CHATFIELD

WATERSHED AUTHORITY
2023 ANNUAL REPORT

DRAFT

The Chatfield Watershed Authority promotes protection of water quality in the Chatfield Watershed for drinking water supplies, recreation, fisheries, and other beneficial uses.

MAY 15, 2024

We Protect the Water You Enjoy

www.chatfieldwatershedauthority.org

The **2023 Annual Report** is the annual water quality summary and status report presented by the Chatfield Watershed Authority to communicate the water quality of Chatfield Reservoir and its watershed, highlighting information required by the Colorado Water Quality Control Commission in Control Regulation #73.

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May 15, 2024

Water Quality Control Commission
Colorado Department of Public Health and Environment
4300 Cherry Creek Drive South
Denver, CO 80246

Dear Commissioners:

The Chatfield Watershed Authority (CWA or Authority) is pleased to submit this 2023 Annual Report to the Water Quality Control Commission (WQCC) in accordance with the reporting requirements of the Chatfield Reservoir Control Regulations, Regulation #73. 2023 has been a unique year, with the watershed experiencing high flows and escaping drought conditions for the longest period since 2016. **Chatfield Reservoir was in compliance with Regulation 38 (WQCC CCR 1002-38) TP and chlorophyll-α standards for the 2023 monitoring period.**

The Authority was successful in 2023 in obtaining an additional source of funding to monitor, protect, and improve water quality in the Chatfield Reservoir and the watershed through the Colorado legislatures adoption of SB 23-267 which proposes to implement a water quality fee system for certain users of Chatfield Reservoir. The implementation details are being developed in 2024 in coordination with Colorado Parks and Wildlife for expected roll-out in 2025.

The Authority was also busy in 2023 as is evidenced by the activities reported in this annual report. These activities include continued participation in the West Plum Creek Stream Management Plan and in the Colorado School of Mines' annual water quality field session in the Chatfield watershed. The Authority also initiated the data analysis process to support the development of a site-specific standard for total nitrogen in Chatfield Reservoir which the Authority plans to present to the Division staff once the initial analysis is complete. The goal of this effort is to have support from the Division for a recommended site-specific total nitrogen standard by 2027. The Authority and its members have also continued efforts to promote water quality education, construction of stream improvements, and control of water quality from construction activities through their stormwater criteria and MS4 permitting activities.

Finally, we mourn the loss of Authority Member Barbara Biggs and celebrate her achievements in her constant efforts to improve water quality, not only for Chatfield Reservoir, but for the entire population of the Colorado front range communities. She will be missed.

We hope you enjoy reading our report and look forward to presenting this report at a future WQCC meeting.

Sincerely,

Laura L. Cavey
2023 Chatfield Watershed Authority Board Chair

CHATFIELD WATERSHED AUTHORITY

The Chatfield Watershed Authority (CWA or the Authority) was established in 1984 when the Governor of Colorado designated the Authority as the 208 Management Agency, in accordance with the Federal Clean Water Act. The Authority's purpose is to preserve the beneficial uses in Chatfield Reservoir and watershed through the promotion of point source, nonpoint source, and stormwater controls that reduce phosphorus and chlorophyll.

The Authority continues to implement Colorado Water Quality Control Commission (WQCC) Chatfield Reservoir Control Regulation (Code of Colorado Regulations No. 73, 5 CCR 1002-73); and coordinates with state and federal agencies regarding water quality control measures.

The Authority is comprised of stakeholders (members) within the 400 square mile watershed and includes the Plum Creek basin and portions of the South Platte River basin (from the outfall of Strontia Springs Reservoir to Chatfield Reservoir, including the Massey Draw and Deer Creek sub-basins). The members develop and implement projects to protect the watershed, reservoir health and water quality. Opportunities exist within the watershed to address the chemical, physical, and biological constituents (pollutants) that impact the watershed and reservoir. Some examples of this include phosphorus removal in wastewater treatment, stabilizing degraded streambanks, mitigating runoff from agricultural lands, minimizing leachate from septic systems, controlling runoff from wildfire burn areas, and providing public education for reducing human-caused pollution.

The Authority members' jurisdictions and service area boundaries as well as the Chatfield watershed boundary are shown on Figure 1. The five-member Board of Directors (Board) is comprised of three elected officials representing Douglas County, Jefferson County, and the Town of Castle Rock; one wastewater district representative; and one representative for other members. The Board continues to implement the Chatfield Reservoir Control Regulation and meets regularly to address policy and fiscal issues.

2023 BOARD MEMBERS

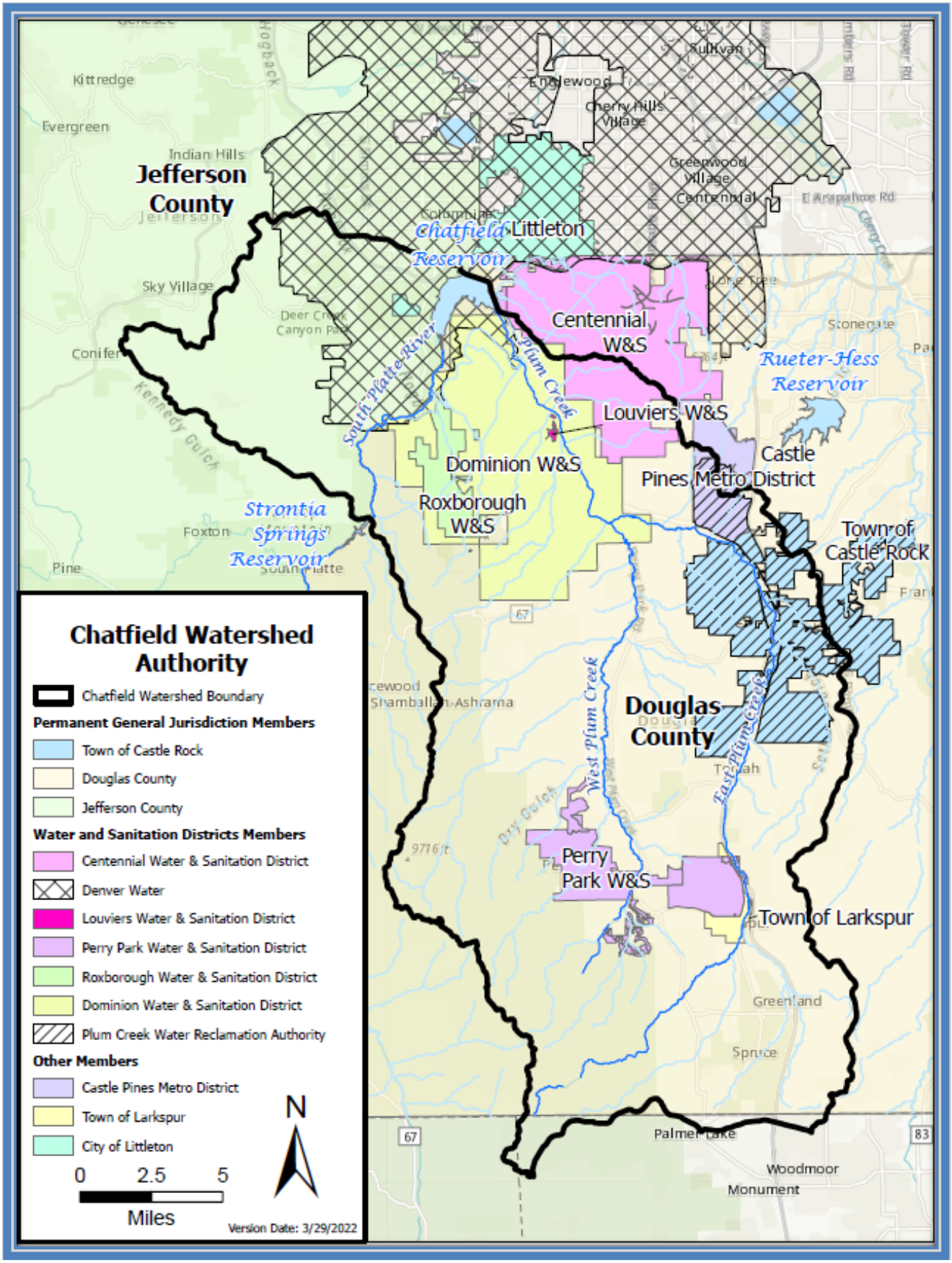
Board Chair: Laura Cavey, Town of Castle Rock Councilman
Board Vice-Chair: Lesley Dahlkemper, Jefferson County Commissioner
Board Director: Lora Thomas and George Teal, Douglas County Commissioners
Board Director of Water and Sanitation Members: Weston Martin, Plum Creek Water Reclamation Authority
Board Director of Other Members: Brent Soderlin, City of Littleton

The Technical Advisory Committee (TAC) is a standing committee that meets monthly to address technical and scientific matters, serving the needs of the Board. Other standing committees are formed, as necessary, to address specific issues at the Board's request.

2023 TECHNICAL ADVISORY COMMITTEE REPRESENTATIVES

Jefferson County: Representative, Patrick O'Connell
Dominion Water & Sanitation District: Representative, Josh Baile, Britta Strother, Hanna Anderson
Castle Pines Metropolitan District: Representative, Sue Mantz
Centennial Water & Sanitation District: Representative, Julie Tinetti
City of Littleton: Representative, Brent Soderlin, Sarah White
Denver Water: Representative, Alison Witheridge
Douglas County: Representative, Ryan Adrian
Louviers Water & Sanitation District: Representative, Matt Collitt
Roxborough Water & Sanitation District: Representative, Barbara Biggs
Plum Creek Water Reclamation Authority: Representative, Kirby Clark
Perry Park Water & Sanitation District: Representative, Diana Miller
Town of Castle Rock: Representative, Dave Van Dellen
Town of Larkspur: Representative, Sean Hogan

Figure 1. Chatfield Watershed Authority Watershed Boundary and Member Entities.



RESERVOIR REGULATORY COMPLIANCE

Chlorophyll-a

In 2023, Chatfield Reservoir maintained compliance with the Code of Colorado Regulations No. 38 (5 CCR 1002-38) chlorophyll-α (chl-α) standard. The Chatfield Reservoir chl-α standard is 10 µg/L, with a one in five-year allowable exceedance frequency. The WQCC adopted a chl-α assessment threshold of 11.2 µg/L to determine compliance with the standard. The chl-α standard is the growing season (July through September) average. In 2023, the chl-α average was 6.2 µg/L, below both the standard and the assessment threshold. Given the allowable exceedance frequency for chl-α, the Chatfield Reservoir is in compliance with the chl-α standard (Figure 2). Observed 2023 chl-α concentrations in Chatfield Reservoir are depicted in Figure 3.

Figure 2. Growing Season Average Chlorophyll α Concentrations, Chatfield Reservoir, 1983-2023.

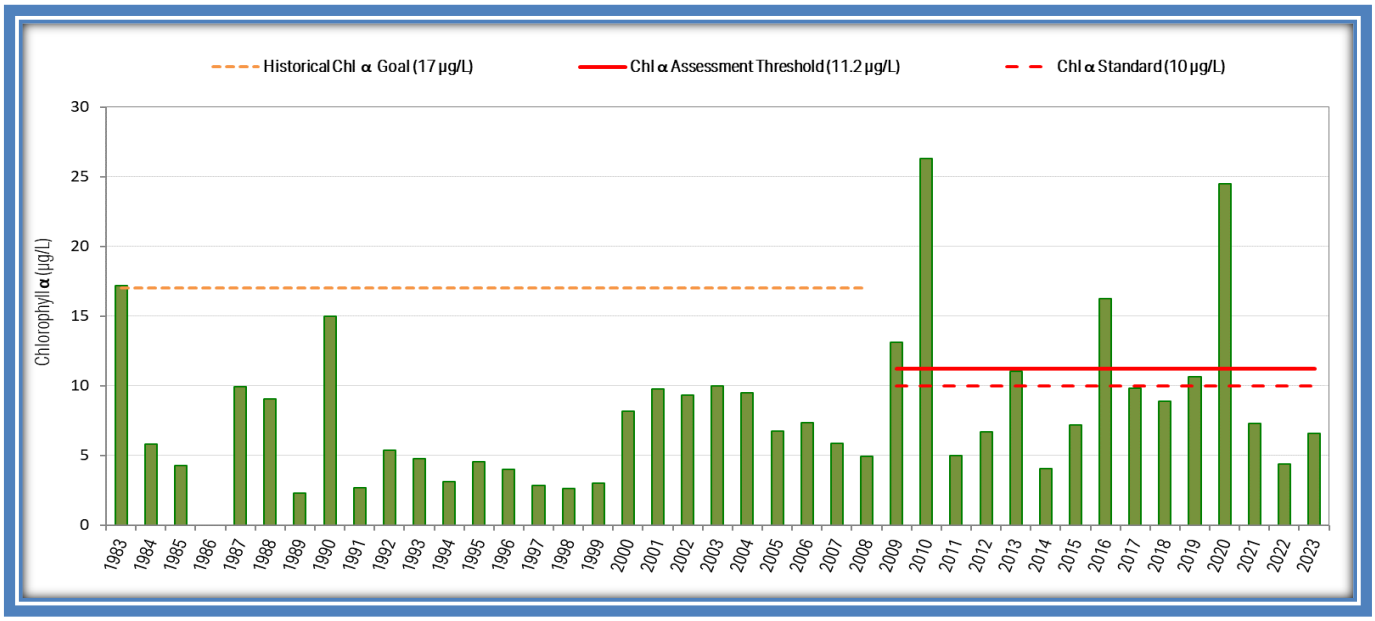
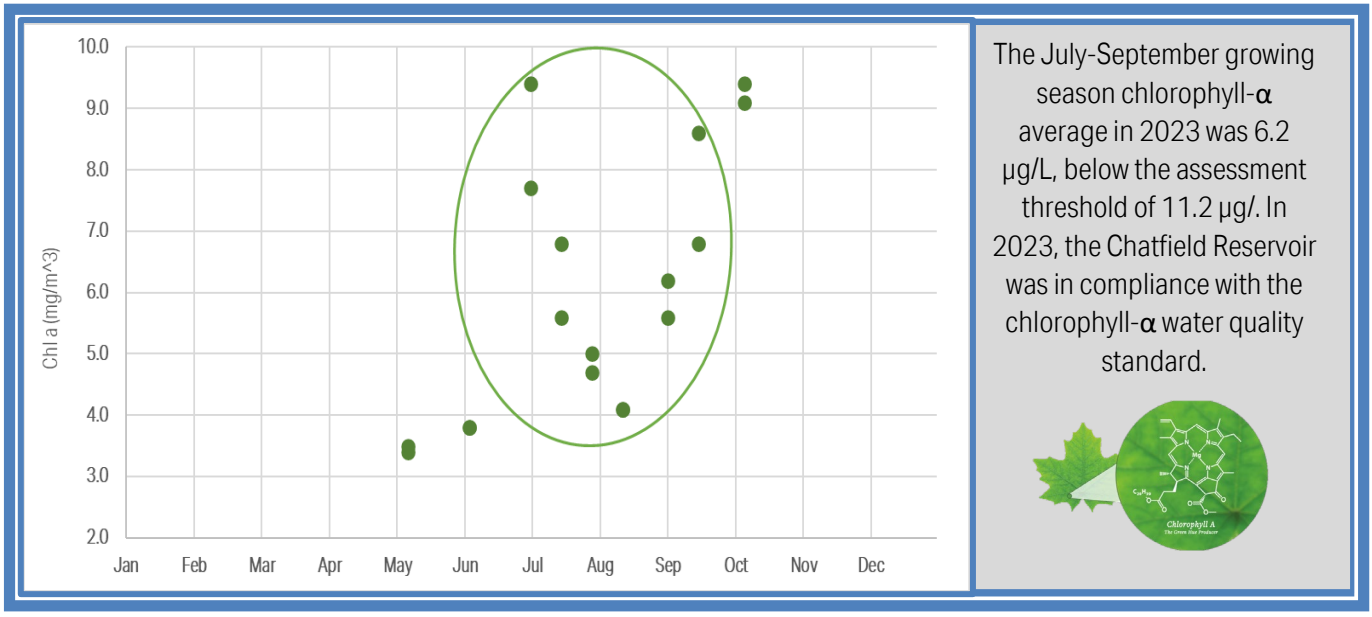


Figure 3. Observed Chlorophyll-α Concentrations, Chatfield Reservoir, 2023.



