

DOE SEP #2 Monitoring Well Installation Completion Report

Idaho Department of Water Resources

Report by Dennis Owsley, P.G.

July 2022



**IDAHO DEPARTMENT OF
WATER RESOURCES**



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Overview

The Idaho Department of Water Resources (IDWR) was awarded a Department of Energy (DOE) Supplemental Environmental Project (SEP) grant in July 2018, with a three-year project period of July 1, 2018, through December 31, 2021. As part of the project, the drilling and construction of ground water monitoring wells across the Eastern Snake Plain Aquifer (ESPA) and within the Big Lost River Valley was completed (Figure 1). IDWR awarded the well completion projects to the lowest bidding driller through two Invitations to Bid. In total, 36 wells were drilled and constructed, ranging in depths from 20' to over 1,170' below land surface (bls). Details regarding the location and construction of the 36 monitoring wells are summarized in the following sections. The wells are divided into two sections, ESPA Monitoring Wells and Big Lost Monitoring Wells, and are ordered chronologically by drilling completion date within each section.

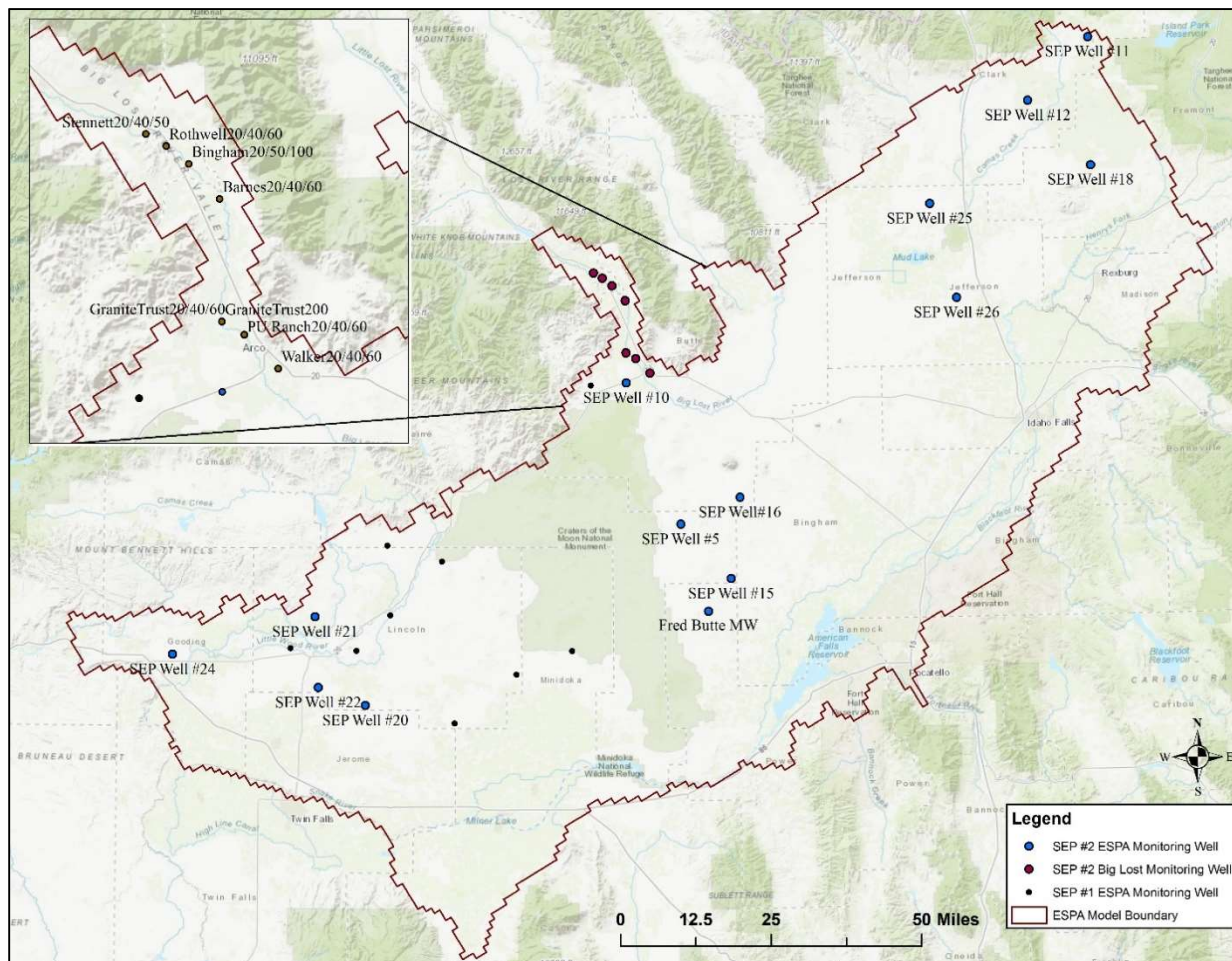


Figure 1. Map of SEP #2 Monitoring Wells

Section 1. ESPA Monitoring Wells

Fourteen monitoring wells were drilled and constructed across the ESPA (Table 1). The purpose of the wells is to provide dedicated, long-term monitoring locations in areas in which data was sparse across the plain. The primary lithologic material encountered during the drilling of all the ESPA monitoring wells was basalt with minor amounts of clay and sand interbeds. Submersible pumps have been installed in most of the monitoring wells to facilitate water quality sampling, and all wells have been equipped with continuous recording water level measurement devices. The following sections describe the drilling and construction of each of the ESPA monitoring wells.

Table 1. ESPA Monitoring Well Summary Table

Well Name	Completion Date	Total Depth (feet bls)	Depth to Water (feet bls)	Pump Installed	County	Latitude	Longitude	PLS
Fred Butte	01/04/2019	990	872	Yes	Power	43.0436	-113.1012	04S 29E Sec. 29
Well #10	09/25/2019	580	480	Yes	Butte	43.5946	-113.3656	03N 26E Sec. 16
Well #5	06/22/2020	815	710	Yes	Blaine	43.2537	-113.1891	02S 28E Sec. 16
Well #18	08/14/2020	680	542	Yes	Fremont	44.1005	-111.8102	09N 39E Sec. 24
Well #11	08/27/2020	230	42	Yes	Clark	44.4084	-111.8090	13N 39E Sec. 36
Well #24	10/07/2020	323	98	Yes	Gooding	42.9412	-114.8578	05S 13E Sec. 36
Well #21	10/30/2020	396	297	Yes	Lincoln	43.0336	-114.3914	04S 17E Sec. 36
Well #20	06/28/2021	423	268	Yes	Lincoln	42.8206	-114.2264	07S 19E Sec. 16
Well #15	07/01/2021	654	601	Yes	Bingham	43.1221	-113.0258	03S 29E Sec. 36
Well #22	07/19/2021	402	240	Yes	Lincoln	42.8633	-114.3805	06S 17E Sec. 36
Well #26	09/09/2021	415	252	No	Jefferson	43.7892	-112.2667	05N 36E Sec. 06
Well #25	09/16/2021	275	158	No	Jefferson	44.0159	-112.3497	08N 35E Sec. 16
Well #12	10/30/2021	1,170	1,070	No	Clark	44.2593	-112.0154	11N 38E Sec. 30
Well #16	05/04/2022	1,218	1,040	No	Butte	43.3169	-112.9935	01N 30E Sec. 19

SEP Fred Butte

On December 8, 2018, drilling commenced on a monitoring well northwest of American Falls Reservoir, near Aberdeen, Idaho (Figure 2). This well, referred to as the SEP Fred Butte Monitoring Well, was completed as a cooperative project with the United States Bureau of Land Management (BLM). The well was drilled by D&C Drilling using an air rotary drilling method to a total depth of 990' bls and was completed on January 4, 2019 (Figure 3). Depth to water in the well was 872' bls at the time of completion. Steel casing was supplied by the BLM and installed to a depth of 680' bls. A standard 38' deep seal of bentonite chips was poured in place. The BLM installed a submersible pump to facilitate stock watering and fire suppression activities.

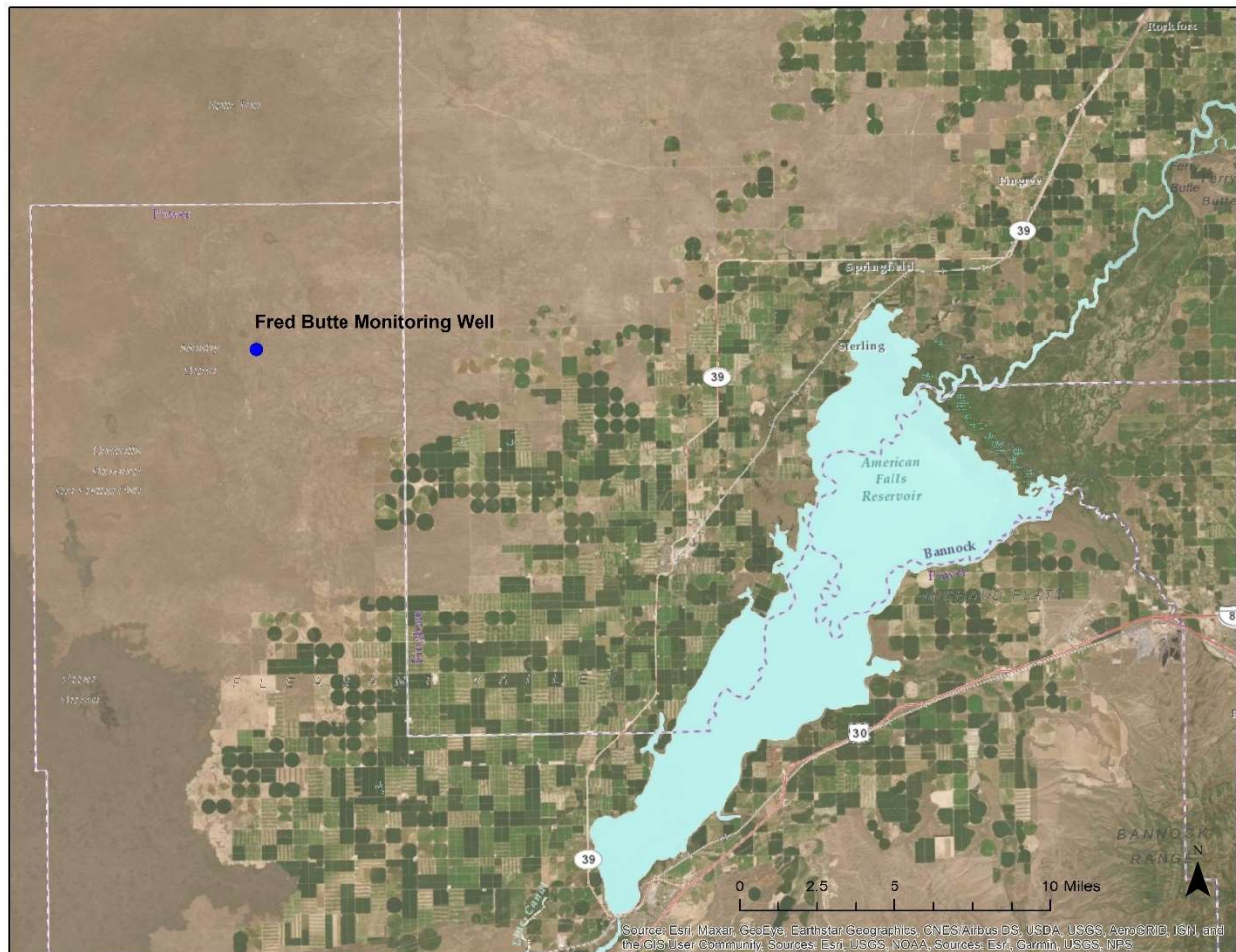


Figure 2. Map of SEP Fred Butte Monitoring Well

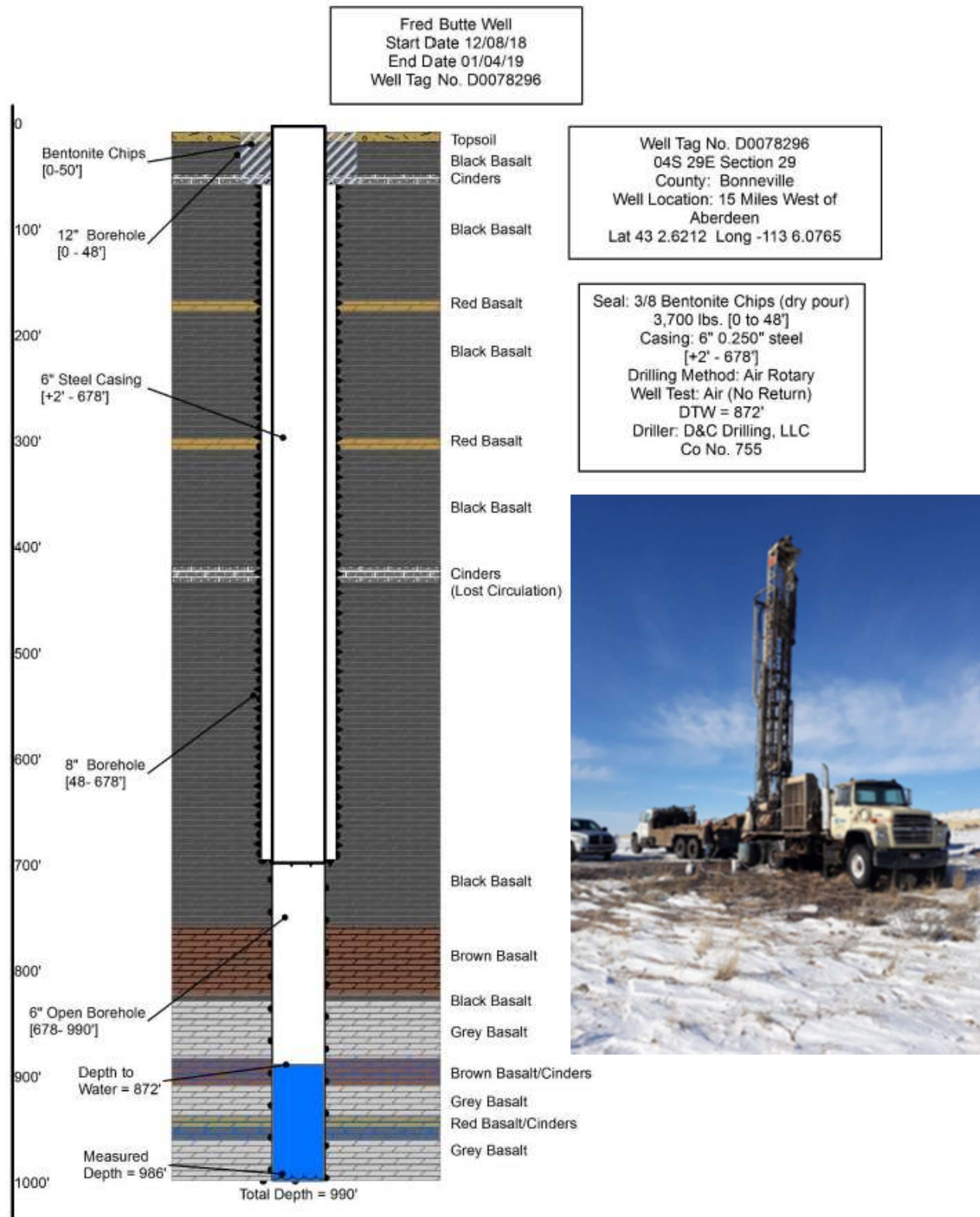


Figure 3. Construction and lithologic details of the SEP Fred Butte Monitoring Well

SEP Well #10

Drilling of SEP Monitoring Well #10 commenced on August 12, 2019. This well is located on privately owned property in Butte County, approximately four miles southwest of Arco, Idaho (Figure 4). Access was granted by the landowner through an access agreement developed to facilitate the well drilling and monitoring activities. The well was completed by Tanner Pump and Drilling on September 25, 2019, to a total depth of 580' bls (Figure 5). Depth to water in the well was 480' bls at the time of completion. The United States Geological Survey (USGS) conducted a borehole geophysical survey in the cased well in Fall 2019. The results of the geophysics survey and the well construction and lithologic details can be seen in Figure 5.

