

PRAIRIE RIDGE Minor Subdivision

WATER QUALITY REPORT

**For
Prairie Ridge
Subdivision**

January 25, 2021

Prepared By:



13511 Northgate Estates Dr., Ste. 250, Colorado Springs, Colorado 80921

Executive Summary:

Water Quality Report – Prairie Ridge Subdivision

Chris D. Cummins of Monson, Cummins & Shohet, LLC, on behalf of the Applicant, Sonship Properties c/o Justin Ensor, (“Owner”), provides the following Water Quality Report in support of the Prairie Ridge subdivision. The undersigned has been practicing water law almost exclusively, for over 17 years, and has substantial experience with Denver Basin groundwater resources, augmentation plans, designated basin replacement plans, subdivision proceedings, and rural water usage, and therefore should be considered a “qualified professional” as concerns water resources, as discussed at Section 8.4.7(B)(1)(c) of the El Paso County Land Development Code. This Report, prepared in conjunction with other professionals, is intended to demonstrate to the El Paso County Planning Commission and the BoCC, the sufficiency in terms of quality of the water rights and resources to be utilized in the proposed Prairie Ridge Subdivision (the “Subdivision”) in northern El Paso County, Colorado.

The Property consists of approximately 39.769 acres located to the south and east of Brown Road, and north of Walker Road, in the SE¼ SE¼ of Section 12, Township 11 South, Range 66 West of the 6th P.M. Each of the 7 lots in the Subdivision is to be provided water and sewer/septic services through an on-site individual well and Individual Septic Disposal Systems (“ISDS”). The proposed subdivision includes seven residential lots, each of approximately 5 acres in size. The sufficiency and adequacy of water resources are described in a separate Water Resources Report.

The water resources to be utilized on the residential lots in the Subdivision is typical of rural residential development in areas near the Black Forest in El Paso County, Colorado. The decree of the Division 1 Water Court in Case No. 06CW100 demonstrates a sufficient quantity and reliability of water to support compliance with El Paso County’s 300-year water supply rules for subdivisions of this nature, and the well-established water quality in the Dawson Aquifer in this part of the County, demonstrates a sufficient water quality consistent with Section 8.4.7(3)(d), and combined with quality testing completed for a nearby Dawson aquifer well, demonstrates a sufficient water quality.

I. INTRODUCTION

The purpose of this report is to provide a preliminary outline of the water quality necessary for approval of the Prairie Ridge minor subdivision, as proposed.

1.1 **New Development Description:** The Subdivision consists of approximately 39.769 acres located to the south and east of Brown Road, and north of Walker Road, in the SE¼ SE¼ of Section 12, Township 11 South, Range 66 West of the 6th P.M. The Property will be subdivided into seven lots. **Exhibit A**, attached hereto, is a plat for the Subdivision as proposed, prepared by Owner’s consultants at M.V.E, Inc., including an area/vicinity map.

II. PROJECTION OF WATER NEEDS

2.1 Analysis of Water Demands: It is expected that the seven residential lots in the Subdivision, will utilize seven individual wells drilled to the Dawson aquifer, to be utilized for domestic-type uses, including in-house, landscape/irrigation of lawn and gardens, and watering of domestic animals and stock. None of these wells have been constructed to date. It is anticipated that the residences on each lot will utilize a maximum total of 1.0 annual acre feet of water. The Dawson aquifer wells are anticipated to produce water at a flow rate of 10 to 15 gallons per minute, based upon past experience. Based on past experience with the numerous Dawson aquifer wells serving rural residential properties throughout El Paso County, this rate of production should be more than sufficient to meet demand for in-house use.

III. PROPOSED WATER QUALITY

3.1 Water Rights: A decreed plan for augmentation to allow for the use of the underlying not-nontributary Dawson aquifer was approved by the Division 1 Water Court on April 13, 2007, and the sufficiency and dependability of such water supplies are described in a separate Water Resources Report.

3.2 Source of Supply: Rural residential water supply demand will be met using not-nontributary Dawson aquifer formation wells. Consistent with El Paso County Land Development Code Section 8.4.7(B)(3)(c)(v), a subdivision utilizing individual wells need not make a further showing as to source of supply.

3.3 Water Quality and Treatment: The water quality in the Dawson aquifer in this area is well established as being suitable for potable use with only in-house filtration for mineral deposits, with an estimated 27,000 households in El Paso County currently utilizing Denver Basin wells. See June 15, 2015 Gazette article – “*Where there is a well, there is a way...*”, attached hereto as **Exhibit B**. While no wells have to date been constructed on the property, an existing neighboring well was sampled, and Owner has obtained new water quality testing from such well with Division of Water Resources Permit No. 280006. So as to ensure compliance with Land Development Code Section 8.4.7(B)(3)(d), and all provisions of LDC Section 8.4.7(B)(10), Owner obtained full-spectrum water quality testing on said neighboring well, including chemical analysis (see LDC §8.4.7(B)(10)(a)), testing against all applicable MCL’s established by the EPCDHE (see LDC §8.4.7(B)(10)(b)), and analysis of all major ions (see LDC §8.4.7(B)(10)(c)). Such samples were collected by a professional representative of Owner pursuant to explicit instructions provided by Owner’s Colorado-certified testing laboratory, Colorado Analytical Laboratories, Inc. (“CAL”), who likewise assisted in maintaining a proper chain of custody on all such samples (see LDC §8.4.7(B)(10)(d)). All samples tested by CAL were obtained from the Dawson aquifer at an existing well neighboring the project site and within ½ mile (see LDC §8.4.7(B)(10)(e)). Owner believes the full-spectrum water quality testing evidences that the quality of the source water in the Dawson aquifer does indeed meet all standards of the Colorado Primary Drinking Water Regulations, and therefore believes LDC §8.4.7(B)(10)(f) to be inapplicable, while acknowledging that pursuant to LDC §§8.4.7(B)(10)(h) and (i), all

future water sources must continue to meet all such applicable standards, including other state or federal standards in addition to or supplemental of those of EPCDHE. Copies of those testing results are collectively attached hereto as **Exhibit C**. Newly constructed wells will meet all such regulatory requirements regarding quality testing before being utilized as a residential water source. Finally, while Owner believes the foregoing narrative to be in compliance with LDC §§8.4.7(B)(3)(d)(1) and (2), subsection (3) of such provision requires Owner to identify potential for water quality degradation from on-site and off-site sources – Owner has identified no unusual or atypical on-site or off-site sources of potential contamination which is likely to, or has the real potential to, contaminate the confined Dawson aquifer from which Owner's source water is to be obtained. Owner's requested subdivision of the subject property into approximately 5-acre parcels is typical of the region, as is the proposed water source. Potential contaminates would be non-compliant or poorly located septic systems (which will not be permitted within the subdivision), hazardous material spills, etc., that are contrary to existing law and regulation, and beyond the Owner's control. Barring such misfeasance or malfeasance, Applicant does not believe any on or off-site hazards of note exist.

Respectfully submitted this 25th day of January, 2021.

MONSON, CUMMINS & SHOHET, LLC

/s/ Chris D. Cummins

Chris D. Cummins

cc: Client, M.V.E., Inc.

