

ARVIN COMMUNITY SERVICES DISTRICT

309 CAMPUS DR. • ARVIN, CALIFORNIA 93203
Phone (661) 854-2127 • Fax (661) 854-8230

SPECIAL MEETING AGENDA OF THE ARVIN COMMUNITY SERVICES DISTRICT BOARD OF DIRECTORS Monday September 30, 2019 6:00 P.M.

Call Meeting to Order Board President Gallardo

Roll Call: Rafael Gallardo President
Maria Alvarez Vice President
Cynthia Moran Board Director
Robert Rodriguez Board Director
Aurelio Reyna Board Director

Raul Barraza, Jr. General Manager
Alan Peake District Counsel
Dee Jaspar District Engineer

This meeting is held in accordance with the Brown Act. Individuals may address the Board on any matter listed on this agenda, excluding closed session. Members of the public desiring to address the Board must request recognition from the Board President. Presentation by members of the public is limited to two minutes each per agenda item.

Flag Salute: Board and audience salute flag.

1. Public Comment:

This portion of the meeting is set aside for members of the public to address any matter not on this agenda and over which the Board has jurisdiction. Comments are limited to 2 minutes for each person and 15 minutes on each subject.

2. Discussion and possible action re: Continued Construction of Well No. 15 of the Arsenic Mitigation Project Phase II

Director _____, seconded Director _____

Roll Call: BD Rodriguez__ BD Reyna __ BD Moran__ VP Alvarez__ BP Gallardo__

3. Adjournment:

Motion: _____

Director _____, seconded Director _____

Roll Call: BD Rodriguez__ BD Reyna __ BD Moran__ VP Alvarez__ BP Gallardo__

I hereby certify under perjury under the laws of the State of California that the foregoing agenda was posted on the Arvin Community Services office window not less than 24 hours prior to the meeting dated September 30, 2019.



Raul Barraza, Jr.
Board Secretary/General Manager



DEE JASPAR & ASSOCIATES, INC.
CONSULTING CIVIL ENGINEERS
2730 UNICORN ROAD, BLDG A
BAKERSFIELD, CA 93308
PHONE (661) 393-4796
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TECHNICAL MEMORANDUM

PREPARED FOR: Raul Barraza, General Manager
Arvin Community Services District
309 Campus Drive
Arvin, CA 93203

PREPARED BY: Curtis M. Skaggs, P.E.
Dee Jaspar and Associates, Inc.
2730 Unicorn Road, Bldg A
Bakersfield, CA 93308

DATE: September 27, 2019

SUBJECT: **Arsenic Mitigation Project – Phase II**
Well No. 15
Well Drilling Recommendation

The well design for Well No. 15 was based upon the results of the test well construction performed at the Well No. 15 site in March of 2018. A casing hammer test well was constructed that allowed frequent water sampling with depth down to approximately 900-ft below ground surface. Arsenic concentrations that exceeded the MCL of 10 ppb were found at depths of:

- 497-ft to 510-ft
- 635-ft to 640-ft
- 830-ft to 835-ft

Furthermore, the water quality below a depth of 800-ft was found to be poor with EC (Electrical Conductivity) concentrations over 1,500 umhos/cm. Therefore a shallow well was designed that had a total depth of 770-ft and was perforated from 550-ft to 620-ft and from 665-ft to 750-ft. See the test well diagram attached in Appendix A.

Bakersfield Well & Pump (BWP), under contract with the General Contractor W.M. Lyles Co. on the Arsenic Mitigation Project – Phase II, commenced the pilot hole drilling of Well No. 15 on August 26th, 2019 and completed the pilot hole drilling on August 29th, 2019 to a total depth of 790-ft.

The electric log (e-log) and the geologic log were evaluated and four zones selected for water quality depth sampling. The pilot hole water quality depth sampling was conducted in addition to the test hole results in an effort to ensure that a well could be constructed that would not require treatment. The selected zones were as noted below:

- 750-ft to 770-ft: Prominent sand zone in proposed lower perforated interval
- 685-ft to 705-ft: Prominent sand zone in proposed lower perforated interval
- 620-ft to 640-ft: Prominent sand zone confirming presence of Arsenic
- 550-ft to 570-ft: Prominent sand zone in proposed upper perforated interval

The water quality results have been received for the above referenced zones and are shown in Table 1 below:

Table 1

Water Depth Sampling Results			
<i>Zone</i>	<i>Depth Interval</i>	<i>EC</i>	<i>Arsenic</i>
Zone 4	550' – 570'		10 ppb
Zone 3	620' – 640'		21 ppb
Zone 2	685' – 705'	579 umhos/cm	10 ppb
Zone 1	750' – 770'	1,540 umhos/cm	5 ppb

From the results of the pilot hole depth sampling, it appears that a well cannot be completed at this well site that avoids Arsenic treatment. Furthermore drilling deeper is not an option due to the elevated levels of EC. This level of EC (> 1,500 umhos/com) is considered unacceptable for drinking water due to the salty taste.

