www.chatfieldwatershed.org
Chatfield Watershed Authority

Chatfield Watershed

2007 ANNUAL REPORT

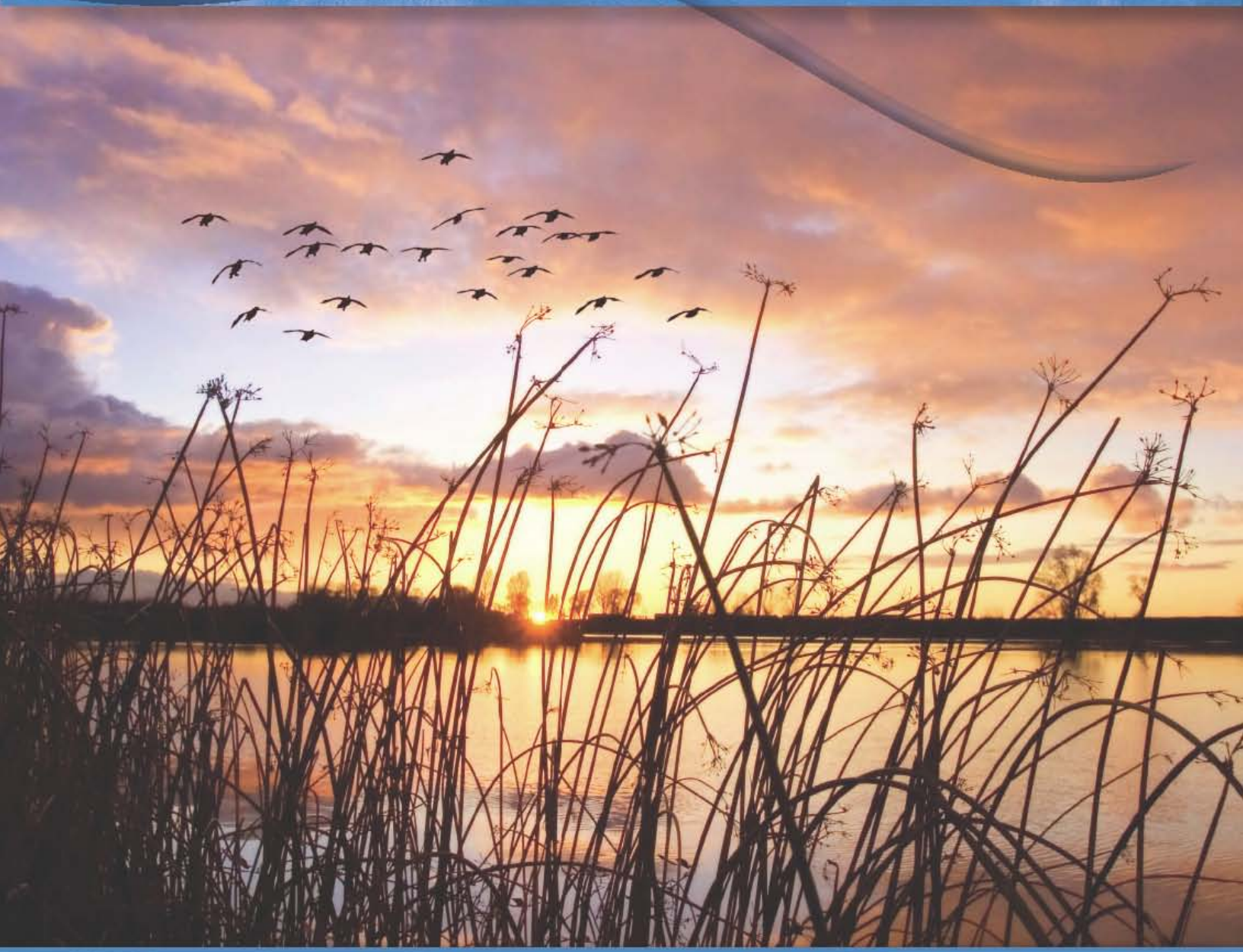


TABLE OF CONTENTS

List of Tables

List of Figures

Appendices

ABBREVIATIONS

ac-ft	acre-feet
Annual Report	Chatfield Watershed Authority 2007 Annual Report on Activities
Authority	Chatfield Watershed Authority
BMP	Best Management Practice
Board	Board of Directors of the Chatfield Watershed Authority
CDOT	Colorado Department of Transportation
CDPHE	Colorado Department of Public Health and Environment
Chatfield Watershed	Consists of: (a) for Plum Creek, all portions of Plum Creek and it's tributaries, including segments 8, 9 10a, 10b, 11a, 11b, 12 and 13 and (b) for the South Platte River, the portions of segments 6a, 6b, and 7 of the South Platte River downstream of Strontia Springs Reservoir outfall.
CIP	Capital Improvement Project
COE	U.S. Army Corps of Engineers
Commission	Colorado Water Quality Control Commission
Control Regulation	Chatfield Reservoir Control Regulation, 5 C.C.R. § 1002-73.
Division	Colorado Water Quality Control Division
DMR	Discharge Monitoring Report
Dominion	Dominion Water and Sanitation District
DRCOG	Denver Regional Council of Governments
GESC	Grading, Erosion and Sediment Control
Guidelines	Water Quality Trading Guidelines adopted by the Authority, and approved by the Division
ISDS	Individual Sewage Disposal System ("Septics")
lbs	Pounds
LID	Low-impact development
µg/L	micrograms per liter
mg/L	milligrams per liter
MIDI	Minimal Industrial Discharges
MS4	Municipal Separate Storm Sewer System
Nonpoint Source to Point Source Trade	Reduction of nonpoint source phosphorus load which is transferred from the nonpoint source to a point source to increase the point source wasteload allocation
NPDES	National Pollutant Discharge Elimination System
Park	Chatfield State Park
Point Source to Point Source Concentration	Transfer of all or a portion of one point source's concentration level to another point source, considering the relative sizes of the facilities,

Trade	where the transferring source has made treatment arrangements for reduction in its phosphorus concentration. In no case shall the transfer cause exceedances of the receiving entity's wasteload allocation
Point Source to Point Source Wasteload Allocation Trade	Transfer of a phosphorus wasteload allocation from one point source to another
POTW	Publicly Owned Treatment Works
Project Owner(s)	Party (or parties) responsible for funding the design, construction, operation and maintenance of a Trade Project in the Chatfield Watershed. If there is more than one Project Owner for a project, the agreement between the Project Owners on allocation of the trade credits shall be determinative
TMAL	Total Maximum Annual Load
TP	Total Phosphorus
Trade Credits	Phosphorus credits approved by the Authority and Division for new Trade Projects, which are held by the Project Owner or a subsequent Allocatee
Trade Projects	Projects constructed to reduce phosphorus beyond the reductions mandated by a permit or reuse authorization, or stormwater best management practices required for the site
Trade Ratio	Ratio of pounds of phosphorus removed from nonpoint source projects to establish one pound of trade credit
Trading Program	Program by which phosphorus credits can be created and used by the Project Owner or transferred from the Project Owner to another entity, in accordance with the Control Regulation
TRC	Technical Review Committee of the Chatfield Watershed Authority
WQCC	Water Quality Control Commission
WWTP	Wastewater Treatment Plant

EXECUTIVE SUMMARY

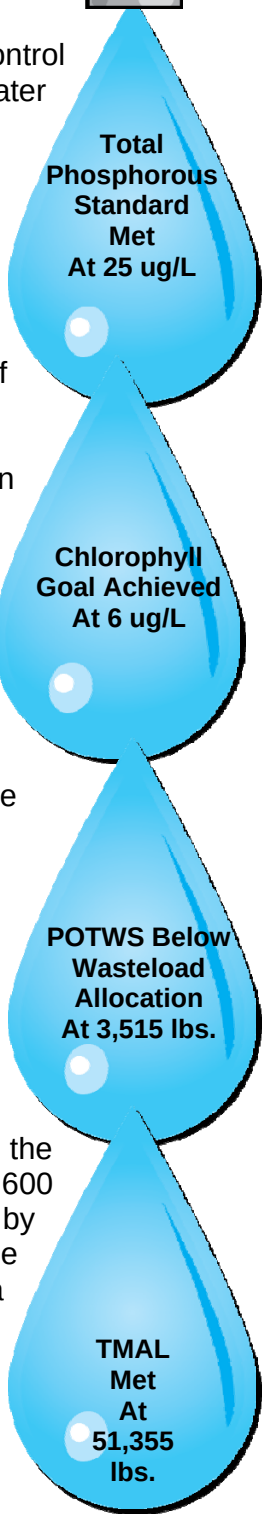
The Chatfield Watershed 2007 Annual Report provides the Water Quality Control Commission (Commission) an update on the status of Chatfield Reservoir water quality and watershed health as well as a review of the Chatfield Watershed Authority (Authority) progress towards achieving water quality standards in 2007.

The total phosphorus standard and chlorophyll goal were attained in 2007. No point source discharger exceeded their allocation. The phosphorus total maximum annual load (TMAL) was met. In addition, best management practices (BMPs) are being implemented in the basin with the intent of providing beneficial effects, reducing phosphorus loads to Chatfield Reservoir.

The growing season (June through September) total phosphorus concentration of 25 µg/L was less than the 27 µg/L reservoir standard and chlorophyll of 6 µg/L was much less than the 17 µg/L goal to meet beneficial uses. The TMAL was met at 51,355 pounds with 286,141 acre feet (ac-ft) of flow. Each of the Publically Owned Treatment Works (POTW) discharged below their wasteload allocations, well below the 7,533 pound (lb) limit at 3,515 lb.

Because so little of the loading into the reservoir is from point sources, less than 13% per Chatfield Reservoir Control Regulation, 5 C.C.R. § 1002-73 (Control Regulation), the Authority continues to actively pursue efforts to reduce nonpoint loads with projects such as Massey Draw Ecosystem Project, West Creek Water Quality Improvements (Hayman burn area), and Seller's Gulch Drainage Improvements. While measuring reductions in pollutants from nonpoint control projects is inherently difficult, the Authority recognizes these efforts offer the most efficient use of limited resources to reduce phosphorus loads

In 2007 the Authority worked with the Colorado Water Conservation Board (CWCB) and U.S. Army Corps of Engineers (COE), to develop a model of baseline conditions and potential water quality impacts associated with the proposed Chatfield reallocation of storage (to increase storage capacity by 20,600 acre-feet). The Chatfield Reallocation of storage was recently embraced by Governor Ritter as a project to provide water supplies to Front Range communities. The Authority and Division have also worked together on a technical review of historical data intended to evaluate if the Control Regulation is reflective of the natural system. These discussions have provided an opportunity for the Division, Authority and stakeholders to interact on technical issues more informally and promote a better dialog on issues and topics regarding future investigations.



1.0 INTRODUCTION

The 2007 Annual Report provides a water quality status update on Chatfield Reservoir and its watershed, highlighting information required by Chatfield Reservoir Control Regulation, 5 CCR 1002-73 (Control Regulation), including;

- Compliance with the reservoir regulatory framework,
- Results from monitoring activities,
- Point source loadings, permit compliance, trades, and wastewater treatment facilities,
- Nonpoint source control efforts, loadings and load reductions, and management strategies, and
- Recommendations for improving water quality.

The mission of the Chatfield Watershed Authority is *"… to promote protection of water quality in the Chatfield Watershed for recreation, fisheries, drinking water supplies, and other beneficial uses by protecting water quality"*. The Authority develops, recommends and adopts provisions for water quality management within the Chatfield Watershed consistent with the Denver Regional Council of Governments (DRCOG) Metro Vision Plan and the Control Regulation. The Authority activities described in this report are part of an integrated water quality management and implementation program to protect or attain established water quality standards and beneficial uses within the Chatfield Watershed. Authority members are as diverse as the over 300 square mile watershed and its varied land uses, including representatives of counties, municipalities, special districts, state and federal agencies (Table 1-1).

Table 1-1. Summary of Authority and Associate Members

Counties	Towns & Communities	Local Governments	Industry & Agencies	Discharger Special Interests
Jefferson	City of Littleton [1,2]	Plum Creek Wastewater Authority[1]	Lockheed Martin Space Systems Company	Ponderosa Retreat & Conference Center[1]
Douglas	Town of Castle Rock[2]	Castle Pines Metropolitan District[1]	Denver Water[2]	Sacred Heart Retreat [1]
	Town of Larkspur	Centennial Water & Sanitation District[1,2]	U.S. Army Corps of Engineers	Highlands Ranch Law Enforcement Center[1]
	Town of Sedalia	Dominion Water & Sanitation District[1,2]	Tri-County Health Department	
		Sedalia Water & Sanitation District[1,2]	Water Quality Control Division	
		Louviers Mutual Service Company[1,2]	Denver Regional Council of Governments	
		Roxborough Water and Sanitation District[1,2]	Colorado Department of Parks and Outdoor Recreation - Chatfield State Park	
		Jackson Creek Ranch Metro District[1,2]		
		Perry Park Water & Sanitation District[1,2]	Colorado Water Conservation Board	
		South Santa Fe Metro District[1,2]	Coalition for the Upper South Platte	
		Metro Wastewater Disposal Dist. #1[1]		

* List includes Authority members pursuant to the *Memorandum of Understanding for Establishing a Management Agency in the Chatfield Watershed* in addition to associate members

[1] Wastewater service provider

[2] Water service provider

The Chatfield Watershed (Figure 1-1) includes Plum Creek, Deer Creek, the portion of the South Platte River downgradient of Strontia Springs Reservoir, and Chatfield Reservoir. The Chatfield Watershed includes those areas tributary to the Plum Creek drainage or directly connected to the Chatfield Reservoir, namely, all portions of Plum Creek and it's tributaries (including segments 8, 9, 10a, 10b, 11a, 11b, 12 and 13) and the South Platte River downstream of Strontia Springs Reservoir outfall (including segments 6a, 6b, and 7).