PRAIRIE RIDGE

A SUBDIVISION OF THE SOUTHEAST ONE-QUARTER OF THE SOUTHEAST ONE-QUARTER OF SECTION 12, TOWNSHIP 11 SOUTH, RANGE 66 WEST OF THE 6TH P.M., EL PASO COUNTY, COLORADO

NOTES:

1.

◦

•

*

◆

Indicates survey monument set with a #4 rebar with Surveyor's Cap, P.L.S. #20681.

Indicates recovered survey monument as noted.

Indicates man-made fill data.

Indicates section corner as noted.
2.

This survey does not constitute a title search by LDC, Inc. to determine ownership or easements of record. For all information regarding easements, rights-of-way and title of record, LDC, Inc. relied upon a Commitment for Title Insurance, prepared by STEWART TITLE OF COLORADO, INC. COLORADO SPRINGS DIVISION, Order No. 200772147JE-2 dated June 29, 2007 at 7:00 a.m.
- Item 10

An easement and right-of-way of unspecified width or location, conveyed to the Mountain View Electric Association, Incorporated, a Colorado Corporation, by instrument dated February 15, 1941, but not recorded until March 7, 1983 in Book 3684 at Page 510. The exact course of said easement is not set forth therein.
- Item 11

Terms, conditions and provisions of, and chargers associated with a perpetual non-exclusive easement, 30 feet wide, for ingress and egress and utility purposes over and along the North boundary line of the herein described parcel, as created in the instrument recorded September 3, 2004 at Reception No. 204150806.
- Item 12

An easement and right-of-way 20 feet wide, conveyed to the Mountain View Electric Association, Incorporated, a Colorado Corporation, by instrument recorded December 7, 2004 at Reception No. 204200417. The exact course of said easement is not set forth therein.
3.

Prior to the establishment of any driveway, an access permit must be granted by the El Paso County Development Service Department.
4.

Sewage treatment is the responsibility of each individual property owner. The El Paso County Health Department must approve each system and, in some cases, the Department may require an engineered system prior to permit approval.
5.

Basis of Bearings: All bearings are based on a portion of the South line SE1/4 SE1/4 SEC. 12, with a found alloy capped steel pin at its Easterly end and a found alloy capped steel pin at its Westerly end, as shown hereon and assumed to bear S89°04'51"W, a distance of 1335.15 feet.
6.

Unless otherwise indicated, all side and rear lot lines are hereby platted on each side with a ten foot (10') Public Utility and Drainage Easement. The exterior boundary shall have a twenty foot (20') Public Utility and Drainage Easement. The sole responsibility for maintenance of these easements is hereby vested with the individual property owners.
7.

All structural foundations shall be located and designed by a Professional Engineer, currently registered in the State of Colorado.
8.

Individual wells are the responsibility of each individual property owner. Permits for individual domestic wells must be obtained from the State Engineer who by law has the authority to set conditions for the issuance of these permits, subject to the provisions of the decree entered by the Water Court, Water Division 1, in Consolidated Case Nos. 06CW100 (Div. 1) and 06CW20 (Div. 2) on April 13, 2007 (the "Water Decree").

Water in the Denver Basin Aquifers is allocated based on a 100 year aquifer life; however, for El Paso County Development Services purposes, water in the Denver Basin Aquifers is evaluated based on a 300 year aquifer life. Applicants and all future owners in the subdivision should be aware that the economic life of a water supply based on wells in a given Denver Basin Aquifer may be less than either the 100 years or 300 years indicated due to anticipated water level declines. Furthermore, the water supply plan should not rely solely upon nonrenewable aquifers. Alternative renewable water resources should be acquired and incorporated in a permanent water supply plan that provides future generations with a water supply.

Water withdrawal and wells are subject to the terms, restrictions and responsibilities as found within the Water Decree and the Declaration of Covenants, Conditions and Restrictions of Prairie Ridge recorded in the El Paso County records.

NOTE: All wells will be drilled at a minimum of 400' apart.

9.

FEDERAL EMERGENCY MANAGEMENT AGENCY, Flood Insurance Rate Map Number 08041C0325 F, effective date March 17, 1997, indicates the area in the vicinity of this parcel of land to be a Zone X (area determined to be out of the 500 year flood plain).
10.

~~(19339)~~Indicates property address. The addresses exhibited on this plot are for informational purposes only. They are not the legal description and are subject to change.
11.

All property owners are responsible for maintaining proper storm water drainage in and through their property.
12.

Mailboxes shall be installed in accordance with all El Paso County Development Services Department and United States Postal Service regulations.
13.

According to Colorado law you must commence any legal action based upon any defect in this survey within three years after you first discover such defect. In no event may any action based upon any defect in this survey be commenced more than ten years from the date of the certification shown hereon.
14.

The following listed lots have been found to be the most impacted by the listed geologic hazards listed below. Mitigation measures and a map of the hazard areas can be found in the report, Soil, Geology, and Geologic Hazard Study, Prairie Ridge Properties, El Paso County, Colorado, by Entech Engineering, Inc., dated May 31, 2007, and addendum dated September 17, 2007, in File SP-07-016 at the El Paso County Development Services Department:

Potentially shallow groundwater area – Lots 4, 5, 6, and 7

Seasonally shallow groundwater – Lots 4, 5, 6 and 7

Man-made fill – Lots 1, 2, 5 and 6

NOTE: If foundations are to be located within areas of man-made fill, then additional investigation will be required.

NOTE: Septic systems must be setback 25' from areas of Potentially Shallow Ground Water and areas of Seasonally Shallow Ground Water.
15.

The following reports and or letters have been submitted and are on file at the El Paso County Development Services Department: Soils and Geology, Drainage, Water Resources, and Wildfire Mitigation.
16.

No lot or interest therein, shall be sold, conveyed, or transferred whether by deed or by contract, nor shall building permits be issued, until and unless the required public improvements have been constructed, completed, and accepted by Board resolution in accordance with the Subdivision Improvements Agreement between the applicant/owner and El Paso County as recorded under Reception Number _____ in the Office of the Clerk and Recorder of El Paso County, Colorado or in the alternative, other collateral is provided which is sufficient in the judgment of the Board of County Commissioners, to make provision for the completion of said improvements. The developer is responsible for fine grading and placing two (2) inches of compacted gravel on Brown Road from Walker Road to the Emergency Turnaround Easement.

Notwithstanding the foregoing, Subdivider may enter into contracts for the sale of, and sell, convey, or transfer in one transaction all of the residential lots in the Subdivision to a developer or builder prior to completion of the required public improvements in accordance with the Subdivision Improvements Agreement.

17.

Developer shall comply with federal and state laws, regulations, ordinances, review and permit requirements, and other agency requirements, if any, of applicable agencies including, but not limited to, the Colorado Division of Wildlife, Colorado Department of Transportation, U.S. Army Corps of Engineers, and the U.S. Fish & Wildlife Service.
18.

All homes are required to have in-home fire sprinklers installed per NFPA Code 13R, Section 901.2. Sprinkler systems shall be installed, repaired, tagged, and maintained by a FSC-A contractor licensed by the Pikes Peak Regional Building Department.
19.