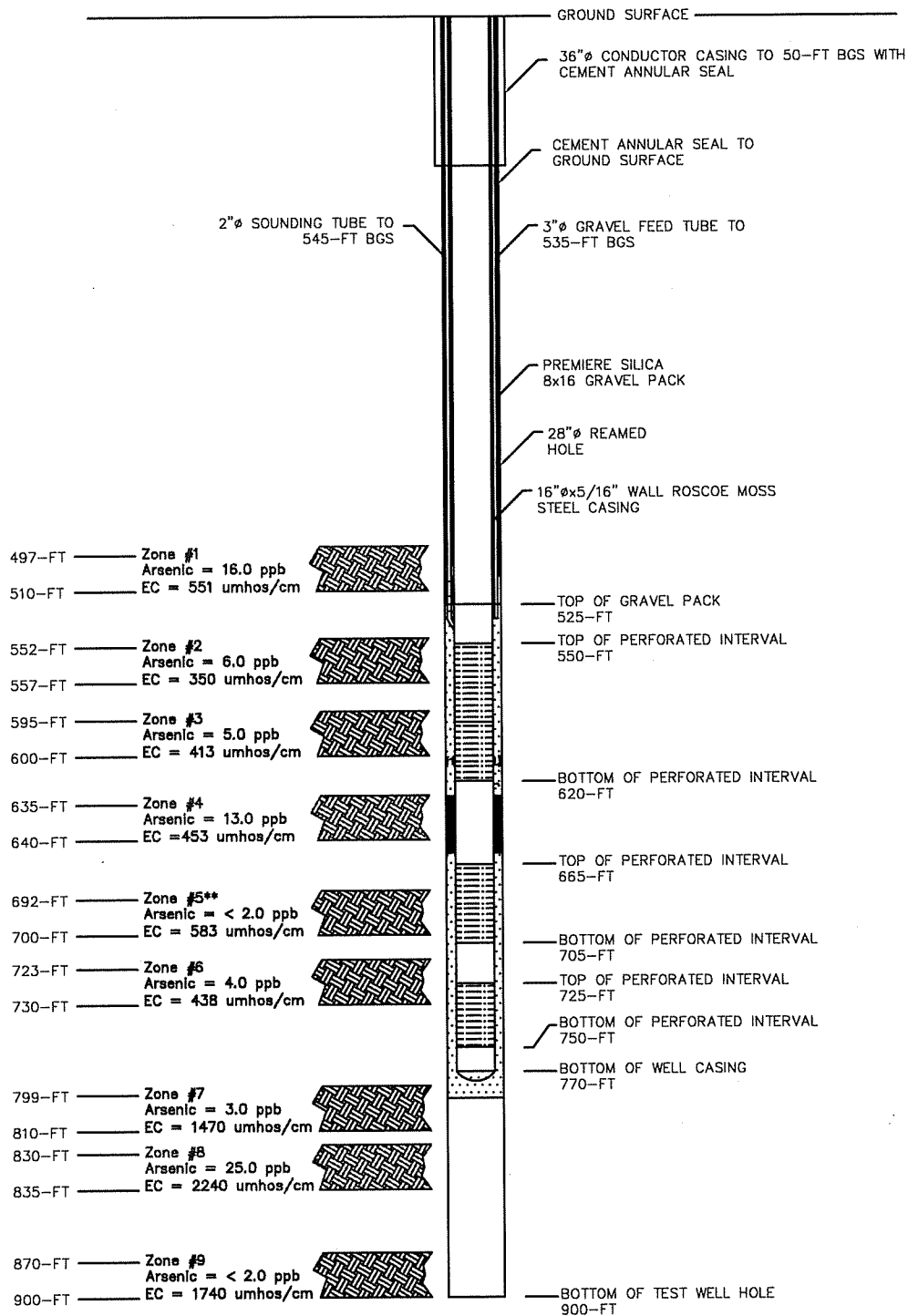
The test hole and the pilot hole do not appear to be in conflict. The issue is that during the pilot hole drilling we are able to perform an e-log that graphically represents the sand formations and the clay formations. The e-log illustrates that there is not very much clay in this hole. This is typically a good sign particularly for the well production. However in this case the clay layers are necessary to provide good seals and protection from the sand formations that have elevated Arsenic concentrations.

