



← please see State engineers comments and add to report

As noted in the submitted report, we are requesting that the water sufficiency findings be waived until Final Plat

WATER RESOURCE REPORT

GRANDVIEW RESERVE PUD/ PRELIMINARY PLAN

August 13, 2021
Updated September 29, 2021
Updated December 10, 2021

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The State had 4 primary comments:

1. Evidence of approval of the formation of the GRMD district.
Exhibit 4 includes the Order and Decree forming the District.
2. A complete summary of the water rights owned and controlled by GRMD and evidence of that ownership or control.
Removed references to LFH water not yet owned by GRMD to clarify and proof of ownership of Arapahoe water included in Exhibit 4.
3. Anticipated demand due to commitments for service entered into by GRMD that are not yet supplied.
Text and Service Commitment Letter updated to clarify that none of the 466.67 annual acre-ft are committed to any other development.
4. Clarification of the proposed uses by the Grandview Reserve subdivision and evidence that the proposed water sources can legally be used for such purposes.
The change applications to modify the determinations as necessary have been filed and are enclosed in Exhibit 4.



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1.0 WATER RESOURCE REPORT

A. Summary of the Proposed Subdivision

The purpose of this report is to discuss the specific water and wastewater needs of the proposed Grandview Reserve development in Falcon, Colorado.

The project consists of 768.23 acres and roughly 3,260 Single Family Equivalent (SFE) water users (consisting of single family residences, commercial, recreation center, church and a school), located between Eastonville Rd and Highway 24, within Sections 21, 22, 27, and 28, all in Township 12 South, Range 64 West of the 6th Principal Meridian. Residential properties within the development will be provided water services through the Grandview Reserve Metropolitan District (GRMD) that is currently being reviewed by El Paso County. GRMD will consist of 4 subdistricts with the initial district (Filing 1) being submitted in August 2021. Filing 1 will contain 568 residential lots along with a church and recreation center.

GRMD will own and operate an interconnected Denver Basin well system that will collect raw water, be treated, stored, and distributed to the project. It is anticipated that three water treatment facilities will be needed throughout the project.

Projected Land Uses: Lands within the subject area have been planned as suburban use consisting of residential, institutional, commercial and open space. Filing 1 will consist of residential, recreation center, church and open space use.

Refer to Appendix A, Exhibit 1 for the Land Plan for the entire project and the initial Filing and Exhibit 1a for the Water Service Area.

B. Information Regarding Sufficient Quantity of Water

i. Calculation of Water Demand

It is expected that each SFE in Grandview Reserve will require an average of 0.353 annual acre-feet of water (domestic and irrigation use). This anticipated water demand is consistent with historic needs for nearby developments.



Table 1a below summarizes the overall water demand estimations for GRMD.

Table 1a: Water Supply and Demand Summary – Full Buildout

Description	SFE's	Demand/SFE (AF/Year)	Total Demand (AF/Year)
Single Family Residences	3260	0.353	1,150.78
School	10		3.53
Recreation Center	4.3		1.52
Church	5		1.77
Commercial	59.5		21.00
Grand Totals	3,338.8		

Notes:

- Commercial demand is anticipated at 3.5 SFE's per acre (3.5*17=59.5 SFE)
- Church and school SFE's are anticipated to be similar to other churches and schools in the Falcon area.

Demand for housing, commercial, and institutional development is dynamic; therefore, the Grandview Reserve Filings buildout will commence as market demands dictate.

Table 1b below summarizes the overall water demand estimations for Filing 1.

Table 1b: Water Supply and Demand Summary – Filing 1

Description	SFE's	Demand/SFE (AF/Year)	Total Demand (AF/Year)
Single Family Residences	568	0.353	200.50
Recreation Center	4.3		1.52
Church	5		1.77
Grand Totals	577.3		203.79

Notes:

- Church and school SFE's are anticipated to be similar to other churches and schools in the Falcon area.