Site plans shall include topography, width and percent of grade of access roads, landscape, vegetation details including proposed defensible space, locations of structures or building envelopes, existing or proposed overhead utilities, occupancy classification of buildings, structures and their appendages, roof classification of buildings, site water supply systems and anything else deemed necessary by the Fire Code Official. All site plans shall be submitted and approved by the Fire Code Official prior to the issuance of the building permit and prior to combustible construction materials being delivered to the site.
20.

Individual lot owners are responsible for constructing driveways, including necessary drainage culverts from Brown Road per Land Development Code Section 6.3.3.C.2 and 6.3.3.C.3. Due to their length, driveways for Lots 5 and 6 will need to be specifically approved by the Tri-Lakes/Monument Fire Rescue Authority.
21.

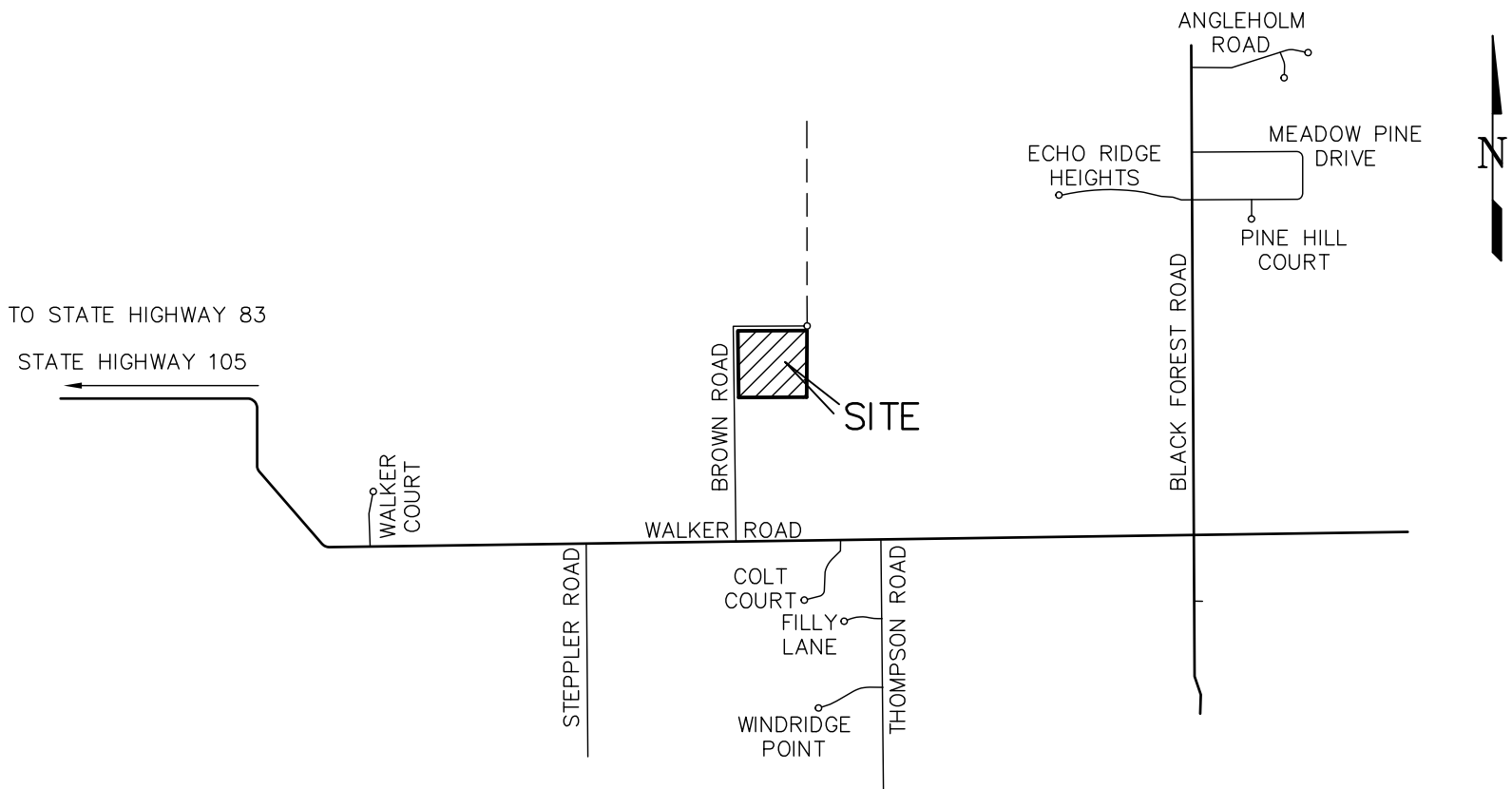
Access Easement shown on Lot 5 is for the benefit of Lot 2's owner with said Easement owned by Lot 5's owner. Maintenance to the driveway of Lot 2's garage is the responsibility of Lot 2's owner.
22.

Access Easement shown on Lot 6 is for the benefit of Lot 1's owner with said Easement owned by Lot 6's owner. Maintenance to the driveway of Lot 1's garage is the responsibility of Lot 1's owner.
23.

The Temporary Right-of-Way Easement within Lot 1 is subject to an Easement Agreement (Reception No. _____, El Paso County, Colorado records). This Easement is to remain in place until such time as Brown Road is extended to the North or West.
24.

The Temporary Emergency Turnaround Easement within Lot 3 and Lot 4 is subject to an Easement Agreement (Reception No. _____, El Paso County, Colorado records).
25.

At time of closing on each lot a sum of \$3,857.00 will be paid to El Paso County to be deposited to the Public Improvement Contribution Fund (Reception No. _____) for off-site public improvements to Brown Road. These funds will be held by El Paso County in a fund setup solely for those improvements.



VICINITY MAP
NO SCALE

SURVEYOR'S CERTIFICATION:

The undersigned Colorado Registered Professional Land Surveyor does hereby certify that the accompanying plat was surveyed and drawn under his direct responsibility and supervision and accurately shows the described tract of land, and subdivision thereof, and that the requirements of Title 38 of the Colorado Revised Statutes, 1973, as amended, have been met to the best of his professional knowledge, belief and opinion.

David V. Hostetler
Colorado Professional Land Surveyor No. 20681

APPROVALS:

This subdivision was approved by the El Paso County Development Services Department this _____ day of _____, 20____ A.D.

Development Services Director

Approved by the Board of County Commissioners of El Paso County, Colorado, this _____ day of _____, 20____ A.D.

Chair

RECORDING:

STATE OF COLORADO }
COUNTY OF EL PASO }SS

I hereby certify that this instrument was filed for record in my office at ____ o'clock ____M., this _____ day of _____, 20____ A.D., and is duly recorded under Reception No. _____ of the records of El Paso County, Colorado.

