CHATFIELD WATERSHED AUTHORITY

PROTECTING THE PUZZLE BEFORE THE CAT GETS IT!

Presenters:
Alan J. Leak, RESPEC ,
David Van Dellen, Castle Rock Water

CHATFIELD WATERSHED AUTHORITY

PLANS FOR ADDRESSING GROWTH, OWTS, AND WASTEWATER CONSOLIDATION TO IMPROVE WATER QUALITY.

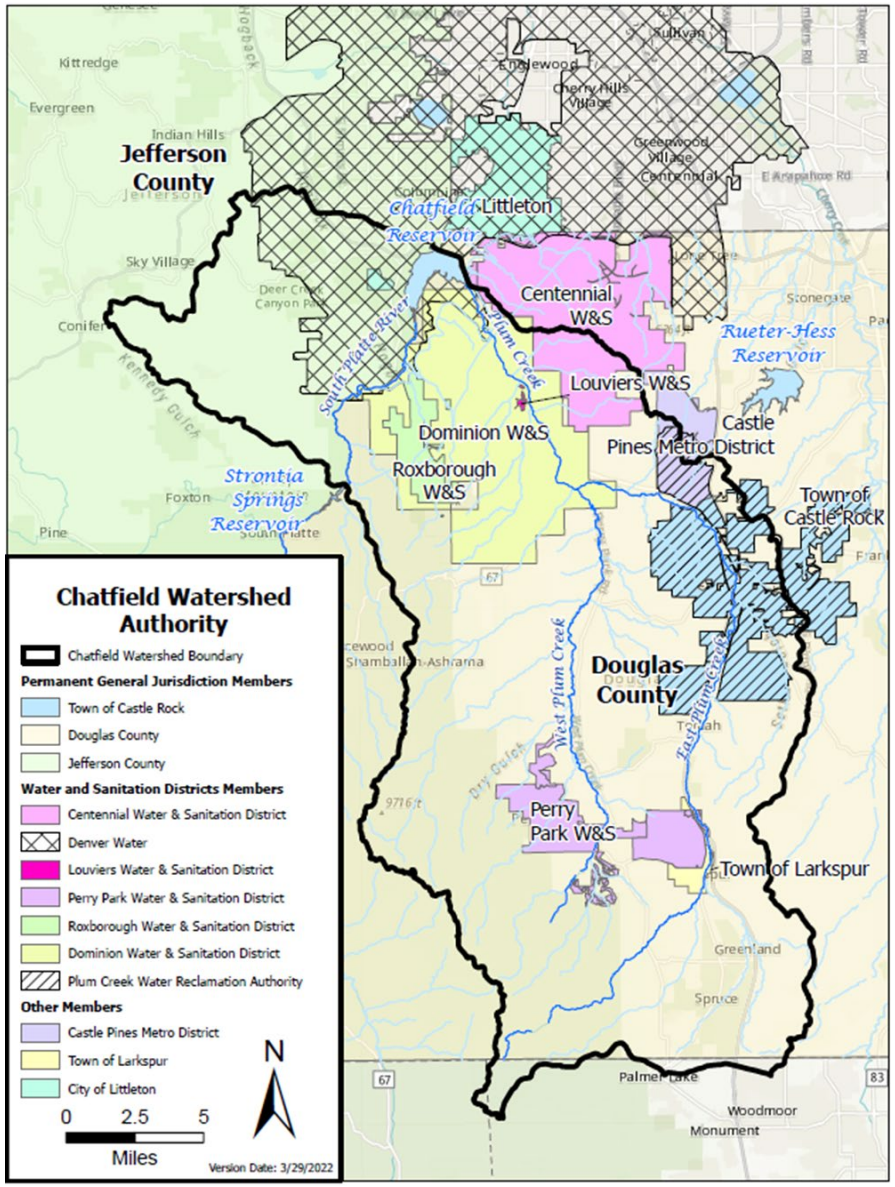
CHATFIELD WATERSHED AUTHORITY

The Chatfield Watershed 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 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 α.