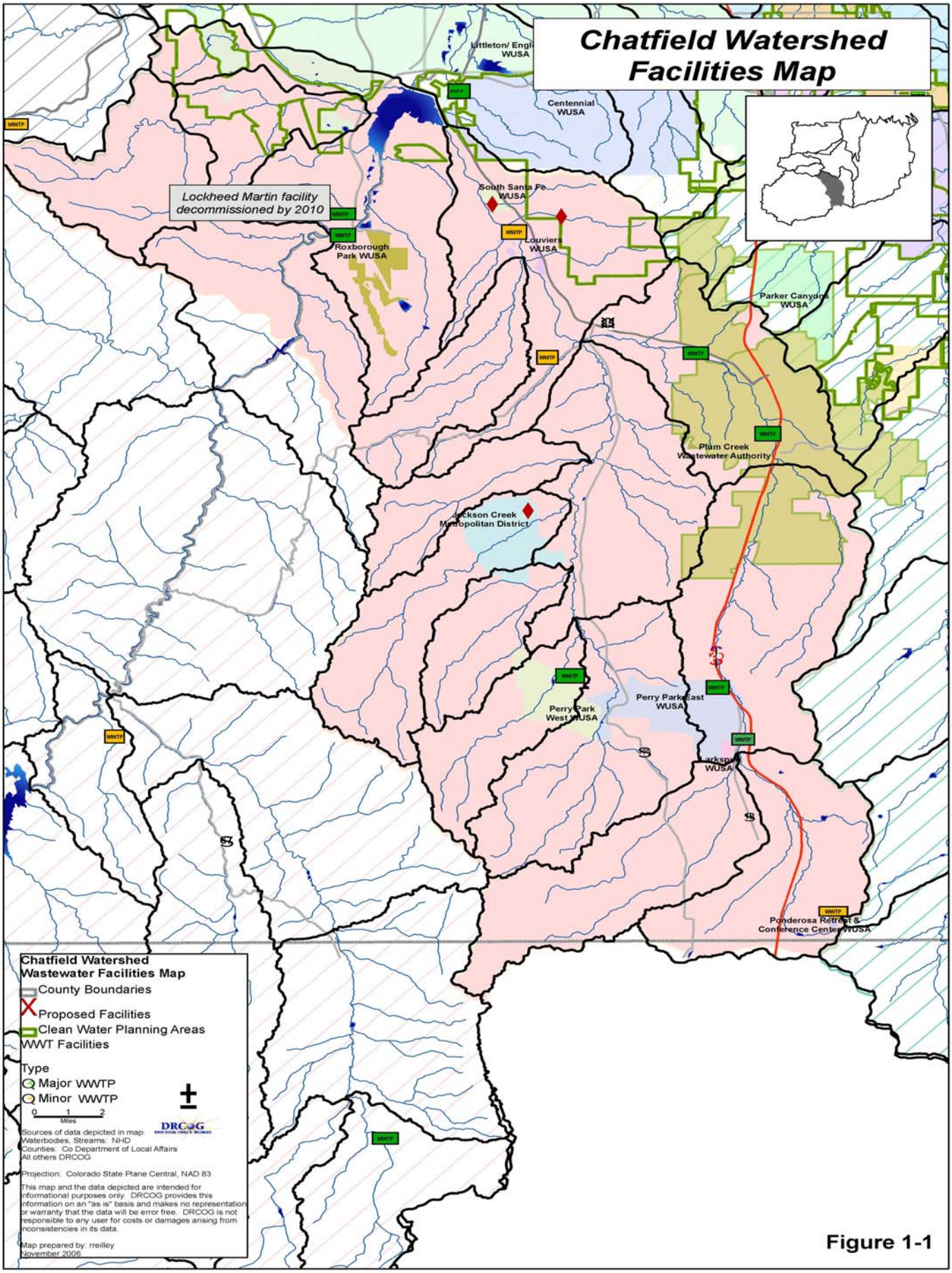

Chatfield Watershed Facilities Map
Littleton/ Engl WUSA
Centennial WUSA
Lockheed Martin facility decommissioned by 2010
South Santa Fe WUSA
Roxborough Park WUSA
Louviers WUSA
Parker Canyons WUSA
Plum Creek Wastewater Authority
Jackson Creek Metropolitan District
Perry Park West WUSA
Perry Park East WUSA
Ponderosa Retreat & Conference Center WUSA
Chatfield Watershed Wastewater Facilities Map
County Boundaries
Proposed Facilities
Clean Water Planning Areas
WWT Facilities
Type
Major WWTP
Minor WWTP
0 1 2
Miles
DRCOG
Sources of data depicted in map:
Waterbodies, Streams: NHD
Counties: Co Department of Local Affairs
All others DRCOG
Projection: Colorado State Plane Central, NAD 83
This map and the data depicted are intended for informational purposes only. DRCOG provides this information on an "as is" basis and makes no representation or warranty that the data will be error free. DRCOG is not responsible to any user for costs or damages arising from inconsistencies in its data.
Map prepared by: rreilley
November 2006

Figure 1-1

2.0 RESERVOIR REGULATORY FRAMEWORK

A total phosphorus standard of 27 µg/L was adopted by the Water Quality Control Commission (Commission) in 1984 with the intent of maintaining chlorophyll levels in the reservoir at no more than 17 µg/L, in order to protect beneficial uses of the reservoir. The total phosphorus standard and chlorophyll goal applies during the growing season defined as July through September. The standard is based on a growing season average as measured throughout the water column. The total maximum annual load (TMAL) for phosphorus allocated for the reservoir from point, nonpoint and background sources is 59,000 pounds per year at 261,000 acre-feet (ac-ft/year) (Table 2-1).

Table 2-1. TMAL Total Phosphorus Allocations Distributed Among Sources

Allocation Type	Total Phosphorus Pounds/Year
Total Maximum Annual Load (TMAL) =	*59,000 @ 261,000 ac-ft/year*
Chatfield Watershed	40,894
Reservoir Base-Load	13,400
Background Sources	19,961
Wasteload Allocation (Point Sources)[1]	7,533
Upper South Platte River Watershed[2]	17,930
Reservoir Base-Load	6,000
Background Sources	11,842
Summit County Wasteload Allocation	88
TOTAL[3]	**58,824**

Notes:

1. Point source discharge permit holders and regulated stormwater permitees who are in compliance with their permit limits and terms for a constituent will not have those limits or terms modified prior to any future adjustment of classifications or standards by the Commission to the extent any observed water quality standards exceedances are attributable to other factors, such as wildfires that are beyond the control of the permit holders.
2. Loadings from the Upper South Platte River watershed include all point sources upstream of the Strontia Springs Reservoir outfall, including 88 pounds of phosphorus per year from wastewater originating in Summit County and discharged directly into the Roberts Tunnel, and all nonpoint sources above the Strontia Springs Reservoir outfall.
3. While the TMAL total phosphorus poundage allocation formula remains unchanged, the amount of total phosphorus assigned to the Chatfield Watershed is reduced because of approved nonpoint source to point source trades.

2.1 ***Compliance with Standard***

With total phosphorus at 25 ug/L for 2007, the reservoir was in compliance with the total phosphorus standard. However, the standard has only been attained 48% of the time with exceedances occurring in four of the last ten growing seasons. The growing season mean total phosphorus standard is 27 µg/L, with seasonal concentrations ranging from 12-76 µg/L during the 23 year period of

record. While compliance with the total phosphorus standard has varied over time, the chlorophyll goal for the reservoir has been met every year, including 2007 at 6 ug/L. Both phosphorus and chlorophyll levels have decreased over the last three years when compared to information for 2001-2004 (Table 2-2; Figure 2-1). Copies of the electronic data sheets, provided by the laboratory, for 2007, are provided in Appendix A. Figures 2-2 and 2-3 provide additional detail showing historical growing season data for total phosphorus and chlorophyll, respectively.

Table 2-2. Total Phosphorus and Chlorophyll Compliance (Growing Season)		
Total Phosphorus Standard for Growing Season	27 µg/L	
Chlorophyll Target	17 µg/L	
Years of seasonal record	1982-2007	23
Years of seasonal compliance for Total Phosphorus	12	48%
Years of seasonal compliance for Chlorophyll	23	100%

Figure 2.1. Seasonal TP and Chlorophyll Compliance

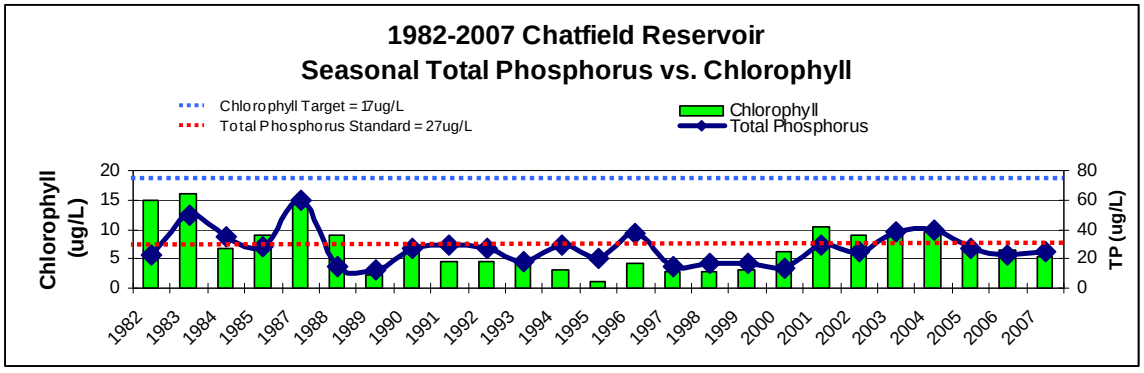
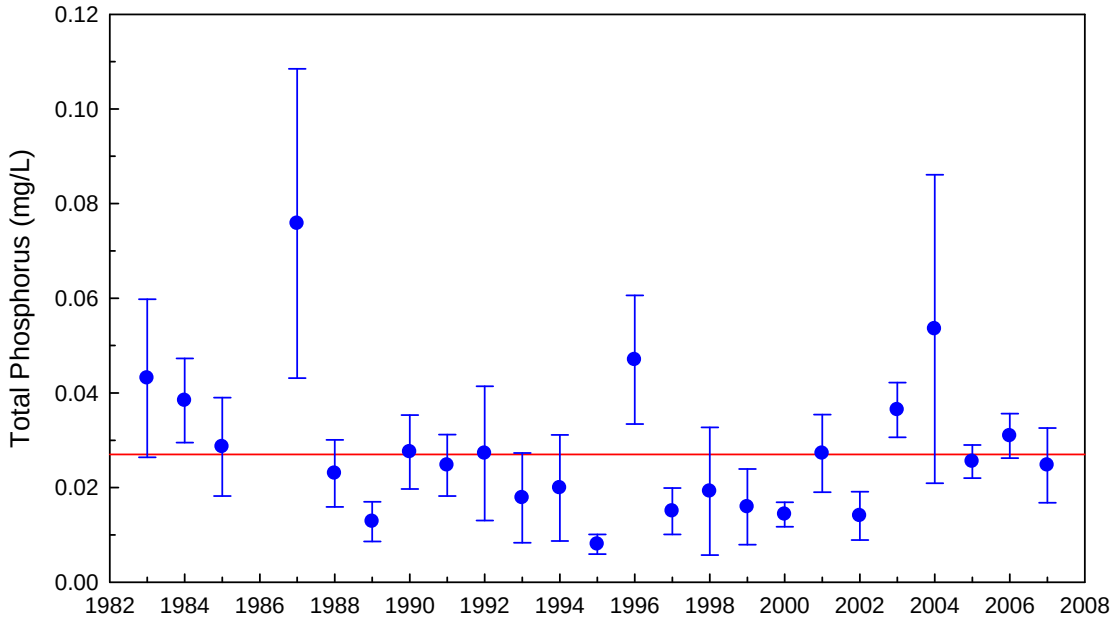
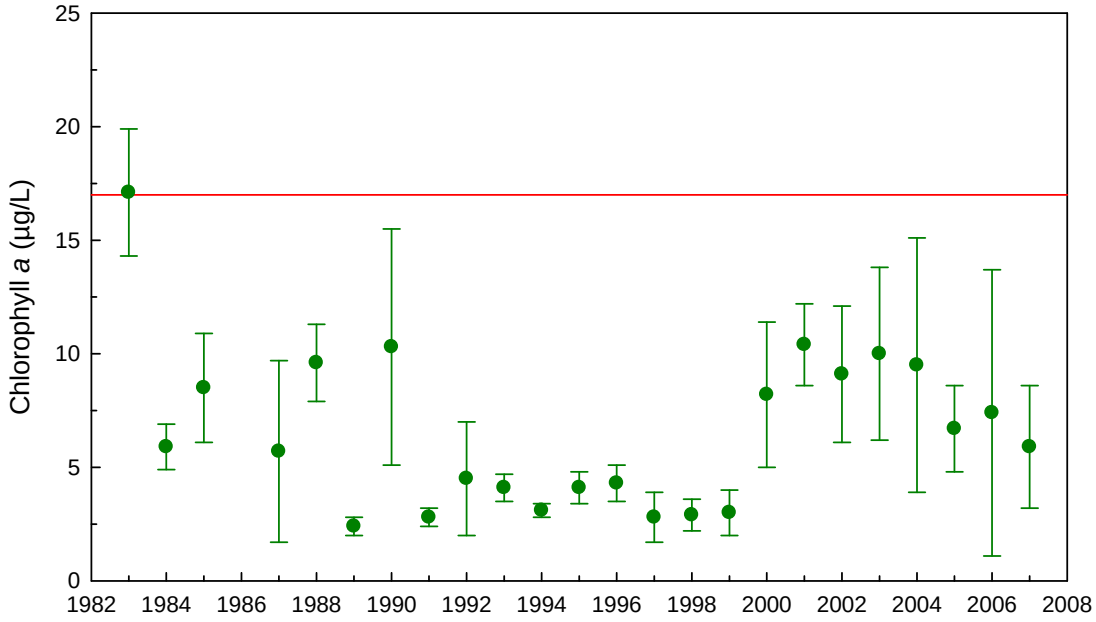


Figure 2-2. Historical record of the July to September average total phosphorus concentration (whiskers represent the 95th confidence interval; red line represents total phosphorus standard of 0.027 mg/L).



Note: ½ the Method Detection Limit (MDL) was substituted for values reported as less than detection limits. Lab duplicates and split samples were omitted from calculations.

Figure 2-3. Historical record of the July to September average chlorophyll concentration (whiskers represent the 95th confidence interval; red line represents chlorophyll goal of 17 µg/L).



Note: ½ the Method Detection Limit (MDL) was substituted for values reported as less than detection limits. Lab duplicates and split samples were omitted from calculations.

2.1.1 Total Phosphorus Loading

Annual measured TMAL compliance values are shown in Table 2-3. In 2007, at an estimated 51,355 pounds, the total phosphorus load to Chatfield Reservoir was below the TMAL of 59,000 pounds. Inflows to Chatfield Reservoir were greater than previous years, estimated at 286,141 ac-ft/year. While Plum Creek comprised approximately 17% of the inflow to the reservoir, it contributed an estimated 59% of the phosphorus load to the reservoir (Figure 2-4). Typically, snowmelt and stormwater runoff events, which are nonpoint source events, contribute a large portion of the total annual load. As described in Section 4.0, all POTW's were below their respective wasteload allocations.

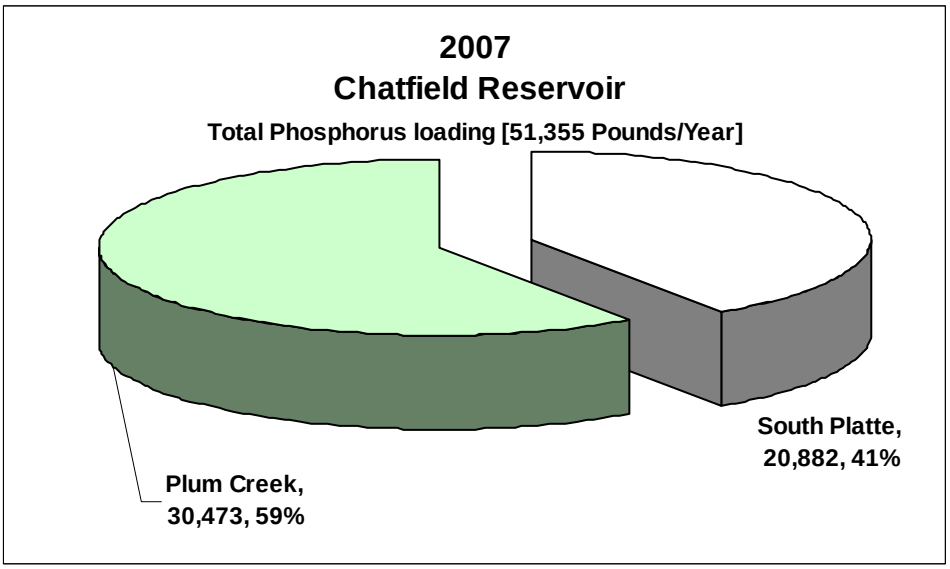
Table 2-3. Total Phosphorus Loading and TMAL Compliance

Annual	Total Volume acre-ft (Estimate)	Total Phosphorus Loading			In-Lake TP Growing Season Conc. mg/l
		Reservoir TP Load (Calculated)[1]	South Platte TP Load (Estimated)[2]	Plum Creek TP Load (Estimated)[3]	
1986	272,000	19,998	13,332	6,666	0.027
1987	295,890	62,040	7,251	54,789	0.076
1988	303,850	19,030	7,446	11,584	0.023
1989	294,160	9,612	6,408	3,204	0.013
1990	283,350	11,573	1,543	10,030	0.028
1991	300,170	7,638	2,826	4,812	0.025
1992	288,460	8,043	6,284	1,759	0.027
1993	274,470	6,181	8,221	-2,040	0.018
1994	289,850	13,763	5,505	8,258	0.020
1995	307,530	48,032	5,024	43,008	0.008
1996	270,659	21,799	8,066	13,733	0.047
1997	280,000	20,697	12,863	7,834	0.015
1998	199,463	52,167	13,785	38,382	0.019
1999	205,361	41,459	6,953	34,506	0.016
2000	98,268	9,380	2,865	6,515	0.014
2001	75,422	8,719	2,510	6,209	0.027
2002	28,885	2,089	1,656	433	0.014
2003	48,807	8,379	3,701	4,678	0.036
2004	46,768	7,809	4,442	3,367	0.054
2005	125,848	24,243	14,126	10,117	0.026
2006	72,518	7,848	5,965	1,883	0.031
2007	286,141	51,355	20,882	30,473	0.025
Average	211,267	20,993	7,348	13,645	0.028

Notes:

1. Reservoir TP Load = South Platte Measured Load + Plum Creek Measured Load
2. South Platte load estimate based on measured inflow and TP concentration 2001 – present
3. Plum Creek load estimate based on measured inflow and TP concentration 2001-present.