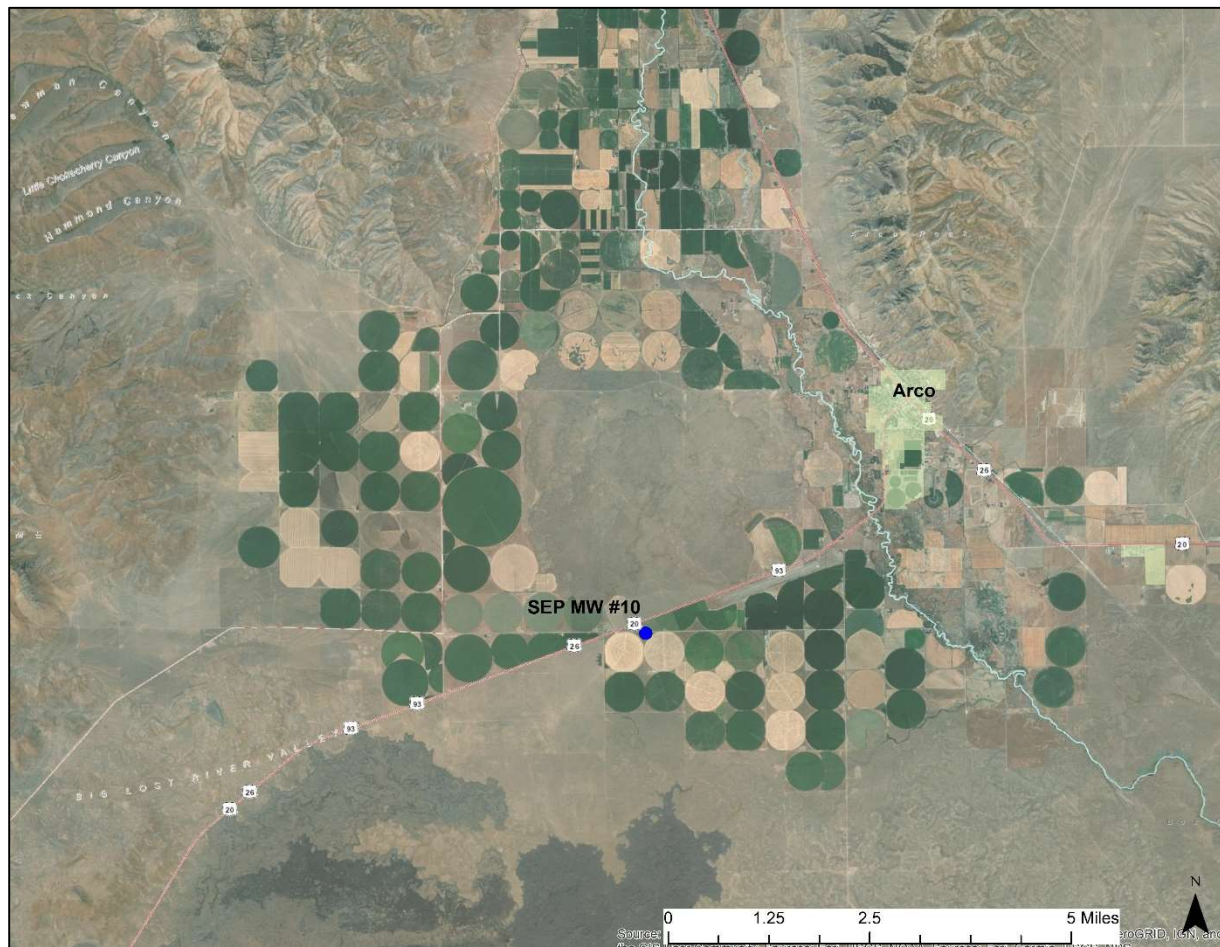


Figure 4. Map of SEP Well #10

Monitoring Well SEP #10

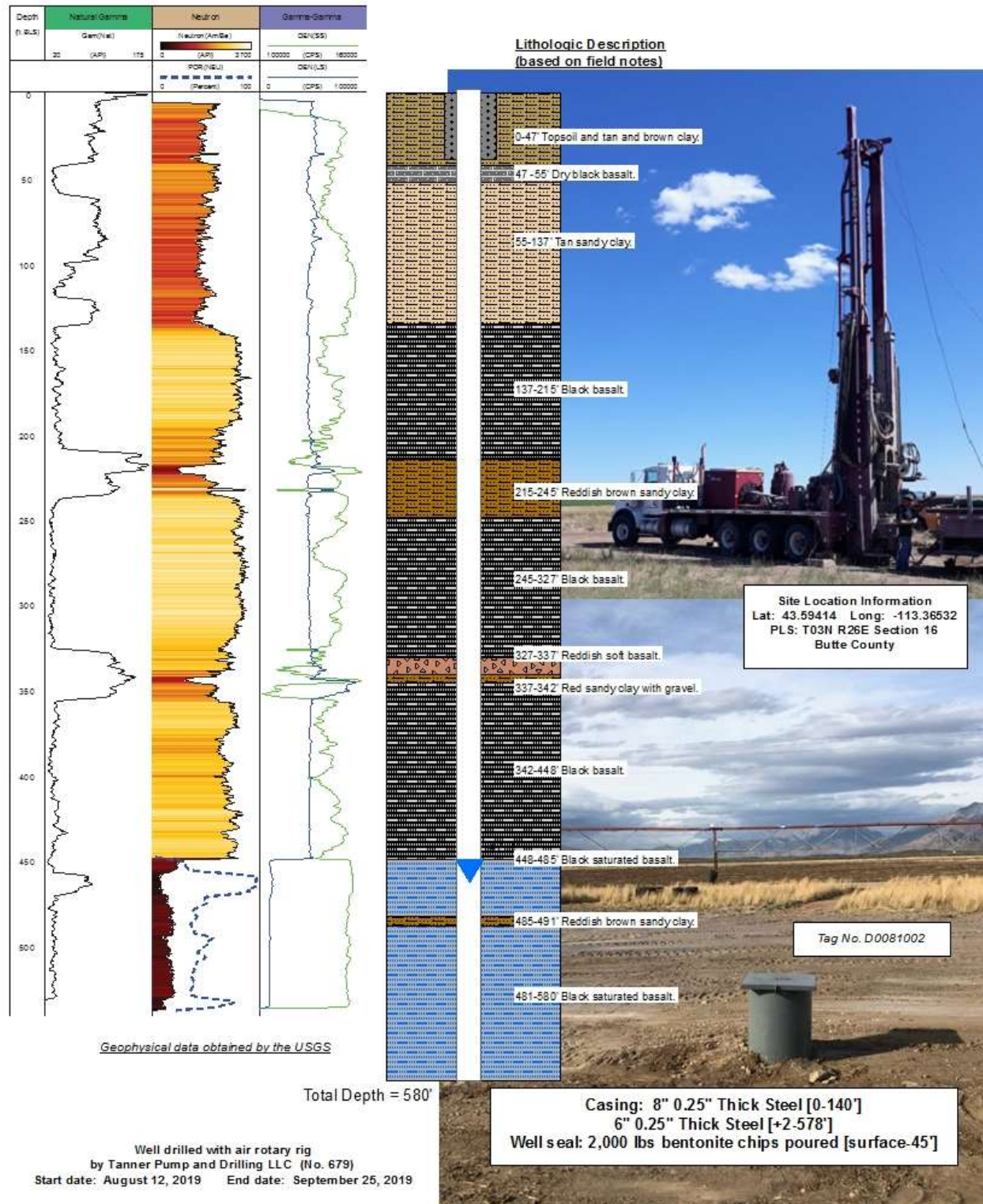


Figure 5. Construction and lithologic details of SEP Well #10

SEP Well #5

The drilling of SEP Monitoring Well #5 started on June 6, 2020, and was completed June 22, 2020, by D&C Drilling. The location of this well is in the central portion of the Eastern Snake Plain Aquifer, east of the Craters of the Moon National Monument (Figure 6). The well was drilled with air rotary to a total depth of 815' bls with a static water level of 710' bls.

Construction and lithologic details can be seen in Figure 7.

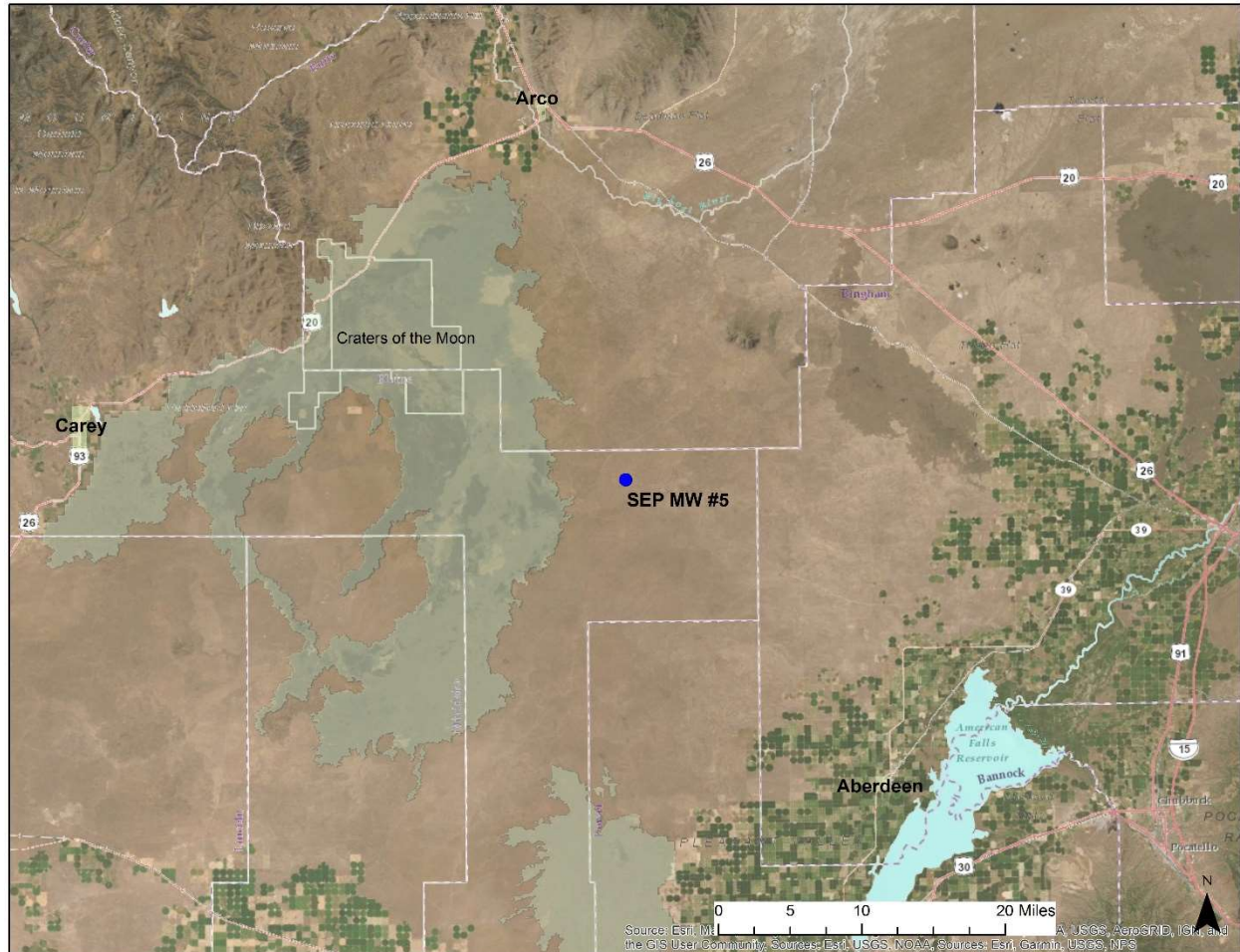
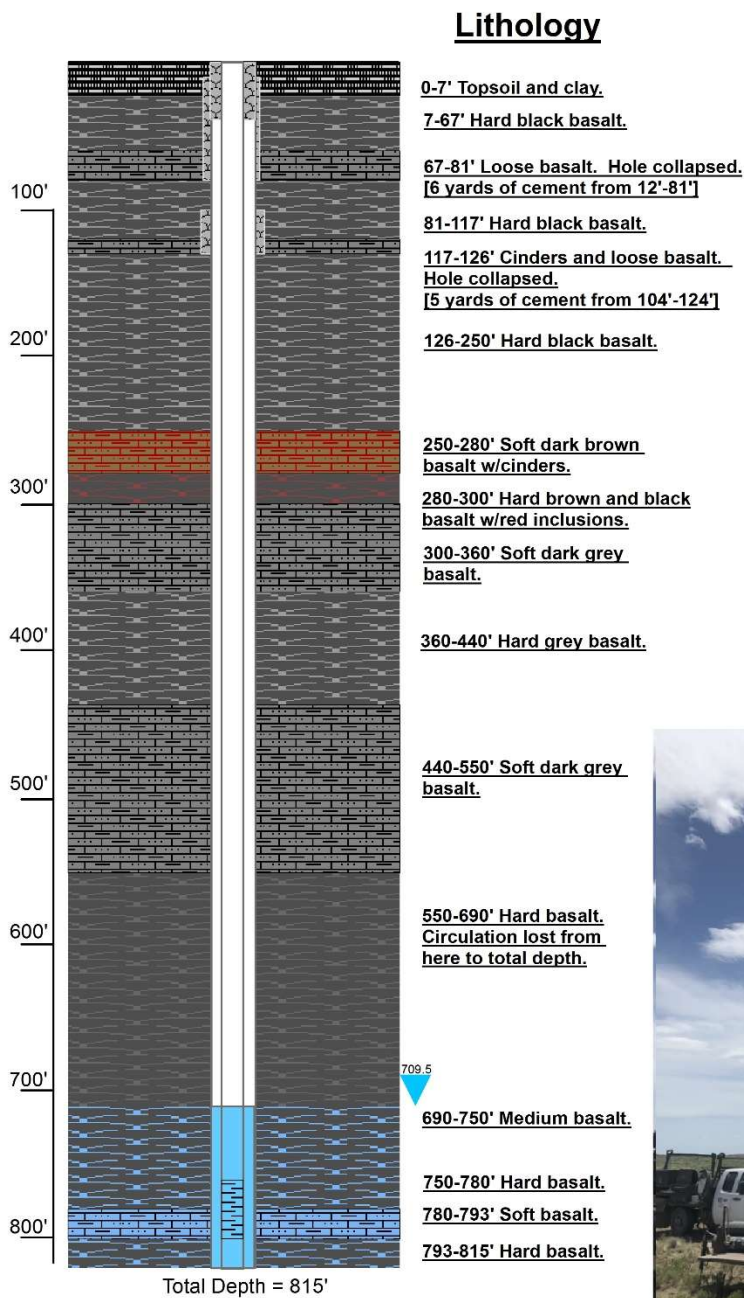


Figure 6. Map of SEP Well #5

Monitoring Well SEP #5



Site Location Information
Lat: 43.254 Long: -113.189
PLS: T02S R28E Section 16

Construction Details



Figure 7. Construction and lithologic details of SEP Well #5

SEP Well #18

The drilling of SEP Monitoring Well #18 commenced on July 23, 2020, by Tanner Pump and Drilling. The location of this well is in Fremont County, approximately 20 miles north of the town of Rexburg, Idaho (Figure 8). The well was completed on August 14, 2020, to a total depth of 680' bls with a static water level of 542' bls (Figure 9). The well was constructed with PVC casing, with a screened interval between 612 to 632' bls.

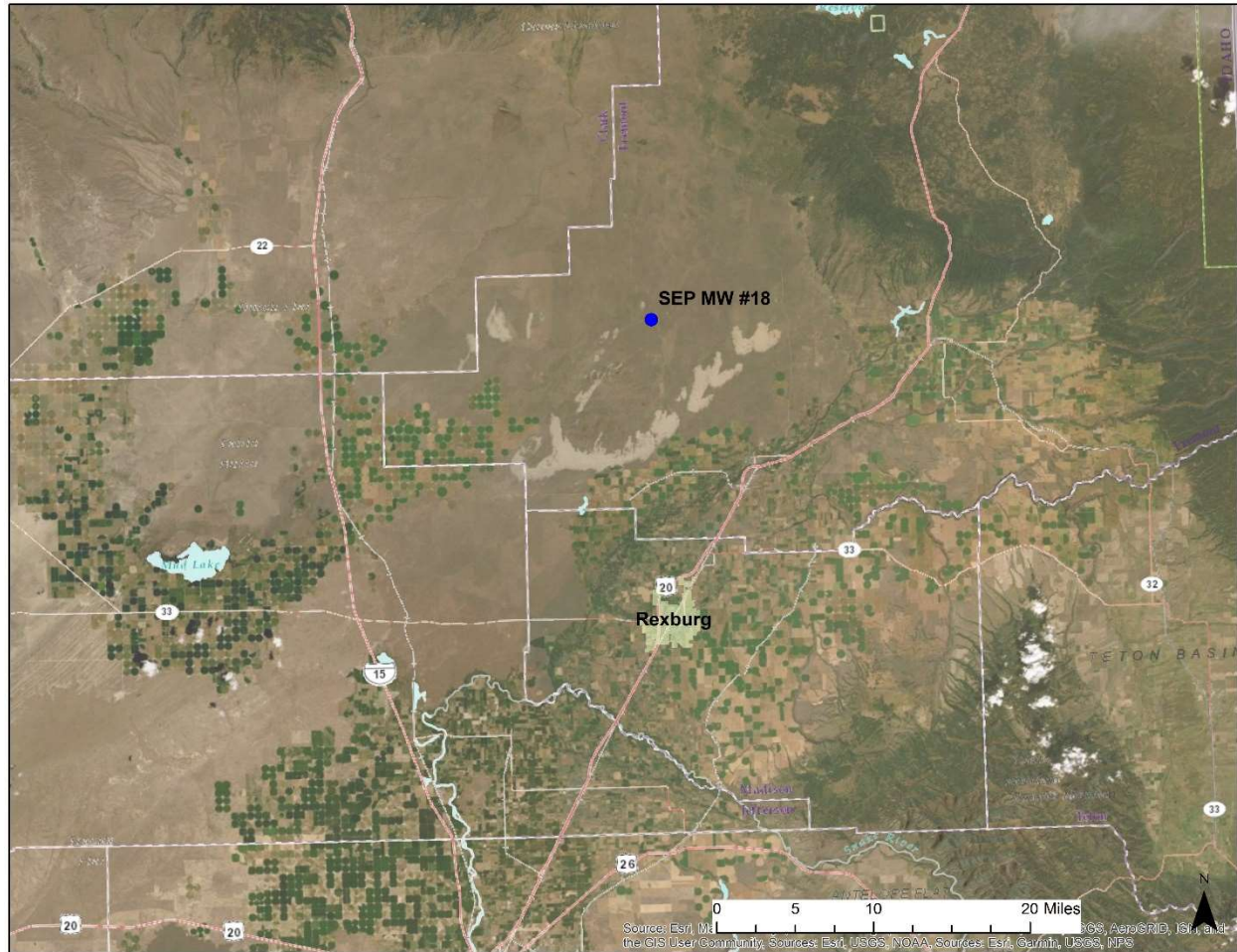
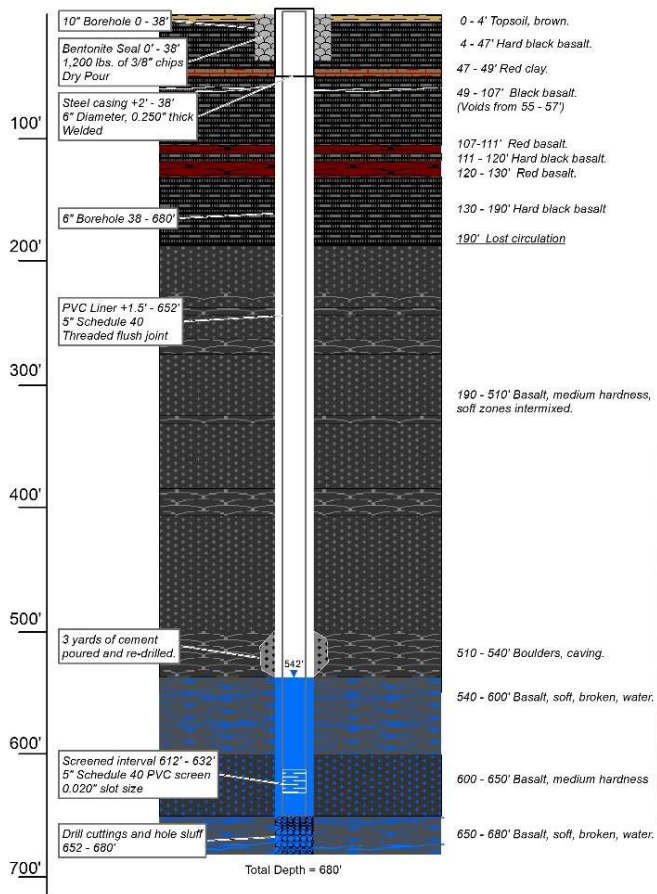


Figure 8. Map of SEP Well #18

Construction Details

Lithologic Description



Monitoring Well SEP #18

Site Location Information
 Lat: 44.06.004 Long: -111.48.689
 PLS: T09N R39E Section 24
 Fremont County

Tag No. D0083756
Drilling Permit No. 895009
Static Water Level = 542'
Completed Depth = 652'



**Well drilled with air rotary rig
 by Tanner Pump & Drilling LLC
 Co. No. 649
 Start date: July 23, 2020 End date: August 14, 2020**

Figure 9. Construction and lithologic details for SEP Well #18

SEP Well #11

The drilling of SEP Monitoring Well #11 was completed August 27, 2020, by Tanner Pump and Drilling. The location of the well is in the upper portion of the ESPA, between Kilgore, Idaho, and Island Park Reservoir (Figure 10). The well was drilled with air rotary and constructed with steel casing to a total depth of 230' bls. At the time of completion, the static water level was 42' bls (Figure 11).