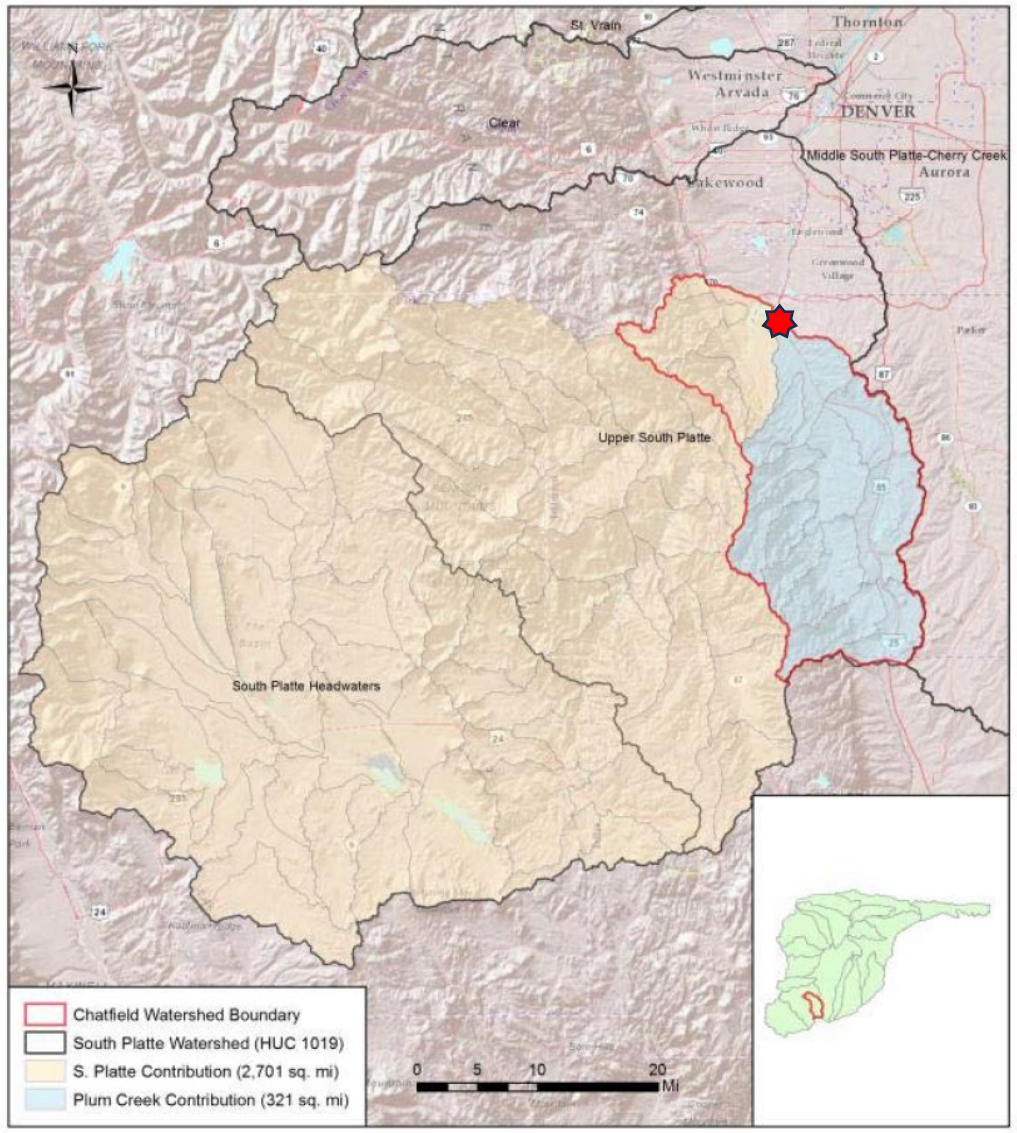
The Authority is a voluntary organization formed through an Intergovernmental Agreement and funded with voluntary dues assessed yearly on the Authority members.

CWA MEMBERSHIP



- **Permanent General Jurisdiction Members**
  - Douglas County
  - Jefferson County
  - Town of Castle Rock
- **Water and Sanitation Members**
  - Centennial Water and Sanitation District
  - Denver Water
  - Dominion Water and Sanitation District
  - Louviers Water and Sanitation District
  - Perry Park Water and Sanitation District
  - Plum Creek Water Reclamation Authority
  - Roxborough Water and Sanitation District
- **Other Members**
  - Castle Pines Metropolitan District
  - Town of Larkspur
  - City of Littleton

CHATFIELD RESERVOIR /WATERSHED



- Total Watershed Area: 3022 sq. mi.(excludes transmountain diversions from the Arkansas and Colorado River Basins).
- Total Regulatory Watershed Area: 440 sq. mi.
- Average Annual Inflow: 100,860 af/yr.
  Over 75% from Cold South Platte River.
  Less than 25% from Warm Plum Creek.
- Regulated as a Cold-Water Reservoir.
- Storage Volume: 20,046 af historic plus up to 20,600 af of additional reallocation storage.

WATER QUALITY CHALLENGES AND STRATIGIES

CHALLENGES:

Funding (with limited funds for matching grants):
Current budget allows for only $29,000/year in funding of non-point source projects

Growth: Douglas County was the fastest growing exurb in the US from 1990-2019 at 481% population growth.

Watershed Risks: Wildfires are the number one risk for impairment of water quality in Chatfield Reservoir (remember the Hayman fire in 2002)?

WATER QUALITY CHALLENGES AND STRATEGIES

STRATEGIES:

- Obtain Approval for Implementing a Water Quality Fee for Users of Chatfield Reservoir

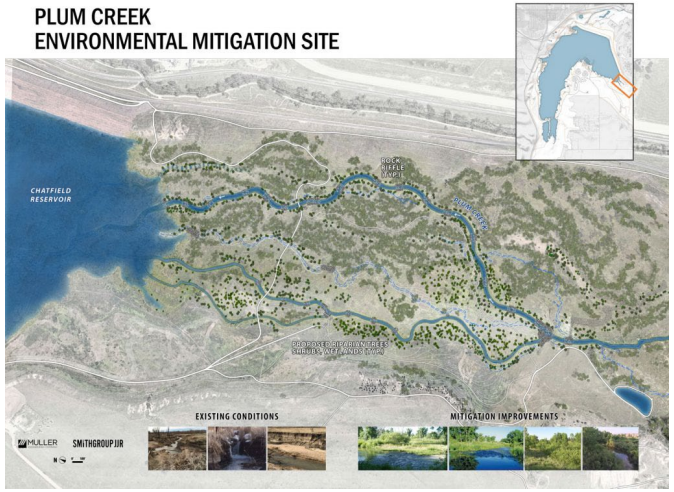
An Act

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.