The observed chl-α concentrations result from background, point source and nonpoint sources of nutrients and internal loading. Cyanobacteria, also known as Cyanophyta or blue-green algae, are a type of phytoplankton that can produce toxins that can harm people, animals, and aquatic ecosystems. Intensified Cyanophyta growth due to certain environmental conditions, including light availability, water temperatures, and nutrient loading, is referred to as a Harmful Algal Bloom (HAB). Although there is currently no standard or assessment threshold for Cyanophyta, a goal of the CWA is to limit conditions that could result in an HAB. Some species of cyanobacteria convert nitrogen gas to biologically available forms of nitrogen, serving as an additional source of nitrogen to reservoir systems. No HABs were reported in 2023.

In 2022, Cyanophyta concentrations ranged from 943 to 82,226 algal cells/ml which are slightly lower than the Cyanophyta levels in 2020 and 2021 which ranged from 229 to 153,079 and 2,143 to 98,364 algal cells/ml, respectively. The highest concentrations of Cyanophyta occurred in early August, averaging 82,226 algal cells/mL (Figure 4).

A 2021 water quality study by Hydros Consulting showed elevated chl-α concentrations in 2020 were partially driven by higher dinoflagellate (Pyrrhophyta) concentrations. However, more recently and in 2023, Cyanophyta were the predominant algae observed in most of the April - October sampling events (Figure 5). Note that Figure 5 is plotted on a logarithmic scale.

Figure 4. 2022 Phytoplankton Monthly Summary - Phytoplankton samples taken in the reservoir during 10 sampling events from April through October 2022.

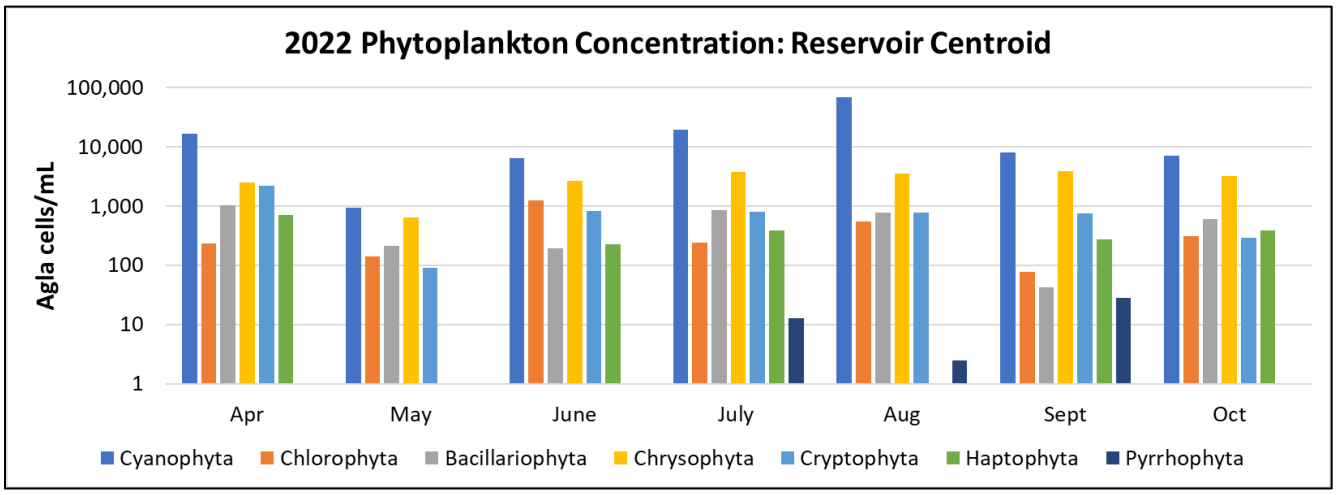
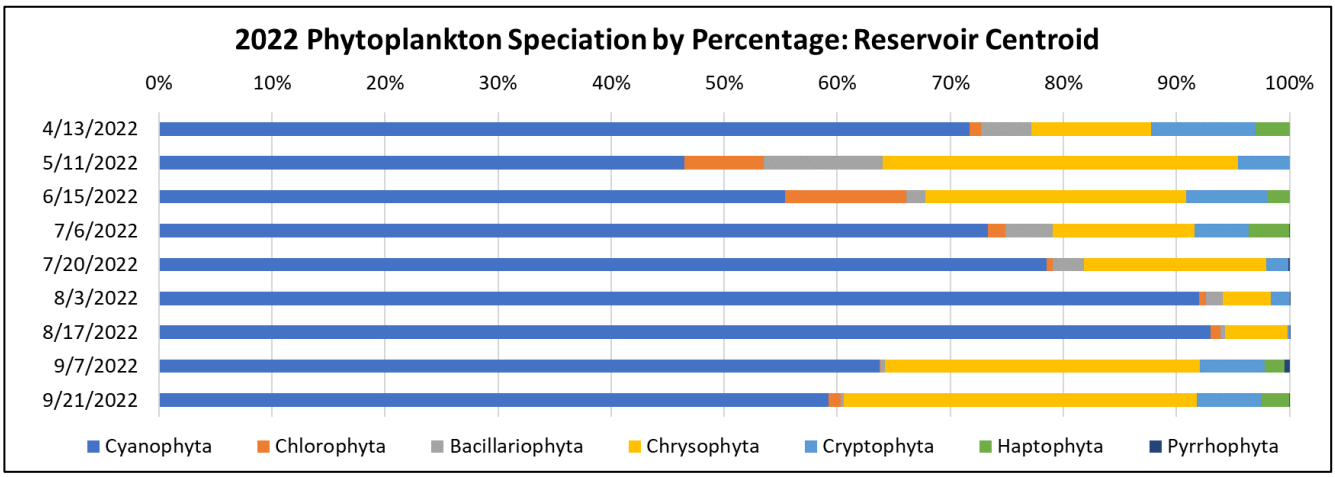


Figure 5. 2022 Phytoplankton Speciation by Percentage.



Total Phosphorus

In 2023, Chatfield Reservoir maintained compliance with the 5 CCR 1002-38 total phosphorus standard. The total phosphorus (TP) growing season (July through September) average was 16.0 µg/L, which is below the standard of 30 µg/L and below the assessment threshold of 35 µg/L. A review of TP compliance with the water quality standard from 1983 to 2023 is illustrated in Figure 6. The TP growing season average remained below the water quality assessment threshold of 35 µg/L, except for the 2020 concentration, since the standard changed in 2009. The monthly TP concentrations observed in 2023 in Chatfield Reservoir are shown in Figure 7.

Figure 6. Growing Season Average Total Phosphorus Concentrations, Chatfield Reservoir, 1983-2023.

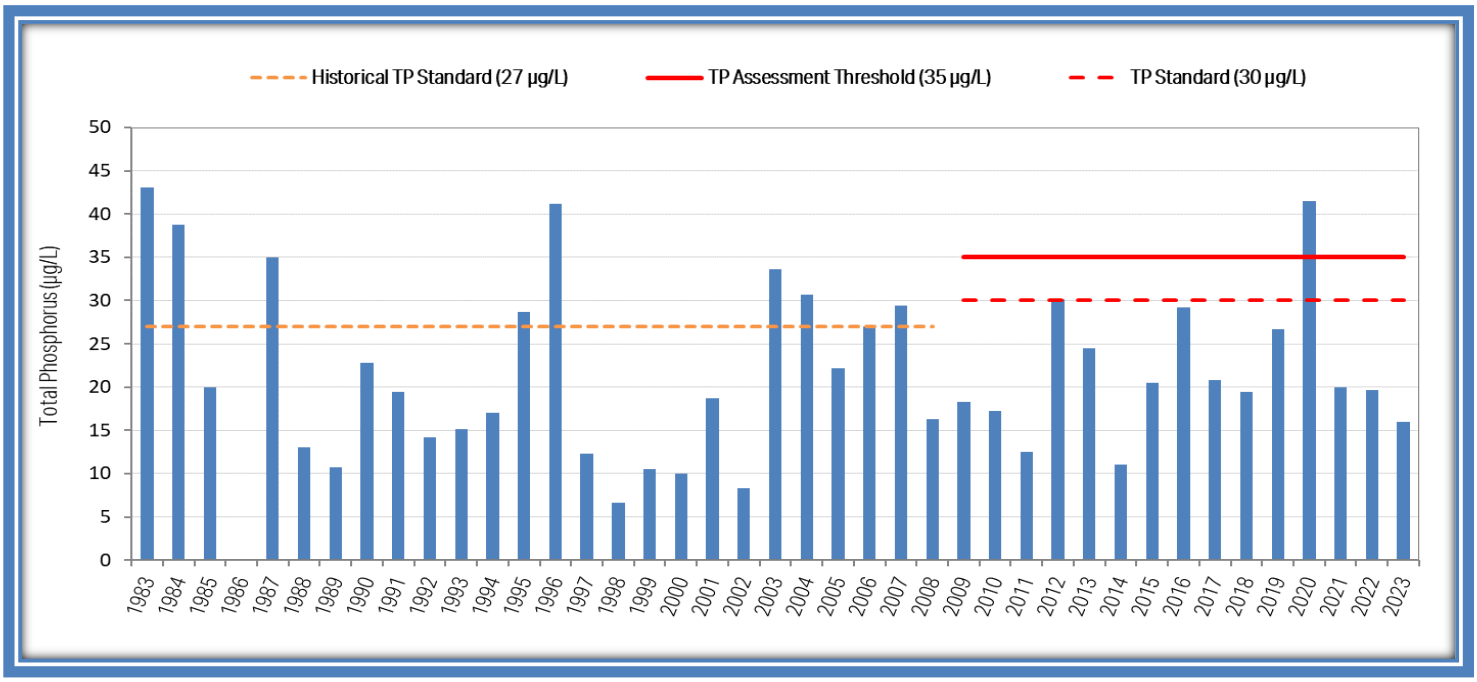
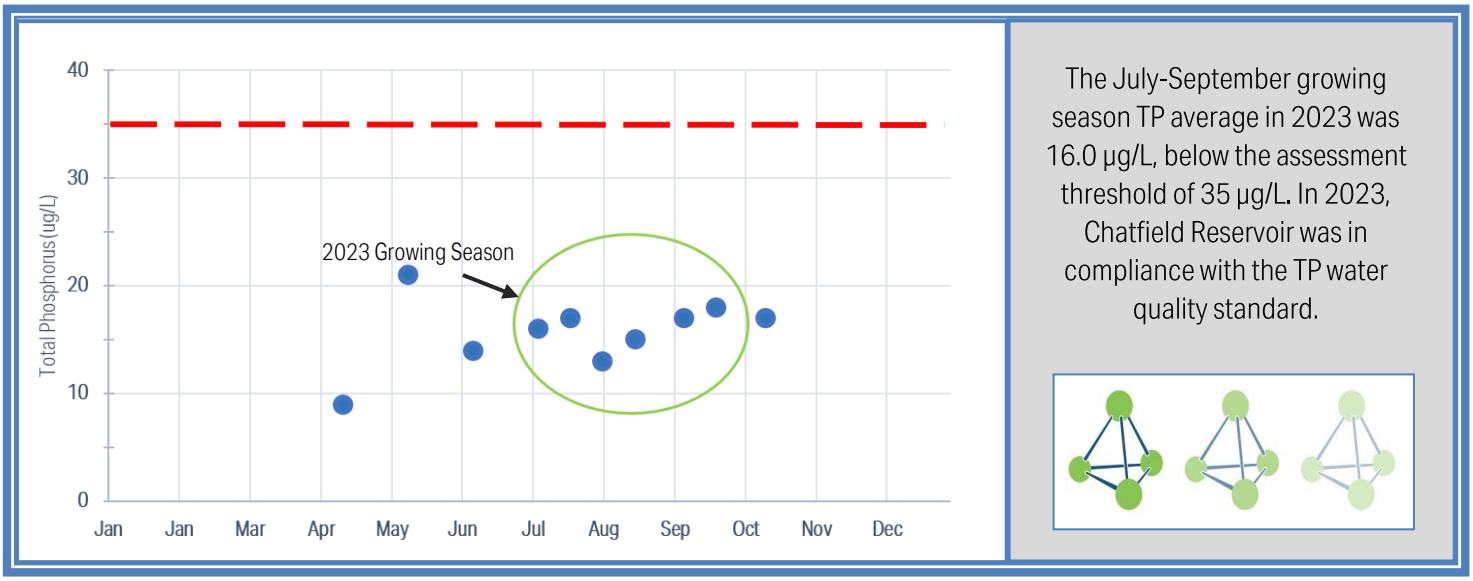


Figure 7. Monthly Total Phosphorus Concentrations, Chatfield Reservoir, 2023.



WATERSHED AND RESERVOIR MONITORING PROGRAM

Since 1984, the Authority and its members have monitored water quality in the reservoir and upstream in the watershed for almost 40 years and have undertaken measures to protect water quality in the Watershed through voluntary funding contributions and grants. The Authority, in coordination with its membership agencies, implements point source, nonpoint source, and stormwater controls pursuant to the Chatfield Reservoir Control Regulation to protect water quality and beneficial uses of the reservoir. Since 2016, the Authority has collaborated with the Chatfield Reservoir Mitigation Company (CRMC) on data collection efforts pursuant to the Memorandum of Understanding between the two agencies.

Chatfield Reservoir

The Authority collects water quality data to determine reservoir chlorophyll levels, temperature, dissolved oxygen concentration, phosphorous concentrations, nitrogen concentrations, and inflow quantities. The members develop and implement nonpoint source and stormwater projects which benefit the watershed and reservoir. The Chatfield Watershed Plan identified opportunities within the watershed to address the chemical, physical, and biological constituents (pollutants) that impact the watershed. Some examples include phosphorus reductions from stabilizing degraded streambanks, mitigating runoff from agricultural lands, minimizing leachate from septic systems, controlling runoff from wildfire burn areas, and providing public education for reducing contamination from the actions of people.

The monitoring program characterizes water quality and determines regulatory compliance in the reservoir. Surface water samples are collected in the following locations:

- South Platte Inflow
- Plum Creek Inflow
- South Platte Arm (in Chatfield Reservoir)
- Plum Creek Arm (in Chatfield Reservoir)
- Reservoir Centroid (Chatfield Reservoir)
- Reservoir Outfall

The constituents are monitored monthly when sample sites are accessible (ice is not present). During the growing season (July through September), reservoir sampling is conducted twice per month. To better understand reservoir dynamics, the Authority collects water column measurements, including the epilimnion and hypolimnion layers, at various depth intervals. The constituents monitored are shown in the Sampling and Analysis Plan presented in Table 1 below. All water quality data are available on the Authority's website: www.chatfieldwatershedauthority.org.

