9	0	1.0	77.6	0.9	20	0.0	9.0	224.5	2.1
Aug-04	2.8	0	1.9	16	3.8	3.8	0	2.6	37	2.0	0	0	0	0	0	10	0	1.3	76.1	1.0	19	0.0	14.9	196.8	2.3
Sep-04	2.8	0	1.9	16	3.8	3.8	0	2.6	37	2.0	0	0	0	0	0	10	0	2.0	94.3	1.0	19	0.0	15.6	249.9	2.9
Oct-04	2.8	0	1.9	16	3.8	3.8	0	2.6	37	2.0	0	0	0	0	0	16	0	1.9	146.8	1.7	22	0.0	15.1	302.9	3.9
Nov-04	2.8	0	1.9	16	3.8	3.8	0	2.6	37	2.0	158	0	440	290	2220	17	0	2.0	166.8	1.7	22	0.0	17.0	317.8	37.9
Dec-04	2.8	0	1.9	16	3.8	3.8	0	2.6	37	2.0	109	0	300	200	1440	18	0	2.3	159.8	1.8	22	0.0	13.2	262.0	25.0
Total	**68**	**0**	**46**	**393**	**92**	**91**	**0**	**62**	**891**	**47**	**1,028**	**0**	**2,840**	**1,890**	**14,930**	**302**	**0**	**52**	**2,463**	**53**	**483**	**0**	**330**	**5,178**	**346**
% of Points	**0.4%**	**#DIV/0!**	**0.1%**	**0.3%**	**0.1%**	**0.6%**	**#DIV/0!**	**0.2%**	**0.8%**	**0.0%**	**6.7%**	**#DIV/0!**	**7.0%**	**1.7%**	**12.9%**	**2.0%**	**#DIV/0!**	**0.1%**	**2.2%**	**0.0%**	**3.1%**	**#DIV/0!**	**0.8%**	**4.5%**	**0.3%**
% of Total	**0.2%**	**0.0%**	**0.1%**	**0.3%**	**0.1%**	**0.3%**	**0.0%**	**0.1%**	**0.7%**	**0.0%**	**3.4%**	**0.0%**	**6.6%**	**1.4%**	**12.3%**	**1.0%**	**0.0%**	**0.1%**	**1.9%**	**0.0%**	**1.6%**	**0.0%**	**0.8%**	**3.9%**	**0.3%**

Notes:

Data used in model, provided by ENSR

Table 3-3. Questions Developed by BMW Association Stakeholders.

	Questions from Stakeholders (Water Quality)
1	What are the water quality impacts on the four uses of the reservoirs (aquatic life, drinking water supply, agriculture, and recreation)?
2	What are the historical trends in important water quality parameters?
3	What kind of water quality can be expected in the future for the two reservoirs?
4	Describe the hydrodynamics of the reservoirs
5	What types of algae grow in the reservoirs (differentiate between desirable and non-desirable types of algae)? What variables control their growth?
6	What is the impact of reservoir operations on water quality?
7	What does a mass balance of nutrients around each of the reservoirs show?
8	What does a mass balance of nutrients by sub-basin show?
9	What are the sources of nutrients (differentiate by source)?
10	What is the impact of uses on the water quality of the reservoirs?
11	What is driving algal growth and high pH?
12	What are the water quantity effects?
13	What water-quality targets are appropriate for the reservoirs?
14	How much loading can the reservoirs take and still meet specific in-lake concentrations?
15	What are the impacts of BMPs and other management options?
16	Is short-circuiting occurring? If so, what is the impact?
17	What is the role of groundwater?
18	What is the impact of reservoir WQ on drinking water wells in the area (Brighton, Lochbuie)?
19	What is the correlation between surface and GW fate and transport?
20	What is the relationship between the WQ of what enters the Burlington Ditch (or the Platte Valley Ditch) and the WQ entering the lake?
21	Tool to evaluate management options
22	What are the storm water sources and impacts?

Data Souce:
Barr/Milton Watershed Evaluation of Approaches and Tools report (Hydrosphere 2005b)

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Table 4-1. Summary Guide to BMW Water Quality and Water Flow Monitoring Program Components.