Figure 2-4. 2007 Total Phosphorus Load to Chatfield Reservoir



3.0 MONITORING PROGRAM

In 2007, the Authority continued the annual water quality monitoring program of the Reservoir, the South Platte, Plum Creek inflows, and specific pollutant source areas tributary to the reservoir, such as the Hayman burn area and Massey Draw. Figure 3-1 depicts surface water sampling sites in the Chatfield watershed excluding specific pollutant source areas tributary to the reservoir as these change based on field conditions.

As in prior years, the monitoring parameters for this program were selected to maximize the use of available financial resources while still meeting the objectives of the monitoring program, such as determining the water quality status of the reservoir and evaluating the attainment of uses and standards. The water quality-monitoring program samples selected constituents at South Platte River inflow (South Platte River at Waterton, Colorado Division of Water Resources monitoring station), Plum Creek inflow (Plum Creek at Titan Road, USGS station), South Platte River downstream of Chatfield Reservoir (South Platte River below Chatfield, USGS station) and within Chatfield Reservoir (Table 3-1). Other ungaged inflows to the reservoir include Deer Creek and Massey Draw, direct surface runoff, direct precipitation, and alluvial inflow. Sampling frequencies for each constituent are summarized in Appendix B. Sampling data can be found at the Authority's website, www.chatfieldwatershedauthority.org.

Figure 3-1. Chatfield Watershed Sampling Sites

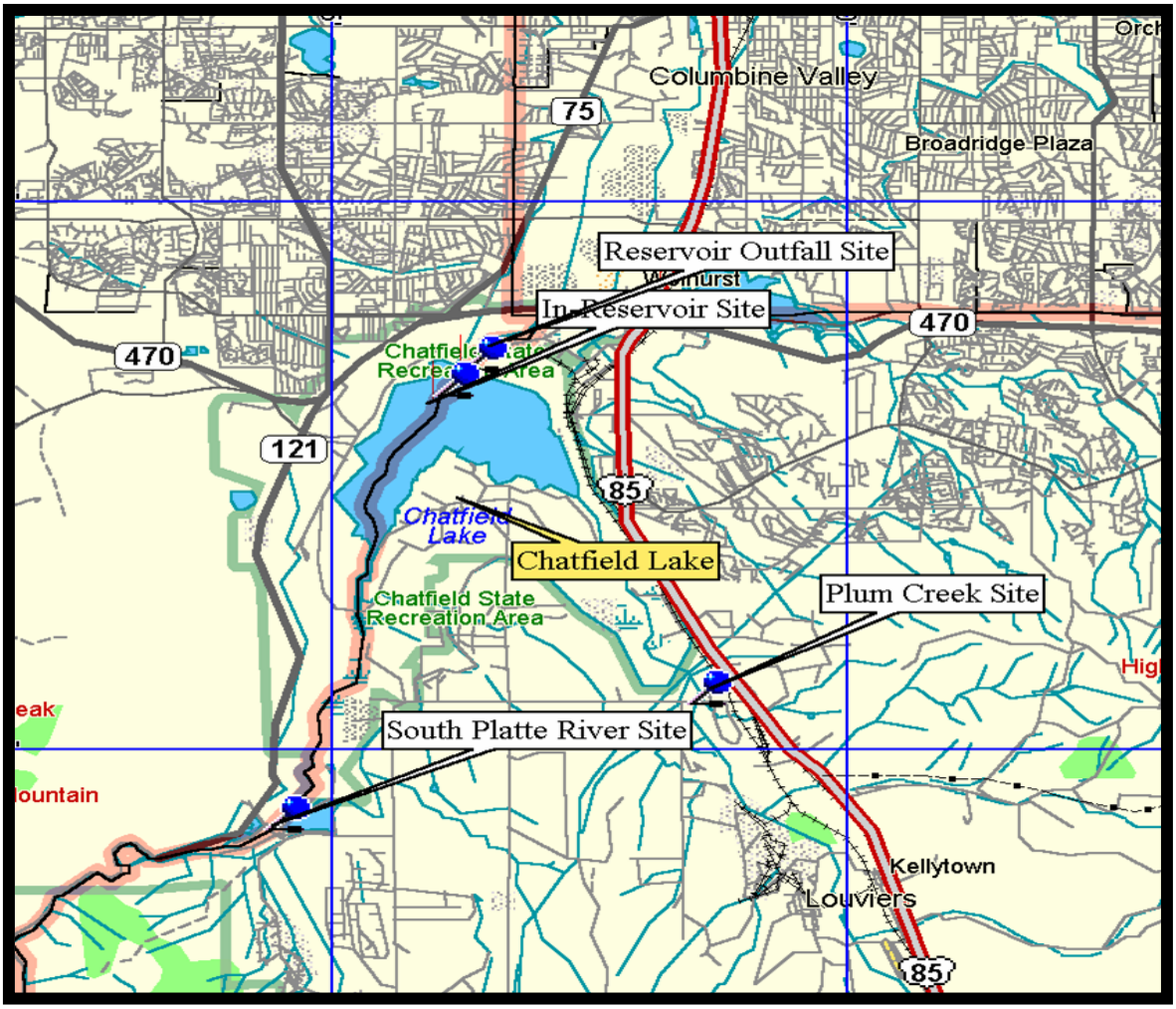


Table 3-1. Sampling Parameters

Field parameters:	Temperature, pH, specific conductance, alkalinity, hardness, dissolved oxygen, total suspended solids, instantaneous flow and Secchi depth
Nutrient analyses:	Phosphorous and nitrogen species
Biological analyses:	Chlorophyll
Metal analyses:	Copper, mercury, iron, cyanide, arsenic, and zinc

3.1 Chatfield Reservoir

The in-reservoir monitoring characterizes Chatfield Reservoir chemical and biological quality. Reservoir monitoring is conducted at one reservoir location for water column chemistry samples and vertical profiles for the basic water-quality parameters. The single reservoir monitoring location, sampling procedure, and data analysis is currently under review by the Division.

Vertical profile sampling is conducted to determine seasonal stratification of the reservoir. The water column samples are collected from three depths: the bottom one meter of the water column, the mid-euphotic zone (as determined from Secchi-depth readings) and the top one-meter of the water column. Chlorophyll is analyzed only from the top one-meter of the water column from an integrated sample.

3.2 South Platte and Plum Creek

The South Platte River and Plum Creek are the two gauged surface inflows to Chatfield Reservoir and primary sources of water to the reservoir. As shown in Table 3-2, on average approximately 75% of the inflow to Chatfield Reservoir is the South Platte River, 17% from Plum Creek, and approximately 8% from other sources. In 2007, the South Platte River and Plum Creek, contributed approximately 76% and 17%, of the inflow to the reservoir, respectively (Figure 3-2).

Table 3-2. Mean inflow budget for Chatfield Reservoir (from WQCD, 2007)

Source	Mean Annual Inflow (AF)	Percent of Total
South Platte River	118,988	75.6
Plum Creek	26,764	17.0
Ungaged Runoff	5,924	3.8
Plum Creek Alluvium	3,787	2.4
Direct Precipitation	1,918	1.2
Total	**157,381**	**100.0**

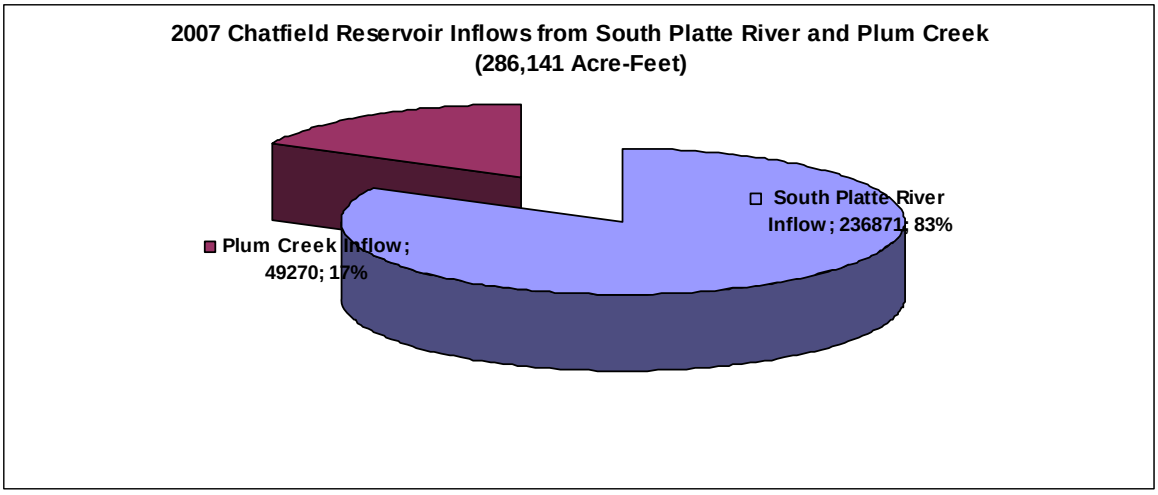


Figure 3-2. Chatfield Reservoir Inflows

No direct flow measurements are made at inflow sites; rather, discharge values are obtained from the appropriate data sources (Colorado Division of Water Resources or the USGS, respectively) for the two inflow sites. Other residual inflow contributions include two small ungaged tributaries (Deer Creek and Massey Draw), direct surface runoff, direct precipitation, and alluvial inflow (Figure 3-3).

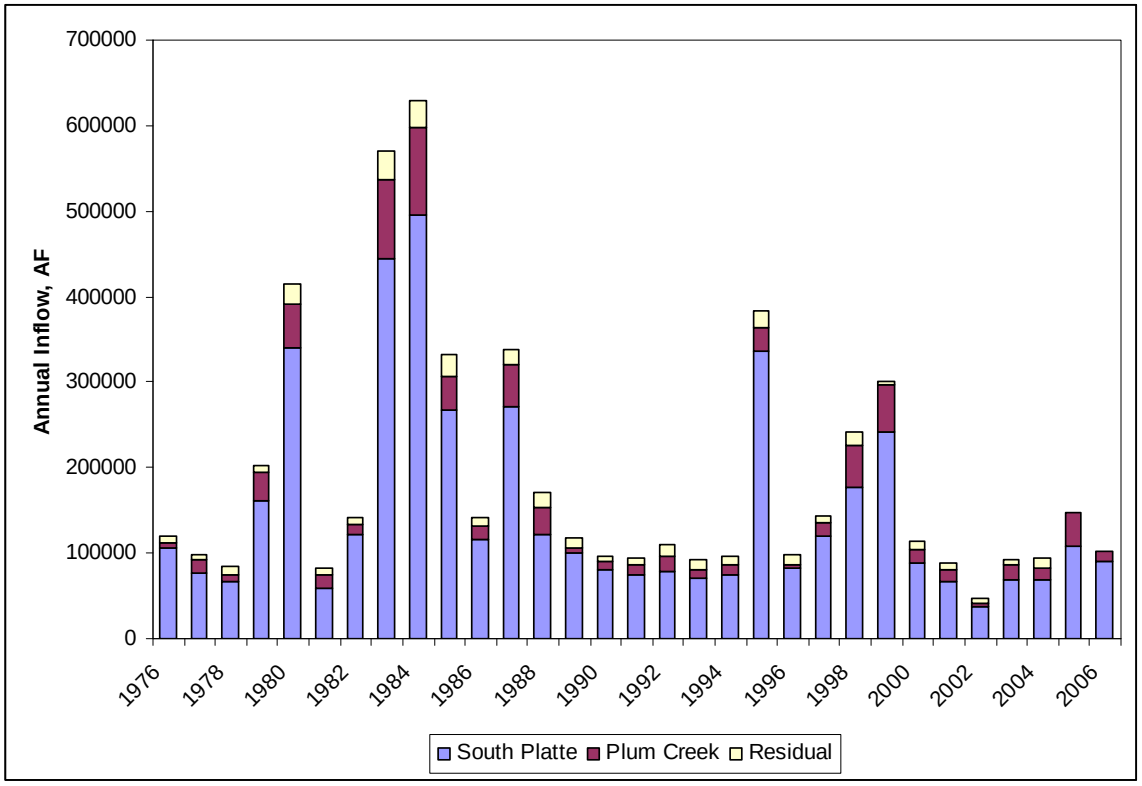


Figure 3-3. Computed annual inflow to Chatfield Reservoir showing contributions from the South Platte and Plum Creek. The computed inflow is provided by the USACE and the two gaged inflows are reported by the USGS or the SEO. (from Division, "Chatfield Annual Water Budget" White Paper, 2007)

3.3 Other Source Areas

The Authority administers water quality monitoring programs in other source areas in the Chatfield watershed. Even though outside the Chatfield Basin, the Authority has assisted in assessment of downstream water quality, wildfire mitigation, and restoration from select areas of the Hayman burn area because of wildfire impacts to water quality in the reservoir. The Authority also monitors the effectiveness of the recent stream improvements implemented in conjunction with a nonpoint source grant (Section 319) along Massey Draw. Results of these monitoring efforts are summarized below.

Hayman Burn Area. Since the containment of the Hayman Fire in July 2002, large quantities of sediment, metals, nutrients and organics have been eroding from burned areas and causing significant degradation of the numerous tributaries of the South Platte River Basin and Chatfield Reservoir. As a result of the fire, sediment loading increased 10-fold, from 1 ton/acre/year to 10 tons/acre/year. (Douglas County, 2006). As calculated from data the Authority collected in 2007 a total of 36,857 pounds of phosphorus has runoff from the burn area. The sediment loading from the Hayman burn area has had significant impacts on Strontia Springs Reservoir and could, eventually, impact Chatfield (Appendix A).

Massey Draw. The Chatfield Watershed Authority continued a limited water quality monitoring in Massey Draw in 2007 to determine the pollutant reduction effectiveness of an environmental restoration project on this tributary to Chatfield Reservoir. This monitoring effort provides pre- and post-construction data of total phosphorus and sediment concentrations for both dry and wet weather events within Massey Draw.

As shown in Table 3-3, post-construction sediment and phosphorus concentrations continue to show reductions, indicating the effectiveness of streambank stabilization efforts. While the Authority and many sponsors of the projects anticipated that Massey Draw would reduce total phosphorus loads, a decrease has not been realized, possibly because of increased flows. The Authority is committed to optimizing the load reduction from Massey Draw and working with the Division to promote greater phosphorus reductions from this basin tributary to Chatfield Reservoir.

Table 3-3. Massey Draw Phosphorus and Sediment Concentration; Pre- and Post-Construction

Parameter	Pre-Construction 2003/2004	Post-Construction 2005	Post-Construction 2006	Post-Construction 2007
Total P (ug/L)	161	119	100	86
TSS (mg/L)	120	36	38	22

4.0 POINT SOURCE DISCHARGERS

There are seven operational wastewater treatment facilities in the Chatfield watershed. All dischargers discharge to Plum Creek or its tributaries, except for Roxborough Water and Sanitation District and Lockheed Martin Space Systems Company. Roxborough Water and Sanitation District convey wastewater flows to the Littleton/Englewood WWTP, however, an amendment to the Clean Water Plan has been approved by the Authority to keep the Roxborough Water and Sanitation District plant operational. Dominion Water and Sanitation District is in the process of presenting the amendment to the DRCOG board. Lockheed Martin Space Systems Company has approval to send it's wastewater flows to the Littleton/Englewood WWTP, also, but has not resolved all issues necessary to complete the process. The total annual wasteload for point source phosphorus (among all permitted dischargers) in the Chatfield Watershed is 7,533 lbs/year, with 52 pounds allocated for a Reserve/Emergency Pool.