- Significant Funding of Improvements From Local Jurisdictions and CRMC



- Watershed Modeling

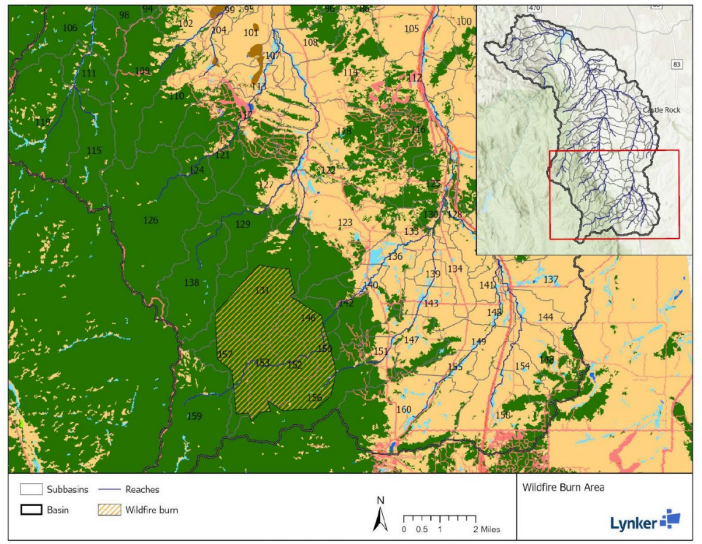


Figure 8: Modeled Wildfire Burn Area

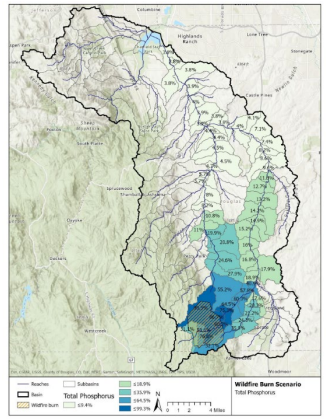


Figure 11: Annual Average Percent Change in Total Phosphorus due to Wildfire Burn

Table 8: Annual Change in Water Quality due to Wildfire

Reach ID	Description	Total Phosphorus Load (% / lbs)	Total Nitrogen Load (% / lbs)	Total Sediment Load (% / tons)	Total Flow (% / AF)
Percent increase (%)					
Reach 131	West Plum Creek (burned)	99.3	103.1	238.5	36.9
Reach 146	East Plum Creek (burned)	86.7	92.5	189.5	34.2
Reach 156	Cook Creek (burned)	52.1	58.0	108.2	21.3
Reach 92	West Plum Creek	8.2	12.2	21.6	4.5
Reach 53	West Plum Creek (confluence)	4.4	6.7	11.3	2.5
Reach 76	East Plum Creek	11.8	18.4	30.5	8.1
Reach 46	East Plum Creek (confluence)	3.8	5.6	12.1	3.8
Reach 45	Plum Creek at Sedalia	3.9	5.8	12.7	3.2
Reach 28	Plum Creek at Titan Rd	3.8	5.5	11.5	3.0
Absolute increase (lbs or tons)					
Reach 131	West Plum Creek (burned)	85.8	3430	62.8	195.7
Reach 146	East Plum Creek (burned)	167.5	6490	130.7	373.4
Reach 156	Cook Creek (burned)	34.0	1330	31.0	76.4
Reach 92	West Plum Creek	80.9	3310	66.4	195.9
Reach 53	West Plum Creek (confluence)	78.3	3260	67.5	195.9
Reach 76	East Plum Creek	195.0	7450	173.7	449.1
Reach 46	East Plum Creek (confluence)	231.8	7370	218.4	449.0
Reach 45	Plum Creek at Sedalia	304.0	10620	251.0	644.9
Reach 28	Plum Creek at Titan Rd	297.0	10500	245.2	644.7

REGULATORY FRAMEWORK

COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT
WATER QUALITY CONTROL COMMISSION
5 CCR 1002-73
REGULATION NO. 73
CHATFIELD RESERVOIR CONTROL REGULATION

Regulation #73 Requirements :

- 208 MANAGEMENT AGENCY: Conduct reviews and provide recommendations to the Division on Site Applications and Phosphorus Trades.
- TMAL: A total maximum annual load (TMAL) for phosphorus of 19,600 lbs/yr under a median inflow of 100,860 AF/yr has been identified to attain the water quality standards for 10 µg/l chlorophyll α and 0.030 mg/l total phosphorus, as described in Regulation No. 38. Attainment of the TMAL may require progressive development of point source and nonpoint controls.
- EFFLUENT LIMITATIONS AND POINT SOURCE WASTELOAD ALLOCATIONS:
  - 1.0 mg/l total phosphorus as a 30-day average concentration
  - The allowed annual wasteload of point source phosphorus is limited to 7,533 lbs/yr,
- PHOSPHORUS TRADING: The regulation provides the opportunity for non-point to point source and inter- agency phosphorus trades.
- MONITORING AND REPORTING: Annually review and submit a water quality monitoring plan and an annual report.