Figure 8. 2023 Chatfield Watershed Authority Sampling Locations and Constituents.

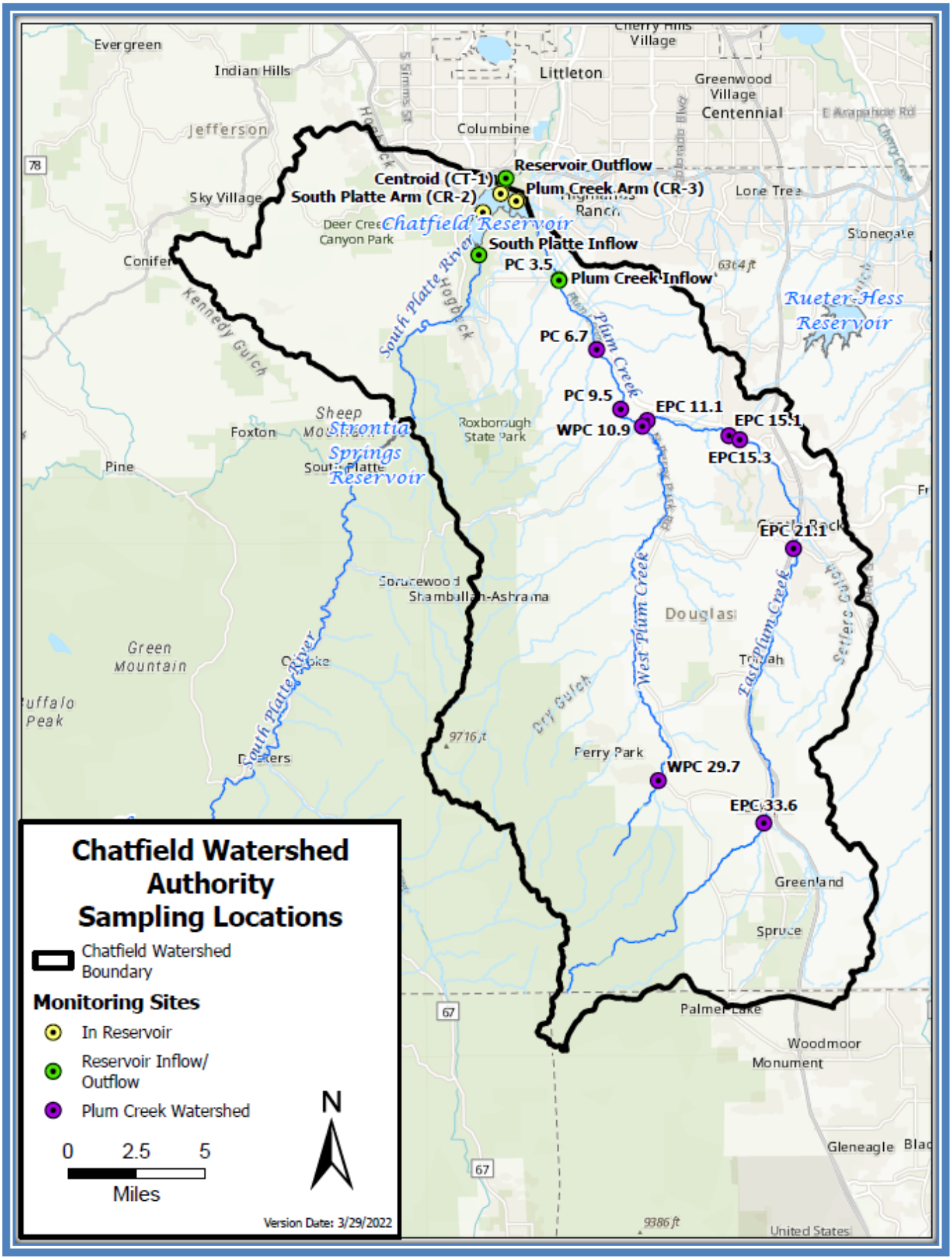


Table 1. Sampling and Analysis Plan.

CONSTITUENT	PLUM CREEK WATERSHED[1]	CHATFIELD RESERVOIR[2]	RESERVOIR INFLOW/OUTFLOW[2]
Field Parameters			
pH	✓	✓	✓
Specific Conductance	✓	✓	✓
Temperature	✓	✓	✓
Streamflow	✓	✓	
Dissolved Oxygen	✓	✓	✓
Oxidation-Reduction Potential		✓	
Secchi Depth		✓	
Nutrients			
Total Phosphorous	✓	✓	✓
Ortho-Phosphorous	✓	✓	✓
Dissolved Phosphorous		✓	✓
Nitrate-nitrite	✓	✓	✓
Ammonia		✓	✓
Total Kjeldahl Nitrogen		✓	✓
Biological Constituents			
E. coli	✓	✓	✓
Chlorophyll *a*		✓	
Phytoplankton		✓	
Zooplankton		✓	
Metals			
Arsenic		✓	
Cadmium		✓	
Chromium		✓	
Copper		✓	
Iron		✓	
Lead		✓	
Manganese		✓	
Mercury		✓	
Nickel		✓	
Selenium		✓	
Silver		✓	
Zinc		✓	
Other Constituents			
Total Suspended Solids	✓	✓	✓
Total Dissolved Solids		✓	✓
Total Organic Carbon		✓	✓
Dissolved Organic Carbon		✓	✓
Carbonaceous Biochemical Oxygen Demand		✓	✓
Alkalinity	✓	✓	✓
Sulfate		✓	
Silica		✓	✓

[1] Plum Creek Watershed Monitoring Network Sampling and Analysis Plan (Tetra Tech, 2013)

[2] Chatfield Reservoir Reallocation Project and Chatfield Watershed Authority Coordinated Sampling and Analysis Plan (SAP) (Chatfield Reservoir Mitigation Company and Chatfield Watershed Authority, 2019)

Plum Creek Watershed Monitoring System

In the Plum Creek basin, watershed monitoring continued in 2023 through voluntary sampling efforts by the Plum Creek Water Reclamation Authority (PCWRA); monitoring locations are shown in Figure 8**.** The objective of the Plum Creek monitoring program is to better characterize water quality in Plum Creek and identify potential nonpoint source pollutant sources, a variety of which have already been identified in the watershed, including:

- Stormwater runoff from historic urbanized and rural areas
- Leachate from unmaintained septic systems, agricultural activities, including runoff from overgrazed agricultural lands
- Runoff from wildfire burn areas
- Runoff from impervious areas
- Erosion from degraded streambanks (Chatfield Watershed Plan, May 2015)

Further data collection is needed, contingent on available resources, to identify and quantify phosphorus sources in the Plum Creek basin. The 2023 Plum Creek water quality observations included the following:

Stream Bank Erosion. Historically, there was significant streambank erosion on Plum Creek and its tributaries. This eroding area contributed significant sediment, and likely TP. As part of the mitigation for the CRMC reallocation project, stabilization of a portion of Plum Creek in the State Park has been completed. Additional stabilization on Plum Creek and its tributaries continues to be evaluated and stabilized by watershed stakeholders. In 2023, the Douglas County Special Projects Group commenced substantial stabilization efforts and expects to be completed in 2024. Two high flow events required clean-up work in 2023. These high flow events likely contributed to additional total phosphorus loads.

Total Phosphorus. TP concentration generally increases from upstream to downstream for both East Plum Creek and Plum Creek (Figure 9). Average TP in West Plum Creek decreased between Perry Park and the confluence with East Plum Creek. TP concentrations have historically been observed to be relatively high at East Plum Creek, downstream of PCWRA as well as East Plum Creek above the confluence with Plum Creek (Site EPC-11.1) when compared to other sites in the Plum Creek watershed. In 2023 the average TP at East Plum Creek, downstream of PCWRA was 142 µg/L, compared to the 2022 average of 127 µg/L, the 2021 average of 154 µg/L, and the 2020 average of 183 µg/L. In 2023, the average TP at Site EPC-11.1 (East Plum Creek above the confluence with Plum Creek) was 212 µg/L. This is significantly lower than the 2022 average of 420 µg/L, while the 2021 average TP at Site EPC-11.1 was 147.5 µg/L, the 2020 average was 130 µg/L, the 2019 average was 193 µg/L, and the 2018 average was 185 µg/L.

Total Suspended Solids. The average Total Suspended Solids (TSS) concentration is an indicator of both normal sediment transport and the effect of high flow events. The highest average TSS concentration observed in 2023 was at East Plum Creek above the confluence with Plum Creek at 444 mg/L TSS (Figure 10). In 2022, the highest TSS concentration was 116 mg/L at Plum Creek near Louviers. In 2021, the highest TSS concentration was at the Plum Creek at Chatfield Reservoir Inlet site at 76.1 mg/L TSS. In 2020, the highest TSS concentration was at Site PC-3.5 (Plum Creek at Titan Road) at 24.5 mg/L. In 2019, the highest TSS concentration was at Site EPC-11.1 (East Plum Creek above the confluence with Plum Creek) at 64.7 mg/L**.** In 2023, there were 10 TSS samples with results higher than the highest result in 2022, half of which were over 200 mg/L.

Over the last four years, average TSS concentrations are trending upward (Figure 11). The average TSS at Plum Creek at Chatfield Reservoir Inlet was 40.6 mg/L in 2023. The TSS at the same location was 10.2 mg/L in 2022, 76.1 mg/L in 2021, and 14.7 mg/L in 2020. The average TSS at West Plum Creek above the confluence with Plum Creek was 23.1 mg/L in 2023, 4.3 mg/L in 2022, 13 mg/L in 2021, and 5.3 mg/L in 2020.

Most sites increased in average TSS concentrations from 2022 to 2023, potentially indicating more erosion and sediment loading to Plum Creek for 2023 due to increased precipitation events and higher flow rates in 2023. At three locations, TSS did not increase in 2023 compared to 2022: Plum Creek at Sedalia, Plum Creek near Louviers, and Plum Creek at Titan Road. However, concentrations were still significantly higher than 2020 and 2021.

E. coli. Significant variability was evident at all monitoring sites for *E. coli* in 2023 (Figure 12), with geometric means ranging from 11 to 128 organisms per 100mL. The water quality standard for *E. coli* is 126 organisms per 100 mL. The geometric mean for *E. Coli* was above the water quality standard at one sampling location: Plum Creek at Chatfield Reservoir Inlet (128 organisms per 100 mL).

At the Plum Creek at Chatfield Reservoir Inlet sampling site, one sample collected in August 2023 resulted in an *E. Coli* measurement of 2,419 organisms per 100 mL. This sample is significantly higher than most samples collected in the past 3 years. If this sample is not included in the analysis, the geometric mean for this location in 2023 would be 98 organisms per 100 mL, which is below the water quality standard. However, several samples in this range were collected in 2022 and 2023, which begin to show a trend of high *E. coli* concentrations in the summertime.

Figure 9. TP in Plum Creek Drainage Area, 2023.

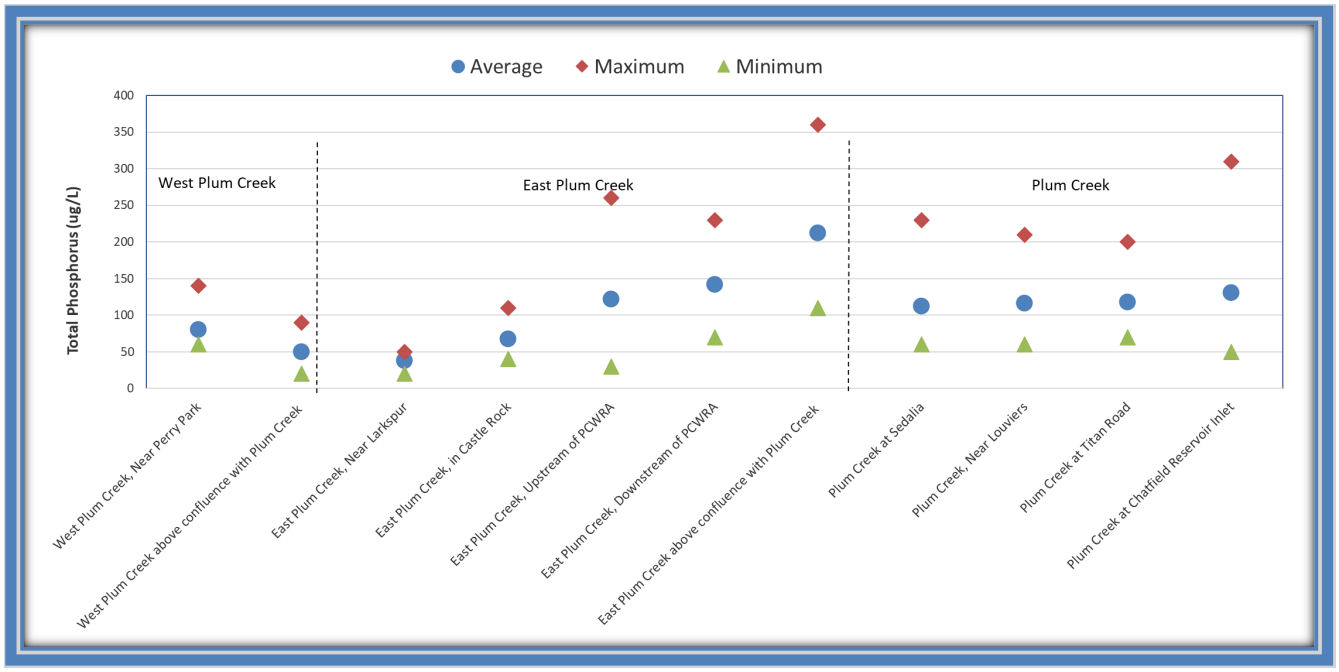


Figure 10. Total Suspended Solids in Plum Creek Drainage Area, 2023.

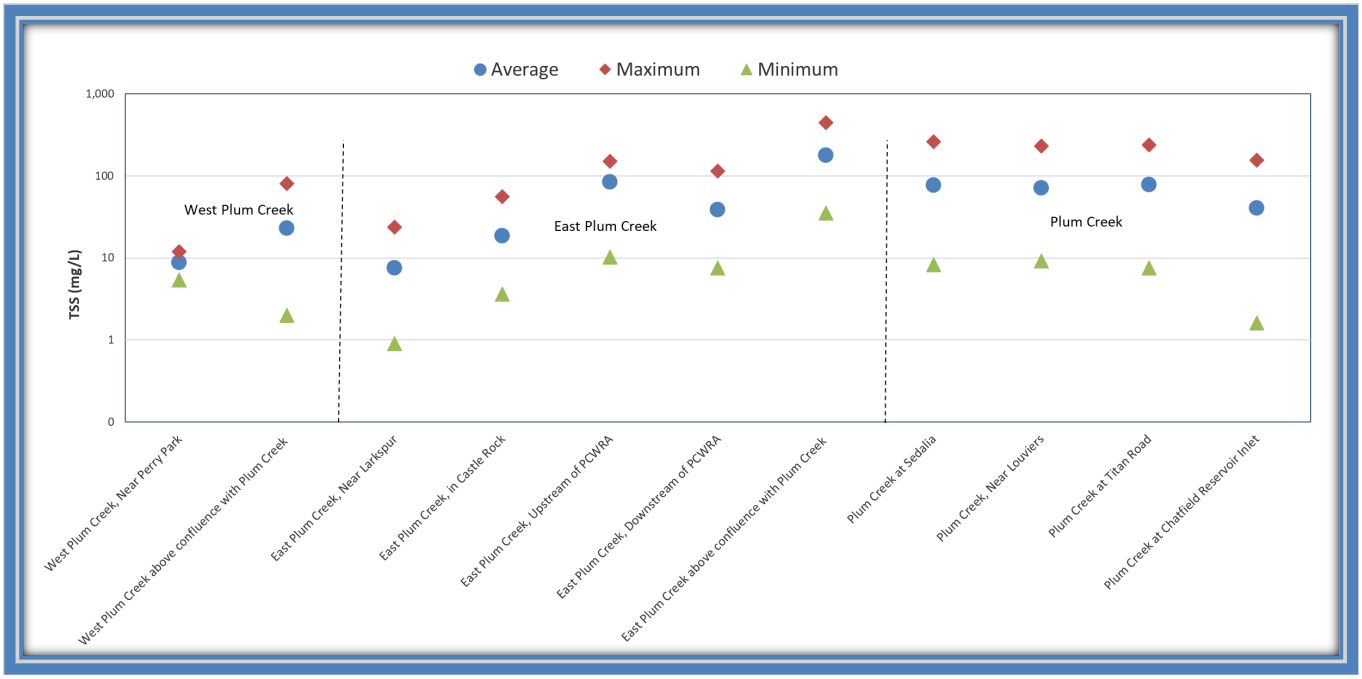


Figure 11. Average Total Suspended Solids Concentrations in Plum Creek Drainage Area, 2020-2023.

