

## 5.0 WATER SYSTEM FACILITIES AND PHYSICAL SUPPLY

### 5.1 Source of Supply

Supply for the existing residence on the subject property will continue to be met via the existing well (see well permit in **Appendix C**).

Supply for the three (3) additional lots will be met with future wells completed in the Dawson aquifer. These wells will be drilled, screened, test-pumped, and completed accordance with the Colorado Division of Water Resources rules and regulations.

### 5.2 Water Treatment

Water in the existing well was tested in December of 2020 for constituents required by El Paso County regulations for a confined aquifer. Any desired treatment of existing and future wells will rely on the individual homeowners as this is not considered a *Community System* by the Colorado Department of Public Health and Environment.

### 5.3 Water Storage

Water storage (other than potential individual cisterns) will not be constructed. Therefore, a central water system with treatment and fire-flow capabilities will not be provided. The residents of each subdivided lot will be made aware of this since it will be included on the subdivision plat.

### 5.4 Distribution, Pumping, and Transmission Lines

Since there is no central water system proposed for this subdivision, no distribution, pumping, or transmission lines will be constructed.

### 5.5 Water Quality

Of the required constituents that were tested, two were out of typical ranges: the *Langelier Index* (-2.48) and *pH* (6.43).

A negative Langelier Index indicates that the water may be corrosive, while a positive Langelier Index indicates that the water may tend to deposit calcium carbonate, forming scales in a distribution system. If the index is close to zero, then the water tends to be neither strongly corrosive nor scale-forming.

With a range from 0 to 14 (with 7 being neutral), pH is a measure of how acidic/basic water is. A pH of less than 7 indicates acidity, whereas a pH of greater than 7 indicates a base.

Water quality results from the existing on-site well are included in **Appendix D**.

This is identified as being beyond the normal range.  
Please provide more information on the safety of the drinking water and any mitigation efforts needed.

***El Paso County Land Development Code  
Water Quality Requirements and Results  
Dawson Confined Aquifer  
for Delroy Johnson Subdivision  
Sampled December 28, 2020***

Compound	Units	MCL/SMCL	Result
Antimony	mg/l	0.006	<0.0012
Arsenic	mg/l	0.01	<0.0006
Barium	mg/l	2	0.0165
Beryllium	mg/l	0.004	<0.0001
Cadmium	mg/l	0.005	<0.0001
Chromium	mg/l	0.1	<0.0015
Cyanide (Total)	mg/l	0	<0.005
Fluoride	mg/l	4	<0.09
Mercury	mg/l	0.002	<0.0001
Nitrate as N	mg/l	10	0.4
Nitrite as N	mg/l	1	<0.03
Selenium	mg/l	0.05	0.0019
Thallium	mg/l	0.002	<0.0002
Aluminum	mg/l	0.05	0.02
Chloride	mg/l	250	1.9
Langlier Index			-2.48
Iron	mg/l	0.3	0.024
Manganese	mg/l	0.05	0.0008
pH		6.5 - 8.5	6.43
Silver	mg/l	0.1	<0.0005
Sulfate	mg/l	250	4.1
TDS	mg/l	500	81
Zinc	mg/l	5	0.035
Gross Alpha/Beta	pCi/l	15	6.5
Combined Radium 226+228	pCi/l	5	1.48
Total Coliform	#/100 ml	Absent	Absent

Green = Result below MCL - Acceptable Water Quality

**STANDARD BACTERIOLOGICAL WATER TEST** METHOD:SM-9223B  
El Paso County Public Health Laboratory EPA ID# CO00025  
1675 West Garden of the Gods Road, Suite 2044, Colorado Springs, CO 80907 - (719) 578-3120

PWSID

Sample Point ID:

Sample Taken Date: 01/04/2021 Time: 1135

Name of Supply:

Address where sample was taken: 14502 State Hwy 83

Sample site location: Mechanical Room

Sampler: Shelby Gatlin

Chlorine: mg/L

☐ Community Supply

☐ Private

☐ Well

☐ City

☐ Non-Community

☐ EHS

☐ Surface/Spring

☐ Cistern

Results to: Shelby Gatlin, Ryan Mangino

Phone: (719) 227-0072

Mailing address: 5540 Tech Center Dr

City/State/Zip: COLORADO SPRINGS, CO. 80919

Fax/Email: sgatlin@jdshydro.com;rmangino@jdshydro.com

Comments:

- ☐ Raw  
☐ Finished  
☐ LT2  
☐ Quantitative

Date 01/04/2021 Time 1449 Rc'd EE0000743

Date 01/04/2021 Time 1621 Tested EE0000728

Date 01/05/2021 Time 1035 Comp EE0000742

**Lab Sample #25074**

**Colliert Results Per 100ml**

☒ Absence: Absence of coliform bacteria

☐ Presence: Presence of coliform bacteria & non-compliance with drinking water standards.