Water Quality and Flow Monitoring Program Information Sources	Exhibit	Page	Document
Water Quality Monitoring			
Parameters Recommended for Monitoring	Table 13	44	The BMW WQ Database and Recommendation for Monitoring (Hydrosphere 2005a)
Location of Water-Quality Monitoring Stations in the BMW WQ Database	Figure 2	16	The BMW WQ Database and Recommendation for Monitoring (Hydrosphere 2005a)
Map of Active Water-Quality Monitoring Stations	Figure 4	27	The BMW WQ Database and Recommendation for Monitoring (Hydrosphere 2005a)
Agencies with Active Water-Quality Monitoring Programs	Table 7	24	The BMW WQ Database and Recommendation for Monitoring (Hydrosphere 2005a)
List of Active Water-Quality Stations	Table 8	33	The BMW WQ Database and Recommendation for Monitoring (Hydrosphere 2005a)
General Water-Quality Sampling Frequency by Agency	Table 9	38	The BMW WQ Database and Recommendation for Monitoring (Hydrosphere 2005a)
Eutrophication-Related Parameters Monitored by Agency	Table 10	39	The BMW WQ Database and Recommendation for Monitoring (Hydrosphere 2005a)
Flow Monitoring			
Locations of Flow Monitoring Stations in the BMW Data Inventory	Figure 1	14	The BMW WQ Database and Recommendation for Monitoring (Hydrosphere 2005a)
Map of Active Flow Monitoring Stations	Figure 3	24	The BMW WQ Database and Recommendation for Monitoring (Hydrosphere 2005a)
Flow Data Summary – Burlington/Barr/Milton Systems	Table 1	12	The BMW WQ Database and Recommendation for Monitoring (Hydrosphere 2005a)
Flow Data Summary	Table 2	13	The BMW WQ Database and Recommendation for Monitoring (Hydrosphere 2005a)
List of Active Flow Stations	Table 6	23	The BMW WQ Database and Recommendation for Monitoring (Hydrosphere 2005a)
Flow Sites to Include in Current Monitoring	Table 12	42	The BMW WQ Database and Recommendation for Monitoring (Hydrosphere 2005a)

Table 5-1. Estimated Mass of Total Phosphorus Entering Barr Lake (lbs)

	IY03	IY04	IY05	Average (IY03-IY05)
Burlington-O'Brian Canal	123,037	164,986	140,270	142,764
Precipitation	567	173	277	339
Inflow Seepage	4,817	4,356	5,512	4,895
Internal Loading	9,000	9,000	9,000	9,000
TOTAL INFLOW	137,420	178,515	155,059	156,998

Data Source: AMEC 2008a

Table 5-2. Estimated Mass of Total Phosphorus Leaving Barr Lake (lbs)

	IY03	IY04	IY05	Average (IY03-IY05)
East Outfall	12,015	12,205	15,044	13,088
West Outfall	24,972	19,517	25,336	23,275
Beebe Canal Releases	9,059	8,697	10,782	9,513
Total Outflow Seepage	16,202	15,216	16,666	16,028
TOTAL OUTFLOW	62,248	55,635	67,828	61,904

Data Source: AMEC 2008a

Table 5-3. Barr Lake Phosphorus Balance (lbs)

	IY03	IY04	IY05	Average (IY03-IY05)
Change in Storage	15,902	-10,239	5,560	3,741
Total Inflow	137,420	178,515	155,059	156,998
Total Outflow	62,248	55,635	67,828	61,904
Unaccounted For	-59,270	-133,119	-81,671	-91,353
% Retained*	41%	66%	49%	52%

* Mass unaccounted for as a percent of total inflow and initial mass in storage

Data Source: AMEC 2008a

Table 5-4. Estimated Mass of Total Nitrogen Entering Barr Lake (lbs)

	IY03	IY04	IY05	Average (IY03-IY05)
Burlington-O'Brian Canal	1,025,632	1,518,038	1,239,405	1,261,025
Precipitation	10,475	9,590	3,782	7,949
Inflow Seepage	38,446	42,375	50,610	43,811
Internal Loading	4,500	4,500	4,500	4,500
TOTAL INFLOW	1,079,052	1,574,503	1,298,297	1,317,284

Data Source: AMEC 2008a

Table 5-5. Estimated Mass of Total Nitrogen Leaving Barr Lake (lbs)

	IY03	IY04	IY05	Average (IY03-IY05)
East Outfall	64,238	70,734	152,771	95,914
West Outfall	149,011	128,826	179,054	152,297
Beebe Canal Releases	54,357	61,520	79,996	65,291
Total Outflow Seepage	90,380	114,338	125,965	110,228
TOTAL OUTFLOW	357,986	375,419	537,786	423,730

Data Source: AMEC 2008a

Table 5-6. Barr Lake Nitrogen Balance (lbs)