The proposed design needed to seal off the Arsenic in the shallow formation above 525-ft and to provide an intermediate seal from 630-ft to 660-ft to block off the Arsenic at that intermediate depth. During the water quality depth sampling Zone #2 was sealed from the intermediate Arsenic at a depth of 665-ft to 675-ft, however this was an extremely small clay layer. This clay layer does not appear to be significant enough to provide a barrier from the intermediate Arsenic between 620-ft to 640-ft and the lower zone is negatively influenced by this Arsenic that is between 13 – 21 ppb. In addition, the upper zone, Zone #4, was sealed from the shallow Arsenic at a depth of 530-ft to 540-ft, however this was more of a silty formation than a clayey formation because of the lack of clay layers. This layer does not appear to be significant enough to provide a barrier from the shallow Arsenic above 525-ft and thus the upper zone is negatively influenced by this Arsenic that is approximately 16 ppb.

Based on the above data, it is recommended that a well not be completed at this site. The probability of completing a well at this site that is below the MCL of 10 ppb for Arsenic is likely less than twenty-percent (20%).

The contract cost to construct Well No 15 is \$680,916.00. The cost expended to date for the conductor casing, pilot hole drilling, and formation sampling is approximately \$260,000.00. Some materials have already been ordered and procured for the well site such as the hydropneumatic tank, motor, and the chlorine building, however it is anticipated that these items can be utilized at the Well No. 12 site and thus not incur further costs. The total cost of constructing and developing the Well No. 15 site is \$2,046,381.00. If all materials that have already been ordered are able to be utilized at the Well No. 12 site, the total expense to date will be approximately \$300,000.00. This leaves approximately \$1,750,000.00 in the budget plus the project contingency of \$2,029,066.00 to pursue a new well site, if approved by the State Water Board. However it should be noted that the time constraints with procuring and developing a new well site may not be able to be completed within the current time frame of the funding agreement which has a completion date of March 31, 2021.

APPENDIX A
CASING HAMMER TEST WELL DIAGRAM



**AIRLIFT SAMPLE ONLY

ARVIN COMMUNITY SERVICES DISTRICT

PROPOSED WELL CONSTRUCTION DESIGN
TEST WELL #1 (AKA WELL NO. 15)

JOB NO.