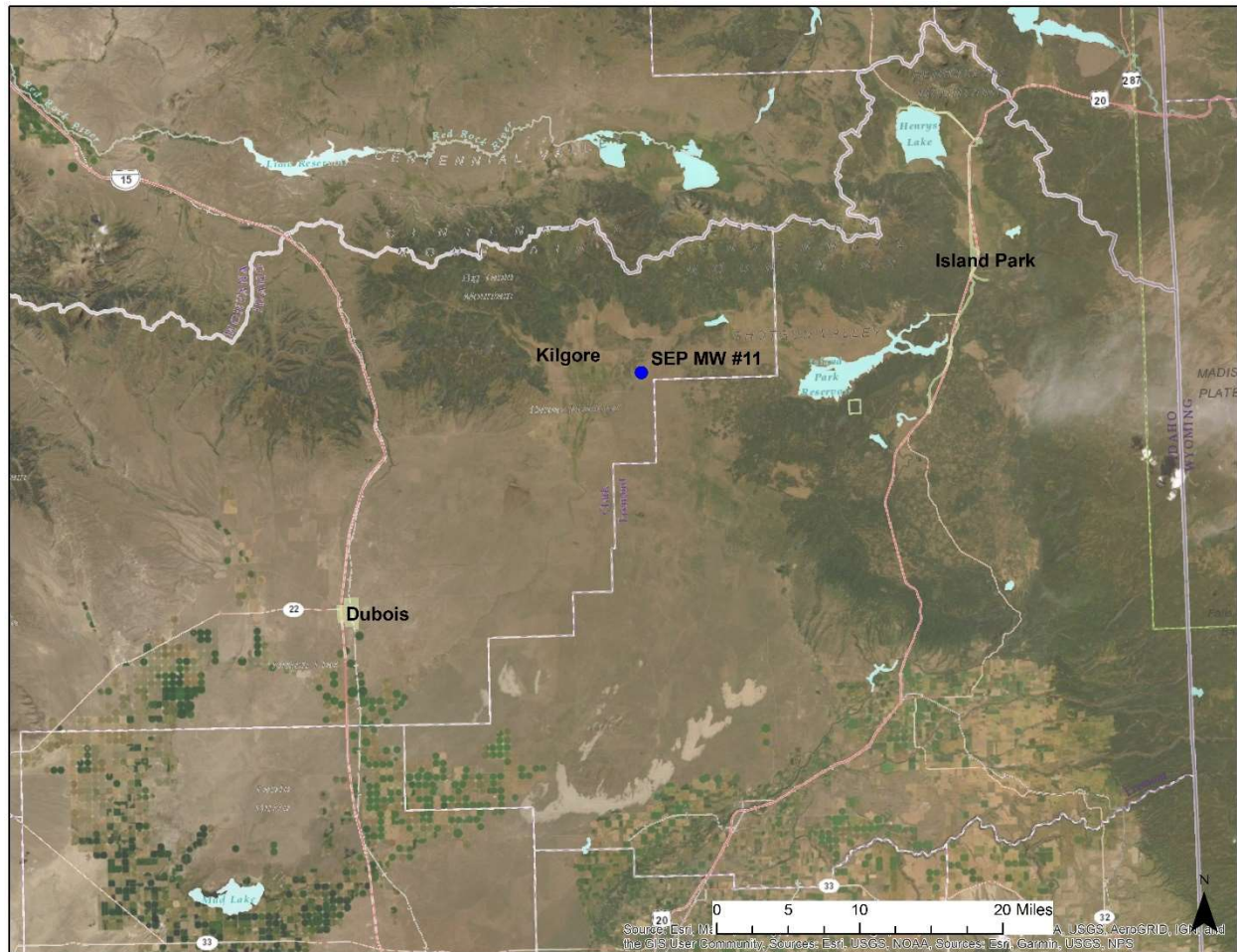
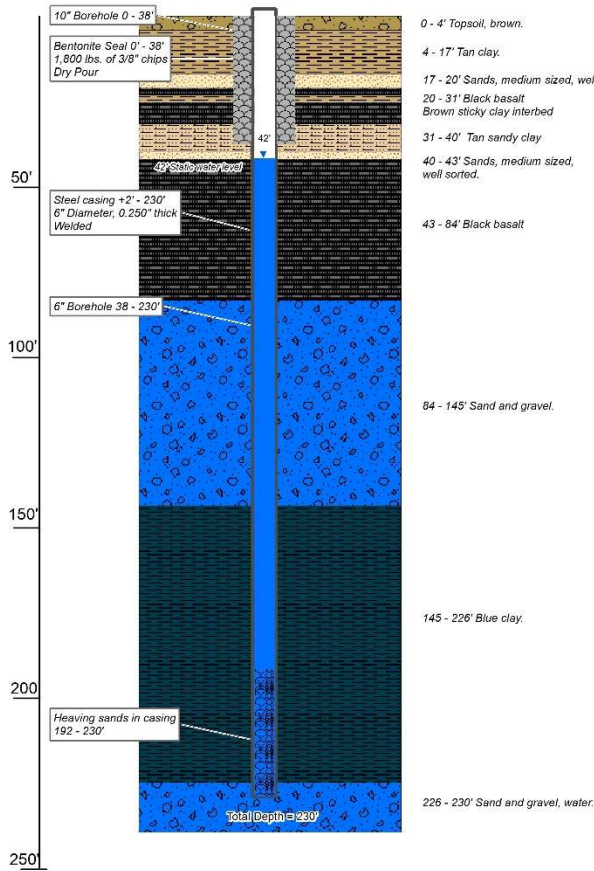


Figure 10. Map of SEP Well #11

Construction Details

Lithologic Description

Monitoring Well SEP #11



Site Location Information
 Lat: 44 24.507 Long: -111 48.538
 PLS: T13N R39E Section 36
 Clark County

Tag No. D0083772
 Drilling Permit No. 895390
 Static Water Level = 42'
 Completed Depth = 192'



Figure 11. Construction and lithologic details of SEP Well #11

SEP Well #24

The drilling of SEP Monitoring Well #24 commenced on October 2, 2020, by Tanner Pump and Drilling. The location of this well is approximately 10 miles west of Gooding, Idaho (Figure 12). The well was drilled with air rotary to a total depth of 323' bls. The well was constructed with PVC casing, with a screened interval between 283 to 323' bls. The well was completed on October 7, 2020, with a static water level of 98' bls. The details of the construction and lithologic interpretation can be seen in Figure 13.

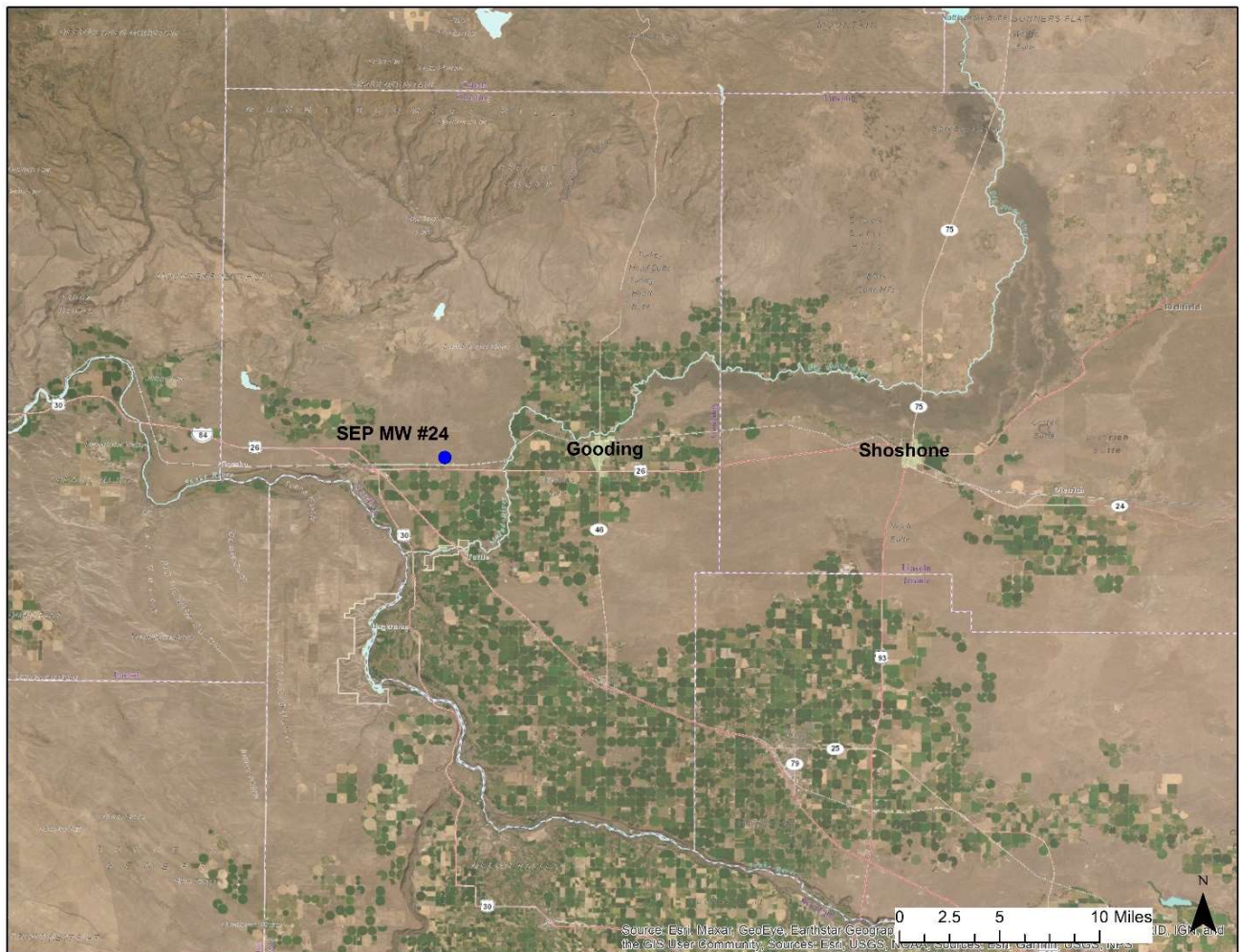
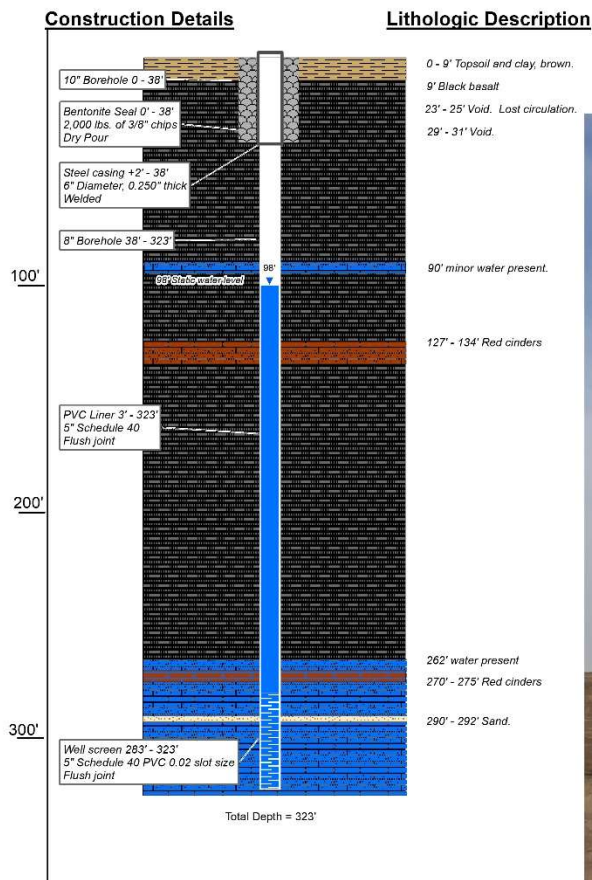


Figure 12. Map of SEP Well #24

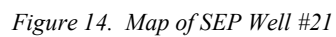


Monitoring Well SEP #24



Figure 13. Construction and lithologic details of SEP Well #24

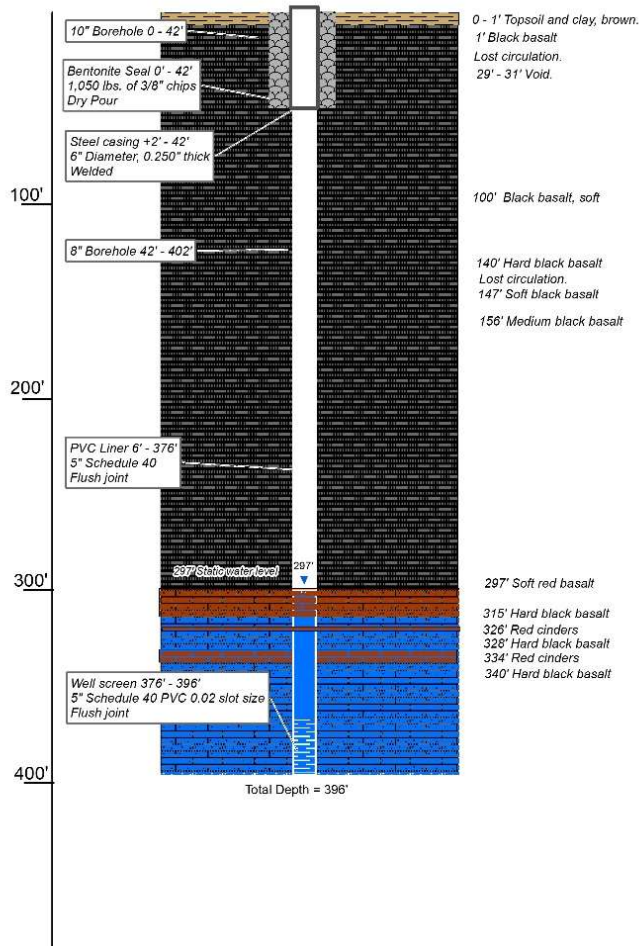
The drilling of SEP Monitoring Well #21 commenced on October 20, 2020, by Tanner Pump and Drilling. This well is located approximately six miles north of the town of Shoshone, Idaho (Figure 14). The well was drilled with air rotary to a total depth of 396' bls. The well was constructed with PVC casing, with a screened interval between 376 to 396' bls. The well was completed on October 30, 2020, with a static water level of 297' bls. The construction and lithologic details can be seen in Figure 15.



Monitoring Well SEP #21

Construction Details

Lithologic Description



Site Location Information
 Lat: 43 02.021 N Long: -114 23.486 W
 PLS: T04S R17E Section 36
 Lincoln County

Tag No. D0085942
Drilling Permit No. 896090
Static Water Level = 297'
Completed Depth = 396'



Well drilled with air rotary rig
by Tanner Pump & Drilling LLC
Co. No. 649
Start date: October 20, 2020 End date: October 30, 2020

Figure 15. Construction and lithologic details of SEP Well #21

SEP Well #20

The drilling of SEP Monitoring Well #20 commenced on June 10, 2021, by Tanner Pump and Drilling. The location of this well is approximately six miles south of the town of Dietrich, Idaho (Figure 16). The well was drilled with air rotary and constructed with steel casing to a total depth of 423' bls. The well was completed on June 28, 2021, with a static water level of 268' bls (Figure 17).