	IY03	IY04	IY05	Average (IY03-IY05)
Change in Storage	125,289	-50,155	33,609	108,744
Total Inflow	1,079,052	1,574,503	1,298,297	1,317,284
Total Outflow	357,986	375,419	537,786	423,730
Unaccounted For	-595,777	-1,249,239	-726,902	-857,306
% Retained*	53%	72%	52%	59%

* Mass unaccounted for as a percent of total inflow and initial mass in storage

Data Source: AMEC 2008a

Table 5-7. Estimated Mass of Total Phosphorus Entering Milton Reservoir (lbs)

	IY03	IY04	Average (IY03-IY04)
Platte Valley Canal	48,322	76,913	62,617
Beebe Canal / Subsurface Seepage	43,083	7,588	25,336
Precipitation	408	226	317
Internal Loading	1,000	1,000	1,000
TOTAL INFLOW	92,813	85,727	89,270

Data Source: AMEC 2008b

Table 5-8. Estimated Mass of Total Phosphorus Leaving Milton Reservoir (lbs)

	IY03	IY04	Average (IY03-IY04)
Releases to Gilmore Canal	22,701	31,661	27,181
Outflow Seepage	10,837	14,022	12,599
TOTAL OUTFLOW	33,539	46,022	39,780

Data Source: AMEC 2008b

Table 5-9. Milton Reservoir Phosphorus Balance (lbs)

	IY03	IY04	Average (IY03-IY04)
Change in Storage	5,603	10,805	8,204
Total Inflow	92,813	85,727	89,270
Total Outflow	33,539	46,022	39,780
Unaccounted For	-53,671	-28,900	-41,286
% Retained*	57%	31%	44%

* Mass unaccounted for as a percent of total inflow and initial mass in storage

Data Source: AMEC 2008b

Table 5-10. Estimated Mass of Total Nitrogen Entering Milton Reservoir (lbs)

	IY03	IY04	Average (IY03-IY04)
Platte Valley Canal	308,025	496,024	402,025
Beebe Canal / Subsurface Seepage	158,399	80,495	119,447
Precipitation	7,534	12,567	10,051
Internal Loading	800	800	800
TOTAL INFLOW	474,758	589,886	532,323

Data Source: AMEC 2008b

Table 5-11. Estimated Mass of Total Nitrogen Leaving Milton Reservoir (lbs)

	IY03	IY04	Average (IY03-IY04)
Releases to Gilmore Canal	107,815	120,439	114,127
Outflow Seepage	81,922	67,463	74,693
TOTAL OUTFLOW	189,737	187,902	188,820

Data Source: AMEC 2008b

Table 5-12. Milton Reservoir Nitrogen Balance (lbs)

	IY03	IY04	Average (IY03-IY04)
Change in Storage	11,369	85,732	48,551
Total Inflow	474,758	589,886	532,323
Total Outflow	189,737	187,902	188,820
Unaccounted For	-273,652	-316,252	-294,952
% Retained*	55%	51%	53%

* Mass unaccounted for as a percent of total inflow and initial mass in storage

Data Source: AMEC 2008b

Table 6-1. Summary of WWTP Utility Plans

Facility[1]	Utility Plan Year	Discharge (mgd)[2]	Treatment Level		System
			TP (mg/L)[3]	TN (mg/L)[3]	
Metro	2005	157	--	10	Denitrification
	2020	195	1	8	BNR, Denitrification, Filtration
	2035	234	0.5	3	Flocculation/Sedimentation
Littleton/Englewood	2005	28.8	--	35	Denitrification
	2020	33.9	1	1	Flocculation/Sedimentation
	2035	38.2	0.1	0.3	Reverse Osmosis
SACWSD	2005	4.75	--	--	--
	2020	7.61	0.1	--	--
	2035	11.01	0.1	--	--
Centennial	2005	7.99	--	--	--
	2020	9.35	--	--	--
	2035	10.94	--	--	--
Aurora	2005	--	--	--	--
	2020	--	--	--	--
	2035	--	--	--	--
Ft. Lupton	2005	--	--	--	--
	2020	--	--	--	--
	2035	--	--	--	--
Brighton	2005	0.002	--	--	--
	2020	0.004	--	--	--
	2035	0.01	--	--	--
Hudson	2005	--	--	--	--
	2020	--	--	--	--
	2035	--	--	--	--
Lochbuie	2005	0.458	--	--	--
	2020	1.36	--	--	--
	2035	2.52	--	--	--

Notes:

-- = Indicates no data available

[1] Utility Plan information was not obtained from every facility

[2] Data from DRCOG's South Platte Urban Local Review document, 2008

[3] Information from individual treatment facilities, verbal contact, 2008

Table 7-1. Implementation Planning Schedule (Modified Project Implementation Plan Milestone Table).