REGULATORY FRAMEWORK

Regulation #73 Requirements (cont.):

73.6 NONPOINT SOURCE CONTROLS

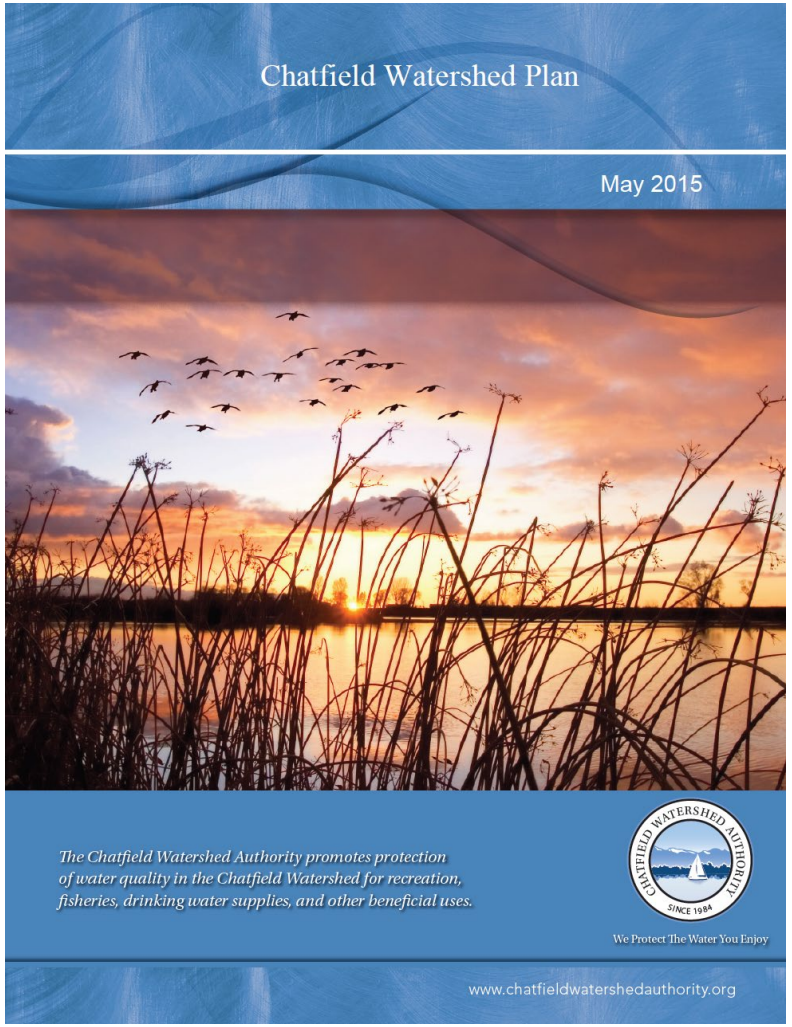
1. The Chatfield Watershed Authority shall develop an implementation program of best management practices for control of erosion and sediments. The Commission shall review the implementation program for existing erosion and sediment control programs as submitted by the Chatfield Watershed Authority at each triennial review of this regulation.

2. The Chatfield Watershed Authority members shall implement nonpoint source control programs for those areas within their jurisdictions with the goal of reducing nonpoint source phosphorus in the Chatfield Watershed so as not to exceed the 33,361 lbs/yr allocation for reservoir base-load and background.

3. If nonpoint source control programs are not implemented, the Commission may adjust the phosphorus total maximum annual load allocations stated in section 73.3 of this regulation, alter water quality monitoring requirements and specify a nonpoint source management program.

4. Constructed structural nonpoint source best management practices shall be monitored by the Chatfield Watershed Authority, agencies, owners, or dischargers to determine total phosphorus removal efficiencies if credits for the controls are to be assigned to point source facilities, as provided under section 73.3(2)(e).

