BBA Water Consultants

FLANNERY RESERVOIR PURCHASE - LOAN FEASIBILITY STUDY

Prepared for

West Divide Water Conservancy District

Feasibility Study Approval
Pursuant to Colorado Revised Statutes 37-60-121 & 122, and in accordance with policies adopted by the Board, the CWCB staff has determined this Feasibility Study meets all applicable requirements for approval.

Joshua Godwin
Digitally signed by Joshua Godwin
Date: 2024.10.29 19:26:33 -06'00'

Signed Date

August 1, 2024 **2412.00:Flannery**

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LIST OF ACRONYMS AND ABBREVIATIONS

AF	AF
cfs	cubic feet per second
DWR	Colorado Division of Water Resources
CWCB	Colorado Water Conservation Board
TABOR	Tax Payer Bill of Rights
WDWCD	West Divide Water Conservancy District

FLANNERY RESERVOIR PURCHASE - LOAN FEASIBILITY STUDY

SECTION 1 – BACKGROUND

1.1 Purpose

The West Divide Water Conservancy District (referred to hereafter as WDWCD or the District) is seeking a low interest loan to fund the purchase of an existing reservoir, Flannery Reservoir (WDID 3804095) for use in a new plan for augmentation in the Fourmile Creek basin, which is located southwest of the City of Glenwood Springs (Figure 1). Many Fourmile Creek water users rely on non-exempt (i.e., exempt from administration) junior, rural, domestic wells for their water supply and contract with WDWCD to provide a legal water supply through augmentation services. These augmentation contracts allow diversions to continue during times of administration by providing a replacement supply to the controlling water rights in the basin. Within the past year, the existing Fourmile Creek plan for augmentation decreed and amended in Division 5 Case Nos. 94CW344, 02CW225, 05CW148, and 17CW3130 has become fully subscribed and augmentation contracts can no longer be issued. WDWCD continues to receive requests for augmentation services within the Fourmile basin. WDWCD was approached by the seller to purchase the property and existing Flannery Reservoir which are located in the headwaters of Threemile Creek and can make water deliveries to controlling water rights in the Fourmile basin. The reservoir reportedly has a capacity of 88 AF, based on recent survey, and is inspected by the Division of Water Resources Dam Safety branch every other year because it is classified as a significant hazard dam.

The District has negotiated a purchase price of $1.75 million dollars. A total of $1,782,500 dollars is being requested which includes the 1% loan initiation fee as well as $15,000 to cover costs associated with Bond Counsel opinion on TABOR implications.

1.2 Study Area Description

The study area that is served by the proposed project is shown on the attached Figure 1 and is located within Garfield County. The supplies from Flannery Reservoir can augment calls within WDWCD's Fourmile Creek service area, Colorado River service area and via exchange in the Silt Interconnect service area. The Fourmile Creek service area includes all of the Fourmile watershed,

which is tributary to the Roaring Fork River, tributary to the Colorado River. The Colorado River service area extends from Carbondale, CO to DeBeque, CO. The Silt Interconnect service area includes the area north of Silt, CO known as Silt Mesa, Rifle Creek and Elk Creek. Figure 2, attached, shows the on-channel Flannery Reservoir and the point of diversion for the Flannery Ditch. The purchase will convey 100% of the Flannery Reservoir and 1-cfs of the 2.5-cfs decreed to the Flannery Ditch water right for irrigation uses (40%).

The Fourmile Creek watershed is located just outside of the City of Glenwood Springs, CO and has seen considerable growth over the past several decades as population has increased (Figure 3) and availability of housing within the city has become severely limited. Growth within city limits is challenging due to large rivers, steep canyon walls, and other natural features. Area residents have expanded outside of the city limits and into more rural areas, like Fourmile Creek, where they must rely on domestic wells rather than a central municipal system for their domestic water supplies. Colorado water law requires non-exempt wells to be augmented during certain times of the year when they are out of priority to more senior water users. While some users in pre-1972 subdivisions can rely on exempt, household use only well permits, any expanded uses beyond indoor domestic would also require augmentation of all uses. WDWCD currently augments many subdivisions in the Fourmile drainage some of which have tied into the City of Glenwood Springs wastewater making their uses 100% depletive to Fourmile Creek. If non-exempt wells are not augmented, water users face curtailment of their water supplies by the Division of Water Resources as well as the risk of reduced property values.

Land use within the Fourmile Creek watershed is generally residential subdivisions with some limited commercial uses and small-scale agricultural operations. Sunlight Mountain Resort operates in the headwaters of the basin and relies on Fourmile Creek for commercial and snowmaking supplies.

1.3 Previous Studies

The current owner has conducted Dam Safety Hazard Analysis related to Flannery Dam. WDWCD has conducted reconnaissance level yield analysis to understand the reliability of the reservoir water supply.

SECTION 2 – BORROWER INFORMATION

2.1 Description

The West Divide Water Conservancy District (District) was created by decree of the District Court of Garfield County, Colorado, in 1964, pursuant to the Water Conservancy District Act, Title 37, Article 45, CRS 1973, as amended. The District is a political subdivision of the State of Colorado and is empowered to acquire water, acquire rights- of- way for water works, contract with the United States or otherwise to provide for water facilities, assume indebtedness, operate and maintain physical works to distribute water supplies, and levy charges on services provided. The governing body of the District is the Board of Directors consisting of 5 members appointed by the Garfield County District Court Judge.

WDWCD has 492 existing contractees across the various plans for augmentation operated by the District. Each WDWCD augmentation service area has its own enterprise fund which generates revenue through fees for augmentation services. The current rate sheet is included in Appendix A.

The majority of contractees benefit from water leased in Ruedi, Green Mountain, and Wolford Mountain Reservoirs. The District's supplies are summarized in **Table 1**. In addition to these mainstem replacement supplies, the District has quantified and changed historical consumptive use credits for the Atkinson Ditch (Fourmile plan), Evans Ditch and Pioneer Ditch (Colorado River plan). The District also owns and operates reservoirs on Fourmile Creek and East Divide Creeks.

Martin Reservoir Nos. 1, 2, and 3 are located on Fourmile Creek and are largely dedicated to a private augmentation plan for the Oak Meadows subdivision. Of the 39.43 AF available on Fourmile Creek, only 13.48 AF are available to WDWCD for other uses outside of the Oak Meadows subdivision.

Alsbury Reservoir is located on East Divide Creek and has a capacity of 181 AF and is largely used for supplemental irrigation water but does also provide augmentation. The Silt Mesa, Rifle Creek, and Elk Creek augmentation plans are served with mainstem supplies utilized by exchange to provide the District with flexible operations utilizing the infrastructure of the Silt Water Conservancy District.

SECTION 3 – WATER RIGHTS

3.1 Water Availability

The Flannery Reservoir water right was the subject of abandonment due to lack of due diligence in 2003. Recent water court activity in Case No. 20CW3182 in Division 5 has sought a junior water right for Flannery Reservoir and is still before the Water Court. The active capacity of the reservoir, based on a recent survey, is 88 AF. This varies from previous findings that the reservoir stores 105 AF. An independent survey will be conducted for verification of normal storage. The Flannery Ditch, which is used for irrigation by multiple parties, is also associated with the subject purchase. The Flannery Ditch was decreed in Case No. CA0420 in the amount of 2.5-cfs for irrigation uses with an appropriation date of December 15, 1885. Flannery Ditch is senior in priority to the only upstream diversion, the West Threemile Ditch, and has historically called it out of priority when supplies are limited. The historical operation of irrigation uses with the Flannery Ditch will not change and ensures the reservoir operations will be similar to what they have been historically (i.e., no additional upstream use impacting yield) as the ditch, not the reservoir, is the controlling water right. Once the reservoir, land, and water rights have been acquired, a change of use of for the Flannery Ditch will be explored as the location of the reservoir footprint was historically used to grow potatoes and changing a portion of this right could provide a more secure senior fill source for Flannery Reservoir. During times of downstream call, the reservoir inflows can be bypassed through the low-level outlet. Augmentation deliveries have been made to Fourmile Creek through a siphon constructed below the reservoir which discharges into Black Diamond Mine Gulch and enters Fourmile Creek above the Atkinson Ditch. These structures are shown in the attached **Figure 4.**

No stream gages have historically been operated on Threemile Creek to inform a firm yield analysis; therefore, USGS StreamStats as well as historical gaged data on Fourmile Creek were used to estimate the supply to the reservoir in wet, dry, and average years. Gauged streamflow is available from Fourmile Creek from 1942-1947 and 1958-1965. These data were summarized for use as a comparison to the Threemile Creek estimates from StreamStats. Averaged monthly flow on Fourmile Creek shows the peak occurring in May while the Streamstats dataset indicated that Threemile Creek peaked in June. Fourmile Creek has higher elevations than Threemile Creek indicating it would likely peak later than Threemile. Because of this discrepancy the monthly data

from StreamStats for Threemile Creek were shifted one month prior for the "wet" and "average" scenarios. For the "dry" scenario, the data were shifted 2 months prior to mimic an earlier runoff in a year with warmer temperatures. Because we have seen a reduction in recent hydrology the output from StreamStats was considered a "wet" scenario in order to provide a conservative water supply estimate. The "average" scenario was calculated as 75% of the "wet" scenario and the "dry" scenario was calculated as 50% of the "wet" scenario. The resulting datasets for Threemile Creek are shown in **Figure 5**.