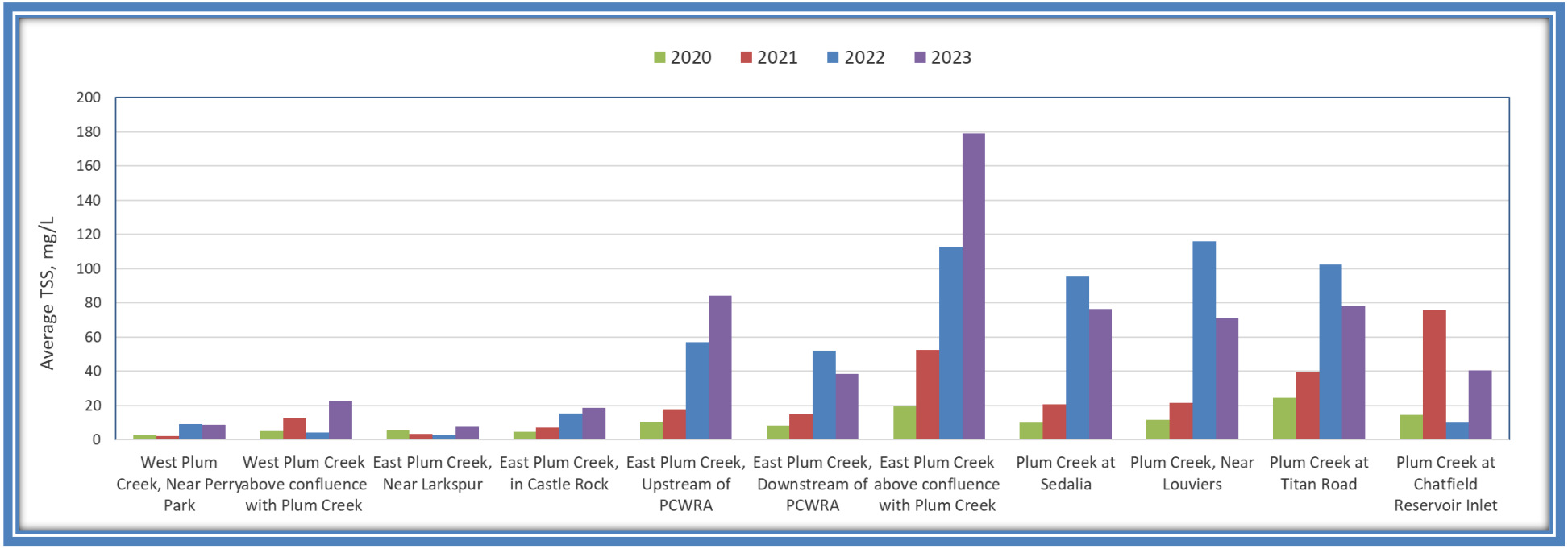
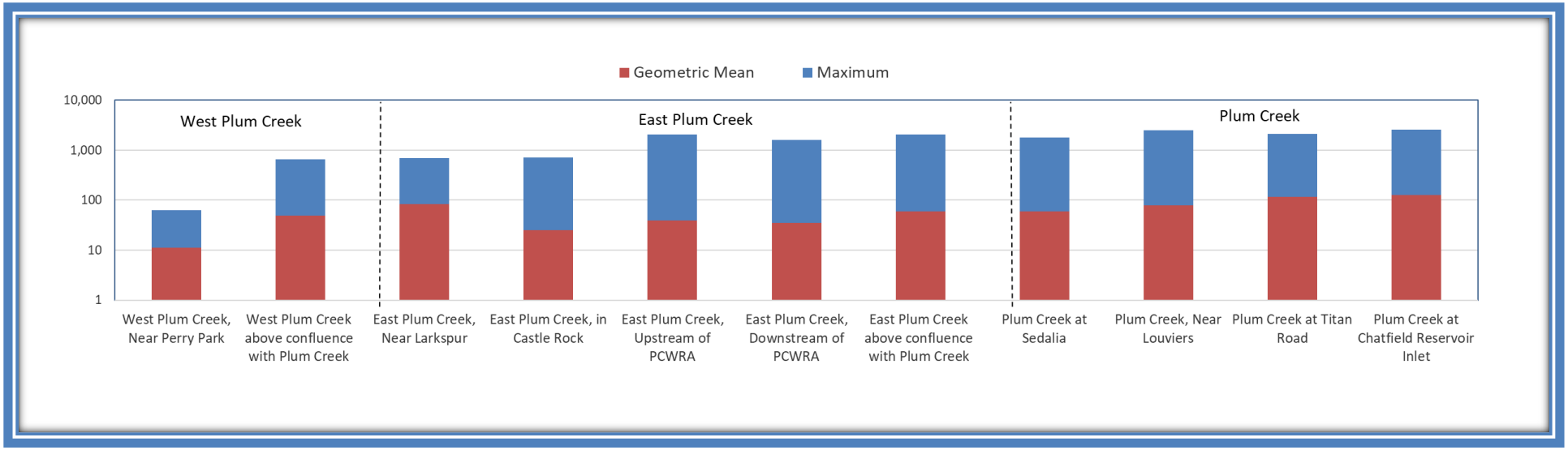


Figure 12. E. coli in Plum Creek Drainage Area, 2023.



CHATFIELD RESERVOIR TMAL

The phosphorus Total Maximum Annual Load (TMAL) of 19,600 pounds/year at a median flow of 100,860 acre-feet/year was revised by the WQCC in 2009, based on statewide reservoir data and a probabilistic model describing the linkage between watershed TP loads and in-lake TP concentrations. As funding levels allow, the Authority has been continually working towards a reallocation of watershed phosphorus loads and point source phosphorus wasteloads as required by Regulation #73.

For this effort, the Authority completed the development and calibration of an initial watershed model in 2016. In 2019, plans were developed for additional model runs in 2020 through 2023 to model the effects of possible improvements and other possible events in the watershed to better understand the potential changes in phosphorus sources and the resulting increases and decreases in phosphorus loads and concentrations in the watershed. These additional model runs started in late 2019 and finished in 2023. Based on the results of these additional model runs, further model runs will be necessary to finalize revised watershed phosphorus loads and phosphorus wasteload allocations.

2023 TP Concentrations – Instream and Reservoir

Average monthly TP concentrations for 2023 at the Chatfield Reservoir Centroid, Chatfield Reservoir Outflow, Plum Creek Inflow, and South Platte Inflow are depicted in Figure 13. Refer to Figure 8 for these sampling locations. Plum Creek TP concentrations were higher for all months except August when compared to South Platte Inflows.

Calculated TP load

The calculated annual TP load is the sum of the average monthly loads. The 2023 annual TP load to the reservoir totaled 22,818 pounds at an inflow of 136,059 acre-feet. This is compared to the TMAL of 19,600 pounds at an inflow of 100,860 acre-feet. The total phosphorus load in 2023 was below the TMAL requirement based on the TMAL ratio of phosphorus to inflow given the higher inflow volume in 2023. Figure 14 shows the calculated annual TP loads to Chatfield Reservoir from 1986 to 2023. Figure 15 shows the Chatfield Reservoir calculated annual inflows from 1986 to 2023. A comparison of the 2023 inflows and TP load contributions per source is presented in Figure 16.

The relative TP loading from sources is higher than typical compared to more recent historic TP inputs, likely due to the significantly higher volume of runoff in Plum Creek in 2023. In 2023, TP loading from Plum Creek was 15,006 pounds, or 52.7% of total input, compared to 6,602 pounds from the South Platte River, or 38.7% of total input. Calculated using all available data (2009-2023), the average annual total phosphorus load from Plum Creek is 7,888 pounds. Plum Creek contributed nearly double the average annual total phosphorus load in 2023. May and June contributed especially high loads in 2023, as shown in Figure 17. Direct precipitation on Chatfield Reservoir, alluvial inflows, and other direct flow sources contributed approximately 1,209 pounds, or 5.3% of total input.

Because of the unusually wet conditions in May 2023 (average monthly flow of 292.1 cfs) in Plum Creek, and in May 2023 (average monthly flow of 374.4 cfs) and June 2023 (average monthly flow of 538.8 cfs) in the South Platte River, the total phosphorus load was significantly higher than the last 7 years. At 1,136 acre-feet, the total volume of precipitation on the reservoir was the highest it has been since the Authority began calculating the contribution of precipitation to inflow volumes and loads in 2009.

The exact reason for the high reservoir outflow TP concentration in September is unknown (see Figure 13). However, there was a significant reduction in outflow implemented the previous day which may have contributed to scouring of deposited sediment (and associated phosphorus) at the gate outlet.

Figure 13. Average Monthly TP Concentrations in Chatfield Watershed and Chatfield Reservoir.

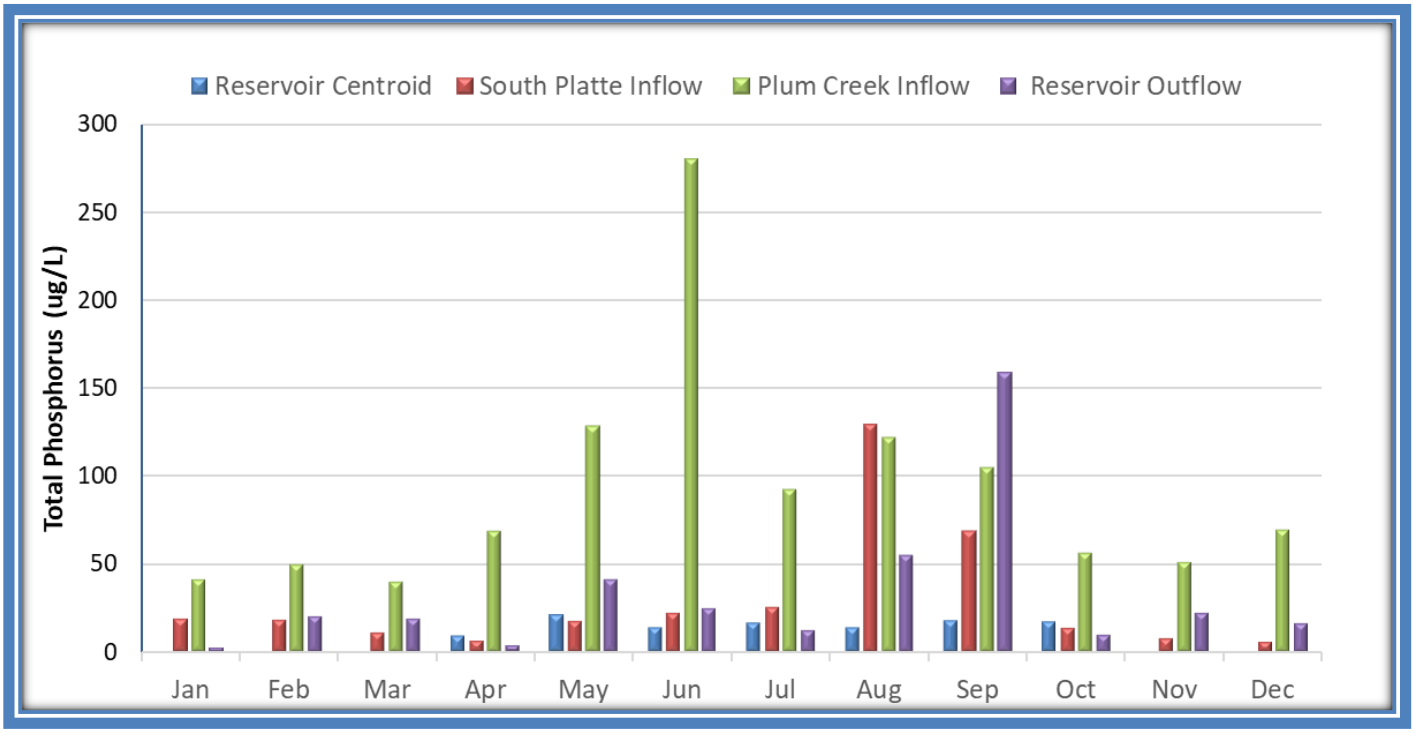


Figure 14. Calculated Annual TP Loads to Chatfield Reservoir from 1986 to 2023.

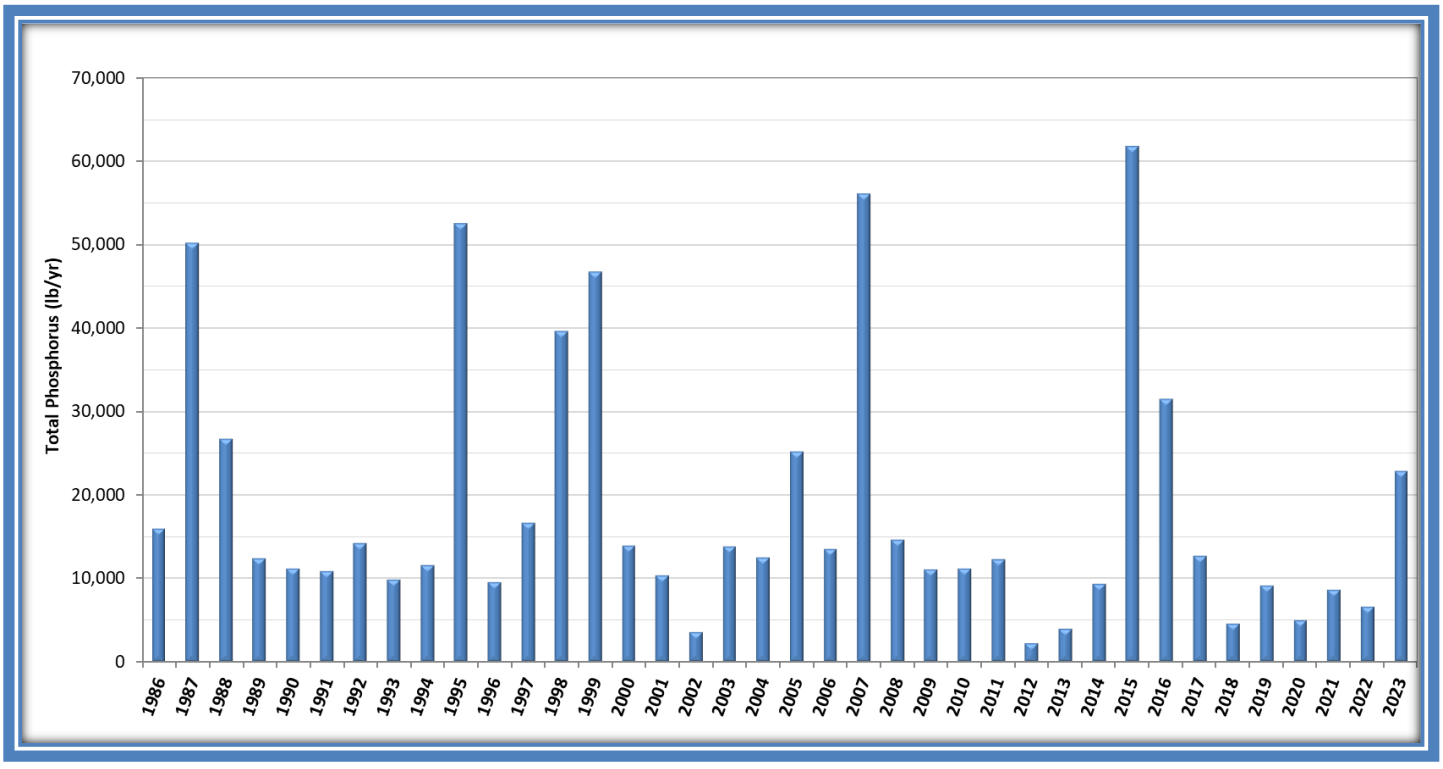


Figure 15. Chatfield Reservoir Calculated Annual Inflow (1986 – 2023).