Robert C. Balink, Recorder

SURCHARGE: _____ BY: _____ Deputy
FEE: _____

EXHIBIT A

KNOW ALL MEN BY THESE PRESENTS:

That K & C RUSHING, LLLP, a Nevada Limited Liability Limited Partnership, being the owner of the following described tract of land to wit:

A parcel of land situated in the the Southeast Quarter of the Southeast Quarter of Section 12, Township 11 South, Range 66 West of the 6th P.M., County of El Paso, State of Colorado, to wit:

The Southeast Quarter of the Southeast Quarter of said Section 12, except the Westerly 30.00 feet for public road purposes, and being described as follows:

Beginning at the Southeast corner of said Section 12, said corner monumented by an alloy capped steel pin marked PLS No. 25361;

thence S89°04'51W, along the South line of the Southeast Quarter of the said Section 12, a distance of 1305.15 feet to a point 30.00 feet Easterly of the Southwest corner thereof, said corner monumented by a plastic capped steel pin marked PLS No. 23875;

thence N00°13'51"W, 30.00 feet Easterly of and parallel with the West line of the said Southeast Quarter of the Southeast Quarter of the said Section 12, a distance of 1325.59 feet to a point on the North line thereof, said corner monumented by a plastic capped steel pin marked PLS No. 23875;

thence N89°01'29"E, along the North line of the said Southeast Quarter of the Southeast Quarter of the said Section 12, a distance of 1307.46 feet to the Northeast corner thereof, said corner monumented by an alloy capped steel pin marked PLS No. 13830;

thence S00°07'55"E, along the East line of the said Southeast Quarter of the Southeast Quarter of the said Section 12, a distance of 1326.90 feet to the Point of Beginning;

Containing 39.769 acres, more or less.

DEDICATION:

The above owner has caused said tract of land to be surveyed and platted into lots, public right-of-way and easements as shown on the accompanying plat, which plat is drawn to a fixed scale as indicated thereon and accurately sets forth the boundaries and dimensions of said tract and the locations of said lots, public right-of-way and easements, and which tract so platted shall be known as PRAIRIE RIDGE, El Paso County, Colorado. Upon acceptance by resolution, all streets so dedicated will become matters of maintenance by El Paso County, Colorado.

IN WITNESS WHEREOF:

The aforementioned, K & C RUSHING, LLLP, a Nevada Limited Liability Limited Partnership, has executed this instrument this _____ day of _____, 20____ A.D.

K & C RUSHING, LLLP, a Nevada Limited Liability Limited Partnership

By: KCR Management Trust dated May 2, 2007, General Partner

Kenneth I. Rushing, Trustee

Carol A. Rushing, Trustee

NOTARIAL:

STATE OF COLORADO }
COUNTY OF EL PASO }SS

The above and aforementioned was acknowledged before me this _____ day of _____, 20____ A.D., by Kenneth I. Rushing, Trustee and Carol A. Rushing, Trustee of the KCR Management Trust dated May 2, 2007, General Partner of K & C Rushing, LLLP, a Nevada Limited Liability Limited Partnership.

Witness my hand and seal _____

My commission expires _____

FEES:

Park Fee: _____ Drainage Fee: _____

School Fee: _____ Bridge Fee: _____

REVISIONS		Date	By
No.	Description		
1	COUNTY COMMENTS	06/13/07	MTC
2	BOUNDARY CONFIGURATION	10/29/07	MTC
3	COUNTY COMMENTS	12/06/07	KLW
4	COUNTY COMMENTS	12/11/07	KLW
5	COUNTY COMMENTS	10/13/08	PAC

H Scale:	N/A	Designed By:	MTC
V Scale:	N/A	Drawn By:	DVH
		Checked By:	
		Date:	07/11/07

Land Development Consultants, Inc.

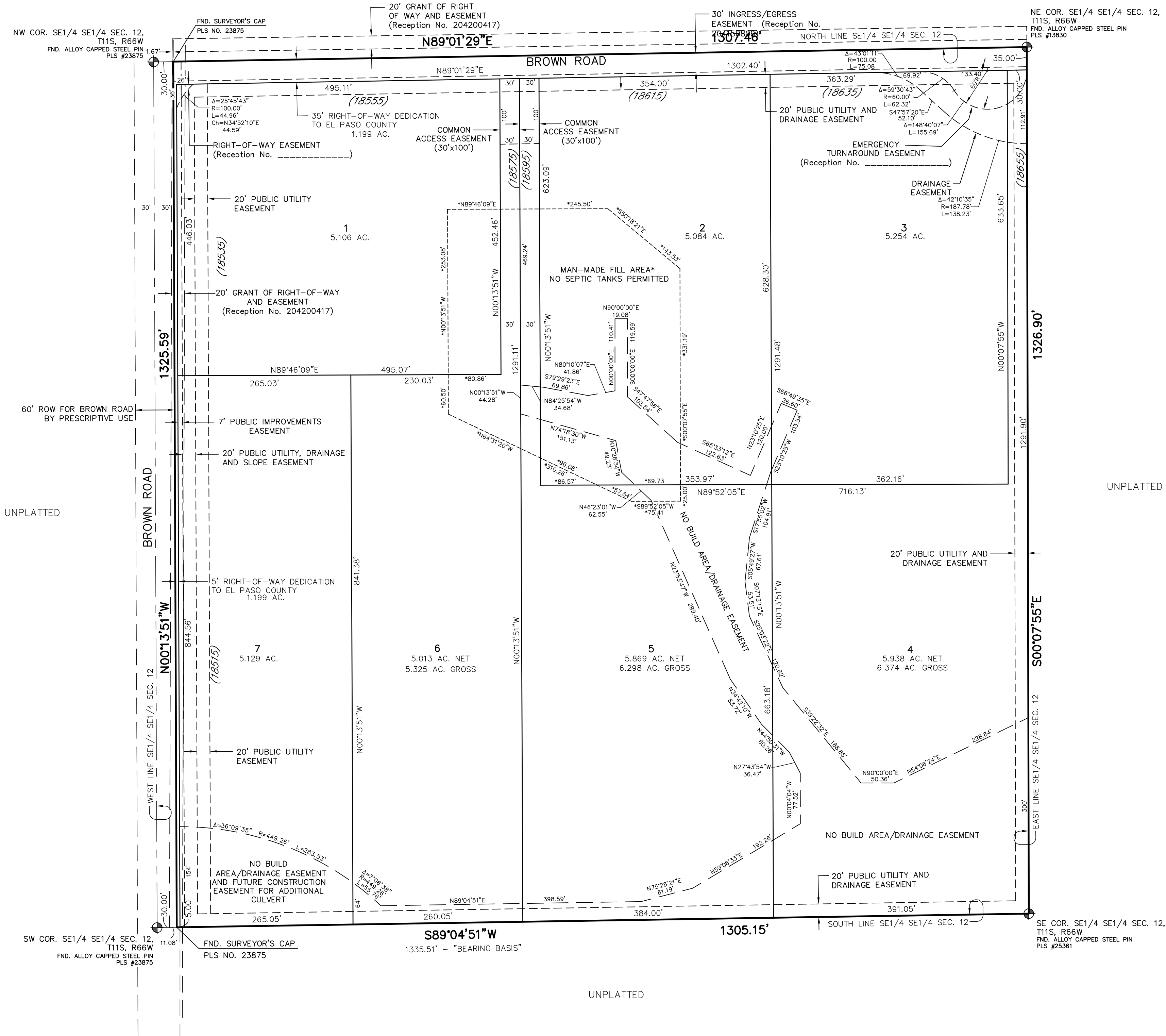
Planning · Landscape Architecture
Engineering · Surveying

www ldc-inc com · TEL: (719) 528-6133 · FAX: (719) 528-6888
2850 Scenicway Circle West · Colorado Springs, CO 80917