4.1 Wasteload Allocation

In 2007, the total phosphorus load from point source discharges was 3,515 pounds/year or about 48% of the total wasteload allocation (Table 4-1). All actively reporting dischargers were in compliance with their established wasteload allocations. Allocations for Sacred Heart, Ponderosa Center, Law Enforcement Center, and Jackson Creek Metropolitan District were included in the Control Regulation #73 at the 2005 Rulemaking Hearing. Monthly contributions of phosphorus discharged by each wastewater treatment facility are provided in Table 4-2.

Table 4-1. Summary of 2007 Phosphorus Wasteload Contribution

Allocation Sources	Wasteload Allocation (Pounds Per Year)	2007 Point Source Total Pounds
Plum Creek Wastewater Authority	4,256	2,227
Lockheed Martin Space Systems Company	1,005	270
Roxborough Water & Sanitation District	1,218	809
Perry Park Water & San. District-Waucondah	365	143
Perry Park Water & San. District-Sageport	73	52
Town of Larkspur	231	12
Louviers Mutual Service Company	122	2
Sacred Heart Retreat	15[4]	No Monitoring
Ponderosa Center	75[3]	No Discharge[1]
Jackson Creek Metropolitan District	50[2]	No Discharge[1]
Centennial Law Enforcement Center	50[5]	No Discharge[1]
South Santa Fe Metropolitan District	21[6]	No Discharge[1]
Reserve/Emergency Pool	52	Not Used
Total Phosphorus Wasteload	**7,533**	**3,515**

1. No Discharge
2. Jackson Creek Ranch received point source allocations through trades pursuant to the Authority Trading Guidelines.
3. Ponderosa Center received point source allocations through trades pursuant to the Authority Trading Guidelines.
4. Temporary five-year phosphorus allocation of 15 pounds for inclusion in discharge permit; obtained from the Reserve/Emergency.
5. Centennial Law Enforcement Center received point source allocations through trade pursuant to the Authority Trading Guidelines.
6. South Santa Fe Metropolitan District received a point source allocation of 21 pounds through trade pursuant to the Authority Trading Guidelines.

Table 4-2. 2007 Point Source Phosphorus Monthly Contribution for Chatfield Reservoir Watershed

Month	Town of Larkspur (lbs/month)	Perry Park Water and Sanitation District: Waucondah (lbs/month)	Perry Park Water and Sanitation District: Sageport (lbs/month)	Plum Creek Wastewater Authority (lbs/month)	Louviers Mutual Service Company (lbs/month)	Roxborough Water and Sanitation District (lbs/month)	Lockheed Martin Space Systems Company (lbs/month)
January	3.83	14.84	2.96	285	0	80.5	12
February	1.81	10.65	2.14	202	0	65.7	17
March	0.46	4.12	1.96	235	0	78.1	20
April	0.46	9.89	4.83	270	0	52.8	19
May	0.79	15.32	9.97	307	1.45	82.0	29
June	0.44	14.16	3.78	178	0	68.3	23
July	0.84	8.35	4.33	188	0	75.5	18
August	0.93	10.54	5.30	110	0	213.2	36
September	0.73	5.67	3.57	85	0	93.1	20
October	0.53	8.35	7.15	90	0	0	28
November	0.76	8.48	2.20	95	0	0	38
December	0.71	32.6	3.96	182	0	0	10
Total Annual Phosphorus Discharge (pounds)	**12.3**	**143**	**52.2**	**2,227**	**1.45**	**809.2**	**270**

Note:

Total annual phosphorus discharge values are rounded.

4.1.1 Compliance With Permits

Point source dischargers are responsible for monitoring their effluent discharges for compliance with their individual permits and compliance with the Control Regulation. Summary of actual discharge monitoring data for each permit (average monthly Total Phosphorus concentration, flow, and monthly wasteload) are provided in Appendix C. The only compliance issue in 2007 was a total phosphorus concentration exceedance during the month of May for Louviers, which was reported as required by the permit.

4.2 Trades

The *Chatfield Reservoir Control Regulation* authorizes trading for point-to-point source trades and point-to-nonpoint source trades. The goal of the Trading Program is to ensure that trades involving nonpoint sources have a net water quality benefit for the Chatfield Reservoir. All Authority approvals of trade credits and alternative arrangements are subject to review and confirmation by the Water Quality Control Division.

Point sources have used four mechanisms to obtain additional phosphorus wasteload allocations:

- Nonpoint source to point source trades (Jackson Creek Ranch; South Santa Fe Metropolitan District, Ponderosa Retreat Center and Law Enforcement Center).

- Point source to point source transfers (Approved transfer from Roxborough for Jackson Creek Ranch; Temporary trade from Lockheed Martin to Plum Creek Metropolitan District).

- Alternative treatment arrangements for phosphorus reductions (Application of effluent at agronomic rates – Larkspur).

- Reserve/emergency pool allocations (Ponderosa Retreat Center and Sacred Heart Retreat).

In August 2007, the South Santa Fe Metropolitan District's nonpoint source to point source trade was approved by the Authority. The non-point to point source trade consists of the closure of an existing non-point source septic system consistent with the Authority closure policy titled "Onsite/ septic tank system closure policy for total phosphorus trade applications" (Authority, June 27, 2007). The project is estimated to reduce the total phosphorus load in the watershed by a total of 42 pounds of total phosphorus per year with total closure of an existing septic system. South Santa Fe requested a non-point to point source trade credit of 21 lbs/year. The 21 pound non-point to point source trade credit is consistent with the allocation identified in District's Wastewater Utility Plan, and is a sufficient amount with which to operate the treatment plant at the permitted capacity.

4.3 Site Location Approval and Wastewater Plan Amendments

As the designated water quality management agency for the Chatfield watershed the Authority reviews applications for site approval for site location and design approval of domestic wastewater treatment works. Review of these applications focus on meeting the Control Regulation, phosphorus wasteload allocation, water quality standards, appropriate sizing and design of proposed improvements, and protecting downstream water supplies. In 2007, only two applications or plan amendments came before the Authority.

1. In October 2007, the Authority approved a Clean Water Plan Amendment for Dominion Water and Sanitation District (Dominion) to utilize the existing Roxborough Water and Sanitation District WWTP, with upgrades, as a facility to treat effluent from the Dominion service area in addition to regional service as needed.

2. In November 2007, the Division approved a permit amendment for the Louviers wastewater treatment plant to change the point of discharge from a surface water discharge to Plum Creek to a discharge to groundwater, via land application of effluent with compliance monitoring using wells and lysimeters.

5.0 NONPOINT LOADING AND SOURCES

The largest contributor of phosphorus loading to the Chatfield reservoir is from nonpoint sources. Controlling nonpoint sources is critical to preserving water quality. This section describes activities undertaken in 2007 to control nonpoint sources of phosphorus loading.

5.1 Nonpoint Source Reductions in the Watershed

- **Douglas County –** Douglas County took the lead on the West Creek Water Quality Improvements project. The goals of this project were to develop and implement a restoration plan to reduce sedimentation, turbidity and suspended solids in the J.O Hill Reservoir which affect the drinking water quality and supply for the Town of West Creek. The restoration plan will include a watershed wide revegetation plan and point sediment removal. A final goal will be to quantify the effects of improvements on the water quality, resulting from both forest restoration and sediment control. The goals of the project may have changed over time. Future reports will discuss final results in more detail.

  Douglas County also maintains an extensive erosion control program. The county has updated their Erosion Control Manual and Drainage Criteria Manual to provide greater emphasis on water quality. While the county has not determined the total phosphorus reductions from the county erosion control program, the intent of the program is to significantly reduce nonpoint source phosphorus loads. The county is involved with extensive fire recovery activities associated with the Hayman burn.

- **Jefferson County –** The Massey Draw Project sponsored by Lockheed, Jefferson County, and UDFCD, a stream restoration project completed in 2005, provides streambank stabilization and wetlands for a lower portion of Massey Draw in Jefferson County that experiences severe erosion with deposition of sediment reaching Chatfield Reservoir. The Authority is committed to implementing additional stabilization and water quality enhancements in coordination with other stakeholders and the Division in order to optimize nonpoint source reductions from this sub-basin.

  Jefferson County also maintains an erosion and sediment control program as part of their MS4 permit. The county maintains a small-site erosion control manual that explains the basic principles of erosion control and illustrates techniques to control sediment from small development sites.

- **Town of Castle Rock –** Castle Rock has incorporated water quality features into its stormwater improvements. Detention facilities throughout the Town reduce nonpoint source total phosphorus reaching adjacent waters. The Town has also commenced implementation of drainageway improvements

tributary to East Plum Creek along Seller's Gulch. The significant improvements along Seller's Gulch included removing concrete debris, armoring the stream channel, channel repair, bank restoration and habitat improvements which will result in water quality enhancement.

- **City of Littleton –** The City of Littleton has implemented several nonpoint source projects in the watershed targeted to reduce total phosphorus loads by 45% -55%. Examples of pollutant reduction facilities include several detention ponds and wetland areas at the Chatfield Green development.

  Littleton partners with the City of Englewood to host the annual Household Hazardous Waste Roundup every fall. A $20 co-payment covers costs to safely dispose of the products. Keeping hazardous wastes from getting into waterways that drain into Chatfield Reservoir preserves the lake's water quality.

- **Roxborough Water & Sanitation District –** Roxborough has a runoff detention system that reduces the amount of nonpoint source total phosphorus reaching adjacent waters. In addition, Roxborough Water & Sanitation District is a sponsor of the Douglas County Household Chemical Roundup Program, the results of which are discussed below.

- **Tri-County Health Department –** The Tri-County Health Department leads the Douglas County Household Chemical Roundup Program which provides residents with an opportunity to dispose of hazardous chemicals from their homes in a safe, legal, and environmentally responsible way, providing an outlet for wastes that might otherwise end up in creeks, stormwater systems, sanitary sewers and septic systems, or be disposed of illegally on others' property.

5.2 Stormwater Permit Requirements

In Colorado, a program has been developed and implemented to permit organizations identified as responsible for controlling stormwater runoff. Stormwater runoff is rainfall or snowmelt that runs over the land surface potentially carrying pollutants into streams and lakes. Pet waste, excess lawn fertilizer, motor oil, cigarette butts, and trash can result in polluted stormwater runoff. The program to permit stormwater discharges has been implemented in two phases, with the second phase being most applicable to the Authority.

In response to federal stormwater rules (commonly referred to as Phase I and II rules), the state has implemented a permitting program for municipal separate storm sewer systems (MS4s). Phase II MS4s in the Chatfield Basin include:

- Douglas County
- Jefferson County

- Town of Castle Rock
- City of Littleton
- Castle Pines Metropolitan District

Unlike wastewater treatment facilities or industrial dischargers, MS4s do not have end-of-pipe effluent limits included in their permits. Instead, MS4 permits are based on requirements to develop programs that meet six minimum control measures, and many of these programs involve the implementation of best management practices in order to reduce pollutants discharged to the maximum extent practicable. The six minimum control measures Phase II permitees are required to meet include:

1. Public education and outreach on stormwater impacts
2. Public participation and involvement
3. Detection and elimination of illicit connections and discharges
4. Construction site stormwater runoff control
5. Post-construction stormwater management in development and redevelopment
6. Pollution prevention/good housekeeping for municipal operations

Table 5-1 summarizes information about the 2007 MS4 activities in the Chatfield watershed.

Table 5-1. Summary of MS4 Programs for Inspections, Enforcement Actions and Education Outreach

Land Use Agency	Permit Inspection Actions		Permit Enforcement Actions	Education & Outreach Programs
Douglas County	Illicit discharges: Construction: Post-Construction:	85 Inspections 2398 Inspections 0 Inspections (None Needed)	Illicit discharges: 85 Construction: 31 Post-construction: None Needed	▪ WET ▪ Newspaper Ad 81544 readers ▪ PSA runs monthly ▪ Open Space Education 437 adults; 440 children
Jefferson County	Illicit discharges: Construction: Post-Construction:	43 Inspections 1275 Inspections since 2005 31 Inspections	Illicit discharges 0 Construction: 79 NOVs; 29 referred to Court for action. Post-construction 0	▪ Continued storm drain marking program ▪ Waterway signs completed ▪ Participated with Rooney Road Recycling Center for household chemical clean-up
Town of Castle Rock	Illicit discharges: Construction: Post-Construction:	437 Outfall Inspections 6 Hotline Inspections 2417 D.E.S.C. Inspections 565 G.E.S.C. Inspections 40 Construction Inspections 285 O&M Inspections	Illicit discharges: 0 Construction: 604 Notices; 1 stop work order Post-construction: 0	▪ 5/05/07 Creek clean-up ▪ 11/16/07 Creek clean-up ▪ 11/30/07 Workshop, 3rd grade classroom ▪ 12/21/07 Stormwater ad, local newspaper
City of Littleton	Illicit discharges: Construction: Post-Construction:	19 Inspections 0 Inspections 3 Inspections	Illicit discharges: 0 Construction: 0 Post-construction: 0	▪ "Littleton Report" articles on stormwater topics (4) ▪ Stormwater page on Littleton web site ▪ Western Welcome Week booth on stormwater ▪ Informational products – beach balls and "manhole cover" flying discs ▪ World Water Monitoring Day open house ▪ Household hazardous material roundup ▪ Summer clean-up program ▪ Leaf and Christmas tree recycling
Castle Pines Metropolitan District	Illicit discharges: Construction: Post-Construction:	Daily inspections as District staff travel through District Douglas County performs this function for District through GESC program Detention and water quality ponds monitored after each storm event.	Illicit discharges: None provided Construction: None provided Post-construction: None provided	▪ Traveling Stormwater Management booth ▪ Televised public service announcement in conjunction with Douglas County Stormwater Co-op.

5.3 Water Quality Review of Land Use Applications

The Authority continues to encourage best management practices as part of the review and referral process with land use applications in Jefferson and Douglas counties. The Authority is a referral agency in the land use application process and as such, provides review and comments on potential water quality impacts associates with land development. The "Referral Review Guidance" (Authority guidance, 2006 and readopted July 2007, Appendix D) outlines general Authority land disturbance mitigation preferences, and Authority review and comment guidance.

The topic of permitting additional individual sewage disposal systems (ISDS) in the basin is of ongoing concern for the Authority and the Authority is taking an active role in supporting conversion of ISDS, particularly along the industrial US-85 corridor, to a regional WWTP. A policy for commercial/industrial ISDS was adopted in March of 2006 and is used as a guide for providing comments on land use referrals (Appendix D). The Authority also has a policy for reviewing manure management and stabled or confined animal nutrient generation, adopted in April of 2006 that provides guidance for reviewing land use applications involving stabled animals and manure management (Appendix D).

In 2007 the Authority reviewed several land use applications from referral agencies providing a thoughtful water quality review of applications and review comments. Included in projects for which formal comments were prepared are The Meadows Dog Park in Castle Rock and a Recreational Vehicle Storage Site Improvement Plan in Douglas County in the Kelly Town area. Additionally, the Authority provided formal comments on proposed general permits and rationale for minimal industrial discharges (MINDI permits).

6.0 RECOMMENDATIONS FOR IMPROVING WATER QUALITY

The Chatfield Watershed Authority has embarked on new watershed management planning and coordination efforts with its members, including the Division. The new watershed management approaches and style offered promote stronger collaboration within the Authority, the Division and Chatfield watershed stakeholders.

The adaptive implementation TMAL approach embraced by the Authority recognizes that the TMAL has elements of uncertainty which need further evaluation, supported monitoring as well as implementation of controls and management strategies designed to improve water quality (US EPA, 2006). Progress is being made toward water quality improvement that will be realized in the near future.

Because relatively little of the loading into the reservoir is from point sources, (less than 13% of the allocation, per Regulation #73), the Authority intends to pursue efforts to reduce nonpoint loads. Although measuring reductions in pollutants from nonpoint control projects is inherently difficult, the Authority will pursue reduction of nonpoint sources to maximize limited resources.