Modeling was conducted to estimate a conservative dry, average, and wet year yield to the Flannery Reservoir water right. The model reduces the available streamflow for water rights senior in priority to Flannery, based on historical diversion records, and accounts for the fill of Hughes reservoir which is located downstream from Flannery Reservoir and is senior in priority. The available flow was zeroed during times of call which were assumed by year type and shown in **Table 2**. The dry year call was conservatively assumed to be active from mid-April through October, the average year call from mid-August until the end of October, and the wet year call for September and October. Historical call records in dry years like 2018 and 2020 became active in mid-May. Early season calls typically come from the Flannery Ditch while later season calls come from senior irrigation rights at the Eby Sullivan and Laws Ditch. The results of the modeling are included in **Table 3** and show sufficient inflows to fill the Flannery Reservoir water right in wet, average, and dry years. The analysis was intentionally conservative in terms of water supply and call regime to demonstrate that even in a dry year, this relatively small structure has water supplies available to fill the reservoir.

3.2 Water Supply Demands

The Flannery Reservoir water right will be utilized mainly on Fourmile Creek where the District's existing plan for augmentation is fully subscribed, and no additional water allotment contracts can be issued. The District continues to see demands for augmentation in the Fourmile Creek basin and is seeking this existing supply at Flannery Reservoir for immediate, additional augmentation capacity. The augmentation demands on Fourmile Creek have increased steadily since the plan was initiated in 1994 (**Figure 6**).

Future demands have been projected for 30 years assuming an average annual growth rate of 1.4% based on Colorado Demographer's Office population projections for Garfield County through 2050. **Table 4** illustrates the current and projected demands contrasted against the existing augmentation supplies from the Atkinson Ditch. The existing demands show a 17.7 AF shortfall in supply which has not yet been experienced given the actual call regime. Additionally, the storage available to the District in Martin Reservoir No. 3 can also be used with administrative approval to meet existing demands. Future supply shortfalls are projected to be approximately 107 AF. After considering evaporation drawdown during times of call, the releasable storage from Flannery Reservoir is approximately 62 AF all of which will be needed over the 30-year loan period (58% of projected supply shortfall). This purchase also includes easements that allow for delivery of the 20 AF owned by the District in Hughes Reservoir which has not yet been available for use because the District lacked access to delivery infrastructure. Together with storage in Flannery Reservoir, the purchase provides approximately 77% of the projected shortfall in supply. Additional supplies may need to be developed depending on the actual growth rate experienced and future river call regimes.

SECTION 4 – PROJECT DESCRIPTION – ANALYSIS OF ALTERNATIVES & SELECTED ALTERNATIVE

4.1 Analysis of Alternatives

Three alternatives are considered herein: no action and expansion of the Martin Reservoir system on Fourmile Creek, and the Flannery Reservoir purchase.

4.1.1 No Action

If the District does not move forward with the purchase of Flannery Reservoir, no additional augmentation contracts will be issued on Fourmile Creek and landowners requiring augmentation will need to develop their own augmentation plans and supplies or otherwise acquire the required supplies. This could cost in the thousands to tens of thousands of dollars per water user when engineering, legal, and operations and maintenance expenses are considered.

The No Action alternative would develop no additional water supplies and incur no additional costs to the District. This alternative could potentially have a negative impact on land values if homeowners do not have access to or the means to develop a reliable, legal water supply.

4.1.2 Martin Reservoir Expansion

The District has been studying the feasibility of expanding the Martin Reservoir system in the headwaters of Fourmile Creek to similarly provide additional water supplies to the Fourmile basin given the existing augmentation plan is fully subscribed. These studies have been conducted with state (federal ARPA pass through) and local grants aimed at securing federal construction funding. Preliminary investigations show the reservoir could be constructed to approximately 240 AF which would make much of the remaining Martin Reservoir conditional water right absolute. The original Martin Reservoir was contemplated to be an on-channel reservoir in the amount of 282.67 AF. Over time, small, non-jurisdictional structures were constructed off-channel with changes to this water right. There are three Martin Reservoir alternatives available to the District, however; 28 AF of the existing 39.43 AF available are dedicated to other water users. After considering evaporation and seepage losses, there is approximately 10 AF of water available to the District from the existing supplies at Martin Reservoirs.

4.1.2.1 Outputs, yields, and costs

A new, preliminary concept designed by Colorado River Engineering (**Figure 7**) would rebuild the three existing structures into a single reservoir. This concept is being investigated and several applications for federal construction funding have been submitted but were not successful. The total storage from this structure is anticipated to be approximately 240 AF and the structure would be lined to reduce seepage losses. The firm yield, based on hydrologic analysis, was estimated to be 107 AF with an average yield of 187 AF. The cost to construct the reservoir has been estimated to be $4.5 million dollars. Annual operations and maintenance costs associated with this structure would be similar to those associated with Flannery Reservoir and are estimated at $5,000 per year on average. A summary of the costs associated with this alternative are presented in **Table 5** and compared to the Flannery purchase.

4.1.2.2 Impacts

Wetland delineation and cultural resource studies have been conducted for the Martin Reservoir expansion. Wetland studies show that approximately 0.56 acres of wetlands would be impacted by the project. No cultural resources of any significance were identified. The Martin Reservoir expansion would be on-channel to an Unnamed tributary to Fourmile Creek and would store water from both the unnamed tributary and from Fourmile Creek utilizing a pump station. This project would require up to 240 AF of diversions from Fourmile Creek and its tributaries which would have an impact on available streamflow. A positive impact of augmentation releases from high elevation reservoirs is that cooler water is released to the stream during the most critical periods for the riparian environment.

4.1.2.3 Economic Analysis and Feasibility

The average yield of 187 AF exceeds the 30-year supply shortage of 106 AF by 81 AF. The initial cost of the project is 2.5 times the cost of purchasing Flannery Reservoir and the timeline to access this water supply is likely greater than 3 years. Given the immediate need for additional supplies, this timeline is not ideal. There are also major unknowns associated with permitting for the project which will impact not only the timeline, but also the cost.

4.1.2.4 Institutional Requirements

- The Martin Reservoir expansion project would require at least the following permits:
    - 404 Individual Permit – dredge and fill waters of the U.S.
    - NEPA compliance due to federal funding
    - Garfield County grading permit
    - Garfield County floodplain permit
    - CDPHE 401 Certification
    - CDPHE Stormwater discharge permit
- **Additional actions required:**
    - Secure construction funding
    - Change of water right, SWSP, and plan for augmentation

- Stream management planning
- Land acquisition of private inholding parcel
- Issue water allotment contracts to users

4.1.2.5 Special Considerations

Federal permitting for this project is a major uncertainty in the cost estimate for construction. NEPA compliance and 404 permitting could add significant costs depending on the mitigation actions required by the US Army Corps of Engineers. Additionally, geotechnical studies for this project have indicated the presence of high groundwater which complicates the design as underdrains will be needed to ensure the liner functions properly. The District would also need to purchase or condemn a private inholding parcel that would be inundated by reservoir construction.

4.1.3 Flannery Reservoir Purchase

Flannery Reservoir will supply approximately 62 AF (after accounting for evaporation) of the 106 AF supply shortage projected over the 30-year loan period. Costs are compared to the Martin Reservoir expansion in **Table 5**.

4.1.3.1 Impacts

Because this project is an existing structure, no additional impacts are anticipated beyond the existing reservoir footprint. A positive impact of augmentation releases from high elevation reservoirs is that cooler water is released to the stream during the most critical periods for the riparian environment.

4.1.3.2 Economic Analysis and Feasibility

The existing Flannery Reservoir can provide approximately 62 AF of the 106 acre-foot projected supply shortage over the 30-year loan period. If additional water is needed in the future, there is also potential to expand the capacity of this existing structure to meet future needs. This purchase will also allow the District to deliver water that they own in Hughes Reservoir, located downstream of Flannery Reservoir, to Fourmile Creek. The purchase includes the easements necessary to accomplish these deliveries. The District owns an additional 20 AF in Hughes Reservoir and together with Flannery deliveries provides approximately 77% of the projected supply shortage over the 30-year loan period.