FINAL PLAT
PRAIRIE RIDGE

Project No.: 07051
Sheet: 1 of 2

A PORTION OF THE SOUTHEAST ONE-QUARTER OF THE SOUTHEAST ONE-QUARTER OF SECTION 12, TOWNSHIP 11 SOUTH, RANGE 66 WEST OF THE 6TH P.M.,
EL PASO COUNTY, COLORADO



H Scale:	1" = 100'
V Scale:	N/A
Designed By:	
Drawn By:	MTC
Checked By:	DVH
Date:	07/11/07

**Land
Development
Consultants, Inc.**

Planning • Landscape Architecture

Engineering • Surveying

www.ldc-inc.com • TEL: (719) 526-6133 • FAX: (719) 526-6848
2850 Serendipity Circle West • Colorado Springs, CO 80917

Sheet:

Ⓖ The Country Life: Where there's a well, there's a way to get water - hopefully

By: **Bill Radford** (/author/Bill+Radford) • June 15, 2015 • *Updated: June 15, 2015 at 4:10 am*

EXHIBIT C

About 27,000 households are served by individual water wells in El Paso County. BILL RADFORD, THE GAZETTE

[View Gallery !\[\]\(666e09182d4cd268646ea700ea60dcdf_img.jpg\)](/gallery/articleid/1553752/pictures?display=flexFullscreen&galleryTheme=lightTheme) (/gallery/articleid/1553752/pictures?display=flexFullscreen&galleryTheme=lightTheme)

[Log in to comment \(/comments/1/1553752\)](/comments/1/1553752)

When a well was drilled for a neighbor's new home recently, it was another "straw" dipping into the water beneath our feet.

There's a lot of such straws in the area. An estimated 27,000 homes - about 67,500 residents - are served by private water wells in El Paso County. That's about 11 percent of residents; the rest are served by public drinking water systems, from the biggie - Colorado Springs Utilities - to smaller ones such as Donala Water and Sanitation District, Cherokee Metro and the city of Fountain. The public systems draw their water from surface water, groundwater or both.

In eastern El Paso County, where I live, most utilize groundwater - the water that lies beneath the Earth's surface. Our well reaches 870 feet into the Arapahoe Aquifer; it's one of four aquifers that make up the Denver Basin, which stretches from El Paso County to Weld County.

If you're looking for property in the country with plans to dig a well, do your homework first, cautions Mark Birkelo, general manager of Barnhart Pump Co. in Falcon.

"The first phone call you want to make is to a water well contractor," Birkelo said. A company such as Barnhart quickly can check on water quality and quantity in a given area.

"That phone call can save a lot of grief," Birkelo said.

Once a site is chosen, the homeowner must acquire a permit from the state Division of Water Resources. Residential permits include domestic and household use only; the latter means no outside water, so no water for lawns, livestock, etc.

Ready to drill a well? "The cost for drilling and pumping can be considerable," cautions El Paso County's "Code of the West." Expect to pay about \$22 to \$24 a foot for a well 600 feet or deeper, Birkelo said; the cost per foot will be less if under about 600 feet. Barnhart is not a drilling company, but does the oversight for 40 to 50 new wells a year, Birkelo said.

If moving to property with a well, test the water pump's production and the quality of the water, Birkelo advised; for information on water potability testing, visit El Paso County Public Health's website at elpasocountyhealth.org/service/water-quality.

Quality is one issue; quantity is another. One afternoon I turned on the tap and nothing came out. The immediate paranoid thought: Our well had run dry. But we had simply overtaxed the water pump; after a 10-minute break, water started to flow again. But long-term worry remains. As a water resources report on the county's website notes, "the aquifers found in the Denver Basin are not considered to be a long-range, renewable source of water. The bedrock aquifers are subject to depletion if withdrawals exceed the natural recharge rate, which is very slow, given that the water within these aquifers has accumulated over thousands of years. The negligible rate of natural recharge, the considerable increase in water withdrawal, and the semiarid climate of the region have led to a situation where the amount of withdrawal from the aquifers may be exceeding the amount of recharge."

Birkelo, who has been in the water business in El Paso County for 30 years, believes that rate of replenishment

depends on the area. There are some wells that have a higher water level than they did decades before, he said, even though "there have been more straws put into that glass of water over time." In other areas, he has seen water levels drop.

Bottom line: It's tough to know what's happening deep underground, he says. That's why oil companies "spend millions of dollars trying to see what's down there" and often end up with a hole in the ground and nothing to show for it. "We know more about outer space," Birkelo said, "than we do what's under our own two feet."



Quotation for Analytical Services

Quote ID: QBO20090077

Prepared For: Monument Valley Engineers - MVE Ci
1903 Lelaray St

Quote Date: Thursday, September 24, 2020
Turn Around Time: 10 Working Days

Colorado Springs, CO 80909

Attn: David R Gorman, P.E.

CAL Task
201001048

Project:

DEW

Matrix	Description	Method	Qty.	Price - each	Total
Water - Drinking	Langelier Index	N/A	1	\$57.00	\$57.00
Water - Drinking	Alkalinity	SM 2320-B	1	Incl.	Incl.
Water - Drinking	Ca as CaCO3	EPA 200.7	1	Incl.	Incl.
Water - Drinking	Carb/ Bicarb	SM 2320-B	1	Incl.	Incl.
Water - Drinking	Lang Index	SM 2330-B	1	Incl.	Incl.
Water - Drinking	pH/ Temp	SM 4500-H-B	1	Incl.	Incl.
Water - Drinking	TDS	SM 2540-C	1	Incl.	Incl.
Water - Drinking	Nitrate/ Nitrite Nitrogen	Calculation	1	\$0.00	\$0.00
Water - Drinking	Fe - Total	EPA 200.7	1	\$12.00	\$12.00
Water - Drinking	Ag - Total	EPA 200.8	1	\$15.00	\$15.00
Water - Drinking	Al - Total	EPA 200.8	1	\$15.00	\$15.00
Water - Drinking	As - Total	EPA 200.8	1	\$15.00	\$15.00
Water - Drinking	Ba - Total	EPA 200.8	1	\$15.00	\$15.00
Water - Drinking	Be - Total	EPA 200.8	1	\$15.00	\$15.00
Water - Drinking	Cd - Total	EPA 200.8	1	\$15.00	\$15.00
Water - Drinking	Cr - Total	EPA 200.8	1	\$15.00	\$15.00
Water - Drinking	Hg	EPA 200.8	1	\$15.00	\$15.00
Water - Drinking	Mn - Total	EPA 200.8	1	\$15.00	\$15.00
Water - Drinking	Sb - Total	EPA 200.8	1	\$15.00	\$15.00
Water - Drinking	Se - Total	EPA 200.8	1	\$15.00	\$15.00
Water - Drinking	Tl - Total	EPA 200.8	1	\$15.00	\$15.00
Water - Drinking	Zn - Total	EPA 200.8	1	\$15.00	\$15.00
Water - Drinking	Chloride	EPA 300.0	1	\$17.00	\$17.00
Water - Drinking	Nitrate Nitrogen	EPA 300.0	1	\$17.00	\$17.00
Water - Drinking	Nitrite Nitrogen	EPA 300.0	1	\$17.00	\$17.00
Water - Drinking	Sulfate	EPA 300.0	1	\$17.00	\$17.00
Water - Drinking	Fluoride	EPA 300.0	1	\$18.00	\$18.00
Water - Drinking	Total Coliform P/A	SM 9223	1	\$23.00	\$23.00
Water - Drinking	Cyanide-Total	EPA 335.4	1	\$38.00	\$38.00
Water - Drinking	Gross Alpha/Beta (Sub)	SM 7110-B	1	\$56.16	\$56.16
Water - Drinking	Radium 226 (Sub)	SM 7500-Ra B	1	\$75.60	\$75.60



Quotation for Analytical Services

Quote ID: QBO20090077

LABORATORIES, INC.