6.1 Reservoir and Model Updates

As part of the October 2007 triennial review hearing, the Commission directed the Authority and Division to work together cooperatively towards continued improvement of water quality in the Chatfield watershed. The parties have commenced an examination of the TMAL and its underlying assumptions.

6.1.1 Technical Review by the Division

During 2007, the Division staff, lead by Dr. Jim Saunders, began a review of the technical basis for the TMAL and original reservoir model. As part of this review, Dr. Saunders has made presentations to the Authority, describing concepts and approaches to the review. A schedule of presentations by Dr. Saunders to the Technical Review Committee (TRC) of the Authority was developed and is shown below. The Division is analyzing the long-term data record for chlorophyll and phosphorus concentrations in the reservoir, as well as hydrology and phosphorus loading, to determine a concentration translator and a loading translator critical to the TMAL.

2007 WQCD TOPICS FOR DISCUSSION AT SPECIAL CHATFIELD TRC MEETINGS

Special TRC Meeting from 1:00 -3:30 p.m. at the Plum Creek Authority Office

Date	Topic(s)	Potential Outcomes
09-13-07	Methods Review Technical comparison of standards, targets, and translators in existing control regulations, with consideration of transparency and consistency	Provide information; discuss technical basis.
10-11-07	Appropriateness of existing chlorophyll target: magnitude, frequency, duration (averaging period) considerations	Summary current views on suitability and structure of chlorophyll standard; discuss relative merits of chlorophyll and phosphorus standards
11-08-07	Evaluation and discussion of concentration translator	Discuss WQCD proposal
12-13-07	Assessment of water budget and appropriate concentrations for each flow source as precursor to phosphorus load calculations	Develop common set of monthly flows partitioned by source; discuss

These discussions have provided an opportunity for the Division, Authority, and stakeholders to interact on the technical issues more informally and promote a better dialogue on issues, concerns, areas of agreement, and topics requiring further investigation and analysis.

Topics in 2007. Topics presented by the Division in 2007 were accompanied with white papers on the selected topics. As discussed in the papers, it has proven difficult to develop or refine a model that satisfactorily describes the relationship between total in-lake phosphorus and chlorophyll. What is important about this process is the intent that there is adequate opportunity for discussion and collaboration of any proposed revisions to the Control Regulation.

The relationship between growing season (July-September) medians for chlorophyll and phosphorus was recently evaluated by the Division in 2007. Figure 6-1 depicts the analysis and variability in the chlorophyll and phosphorus relationship in the Reservoir. While the technical review is ongoing, the analysis indicates by the relatively low correlation coefficient or R2 value, phosphorus is not the only factor controlling the abundance of algae in Chatfield Reservoir in any natural setting. The Division and Authority are currently evaluating the data to determine if there is a model better suited to describe the relationship between total phosphorus and chlorophyll in Chatfield than the current Vollenweider model which is used in the Control Regulation.

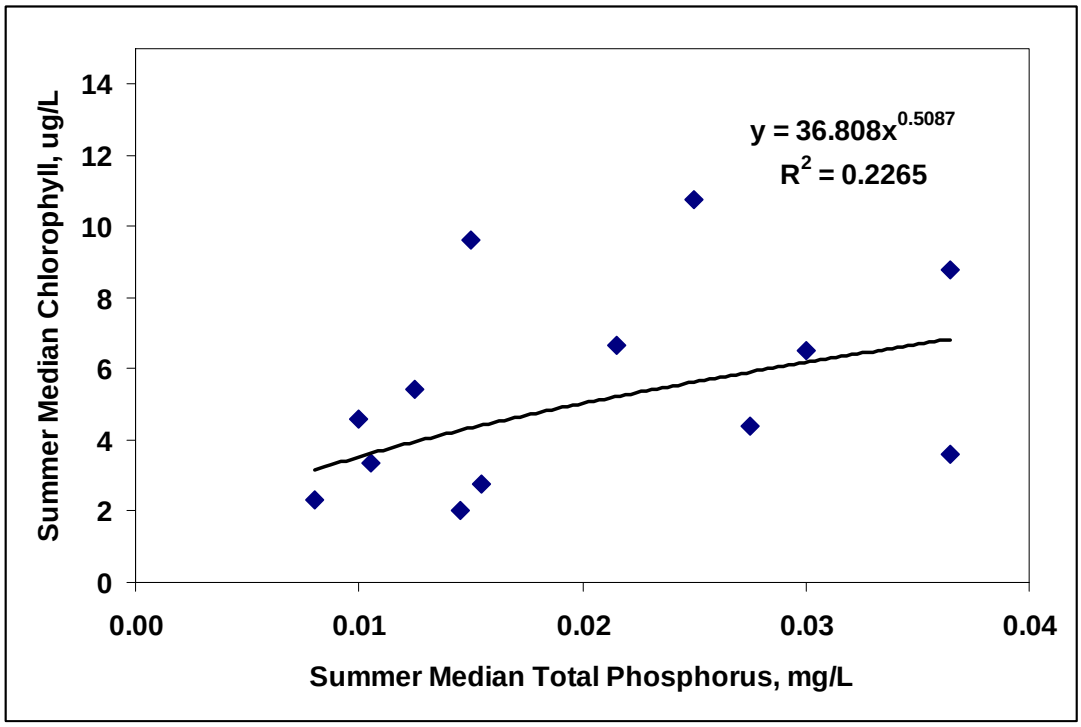


Figure 6-1. Relationship between summer median concentrations for chlorophyll and phosphorus in Chatfield Reservoir, 1987-2006. Several years were omitted because the median phosphorus was at or below the method detection limit. (From WQCD, An Evaluation of "Chlorophyll – Phosphorus Relationship in Chatfield Reservoir", 2007).

6.1.2 Chatfield Reallocation Study

Concurrently, the Authority has worked with the Colorado Water Conservation Board (CWCB) and the COE and other interested parties to develop a model of baseline conditions and potential water quality impacts associated with the proposed Chatfield reallocation of storage (to increase storage capacity by 20,600 acre-feet). The Chatfield Reallocation of storage was recently embraced by Governor Ritter as a project to provide water supplies to Front Range communities (Appendix E). As part of the study, a new reservoir model is being built upon existing water quality databases, to evaluate Chatfield Reservoir. We do not expect that such a model will provide all of our modeling requirements for the Reservoir, watershed and TMAL but it is a starting point. This model could potentially be the building block to support a refined model for Chatfield Reservoir; a model that incorporates the technical recommendations resulting from discussions between the Division and Authority along with the flood control and operational realities of Chatfield Reservoir. The Authority is encouraged that there are opportunities to coordinate the refinement of the reservoir model with the Division, CWCB, and COE team and consider development of refined models and approaches that better predict and evaluate water quality in Chatfield Reservoir.

It is important to remember that the significant change in the storage and operation of Chatfield will likely change the relationships currently being modeled by the Division. While the impending change does not render current evaluations moot, it does need to

be recognized that relationships between total phosphorus and chlorophyll modeled today are likely to be significantly changed upon completion of a project as large as the proposed Chatfield Reallocation.

6.2 Future Issues – what do we see on the horizon?

6.2.1 Collaboration in Developing Refined Model

We envision a collaborative opportunity with the Division and COE that entails further development of the reservoir model, with additional funding and in-kind support to facilitate model development. Estimates for the modeling effort range from $350,000 to $600,000. As the Authority operates on an annual budget of approximately $130,000, the Authority needs grants to meet the funding needs for a new Reservoir and watershed analysis. The Authority is seeking support and monies for this approach for Reservoir, watershed and TMAL modeling and analysis, from the Commission, Division, and other stakeholders.

6.2.2 Implementing Additional Nonpoint Source Control Strategies

The overarching challenge for the Authority into the future will be to manage the impacts from land use changes on water quality. In a sense, the mission of the Authority is to implement a sustainability plan for an entire watershed as measured through water quality. The Authority is committed to being a proactive partner and implementing improvements in the basin targeted towards phosphorus reduction and watershed health.

We also foresee other water quality improvements being realized in conjunction with MS4 permittees and new sustainable development, to enhance stormwater controls and to promote additional reduction of phosphorus loading to Chatfield Reservoir. Finally, we will continue to promote the conversion of Individual Sewage Disposal Systems (ISDS) to conventional treatment wherever feasible and environmentally prudent. The prevalence of ISDS along the US-85 Corridor has had the attention of the Authority. A recent Douglas County Planning effort is focusing on this topic and the opportunity to promote regional wastewater treatment in this growing area of the watershed.

7.0 SUMMARY AND CONCLUSIONS

The total phosphorus standard and chlorophyll goal was attained in 2007. Monitoring efforts continued both to monitor for meeting requirements of the Control Regulation and to measure improvements from nonpoint source controls. While flows from the South Platte River dominated the hydrology, loads from Plum Creek comprised over half the total load. However, the phosphorus TMAL was met in 2007.

No point source discharger exceeded their allocation. In addition, implementation of BMPs in the basin continued with the intent of a beneficial effect, reducing phosphorus loads to Chatfield Reservoir. MS4 permittees continued to fulfill their permit requirements furthering load reductions from nonpoint sources.

Future efforts in the Chatfield basin will, primarily, focus on controlling nonpoint sources of phosphorus loading because of their dominant contribution. Development of a strategy for improving water quality and prioritizing activities will be accomplished at the Authority's upcoming retreat. Among other issues, the Authority will discuss the following:

- Identifying and prioritizing phosphorus reducing BMPs and water quality enhancement projects in the basin as part of a capital improvement program.
    - In coordination with members and stakeholders, priority projects will be identified for further evaluation and potential implementation. Priority projects will be selected based on specific criteria, including phosphorus reduction, cost, watershed water quality improvements, and partnership/funding opportunities.
    - As land uses change and become more intensive, efforts will be made to control impacts from development. New environmentally sustainable, low impact development is being planned and supported by leaders in the state to reduce the water quality effect development can have on the watershed. Other priority improvements, such as detention, river restoration, and ISDS conversion will promote water quality enhancement, particularly in the Plum Creek Basin.

- Improving water quality monitoring protocols in coordination with the Division.
    - As a result of ongoing dialogue and recommendations from the Division, the Authority will embark on implementing refinements, within the Authority's budgetary constraints, to support the most accurate characterization of water quality in Chatfield Reservoir.

- Refining water quality models and tools in coordination with the Division and Chatfield Reallocation Water Quality Committee.
    - Significant effort from the Division, particularly on the part of Dr. Jim Saunders, is recognized by the Authority. This effort has opened thought provoking discussions and coordination in areas such as phosphorus loading to the reservoir, the chlorophyll and phosphorus relationship, and

new modeling relationships for consideration. The Authority looks forward to continuing to evaluate the relationships collaboratively with the Division.

- The Authority has coordinated with the COE on the aspects of reallocating Chatfield Reservoir to support water resources development, particularly as it relates to water quality modeling of operational scenarios. The Authority will continue to coordinate with this working committee to promote refinement of models used in the evaluation of the reallocation of Chatfield Reservoir.

The Authority has been a diligent steward of water resources in the Chatfield basin using relatively limited resources. The basin may be poised for development which may create additional pressures on water quality. The Authority is committed to fulfilling its responsibilities, to the best of its abilities, as changes occur.

8.0 REFERENCES

Colorado Department of Public Health and Environment, Water Quality Control Commission, 5 CCR 1002-73, Regulation No. 73, Chatfield Reservoir Control Regulation.

Colorado Division of Water Resources, http://www.water.state.co.us.

Colorado Water Quality Control Division, White Paper *"Chatfield Reservoir Chlorophyll-Phosphorus Relationship*", November 2007.

Colorado Water Quality Control Division, White Paper *"Chatfield Reservoir Annual Water Budget"*, December 2007.

Douglas County (2006) NPS Project Summary Sheet for West Creek Water Quality Improvements. EPA fiscal Year 2006. Report date November 15, 2005. Contacts Garth Englund, P.E. or Don Moore, AICP. Douglas County, 100 Third Street, Castle Rock, Colorado 80104, telephone: 303-660-7490.

US Army Corps of Engineer, Draft Reallocation Environmental Impact Study*, "Impacts of Increased Water Supply Storage on Water Quality: Chatfield Reservoir Storage Reallocation Feasibility Study"*, December 2007.

US Environmental Protection Agency, http://www.epa.gov/owow.tmdl/tmdl_clarification_letter.html.

US Geological Survey, http://waterdata.usgs.gov/co/nwis.

APPENDIX A

ELECTRONIC DATA SHEETS FOR TOTAL PHOSPHORUS AND CHLOROPHYLL AND LOADING CALCULATIONS FROM HAYMAN BURN AREA

2007 Phosphorus and Chlorophyll a Laboratory Data

TOTAL PHOSPHORUS

LAB ID	CLIENT ID	COLLECT DATE	RECEIVE DATE	ANALYTE	MATRIX	METHOD	RESULT	TEXT RESULT	QUAL	UNITS	MDL	PQL	ANALYZE DATE
C107-3	PC	01/26/07	01/26/07	Phosphorus, total	SW	4500-P G,	0.031	0.031		mg/L	0.002		01/30/07
C107-2	SO	01/26/07	01/26/07	Phosphorus, total	SW	4500-P G,	0.024	0.024		mg/L	0.002		01/30/07
C107-1	SP	01/26/07	01/26/07	Phosphorus, total	SW	4500-P G,	0.045	0.045		mg/L	0.002		01/30/07
C107-4	MDA	01/26/07	01/26/07	Phosphorus, total	SW	4500-P G,	0.238	0.238		mg/L	0.002		01/30/07
C107-5	MDB	01/26/07	01/26/07	Phosphorus, total	SW	4500-P G,	0.045	0.045		mg/L	0.002		01/30/07
C207-7	MDA	02/22/07	02/22/07	Phosphorus, total	SW	4500-P G,	0.09	0.09		mg/L	0.002		02/26/07
C207-8	MDB	02/22/07	02/22/07	Phosphorus, total	SW	4500-P G,	0.061	0.061		mg/L	0.002		02/26/07
C207-5	PC	02/22/07	02/22/07	Phosphorus, total	SW	4500-P G,	0.107	0.107		mg/L	0.002		02/26/07
C207-1	RM-1	02/22/07	02/22/07	Phosphorus, total	SW	4500-P G,	0.011	0.011		mg/L	0.002		02/26/07
C207-2	RM-2	02/22/07	02/22/07	Phosphorus, total	SW	4500-P G,	0.015	0.015		mg/L	0.002		02/26/07
C207-4	SO	02/22/07	02/22/07	Phosphorus, total	SW	4500-P G,	0.015	0.015		mg/L	0.002		02/26/07
C207-3	SP	02/22/07	02/22/07	Phosphorus, total	SW	4500-P G,	0.014	0.014		mg/L	0.002		02/26/07
C307-1	HC	03/29/07	03/30/07	Phosphorus, total	SW	4500-P G,	0.094	0.094		mg/L	0.002		04/05/07
C307-2	HCM	03/29/07	03/30/07	Phosphorus, total	SW	4500-P G,	0.099	0.099		mg/L	0.002		04/05/07
C307-12	MDA	03/30/07	03/30/07	Phosphorus, total	SW	4500-P G,	0.069	0.069		mg/L	0.002		04/05/07
C307-13	MDB	03/30/07	03/30/07	Phosphorus, total	SW	4500-P G,	0.034	0.034		mg/L	0.002		04/05/07
C307-10	PC	03/30/07	03/30/07	Phosphorus, total	SW	4500-P G,	0.070	0.07		mg/L	0.002		04/05/07
C307-5	RM-1	03/30/07	03/30/07	Phosphorus, total	SW	4500-P G,	0.013	0.013		mg/L	0.002		04/05/07
C307-6	RM-2	03/30/07	03/30/07	Phosphorus, total	SW	4500-P G,	0.013	0.013		mg/L	0.002		04/05/07
C307-7	RM-3	03/30/07	03/30/07	Phosphorus, total	SW	4500-P G,	0.016	0.016		mg/L	0.002		04/05/07
C307-9	SO	03/30/07	03/30/07	Phosphorus, total	SW	4500-P G,	0.012	0.012		mg/L	0.002		04/05/07
C307-8	SP	03/30/07	03/30/07	Phosphorus, total	SW	4500-P G,	0.025	0.025		mg/L	0.002		04/05/07
C307-3	TC	03/29/07	03/30/07	Phosphorus, total	SW	4500-P G,	0.159	0.159		mg/L	0.002		04/05/07
C307-4	WC	03/29/07	03/30/07	Phosphorus, total	SW	4500-P G,	0.086	0.086		mg/L	0.002		04/05/07
C407-8	MDA	04/27/07	04/27/07	Phosphorus, total	SW	4500-P G,	0.075	0.075		mg/L	0.002		04/30/07
C407-9	MDB	04/27/07	04/27/07	Phosphorus, total	SW	4500-P G,	0.123	0.123		mg/L	0.002		04/30/07
C407-6	PC	04/27/07	04/27/07	Phosphorus, total	SW	4500-P G,	0.407	0.407		mg/L	0.002		04/30/07
C407-1	RM-1	04/27/07	04/27/07	Phosphorus, total	SW	4500-P G,	0.031	0.031		mg/L	0.002		04/30/07
C407-2	RM-2	04/27/07	04/27/07	Phosphorus, total	SW	4500-P G,	0.065	0.065		mg/L	0.002		04/30/07
C407-3	RM-3	04/27/07	04/27/07	Phosphorus, total	SW	4500-P G,	0.028	0.028		mg/L	0.002		04/30/07
C407-5	SO	04/27/07	04/27/07	Phosphorus, total	SW	4500-P G,	0.049	0.049		mg/L	0.002		04/30/07
C407-4	SP	04/27/07	04/27/07	Phosphorus, total	SW	4500-P G,	0.071	0.071		mg/L	0.002		04/30/07
C407-7	ZZZ	04/27/07	04/27/07	Phosphorus, total	SW	4500-P G,	0.107	0.107		mg/L	0.002		04/30/07
C507-8	MDA	05/24/07	05/24/07	Phosphorus, total	SW	4500-P G,	0.162	0.162		mg/L	0.002		06/01/07
C507-9	MDA1	05/24/07	05/24/07	Phosphorus, total	SW	4500-P G,	0.258	0.258		mg/L	0.002		06/01/07
C507-10	MDB	05/24/07	05/24/07	Phosphorus, total	SW	4500-P G,	0.256	0.256		mg/L	0.002		06/01/07
C507-6	PC	05/24/07	05/24/07	Phosphorus, total	SW	4500-P G,	0.292	0.292		mg/L	0.002		06/01/07
C507-1	RM-1	05/24/07	05/24/07	Phosphorus, total	SW	4500-P G,	0.031	0.031		mg/L	0.002		06/01/07
C507-2	RM-2	05/24/07	05/24/07	Phosphorus, total	SW	4500-P G,	0.029	0.029		mg/L	0.002		06/01/07
C507-3	RM-3	05/24/07	05/24/07	Phosphorus, total	SW	4500-P G,	0.033	0.033		mg/L	0.002		06/01/07
C507-5	SO	05/24/07	05/24/07	Phosphorus, total	SW	4500-P G,	0.033	0.033		mg/L	0.002		06/01/07
C507-4	SP	05/24/07	05/24/07	Phosphorus, total	SW	4500-P G,	0.046	0.046		mg/L	0.002		06/01/07