4.1.3.3 Institutional Requirements

This alternative would require the following actions:

- SWSP and file plan for augmentation
- Issue water allotment contracts to water users

4.2 Selected Alternative – Flannery Reservoir Purchase

4.2.1 Project Description

As described above, this is an existing reservoir that includes the easements and infrastructure necessary to deliver water stored in Flannery Reservoir or Hughes Reservoir to controlling water rights on Fourmile Creek, or down Threemile Creek to the confluence with the Colorado River where it can be used as a mainstem augmentation supply. This water is needed immediately to continue to meet existing and future augmentation needs in the Fourmile basin.

4.2.2 Map and Schematic

A map of the existing reservoir and appurtenant structures are included in **Figure 4**. The reservoir and delivery mechanisms are shown schematically in the attached **Figure 8**.

4.2.3 Field Investigations

Because this is an existing structure, there have not been extensive studies or field investigations conducted by the District to-date. The current owner of the reservoir has completed a Hydrology Hazard Assessment for the dam and dam safety inspections are conducted every other year by the Division of Water Resources. In the due diligence period, a new bathymetric survey will be conducted as well as a dam safety inspection by an engineering firm with expertise in dams and reservoirs.

4.2.4 Right-of-Way/Land

This purchase will include the land and rights of way required to operate the reservoir and make deliveries to Fourmile Creek via Black Diamond Mine Gulch as well as from Hughes Reservoir through the Rowher Ditch (**Figure 4**).

4.3 Cost Estimate

The cost associated with the purchase is $1,750,000. The loan request is $1,782,500 to cover the cost of purchase, the 1% loan initiation fee, and $15,000 to cover the cost of Bond Counsel opinion on TABOR implications.

4.4 Implementation Schedule

WDWCD anticipates closing on this purchase on September 3rd, 2024 and will rely on seller bridge financing until the CWCB considers this loan application at the September 2024 board meeting. Once the reservoir purchase is completed, WDWCD will seek a Substitute Water Supply Plan and file a new plan for augmentation utilizing the supplies in Flannery Reservoir, Hughes Reservoir, and supplemented with Martin Reservoirs unallocated capacity.

4.5 Impacts

Because this is an existing facility and no significant modifications to the structure are planned, there are no construction impacts to consider. The proposed water purchase and pending decree will provide legal water supplies for landowners in the Fourmile Creek basin. The additional augmentation capacity ensures landowners requiring legal replacement supplies for their domestic water uses can continue to contract them. Absent these supplies, additional development in the basin would be limited.

4.6 Institutional Requirements

The only institutional actions required for use of the existing structure are water court activities to include the Flannery Reservoir and Hughes Reservoir supplies in a new regional plan for augmentation and substitute water supply plan. Additionally, the District may need to take over Case No. 20CW3182 to ensure storage rights are reinstated as well as adding augmentation uses to the structure. These actions will require applications to the water court, negotiations with any potential opposers, and the Division of Water Resources. All easements and operation agreements are already in place to utilize the water supplies from Flannery Reservoir.

SECTION 5 – FINANCIAL FEASIBILITY/ANALYSIS

5.1 Loan Amount

The total cost to purchase the reservoir is $1,750,000. The loan request is $1,782,500 to cover the cost of purchase as well as the 1% loan initiation fee and $15,000 to cover the cost of bond counsel opinion. Based on municipal projects for middle income areas, the District anticipates an interest rate of 3.35% for a 30-year term.

5.2 Financing Sources

The reservoir will be purchased by loan. Initially, the loan will be secured with seller financing until CWCB considers this low interest loan application.

5.3 Revenue and Expenditure Projections

Utilizing the 2020-2023 financial audits, revenues and expenditures under the District's business activities were projected for the 30-year life of the loan. Table 6 illustrates the District's trends in revenue and expenditures as well as the conservative assumptions used in the projections. Interest income is highly variable year to year and depends on the current interest rate in reserve accounts. For a conservative estimate, interest income was assumed to be constant at $19,610 or 50% of the average value. Trends in charges for services are typically positive, but also highly variable. The minimum annual increase of 3.7% was utilized as an annual escalating factor in the projection. Similarly, expenses (other than water leasing) show a negative trend. It was assumed that expenses will likely increase at the maximum value of 3.6% per year. Water leasing was assumed to be constant over the 30-year loan (these are all long-term contracts) at $67,000.

The revenue and expenditure projections include the annual loan payment as well as the required reserve payment. The results are provided in **Table 7**. Overall, the projection shows the District can meet the loan repayment obligation over the life of the loan. There are many assumptions that go into this analysis. At the end of 2023, the District had liquid cash in excess of 3 million dollars as unrestricted reserves that may be used to meet ongoing obligations to citizens and creditors.

5.4 Loan Repayment Sources

The District revenue sources that will be used to repay the low interest loan include water assessments, interest income, and reserve funds. The District's net financial position at the end of 2023 for enterprise activities was $4,254,138 which includes capital assets and reserves.

5.5 Financial Impacts

Based on revenue and expenditure projections for the life of the loan, the District can meet the anticipated loan repayment expenses. The District does not rely on property taxes as revenue in Enterprise funds. Once an augmentation plan or SWSP is approved, the District will begin receiving additional revenue from issuing water allotment contracts utilizing this supply. Based on the water available for delivery and the annual loan repayment, water allotment contract fees could be issued in 0.5 acre-foot increments and cost in the range of $600-900 per contract depending on use type. These costs have been estimated only and will require Board consideration of realized costs prior to being approved and finalized.

5.6 TABOR

Bond counsel has been secured by the District to understand their TABOR status. In the event the District is TABOR-restricted, the District will be unable to raise rates without a vote of the people or receive loan funds. The District has received no non-federal pass through grants in 2024 that would impose a TABOR limitation.

The District has applied for a Colorado Water Plan grant in 2024; contracting for this work may need to be delayed until 2025 in order to remain in compliance with TABOR in 2024 and allow the District to receive this low interest loan.

5.7 Collateral

The District pledges revenues from fees for services and cash reserves as collateral for repayment of the loan.

5.8 Sponsor Creditworthiness

Copies of the District's current rate sheet and three annual audits are attached for reference in Appendix A.

SECTION 6 – CONCLUSIONS AND RECOMMENDATIONS

This loan feasibility study has highlighted both the need for the project facilities as well as the ability for the District to repay this low interest loan. There is an immediate need to continue to provide augmentation services in the Fourmile basin and this purchase would allow for a Substitute Water Supply Plan and subsequent Decreed Plan for Augmentation to be sought.

The revenue and expenditure projections illustrate the ability of the District to repay the loan. District reserve funds provide additional assurance in the event of unforeseen revenue shortfalls.