Refer to Appendix A, Exhibit 2 for the Water Supply Information Sheet for Filing 1.

ii. Calculation of Quantity of Water Available

Large capacity wells, mostly in the Arapahoe and Laramie-Fox Hills formations, will provide water for the Grandview Reserve Filing 1.

- The total annual water demand for 577.3 SFE's is calculated to be 203.79 AF.
- 4 Site Investments, the property owner, conveyed 140,000 AF of Arapahoe



non-tributary water to Grandview Reserve Metropolitan District (GRMD). Refer to Appendix A, Exhibit 4 for documentation related to the ownership of the underlying Arapahoe Aquifer water rights.

- The adjoining 4 Way Ranch owns 242,850 AF of Laramie-Fox Hills non-tributary water.
- 4 Site Investments is under contract to purchase 131,250 AF of the Laramie-Fox Hills water right. Refer to Appendix A, Exhibit 5.
- The Laramie-Fox Hills water right shall be conveyed from 4 Site Investments to the Grandview Reserve Metropolitan District (GRMD) after 4 Site Investments closes on them.
- Water from the Arapahoe and Laramie-Fox Hills formations is Non-Tributary, Non-Renewable water.

Table 2 below summarizes the overall water supply available for GRMD.

Table 2: Water Supply Summary

Decree	Owner	Aquifer	Total Volume (AF)	Annual Acre-Feet (300 Year Basis)
510-BD	4 Site Investments	LFH	131,250	437.50
511-BD	GRMD	Arapahoe	140,000	466.67
	Total Supply		271,250	904.17

Grandview Filing 1 Annual Demand: 203.79 AF
300-Year Quantity Available: 904.17 AF

While both LFH and Arapahoe water is intended to be used for Filing 1, it is important to note that the Arapahoe water right owned by GRMD is sufficient to meet the 300-year quantity needed for Filing 1.

iii. Groundwater Source Information

There are two water right determinations 510-BD and 511-BD within 4-Way Ranch for the Denver Basin to be used for the proposed development. Both the Arapahoe and Laramie Fox Hills aquifers are determined to be fully non-tributary, non-renewable. Augmentation is not required for this supply.

iv. Production Wells Information

The water demand for Filing 1 will be met using Arapahoe (A) and Laramie-Fox Hills (LFH) wells. The number of wells required for Grandview Reserve Filing 1 will depend on well production rates. Typically, each well site will consist of a A and LFH well. Potential well site locations are shown in Appendix A, Exhibit 3 along with the collection system and water distribution configuration.

Each well site is assumed to produce approximately 120 GPM based on the yields from nearby wells. Depending on the well yields, Filing 1 may require as many as 3 well sites. Assuming that the wells are pumped 18 hours per day, 3 well sites are projected to produce 388,800 gallons per day. The actual number of wells will be determined based on the well yields observed during test pumping.

v. Surface Water Sources [N/A]



C. Information Regarding Sufficient Dependability of Water Supply

i. Proof of Ownership

The Grandview Reserve Metropolitan District will provide water to the subject property. The District will use the available supply shown in Table 2. Refer to Appendix A, Exhibit 4 for a discussion on current ownership, contracts and process to transfer ownership of LFH water right to GRMD.

Refer to Appendix A, Exhibit 4 for the Water Rights associated with Table 2.

Refer to the Appendix A, Exhibit 5 for the contract to purchase LFH water rights, that will be used in conjunction with the A water rights for Filing 1 per Table 1b.

ii. Financial Plan

Refer to the District Service Plan enclosed as Appendix A, Exhibit 8.

iii. Description of Water Supply

Treatment Facility: Water treatment will be in the form of a treatment facility utilizing pressure-sand filtration. The proposed treatment facility will be sized for Filing 1 projected peak day demands and shall be planned to expand to twice that capacity. Additional treatment facility(s) will be required to meet demands above that. Pressure-sand treatment systems are utilized by many other metropolitan districts in the Falcon area for Denver Basin water. They are typically used to treat secondary contaminant levels in source water (iron and manganese), primarily for aesthetics (taste and odor). Refer to Appendix A, Exhibit 3 for the potential Water Treatment Facility locations.