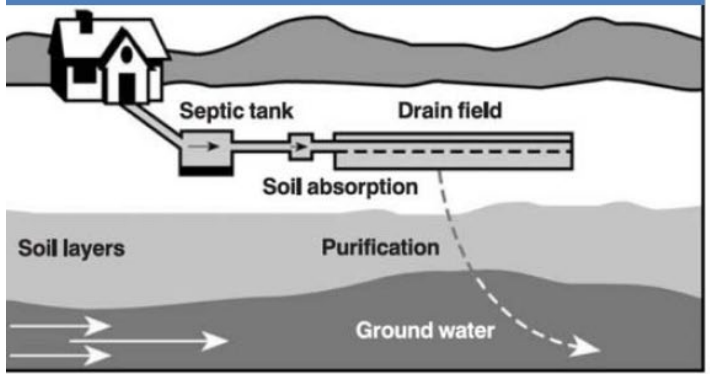
CHATFIELD WATERSHED PLAN



Erosion from degraded streambanks

Runoff from agricultural lands

Leachate from poorly-functioning or unmaintained septic systems



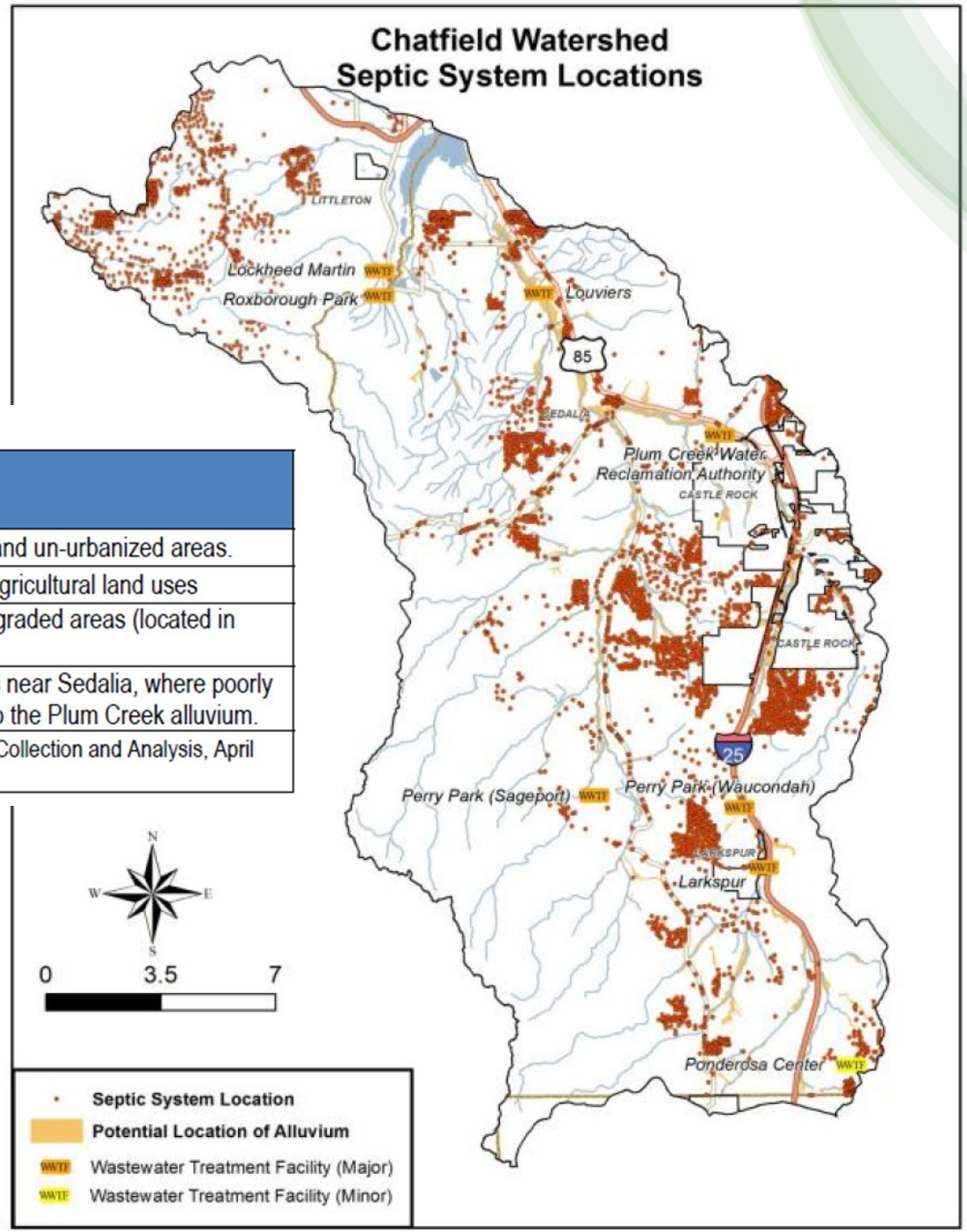
Runoff from wildfire burn areas

Over 1500 OWTS Systems in the Chatfield Watershed

Table 4-8 Preliminary Findings of the Plum Creek Watershed Study

Potential Pollutant Sources	Preliminary Findings [1]
Stormwater runoff	Potentially elevated TP downstream of urbanized and un-urbanized areas.
Runoff from agricultural lands	Potentially higher TP and *E. coli* downgradient of agricultural land uses
Streambank erosion	Potentially higher TSS and TP downgradient of degraded areas (located in urbanized and un-urbanized areas).
Septic Systems	Potentially higher *E. coli* and nitrate concentrations near Sedalia, where poorly functioning septic systems may exist in proximity to the Plum Creek alluvium.

[1] Colorado Water Conservation Board (CWCB). 2013. Plum Creek Watershed Monitoring Report – Data Collection and Analysis, April 2012 – March 2013. Prepared by Tetra Tech, Inc. April 2013.