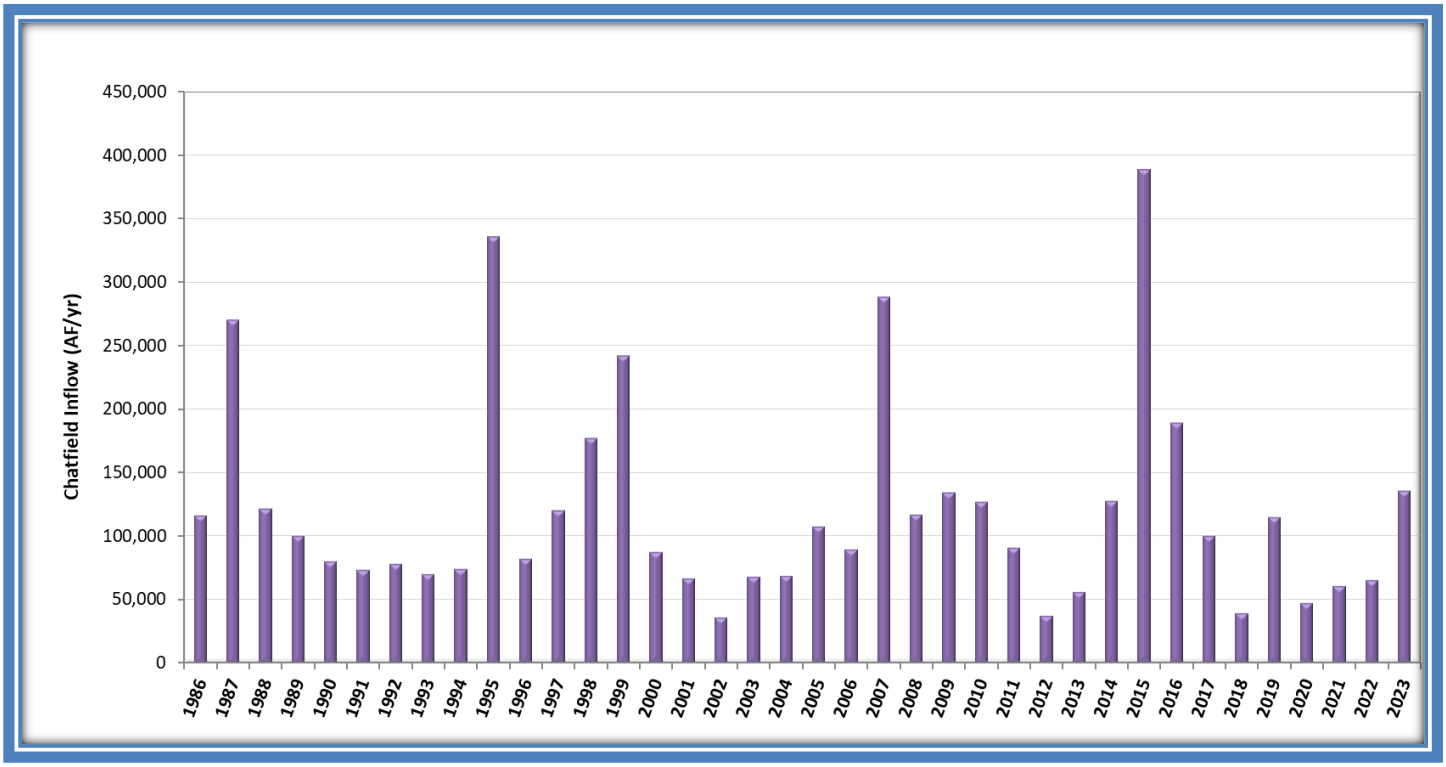


Figure 16. 2023 Chatfield Reservoir Inflows and TP Loads by Source.

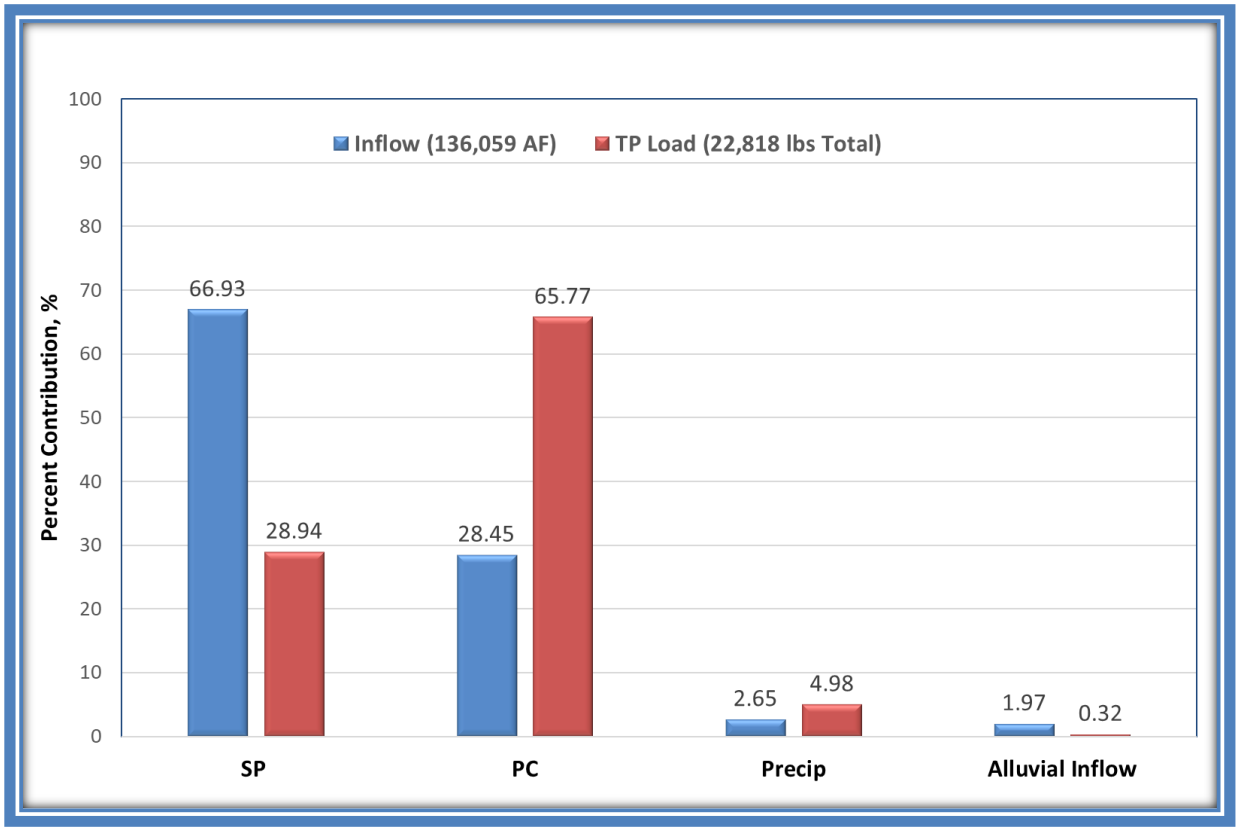
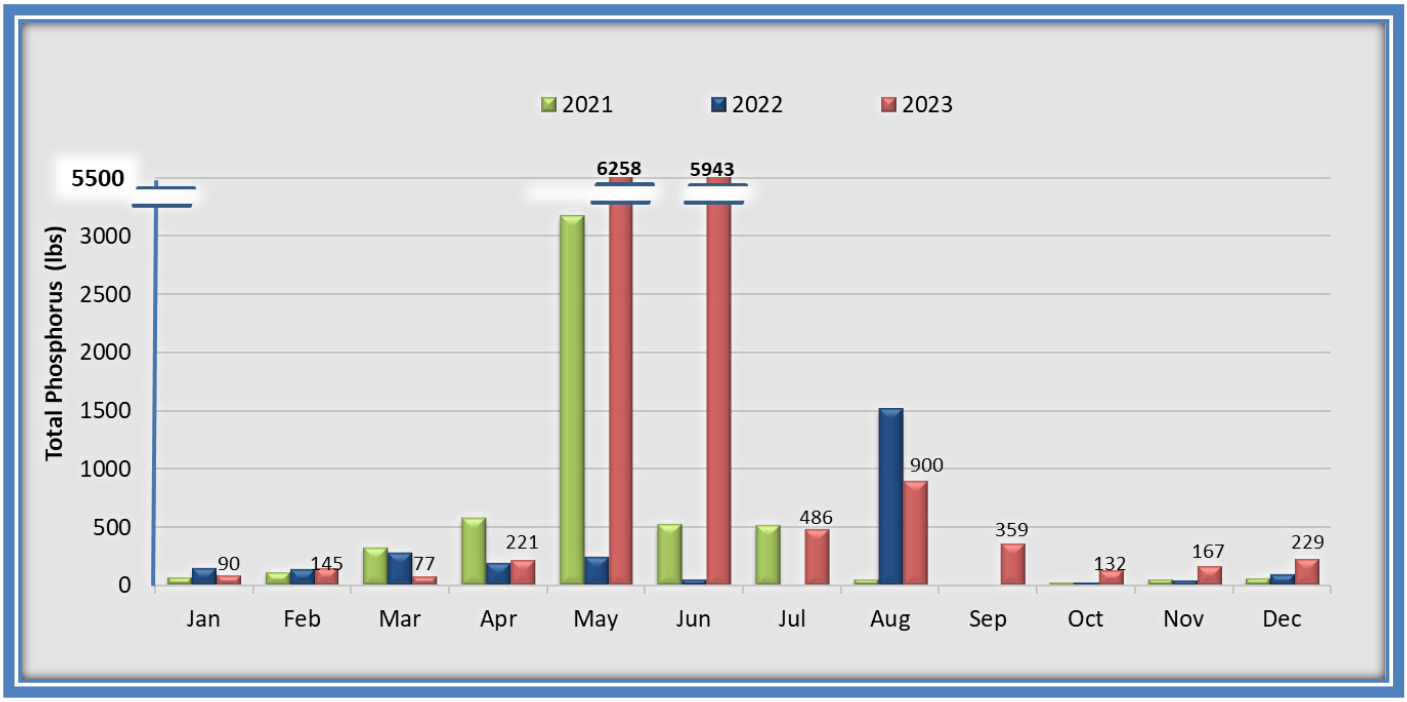


Figure 17. Plum Creek Inflow Monthly Total Phosphorus Loading.



WASTEWATER TREATMENT PLANTS

To demonstrate compliance with each respective Colorado Department of Public Health and the Environment (CDPHE) Wastewater Treatment Plants (WWTP) discharge permit and the Chatfield Reservoir Control Regulation 73, wastewater treatment plants in the Chatfield watershed perform monitoring and reporting of effluent discharge. In 2023, the total reported TP discharges from WWTPs were approximately 3,073.5 pounds out of the allowable wasteload allocation of 7,605.6 pounds. Refer to Figure 18 for WWTP locations. During 2023, all but one WWTP maintained compliance with the permitted TP concentration limit. The WWTPs in the Chatfield watershed and their respective TP wasteload allocations are summarized in Table 2. The 2023 Monthly TP Concentration from WWTPs are summarized in Table 3.

Table 2. Phosphorus Wasteload from WWTPs in the Chatfield Watershed (Pounds).

Permittee	CDPHE Permit Number	TP Wasteload Allocation (Pounds)	TP Loading (Pounds)		
			2021	2022	2023
Plum Creek Water Reclamation Authority	CO0038547	4,256	2,044	2,106	2,675.7
Perry Park Water and Sanitation District	CO0022551	365	173.8	113.1	172.3
Perry Park Water and Sanitation District	CO0043044	73	59.4	64.4	70.9
Lockheed Martin Space Systems Company	CO0001511	1005	22.1	52.13	109.1
Town of Larkspur	COX632092	231	10.6	39.4	ND
Highlands Ranch Law Enforcement Academy[1,2]	20060427	30	ND	ND	ND
Centennial Water and Sanitation District	CO0037966	20	ND[4]	ND[4]	ND[4]
Ponderosa Retreat and Conference Center	COX047511	75	ND[4,5]	ND[4,5]	ND[4,5]
Louviers Water and Sanitation District	COX632098	122	ND[6]	ND[6,7]	ND[7]
Dominion Water and Sanitation District	CO0041645	1,218	ND[4]	ND[4]	ND[4]
Sacred Heart Retreat	COX041874	15	ND[7]	ND[8]	ND[8]
Jackson Creek Ranch	N/A	50	ND	ND	ND
Reserve Emergency Pool	N/A	73	ND	ND	ND
Sun Jelly RV Park	COX631080	72.6	105.2**	33.64	45.5
TP WASTELOADS		7,605.6	2415.1	2,408.67	3,073.5

*TP loading from WWTPs is from the WWTP point of discharge; the TP load discharged from WWTPs does not equate to the TP load delivered to Reservoir due to assimilation of TP and geochemical fate and transport processes in the watershed.

**Values indicate exceedance of the TP wasteload allocation.

*** No Data (ND)

**** Not Applicable (N/A)

1. Permits for the Highlands Ranch Law Enforcement Academy Individual Sewage Disposal Systems were issued by the former Tri-County Health Department. Sampling is not required by the Tri-County Health Department Individual Sewage Disposal Systems discharge permit.
2. Centennial Water and Sanitation District serves as a co-management agency for the water system and has provided the Highlands Ranch Law Enforcement Academy with a wasteload allocation of 30-pounds from its 50-pound wasteload allocation.
3. Wastewater reuse is authorized under 5 CCR 1002-84 – Reclaimed water, with no discharge.
4. No reported wastewater discharge in the Chatfield watershed.
5. Ponderosa Retreat Center water quality credits are based on a trade project completed pursuant to the Authority Trading Program. Effluent phosphorus concentration was not sampled in 2023.
6. Source: Environmental Protection Agency Integrated Compliance Information System database.
7. No phosphorus samples were collected in 2023 as the compliance point lysimeters were dry during each monthly sampling event.
8. Facility is storing and transporting all wastewater to McDonald Farms for treatment, resulting in no discharge in 2023.