MPN/100 ml:

☒ Absence: E. Coli: Escherichia coli bacteria

☐ Presence:

MPN/100 ml:

## Analytical Results

**TASK NO: 201230001**

**Report To:** Stephanie Schwenke

**Company:** JDS Hydro Consultants  
5540 Tech Center Dr.  
Suite 100  
Colorado Springs CO 80919

**Bill To:** Stephanie Schwenke

**Company:** JDS Hydro Consultants  
5540 Tech Center Dr.  
Suite 100  
Colorado Springs CO 80919

**Task No.:** 201230001

**Client PO:**

**Client Project:** Delroy Johnson Subdivision

**Date Received:** 12/30/20

**Date Reported:** 1/13/21

**Matrix:** Water - Drinking

**Customer Sample ID** #1

**Sample Date/Time:** 12/28/20 11:20 AM

**Lab Number:** 201230001-01

Test	Result	Method	ML	Date Analyzed	Analyzed By
Bicarbonate	36.9 mg/L as CaCO <sub>3</sub>	SM 2320-B	4	12/31/20	ECM
Calcium as CaCO <sub>3</sub>	19.7 mg/L	EPA 200.7	0.1	1/5/21	MBN
Carbonate	< 4 mg/L as CaCO <sub>3</sub>	SM 2320-B	4	12/31/20	ECM
Hydroxide	< 4 mg/L as CaCO <sub>3</sub>	SM 2320-B	4	12/31/20	ECM
Langelier Index	-2.48 units	SM 2330-B		1/13/21	SAN
pH	6.43 units	SM 4500-H-B	0.01	12/28/20	Sampler
Temperature	16 °C	SM 4500-H-B	1	12/28/20	Sampler
Total Alkalinity	36.9 mg/L as CaCO <sub>3</sub>	SM 2320-B	4	12/31/20	ECM
Total Dissolved Solids	81 mg/L	SM 2540-C	5	12/31/20	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



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**Matrix:** Water - Drinking

**Customer Sample ID** #1

**Sample Date/Time:** 12/28/20 11:20 AM

**Lab Number:** 201230001-01

Test	Result	Method	ML	Date Analyzed	Analyzed By	MCL
Chloride	1.9 mg/L	EPA 300.0	0.1 mg/L	12/30/20	MAT	
Fluoride	< 0.09 mg/L	EPA 300.0	0.09 mg/L	12/30/20	MAT	4
Nitrate Nitrogen	0.40 mg/L	EPA 300.0	0.05 mg/L	12/30/20	MAT	10
Nitrite Nitrogen	< 0.03 mg/L	EPA 300.0	0.03 mg/L	12/30/20	MAT	1
Sulfate	4.1 mg/L	EPA 300.0	0.1 mg/L	12/30/20	MAT	

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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**

## Analytical Results

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**Company:** JDS Hydro Consultants  
5540 Tech Center Dr.  
Suite 100  
Colorado Springs CO 80919

**Bill To:** Stephanie Schwenke  
**Company:** JDS Hydro Consultants  
5540 Tech Center Dr.  
Suite 100  
Colorado Springs CO 80919

**Task No.:** 201230001  
**Client PO:**  
**Client Project:** Delroy Johnson Subdivision

**Date Received:** 12/30/20  
**Date Reported:** 1/13/21  
**Matrix:** Water - Drinking

**Customer Sample ID** #2

**Sample Date/Time:** 12/28/20 11:17 AM

**Lab Number:** 201230001-02

Test	Result	Method	ML	Date Analyzed	Analyzed By	MCL
<b>Total</b>						
Iron	0.024 mg/L	EPA 200.7	0.005 mg/L	1/5/21	MBN	0.3
Aluminum	0.020 mg/L	EPA 200.8	0.001 mg/L	12/31/20	IPC	0.05
Antimony	< 0.0012 mg/L	EPA 200.8	0.0012 mg/L	12/31/20	IPC	0.006
Arsenic	< 0.0006 mg/L	EPA 200.8	0.0006 mg/L	12/31/20	IPC	0.01
Barium	0.0165 mg/L	EPA 200.8	0.0007 mg/L	12/31/20	IPC	2
Beryllium	< 0.0001 mg/L	EPA 200.8	0.0001 mg/L	12/31/20	IPC	0.004
Cadmium	< 0.0001 mg/L	EPA 200.8	0.0001 mg/L	12/31/20	IPC	0.005
Chromium	< 0.0015 mg/L	EPA 200.8	0.0015 mg/L	12/31/20	IPC	0.1
Manganese	0.0008 mg/L	EPA 200.8	0.0008 mg/L	12/31/20	IPC	0.05
Mercury	< 0.0001 mg/L	EPA 200.8	0.0001 mg/L	12/31/20	IPC	0.002
Selenium	0.0019 mg/L	EPA 200.8	0.0008 mg/L	12/31/20	IPC	0.05
Silver	< 0.0005 mg/L	EPA 200.8	0.0005 mg/L	12/31/20	IPC	
Thallium	< 0.0002 mg/L	EPA 200.8	0.0002 mg/L	12/31/20	IPC	0.002
Zinc	0.035 mg/L	EPA 200.8	0.001 mg/L	12/31/20	IPC	5