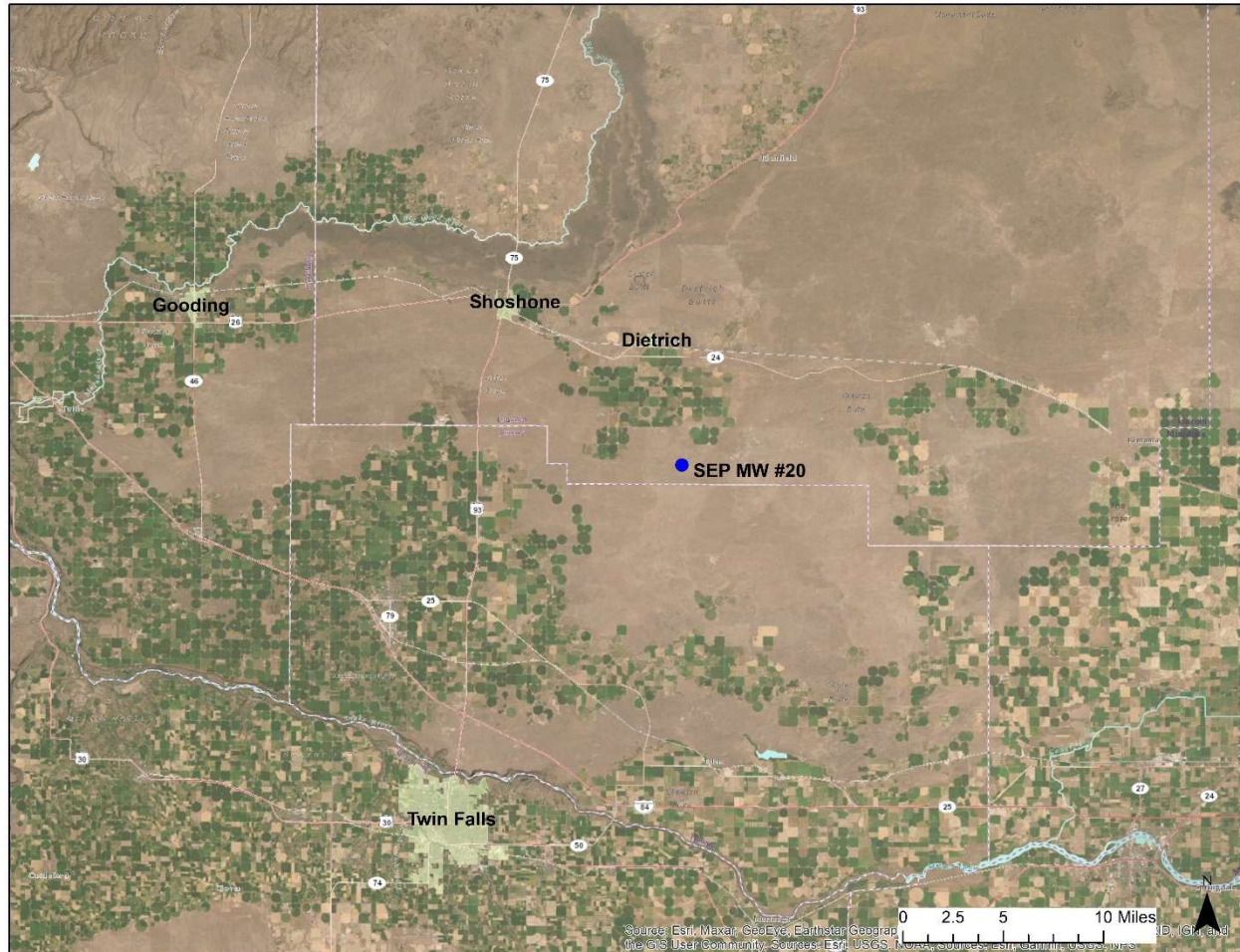
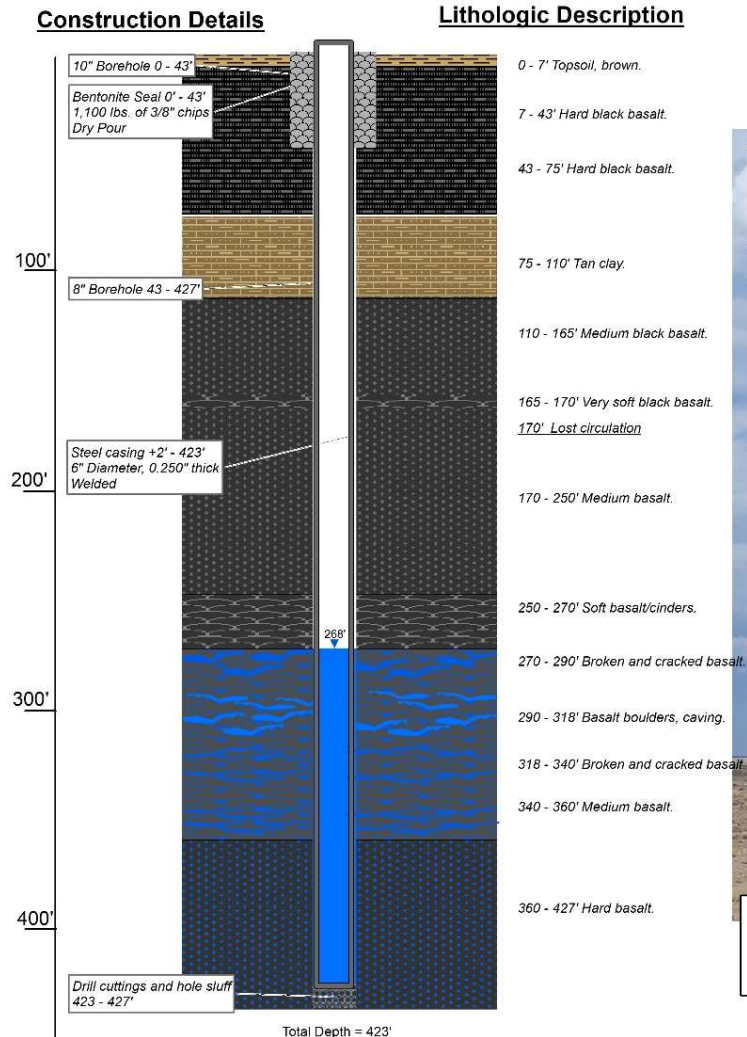


Figure 16. Map of SEP Well #20



Monitoring Well SEP #20

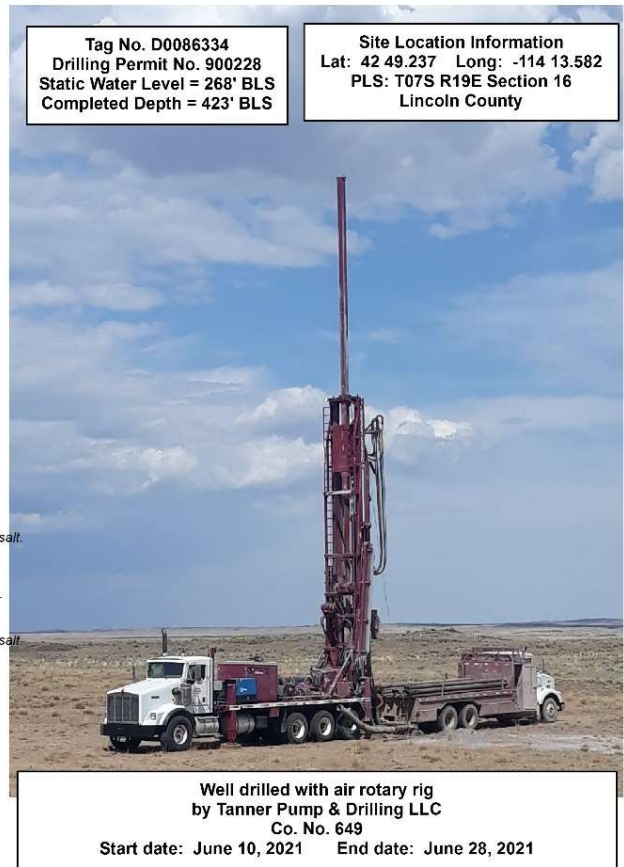


Figure 17. Construction and lithologic details of SEP Well #20

SEP Well #15

The drilling of SEP Monitoring Well #15 began on June 6, 2021, by D&C Well Drilling. This well is located approximately 15 miles northwest of the town of Aberdeen, Idaho (Figure 18). The well was drilled with air rotary to a depth of 654' bls. The well was constructed with PVC casing, screened from 614' to 654'. The well was completed on July 1, 2021, with a water level of 601' bls. The lithologic and construction details can be seen in Figure 19.

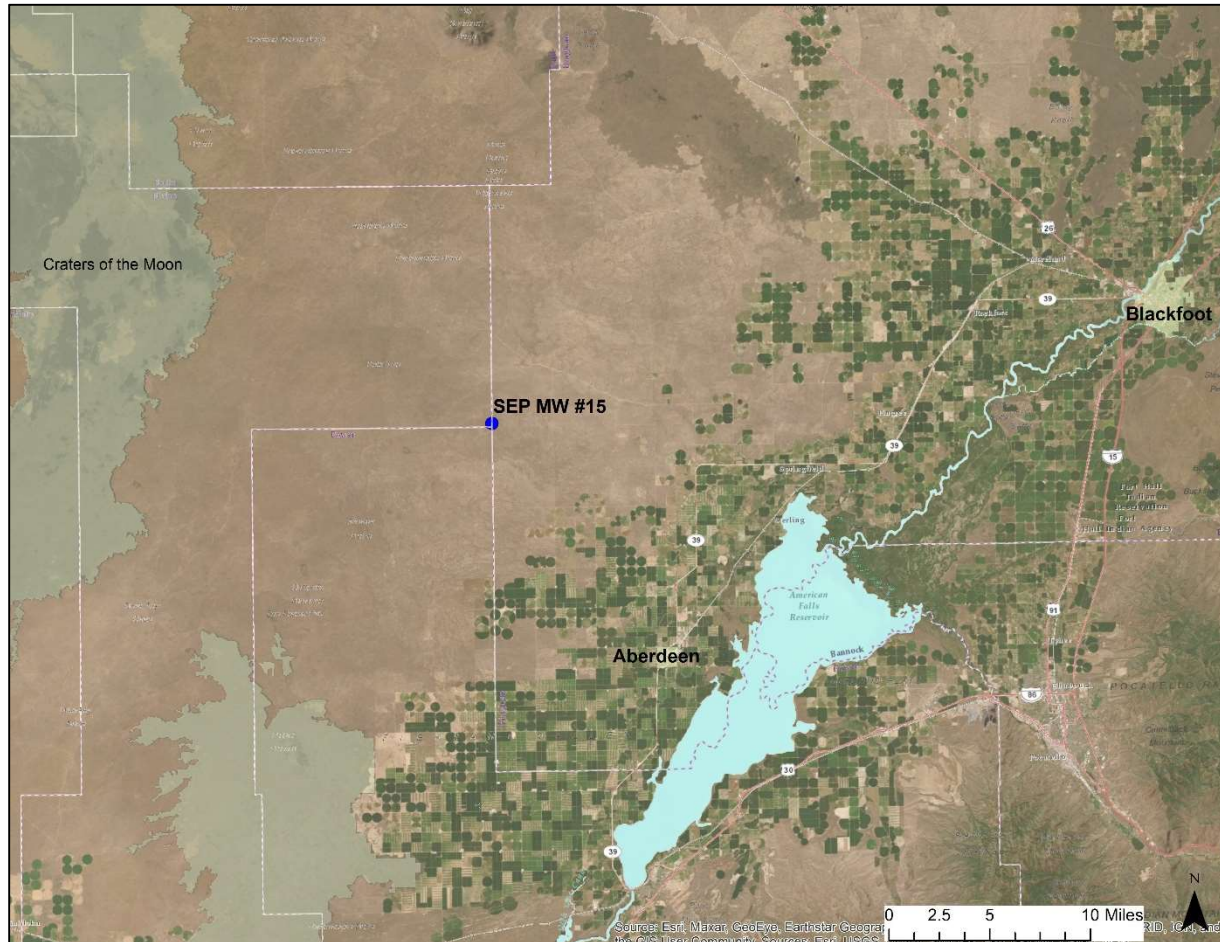


Figure 18. Map of SEP Well #15

Monitoring Well SEP #15

Tag No. D86072
 Drilling Permit No. 900553
 Well Number 03S 29E 36BBC1
 Static Water Level = 601' BLS
 Completed Depth = 657' BLS

Well drilled with air rotary
 by D&C Drilling (Co. No. 765)
 Start Date: 6/28/2021
 End Date: 7/1/2021

Site Location
 Lat: 43.1221 Long: -113.0258
 PLS: T3S R29E S. 36
 Elevation: 4983 ft

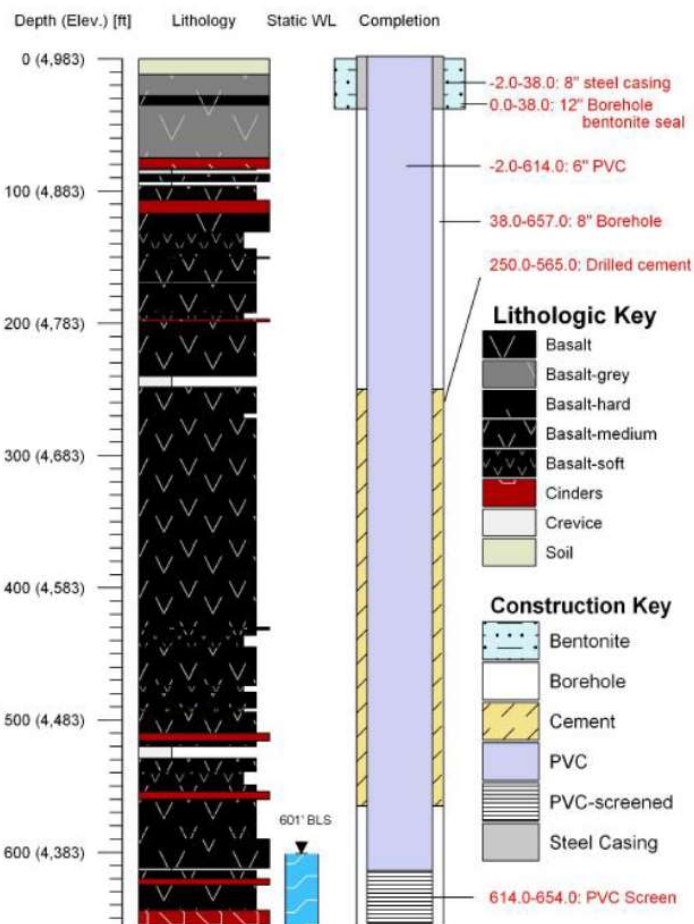


Figure 19. Construction and lithologic details of SEP Well #15

SEP Well #22

The drilling of SEP Monitoring Well #22 began on June 28, 2021, by Tanner Pump and Drilling. This well is in Lincoln County, approximately five miles southeast of the town of Shoshone, Idaho (Figure 20). The well was drilled with air rotary and finished on July 19, 2021, at a total depth of 402' bls. The well was constructed with steel casing, perforated at the bottom 20' of the well. At the time of completion, the water level in the well was 240' bls. The details of the final construction and the lithologic interpretation can be seen in Figure 21.



Figure 20. Map of SEP Well #22

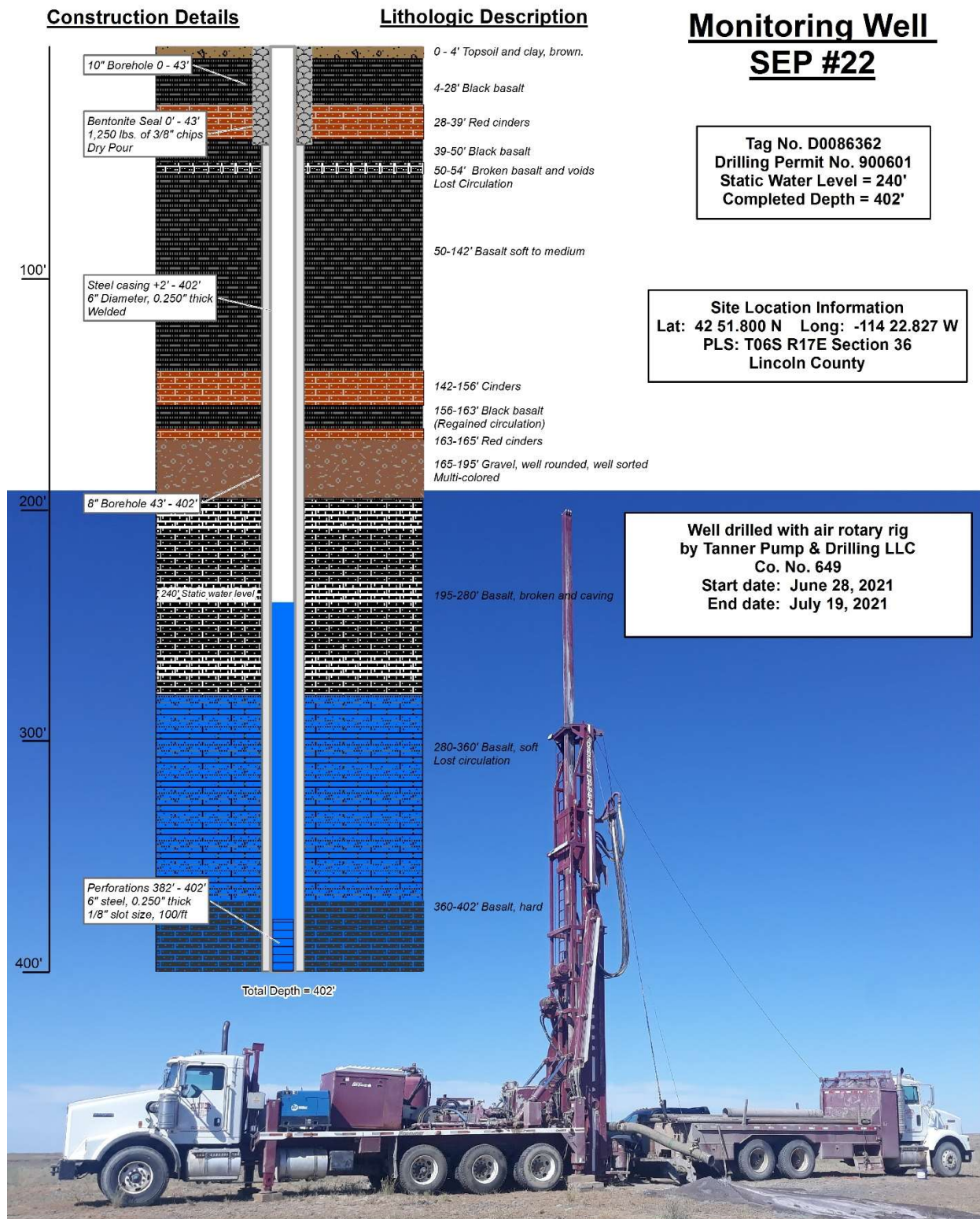


Figure 21. Construction and lithologic details of SEP Well #22

SEP Well #16

The drilling of SEP Monitoring Well #16 began on June 25, 2021, by High Plains Well Drilling. This well is in Butte County, approximately seven miles south of Big Southern Butte on BLM property (Figure 22). In addition to providing an excellent location to collect water level data from this portion of the aquifer, this well can be used to provide a source of water to the BLM for fire suppression and stock watering activities should it be needed. On August 14, 2021, the proposed total depth of 1,040' bls was reached. However, no water was present and unstable conditions did not allow the borehole to remain open. High Plains Drilling removed their rig and equipment from the site, and the USGS was contracted to finish the well to a newly proposed total depth of 1,200' bls. The USGS began deepening this well in the Fall of 2021; however, weather conditions halted the progress of the completion of this well until the Spring of 2022. The final depth of the well was reached on May 4, 2022 to a depth of 1,218' bls, with a static water level of 1,040' bls. The lithologic and construction details of the well drilled by High Plains can be seen in Figure 23.