DATE MAR 15, 2018

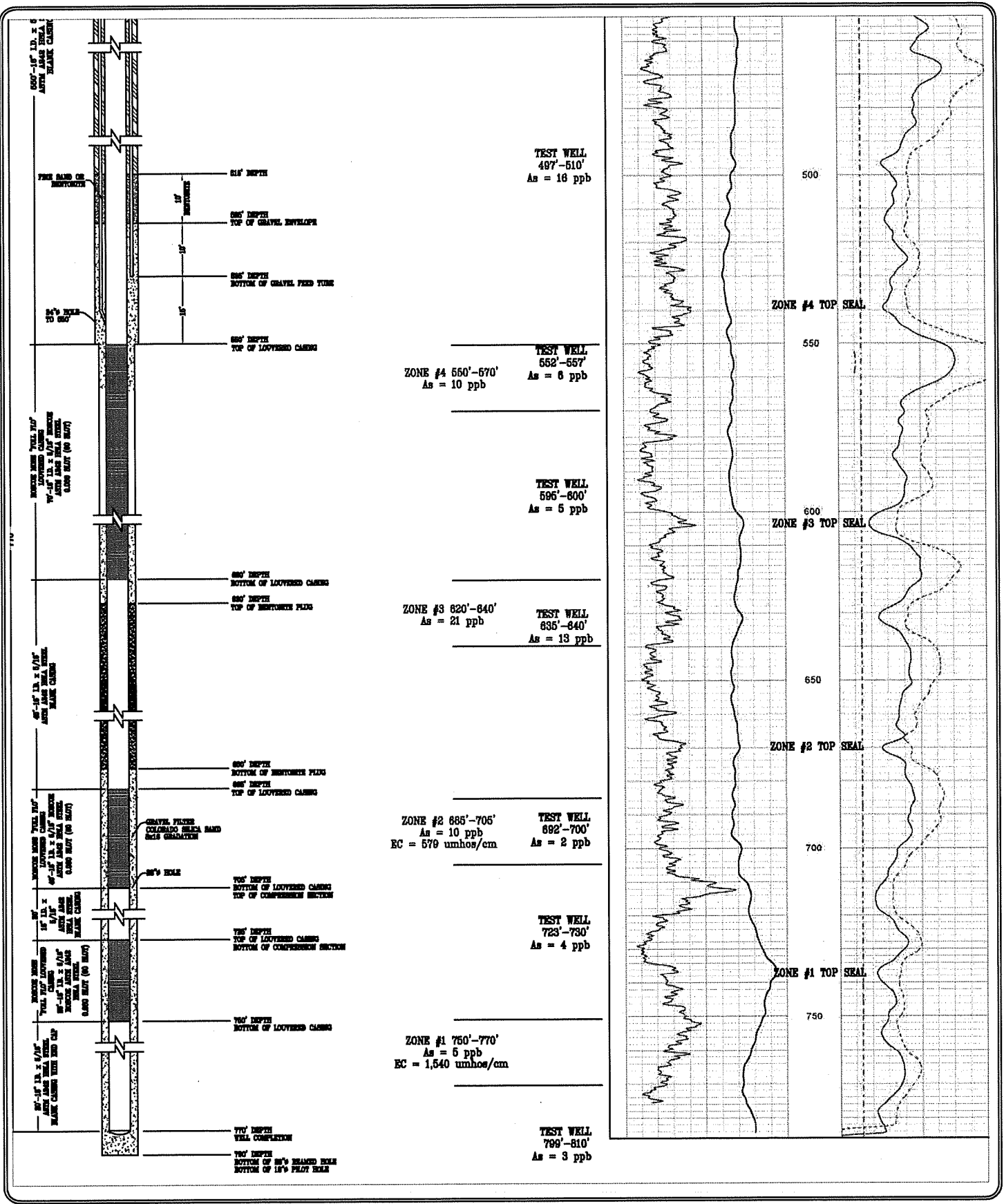
SHEET

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APPENDIX B
PILOT HOLE ZONE TESTING DIAGRAM



<p>WELL NO. 15 PILOT HOLE DATA</p> <p>ARVIN COMMUNITY SERVICES DISTRICT ARVIN, CALIFORNIA</p>	JOB NO.	DATE 9/23/19	SHEET 1
	<p>DBB JASPAR & ASSOCIATES, INC. CIVIL • ENGINEERS 3701 PEGASUS DRIVE, SUITE 121 BAKERSFIELD, CALIFORNIA 93308 PHONE 861 393-4796 FAX 861 393-4799</p>		

ARVIN COMMUNITY SERVICES DISTRICT
ARSENIC MITIGATION PROJECT - PHASE II

WELL NO. 15 RECOMMENDATION

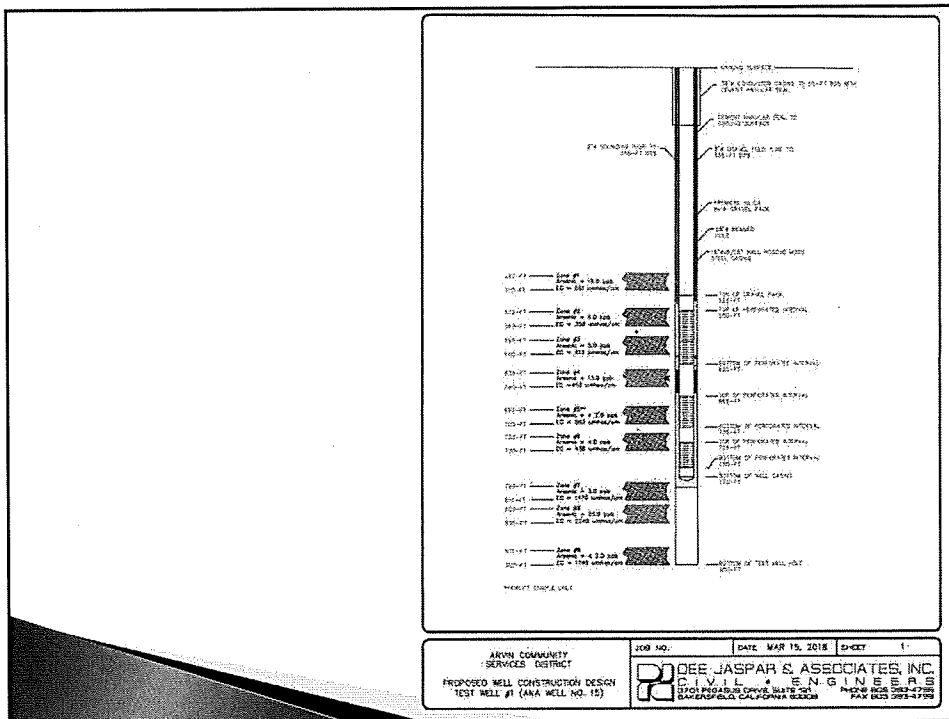
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Well No. 15 - Test Well