Water - Drinking	Radium 228 (Sub)	EPA Ra-05	1	\$118.80	\$118.80
Shipping	Cooler Shipment - UPS	UPS	1	\$10.00	\$10.00
Shipping	Sample Shipment to Outside Lab UPS		1	\$30.00	\$30.00

CAL Task

201001048

\$701.56

DEW

Colorado Analytical Laboratory maintains certification by the Colorado Department of Health (CDPHE) and EPA Region 8 for Wyoming and Tribal Public Water Systems to analyze drinking water for organic contaminants (SOC's VOC's), inorganic contaminants (metals), nitrate nitrite, cyanide, fluoride and coliform bacteria.

Sub-Contract analysis pricing subject to change. Sub-Contract radiological analysis turn-around time is 4 to 8 weeks depending on sample matrix.

Billing terms are Net 30 on approved accounts, all other accounts are COD. Additional charges may apply for accelerated turn around.

We appreciate the opportunity to be of service to you. If you have questions please call us at 303-659-2313 or visit us at www.coloradolab.com

C
10
C

L
1:
L

P

W

WW

Analytical Results

TASK NO: 201001048

Report To: David R Gorman, P.E.

Company: Monument Valley Engineers - MVE Civil
1903 Lelaray St
Colorado Springs CO 80909

Bill To: David R Gorman, P.E.

Company: Monument Valley Engineers - MVE Ci
1903 Lelaray St
Colorado Springs CO 80909

Task No.: 201001048
Client PO:
Client Project:

Date Received: 10/1/20
Date Reported: 10/9/20
Matrix: Water - Drinking

Lab Number	Customer Sample ID	Sample Date/Time	Test	Result	Method	Date Analyzed
201001048-01C	Prarie Ridge	10/1/20 10:15 AM	Total Coliform	Absent	SM 9223	10/2/20
			E-Coli	Absent	SM 9223	10/2/20

Abbreviations/ References:

Absent = Coliform Not Detected

Present = Coliform Detected - Chlorination Recommended

Date Analyzed = Date Test Completed

SM = "Standard Methods for the Examination of Water and Wastewater"; APHA; 19th Edition; 1995



DATA APPROVED FOR RELEASE BY

Analytical Results

TASK NO: 201001048

Report To: David R Gorman, P.E.

Company: Monument Valley Engineers - MVE Civil
1903 Lelaray St
Colorado Springs CO 80909

Bill To: David R Gorman, P.E.

Company: Monument Valley Engineers - MVE Ci
1903 Lelaray St
Colorado Springs CO 80909

Task No.: 201001048
Client PO:
Client Project:

Date Received: 10/1/20
Date Reported: 10/9/20
Matrix: Water - Drinking

Customer Sample ID Prarie Ridge
Sample Date/Time: 10/1/20 10:15 AM
Lab Number: 201001048-01

Test	Result	Method	ML	Date Analyzed	Analyzed By
Bicarbonate	48.9 mg/L as CaCO ₃	SM 2320-B	4	10/2/20	ECM
Calcium as CaCO ₃	32.3 mg/L	EPA 200.7	0.1	10/6/20	MBN
Carbonate	< 4 mg/L as CaCO ₃	SM 2320-B	4	10/2/20	ECM
Hydroxide	< 4 mg/L as CaCO ₃	SM 2320-B	4	10/2/20	ECM
Langelier Index	-1.72 units	SM 2330-B		10/7/20	SAN
pH	6.86 units	SM 4500-H-B	0.01	10/1/20	MBN
Temperature	20 °C	SM 4500-H-B	1	10/1/20	MBN
Total Alkalinity	48.9 mg/L as CaCO ₃	SM 2320-B	4	10/2/20	ECM
Total Dissolved Solids	120 mg/L	SM 2540-C	5	10/6/20	ISG

Abbreviations/ References:

ML = Minimum Level = LRL = RL
mg/L = Milligrams Per Liter or PPM
ug/L = Micrograms Per Liter or PPB
mpn/100 mls = Most Probable Number Index/ 100 mls
Date Analyzed = Date Test Completed



DATA APPROVED FOR RELEASE BY

Analytical Results

TASK NO: 201001048

Report To: David R Gorman, P.E.

Company: Monument Valley Engineers - MVE Civil
1903 Lelaray St
Colorado Springs CO 80909

Bill To: David R Gorman, P.E.

Company: Monument Valley Engineers - MVE Civil
1903 Lelaray St
Colorado Springs CO 80909

Task No.: 201001048
Client PO:
Client Project:

Date Received: 10/1/20
Date Reported: 10/9/20
Matrix: Water - Drinking

Customer Sample ID Prarie Ridge
Sample Date/Time: 10/1/20 10:15 AM
Lab Number: 201001048-01

Test	Result	Method	ML	Date Analyzed	Analyzed By	MCL
Nitrate/ Nitrite Nitrogen	1.67 mg/L	Calculation	0.05 mg/L	10/6/20	MAT	
Chloride	2.0 mg/L	EPA 300.0	0.1 mg/L	10/2/20	MAT	
Fluoride	0.18 mg/L	EPA 300.0	0.09 mg/L	10/2/20	MAT	4
Nitrate Nitrogen	1.67 mg/L	EPA 300.0	0.05 mg/L	10/2/20	MAT	10
Nitrite Nitrogen	< 0.03 mg/L	EPA 300.0	0.03 mg/L	10/2/20	MAT	1
Sulfate	4.5 mg/L	EPA 300.0	0.1 mg/L	10/2/20	MAT	
Cyanide-Total	< 0.005 mg/L	EPA 335.4	0.005 mg/L	10/5/20	CES	0.02
Total						
Iron	< 0.005 mg/L	EPA 200.7	0.005 mg/L	10/6/20	MBN	0.3
Aluminum	0.003 mg/L	EPA 200.8	0.001 mg/L	10/2/20	IPC	0.05
Antimony	< 0.0012 mg/L	EPA 200.8	0.0012 mg/L	10/2/20	IPC	0.006
Arsenic	< 0.0006 mg/L	EPA 200.8	0.0006 mg/L	10/2/20	IPC	0.01
Barium	0.0655 mg/L	EPA 200.8	0.0007 mg/L	10/2/20	IPC	2
Beryllium	0.0001 mg/L	EPA 200.8	0.0001 mg/L	10/2/20	IPC	0.004
Cadmium	< 0.0001 mg/L	EPA 200.8	0.0001 mg/L	10/2/20	IPC	0.005
Chromium	< 0.0015 mg/L	EPA 200.8	0.0015 mg/L	10/2/20	IPC	0.1
Manganese	< 0.0008 mg/L	EPA 200.8	0.0008 mg/L	10/2/20	IPC	0.05
Mercury	< 0.0000 mg/L	EPA 200.8	0.0000 mg/L	10/6/20	MLT	0.002
Selenium	0.0012 mg/L	EPA 200.8	0.0008 mg/L	10/2/20	IPC	0.05

Abbreviations/ References:

ML = Minimum Level = LRL = RL
MCL = Maximum Contaminant Level per The EPA
mg/L = Milligrams Per Liter or PPM
ug/L = Micrograms Per Liter or PPB
mpn/100 mls = Most Probable Number Index/ 100 mls
Date Analyzed = Date Test Completed



DATA APPROVED FOR RELEASE BY

Analytical Results

TASK NO: 201001048

Report To: David R Gorman, P.E.