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

## Analytical Results

**TASK NO: 201230001**

**Report To:** Stephanie Schwenke  
**Company:** JDS Hydro Consultants  
5540 Tech Center Dr.  
Suite 100  
Colorado Springs CO 80919

**Bill To:** Stephanie Schwenke  
**Company:** JDS Hydro Consultants  
5540 Tech Center Dr.  
Suite 100  
Colorado Springs CO 80919

**Task No.:** 201230001  
**Client PO:**  
**Client Project:** Delroy Johnson Subdivision

**Date Received:** 12/30/20  
**Date Reported:** 1/13/21  
**Matrix:** Water - Drinking

**Customer Sample ID** #3

**Sample Date/Time:** 12/28/20 11:23 AM

**Lab Number:** 201230001-03

Test	Result	Method	ML	Date Analyzed	Analyzed By	MCL
Cyanide-Total	< 0.005 mg/L	EPA 335.4	0.005 mg/L	1/5/21	CES	0.02

**Abbreviations/ References:**

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ug/L = Micrograms Per Liter or PPB

mpn/100 mls = Most Probable Number Index/ 100 mls

Date Analyzed = Date Test Completed



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

**JDS Hydro Consultants, Inc.**

Project ID:

Sample ID: #1 #2

Locator:

ACZ Sample ID: **L63558-01**

Date Sampled: 12/28/20 11:30

Date Received: 12/30/20

Sample Matrix: *Drinking Water*

Gross Alpha &amp; Beta, total

Prep Method:

M900.0

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Gross Alpha	01/22/21 0:04		1.8	1.3	1.2	pCi/L		cer
Gross Beta	01/22/21 0:04		4.7	1.9	1.7	pCi/L		cer

Radium 226, total

Prep Method:

M903.1

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 226, total	01/19/21 0:11		0.59	0.15	0.12	pCi/L	*	djc

Radium 228, total

Prep Method:

M904.0

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Radium 228, total	01/14/21 13:49		0.89	0.45	0.43	pCi/L	*	amk



**Report Header Explanations**

<i>Batch</i>	A distinct set of samples analyzed at a specific time
<i>Error(+/-)</i>	Calculated sample specific uncertainty
<i>Found</i>	Value of the QC Type of interest
<i>Limit</i>	Upper limit for RPD, in %.
<i>LCL</i>	Lower Control Limit, in % (except for LCSS, mg/Kg)
<i>LLD</i>	Calculated sample specific Lower Limit of Detection
<i>PCN/SCN</i>	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
<i>PQL</i>	Practical Quantitation Limit
<i>QC</i>	True Value of the Control Sample or the amount added to the Spike
<i>Rec</i>	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
<i>RER</i>	Relative Error Ratio, calculation used for Dup. QC taking into account the error factor.
<i>RPD</i>	Relative Percent Difference, calculation used for Duplicate QC Types
<i>UCL</i>	Upper Control Limit, in % (except for LCSS, mg/Kg)
<i>Sample</i>	Value of the Sample of interest

**QC Sample Types**

<i>DUP</i>	Sample Duplicate	<i>MS/MSD</i>	Matrix Spike/Matrix Spike Duplicate
<i>LCSS</i>	Laboratory Control Sample - Soil	<i>PBS</i>	Prep Blank - Soil
<i>LCSW</i>	Laboratory Control Sample - Water	<i>PBW</i>	Prep Blank - Water

**QC Sample Type Explanations**

Blanks	Verifies that there is no or minimal contamination in the prep method procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Matrix Spikes	Determines sample matrix interferences, if any.

**ACZ Qualifiers (Qual)**

H	Analysis exceeded method hold time.
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**Method Prefix Reference**

M	EPA methodology, including those under SDWA, CWA, and RCRA
SM	Standard Methods for the Examination of Water and Wastewater.
D	ASTM
RP	DOE
ESM	DOE/ESM

**Comments**

- (1) Solid matrices are reported on a dry weight basis.
- (2) Preparation method: "Method" indicates preparation defined in analytical method.
- (3) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
- (4) An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.