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FIGURES

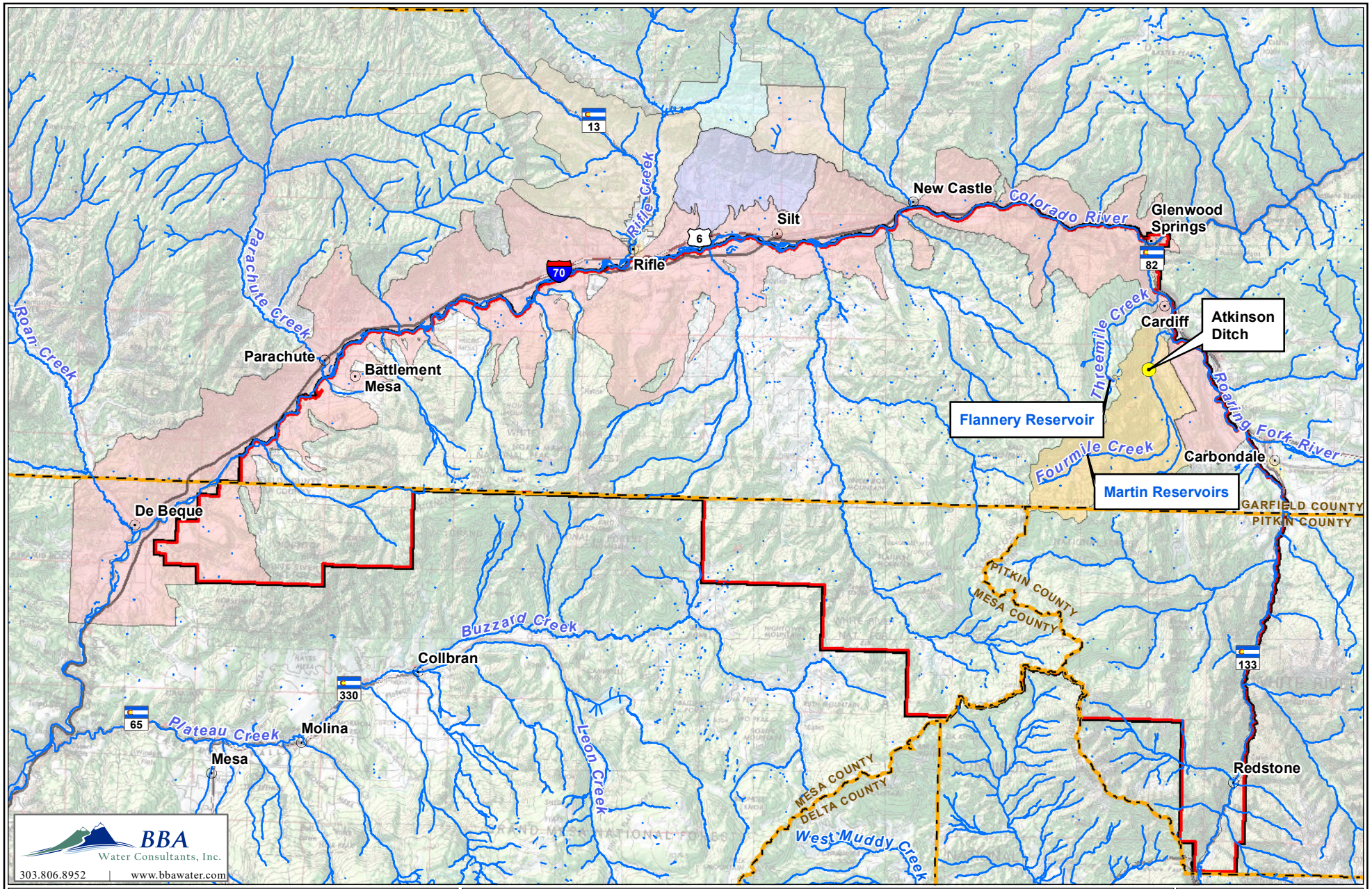

Figure 1
Study Area

Date: 8/1/2024 | Job No. 2412.00

Legend

- Water Right Structure
- Colorado River Service Area
- Fourmile Service Area
- Silt Mesa Service Area
- Upper Rifle Creek Service Area
- Lower Rifle Creek Service Area
- Elk Creek Service Area
- WDWCD District Boundary

Data Source: CDSS, CDOT, USGS, BLM

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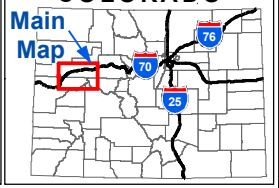