2007 Phosphorus and Chlorophyll a Laboratory Data

TOTAL PHOSPHORUS

LAB ID	CLIENT ID	COLLECT DATE	RECEIVE DATE	ANALYTE	MATRIX	METHOD	RESULT	TEXT RESULT	QUAL	UNITS	MDL	PQL	ANALYZE DATE
C507-7	XXX	05/24/07	05/24/07	Phosphorus, total	SW	4500-P G,	0.237	0.237		mg/L	0.002		06/01/07
C607-8	MDA	06/21/07	06/21/07	Phosphorus, total	SW	4500-P G,	0.066	0.066		mg/L	0.002		06/25/07
C607-9	MDA-1	06/21/07	06/21/07	Phosphorus, total	SW	4500-P G,	0.029	0.029		mg/L	0.002		06/25/07
C607-10	MDB	06/21/07	06/21/07	Phosphorus, total	SW	4500-P G,	0.013	0.013		mg/L	0.002		06/25/07
C607-6	PC	06/21/07	06/21/07	Phosphorus, total	SW	4500-P G,	0.076	0.076		mg/L	0.002		06/25/07
C607-1	RM-1	06/21/07	06/21/07	Phosphorus, total	SW	4500-P G,	0.017	0.017		mg/L	0.002		06/25/07
C607-2	RM-2	06/21/07	06/21/07	Phosphorus, total	SW	4500-P G,	0.013	0.013		mg/L	0.002		06/25/07
C607-3	RM-3	06/21/07	06/21/07	Phosphorus, total	SW	4500-P G,	0.045	0.045		mg/L	0.002		06/25/07
C607-5	SO	06/21/07	06/21/07	Phosphorus, total	SW	4500-P G,	0.025	0.025		mg/L	0.002		06/25/07
C607-4	SP	06/21/07	06/21/07	Phosphorus, total	SW	4500-P G,	0.017	0.017		mg/L	0.002		06/25/07
C607-7	XXX	06/21/07	06/21/07	Phosphorus, total	SW	4500-P G,	0.028	0.028		mg/L	0.002		06/25/07
C607B-1	HC	06/29/07	06/29/07	Phosphorus, total	SW	4500-P G,	0.063	0.063		mg/L	0.002		07/05/07
C607B-2	HCM	06/29/07	06/29/07	Phosphorus, total	SW	4500-P G,	0.058	0.058		mg/L	0.002		07/05/07
C607B-3	TC	06/29/07	06/29/07	Phosphorus, total	SW	4500-P G,	0.093	0.093		mg/L	0.002		07/05/07
C607B-4	WC	06/29/07	06/29/07	Phosphorus, total	SW	4500-P G,	0.056	0.056		mg/L	0.002		07/05/07
C707-8	MDA	07/17/07	07/17/07	Phosphorus, total	SW	4500-P G,	0.034	0.034		mg/L	0.002		07/19/07
C707-9	MDA1	07/17/07	07/17/07	Phosphorus, total	SW	4500-P G,	0.040	0.040		mg/L	0.002		07/19/07
C707-10	MDB	07/17/07	07/17/07	Phosphorus, total	SW	4500-P G,	0.017	0.017		mg/L	0.002		07/19/07
C707-6	PC	07/17/07	07/17/07	Phosphorus, total	SW	4500-P G,	0.066	0.066		mg/L	0.002		07/19/07
C707-1	RM-1	07/17/07	07/17/07	Phosphorus, total	SW	4500-P G,	0.016	0.016		mg/L	0.002		07/19/07
C707-2	RM-2	07/17/07	07/17/07	Phosphorus, total	SW	4500-P G,	0.020	0.020		mg/L	0.002		07/19/07
C707-3	RM-3	07/17/07	07/17/07	Phosphorus, total	SW	4500-P G,	0.032	0.032		mg/L	0.002		07/19/07
C707-5	SO	07/17/07	07/17/07	Phosphorus, total	SW	4500-P G,	0.025	0.025		mg/L	0.002		07/19/07
C707-4	SP	07/17/07	07/17/07	Phosphorus, total	SW	4500-P G,	0.015	0.015		mg/L	0.002		07/19/07
C707-7	XXX	07/17/07	07/17/07	Phosphorus, total	SW	4500-P G,	0.012	0.012		mg/L	0.002		07/19/07
C707B-1	HC	07/27/07	07/27/07	Phosphorus, total	SW	4500-P G,	0.104	0.104		mg/L	0.002		08/07/07
C707B-2	HCM	07/27/07	07/27/07	Phosphorus, total	SW	4500-P G,	0.135	0.135		mg/L	0.002		08/07/07
C707B-12	MDA	07/31/07	07/31/07	Phosphorus, total	SW	4500-P G,	0.134	0.134		mg/L	0.002		08/07/07
C707B-13	MDA-1	07/31/07	07/31/07	Phosphorus, total	SW	4500-P G,	0.118	0.118		mg/L	0.002		08/07/07
C707B-14	MDB	07/31/07	07/31/07	Phosphorus, total	SW	4500-P G,	0.138	0.138		mg/L	0.002		08/07/07
C707B-10	PC	07/31/07	07/31/07	Phosphorus, total	SW	4500-P G,	0.115	0.115		mg/L	0.002		08/07/07
C707B-5	RM-1	07/31/07	07/31/07	Phosphorus, total	SW	4500-P G,	0.080	0.080		mg/L	0.002		08/07/07
C707B-6	RM-2	07/31/07	07/31/07	Phosphorus, total	SW	4500-P G,	0.014	0.014		mg/L	0.002		08/07/07
C707B-7	RM-3	07/31/07	07/31/07	Phosphorus, total	SW	4500-P G,	0.031	0.031		mg/L	0.002		08/07/07
C707B-9	SO	07/31/07	07/31/07	Phosphorus, total	SW	4500-P G,	0.022	0.022		mg/L	0.002		08/07/07
C707B-8	SP	07/31/07	07/31/07	Phosphorus, total	SW	4500-P G,	0.014	0.014		mg/L	0.002		08/07/07
C707B-3	TC	07/27/07	07/27/07	Phosphorus, total	SW	4500-P G,	0.327	0.327		mg/L	0.002		08/07/07
C707B-4	WC	07/27/07	07/27/07	Phosphorus, total	SW	4500-P G,	0.068	0.068		mg/L	0.002		08/07/07
C707B-11	ZZZ	07/31/07	07/31/07	Phosphorus, total	SW	4500-P G,	0.022	0.022		mg/L	0.002		08/07/07
C807-6	PC	08/10/07	08/10/07	Phosphorus, total	SW	4500-P G,	0.115	0.115		mg/L	0.002		08/20/07
C807-1	RM-1	08/10/07	08/10/07	Phosphorus, total	SW	4500-P G,	0.024	0.024		mg/L	0.002		08/20/07
C807-2	RM-2	08/10/07	08/10/07	Phosphorus, total	SW	4500-P G,	0.016	0.016		mg/L	0.002		08/20/07

2007 Phosphorus and Chlorophyll a Laboratory Data

TOTAL PHOSPHORUS

LAB ID	CLIENT ID	COLLECT DATE	RECEIVE DATE	ANALYTE	MATRIX	METHOD	RESULT	TEXT RESULT	QUAL	UNITS	MDL	PQL	ANALYZE DATE
C807-3	RM-3	08/10/07	08/10/07	Phosphorus, total	SW	4500-P G,	0.019	0.019		mg/L	0.002		08/20/07
C807-5	SO	08/10/07	08/10/07	Phosphorus, total	SW	4500-P G,	0.027	0.027		mg/L	0.002		08/20/07
C807-4	SP	08/10/07	08/10/07	Phosphorus, total	SW	4500-P G,	0.037	0.037		mg/L	0.002		08/20/07
C807B-6	PC	08/23/07	08/23/07	Phosphorus, total	SW	4500-P G,	0.118	0.118		mg/L	0.002		08/29/07
C807B-1	RM-1	08/23/07	08/23/07	Phosphorus, total	SW	4500-P G,	0.007	0.007		mg/L	0.002		08/29/07
C807B-2	RM-2	08/23/07	08/23/07	Phosphorus, total	SW	4500-P G,	0.008	0.008		mg/L	0.002		08/29/07
C807B-3	RM-3	08/23/07	08/23/07	Phosphorus, total	SW	4500-P G,	0.011	0.011		mg/L	0.002		08/29/07
C807B-5	SO	08/23/07	08/23/07	Phosphorus, total	SW	4500-P G,	0.019	0.019		mg/L	0.002		08/29/07
C807B-4	SP	08/23/07	08/23/07	Phosphorus, total	SW	4500-P G,	0.018	0.018		mg/L	0.002		08/29/07
C807C-1	HC	08/24/07	08/24/07	Phosphorus, total	SW	4500-P G,	0.082	0.082		mg/L	0.002		08/29/07
C807C-2	HCM	08/24/07	08/24/07	Phosphorus, total	SW	4500-P G,	0.077	0.077		mg/L	0.002		08/29/07
C807C-3	TC	08/24/07	08/24/07	Phosphorus, total	SW	4500-P G,	0.444	0.444		mg/L	0.002		08/29/07
C807C-4	WC	08/24/07	08/24/07	Phosphorus, total	SW	4500-P G,	0.060	0.060		mg/L	0.002		08/29/07
C907-6	PC	09/17/07	09/17/07	Phosphorus, total	SW	4500-P G,	0.052	0.052		mg/L	0.002		09/18/07
C907-1	RM-1	09/17/07	09/17/07	Phosphorus, total	SW	4500-P G,	0.035	0.035		mg/L	0.002		09/18/07
C907-2	RM-2	09/17/07	09/17/07	Phosphorus, total	SW	4500-P G,	0.027	0.027		mg/L	0.002		09/18/07
C907-3	RM-3	09/17/07	09/17/07	Phosphorus, total	SW	4500-P G,	0.046	0.046		mg/L	0.002		09/18/07
C907-5	SO	09/17/07	09/17/07	Phosphorus, total	SW	4500-P G,	0.034	0.034		mg/L	0.002		09/18/07
C907-4	SP	09/17/07	09/17/07	Phosphorus, total	SW	4500-P G,	0.018	0.018		mg/L	0.002		09/18/07
C907B-6	PC	09/25/07	09/25/07	Phosphorus, total	SW	4500-P G,	0.048	0.048		mg/L	0.002		10/01/07
C907B-1	RM-1	09/25/07	09/25/07	Phosphorus, total	SW	4500-P G,	0.022	0.022		mg/L	0.002		10/01/07
C907B-2	RM-2	09/25/07	09/25/07	Phosphorus, total	SW	4500-P G,	0.019	0.019		mg/L	0.002		10/01/07
C907B-3	RM-3	09/25/07	09/25/07	Phosphorus, total	SW	4500-P G,	0.017	0.017		mg/L	0.002		10/01/07
C907B-5	SO	09/25/07	09/25/07	Phosphorus, total	SW	4500-P G,	0.029	0.029		mg/L	0.002		10/01/07
C907B-4	SP	09/25/07	09/25/07	Phosphorus, total	SW	4500-P G,	0.007	0.007		mg/L	0.002		10/01/07
C907C-1	HC	09/28/07	09/28/07	Phosphorus, total	SW	4500-P G,	0.032	0.032		mg/L	0.002		10/15/07
C907C-2	HCM	09/28/07	09/28/07	Phosphorus, total	SW	4500-P G,	0.034	0.034		mg/L	0.002		10/15/07
C907C-3	TC	09/28/07	09/28/07	Phosphorus, total	SW	4500-P G,	0.194	0.194		mg/L	0.002		10/15/07
C907C-4	WC	09/28/07	09/28/07	Phosphorus, total	SW	4500-P G,	0.052	0.052		mg/L	0.002		10/15/07
C1007-6	PC	10/23/07	10/23/07	Phosphorus, total	SW	4500-P G,	0.072	0.072		mg/L	0.002		10/29/07
C1007-1	RM-1	10/23/07	10/23/07	Phosphorus, total	SW	4500-P G,	0.022	0.022		mg/L	0.002		10/29/07
C1007-2	RM-2	10/23/07	10/23/07	Phosphorus, total	SW	4500-P G,	0.021	0.021		mg/L	0.002		10/29/07
C1007-3	RM-3	10/23/07	10/23/07	Phosphorus, total	SW	4500-P G,	0.025	0.025		mg/L	0.002		10/29/07
C1007-5	SO	10/23/07	10/23/07	Phosphorus, total	SW	4500-P G,	0.025	0.025		mg/L	0.002		10/29/07
C1007-4	SP	10/23/07	10/23/07	Phosphorus, total	SW	4500-P G,	0.006	0.006		mg/L	0.002		10/29/07
C1007B-1	HC	10/26/07	10/26/07	Phosphorus, total	SW	4500-P G,	0.070	0.070		mg/L	0.002		11/05/07
C1007B-2	HCM	10/26/07	10/26/07	Phosphorus, total	SW	4500-P G,	0.036	0.036		mg/L	0.002		11/05/07
C1007B-3	TC	10/26/07	10/26/07	Phosphorus, total	SW	4500-P G,	0.171	0.171		mg/L	0.002		11/05/07
C1007B-4	WC	10/26/07	10/26/07	Phosphorus, total	SW	4500-P G,	0.049	0.049		mg/L	0.002		11/05/07
C1107-6	PC	11/29/07	11/29/07	Phosphorus, total	SW	4500-P G,	0.000	0.000	U	mg/L	0.002		12/18/07
C1107-1	RM-1	11/29/07	11/29/07	Phosphorus, total	SW	4500-P G,	0.002	0.002		mg/L	0.002		12/18/07
C1107-2	RM-2	11/29/07	11/29/07	Phosphorus, total	SW	4500-P G,	0.006	0.006		mg/L	0.002		12/18/07