Company: Monument Valley Engineers - MVE Civil
1903 Lelaray St
Colorado Springs CO 80909

Bill To: David R Gorman, P.E.

Company: Monument Valley Engineers - MVE Ci
1903 Lelaray St
Colorado Springs CO 80909

Task No.: 201001048
Client PO:
Client Project:

Date Received: 10/1/20
Date Reported: 10/9/20
Matrix: Water - Drinking

Customer Sample ID Prarie Ridge
Sample Date/Time: 10/1/20 10:15 AM
Lab Number: 201001048-01

Test	Result	Method	ML	Date Analyzed	Analyzed By	MCL
<i>Total</i>						
Silver	< 0.0005 mg/L	EPA 200.8	0.0005 mg/L	10/2/20	IPC	
Thallium	< 0.0002 mg/L	EPA 200.8	0.0002 mg/L	10/2/20	IPC	0.002
Zinc	0.006 mg/L	EPA 200.8	0.001 mg/L	10/2/20	IPC	5

Abbreviations/ References:

ML = Minimum Level = LRL = RL
MCL = Maximum Contaminant Level per The EPA
mg/L = Milligrams Per Liter or PPM
ug/L = Micrograms Per Liter or PPB
mpn/100 mls = Most Probable Number Index/ 100 mls
Date Analyzed = Date Test Completed



DATA APPROVED FOR RELEASE BY

10411 Heinz Way / Commerce City, CO 80640 / 303-659-2313
Mailing Address: P.O. Box 507 / Brighton, CO 80601-0507



Hazen Research, Inc.
4601 Indiana Street
Golden, CO 80403 USA
Tel: (303) 279-4501
Fax: (303) 278-1528

Customer ID: 20040H
Account ID: Z01034

Lab Control ID: 20M02854
Received: Oct 05, 2020
Reported: Nov 17, 2020
Purchase Order No.
None Received

Stuart Nielson
Colorado Analytical Laboratories, Inc.
10411 Heinz Way
Commerce City, CO 80640

ANALYTICAL REPORT

*Report may only be copied in its entirety.
Results reported herein relate only to discrete samples
submitted by the client. Hazen Research, Inc. does not warrant
that the results are representative of anything other than the
samples that were received in the laboratory*

By: _____


Jessica Axen
Analytical Laboratories Director



Hazen Research, Inc.
4601 Indiana Street
Golden, CO 80403 USA
Tel: (303) 279-4501
Fax: (303) 278-1528

Lab Control ID: 20M02854

Received: Oct 05, 2020

Reported: Nov 17, 2020

Purchase Order No.

None Received

Customer ID: 20040H

Account ID: Z01034

ANALYTICAL REPORT

Stuart Nielson

Colorado Analytical Laboratories, Inc.

Lab Sample ID			20M02854-001					
Customer Sample ID			201001059-01 - Prarie Ridge sampled on 10/01/20 @ 1015					
Parameter	Units	Code	Result	Precision* +/-	Detection Limit	Method	Analysis Date / Time	Analyst
Gross Alpha	pCi/L	T	2.1	1.9	0.1	SM 7110 B	10/7/20 @ 0852	KT
Gross Beta	pCi/L	T	6.1	2.4	3.8	SM 7110 B	10/7/20 @ 0852	KT
Radium-226	pCi/L	T	NR	-	-	SM 7500-Ra B	-	-
Radium-228	pCi/L	T	NR	-	-	EPA Ra-05	-	-

NR - Not Requested - Analysis not requested on this sample.

Certification ID's: CO/EPA CO00008; CT PH-0152; KS E-10265; MI 9070; NJ CO008;
NYSELAP (NELAC Certified) 11417; RI LAO00284; WI 998376610, TX T104704256-15-6

*Variability of the radioactive decay process (counting error) at the 95% confidence level, 1.96 sigma.

Codes: (T) = Total (D) = Dissolved (S) = Suspended (R) = Total Residual (AR) = As Received < = Less Than



Hazen Research, Inc.
4601 Indiana Street
Golden, CO 80403 USA
Tel: (303) 279-4501
Fax: (303) 278-1528

Lab Control ID: 20M02854

Received: Oct 05, 2020

Reported: Nov 17, 2020

Purchase Order No.

None Received

Customer ID: 20040H

Account ID: Z01034

ANALYTICAL REPORT

Stuart Nielson

Colorado Analytical Laboratories, Inc.

Lab Sample ID			20M02854-002					
Customer Sample ID			201001059-01A - Prarie Ridge sampled on 10/01/20 @ 1015					
Parameter	Units	Code	Result	Precision* +/-	Detection Limit	Method	Analysis Date / Time	Analyst
Gross Alpha	pCi/L	T	NR	-	-	SM 7110 B	-	-
Gross Beta	pCi/L	T	NR	-	-	SM 7110 B	-	-
Radium-226	pCi/L	T	0.9	0.3	0.1	SM 7500-Ra B	11/6/20 @ 0938	AS
Radium-228	pCi/L	T	3.5	1.0	0.3	EPA Ra-05	10/19/20 @ 1158	JR

NR - Not Requested - Analysis not requested on this sample.

Certification ID's: CO/EPA CO00008; CT PH-0152; KS E-10265; MI 9070; NJ CO008;
NYSELAP (NELAC Certified) 11417; RI LA000284; WI 998376610, TX T104704256-15-6

*Variability of the radioactive decay process (counting error) at the 95% confidence level, 1.96 sigma.

Codes: (T) = Total (D) = Dissolved (S) = Suspended (R) = Total Residual (AR) = As Received < = Less Than

HAZEN RESEARCH, INC.
RADIOCHEMISTRY LABORATORY

Date: 10/07/2020

Batch QC Summary Form

Analyte: Gross Alpha

Control Standard/LFB: ID: C-11 pCi/mL: 57.4 (use 1 diluted)

Spike Solution: ID: C-11 pCi/mL: 57.4 (use 1 mL)

Spike Recovery Calculation: Sample: Tap*

$$\text{Calculation: } \frac{(59.2) - (1.000) - (0.4)}{57.4} \times 100 = 103\%$$

Batch QC Evaluation:

Parameter	Criteria	Pass	Fail	N/A
Control Std./LFB	+/- 30 %	x		
Spike Recovery	70 - 130 %	x		
Blank	< or = 3 x Uncertainty	x		
Duplicate 1	95% confidence interval overlap	x		
Duplicate 2 *	95% confidence interval overlap	x		

* Required for batch size greater than 10 samples.