Storage Facility: Water storage will have to be sized for the largest demand in the development to meet International Fire Code standards. That fire-flow volume will be added to the Average Daily Demand to establish the required water storage volume. The storage tank(s) for Filing 1 are anticipated to be located adjacent to the proposed Water Treatment Facility.

Distribution/Transmission: Distribution lines will likely be PVC, adequately sized to convey fire-flows throughout the subdivision. They will be constructed by GRMD. No other districts are planned to provide water or infrastructure for GRMD water system. The project and subsequent filings will be looped to provide redundancy and reliability of the system.

iv. Calculation Demonstrating Quantity [N/A]

v. Evidence of Water System Source

The water collection and distribution system will be construction with this development. Available capacities are stated above. Refer to Appendix A, Exhibit 6 for the GRMD water commitment letter.

vi. Evidence of Short-Term Supply for Fire



water quality information required for water sufficiency at preliminary plan stage

Acknowledged. Wells are not yet drilled. GRMD has requested WQ results from MSMD A-6.

The water delivery system will include a storage tanks that will be sized for fire flow as stated above. Additionally, distribution lines shall be sized to convey fire-flows as determined by the International Fire Code. The tank and treatment facility will include standby power sources to provide redundancy in the event of a system failure. Interconnects with future Filings will occur to provide additional redundancy. Discussions with neighboring Districts are in progress to discuss District interconnects.

D. Information Regarding Sufficient Quality

i. Chemical Analysis of Proposed Water from Each Proposed Source

Water quality analysis shall be made available upon request once well drilling is complete.

ii. Evidence of Compliance with County and State Water Quality Standard

Water quality must meet Colorado Department of Public Health & Environment (CDPHE) regulations for primary drinking water standards.

iii. Discussion of Potential for Water Quality Degradation from On-site and Off-site Sources

All water will be sourced from two underlying aquifers. As design progresses, analysis regarding combing the two water sources will be considered to determine required treatment. Permits will be obtained from CDPHE for the water treatment plant and holding tank.

E. Public and Private Commercial Water Providers [N/A]

i. Information From Commercial Water Providers

The Grandview Reserve development lies within the GRMD service area. There are no other public or private water providers whose service area includes the proposed development. There are two existing water service providers, 4-Way Ranch Metropolitan District and Meridian Service Metropolitan District, whose service areas are adjacent to the proposed development. Neither have the capacity to serve water to the proposed development. Discussions regarding interconnects with both Districts are on-going.

ii. Water Providers Report

GRMD was just formed and as such, has not yet developed water sources or sold water. Appendix A, Exhibit 4 contains information on the water rights the District currently owns. As discussed, the District anticipates acquiring the water right described in Appendix A, Exhibit 5 in the next year. The proposed water system to serve Filing 1 is anticipated to be constructed by the District in the next 12-18 months.

F. State Engineer Summary Narrative

Grandview Reserve is located in El Paso County, east of Falcon, Colorado. The legal description can be found in Appendix A, Exhibit 7. Currently the property is vacant but



is proposed to be a multi-use residential subdivision with commercial and institutional properties. There is one well that is located on the property under permit 273040, that was permitted 03/21/2007. The property proposes to include multiple large-capacity wells to service the subdivision. The wells are within the Denver Basin and include the Arapahoe and Laramie Fox Hills aquifers. The goal of the project is to interconnect multiple well sites and deliver to a centralized water treatment facility. After treatment, the water will be stored in water storage tanks, to be available for the subdivision use for domestic, fire flow and irrigation use. Required quantities are shown in the above sections of the report.

Water Resources Report_V2 comment.pdf Markup Summary 1-13-2022

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Page Label: 1
Author: dsdparsons
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water quality information required for water sufficiency at preliminary plan stage