2007 Phosphorus and Chlorophyll a Laboratory Data

TOTAL PHOSPHORUS

LAB ID	CLIENT ID	COLLECT DATE	RECEIVE DATE	ANALYTE	MATRIX	METHOD	RESULT	TEXT RESULT	QUAL	UNITS	MDL	PQL	ANALYZE DATE
C1107-3	RM-3	11/29/07	11/29/07	Phosphorus, total	SW	4500-P G,	0.009	0.009		mg/L	0.002		12/18/07
C1107B-5	SO	11/30/07	11/30/07	Phosphorus, total	SW	4500-P G,	0.011	0.011		mg/L	0.002		12/18/07
C1107-4	SP	11/29/07	11/29/07	Phosphorus, total	SW	4500-P G,	0.033	0.033		mg/L	0.002		12/18/07
C1107B-1	HC	11/30/07	11/30/07	Phosphorus, total	SW	4500-P G,	0.018	0.018		mg/L	0.002		12/18/07
C1107B-2	HCM	11/30/07	11/30/07	Phosphorus, total	SW	4500-P G,	0.017	0.017		mg/L	0.002		12/18/07
C1107B-3	TC	11/30/07	11/30/07	Phosphorus, total	SW	4500-P G,	0.037	0.037		mg/L	0.002		12/18/07
C1107B-4	WC	11/30/07	11/30/07	Phosphorus, total	SW	4500-P G,	0.041	0.041		mg/L	0.002		12/18/07
C1207-6	PC	12/04/07	12/04/07	Phosphorus, total	SW	4500-P G,	0.011	0.011		mg/L	0.002		12/18/07
C1207B-1	RM-1	12/07/07	12/07/07	Phosphorus, total	SW	4500-P G,	0.004	0.004		mg/L	0.002		12/18/07
C1207B-2	RM-2	12/07/07	12/07/07	Phosphorus, total	SW	4500-P G,	0.006	0.006		mg/L	0.002		12/18/07
C1207B-3	RM-3	12/07/07	12/07/07	Phosphorus, total	SW	4500-P G,	0.013	0.013		mg/L	0.002		12/18/07
C1207-5	SO	12/04/07	12/04/07	Phosphorus, total	SW	4500-P G,	0.013	0.013		mg/L	0.002		12/18/07
C1207-4	SP	12/04/07	12/04/07	Phosphorus, total	SW	4500-P G,	0.000	0.000	U	mg/L	0.002		12/18/07
C1207C-1	HC	12/10/07	12/10/07	Phosphorus, total	SW	4500-P G,	0.016	0.016		mg/L	0.002		12/18/07
C1207C-2	HCM	12/10/07	12/10/07	Phosphorus, total	SW	4500-P G,	0.017	0.017		mg/L	0.002		12/18/07
C1207C-3	TC	12/10/07	12/10/07	Phosphorus, total	SW	4500-P G,	0.014	0.014		mg/L	0.002		12/18/07
C1207C-4	WC	12/10/07	12/10/07	Phosphorus, total	SW	4500-P G,	0.010	0.010		mg/L	0.002		12/18/07

CHLORPHYLL A

C207-1	RM-1	02/22/07	02/22/07	Chlorophyll *a*	SW	10200 H (n	0.3	0.3		mg/m3	0.1		03/07/07
C307-5	RM-1	03/30/07	03/30/07	Chlorophyll *a*	SW	10200 H (n	3.8	3.8		mg/m3	0.1		04/03/07
C407-1	RM-1	04/27/07	04/27/07	Chlorophyll *a*	SW	10200 H (n	7.3	7.3		mg/m3	0.1		05/01/07
C507-1	RM-1	05/24/07	05/24/07	Chlorophyll *a*	SW	10200 H (n	4.1	4.1		mg/m3	0.1		06/18/07
C507-11	ZZZ	05/24/07	05/24/07	Chlorophyll *a*	SW	10200 H (n	4.6	4.6		mg/m3	0.1		06/18/07
C607-1	RM-1	06/21/07	06/21/07	Chlorophyll *a*	SW	10200 H (n	3.2	3.2		mg/m3	0.1		06/29/07
C707-1	RM-1	07/17/07	07/17/07	Chlorophyll *a*	SW	10200 H (n	2.5	2.5		mg/m3	0.1		08/02/07
C707B-5	RM-1	07/31/07	07/31/07	Chlorophyll *a*	SW	10200 H (n	5.7	5.7		mg/m3	0.1		08/15/07
C707B-15	YYY	07/31/07	07/31/07	Chlorophyll *a*	SW	10200 H (n	6.1	6.1		mg/m3	0.1		08/15/07
C807-1	RM-1	08/10/07	08/10/07	Chlorophyll *a*	SW	10200 H (n	3.3	3.3		mg/m3	0.1		08/23/07
C807B-1	RM-1	08/23/07	08/23/07	Chlorophyll *a*	SW	10200 H (n	4.2	4.2		mg/m3	0.1		09/06/07
C907-1	RM-1	09/17/07	09/17/07	Chlorophyll *a*	SW	10200 H (n	8	8		mg/m3	0.1		09/20/07
C907B-1	RM-1	09/25/07	09/25/07	Chlorophyll *a*	SW	10200 H (n	11.5	11.5		mg/m3	0.1		10/03/07
C1007-1	RM-1	10/23/07	10/23/07	Chlorophyll *a*	SW	10200 H (n	4.25	4.25		mg/m3	0.1		10/30/07
C1107-1	RM-1	11/29/07	11/29/07	Chlorophyll *a*	SW	10200 H (n	8.7	8.7		mg/m3	0.1		12/04/07
C1207B-1	RM-1	12/07/07	12/07/07	Chlorophyll *a*	SW	10200 H (n	7.7	7.7		mg/m3	0.1		12/27/07

Total Phosphorus Loading from Hayman Burn Area

Estimated Monthly Flow (Ac-Ft/ Month)

2006					2007									
Jun-06	Aug-06	Oct-06	Nov-06	Dec-06	Mar-07	Apr-07	May-07	Jun-07	Jul-07	Aug-07	Sep-07	26-Oct	30-Nov	11-Dec
291.5	1,229.5	909.8	2,807.9	1,957.9	13,892.9	19,964.8	6,749.7	2,873.4	3,178.2	2,735.5	1,481.3	1,665.9	1,308.8	2,385.5

TP Montly Concentration

2006					2007									
Jun-06	Aug-06	Oct-06	Nov-06	Dec-06	Mar-07	Apr-07	May-07	Jun-07	Jul-07	Aug-07	Sep-07	26-Oct	30-Nov	11-Dec
27		457	152	21	99	548	77	56	68	60	52	49		

TP Montly Loading (Pounds/Month)

2006					2007										
Jun-06	Aug-06	Oct-06	Nov-06	Dec-06	Mar-07	Apr-07	May-07	Jun-07	Jul-07	Aug-07	Sep-07	26-Oct	30-Nov	11-Dec	total
21.4	0.0	1,132.2	1,162.2	112.0	3,745.2	29,791.6	1,415.2	438.2	588.5	446.9	209.7	222.3			39,063.1

2007 Total
36,857.6

April 28, 2008

Amy Conklin, Manager
Chatfield Watershed Authority
6795 S. Elati Street
Littleton, CO 80120

Dear Ms. Conklin:

Per your request to better substantiate the sediment loading impacts upon the Chatfield Reservoir resulting from the 2002 Hayman fire, I can offer the following:

Sediment Loading:

Fire destroys the accumulated forest floor layer of vegetation and greatly alters water infiltration rates by exposing soils to raindrop impact and creating water repellent conditions. The U.S. Forest Service has been doing hill slope sediment transport monitoring of the 2002 Hayman fire showing increased erosion sediment yields and nutrient loading.

Field studies initiated after the 2002 Hayman Fire by the U. S. Forest Service show that the decrease in ground cover and the resultant increase in surface water runoff lead to channel initiation in formerly unchannelled swales as well as incision and gullying in existing channels. These processes have resulted in dramatic increases in sediment transport and will continue for a number of years until ground cover and canopy vegetation are reestablished.

The following table shows the first-year sediment erosion rates for the entire Hayman Fire burn area by burn severity class as determined by the U.S. Forest Service Hayman Fire Burned Area Emergency Rehabilitation Team (Robichaud 2003) and (Hayman Fire - Burned Area Report 2002).

Burn Severity	**Erosion Rate – tons/acre**
Unburned	0.5 -1.0
Low	22
Moderate	70
High	70

U.S. Forest Service stated that the sediment erosion loading for 2003 was one-ton per acre per year prior to the Hayman fire and 11 tons per acre per year after the fire (Robichaud. P.; MacDonald, L.; Freeouf, J. et al 2003).

Unpublished 2004 U.S. Forest Service sediment erosion data for the Hayman fire for showed an increased to 17 tons per acre per year from a pre-fire sediment erosion rate of one-ton per acre per year. This increase in the erosion sediment rate was the result of extensive summer rain storms in the Upper South Platte River Basin in 2004.

The five year average for the 1996 Buffalo Creek fire, located in the Upper South Platte River Basin north of the Hayman, fire resulted in a sediment erosion rate of 10 tons per acre (Moody, J.A. :Martin, D.A. 2001)

Denver Water is scheduled to remove 800,000 cubic yards of sediment from Strontia Springs Reservoir at a cost of $23,000,000. The vast majority of the sediment to be removed is attributed to sediment erosion form the Hayman fire.

Sincerely,

Don Moore
Planner, Douglas County

References:

Robichaud, P.; MacDonald, L; Freeouf, J; Neary, D. Martin, D.; Ashmun, L 2003. Post Fire Rehabilitation of the Hayman Fire. USDA Forest Service General Technical Report RMRS-GTR-114: 293-314p.

U.S. Department of Agriculture, Forest Service, 2002. Hayman Fire- Burned Area Report. (Hayman Fire 2500-8, original 7/5/02, revised 8/21/02) Unpublished report on file at: U.S Department of Agriculture, forest Service, Pike and San Isabel National Forests, Pueblo, CO. 12p.

Moody, J.A.; Martin, D.A. 2001 Initial hydrologic and geomorphic response to two burned watersheds in Colorado, U.S. Geological Survey Water resources Investigation Report 01-4122, Denver Colorado.

APPENDIX B

SAMPLING FREQUENCIES

Appendix B

Summary of Monitoring Frequency

Constituent	Frequency		
	Monthly	Quarterly	Annually
Temperature, Degrees C	X		
Field pH (s.u.)	X		
Specific Conductance (uS/cm)	X		
Dissolved Oxygen, mg/L	X		
Total Suspended Solids, mg/L	X		
Total Phosphorus, mg/L	X		
Ortho Phosphorus, mg/L	X		
Nitrite + Nitrate-nitrogen, mg/L	X		
Ammonia Nitrogen, mg/L	X		
Total Nitrogen, mg/L	X		
Instantaneous Flow (Rivers & Streams), cfs	X		
Chlorophyll a (Reservoir), ug/L	X		
Secchi Depth (Reservoir), meters	X		
Phytoplankton Biomass & Species (Reservoir)		X	
Alkalinity (optional), mg/L		X	

APPENDIX C

POINT SOURCE DISCHARGER TABLES

Appendices

2007 Monthly Flow, Phosphorus Concentration, and Loading from Select Water Treatment Plants in the Chatfield Watershed

Town of Larkspur

Month	*Total Montly Flow (million gallons)*	*Average Monthly Total Phosphorus Concentration (mg/L)*	*Total Phosphorus Discharge (pounds)*
January	0.484	0.95	3.83
February	0.494	0.44	1.81
March	0.552	0.1	0.46
April	0.612	0.09	0.46
May	0.675	0.14	0.79
June	0.581	0.09	0.44
July	0.841	0.12	0.84
August	0.857	0.13	0.93
September	0.517	0.17	0.73
October	0.451	0.14	0.53
November	0.481	0.19	0.76
December	0.568	0.15	0.71
	Total Discharge (million gallons/year)	**Annual Average (mg/L)**	**Total Discharge (pounds/year)**
	7.11	**0.23**	**12.3**

Note:
Statistics are rounded.

Perry Park Water and Sanitation District: Waucondah

Month	*Total Montly Flow (million gallons)*	*Average Monthly Total Phosphorus Concentration (mg/L)*	*Total Phosphorus Discharge (pounds)*
January	4.34	0.41	14.84
February	4.12	0.31	10.65
March	4.71	0.12	4.12
April	4.56	0.26	9.89
May	4.71	0.39	15.32
June	4.59	0.37	14.16
July	4.77	0.21	8.35
August	4.68	0.27	10.54
September	4.86	0.14	5.67
October	4.77	0.21	8.35
November	4.62	0.22	8.48
December	4.71	0.83	32.6
	Total Discharge (million gallons/year)	**Annual Average (mg/L)**	**Total Discharge (pounds/year)**
	55.4	**0.31**	**143**

Note:
Statistics are rounded.

Perry Park Water and Sanitation District: Sageport

Month	*Total Montly Flow (million gallons)*	*Average Monthly Total Phosphorus Concentration (mg/L)*	*Total Phosphorus Discharge (pounds)*
January	1.27	0.28	2.96
February	1.12	0.23	2.14
March	1.24	0.19	1.96
April	1.26	0.46	4.83
May	1.3	0.92	9.97
June	1.26	0.36	3.78
July	1.3	0.40	4.33
August	1.3	0.49	5.30
September	1.26	0.34	3.57
October	1.3	0.66	7.15
November	1.41	0.19	2.20
December	1.36	0.35	3.96
	Total Discharge (million gallons/year)	**Annual Average (mg/L)**	**Total Discharge (pounds/year)**
	15.4	**0.41**	**52.2**

Note:
Statistics are rounded.

Louviers Mutual Service Company

Month	*Total Montly Flow (million gallons)*	*Average Monthly Total Phosphorus Concentration (mg/L)*	*Total Phosphorus Discharge (pounds)*
January	0	0	0
February	0	0	0
March	0	0	0
April	0	0	0
May	0.03366	5.2	1.45
June	0	0	0
July	0	0	0
August	0	0	0
September	0	0	0
October	0	0	0
November	0	0	0
December	0	0	0
	Total Discharge (million gallons/year)	**Annual Average (mg/L)***	**Total Discharge (pounds/year)**
	0.03366	**5.20**	**1.45**

Note:
* = Zeros are not included in annual average concentration calculation.
Statistics are rounded.

Roxborough Water and Sanitation District

Month	*Total Montly Flow (million gallons)*	*Average Monthly Total Phosphorus Concentration*	*Total Phosphorus Discharge (pounds)*
January	18	0.53	80.50
February	16	0.48	65.70
March	23	0.4	78.10
April	25	0.25	52.80
May	28	0.35	82.00
June	22	0.37	68.30
July	21	0.44	75.50
August	19	1.34	213.20
September	6	1.81	93.10
October			
November			
December			
	Total Discharge (million gallons/year)	**Annual Average (mg/L)**	**Total Discharge (pounds/year)**
	179	**0.68**	**809.20**

Note:
Statistics are rounded.