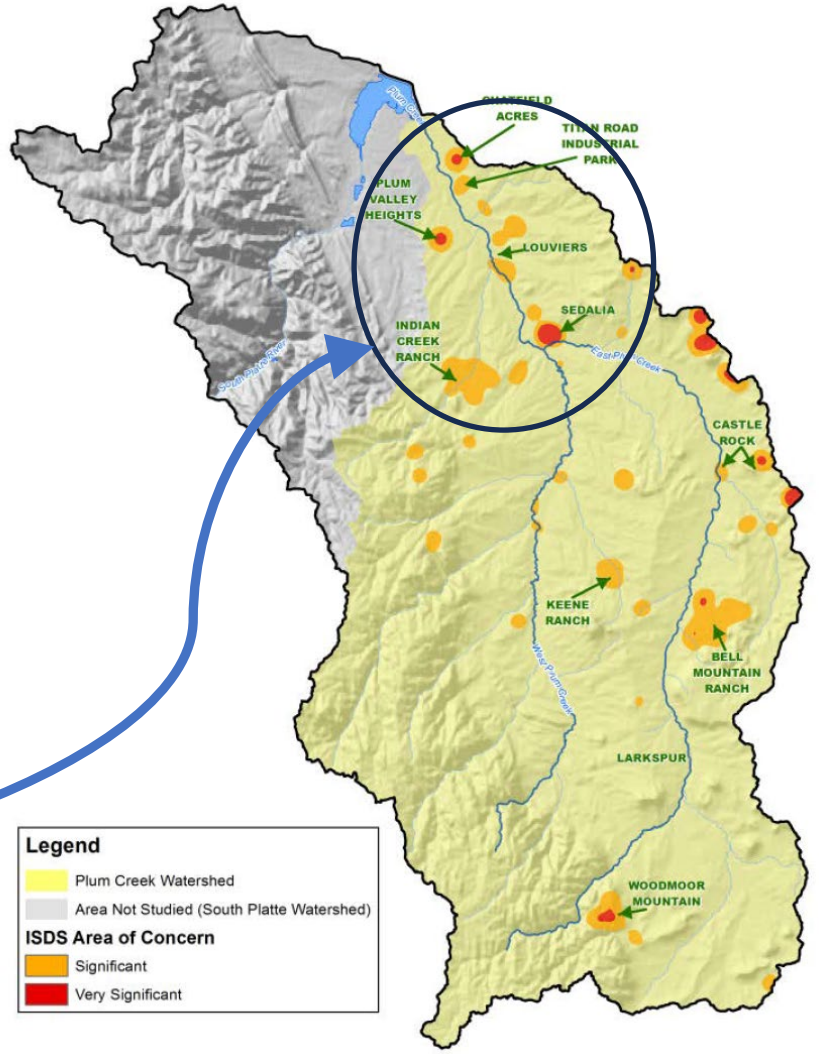


OWTS HOTSPOT IDENTIFICATION

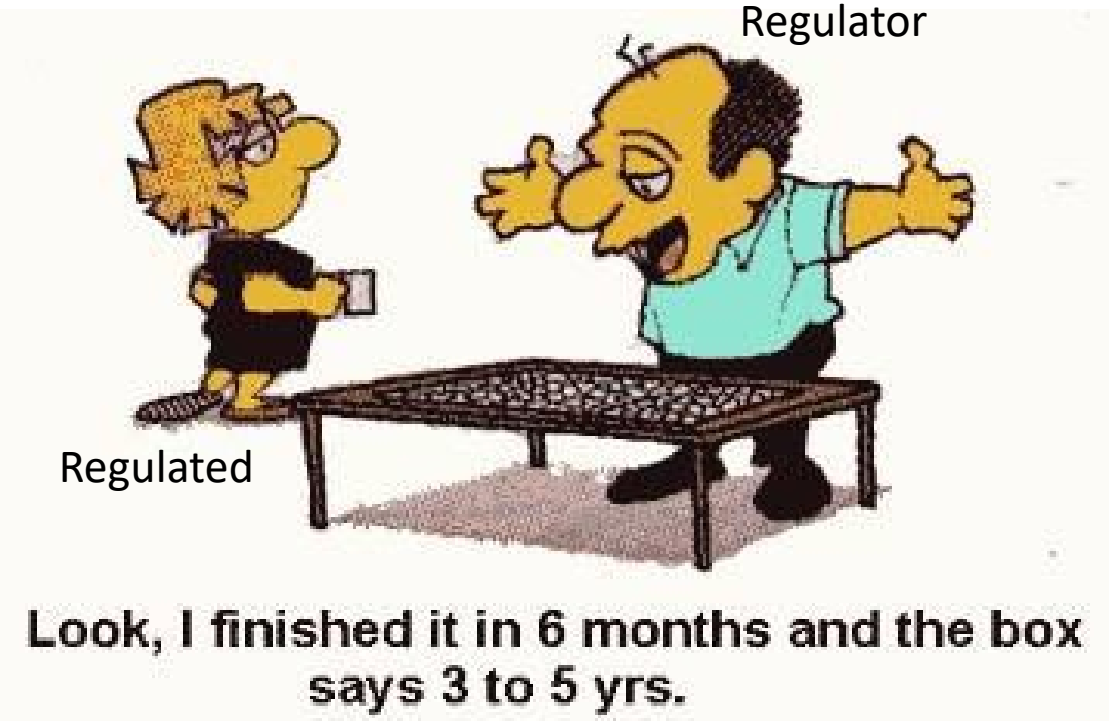
Factor	Ranking Attributes	Factor Value
Proximity to Stream	≥151 meters	0
	≤ 150 meters	2
Hydrologic Soil Group	Soil Group A & B	0
	Soil Group C	1
	Soil Group D	2
Age of Structure	≤ 30 years old	0
	> 30 years old	2
Depth of Well and Aquifer	≥ 46 feet	0
	≤ 45 feet	2
Flood zone location	ISDS not in flood zone	0
	ISDS in flood zone	2
Concentration of People and Structure Density	Suitable parcel size	0
	Not a suitable parcel size	2