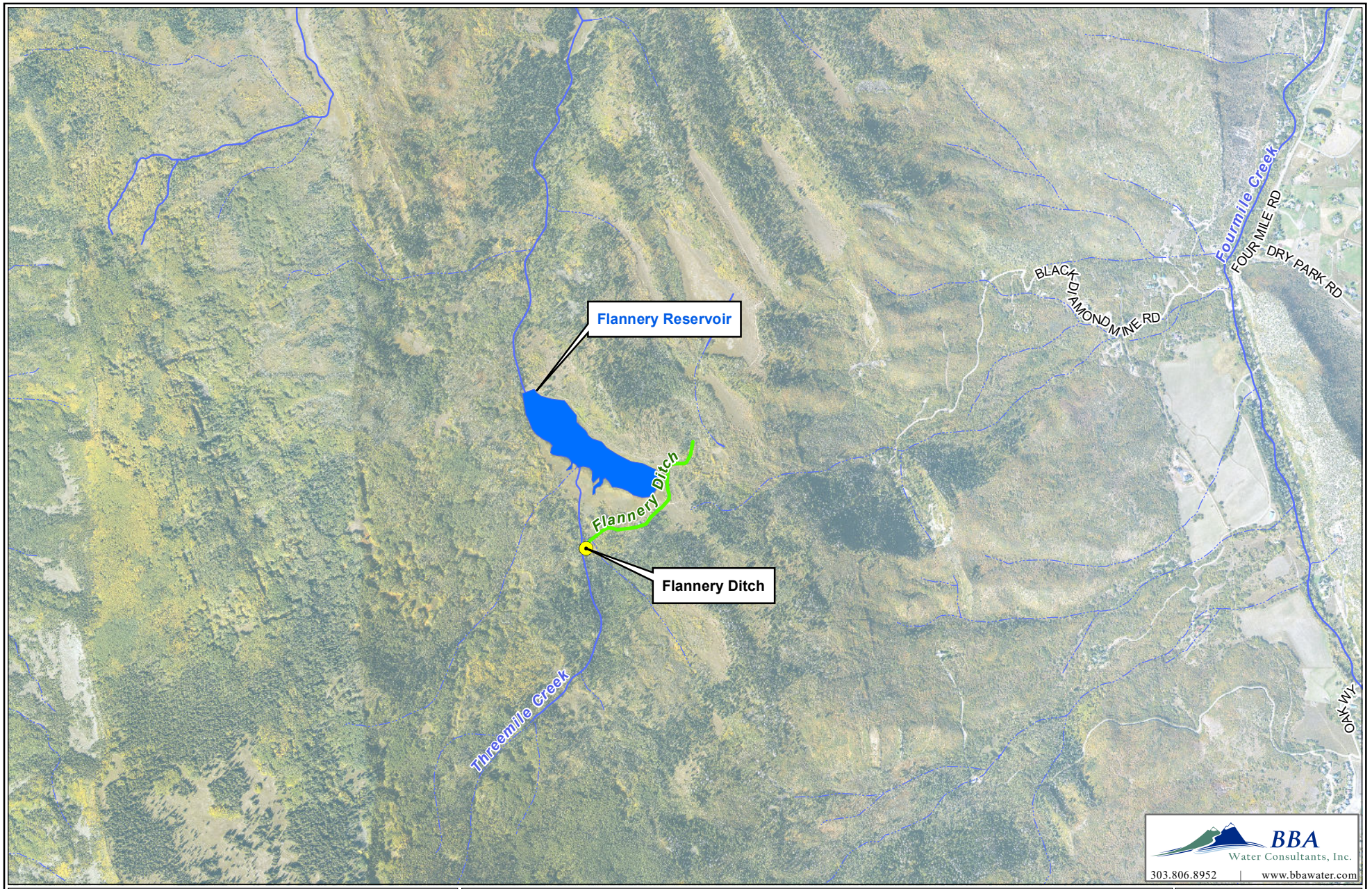

Figure 2
Water Supply Sources

Date: 8/1/2024 | Job No. 2412.00

Legend

- Water Right Structure

Aerial Photo Date: 9/24/2023 NAIP USDA
Data Source: CDSS, CDOT, USGS, BLM

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COLORADO

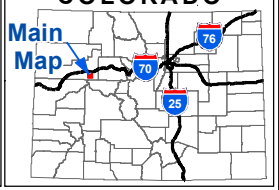
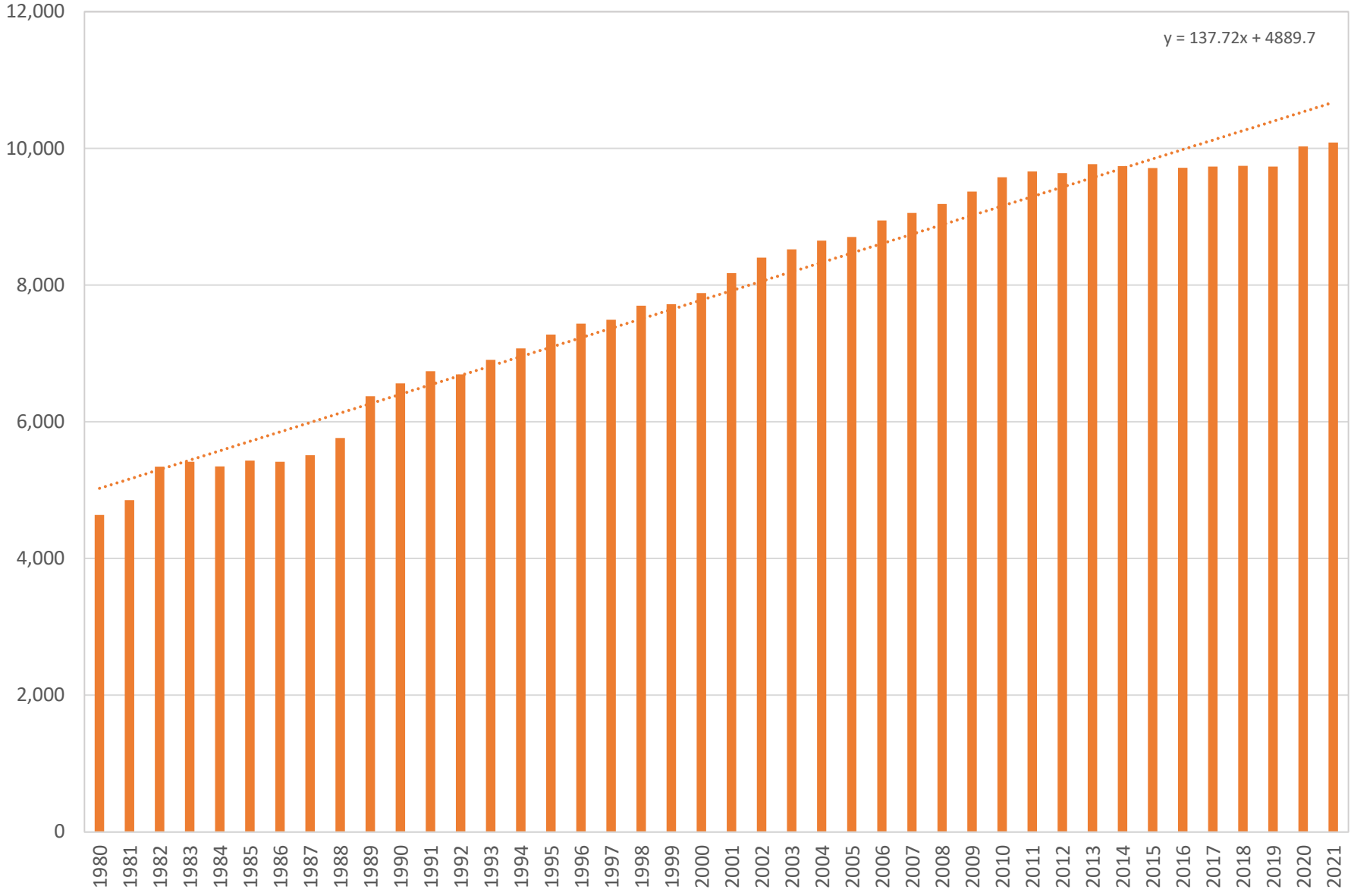


Figure 3: Glenwood Springs, CO Population Time Series (1980 - 2021)



https://demography.dola.colorado.gov/assets/html/muni.html

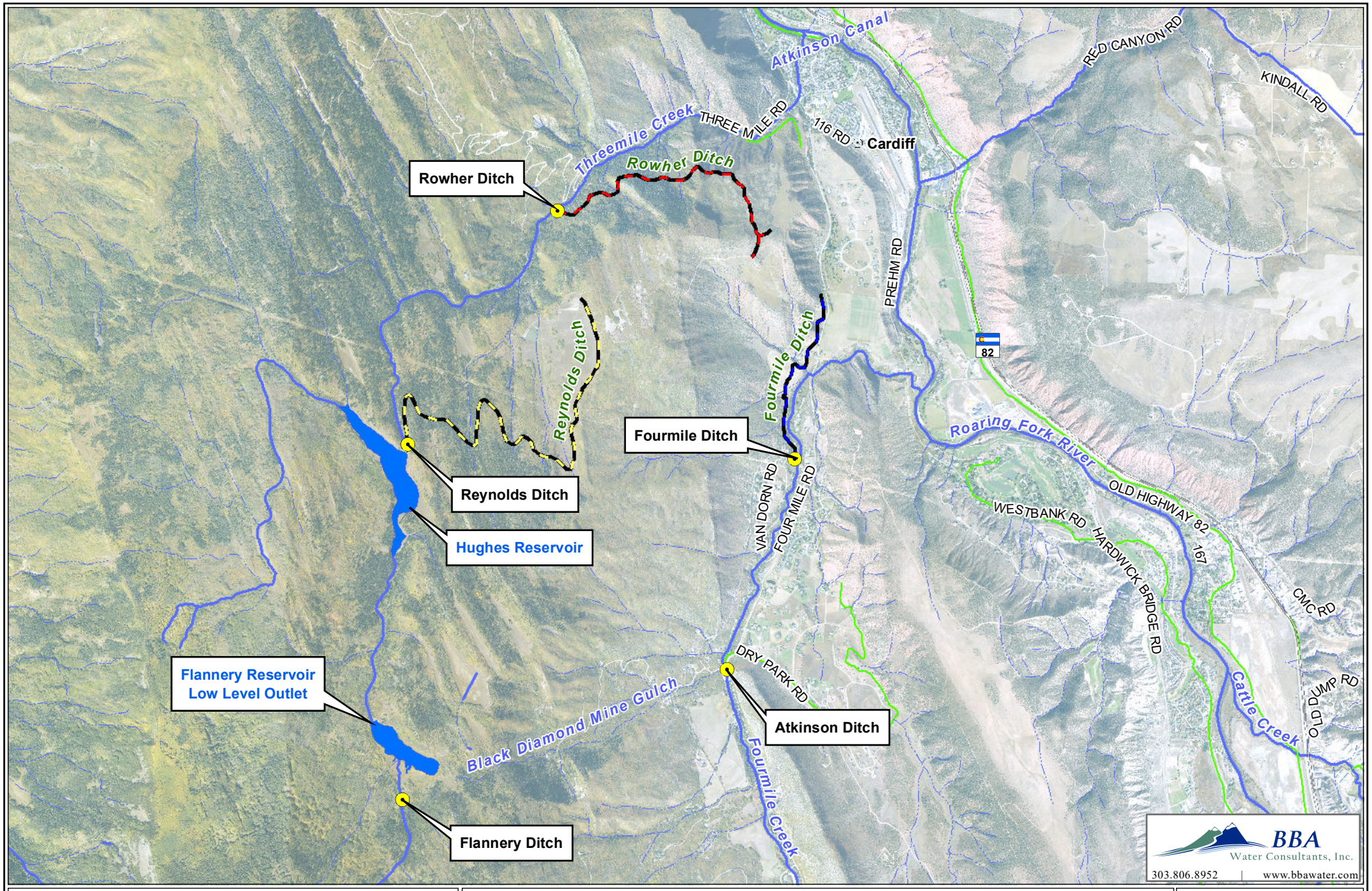


Figure 4
Selected Alternative - Flannery

Date: 7/29/2024 | Job No. 2412.00

Legend

- Water Right Structure

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W E
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0 4,000 8,000
Feet