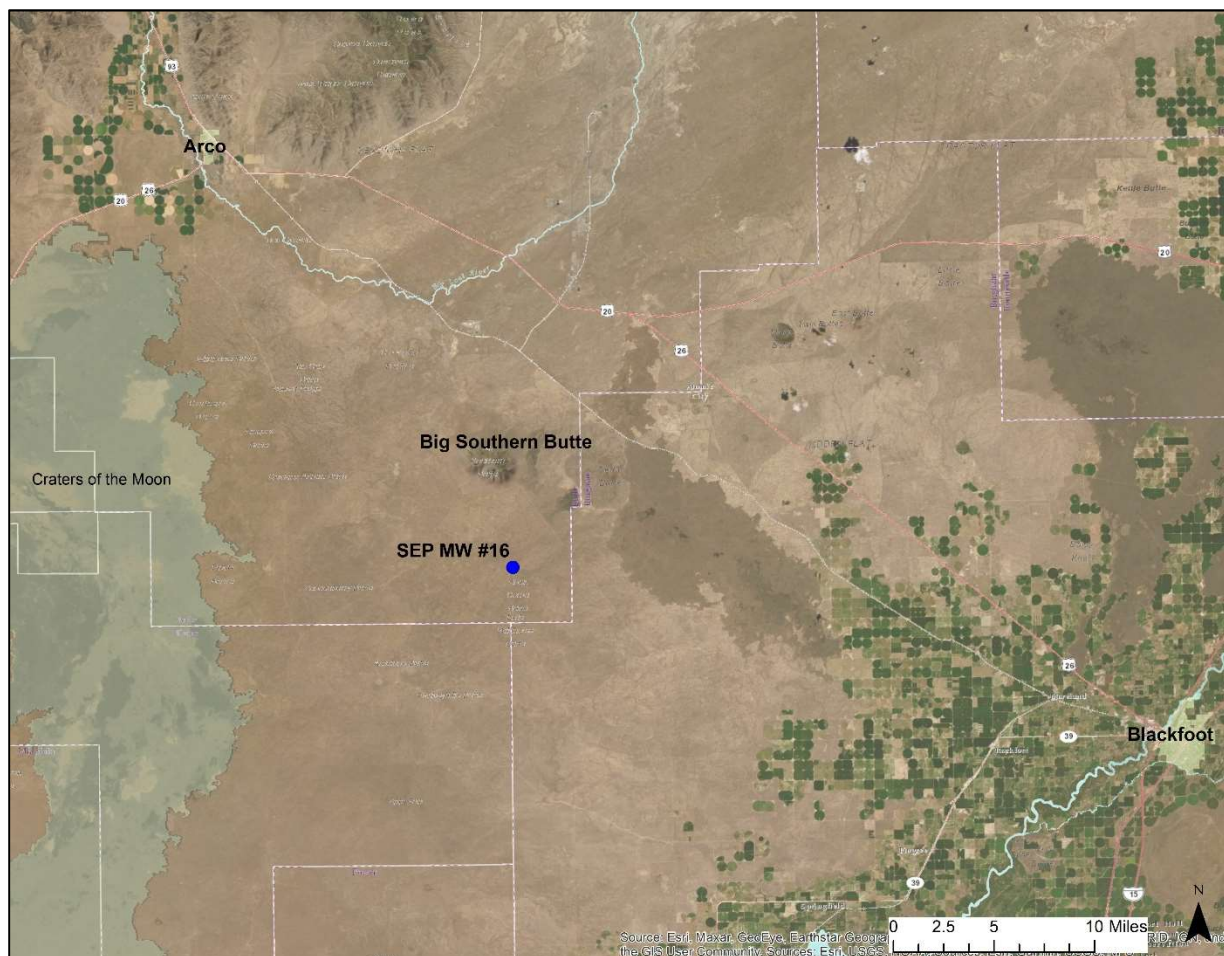


Figure 22. Map of SEP Well #16

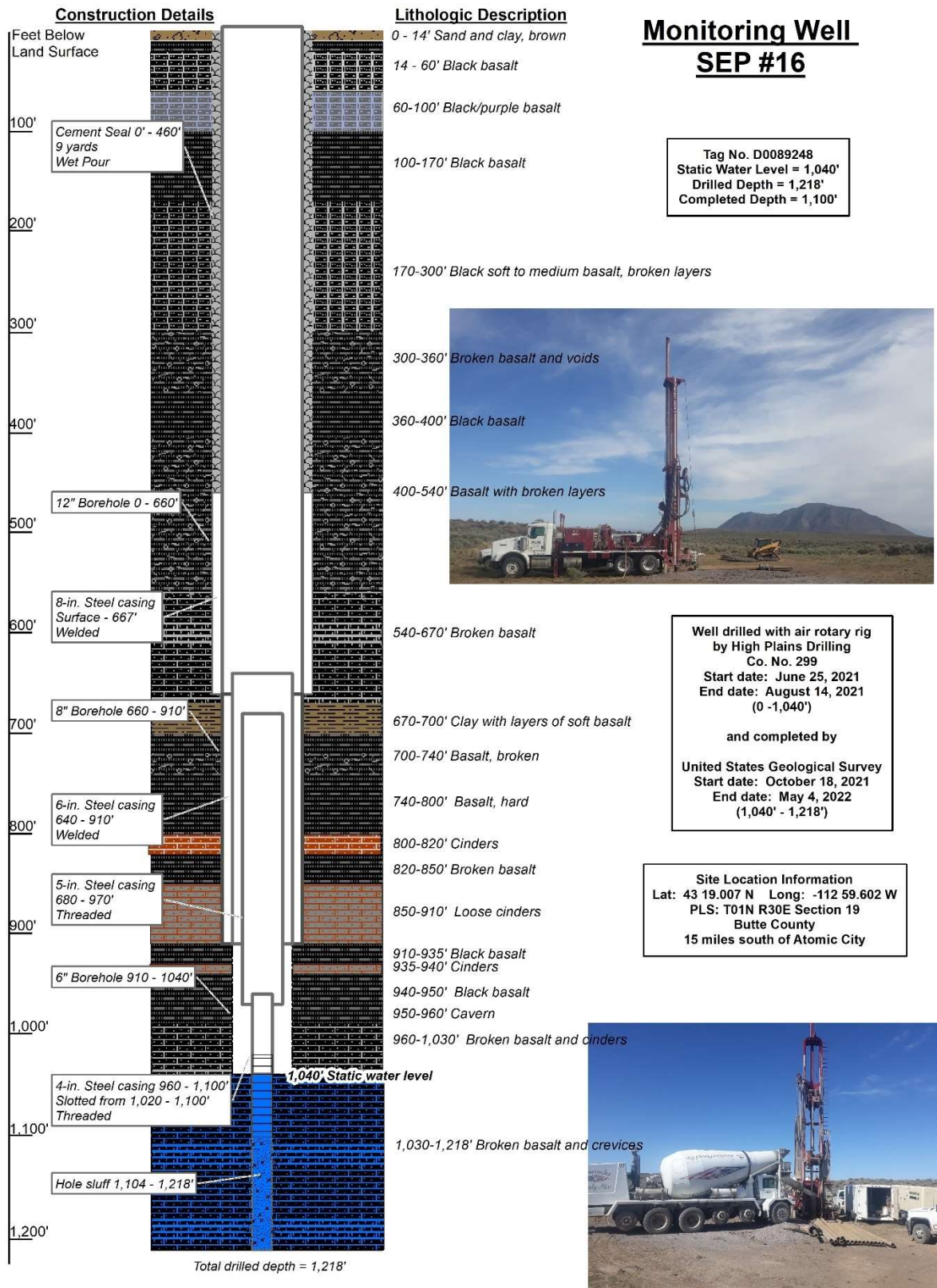


Figure 23. Construction and lithologic details of SEP Well #16

SEP Well #26

The drilling of SEP Monitoring Well #26 commenced on September 6, 2021, by Thomas Drilling Company. This well is in Jefferson County, northwest of the town of Roberts, Idaho and southeast of Mud Lake (Figure 24). The well was drilled with air rotary and constructed with PVC casing to a total depth of 415' bls. The well was completed on September 9, 2021, with a static water level of 252' bls (Figure 25).

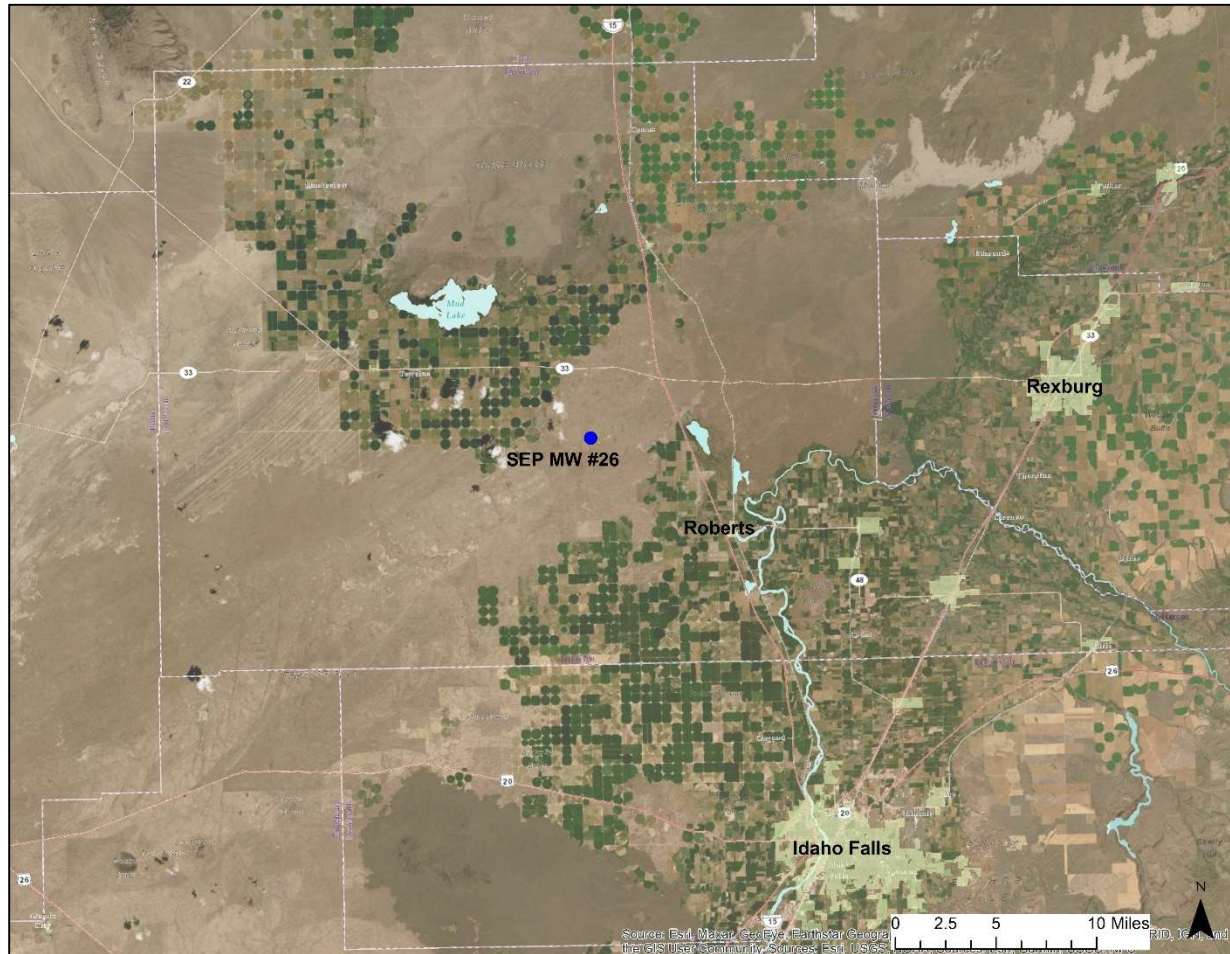


Figure 24. Map of SEP Well #26

SEP #26

Lat: 43.7892 Long: -112.2667
PLS: T05N R36E Section 06

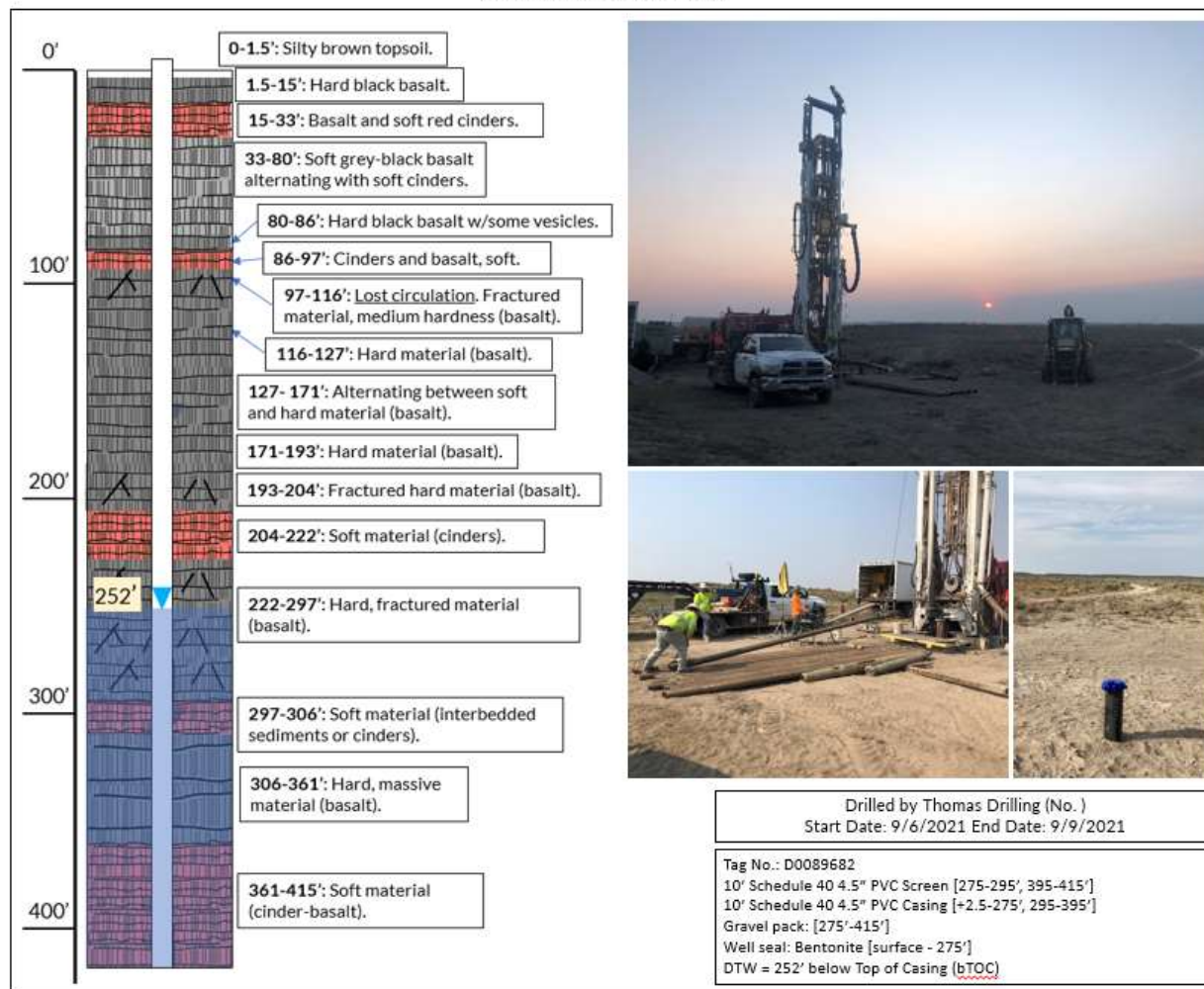


Figure 25. Construction and lithologic details of SEP Well #26

SEP Well #25

The drilling of SEP Monitoring Well #25 commenced on September 13, 2021, by Thomas Drilling. This well is in Jefferson County, approximately eight miles north of Mud Lake (Figure 26). The well was drilled with air rotary to a depth of 275' bls. The well was constructed with steel casing to a depth of 235' bls and open hole for the bottom 40' of the well. The well was completed on September 16, 2021, with a static water level of 158' bls (Figure 27).