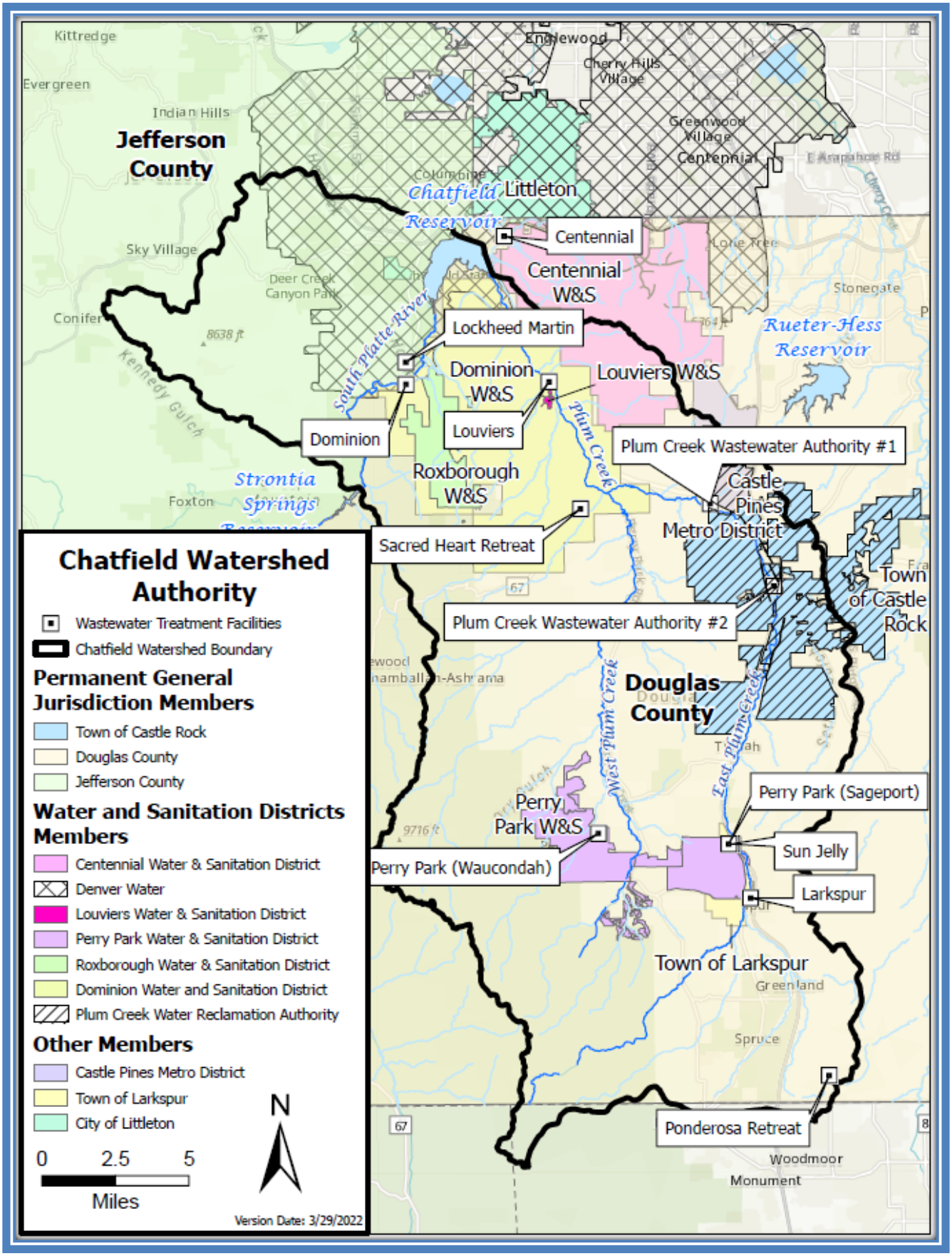
Table 3. 2023 Daily Average Phosphorus Concentrations by Month from WWTPs (mg/L)

Permittee	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Plum Creek Water Reclamation Authority (CO0038547)	0.13	0.21	0.15	0.15	0.14	0.14	0.12	0.09	0.08	0.08	0.19	0.16
Perry Park Water and Sanitation District (CO0022551)	0.14	0.26	0.51	0.38	0.5	0.28	0.32	0.20	0.59	0.15	0.42	0.41
Perry Park Water and Sanitation District (CO0043044)	0.31	0.17	0.44	0.39	0.37	0.60	0.29	0.39	0.21	0.19	0.61	0.12
Lockheed Martin Space Systems Company	0.23	0.14	0.19	0.15	0.32	0.18	0.78	0.21	0.15	0.13	0.75	0.13
Town of Larkspur	0.07	0	0.07	0.07	0.20	0.07	0.43	0.12	0.06	0.08	0.08	0.08
Highlands Ranch Law Enforcement Academy	N/A[2]	N/A[2]	N/A[2]	N/A[2]	N/A[2]	N/A[2]	N/A[2]	N/A[2]	N/A[2]	N/A[2]	N/A[2]	N/A[2]
Centennial Water and Sanitation District	ND[3]	ND[3]	ND[3]	ND[3]	ND[3]	ND[3]	ND[3]	ND[3]	ND[3]	ND[3]	ND[3]	ND[3]
Ponderosa Retreat and Conference Center	ND[3,4]	ND[3,4]	ND[3,4]	ND[3,4]	ND[3,4]	ND[3,4]	ND[3,4]	ND[3,4]	ND[3,4]	ND[3,4]	ND[3,4]	ND[3,4]
Louviers Water and Sanitation District	ND[1]	ND[1]	ND[1]	ND[1]	ND[1]	ND[1]	ND[1]	ND[1]	ND[1]	ND[1]	ND[1]	ND[1]
Dominion Water and Sanitation District	ND[3]	ND[3]	ND[3]	ND[3]	ND[3]	ND[3]	ND[3]	ND[3]	ND[3]	ND[3]	ND[3]	ND[3]
Sacred Heart Retreat	ND[5]	ND[5]	ND[5]	ND[5]	ND[5]	ND[5]	ND[5]	ND[5]	ND[5]	ND[5]	ND[5]	ND[5]
Jackson Creek Ranch	ND[3]	ND[3]	ND[3]	ND[3]	ND[3]	ND[3]	ND[3]	ND[3]	ND[3]	ND[3]	ND[3]	ND[3]
Reserve Emergency Pool	ND[3]	ND[3]	ND[3]	ND[3]	ND[3]	ND[3]	ND[3]	ND[3]	ND[3]	ND[3]	ND[3]	ND[3]
Sun Jelly RV Park	1.74*	0.09	0.00	0.00	0.40	3.99*	0.98	0.00	0.00	0.27	4.44*	2.01*

* Non-compliance with TP concentration limits.

1. No phosphorus samples were collected as the compliance point lysimeters were dry during each monthly sampling event.
2. Sampling is not required by the issued Tri-County Health Department discharge permit.
3. No reported wastewater discharge to the Chatfield watershed.
4. Effluent phosphorus concentration was not sampled in 2023.
5. Facility is storing and transporting all wastewater to McDonald Farms for treatment, resulting in no discharge in 2023.

Figure 18. Wastewater Treatment Plants Located within the Chatfield Watershed.



SITE LOCATION APPLICATIONS

As the 208 Management Agency, the Authority reviews site location applications and associated engineering reports for new or proposed facilities to effectively manage waste treatment works and related facilities serving Chatfield Basin.

The Authority reviews, comments, and makes recommendations to the Water Quality Control Division for site location applications for domestic wastewater treatment works, including wastewater treatment plants, individual sewage disposal systems, lift (pumping) stations, and certain interceptor sewers with a capacity of 2,000 gallons per day or greater, as well as certain facilities that produce reclaimed domestic wastewater. As required by Colorado's Site Location and Design Approval Regulations for Domestic Wastewater Treatment Works (Regulation 22), most site location applications are submitted to the Authority by the Applicant prior to submittal to the Water Quality Control Division.

Under the Chatfield Reservoir Control Regulation, the Authority is to implement the TMAL for TP loading to the reservoir. The Authority reviews site location applications for compliance with the Chatfield Reservoir Control Regulation and the Emergency Response Plan. The review primarily assesses the following criteria:

- CDPHE WQCC Control Regulation No. 73. 73.3.2(b): "No municipal, domestic, or industrial wastewater discharge in the Chatfield Watershed shall exceed 1.0 mg/L TP as a 30-day average concentration, except as provided under section 73.3(2)(f)."
- CDPHE WQCC Control Regulation No. 73, 73.3.2(c): "The allowed annual waste load of point source phosphorus in the Chatfield watershed is limited to 7,533 lb/year, allocated among the dischargers."
- The likelihood of sanitary sewer overflows and contaminants reaching Chatfield Reservoir, Plum Creek, or the South Platte River and, in the event of an emergency, the ability of emergency response plans to contain the sanitary sewer overflows and contaminants, per the Cherry Creek Reservoir Watershed Site Application Review Process Emergency Response Plan Criteria (Emergency Response Plan Criteria) which have also been adopted by the Chatfield Watershed Authority.

Jellystone Site Application and Phosphorus Trade Application

Prior to commissioning a wastewater treatment facility, Jellystone Park depended on onsite wastewater treatment systems (OWTS) across the park. After deliberation with the Authority and CDPHE, Jellystone was ultimately allocated in 2020 a wasteload of 72.6 pounds of total phosphorus per year by eliminating an estimated 145.2 pounds per year. The wastewater treatment facility was constructed and commissioned in 2021. In 2021, 2022, and 2023 the total phosphorus wasteload and/or the total phosphorus concentration limits were exceeded. The wastewater treatment facility has not performed as expected and Jellystone has since submitted a revised site application to CDPHE and the Authority. The application for the amended site location approval and supporting documents were submitted to CDPHE on September 13, 2023. On December 28, 2023, CDPHE issued a request for information to Jellystone, a copy of which was provided to the Authority. In January 2024, the Authority received the site application and began its review pursuant to the Authority's Review Criteria for Site Application and Design Approvals. The results of this review will be reported in the Authority's 2024 Annual Report. r

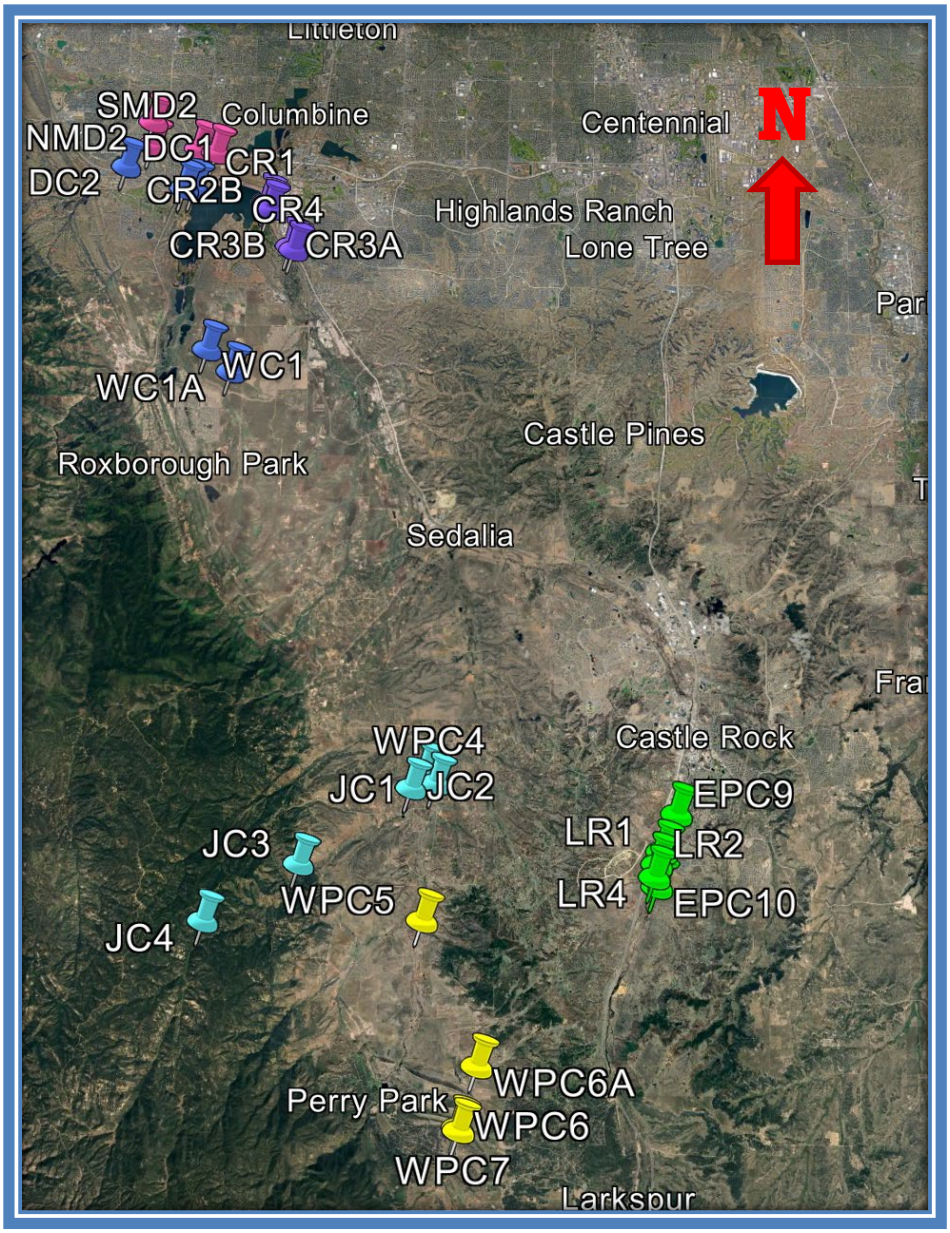
COLORADO SCHOOL OF MINES WATER QUALITY PROJECT

The Authority tasked environmental engineering students at the Colorado School of Mines (CSM) with gathering water quality data from tributaries within the Chatfield watershed, including Plum Creek, Deer Creek, Massey Draw, Jackson Creek, and Willow Creek (Figure 19 and Table 4).

The goals of the Mines field session course were as follows:

- Obtain and document **a snapshot-in-time of water quality** in the Chatfield watershed tributary creeks through sampling and testing of water quality parameters of concern and streamflow rates.
- **Interpret the potential linkages** between the watershed soils/geology/land uses on the sampled water quality constituents.
- **Provide advice** on possible measures to improve the quality of water in the Chatfield watershed.
- **Report and present** their findings to representatives of the Authority.

Figure 19. Mines Field Session Sampling Sites



Notes:

- West Plum Creek and East Plum Creek generally flow south to north towards Chatfield Reservoir.
- Massey Draw and Deer Creek generally flow west to east towards Chatfield Reservoir.
- Sampling sites are located on Red Rocks Reservoir, West Plum Creek, Jackson Creek, Plum Creek, East Plum Creek, Willow Creek, Deer Creek, and Massey Draw.

The work was divided among six groups of students. New sites were added in 2023. The table below indicates which of the 2023 sites were sampled in the previous three years.

Table 4. 2023 Colorado School of Mines Sample Sites.

