



October 17, 2023

Kat Hammer, Planner
Arapahoe County Public Works and Development
Transmitted via email: khammer@arapahoegov.com

Re: Case No. CZ23-001, Greenland Estates Acres - 3rd Letter
The NW ¼ of Section 17, Twp. 4 South, Range 63 West, 6th P.M.
Water Division 1, Water District 1
Lost Creek Designated Basin

Dear Kat Hammer:

We have reviewed the submittal concerning the above-referenced proposal to rezone and subdivide 160 acres into 54 residential lots and additional information provided by Justin Reyher on October 13, 2023. The proposed water supply source is new wells withdrawing allocations in the Denver Basin aquifers allocated under Determination of Water Right nos. 4576-BD, 4577-BD, and 4578-BD. This letter supersedes the comments from this office dated September 18, 2023.

Water Supply Demand

The water will be used in 54 residences with an estimated demand of 27 acre-feet/year.

Source of Water Supply

The proposed water supply source is new wells withdrawing allocations in the Denver Basin aquifers allocated under Determination of Water Right nos. 4576-BD, 4577-BD, and 4578-BD for water underlying the property. Determination nos. 4576-BD, 4577-BD, and 4578-BD were approved pursuant to section 37-90-107(7), C.R.S. and the Findings and Orders of the Colorado Ground Water Commission for each determination dated October 10, 2023 for domestic, irrigation, commercial, stock watering, fire protection, and replacement purposes. A summary of these allocations is provided in Table 1 below. The proposed residential water use is allowed by the determinations on the subject property.

Table 1. Water quantified in Determination nos. 4576-BD, 4577-BD, and 4578-BD.

Determination no.	Aquifer	Aquifer Type	100-year allocation (acre-feet/year)	300-year allocation (acre-feet/year)
4576-BD	Laramie-Fox Hills	Nontributary	38.4	12.8
4577-BD	Lower Arapahoe	Nontributary	23.1	7.7
4578-BD	Upper Arapahoe	Nontributary	24.5	8.16
<i>Total</i>			<i>86.0</i>	<i>28.6</i>



The Laramie-Fox Hills, Lower Arapahoe, and Upper Arapahoe aquifers at this location, are located approximately between 1,465 feet to 1,665 feet, 960 feet to 1,105, and 660 feet to 885 feet respectively, below ground surface, depending on the surface elevation. According to Rule 10.4.5.2 of the Rules and Regulations for Water Well Construction, Pump Installation, Cistern Installation, and Monitoring and Observation Hole/Well Construction (2 CCR 402-2), solid steel casing must be installed from the base of the confining layer directly above either the Laramie-Fox Hills or the Lower Arapahoe or the Upper Arapahoe aquifer to either the top of the well or at least 10 feet above the base of the surface casing. Given the depth interval for the above-described aquifers, and the minimum construction requirements of Rule 10.4.5.2, we note for the County's consideration, that the well construction expense will be substantially greater than for wells in similar developments that are proposed to be completed in shallower aquifers.

The proposed source of water for this subdivision is bedrock aquifers in the Denver Basin. The State Engineer's Office does not have evidence regarding the length of time for which this source will be a physically and economically viable source of water. According to section 37-90-107(7)(a), C.R.S., "Permits issued pursuant to this subsection (7) shall allow withdrawals on the basis of an aquifer life of 100 years." Based on this allocation approach, the annual amounts of water allocated in Determination nos. 4576-BD, 4577-BD, and 4578-BD are equal to one percent of the total amounts as shown in Table 1 which together exceed the demand of the subdivision, as determined by Rule 5.3.2.1 of the Designated Basin Rules, 2 CCR 410-1. Therefore, the water may be withdrawn in those annual amounts shown on Table 1 for a maximum of 100 years.

Applications for on lot well permits, submitted by an entity other than the current water right holder (Greenland Investment, LLC) must include evidence that the applicant has acquired the right to the portion of water being requested on the application.

State Engineer's Office Opinion

Based upon the above and pursuant to section 30-28-136(1)(h)(I), C.R.S., it is our opinion that the proposed water supply is adequate and can be provided without causing injury to decreed water rights.

Our opinion that the water supply is **adequate** is based on our determination that the amount of water required annually to serve the subdivision is currently physically available, based on current estimated aquifer conditions.

Our opinion that the water supply can be **provided without causing injury** is based on our determination that the amount of water that is legally available on an annual basis, according to the statutory allocation approach, for the proposed uses on the subdivided land is greater than the annual amount of water required to supply existing water commitments and the demands of the proposed subdivision.

Our opinion is qualified by the following:

The Ground Water Commission has retained jurisdiction over the final amount of water available pursuant to the above-referenced water rights, pending actual geophysical data from the aquifer.

The amounts of water in the Denver Basin aquifer, and identified in this letter, are calculated based on estimated current aquifer conditions. The source of water is from a non-renewable aquifer, the allocations of which are based on a 100-year aquifer life. The county should be aware that the economic life of a water supply based on wells in a given Denver Basin aquifer may be less than the 100 years (or 300 years) used for allocation due to anticipated water level declines. We recommend that the county determine whether it is appropriate to require development of renewable water resources for this subdivision to provide for a long-term water supply.

Additional Comments

While the county's 2018 *Arapahoe County Comprehensive Plan, As Amended Through January 24, 2020*, under Public Facilities And Services contains "Strategy PFS 2.1(b) - Adopt a 300-year Water Supply Requirement" that states: "The County will require new development to provide a 300-year water supply", the county has stated that their legal requirement is currently 100 years. Therefore, our official opinion in this letter is based on 100 years. However, using an allocation approach based on 300 years, the allowed average annual amount of withdrawal would be reduced to one third of those amounts as shown in Table 1 which together exceed the annual demand for this subdivision of 27 acre-feet. As a result, the water may be withdrawn in those annual amounts for a maximum of 300 years.

Additionally, the submittal indicates that a stormwater detention structure will be constructed as a part of this project. The Applicant should be aware that, unless the structure can meet the requirements of a "storm water detention and infiltration facility" as defined in Designated Basin Rule 5.11, the structure may be subject to administration by this office. The Applicant should review Rule 5.11 to determine whether the structure meets the requirements of the Rule and ensure any notification requirement is met.

Please contact Wenli Dickinson at 303-866-3581 x8206 or Wenli.Dickinson@state.co.us with any questions.

Sincerely,



Ioana Comaniciu, P.E.

Water Resources Engineer

Ec: Lost Creek GWMD

Subdivision referral no. 30935

Applicant (erich@frontrangecivil.com, justin@beaconrealestateservices.com)