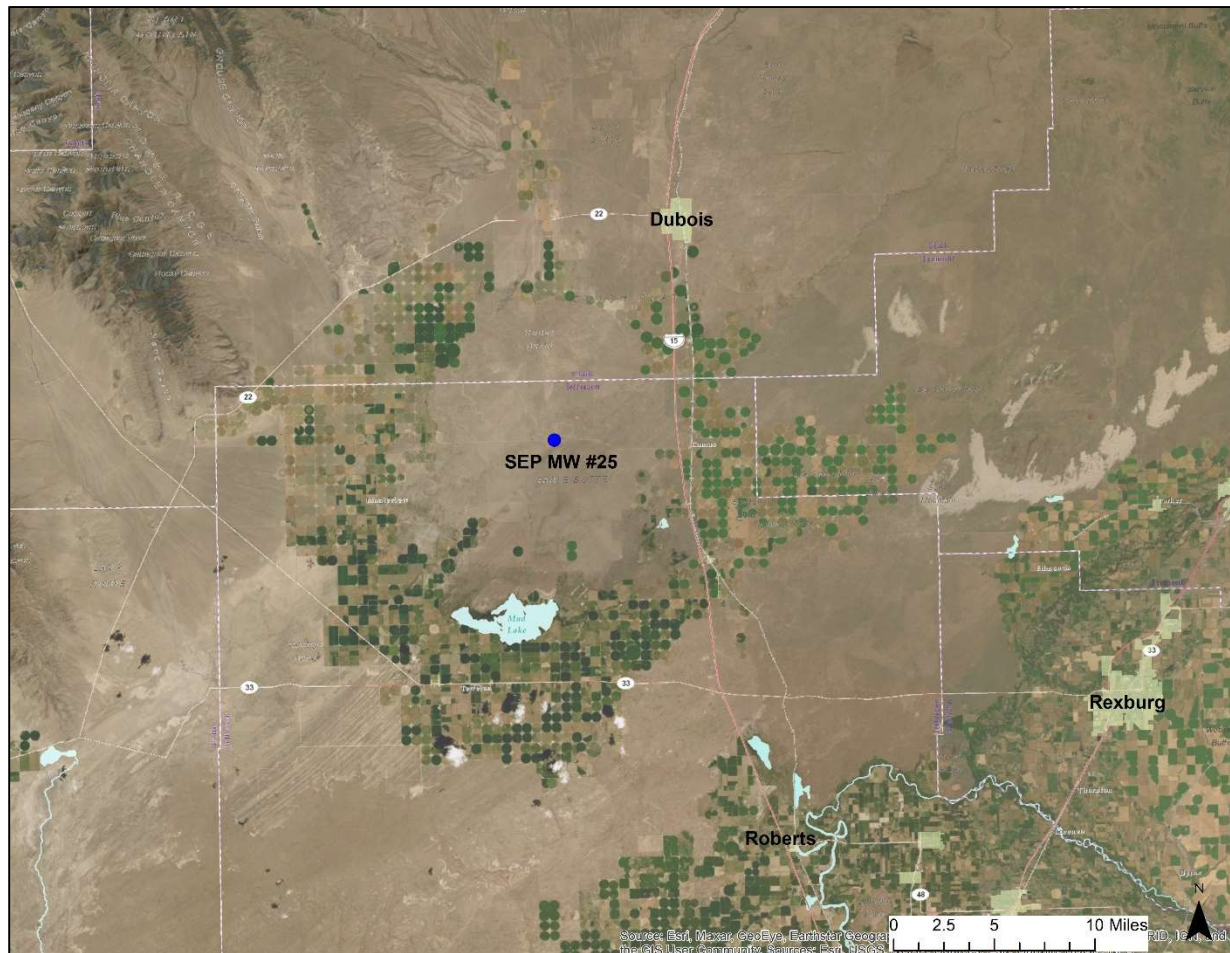
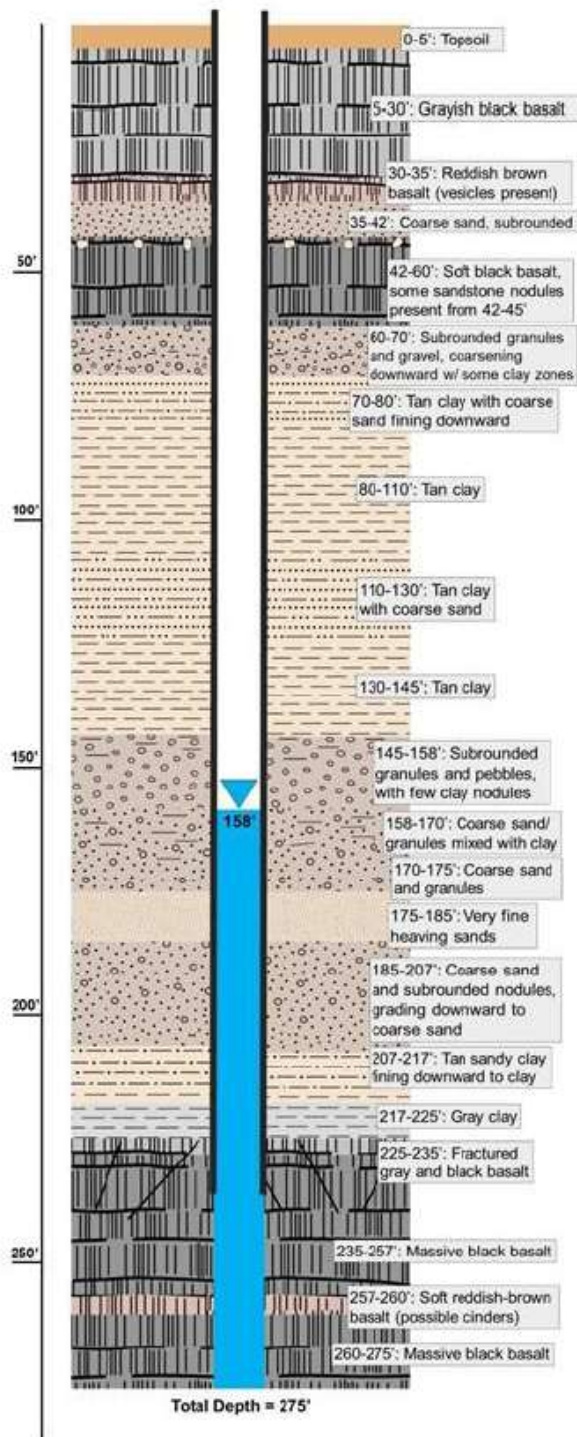


Figure 26. Map of SEP Well #25

SEP Well #25



Tag #D0089685
Casing: 8" steel [+2 to 235']
Total depth: 275'
DTW = 158'



Site Location Information
Lat/Long: 44.01591, -112.34971
PLS: T08N R35E Section 16
County: Jefferson



Well drilled with air rotary by
Thomas Drilling, Inc.
Start date: September 13, 2021
End date: September 16, 2021

Figure 27. Construction and lithologic details of SEP Well #25

SEP Well #12

The drilling of SEP Monitoring Well #12 commenced on August 8, 2021, by High Plains Drilling Company. This well is in Clark County, approximately seven miles northeast of Dubois, Idaho (Figure 28). The well was drilled with air rotary to a depth of 1,170' bls. The well was constructed with steel casing to a depth of 1,070' bls and an open hole completion for the bottom 100' of the well. The well was completed on October 30, 2021, with a static water level of 1,070' bls (Figure 29).

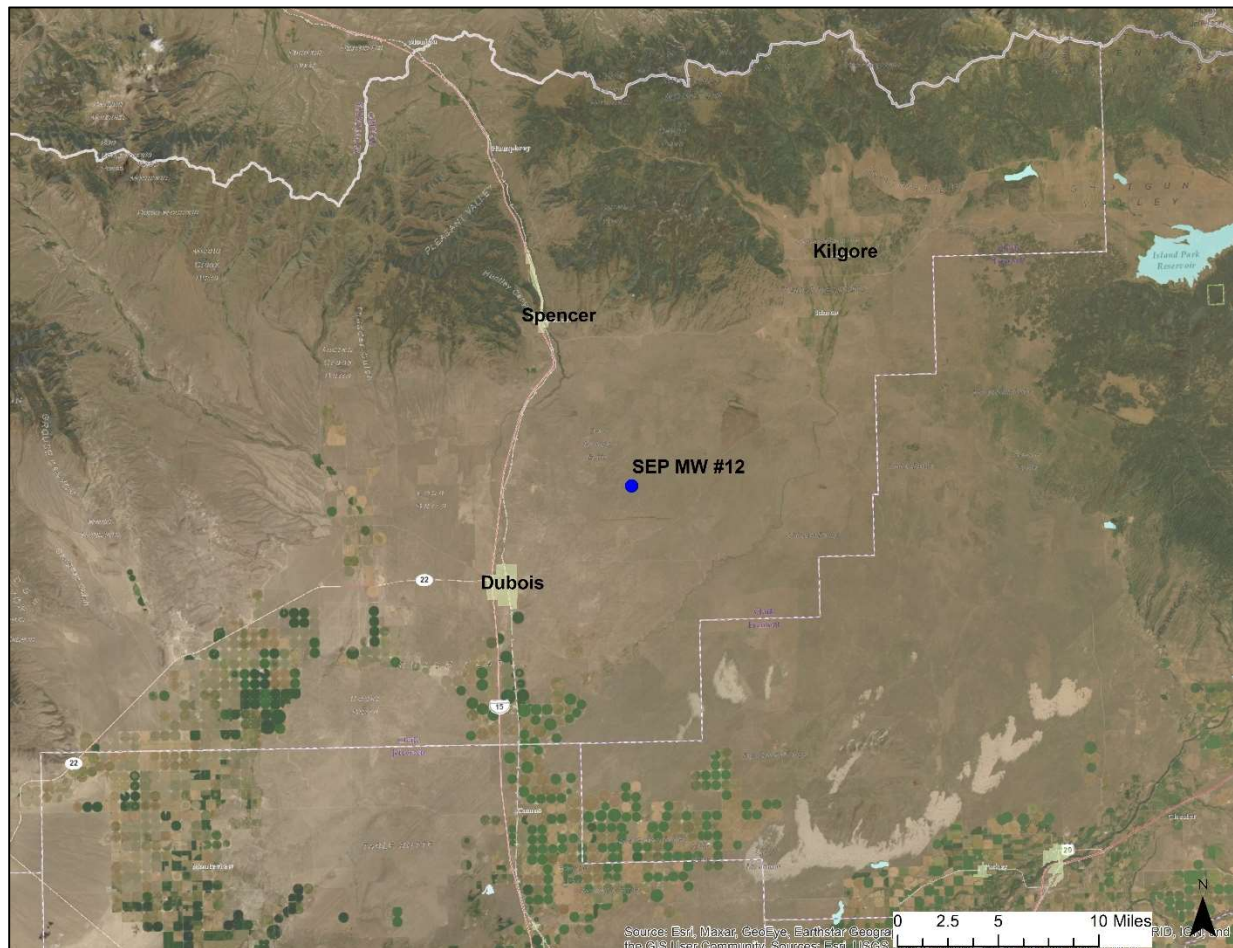
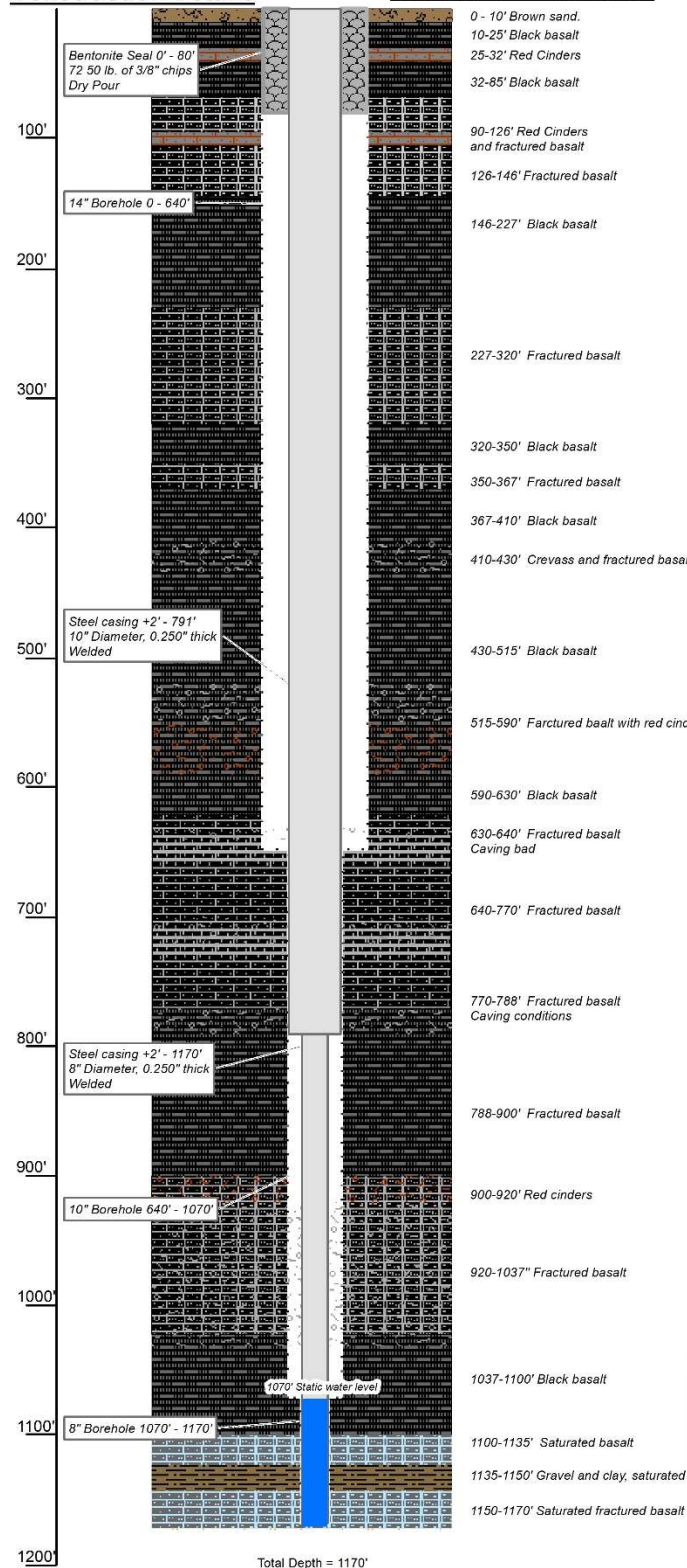


Figure 28. Map of SEP Well #12

Construction Details

Lithologic Description



Monitoring Well

SEP #12

Tag No. D0089664
Static Water Level = 1120'
Completed Depth = 1170'

Site Location Information

Lat: 44 15.574 N Long: -112 00.953 W
PLS: T11N R38E Section 30
Clark County



Well drilled with air rotary rig
by High Plains Drilling
Co. No. 299
Start date: August 8, 2021
End date: October 30, 2021



Figure 29. Construction and lithologic details of SEP Well #12

Section 2. Big Lost River Basin Monitoring Wells

Twenty-two wells were drilled and constructed in the Big Lost River Basin. The purpose of the wells is to provide lithologic details and serve as dedicated, long term monitoring locations in the Big Lost River Valley. The locations of the wells were selected to investigate the surface water/ground water interaction within the valley. The vast majority of subsurface encountered in the drilling of these wells was sand, gravel, and clay layers. All but three of the wells were saturated at the time of construction (Table 2). The wells have been sampled for water quality parameters and they are all equipped with continuous recording water level equipment. The following sections describe the drilling and construction of the Big Lost River Basin monitoring wells.

Table 2. Summary table of the Big Lost River Basin Monitoring Wells

Well Name	Completion Date	Total Depth (feet bls)	Depth to Water (feet bls)	County	Latitude	Longitude	PLS
Walker 20	7/31/2019	20	8.2	Butte	43.617	-113.286	03N 27E Sec. 06
Walker 40	7/31/2019	40	8.4	Butte	43.617	-113.286	03N 27E Sec. 06
Walker 60	8/1/2019	60	8.8	Butte	43.617	-113.286	03N 27E Sec. 06
PU Ranch 20	8/2/2019	20	3.1	Butte	43.653	-113.334	04N 26E Sec. 23
PU Ranch 40	8/2/2019	40	3.3	Butte	43.653	-113.334	04N 26E Sec. 23
PU Ranch 60	8/2/2019	60	8.5	Butte	43.653	-113.334	04N 26E Sec. 23
Granite Trust 20	8/3/2019	20	17.9	Butte	43.666	-113.365	04N 26E Sec. 21
Granite Trust 40	8/3/2019	40	17.8	Butte	43.666	-113.365	04N 26E Sec. 21
Granite Trust 60	8/3/2019	60	18	Butte	43.666	-113.365	04N 26E Sec. 21
Barnes 20	8/4/2019	20	6.6	Butte	43.792	-113.367	05N 26E Sec. 04
Barnes 40	8/4/2019	40	7.3	Butte	43.792	-113.367	05N 26E Sec. 04
Barnes 60	8/4/2019	60	6.8	Butte	43.792	-113.367	05N 26E Sec. 04
Rothwell 20	8/5/2019	20	dry	Custer	43.847	-113.442	06N 25E Sec. 14
Rothwell 40	8/5/2019	40	27.9	Custer	43.847	-113.442	06N 25E Sec. 14
Rothwell 60	8/5/2019	60	43.2	Custer	43.847	-113.442	06N 25E Sec. 14
Stennett 20	8/3/2019	20	dry	Custer	43.859	-113.471	06N 25E Sec. 10
Stennett 40	8/4/2019	40	39.1	Custer	43.859	-113.471	06N 25E Sec. 10
Stennett 50	8/5/2019	50	47.3	Custer	43.859	-113.471	06N 25E Sec. 10
Bingham 20	7/6/2021	20	dry	Custer	43.828	-113.411	06N 26E Sec. 19
Bingham 50	7/8/2021	50	30.4	Custer	43.828	-113.411	06N 26E Sec. 19
Bingham 100	7/9/2021	100	34.2	Custer	43.828	-113.411	06N 26E Sec. 19
Granite Trust 200	8/29/2021	200	58	Butte	43.666	-113.365	04N 26E Sec. 21

Walker 20/40/60

The Walker site is located just south of Arco, Idaho, on a parcel of privately owned property (Figure 30). The Walker site is approximately one mile east of the Big Lost River and approximately 50' east of a lateral of the Ferris Slough that was actively diverting water during the time of the drilling. Drilling commenced on July 30, 2019, and was completed on August 1, 2019, by HazTech Drilling, using a hollow stem auger drilling method. Three wells were installed to depths of 20', 40', and 60' bls. An existing irrigation well completed to a depth of 80' is located approximately 50' to the northeast of the monitoring wells. Construction and lithologic details can be seen in Figure 31. The subsurface material encountered in these wells included 6' of topsoil, underlain by approximately 15' of gravels and sands. Beneath the gravels, fine-grained sediments (clays and sands) made up the remaining of the subsurface material. Dark heaving sands were encountered in the bottom 12' that served as a natural filter pack for the 60' well. At the time of completions, depths to water in all three wells were similar, between 8 to 9' bls.