Group Number	Description	Points of Interest/Previous Findings	Standard Sites + site sampled in 2020 ▲site sampled in 2021 ● site sampled in 2022	
1	Red Rocks Reservoir & Upper West Plum Creek	Red Rocks Reservoir & undercut culvert at WPC6. New sites WPC6A and WPC7A, B, C… (multiple sites possible around reservoir at WPC7)	WPC5+ WPC6+● WPC6A	WPC7A, B, C
2	Jackson Creek	Jackson Creek into West Plum Creek. New sites JC3 and JC4 further upstream.	WPC4+● JC1+● JC2+●	JC3 JC4
3	East Plum Creek	East Plum Creek at Colorado Agricultural Leadership Foundation Lowell Ranch. New sites LR1, LR2, LR4 were added between EPC9 and EPC10	EPC9 ▲● EPC10 ▲	LR1 LR2 LR4
4	Plum Creek at Chatfield Reservoir	Plum Creek delta impact on water quality into Chatfield Reservoir. CR2B previously Site PC6. New sites CR1, CR2A, CR3A, CR3B, and CR4	CR1 CR2A CR2B (PC6●)	CR3A CR3B CR4
5	Willow Creek & Deer Creek	Continued monitoring of impact of residential development on Willow Creek. Deer Creek delta impact on water quality into Chatfield Reservoir. New sites DC1A and WC1A.	WC1+ ▲● WC1A DC1A	DC1● DC2●
6	Massey Draw	All new sites on Massey Draw, which flows into Chatfield Reservoir from the north and is surrounded by residential development.	MD1 MD2 NMD1	NMD2 SMD1 SMD2

Sample results were compared to Colorado Regulations 31 and 38. Exceedances are noted below.

<u>Selenium</u>

- Levels exceeded the Regulation 38 Acute standard* on all Willow Creek sites and five of six Massey Draw sites (MD1, SMD1, SMD2, NMD1, NMD2).

* Acute standards apply when the standard is exceeded at any point in time.

REGULATED STORMWATER SOURCES

Colorado's stormwater permit program requires control of stormwater runoff in all Phase I and Phase II Municipal Separate Storm Sewer Systems (MS4) entities. These requirements are separate and distinct from the Chatfield Control Regulations and complement the TMAL's purpose. Through the efforts of the MS4s, rate payers have spent significant funds to address water quality through implementing projects to mitigate impacts from urban stormwater runoff. Authority members with Phase I and II MS4 permits in the Chatfield Basin include:

- Statewide General Permit (COR090000)
  - Jefferson County
  - City of Littleton
- Cherry Creek Reservoir General Permit (COR080000)
  - Douglas County
  - City of Castle Pines
  - Town of Castle Rock
- Individual / Other Permit
  - Castle Pines Metropolitan District
  - Colorado Department of Transportation
- Non-Standard General Permit (COR070000)
  - Douglas County School District
  - E-470 Toll Road
  - Regional Transportation District
  - Castle Pines Metro District
  - Castle Pines North Metro District
  - Highlands Ranch Metro District
  - Highlands Heritage Metro District
  - Meridian Metro District
  - Southeast Metro Stormwater Authority
  - Stonegate Village Metro District
  - Stonegate Village North Metro District

Figure 20. Six Minimum Control Measures.

General MS4 permits require the permittee to develop programs that meet all minimum control measures (Figure 20):

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

MS4 permits require implementation of best management practices (BMPs) to reduce pollutants discharged to the "maximum extent practicable. A summary of 2022 MS4 permit inspection and enforcement metrics are provided in Table 5.

Table 5. Summary of 2023 MS4 Permit Activities.

Land Use Agency	Permit Number	Permit Inspection Actions			Permit Enforcement Actions		
		Illicit Discharges	Construction	Post-Construction	Illicit Discharges	Construction	Post-Construction
Douglas County	COR080003	12	5420	37	0	299	0
Jefferson County	COR090024	26	703	45	26	39	0
Town of Castle Rock	COR080012	39	2488	241	14	1539	1
City of Littleton	COR090055	5	159	6	1	1	0

Notes:

- Castle Pines Metropolitan District inspection and enforcement action data are incorporated in Douglas County reporting; City of Castle Pines MS4 boundary is predominately in the Cherry Creek Basin; only a very small portion is located in the Chatfield Watershed.
- Town of Castle Rock inspection and enforcement action data includes data from the Cherry Creek Basin and the Chatfield Watershed. The Town of Castle Rock MS4 boundary is predominately in the Chatfield Basin; about two-thirds of the Town is located in the Chatfield Watershed.
- The data for the City of Littleton includes all MS4 activities within the city limits. However, the city limits of Littleton only overlap with the Chatfield watershed boundary for a small portion (i.e., the Trailmark development)
- Data for Jefferson County includes all MS4 activities within the County limits.
- Douglas County data included only MS4 activities within the watershed (Figure 22).

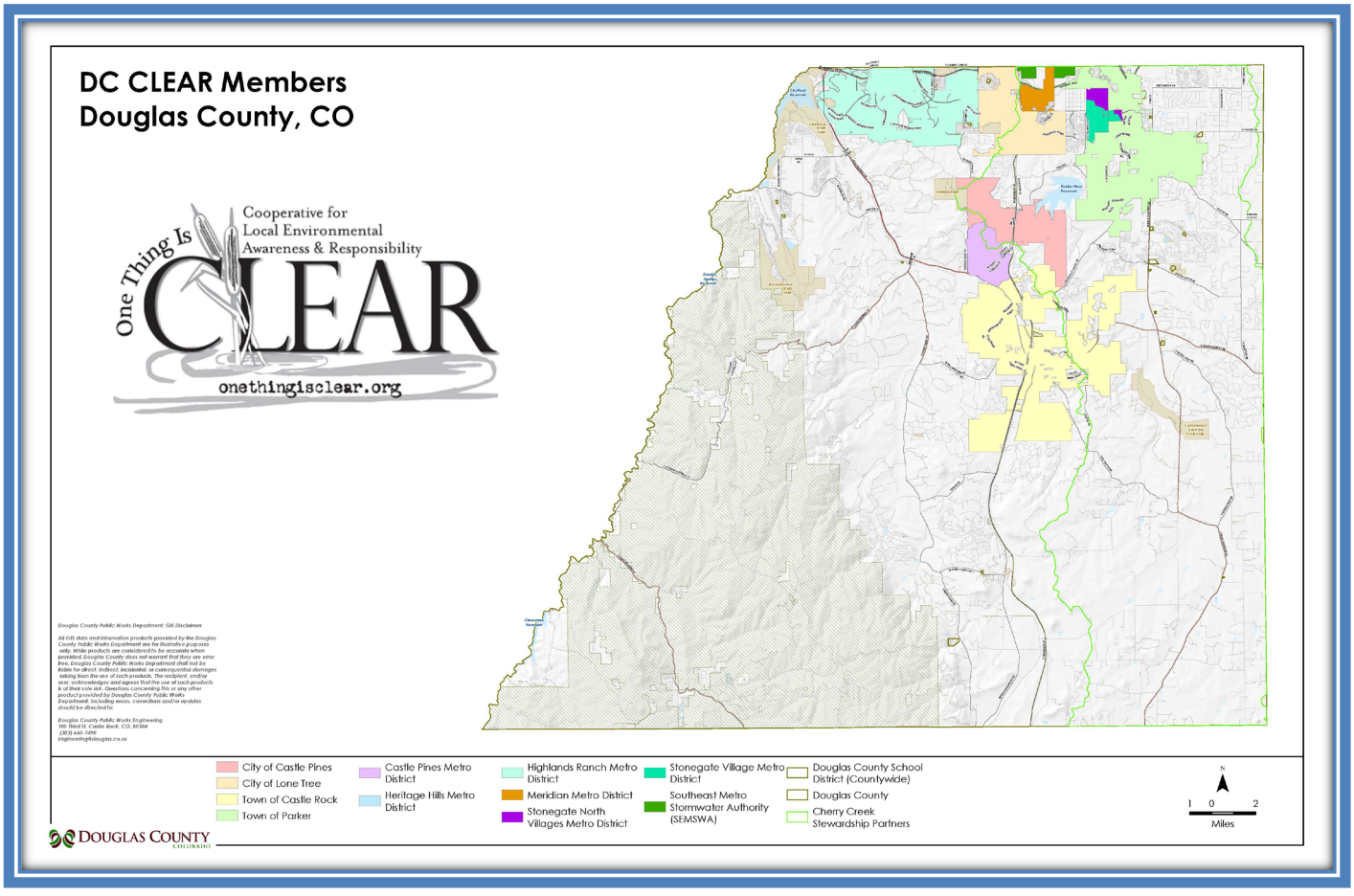


Figure 21. DC Clear Communities Map.

EDUCATION AND OUTREACH

Many Authority members held some in person events and connected with the public to educate and inform people on the benefits of their stormwater programs. Authority members also continued outreach efforts via on-line programs, billing inserts, and advertisements in 2023. Programs used by Authority members are as follows:

Douglas County CLEAR

Through the Cooperative for Local Environmental Awareness and Responsibility (CLEAR), the DC CLEAR members have created the "One thing is Clear: our creeks, rivers and lakes depend on you" public awareness program. The interactive website provides information for Douglas County residents on how they can work to keep pollution out of their water ways. CLEAR Members (Figure 21) collaborated with Members of Stormwater Permittees for Local Awareness of Stream Health (SPLASH) on Nutrient Outreach and training seminars.

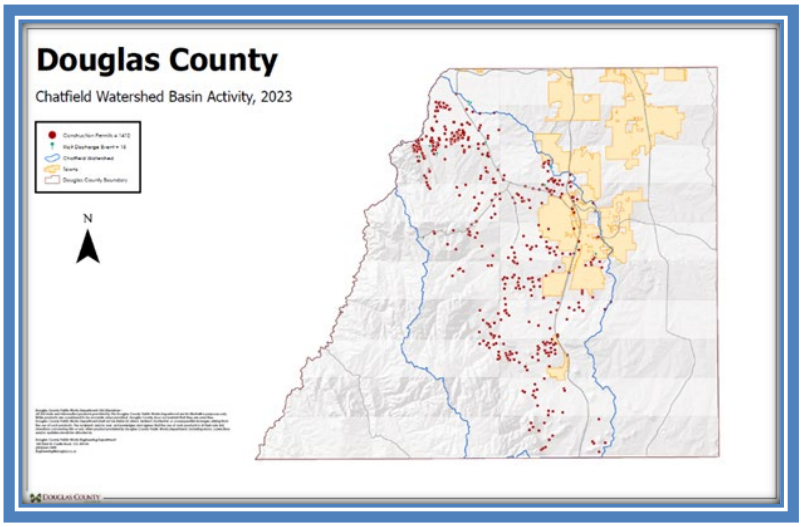


Figure 22. Douglas County MS4 Activities within the Chatfield Watershed Basin.

CLEAR 2023 program activities:

- Updated & maintained the CLEAR website at http://onethingisclear.org/.
- A total of 12 two-third page residential and commercial awareness advertisements ran monthly in 10 Colorado Community Media newspapers covering certain portions of Douglas, Arapahoe, Jefferson and Elbert Counties (Figure 23). Ads ran in the Castle Rock News Press, Castle Pines News Press, Douglas County News Press, Highlands Ranch Herald, Lone Tree Voice, Elbert County News, Parker Chronicle, Centennial Citizen, Englewood Herald, Littleton Independent and South Platte Independent.

Print Date	Topic	Message	Target Audience
January 21	Good Housekeeping	Vehicle maintenance and repair practices. Tag Line: One message you can absorb.	Commercial
February 18	Litter	Piece of trash does damage. Promote cleanup programs. Tag Line: *It's not good for our water… either.*	Residential
March 18	Dumping	Hazardous material dumping. Promote neighborhood watch. Tag Line: *Are you a good neighbor to your environment?*	Residential
April 15	Phosphorus	Fertilizer application. Promote testing soils. Tag Line: *Fertilizer: archenemy of waterways.*	Residential/ Commercial
May 20	Good Housekeeping	Proper storage of landscape materials. Tag Line: *Just add water.*	Residential/ Commercial
June 17	Litter	Good housekeeping with fireworks. Promote prompt cleanup. Tag Line: *Freedom brings responsibility.*	Residential
July 15	Dog Waste	Pick up after your dog. Environmental awareness. Tag Line: *It is your duty (dooty)!*	Residential
August 19	Good Housekeeping	General good housekeeping; customer service message. Tag Line: *Customer service goes beyond your doors.*	Commercial
September 16	Dumping	Proper latex paint waste disposal. Tag Line: *Old latex paint? Don't flip out! Dry it out!*	Residential
October 21	Phosphorus	Fall yard maintenance practices to reduce nutrients in waterways. Tag Line: This fall, rethink nature's fertilizer.	Residential
November 18	Dumping	Proper carpet cleaning waste disposal. Tag Line: *Is carpet cleaning on your holiday checklist?*	Residential
December 16	Thank you	Efforts that protect water quality are a gift to streams. Tag Line: *It's clear this stream is grateful.*	Residential

Figure 23. 2023 Advertisements Summary.

Figure 24. Douglas County Waste Diversion and Recycling Summary.

/ Members supported and attended both general and committee meetings of the Colorado Stormwater Council (CSC).

/ Members supported the Cherry Creek Stewardship Partners.

/ CLEAR Members continue to collaborate with Members of SPLASH on New Non-Standard MS4 Permit, Nutrient Outreach, training seminars, newspaper ads, etc.

Additionally, Douglas County conducts a Waste Diversion and Recycling program, inside and outside the Chatfield Watershed. A summary of activities is shown in Figure 24. This data represents material collected and recycled across all of Douglas County, including incorporated areas outside of the Chatfield Watershed.

Town of Castle Rock

Spring Up the Creek has become a tradition for Castle Rock and draws residents every year to preserve our waterways by removing trash that collects along the stream banks. The event occurred on Saturday, May 5, 2023.

More than 207 volunteers picked up 162 bags of trash along 9 designated trails (Figure 25). Volunteers assembled at specific trailheads across the town. Castle Rock Water, Castle Pines Metropolitan District, Plum Creek Water Reclamation Authority, Chatfield Watershed Authority and Douglas County sponsored the event. This year's give-away was seed bombs. These tiny balls are laden with Colorado native wildflower seeds and provide a fun opportunity to throw them along paths, in yards or in other open spaces.

Figure 25. Spring Up the Creek volunteers gathering trash along Plum Creek.

The Town continues to manage a robust social media and internet outreach program, for which stormwater is a top priority. Emails to 27,000 customers and posts on Facebook (26,000 followers) and Instagram (10,000 followers) reached thousands of people. These messages include There is No Poop Fairy campaign for picking up pet waste, excessive water, fertilizer and pollution, and moving water hazards.

Jefferson County

Jefferson County continues to participate with Rooney Road Recycling Facility and in 2023 the facility collected over 350,000 pounds of household hazardous waste. Household hazardous waste (includes electronic waste, household chemicals, paints, propane cylinders and automotive products) materials have been collected at the Rooney Road Recycling facility since 1994 and total more than 8,000,000 pounds of materials. This facility provides residents a way to properly dispose of leftover materials, keeps materials out of onsite wastewater treatment systems and helps reduce illegal dumping in the watershed.

Jefferson County holds a Drug Take-Back Day twice a year which provides the public an opportunity to surrender expired or unwanted medications. The Drug Take-Back Days provides residents a way to properly dispose of leftover medications and keeps them out of onsite wastewater systems and wastewater treatment facilities.