Conclusions:

 x Batch QC Passes**
 Batch QC Fails
 Batch QC Passes, with exceptions**:

Reruns Required: _____

Narrative:

**All QC data provided in this section of the report met the acceptance criteria specified in the analytical methods and procedures. State Maximum Contamination Levels (MCLs) are not evaluated in this report.

Batch Listing by Lab Control Number:

<u>20M02829</u>	<u>20M02865</u>
<u>20M02835</u>	<u>20M02867</u>
<u>20M02854</u>	<u>20M02742</u>
<u>20M02855</u>	<u>20M02743</u>
<u>20M02859</u>	<u>20M02772</u>
<u>20M02860</u>	<u>20M02825</u>
<u>20M02861</u>	_____
<u>20M02862</u>	_____
<u>20M02863</u>	_____
<u>20M02864</u>	_____

Evaluator:

Glynn Rockwell _____

10/12/2020

Date

HAZEN RESEARCH, INC.
RADIOCHEMISTRY LABORATORY

Date: 10/07/2020

Batch QC Summary Form

Analyte: Gross Beta

Control Standard/LFB: ID: C-11 pCi/mL: 44 (use 1 diluted)

Spike Solution: ID: C-11 pCi/mL: 44 (use 1 mL)

Spike Recovery Calculation: Sample: Tap*

$$\text{Calculation: } \frac{(38.3) - (1.000) - (0.0)}{44} \times 100 = 87\%$$

Batch QC Evaluation:

Parameter	Criteria	Pass	Fail	N/A
Control Std./LFB	+/- 20 %	x		
Spike Recovery	80 - 120 %	x		
Blank	< or = 3 x Uncertainty	x		
Duplicate 1	95% confidence interval overlap	x		
Duplicate 2 *	95% confidence interval overlap	x		

* Required for batch size greater than 10 samples.

Conclusions:

 x Batch QC Passes**
 Batch QC Fails
 Batch QC Passes, with exceptions**:

Reruns Required: _____

Narrative:

**All QC data provided in this section of the report met the acceptance criteria specified in the analytical methods and procedures. State Maximum Contamination Levels (MCLs) are not evaluated in this report.

Batch Listing by Lab Control Number:

<u>20M02829</u>	<u>20M02865</u>
<u>20M02835</u>	<u>20M02867</u>
<u>20M02854</u>	<u>20M02742</u>
<u>20M02855</u>	<u>20M02743</u>
<u>20M02859</u>	<u>20M02772</u>
<u>20M02860</u>	<u>20M02825</u>
<u>20M02861</u>	_____
<u>20M02862</u>	_____
<u>20M02863</u>	_____
<u>20M02864</u>	_____

Evaluator:

Gynnes Rockwell _____

10/12/2020

Date

HAZEN RESEARCH, INC.
RADIOCHEMISTRY LABORATORY

Date: 11/06/2020

Batch QC Summary Form

Analyte: Radium-226

Control Standard/LFB: ID: NBL-6A pCi/mL: 23 (use 2 diluted)

Spike Solution: ID: NBL-6A pCi/mL: 23 (use 2 mL)

Spike Recovery Calculation: Sample: 20M02807-002c

Calculation: $\frac{(46.9) - (0.970)}{46} \times 100 = 99\%$

Batch QC Evaluation:

Parameter	Criteria	Pass	Fail	N/A
Control Std./LFB	+/- 20 %	x		
Spike Recovery	80 - 120 %	x		
Blank	< or = 3 x Uncertainty	x		
Duplicate 1	95% confidence interval overlap	x		
Duplicate 2 *	95% confidence interval overlap			x

* Required for batch size greater than 10 samples.

Conclusions:

 x Batch QC Passes**
 Batch QC Fails
 Batch QC Passes, with exceptions**:

Reruns Required: _____

Narrative:

**All QC data provided in this section of the report met the acceptance criteria specified in the analytical methods and procedures. State Maximum Contamination Levels (MCLs) are not evaluated in this report.

Batch Listing by Lab Control Number:

20M02807	_____
20M02829	_____
20M02835	_____
20M02841	_____
20M02842	_____
20M02854	_____
20M02855	_____
20M02856	_____
_____	_____
_____	_____

Evaluator:

Gynnes Rockwell _____

11/16/2020

Date

HAZEN RESEARCH, INC.
RADIOCHEMISTRY LABORATORY

Date: 10/19/2020

Batch QC Summary Form

Analyte: Radium-228

Control Standard/LFB: ID: NBL-7A pCi/mL: 13.2 (use 10 diluted)

Spike Solution: ID: NBL-7A pCi/mL: 13.2 (use 10 mL)

Spike Recovery Calculation: Sample: 20M02871-001e

$$\text{Calculation: } \frac{(140.5) - (1.7)}{132} \times 100 = 105\%$$

Batch QC Evaluation:

Parameter	Criteria	Pass	Fail	N/A
Control Std./LFB	+/- 20 %	x		
Spike Recovery	80 - 120 %	x		
Blank	< or = 3 x Uncertainty	x		
Duplicate 1	95% confidence interval overlap	x		
Duplicate 2 *	95% confidence interval overlap			x

* Required for batch size greater than 10 samples.

Conclusions:

 x Batch QC Passes**
 Batch QC Fails
 Batch QC Passes, with exceptions**:

Reruns Required: _____

Narrative:

**All QC data provided in this section of the report met the acceptance criteria specified in the analytical methods and procedures. State Maximum Contamination Levels (MCLs) are not evaluated in this report.

Batch Listing by Lab Control Number:

20M02783	_____
20M02784	_____
20M02807	_____
20M02829	_____
20M02835	_____
20M02854	_____
20M02855	_____
20M02871	_____
_____	_____
_____	_____

Evaluator:

Glynn Rockwell _____

10/22/2020

Date

Sub-Lab Chain of Custody Form

20 mo?

Report To Information Company Name: <u>Colorado Analytical Laboratory</u> Report To: <u>Stuart Nielson</u> E-Mail: <u>stuartnielson@coloradolab.com</u>	Bill To Information (If different from report to)	Project Name -
Address: <u>10411 Heinz Way</u> <u>Commerce City, CO 80640</u> Phone: <u>303-659-2313</u>	Address:	CAL TASK 201001059 DEW Compliance Samples: Submit Data to CDPHE:

Tests Requested

Sample Date/Time		Sample ID	Matrix																
10/1/20	10:15 AM	201001059-01 - Prairie Ridge	Water - Drinking																
10/1/20	10:15 AM	201001059-01A - Prairie Ridge	Water - Drinking																

Comment:

Relinquished by: (Signature)	Date: Time: 10/2/20 1000	Received by: (Signature)	Date: Time: 10/2/20 1442	Relinquished by: (Signature)	Date: Time:	Received by: (Signature)
---------------------------------	--------------------------------	-----------------------------	--------------------------------	---------------------------------	-------------	-----------------------------

FedEx
9128 49317369

Rec'd presd
YR
10/2/20