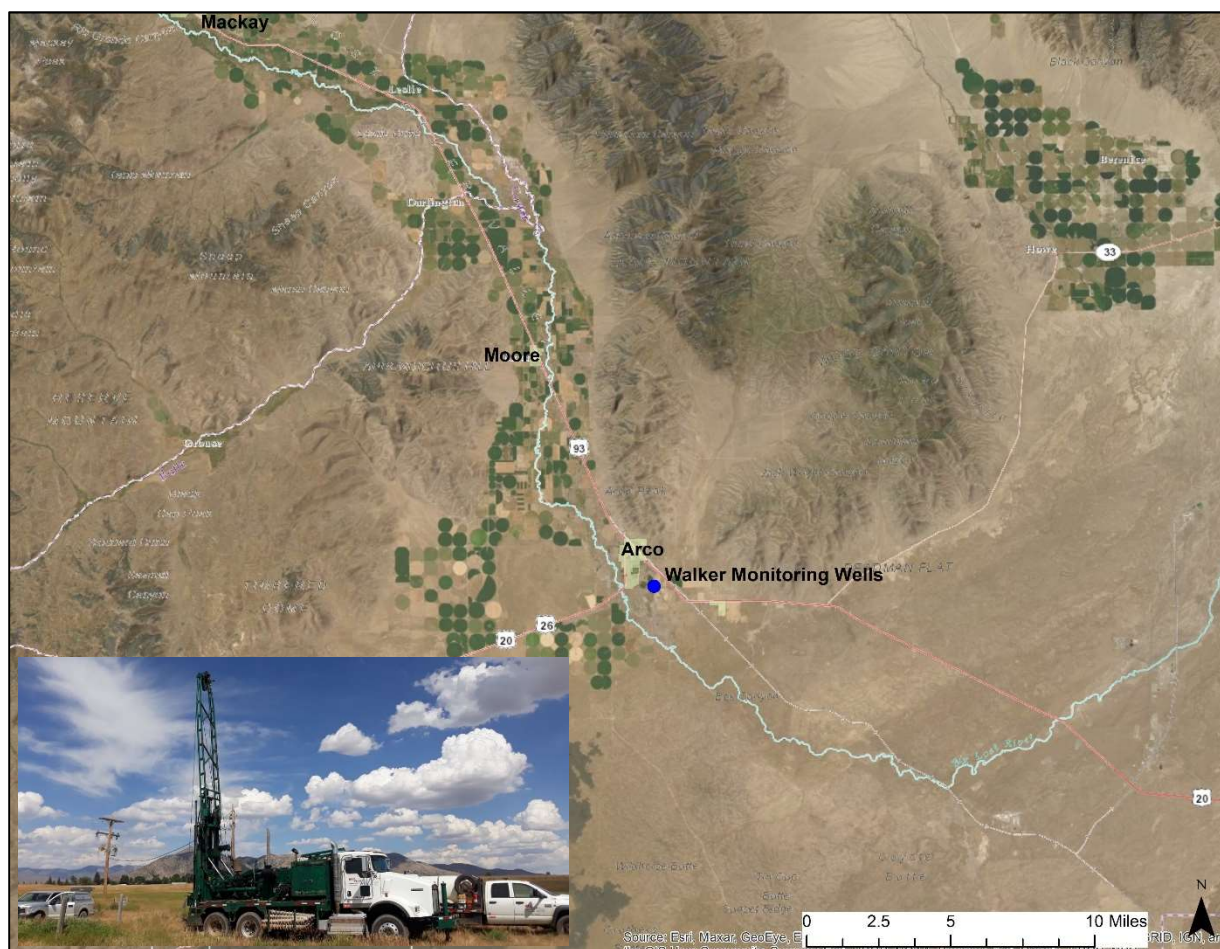


Figure 30. Map of Walker SEP Monitoring Wells

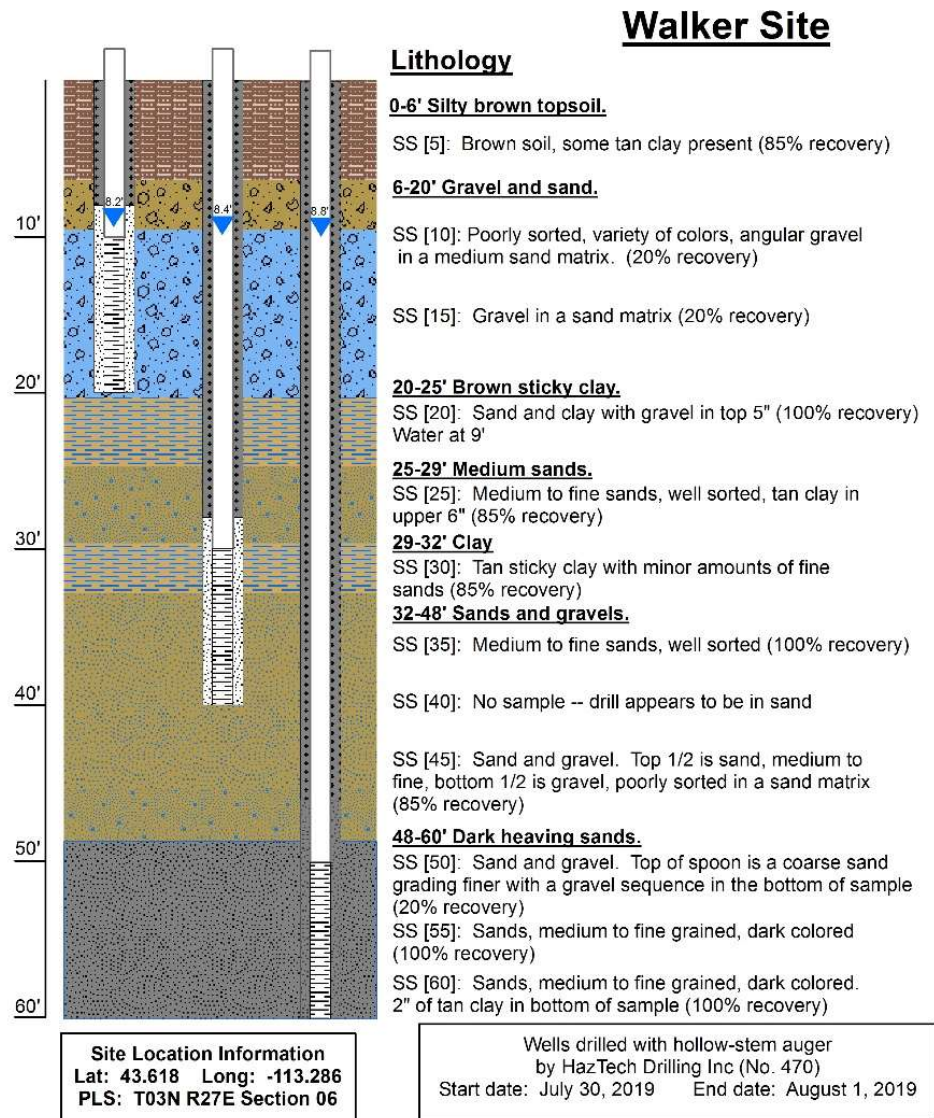


Figure 31. Construction and lithologic details of the Walker SEP Monitoring Wells

PU Ranch 20/40/60

The PU Ranch site is located north of Arco, Idaho, on a parcel of privately owned property near the Arco Diversion (Figure 32). The site is located approximately 200' from the Big Lost River, which was flowing during the drilling. Drilling commenced on August 1, 2019, and was completed by August 2, 2019 by HazTech Drilling. Three wells were installed to depths of 20', 40', and 60'. Construction and lithologic details can be seen in Figure 33. The upper 37' of the subsurface was composed of gravel with sands. Below the gravels was a thick sequence of primarily dark sands with minor amounts of gravel. Water was encountered at approximately 5' bls. The depths to water in the 20' and 40' wells were similar, approximately 3' bls. The 60' well had a water level of approximately 8' bls, indicating a downward gradient between the two water bearing formations.

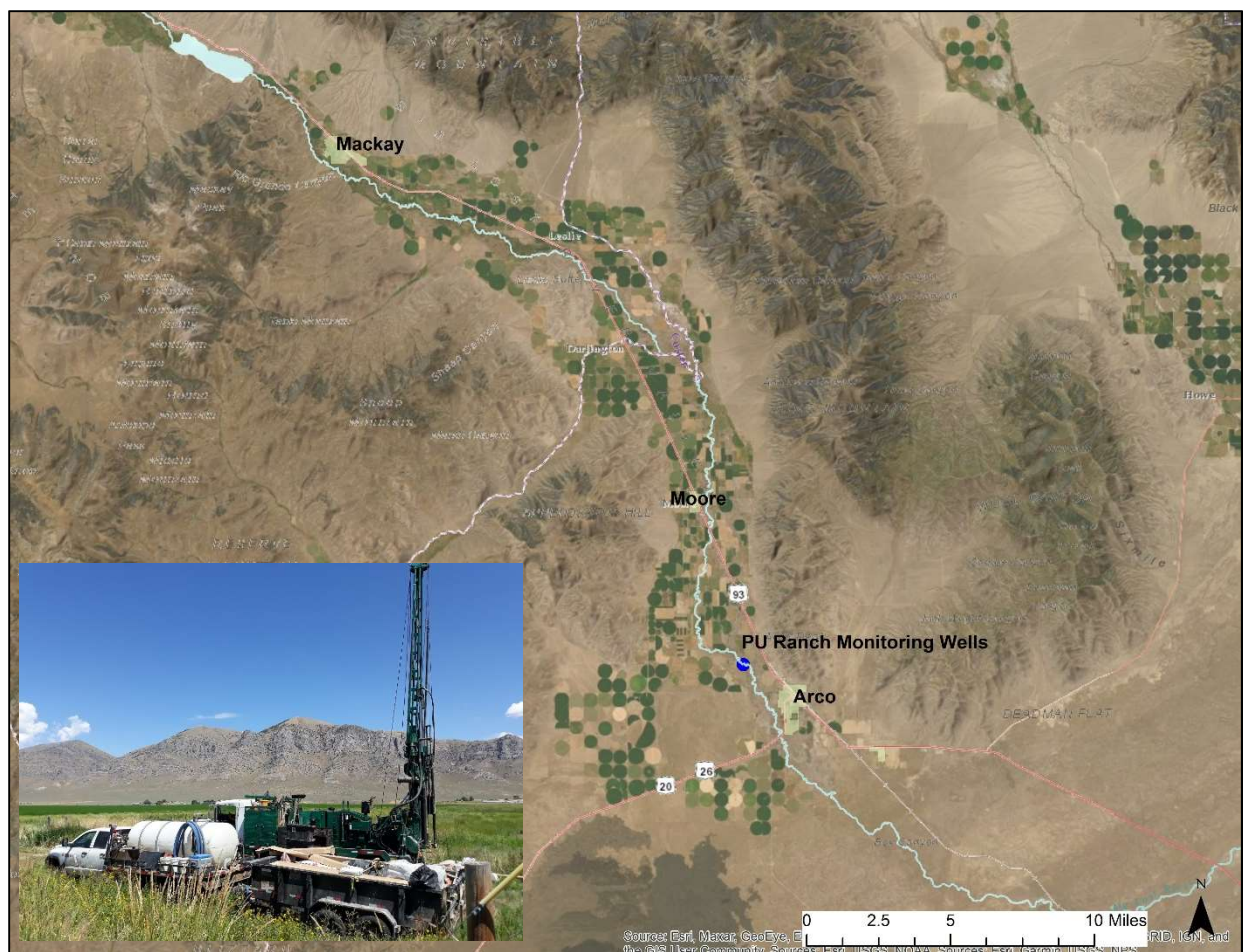
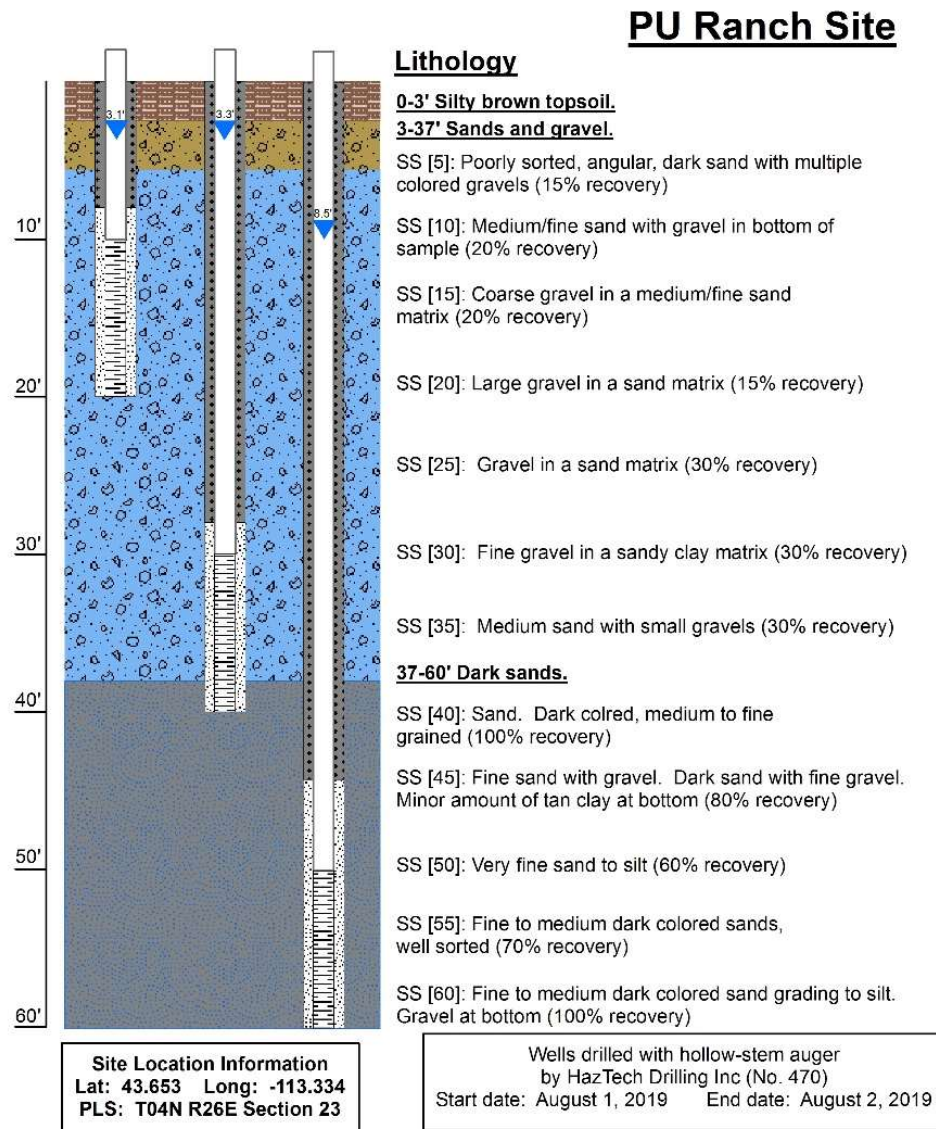


Figure 32. Map of the SEP PU Ranch Monitoring Wells



Construction Details
PU Ranch 20 -- D0082992 10' Schedule 40 2" PVC screen [10-20'] 10' Schedule 40 2" PVC casing [+2.5-10'] Sand pack: 325 lbs. poured [8-20'] Well seal: 50 lbs. bentonite chips poured [surface-8'] DTW = 3.1' BLS
PU Ranch 40 -- D0082993 10' Schedule 40 2" PVC screen [30-40'] 10' Schedule 40 2" PVC casing [+2.5-30'] Sand pack: 175 lbs. poured [28-40'] Well seal: 290 lbs cement through tremie [surface-28'] DTW = 3.3' BLS
PU Ranch 60 -- D0082994 10' Schedule 40 2" PVC screen [50-60'] 10' Schedule 40 2" PVC casing [+2.5-50'] Sand pack: 350 lbs poured [46-60'] Well seal: 540 lbs cement through tremie [surface-46'] DTW = 8.5' BLS



Figure 33. Construction and lithologic details of the SEP PU Ranch Monitoring Wells

Granite Trust 20/40/60

The Granite Trust site is located approximately five miles northwest of Arco, Idaho, on a parcel of privately owned property (Figure 34). The site is approximately 50' west of the Big Lost River channel, which was flowing at the time of the drilling. Drilling commenced on August 2, 2019 and was completed on August 3, 2019 by HazTech Drilling. Three wells were installed to depths of 20', 40', and 60' bls. Construction and lithologic details can be seen in Figure 35. Sequences of sands and gravels (primarily gravels) made up the lithology encountered while drilling these three wells. At the time of completions, the depths to water were similar in all three wells, around 18' bls.