Aerial Photo Date: 9/24/2023 NAIP USDA
Data Source: CDSS, CDOT, USGS, BLM

COLORADO

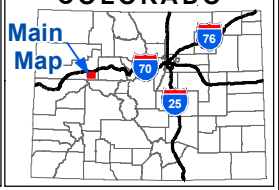


Figure 5: Threemile Creek Flow Scenarios

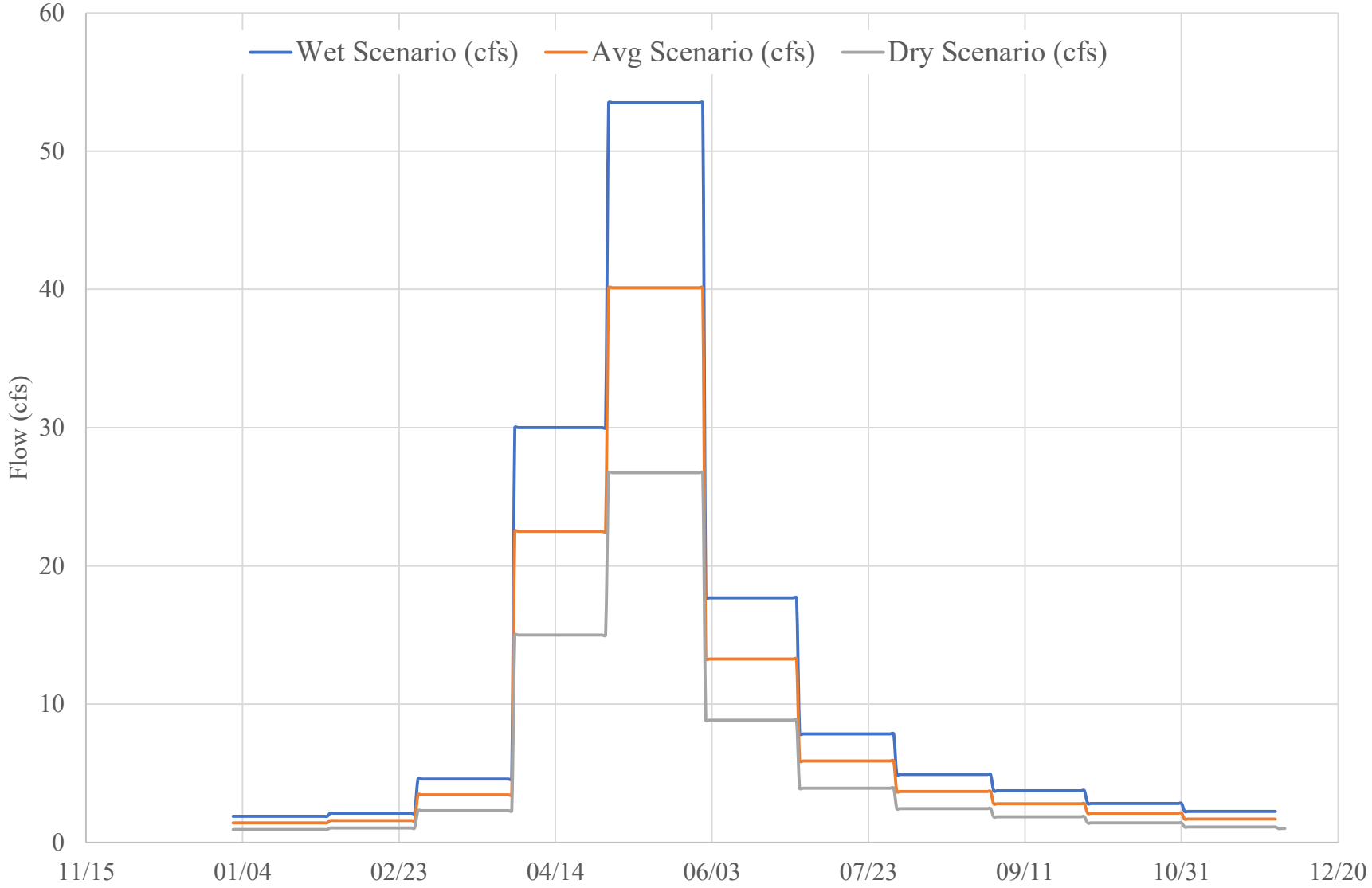
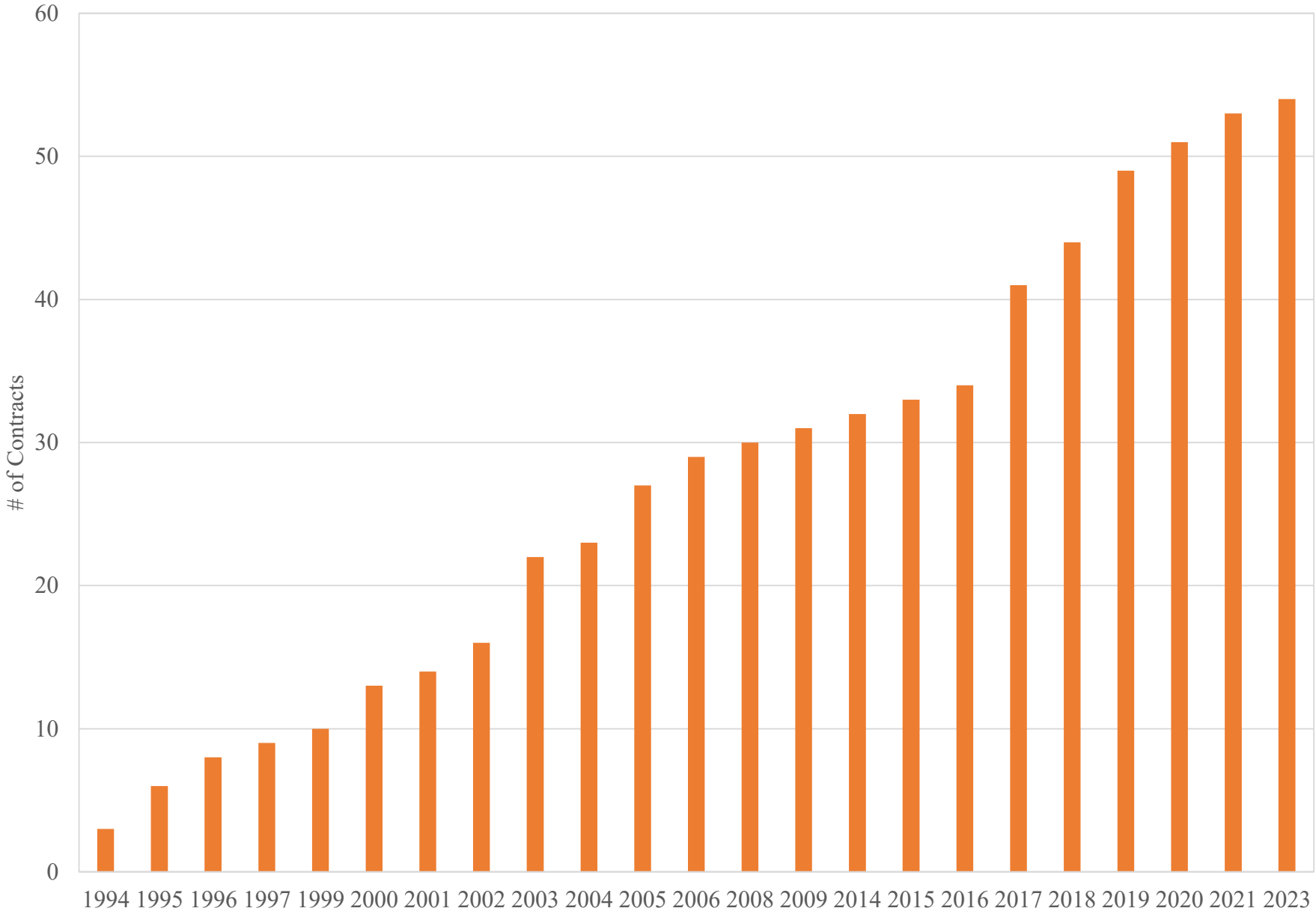
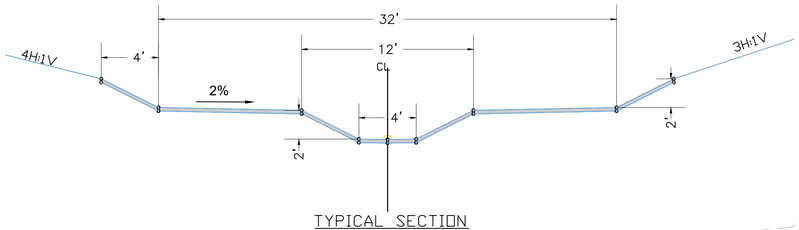
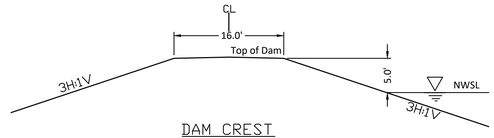


Figure 6: Cumulative Number of Fourmile Contracts 1994-2023





TYPICAL SECTION
BYPASS/SPILLWAY CHANNEL



DAM CREST
TYPICAL SECTION

8775' Top of Dam elev
8770' Normal Water Elev 9.49 acres
3H:1V slopes
8735' Bottom of Reservoir 4.24 acres
Volume 240 ac-ft

Headgate & Flume Diversion
Stream Channel & Spillway Bypass
2" Diameter Spillway Pipeline
2" Diameter Fill Pipeline
Martin Reservoir 3
Martin Reservoir 2
Martin Reservoir 1
Reclaimed area
Reclaimed area
2" Diameter Outlet Pipe
XSEC 1
XSEC 2
XSEC 3
Borrow or Fill Areas
Borrow or Fill Areas
Fourmile Creek
BRIDGE

PLAN VIEW

10/30/23

Engineer's Seal

This Drawing Not Valid Unless Latest Revision Initials Are Handwritten						Original Drawing Preparation		
No.	Description	By	Date	Approved	Date		By	Date
1						Drawn	CM	12/22
2						Checked	CM	12/22
3						Approved	--	--
4						Client Approved	--	--
5								

Permit Set, Not for Construction

COLORADO RIVER ENGINEERING INCORPORATED
PO Box 1301
Rifle, CO 81650
Tel 970-625-4933

CLIENT: WDWCD
Rifle Co

PROJECT:

SHEET TITLE: SITE PLAN
Martin Res Concept

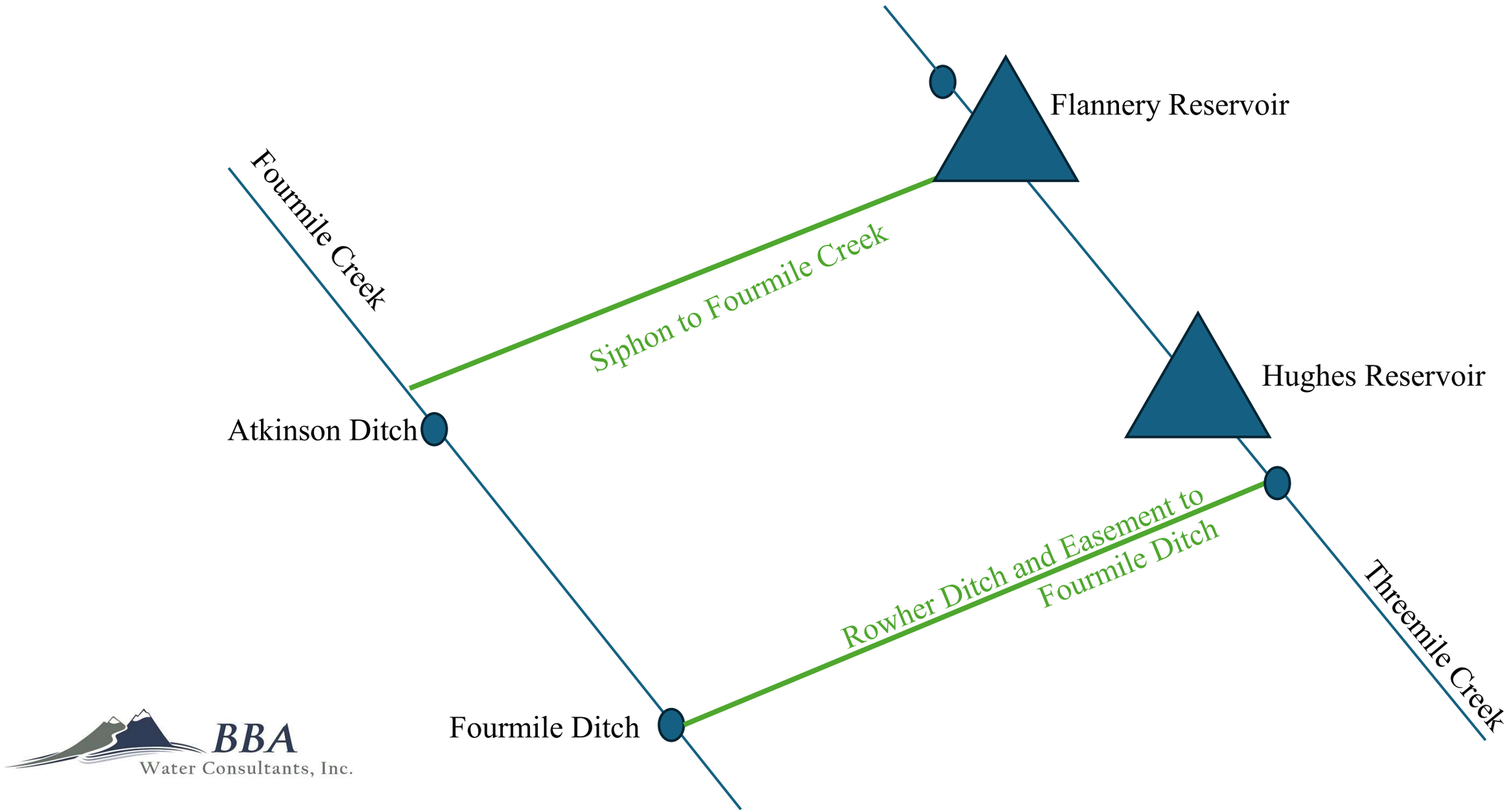
SEO FILE #:

CRE FILE: C:\Users\Chris\Desktop\CREMartinDesign.dwg

SHEET NO. OF #

Revision 0

Figure 8: Schematic of Flannery and Hughes Delivery to Fourmile Creek



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TABLES

Table 1: Available Augmentation Supplies		
Colorado River		
	Amount (AF)	Amount (cfs)
Ruedi I (USBR)	100	
Ruedi II (USBR)	500	
Ruedi II (CRWCD)	100	
Ruedi II (CRWCD Option to Lease)	900	
Wolford Mountain	10	
Green Mountain(USBR)	200	
Evans Ditch CU Credits	102.51	
Pioneer Ditch CU Credits	47.6	
Total Current Reservoir Supply	**910**	
Additional Reservoir Supply Available	**900**	
Total HCU Credits	**102.51**	
Divide Creek		
Alsbury Reservoir**	150	
Total	**150**	
Fourmile Creek		
Atkinson Ditch (agreement with Fourmile Ditch)***	180	0.5
Martin Reservoir #1	9.25	
Martin Reservoir #2	13.7	
Martin Reservoir #3	16.48	
Total	**39.43**	**0.5**
Rifle Creek/Silt Mesa		
Harvey Gap Storage Limits	100	
Silt Interconnect Operating Limits	200	2
Total*	**0**	**0**
*Exchange water from Colorado River Sources ** Total storage less dead pool. ***Volume assumes a 182 day season		

Table 2: Threemile Creek Call Scenarios

Month	1 = Dry Year Call	2 = Avg Year Call	3 = Wet Year Call
Jan	0%	0%	0%
Feb	0%	0%	0%
Mar	0%	0%	0%
Apr	53%	0%	0%
May	100%	0%	0%
Jun	100%	0%	0%
Jul	100%	50%	0%
Aug	100%	100%	0%
Sep	100%	100%	100%
Oct	100%	100%	100%
Nov	0%	0%	0%
Dec	0%	0%	0%

Table 3: Water Available to Flannery Reservoir	
Year Type	**Water Availability (AF)**
Wet	5799
Average	3971
Dry	544

Table 4: Existing and Future Demands vs. Existing Supplies													
Demand Scenario	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Total**
Existing Demands	3.6	3.2	3.6	18.8	29.6	36.0	35.4	31.2	28.5	22.6	3.8	3.7	219.98
30-Year Projected* Demands	5.35	4.73	5.44	28.16	44.31	53.81	53.03	46.64	42.71	33.84	5.66	5.53	329.22
Max Call Scenario				53%	100%	100%	100%	100%	100%	100%			
Existing Augmentation Requirement	0.00	0.00	0.00	10.56	31.17	37.85	37.30	32.81	30.04	23.80	0.00	0.00	203.52
30-Year Aug Requirement	0.00	0.00	0.00	15.81	46.64	56.65	55.82	49.10	44.96	35.62	0.00	0.00	304.59
Atkinson Ditch Supply**	0	0	0	29.7	30.69	29.7	30.69	30.69	29.7	30.69	0	0	211.86
Unmet Current Demands	0.00	0.00	0.00	0.00	0.48	8.15	6.61	2.12	0.34	0.00	0.00	0.00	17.69
Unmet Future Demands	0.00	0.00	0.00	0.00	15.95	26.95	25.13	18.41	15.26	4.93	0.00	0.00	106.62

*Assumes average annual growth rate of 1.4% based on State Demography Office Projections for Garfield county

** Atkinson Ditch Supply based on allowable 0.5 cfs augmentation limitation provided by agreement with Fourmile Ditch

Table 5: Alternative Cost Comparison		
Category	**Martin Expansion**	**Flannery Purchase**
Purchase/Construction Cost	$ 4,500,051.56	$ 1,782,500.00
Annual O&M	$ 5,000.00	5,000
Avg Annual Delivery (af)	187	62
Loan Term	30	30
Loan Rate	3.35%	3.35%
Total Interest	$2,702,865.81	$1,070,622.83
Total O&M	$ 150,000.00	$ 150,000.00
Total Amortized Capital Cost	$ 7,352,917.37	$ 3,003,122.83
Annual Amortized	$ 245,097.25	$ 100,104.09
Cost Per Unit Output	$ 1,310.68	$ 1,614.58

Table 6: Revenue and Expenditure Trends and Projection Assumptions						
Audit Year	**Interest Income**	**Interest Trend**	**Charges For Services**	**Revenue Trend**	**Expenses**	**Expenses Trend**
2020	$ 14,348.00		$ 306,235.00		$ 252,438.00	
2021	$ 2,363.00	-83.5%	$ 336,962.00	10.0%	$ 230,199.00	-8.8%
2022	$ 37,973.00	1507.0%	$ 349,335.00	3.7%	$ 238,580.00	3.6%
2023	$ 102,195.00	169.1%	$ 428,767.00	22.7%	$ 235,758.00	-1.2%
Avg	**$ 39,219.75**	**530.9%**		**12.1%**		**-2.1%**
Projection Assumptions	**$ 19,609.88**			**3.7%**		**3.6%**