Lockheed Martin Space Systems Company

Month	*Total Montly Flow (million gallons)*	*Average Monthly Total Phosphorus Concentration (mg/L)*	*Total Phosphorus Discharge (pounds)*
January	6.960	0.20	12
February	7.258	0.28	17
March	9.034	0.26	20
April	8.468	0.27	19
May	7.996	0.43	29
June	6.443	0.43	23
July	6.500	0.33	18
August	7.591	0.56	36
September	5.697	0.46	20
October	6.355	0.58	28
November	5.849	--	38
December	5.444	--	10
	Total Discharge (million gallons/year)	**Annual Average (mg/L)**	**Total Discharge (pounds/year)**
	83.6	**0.38**	**270**

Note:
Statistics are rounded.

Plum Creek Wastewater Authority

Month	*Total Montly Flow (million gallons)*	*Average Monthly Total Phosphorus Concentration (mg/L)*	*Total Monthly Reuse Flow (million gallons)*	*Reuse Average Monthly Total Phosphorus Concentration (mg/L)*
January	118.9	0.29	0	0.30
February	118.4	0.21	0	0.22
March	117.6	0.24	4.85	0.31
April	121.0	0.27	7.34	0.25
May	113.7	0.32	17.6	0.36
June	69.9	0.28	39.7	0.33
July	79.4	0.27	39.9	0.23
August	96.2	0.13	25.3	0.16
September	85.6	0.11	27.2	0.14
October	97.8	0.11	19.2	0.15
November	106.5	0.11	11.6	0.10
December	126.5	0.17	0.182	0.21
	Total Discharge (million gallons/year)	**Annual Average (mg/L)**	**Total Discharge (million gallons/year)**	**Annual Average (mg/L)**
	1,251	**0.21**	**193**	**0.23**

Note:
Statistics are rounded.

APPENDIX D

SELECTED AUTHORITY POLICIES

MEMORANDUM

Date: **Adopted July 25, 2007**

By: **Chatfield Watershed Authority Board**

Authority Guidance: **Authority Referral Review Guidance: *Land Use Development / Redevelopment Applications***

Purpose/ Goal – The Chatfield Watershed Authority (Authority) is a referral agency to land use agencies within the Chatfield Watershed boundary, including cities and counties. The Authority, as a water quality management agency and local watershed authority, reviews referral applications for consistency with local, regional and state water quality regulations, associated policies and the Chatfield watershed plan. This "Referral Review Guidance" outlines general Authority land disturbance mitigation preferences, and Authority review and comment guidance.

Authority Review Guidelines – Referred land use applications that cause a land disturbance and/or a potential to negatively affect water quality are subject to review and comment by Authority. The Authority encourages site development to utilize a "4-Step Process" {Urban Drainage and Flood Control (UDFCD) *4-Step Planning Process*[1] (*http://www.udfcd.org*} or "Low Impact Development (LID)". These processes include structural best management practices (BMPs) as an integral part of new development or a project with redevelopment.

Whether LID or 4-step terminology is used, the basic tenants are the same: Reduce runoff by reducing pavement, disconnecting impervious area and/or allowing infiltration all with a goal of mimicking predevelopment hydrology. Land disturbance activities using the 4-steps process or LID would use techniques that allow or restore sheetflow and infiltration/absorption such as: no raised curb, curb cuts to allow water to flow into a grass buffer or other landscaping, sumped landscaping (not raised parking lot islands), block pavement as cross walks, parking spaces, overflow to break up the impervious flatwork, grass buffers and swales.

Applications will be reviewed by Authority to determine the potential for runoff-caused water quality degradation. If land use applications do not use a *4-Step Planning or similar LID Process, the Authority* may request *additional information before the Authority can complete an adequate review of the proposal/ application*.

Land Disturbance Review Elements– A land use application that causes land disturbance should:

---

[1] [1]Urban Drainage and Flood Control District, Denver Colorado. The **Urban Storm Drainage Criteria Manual** can be downloaded at: http://www.udfcd.org/downloads/down_critmanual.htm

1. Use a treatment train approach and apply multiple structural and/or non-structural best management practices consistent to hydrogeological conditions of the site;

2. Strive to mimic pre-development hydrology and promote infiltration over off-site runoff;

3. Not reasonably increase pollutant loading over ambient conditions, with no net increase in total phosphorus loading on long-term basis; and

4. Not cause or create a potential for off-site or downstream increased erosion or water quality degradation.

4-Step Planning Process Or Similar LID Process – These processes include four basic elements {*See UDFCD Urban Storm Drainage Criteria Manual, Volume 3 for information on the 4-step process and stormwater management*}. The Authority considers the following four components consistent with a *4-Step Planning or similar LID Process*:

1) Runoff Reduction

- The land use application should include techniques for reducing stormwater runoff. This may include porous paving surfaces, disconnected impervious area, modular block pavement as well as vegetated swales and sumps.

- Site design should promote water infiltration structures and on-site recharge, whenever feasible.

2) Provide Water Quality (Capture Volume) Enhancement

- Site design must consider water quality features [*Best Management Practices, LID practices or ©"Smart Growth Practices*"] to preserve surface and groundwater quality.

- Detention ponds or basins are an important aspect of water quality; however a single detention structure in sloped terrain may not mitigate all adverse water quality effects. A treatment train that may include several detention structures is the preferred Authority option.

- Runoff reduction or filtering should protect sensitive aquatic and riparian areas/ zones found in the Chatfield Watershed.
- The amount of nutrient (nitrogen and phosphorus) and other pollutant runoff from the site under post-construction conditions should not exceed ambient pre-construction conditions on a long-term basis.

- Large scale land use developments are encouraged to obtain water quality data or develop estimates on pre-construction water quality conditions, including taking photographs of pre-construction drainages and receiving waters.

3) Stabilized Drainageways

- Land development projects that significantly increase impervious area on a property should identify drainageway stabilization mitigation measures in the land application process to reduce increased velocity impacts such as down cutting and scouring.

- A change in hydrology caused by development that generates higher quantities of stormwater runoff with subsequent higher potential pollutant loading to adjacent waterways requires appropriate use of BMPs or appropriate practices.

4) Industrial and Commercial BMPs Appropriate For Watershed

- Industrial and Commercial BMPs should not cause a degradation of water quality conditions.

- Landscape designs should promote LID practices that prevent excessive runoff to waterways/ watershed and promote infiltration, when feasible.

- Irrigation and fertilized landscaping should not contribute excessive (above ambient conditions) nutrient loading in adjacent watershed.

- The Authority promotes use of native vegetation.

MEMORANDUM

Date: **March 22, 2006**

To: ***Chatfield Watershed Authority***

Re: **Policy For Commercial/Industrial Individual Sewage Disposal Systems**

Chatfield Authority Policy For Commercial/Industrial Individual Sewage Disposal Systems

This Policy shall apply to applicants proposing an individual sewage disposal system (a.k.a. "septics") to serve industrial or commercial development of any size, or residential development where wastewater flows will be greater than 2,000 gpd.

When reviewing an application for septic systems, the Authority shall use the wastewater flow estimates adopted by the Colorado Board of Health (5 CCR 1003-6) (Table 1), unless the wastewater flow estimates adopted by Tri-County Health Department (Table 2) are more stringent.

Applications for a septic system to serve commercial or industrial development of any size, or residential development which will generate 2,000 gpd or more within the Chatfield Watershed shall state the use (e.g. bowling alley, office building, shopping center) and calculate the average wastewater flows using the Colorado Board of Health or Tri-County Health Department regulations, whichever is more stringent. The Colorado Board of Health has not adopted a process for waiver or exemption of its wastewater flow estimates. Therefore, the Authority will not consider waivers or exemptions from the applicable wastewater flow estimates.

The Authority shall not approve septic systems that are within the 100-year floodplain.

Any septic system serving commercial or industrial development must provide advanced treatment to remove nutrients, and shall monitor and report influent flows and effluent quality.

Tri-County Health applies a peaking factor of 1.5 for predicting septic wastewater generation. This peaking factor is lower than the value recommended in the DRCOG *Clean Water Plan*, which can vary from 2-5 peaking. The Authority will accept a peaking factor of 1.5 for proposed commercial/ industrial onsite systems consistent with Tri-County Health guidelines. Permitted treatment facilities (>2,000 gallons per day) are still expected to use peaking factors consistent with the DRCOG *Clean Water Plan*.

Any proposed wastewater system for a residential, commercial or industrial use in the Chatfield watershed that will produce 2,000 gpd or more must comply with state, local, and regional requirements, including preparation of a Clean Water Plan; a wastewater utility plan consistent with the DRCOG Utility Plan Guidance; and a phosphorus allocation.

Any proposed septic system for a commercial or industrial development in the Chatfield Watershed must consider connection to existing wastewater treatment facilities within a 10-mile radius of the proposed site. The Authority encourages regionalization of wastewater treatment and any proposal must address this wastewater regionalization issue. Additionally, the Authority may require that a phosphorus monitoring plan be developed that includes annual monitoring and reporting as part of any proposed commercial or industrial onsite system.

The Authority will not approve the location of septic systems for a development that plans to annex to a water and sanitation district or other provider that does not have an approved wastewater utility plan or the capacity and ability to provide service within the proposed development phase of the project.

Chatfield Watershed Authority

Adopted: **April 26, 2006**

Policy: **Reviewing Manure Management and Stabled or Confined Animal Nutrient Generation**

This Policy shall apply to new facilities where animals are or will be stabled or confined and fed or maintained for a total of 45 days or more in any 12-month period ("Animal Facility") within the Chatfield Watershed. It shall also apply to existing Animal Facilities that are enlarged, expanded, extended, increased, altered, or moved for any reason within the Chatfield Watershed. If an existing Animal Facility discontinues use for any reason for a period of more than 12 consecutive months, the facility shall comply with the requirements of this Policy.

The Chatfield Watershed Authority ("Authority") recognizes animal manure and associated liquid waste stream is a contributing factor in nonpoint source pollution within the Chatfield Watershed. An Animal Facility or similar project can lead to an accumulation of nutrients in site-specific locations over the long term, especially in areas with repeated applications. Excessive loading of nutrients can degrade surface and alluvial groundwater water quality and cause exceedances of Water Quality Standards and risks to human health and the environment. As such, the Authority will apply the estimated nutrient loading numbers from the following table when reviewing Animal Facilities involving manure and associated liquid waste stream management.

Table 1 **Approximate quantity per 1000 lb animal equivalent per year and fertilizer nutrient composition of various types of animal manure at time applied to the land[1]**

Type of livestock	Bed vs. no bedding	Manure Tons	Dry matter	Total Nitrogen	Ammonia	Phosphorus	Potassium
			%	lb/ton of Manure			
Swine	w/bedding	6.1	18	8	5	3.08	5.81
	w/o bedding	6.1	18	10	6	3.96	6.64
Beef cattle	w/bedding	2.6	50	21	8	3.52	21.58
	w/o bedding	2.5	52	21	7	1.76	19.09
Dairy cattle	w/bedding	9.1	21	9	5	1.76	8.3
	w/o bedding	10.6	18	9	4	1.76	8.3
Sheep	w/bedding	6.5	28	14	5	3.96	20.75
	w/o bedding	6.5	28	18	5	4.84	21.58
Poultry	w/litter	4.4	75	56	36	19.8	28.22
	w/o litter	7.3	45	33	26	21.1	28.22
Poultry deep pit	(compost)	4.3	76	68	44	28.2	37.35
Turkey	w/litter	7.2	29	20	13	7.04	10.79
	w/o litter	9.5	22	27	17	8.8	14.11
Horses/ Mules/ Donkeys[2]	w/o bedding	8.2	21	12	2	2.8	7.5
	w/bedding	9.7	46	19	4	1.76	11.62

[1] Adapted from multiple sources. Colorado data was included where available. (See references)

[2] Values for horses, but assumes other equines such as mules and donkeys

Manure management strategies (solid waste and liquid waste stream) used in the Chatfield watershed should not increase the total annual load of total nitrogen or total phosphorus above ambient conditions where such waste can or potentially can reach surface waters in the watershed or within the groundwater.

It is presumed that Animal Facilities will store manure in a contained area, and will haul the manure out of the Chatfield Watershed. However, Animal Facilities may secure a waiver from the Authority to keep manure in the watershed provided the following three steps are met by the applicant:

(1) Calculate the estimated annual wasteload based on 1,000 pound animal equivalents as per Table 1 for nutrients;

(2) Identify best management practices and mitigation strategies to reduce nutrient contributions; and

(3) Outline a monitoring and reporting plan that should prove effectiveness of the proposed management strategy.

If monitoring or inspection indicates that manure or nutrients are not adequately retained or may be contributing nutrients into the watershed, the waiver will be revoked and the owners will be required to store and haul manure to an off-site location.

References

J.G. Davis and A.M Swinker. 2004. Horse Manure Management. CSU Cooperative Extension Bulletin No. 1.219. Colorado State University.

Waskom and Davis. 1999. BMPs for manure management, Colorado State University Bulletin No. 568a.

D.F. Leikam and R.E. Lamond. 2003. Estimating Manure Nutrient Availability. Department of Agronomy Bulletin MF-2562. Kansas State University Agricultural Experiment Station and Cooperative Extension Service.

Saskatchewan Agriculture and Food. 1999. Nutrient Values of Manure. Farmfacts 5M ISSN 0840-9447 LON0299.

Natural Resources Conservation Service (NRCS) www.nrcs.usda.gov (This site has multiple listings on manure management, assessment tools (e.g., The Phosphorus Index) and manure characteristics)

Texas Animal Manure Management Issues (TAMMI) Website is an electronic informational clearinghouse, developed and designed with a mission to provide agricultural waste management education and information on demand. http://tammi.tamu.edu/

United States Department of Agriculture. Confined Animal and Manure Nutrient Data System - http://www.ers.usda.gov/

APPENDIX E

LETTER FROM GOVERNOR RITTER IN SUPPORT OF CHATFIELD REALLOCATION

STATE OF COLORADO

OFFICE OF THE GOVERNOR
136 State Capitol Building
Denver, Colorado 80203
(303) 866 - 2471
(303) 866 - 2003 fax

Bill Ritter, Jr.
Governor

January 25, 2008

Jeff Shoemaker
Executive Director
The Greenway Foundation
1040 South Gaylord Street, Suite 201
Denver, Colorado 80209

Dear Mr. Shoemaker:

On behalf of the State of Colorado, I write to express support for the efforts of the Colorado Water Conservation Board and the Chatfield Reservoir Reallocation Coalition to secure federal funding for the Chatfield Reservoir Reallocation Environmental Impact Statement. As the local sponsor for the project, the Colorado Water Conservation Board is working in conjunction with the U.S. Army Corps of Engineers to complete work on the EIS.

As Colorado continues to grow, particularly in the Denver metropolitan area, we must look at the resources we have to determine whether we can put existing infrastructure to better use. The U.S. Army Corps of Engineers has determined that Chatfield Reservoir can accommodate an additional 20,600 acre feet of water storage without limiting its usefulness as a flood control structure. This additional storage space will be used by a group of water providers, farmers and environmental organizations to meet the diverse needs of our growing state. It is imperative that the current EIS move forward in a timely fashion. It is critical that federal funding for the EIS be available to complete this important study. This once-in-a-generation opportunity enjoys broad support from municipal, agricultural and environmental interests.

- It will make use of an existing water storage facility.
- It will not require construction of a new water storage facility.
- It may bring significant revenues to the federal treasury.
- The water will originate from snowmelt and stormwater runoff within the South Platte River Basin and will be captured and stored in Chatfield.
- It will provide additional water for Northeast Colorado farmers to help meet critical irrigation needs.
- It will help cities and special districts meet drinking water and other municipal needs both above and below Chatfield.
- It will provide opportunities for environmental and recreational enhancements along the South Platte River in the 53-mile Denver urban river corridor from Chatfield Reservoir to below the Adams County-Weld County line.

The Chatfield Reservoir Reallocation Project is an excellent example of the solutions that Colorado must embrace to meet my vision for the 21st century that calls for maximizing water supplies through a responsible mix of conservation, re-use, efficiency, cooperation and voluntary crop-to-city water agreements.

Sincerely,

Bill Ritter, Jr.
Governor