Table 3. Matrix for ISDS

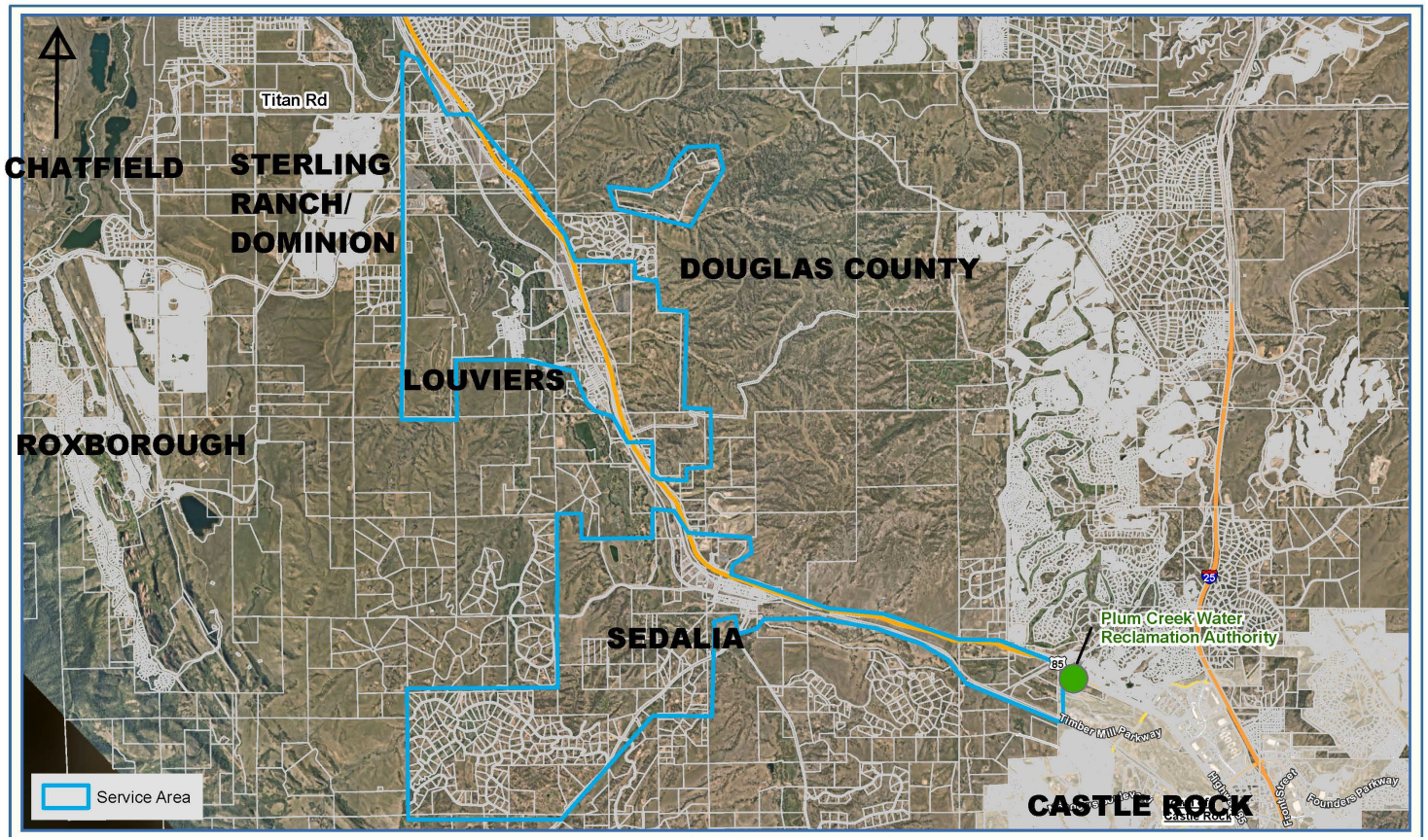
Where do we start to address the risk from aging OWTS? Let's start here



Dad Joke Break!



REGIONAL WASTEWATER SOLUTION



Project Partners

- Douglas County
- Town of Castle Rock
- Dominion Water and Sanitation District
- Louviers Water and Sanitation District

Additional Project Proponents

- Roxborough Water and Sanitation District
- South Platte Renew

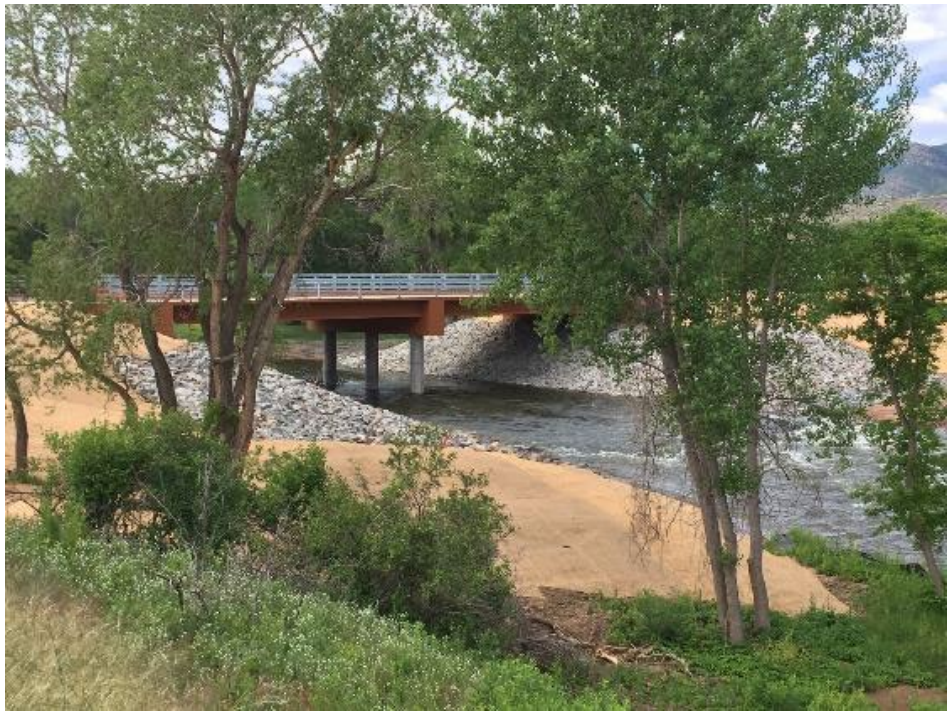
REGIONAL WASTEWATER SOLUTION

KEY TERMS OF PROJECT (PHASE 1)

- $26.8 million in County managed ARPA Funds
- Louviers lift station, force main and decommission lagoon
- Gravity sewer system through Sterling Ranch
- New Wastewater Treatment Facility on Roxborough site