In addition, Jefferson County hosted a public cleanup of the Clear Creek corridor on National Public Lands Day in 2023. There were 700 volunteers that removed 25,000 pounds of trash/debris along 22 miles of the corridor.

Jefferson County participated in both virtual and in-person public events to reach diverse audiences for their MS4 and floodplain management programs.

Jefferson County also maintains a land disturbance program throughout the County. The County maintains a small-site erosion control manual that explains the basic principles of erosion and sediment control and illustrates techniques to control sediment from small development sites. Jefferson County has an inspection program for illicit discharges, construction activities, and post-construction inspections.

Jefferson County regularly reports to the Bear Creek Watershed Association on stormwater management practices and programs. More information about Jefferson County's stormwater program is contained in their CDPS Stormwater Permit Annual Report.

City of Littleton

The City of Littleton participated in Stormwater Permittees for Local Awareness of Stream Health (SPLASH), which supports and conducts a wide range of educational activities. Three rain barrel workshops were put on by SPLASH members, which include stormwater education, training on rain barrel installation and proper usage, and receipt of a rain barrel and installation kit.

SPLASH's primary focus in 2023 was to update and reinvigorate its education and outreach strategy. SPLASH partnered with a marketing agency, Launch, to get insight on how to improve its strategy and have a bigger impact on residents of Arapahoe County.

Within the City of Littleton, SPLASH has begun a partnership with Explorative Pathways for Innovative Careers (EPIC) Campus (Figure 26), providing stormwater management education to Water Resources students as a part of the school's Career Pathways Program.

Figure 26. EPIC Campus Logo.

PROGRESS TO PROMOTE WATER QUALITY PROTECTION

While funding sources remain very limited, the Authority's collaborative role seeks out partnerships to support our water quality goals now and in the future. Donations and in-kind services from Authority members to support progress to promote water quality protection included:

- Continued implementation of the amended Intergovernmental Agreement (IGA) and bylaws.
- Continued water quality monitoring program in both the reservoir and the watershed.
- Continued implementation of the Chatfield Watershed Plan.
- Continued collaboration with Chatfield Reservoir Mitigation Company (CRMC) regarding data collection to support CRMC reservoir modeling efforts.
- Collaboration with local and state agencies in grant funding efforts.
- Continued Public Outreach activities.

In addition, our members have been expending significant funds for drainageway and storm sewer projects to reduce erosion and flooding and improve water quality. The following are example projects completed by Authority Members.

Douglas County

Sugar Creek Offsite Mitigation Project

The Sugar Creek project is located 19 miles upstream of the Reservoir along 4.5 miles of Douglas County South Hwy 67 (Sugar Creek) within the Pike National Forest. Douglas County took over maintenance of the Sugar Creek Rd. improvements from the Chatfield Reservoir Mitigation Company in August of 2022. Douglas County subsequently worked with a contractor to perform maintenance on the sediment traps which are a unique component of the Sugar Creek sediment transport mitigation infrastructure. Over 90 cubic yards of sediment were removed from the 34 sediment traps in 2023 (Figures 27 and 28).

Figure 27. Sediment Trap before cleanout.

Figure 28. Sediment Trap after cleanout.

East Plum Creek Stabilization Project

Douglas County Special Projects group continued work on the East Plum Creek stabilization project in coordination with CALF and a variety of constituents (Figure 29). Work included bank stabilization, vegetation planting, and some clean-up work following two intense flow events that occurred in the spring of 2023. The work within the project area did survive the intense flows, substantiating the credibility of the stabilization approach and methods. Work is estimated to be complete in the fall of 2024.

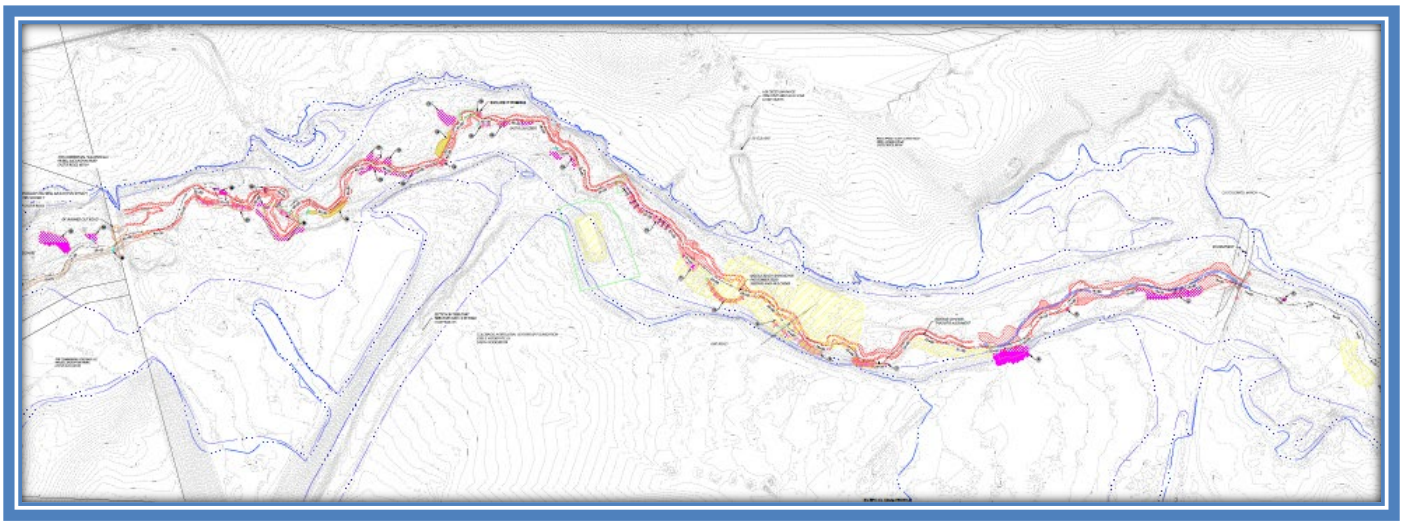


Figure 29. Map of East Plum Creek Stabilization Project.

Town of Castle Rock

East Plum Creek Reach 6 Stabilization

Castle Rock Water completed stream stabilization of Reach 6 along East Plum Creek. East Plum Creek is the largest drainageway within the Town and is located on the western side of Town. Stream stabilization occurred in five locations, three being drop structures and two being bank protection, with a total channel length of approximately 3,700 lineal feet. Work included grading the incised channel banks, reconstructing the channel bed, placing buried riprap to protect channel banks, installing sheet pile cutoff walls, installing riffle drops and cascading boulder structures, and planting native grass and willows. Stream stabilization efforts such as these support the mission to preserve and protect water quality within the Town's open space and the watershed. Construction kicked off in February 2023 and is now substantially complete, except for willow planting to be done in spring of 2024. The contractor was 53 Corporation, Inc. The construction cost was $1,353,006, and the project was completed under budget and on time (Figures 30 and 31).

Figure 30. Installation of Sheet Pile and Cap Drop 3.

Figure 31. Drop 3 Completion with Grass Growing.

FUNDING OF NON-POINT SOURCE PROJECTS

West Plum Creek Stream Management Plan (Total Cost $265,786 with $31,000 in-kind match funding, of which $5,000 cash and $5,000 in-kind services contributed by CWA).

This ongoing project aims to fully document existing conditions and identify risks to fish populations along West Plum Creek, the last relatively unaltered transition zone stream in the South Platte Basin and perhaps the best example of a nearly intact fish assemblage along Colorado's Front Range. Colorado Parks and Wildlife, alongside partners including River Network, US Fish and Wildlife Services, Douglas County's Division of Open Space and Natural Resources, Chatfield Watershed Authority, and others will participate in the creation of a Stream Management Plan to assess native fish habitat, improve water quality, and better understand hydrology and opportunities in water management with the water users. Of primary importance is documenting fish passage barriers and understanding the hydrologic regime of the watershed, and how to maintain its integrity into the future.

Phase I is focused on stream condition assessment and characterization, development of objectives to reduce risk to native fish populations, identification of priority projects for fish passage, and landowner engagement. A subsequent phase will identify and prioritize opportunities in water management, water quality, and river/riparian restoration alongside water users.

Colorado School of Mines 2023 Field Session (Up to $5,000 of in-kind services contributed by CWA)

The Authority participates in the Colorado School of Mines (CSM) annual field session in the Chatfield Watershed. In the field session, CSM students act as consultants to the Authority to perform field investigations, perform in-stream water quality tests, collect samples for laboratory analysis, review water quality test results, summarize field observations and test results, and report their findings to the Authority with in-person presentations and a two-page water quality summary document. In 2023, six groups of an average of five students per group visited 33 locations in the Chatfield watershed to conduct their field investigations. The Authority uses their findings and data to further the Authority's understanding of water quality in the Chatfield watershed, including obtaining data in several locations not subject to the Authority's water quality monitoring program. This program provides great value to the Authority as it is estimated that these students provide over 2400 manhours of work for the Authority not including the hours spent by CSM professors and teaching assistants who plan and lead the annual field session.

Wildfire Mitigation

The Authority has previously allocated $5000 to support a wildfire mitigation project in the Chatfield watershed and is pursuing additional partnerships and grant opportunities to collaborative address wildfire risk and mitigation. The Authority expects that its previously allocated $5000 contribution will be spent in 2024 on the Hilldale Pines Shaded Fuelbreak fire mitigation project through Denver Mountain Parks.

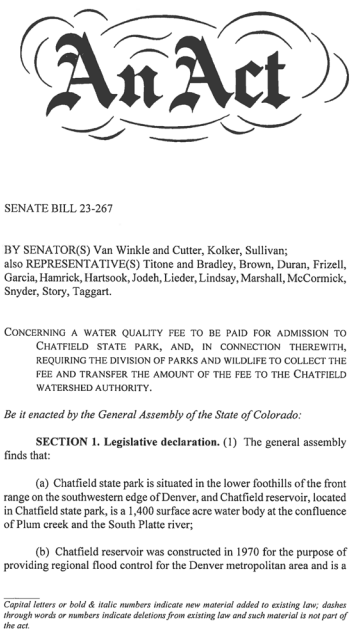
REGULATORY ISSUES AND PARTICIPATION

Lakes Nutrients Rulemaking Hearing Process

The Authority participated in the initiation of the Lakes Nutrient Rulemaking process through review and responsive comments on the Division's proposals for revisions to Regulations #31-#38 and #85. This review included QA/QC of data in the Division's water quality database and discussions with the Division staff over issues related to Chatfield Reservoir. The Authority appreciated the Division's willingness to assist the Authority in data analysis and examination of issues identified by the Authority. The Division was cooperative and responsive to the Authority's questions and desired to resolve the identified issues. The final revisions to Regulations #31-#38 and #85 were approved at the rulemaking hearing on April 10, 2023. Subsequent to the hearing, the Authority began the process to develop a site-specific Nitrogen Standard for Chatfield Reservoir

FUNDING INITIATIVE

The Authority's 2016 Watershed Plan identified the need for additional funding if the Authority were to continue to promote and implement programs and projects to promote water quality improvements while meeting the Authority's regulatory requirements. In 2021, the Authority's consultants began a process to identify additional funding mechanisms while preparing a list of potential programs, projects, their estimated cost, and priority for implementation. This process cumulated in a request to the Colorado State Legislature to obtain additional funding by implementing a water quality fee for Chatfield State Park users.



An Act

SENATE BILL 23-267

BY SENATOR(S) Van Winkle and Cutter, Kolker, Sullivan;
also REPRESENTATIVE(S) Titone and Bradley, Brown, Duran, Frizell, Garcia, Hamrick, Hartsook, Jodeh, Lieder, Lindsay, Marshall, McCormick, Snyder, Story, Taggart.

CONCERNING A WATER QUALITY FEE TO BE PAID FOR ADMISSION TO CHATFIELD STATE PARK, AND, IN CONNECTION THEREWITH, REQUIRING THE DIVISION OF PARKS AND WILDLIFE TO COLLECT THE FEE AND TRANSFER THE AMOUNT OF THE FEE TO THE CHATFIELD WATERSHED AUTHORITY.

Be it enacted by the General Assembly of the State of Colorado:

SECTION 1. Legislative declaration. (1) The general assembly finds that:

(a) Chatfield state park is situated in the lower foothills of the front range on the southwestern edge of Denver, and Chatfield reservoir, located in Chatfield state park, is a 1,400 surface acre water body at the confluence of Plum creek and the South Platte river;

(b) Chatfield reservoir was constructed in 1970 for the purpose of providing regional flood control for the Denver metropolitan area and is a

Capital letters or bold & italic numbers indicate new material added to existing law; dashes through words or numbers indicate deletions from existing law and such material is not part of the act.

In 2023, Senate Bill 23-267 was passed, which establishes a water quality fee for Chatfield State Park. The fee is expected to take effect January 1, 2025. Fee revenue will be transmitted to the Chatfield Watershed Authority, less the Department of Natural Resources' administrative expenses. The allocation of these funds is subject to additional requirements and restrictions imposed by the Parks and Wildlife Commission. The funds collected shall be used to support water quality projects, including projects that provide for the construction, operation, and maintenance of nonpoint source projects, water quality monitoring, and urban runoff and erosion management and control. Up to 25 percent of the revenue must be spent on water quality projects in Chatfield State Park. The Authority will be working in 2024 to further identify and prioritize a list of proposed water quality projects for the next five years to be funded by the water quality fee as well as working cooperatively with Colorado Parks and Wildlife to identify and prioritize water quality projects within Chatfield State Park.

IN MEMORIUM

Barbara Biggs

The Authority wishes to acknowledge the importance of the contributions of Barbara Biggs to the goals and missions of the Authority. Barbara was appointed as a board member in November 2017, representing the Roxborough Water and Sanitation District. Over the next 6 short years, Barbara used her expertise and extensive background in Colorado water quality matters to guide the Authority in development of policies, procedures, and programs that provide the foundation of the Authority's current activities and programs. Barbara played a key role in testifying before the Colorado State Legislature to support the adoption of SB-267 to implement a water quality fee at Chatfield Reservoir. The Authority will certainly miss the dedication and commitment of Barbara to the improvement of water quality in Chatfield Reservoir.

CHATFIELD WATERSHED AUTHORITY MEMBERS

www.chatfieldwatershedauthority.org

Members consist of water and sanitation districts, water providers, municipalities, metropolitan districts and other area stakeholders within the Chatfield Watershed. The membership representation consists of organization staff and elected officials. Membership dues assist with collaborative projects and water quality testing.

Chatfield Watershed Authority Members

City of Littleton
City and County of Denver (acting through its Board of Water Commissioners)
Douglas County
Jefferson County
Roxborough Water & Sanitation District
Town of Castle Rock
Perry Park Water & Sanitation District
Centennial Water & Sanitation District
Town of Larkspur
Castle Pines Metropolitan District
Dominion Water & Sanitation District
Louviers Water & Sanitation District
Plum Creek Water Reclamation Authority

Ex-Officio Participants

Colorado Agricultural Leadership Foundation (CALF)
Colorado Parks and Wildlife Commission (Chatfield State Park)
Colorado Department of Transportation
Colorado Water Conservation Board
Ken Caryl Ranch Master Association
The Law Enforcement Foundation
Ponderosa Retreat
Sacred Heart Retreat
U.S. Army Corps of Engineers
Chatfield Reservoir Mitigation Company
Water Quality Control Division of the Colorado Department of Public Health and Environment

Watershed Manager

Colorado Watershed Assembly

Financials

TWS Financial, Inc.

Technical Consultant

RESPEC Company, LLC