Phase	OBJECTIVE/TASK	PRODUCTS	Year 1 7/05-6/06	Year 2 7/06-6/07	Year 3 7/07-6/08	Year 4 7/08-6/09	Year 5 7/09-6/10	Year 6 7/10-6/11	PROJECTED 2011 - 2022
Phase 2	**OBJECTIVE 1 - Watershed Plan**								
	Task 1 - Reservoir Assessments and Watershed Plan	Report							
		Plan							
	OBJECTIVE 2 – Organization Stability & Continuing Watershed Planning								
	Task 2 – Organization Stability	Organization							
	Task 3 – Watershed Plan Implementation/Updates	Reports/Plan							
	Task 4 – Info/Education Communications	I/E Material							
	OBJECTIVE 3 – Model Development								
	Task 5 – Develop Model(s)	Model							
Phase 3	**OBJECTIVE 4 – pH TMDL Development**								
	Task 6 – Develop pH TMDL	pH TMDL							
Phase 4*	**BMP Implementation**								
	Implement Management Measures	BMP Measures							
Ongoing	**Monitoring**								
	Monitor Water Quality	Water Quality Updates							

* The current 319 Nonpoint Source grant involves Phase 2 and 3 activites; Phase 4 implementation activities will be covered under other funding sources.

Table 7-2. Phase 2 and 3 Funding Sources.

Activity	Year 1 7/05-6/06	Year 2 7/06-6/07	Year 3 7/07-6/08	Year 4 7/08-6/09	Phase 2 Total (Year 1 - 4)	Year 5 7/09-6/10	Year 6 7/10-6/11	Phase 3 Total (Year 5 - 6)
§319(h) Funds								
Sub-total	**$25,000**	**$42,300**	**$72,300**	**$59,800**	**$199,400**	**$35,000**	**$67,500**	**$102,500**
Cash Dues & Contributions								
Municipalities	$13,750	$13,750	$13,750	$13,750	$55,000	$18,000	$18,000	$36,000
Irrigation Companies	$11,000	$11,000	$11,000	$11,000	$44,000	$13,500	$13,500	$27,000
Other Associations	$15,560	$15,560	$15,560	$15,570	$62,250	$18,500	$18,500	$37,000
Wastewater Agencies	$18,000	$18,000	$18,000	$18,000	$72,000	$21,000	$21,000	$42,000
Other	$2,625	$2,625	$2,625	$2,625	$10,500	$4,000	$4,000	$8,000
Special Assessments	$0	$0	$0	$0	$0	$25,000	$25,000	$50,000
Sub-total	**$60,935**	**$60,935**	**$60,935**	**$60,945**	**$243,750**	**$100,000**	**$100,000**	**$200,000**
In-Kind Contributions								
Municipalities	$171,685	$159,185	$81,685	$81,685	$494,240	$81,685	42,935	$124,620
Irrigation Companies	$113,185	$113,185	$58,685	$58,685	$343,740	$58,685	$31,435	$90,120
Other Associations	$4,185	$4,185	$4,185	$4,185	$16,740	$4,185	$4,185	$8,370
Wastewater Agencies	$320,572	$308,072	$157,872	$157,872	$944,388	$157,872	$82,772	$240,644
Other	$3,023	$3,023	$3,023	$3,023	$12,092	$3,023	$3,023	$6,046
Sub-total	**$612,650**	**$587,650**	**$305,450**	**$305,450**	**$1,811,200**	**$305,450**	**$164,350**	**$469,800**
Total Funds	**$698,585**	**$690,885**	**$438,685**	**$426,195**	**$22,543,501**	**$440,450**	**$331,850**	**$772,300**

Table 7-3. Phase 2 and 3 Budget.