Table 7: Revenue and Expenditure 30-Year Projection										
	Revenues			Expenditures						Balance
Year	Charges for Services**	Interest Income	Total	Legal/Eng/General*	New O&M	Water Lease	Loan Repayment	Reserve Funds	Total	Net Revenue
2023	$ 428,767.00	$ 19,609.88	$ 448,376.88	$ 235,758.00	$ 5,000.00	$ 67,000.00	$ 95,104.09	$ 9,510.41	$ 412,372.50	$ 36,004.37
2024	$ 445,240.91	$ 19,609.88	$ 464,850.79	$ 244,562.24	$ 5,000.00	$ 67,000.00	$ 95,104.09	$ 9,510.41	$ 421,176.74	$ 43,674.04
2025	$ 462,347.78	$ 19,609.88	$ 481,957.66	$ 253,695.27	$ 5,000.00	$ 67,000.00	$ 95,104.09	$ 9,510.41	$ 430,309.77	$ 51,647.88
2026	$ 480,111.92	$ 19,609.88	$ 499,721.80	$ 263,169.37	$ 5,000.00	$ 67,000.00	$ 95,104.09	$ 9,510.41	$ 439,783.87	$ 59,937.93
2027	$ 498,558.59	$ 19,609.88	$ 518,168.47	$ 272,997.27	$ 5,000.00	$ 67,000.00	$ 95,104.09	$ 9,510.41	$ 449,611.77	$ 68,556.69
2028	$ 517,714.01	$ 19,609.88	$ 537,323.88	$ 283,192.19	$ 5,000.00	$ 67,000.00	$ 95,104.09	$ 9,510.41	$ 459,806.69	$ 77,517.19
2029	$ 537,605.41	$ 19,609.88	$ 557,215.28	$ 293,767.83	$ 5,000.00	$ 67,000.00	$ 95,104.09	$ 9,510.41	$ 470,382.33	$ 86,832.95
2030	$ 558,261.07	$ 19,609.88	$ 577,870.94	$ 304,738.41	$ 5,000.00	$ 67,000.00	$ 95,104.09	$ 9,510.41	$ 481,352.92	$ 96,518.03
2031	$ 579,710.35	$ 19,609.88	$ 599,320.23	$ 316,118.69	$ 5,000.00	$ 67,000.00	$ 95,104.09	$ 9,510.41	$ 492,733.19	$ 106,587.04
2032	$ 601,983.75	$ 19,609.88	$ 621,593.63	$ 327,923.95	$ 5,000.00	$ 67,000.00	$ 95,104.09	$ 9,510.41	$ 504,538.45	$ 117,055.17
2033	$ 625,112.93	$ 19,609.88	$ 644,722.80	$ 340,170.07	$ 5,000.00	$ 67,000.00	$ 95,104.09	$ -	$ 507,274.16	$ 137,448.64
2034	$ 649,130.77	$ 19,609.88	$ 668,740.64	$ 352,873.52	$ 5,000.00	$ 67,000.00	$ 95,104.09	$ -	$ 519,977.61	$ 148,763.03
2035	$ 674,071.41	$ 19,609.88	$ 693,681.28	$ 366,051.37	$ 5,000.00	$ 67,000.00	$ 95,104.09	$ -	$ 533,155.46	$ 160,525.82
2036	$ 699,970.31	$ 19,609.88	$ 719,580.19	$ 379,721.33	$ 5,000.00	$ 67,000.00	$ 95,104.09	$ -	$ 546,825.43	$ 172,754.76
2037	$ 726,864.29	$ 19,609.88	$ 746,474.16	$ 393,901.80	$ 5,000.00	$ 67,000.00	$ 95,104.09	$ -	$ 561,005.89	$ 185,468.27
2038	$ 754,791.58	$ 19,609.88	$ 774,401.45	$ 408,611.82	$ 5,000.00	$ 67,000.00	$ 95,104.09	$ -	$ 575,715.92	$ 198,685.53
2039	$ 783,791.88	$ 19,609.88	$ 803,401.75	$ 423,871.19	$ 5,000.00	$ 67,000.00	$ 95,104.09	$ -	$ 590,975.28	$ 212,426.47
2040	$ 813,906.41	$ 19,609.88	$ 833,516.29	$ 439,700.40	$ 5,000.00	$ 67,000.00	$ 95,104.09	$ -	$ 606,804.50	$ 226,711.79
2041	$ 845,178.00	$ 19,609.88	$ 864,787.88	$ 456,120.75	$ 5,000.00	$ 67,000.00	$ 95,104.09	$ -	$ 623,224.84	$ 241,563.03
2042	$ 877,651.09	$ 19,609.88	$ 897,260.97	$ 473,154.30	$ 5,000.00	$ 67,000.00	$ 95,104.09	$ -	$ 640,258.40	$ 257,002.57
2043	$ 911,371.85	$ 19,609.88	$ 930,981.72	$ 490,823.97	$ 5,000.00	$ 67,000.00	$ 95,104.09	$ -	$ 657,928.06	$ 273,053.66
2044	$ 946,388.21	$ 19,609.88	$ 965,998.09	$ 509,153.49	$ 5,000.00	$ 67,000.00	$ 95,104.09	$ -	$ 676,257.59	$ 289,740.50
2045	$ 982,749.96	$ 19,609.88	$ 1,002,359.84	$ 528,167.52	$ 5,000.00	$ 67,000.00	$ 95,104.09	$ -	$ 695,271.62	$ 307,088.22
2046	$ 1,020,508.79	$ 19,609.88	$ 1,040,118.66	$ 547,891.62	$ 5,000.00	$ 67,000.00	$ 95,104.09	$ -	$ 714,995.72	$ 325,122.95
2047	$ 1,059,718.37	$ 19,609.88	$ 1,079,328.24	$ 568,352.30	$ 5,000.00	$ 67,000.00	$ 95,104.09	$ -	$ 735,456.40	$ 343,871.84
2048	$ 1,100,434.44	$ 19,609.88	$ 1,120,044.32	$ 589,577.08	$ 5,000.00	$ 67,000.00	$ 95,104.09	$ -	$ 756,681.17	$ 363,363.14
2049	$ 1,142,714.89	$ 19,609.88	$ 1,162,324.77	$ 611,594.48	$ 5,000.00	$ 67,000.00	$ 95,104.09	$ -	$ 778,698.57	$ 383,626.19
2050	$ 1,186,619.83	$ 19,609.88	$ 1,206,229.70	$ 634,434.11	$ 5,000.00	$ 67,000.00	$ 95,104.09	$ -	$ 801,538.20	$ 404,691.50
2051	$ 1,232,211.66	$ 19,609.88	$ 1,251,821.53	$ 658,126.67	$ 5,000.00	$ 67,000.00	$ 95,104.09	$ -	$ 825,230.76	$ 426,590.77
2052	$ 1,279,555.20	$ 19,609.88	$ 1,299,165.07	$ 682,704.01	$ 5,000.00	$ 67,000.00	$ 95,104.09	$ -	$ 849,808.11	$ 449,356.97

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APPENDIX A

West Divide Water Conservancy District
Schedule of Revenues, Expenses and Changes in
Net Position - Budget (Non-GAAP) and Actual
Silt Interconnect Enterprise Fund
For the Year Ended December 31, 2023

	Original Budget	Final Budget	Actual	Final Budget Favorable (Unfavorable)
Operating Revenues				
Charges for services	$ 52,850	$ 52,850	$ 59,641	$ 6,791
Total operating revenues	52,850	52,850	59,641	6,791
Operating Expenses				
Legal	2,750	2,750	2,035	715
Operating Expenses	6,577	6,577	6,577	-
Recording Fees	150	150	262	(112)
Water leasing/usage	1,300	1,300	1,285	15
Miscellaneous	8,060	8,060	7,955	105
Personnel service expense	4,500	4,500	4,932	(432)
Engineering	4,000	4,000	325	3,675
Total operating expenses	27,337	27,337	23,371	3,966
Operating income budget basis	25,513	25,513	36,270	10,757
Non-operating revenues				
Interest income	100	100	306	206
Total non-operating revenues	100	100	306	206
Change in net position - Budget basis	$ 25,613	$ 25,613	$ 36,576	$ 10,963

The accompanying notes are an integral part of these financial statements.

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APPENDIX B

Steve Beckley, Owner

Flannery Reservoir (DAMID: 380212)
Hydrology Hazard Assessment

February 2022

Prepared by

SGM

259 Grand Ave, Suite 200
Grand Junction, CO 81501
970. 245.2571

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StreamStats Services Version: 1.2.22
NSS Services Version: 2.1.2