- ▶ Casing Hammer Test Well - March 2018
 - ▶ Arsenic above the MCL of 10 ppb from
 - 497-ft to 510-ft
 - 635-ft to 640-ft
 - 830-ft to 835-ft
- EC greater than 1,500 umhos/cm below 800-ft.

Recommended casing design with screen
from 550-ft to 620-ft and 665-ft to 750-ft.

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Well No. 15 – Pilot Hole

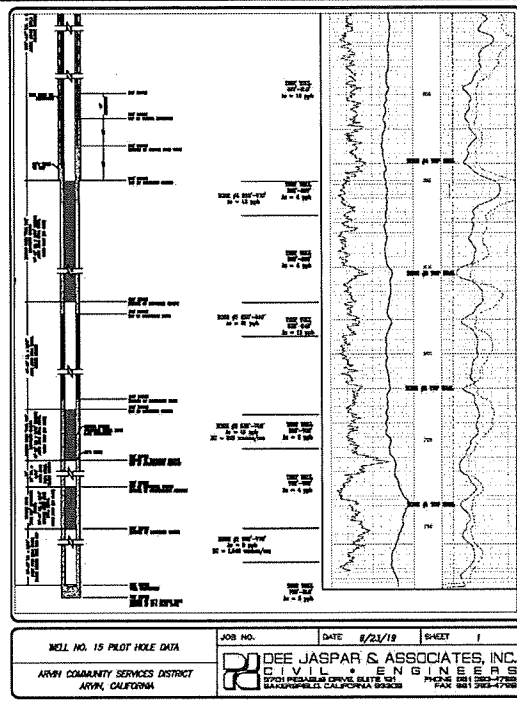
- ▶ Drilled Pilot Hole from August 26th – 29th, 2019.
- ▶ Drilled to a depth of 790-ft.
- ▶ Selected Four Zones:
 - Zone 1: 750-ft to 770-ft
 - Zone 2: 685-ft to 705-ft
 - Zone 3: 620-ft to 640-ft
 - Zone 4: 550-ft to 570-ft
- ▶ The Arsenic results were:

◦ Zone 1: 750-ft to 770-ft	5 ppb
◦ Zone 2: 685-ft to 705-ft	10 ppb
◦ Zone 3: 620-ft to 640-ft	21 ppb
◦ Zone 4: 550-ft to 570-ft	10 ppb

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The only clay layer to seal against to protect from shallow Arsenic above 525-ft is at approximately 539-ft. It is not very clayey and is small and does not appear to provide an adequate seal as the 16 ppb Arsenic at 497'-510' appears to be leaking into proposed upper interval.

The only clay layer to seal against the intermediate Arsenic is at approximately 670-ft. It is not very clayey and is small and does not appear to provide an adequate seal as the 13-21 ppb Arsenic at 620'-640' appears to be leaking into the proposed lower interval.



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Well No. 15 – Costs

- ▶ Well No. 15 Drilling Contract Costs = \$680,916.00
- ▶ Estimated costs to date = \$ 260,000.00

- ▶ Well No. 15 Total Site Contract Costs = \$2,046,381.00.
- ▶ Estimated costs to date = \$300,000.00

- ▶ Estimated remaining budget from halting Well No. 15 work = \$1,750,000.00.
- ▶ Project contingency available = \$2,029,660.00.
- ▶ Total eligible project funds approximately \$3,779,660.00

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