Phase	Activity	Year 1 7/05-6/06	Year 2 7/06-6/07	Year 3 7/07-6/08	Year 4[a] 7/08-6/09	Year 5[a] 7/09-6/10	Year 6[a] 7/10-6/11	Total (Year 1-6)	Project Totals Cash Match	In-Kind Match	§319(h) Funds
Phase 2	**Obj. 1- Watershed Plan**										
	TASK 1 – *Reservoir Assessment and Watershed Plan*										
	Reservoir Assessment	$20,000	$0	$0	$0	$0	$0	$20,000	$0	$5,000	$15,000
	Write Watershed Plan	$30,000	$0	$0	$0	$0	$0	$30,000	$0	$20,000	$10,000
	Administrative Support	$5,000	$0	$0	$0	$0	$0	$5,000	$5,000	$0	$0
	Objective 1 Sub-Total	$55,000	$0	$0	$0	$0	$0	$55,000	$5,000	$25,000	$25,000
	Obj. 2 -Organization Stability & Continuing Watershed Planning										
	TASK 2 – *Organization Stability*										
	Staffing	$9,250	$18,500	$18,500	$9,250	$0	$0	$55,500	$33,300	$0	$22,200
	Technical Assistance	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
	Administrative Support	$2,500	$5,000	$5,000	$2,500	$0	$0	$15,000	$15,000	$0	$0
	Stakeholder Participation	$23,250	$23,250	$23,250	$23,250	$23,250	$23,250	$139,500	$0	$139,500	$0
	Task 2 Sub-Total	$35,000	$46,750	$46,750	$35,000	$23,250	$23,250	$210,000	$48,300	$139,500	$22,200
	TASK 3 – *Watershed Plan Implementation with Annual Updates*										
	Staffing	$5,550	$11,100	$11,100	$5,550	$0	$0	$33,300	$19,980	$0	$13,320
	Technical Assistance	$7,500	$15,000	$15,000	$7,500	$0	$0	$45,000	$22,500	$0	$22,500
	Administrative Support	$2,000	$4,000	$4,000	$2,000	$0	$0	$12,000	$12,000	$0	$0
	Task 3 Sub-Total	$15,050	$30,100	$30,100	$15,050	$0	$0	$90,300	$54,480	$0	$35,820
	TASK 4 – *Information and Education Communications*										
	Staffing	$3,700	$7,400	$7,400	$3,700	$0	$0	$22,200	$13,320	$0	$8,880
	Technical Assistance	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
	Administrative Support	$2,000	$4,000	$4,000	$2,000	$0	$0	$12,000	$12,000	$0	$0
	Task 4 Sub-Total	$5,700	$11,400	$11,400	$5,700	$0	$0	$34,200	$25,320	$0	$8,880
	Objective 2 Sub-Total	$55,750	$88,250	$88,250	$55,750	$23,250	$23,250	$334,500	$128,100	$139,500	$66,900
	Obj. 3 – Model Development										
	TASK 5 – *Develop Model(s)*										
	Data Collection	$564,400	$564,400	$282,200	$282,200	$282,200	$141,100	$2,116,500	$0	$2,116,500	$0
	Technical Assistance	$10,000	$20,000	$17,500	$7,500	$0	$0	$55,000	$27,500	$0	$27,500
	Modeling Consultant	$10,000	$50,000	$70,000	$30,000	$0	$0	$160,000	$80,000	$0	$80,000
	Objective 3 Sub-Total	$584,400	$634,400	$369,700	$319,700	$282,200	$141,100	$2,331,500	$107,500	$2,116,500	$107,500
	Phase 2 Sub-Total	$695,150	$722,650	$457,950	$375,450	$305,450	$164,350	$2,721,000	$240,600	$2,281,000	$199,400

Table 7-3. Phase 2 and 3 Budget.

Phase	Activity	Year 1 7/05-6/06	Year 2 7/06-6/07	Year 3 7/07-6/08	Year 4[a] 7/08-6/09	Year 5[a] 7/09-6/10	Year 6[a] 7/10-6/11	Total (Year 1-6)	Project Totals: Cash Match	Project Totals: In-Kind Match	Project Totals: §319(h) Funds
Phase 3	**Obj. 4 – pH TMDL Development**										
	TASK 6 – *Develop pH TMDL*										
	Staffing	$0	$0	$0	$18,500	$37,000	$18,500	$74,000	$74,000	$0	$0
	Technical Assistance	$0	$0	$0	$12,500	$27,500	$15,000	$55,000	$27,500	$0	$27,500
	Model Consultant	$0	$0	$0	$10,000	$25,000	$15,000	$50,000	$25,000	$0	$25,000
	Engineering Consultant	$0	$0	$0	$12,500	$37,500	$25,000	$75,000	$37,500	$0	$37,500
	Report Preparation	$0	$0	$0	$0	$12,500	$12,500	$25,000	$12,500	$0	$12,500
	Administrative Support	$0	$0	$0	$6,500	$13,000	$6,500	$26,000	$26,000	$0	$0
	Objective 4 Sub-Total	$0	$0	$0	$60,000	$152,500	$92,500	$305,000	$202,500	$0	$102,500
	Phase 3 Sub-Total	$0	$0	$0	$60,000	$152,500	$92,500	$305,000	$202,500	$0	$102,500
	Total Proposal	**$695,150**	**$722,650**	**$457,950**	**$435,450**	**$457,950**	**$256,850**	**$3,026,000**	**$443,100**	**$2,281,000**	**$301,900**

Notes:

[a]Exact distribution of funds in Years 4-6 is currently being reviewed.