PHASE 2

- System Development Fees
- Gravity sewer from Sedalia to Louviers
- Pump Station for reuse supplies



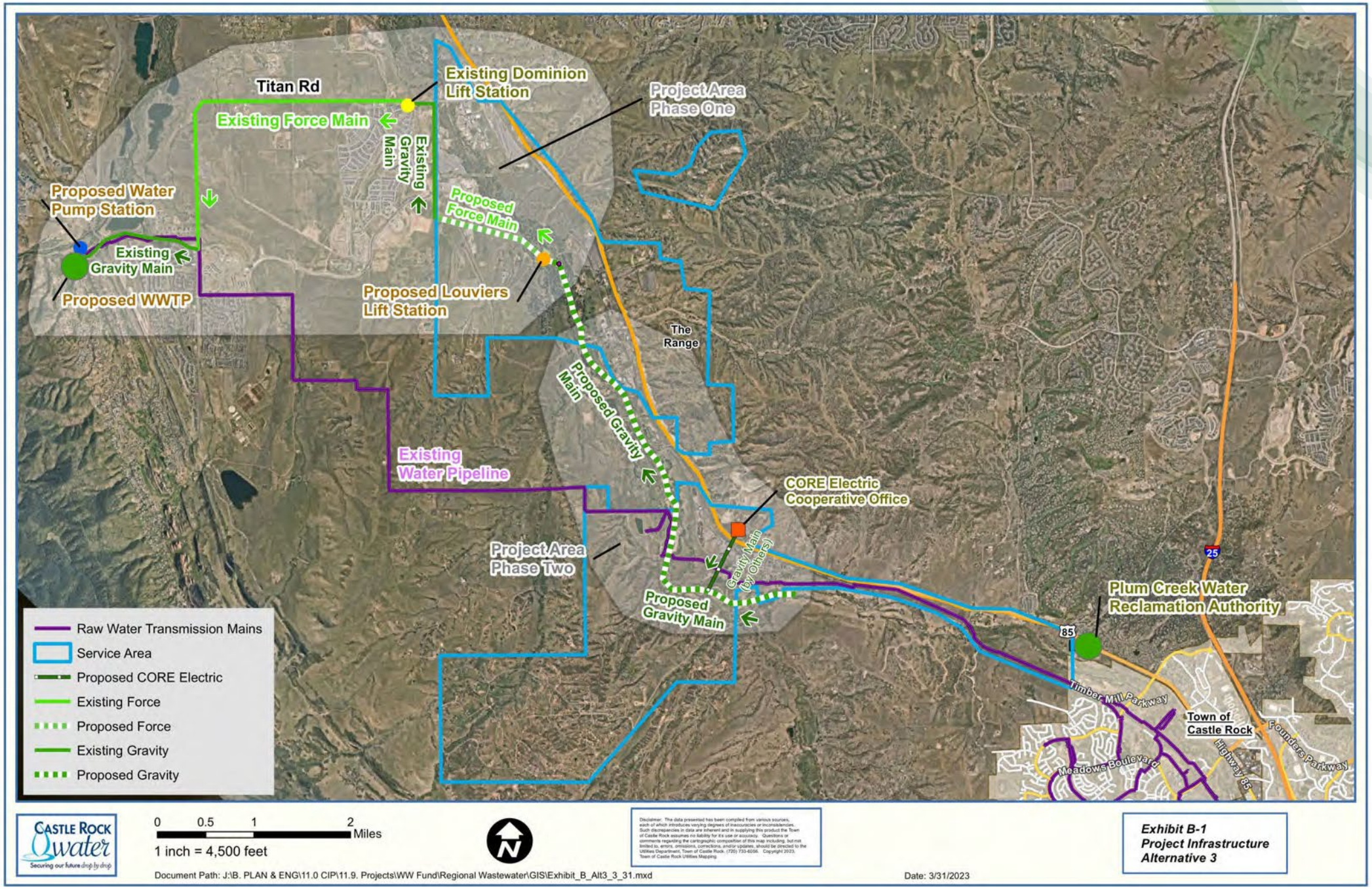
South Platte River Prior to Chatfield Reservoir

REGIONAL WASTEWATER SOLUTION

KEY BENEFITS FOR CHATFIELD RESERVOIR, COUNTY AND CORRIDOR

- Chatfield and Plum Creek water quality
- Reusable water supplies
- Wastewater solutions needed in corridor
- This has been a County priority for years

Louviers Wastewater Treatment Lagoon


Titan Rd
Existing Dominion Lift Station
Project Area Phase One
Existing Force Main
Existing Gravity Main
Proposed Water Pump Station
Proposed Force Main
Existing Gravity Main
Proposed WWTP
Proposed Louviers Lift Station
The Range
Proposed Gravity Main
Existing Water Pipeline
CORE Electric Cooperative Office
Project Area Phase Two
Gravity Main (by Others)
Proposed Gravity Main
Plum Creek Water Reclamation Authority
25
85
Timber Mill Parkway
Town of Castle Rock
Meadows Boulevard
Highway 85
Founders Parkway
Raw Water Transmission Mains
Service Area
Proposed CORE Electric
Existing Force
Proposed Force
Existing Gravity
Proposed Gravity
0 0.5 1 2 Miles
1 inch = 4,500 feet
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Date: 3/31/2023
Exhibit B-1
Project Infrastructure
Alternative 3

REGIONAL WASTEWATER SOLUTION


QUESTIONS?
CHATFIELD WATERSHED AUTHORITY
SINCE 1984
www.chatfieldwatershedauthority.org