For a complete list of ACZ's Extended Qualifiers, please click:

<https://aczk.com/wp-content/uploads/2019/04/Ext-Qual-List.pdf>

JDS Hydro Consultants, Inc.

ACZ Project ID: **L63558**

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

**Alpha**

M900.0

Units: pCi/L

**WG512839**

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Error	LLD	Found	Error	LLD	Rec%	Lower	Upper	RPD/RER	Limit	Qual
WG512839PBW	PBW	01/22/21						-37	0.54	0.96			1.92			
WG512839LCSWA	LCSW	01/22/21	PCN62436	66.67				60	5.4	1	90	67	144			
L63558-01DUP	DUP-RPD	01/22/21			1.8	1.3	1.2	1.6	1.1	0.97				12	20	
L63594-01MSA	MS	01/22/21	PCN62436	66.67	3	1.6	1.2	72	6.4	1.1	104	67	144			
L63635-07DUP	DUP-RPD	01/22/21			0.82	1.7	6.7	1.5	2.1	13				59	20	RG
L63635-07DUP	DUP-RER	01/22/21			0.82	1.7	6.7	1.5	2.1	13				0.25	2	

**Beta**

M900.0

Units: pCi/L

**WG512839**

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Error	LLD	Found	Error	LLD	Rec%	Lower	Upper	RPD/RER	Limit	Qual
WG512839PBW	PBW	01/22/21						.9	1.8	1.8			3.6			
WG512839LCSWB	LCSW	01/22/21	RC200602-10	66.6				69	4.2	1.6	104	82	122			
L63558-01DUP	DUP-RPD	01/22/21			4.7	1.9	1.7	5	2	1.9				6	20	
L63635-06MSB	MS	01/22/21	RC200602-10	99.9	3.4	2.5	6.8	100	6.4	5.1	97	82	122			
L63635-07DUP	DUP-RER	01/22/21			6	3	9.1	3.7	2.8	12				0.56	2	
L63635-07DUP	DUP-RPD	01/22/21			6	3	9.1	3.7	2.8	12				47	20	RG

**Radium 226, total**

M903.1

Units: pCi/L

**WG512653**

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Error	LLD	Found	Error	LLD	Rec%	Lower	Upper	RPD/RER	Limit	Qual
WG512653PBW	PBW	01/19/21						.14	0.11	0.1			0.2			
WG512653LCSW	LCSW	01/19/21	PCN61539	20				21	0.64	0.13	105	43	148			
L63454-01DUP	DUP-RER	01/19/21			0.06	0.08	0.12	0	0.07	0.13				0.56	2	
L63454-01DUP	DUP-RPD	01/19/21			0.06	0.08	0.12	0	0.07	0.13				200	20	RG
L63594-01DUP	DUP-RPD	01/19/21			0.89	0.13	0.06	.96	0.14	0.08				8	20	
L63569-02MS	MS	01/19/21	PCN61539	20	0.13	0.11	0.19	18	0.51	0.13	89	43	148			

JDS Hydro Consultants, Inc.

ACZ Project ID: L63558

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Radium 228, total M904.0

Units: pCi/L

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Error	LLD	Found	Error	LLD	Rec%	Lower	Upper	RPD/RER	Limit	Qual
<b>WG512375</b>																
L63330-01DUP	DUP-RPD	01/13/21			1.1	0.75	1.7	1.3	0.81	1.8				17	20	
L63330-02MS	MS	01/13/21	PCN61541	9.31	1.9	0.82	1.7	12	1.2	1.8	108	47	123			
WG512375LCSW	LCSW	01/13/21	PCN61541	9.31				11	1.1	0.7	118	47	123			
WG512375PBW	PBW	01/13/21						-.28	0.43	0.46			0.92			
L63570-01DUP	DUP-RPD	01/14/21			-0.08	0.8	1.9	.27	0.7	1.8				368	20	RG
L63570-01DUP	DUP-RER	01/14/21			-0.08	0.8	1.9	.27	0.7	1.8				0.33	2	

JDS Hydro Consultants, Inc.

ACZ Project ID: **L63558**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L63558-01	WG512653	Radium 226, total	M903.1	RG	Sample concentration is less than 5x LLD; RPD was not used for data validation. Replicate Error Ratio (RER) is less than 2. Precision judged to be in control.
	WG512375	Radium 228, total	M904.0	RG	Sample concentration is less than 5x LLD; RPD was not used for data validation. Replicate Error Ratio (RER) is less than 2. Precision judged to be in control.