Table 7-4. Information/Education Implementation Plan

Information/Education Activities and Programs	Potential Involved Entities	Cost Estimates	Milestones		
			Short	Intermediate	Long-term
Events					
South Platte Forum (poster presentation)	City of Aurora, City of Brighton, FRICO, Metro WWTP	$150.00	1) Obtain invite to Forum (abstract acceptance)	2) Develop draft poster 3) Solicit comments 4) Prepare final poster	5) Present poster at Forum
National Water Quality Awareness Week/World Water Quality Monitoring Day (NWQAW/WWQMD)	Littleton/Englewood WWTP, Metro WWTP, Barr Lake State Park	$500.00	1) Research past NWQAW/WWQMD events	2) Develop 2007 participation plan	3) Recruit participants
Colorado Watershed Assembly Conference	--	$1,200.00	1) Register for conference	2) Develop and print brochures to distribute	3) Participate in conference (networking) 4) Write up conference summary
Local events	--	--	1) Research appropriate local events	2) Develop plan to participate	3) Recruit participants
Water festivals	City of Aurora; City and County of Denver	--	1) Research water festivals	2) Develop plan to participate	3) Recruit participants
Lake Appreciation Month	North American Lake Management Association; Metro WWTP	--	1) Research Lake Appreciation Month events	2) Develop plan to participate	3) Recruit participants
Colorado Cares Day	North American Lake Management Association; Metro WWTP	--	1) Research Colorado Cares Day events	2) Develop plan to participate	3) Recruit participants
Secchi Dip-In	North American Lake Management Association; Metro WWTP	--	1) Research Secchi Dip-In	2) Develop plan to participate 3) Coordinate efforts with participating organizations	4) Recruit participants/promote event 5) Collect data 6) Report data
Annual watershed tours	BMW Association stakeholders	$250	1) Solicit stakeholder input on desired tour focus	2) Select tour locations/lead organizations	3) Recruit participants/promote event 4) Organize transportation/food
Informational presentations at bi-monthly stakeholder meetings	CDPHE, Barr Lake State Park, ENSR, others not yet determined	$0	1) Solicit Board recommendations for presenters	2) Recruit presenters	3) Promote meetings 4) Organize logistics
Products					
Newsletter	Littleton/Englewood WWTP, Metro WWTP, FRICO	$500.00	1) Identify lead editors	2) Plan content 3) Recruit article authors 4) Edit articles	5) Format newsletter 6) Print newsletter 7) Distribute newsletter
Watershed Plan presentation	All BMW Association Board Members	$500.00	1) Finalize Watershed Plan 2) Identify target organizations to present to 3) Schedule presentation with target organizations	4) Develop PowerPoint presentation 5) Develop pledge forms to promote Board participation	5) Compile presentation toolkit (including PowerPoint presentation, pledge form, brochurse, and newsletters) for each Board member 6) Encourage each Board member to report back to the full Board following presentation
Watershed Plan promotion	All BMW Association Board Members, local and regional media	$100.00	1) Finalize Watershed Plan 2) Identify target organizations to promote Plan to 3) Develop and distribute press release	3) Develop and distribute press release 4) Develop pledge forms to promote stakeholder participation	5) Distribute Watershed Plan Executive Summary and pledge forms 6) Follow-up with phone calls
Website	City of Brighton	$5,000.00	1) Build website 2) Select website host	3) Train Coordinator to update website	4) Update website weekly 5) Promote website
Brochures	Metro WWTP	$500	1) Identify focus of brochure	2) Develop brochure content	3) Format brochure 4) Print brochure (as needed) 5) Distribute brochure
Watershed awards and recognition for good practices	--	--	1) Identify criteria of award	2) Solicit award donations 3) Develop award plaque	4) Promote award to community 5) Select award winner(s) 6) Promote award winner to community

Notes:

-- Indicates a field which has not yet been determined.