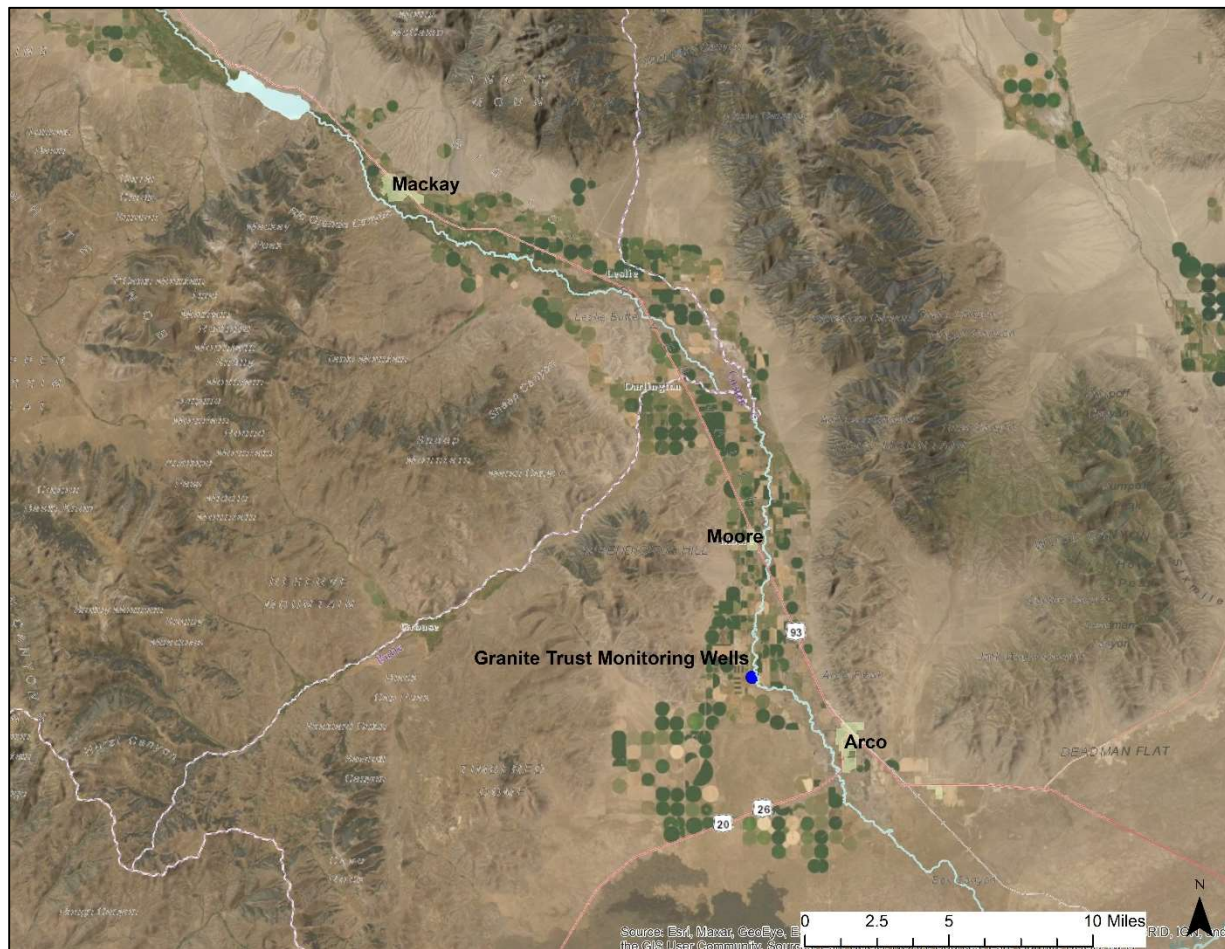


Figure 34. Map of the SEP Granite Trust Monitoring Wells

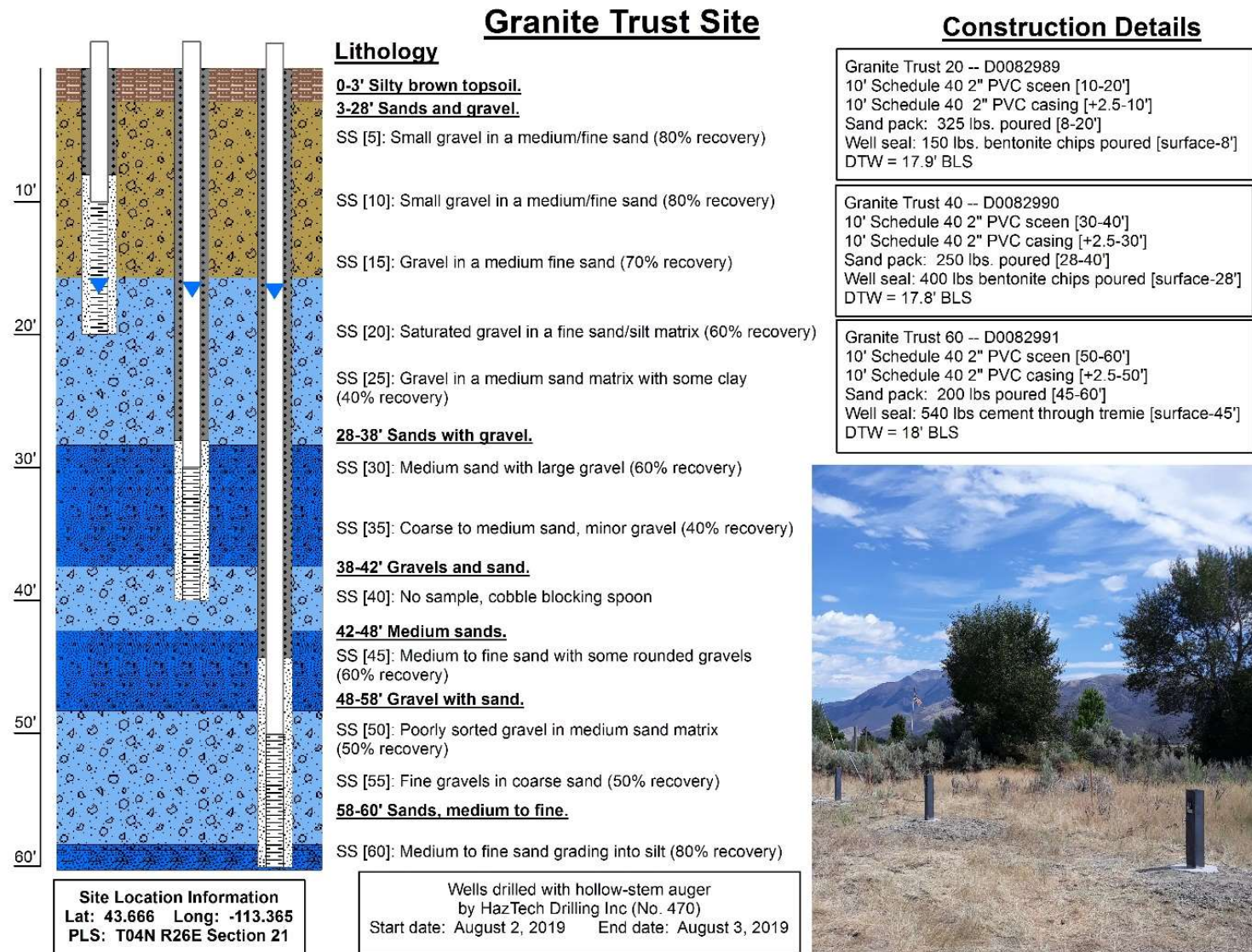


Figure 35. Construction and lithologic details of the SEP Granite Trust Monitoring Wells

Barnes 20/40/60

The Barnes site is located north of Moore, Idaho, on a parcel of privately owned property (Figure 36). The Big Lost River channel is approximately one-quarter mile east of the drill site and was flowing during the time of the drilling. Drilling commenced on August 3, 2019, and was completed on August 4, 2019 by HazTech Drilling. Three wells were installed to depths of 20', 40', and 60'. Construction and lithologic details can be seen in Figure 37. Beneath the top 7' of topsoil, saturated sands and gravels composed the majority of the subsurface encountered. The depth to water in all three wells was very similar, around 7' bls.

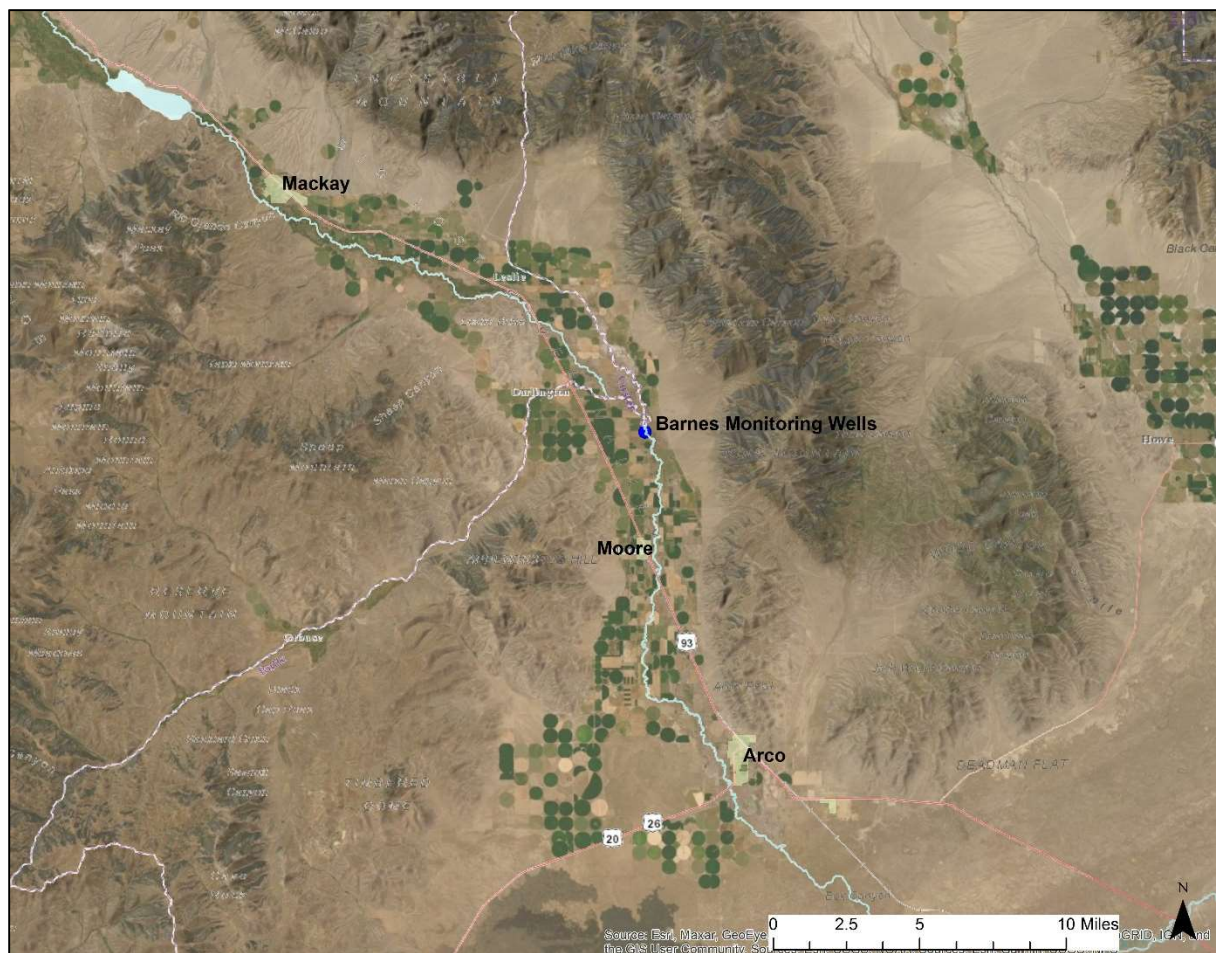


Figure 36. Map of the SEP Barnes Monitoring Wells

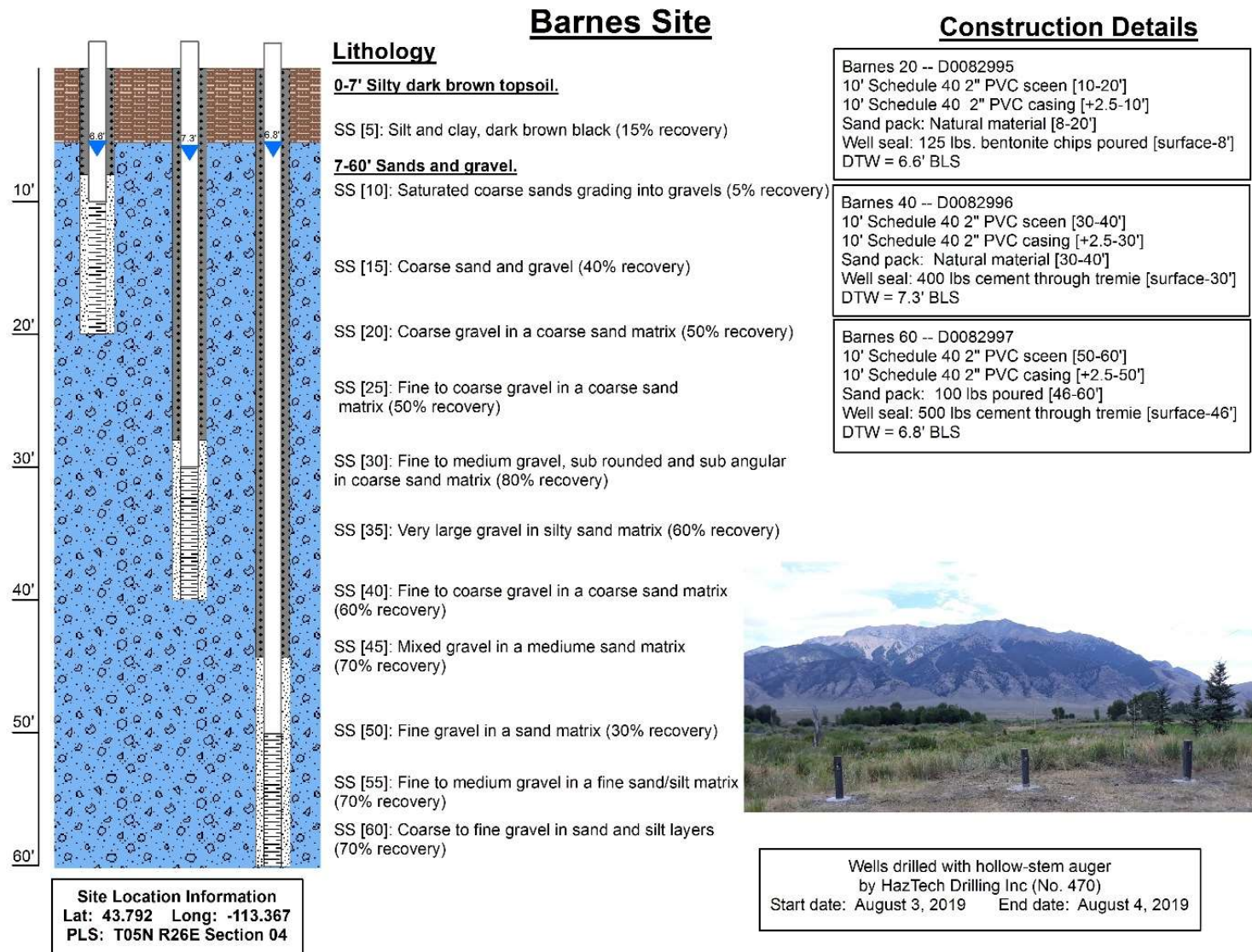


Figure 37. Construction and lithologic details of the SEP Barnes Monitoring Wells

Rothwell 20/40/60

The Rothwell site is located south of Leslie, Idaho, on a parcel of property owned by the United States Bureau of Land Management (Figure 38). The site is approximately 50' east of the Big Lost River, which was flowing at the time of the drilling. Drilling commenced on August 4, 2019, and was completed on August 5, 2019 by HazTech Drilling. Three wells were installed to depths of 20', 40', and 60'. Construction and lithologic details can be seen in Figure 39. The 20' well was dry upon completion, and the water levels in the 40' and 60' wells were 28' and 43' bls, respectively. The subsurface lithology was primarily sands and gravels.

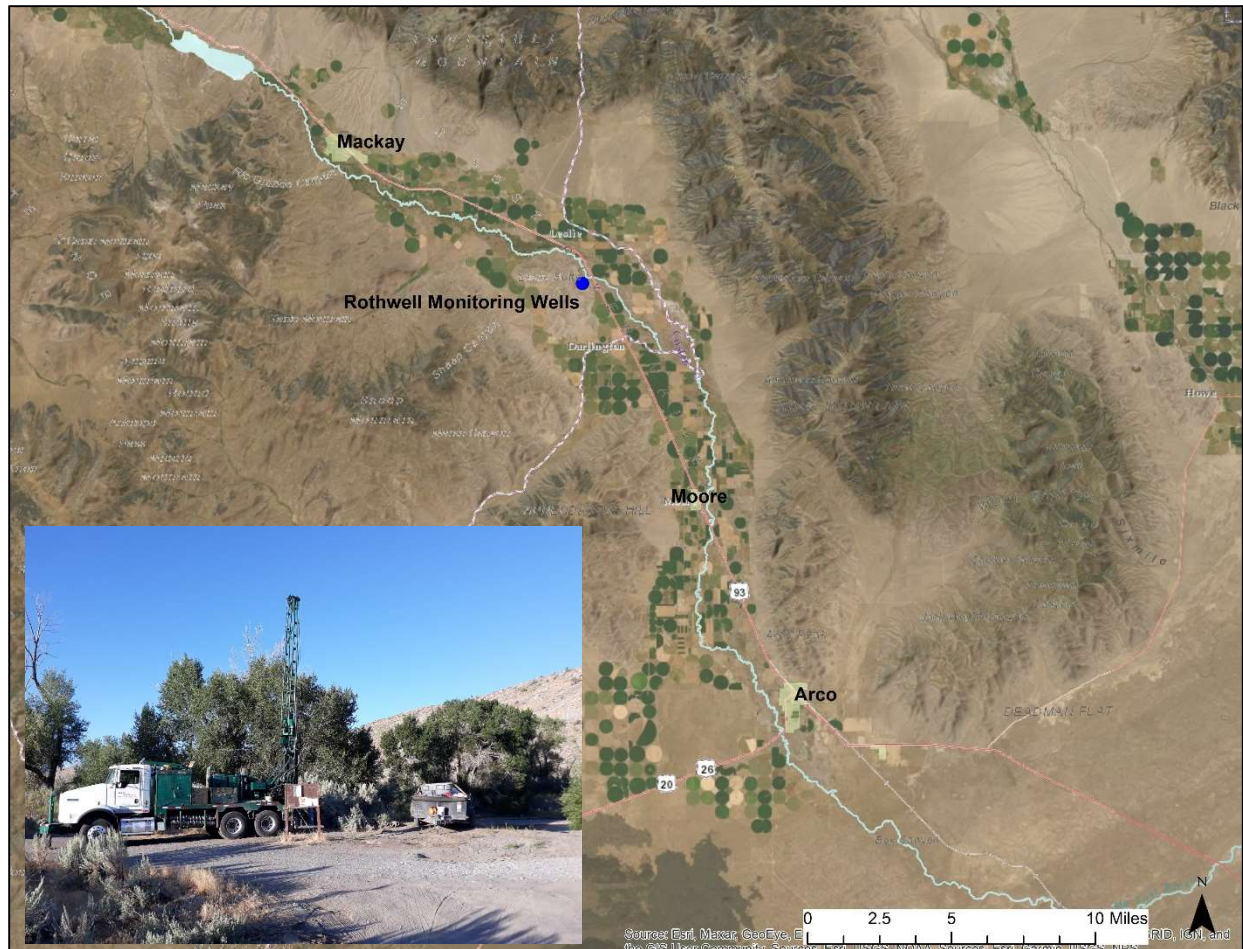


Figure 38. Map of the SEP Rothwell Monitoring Wells

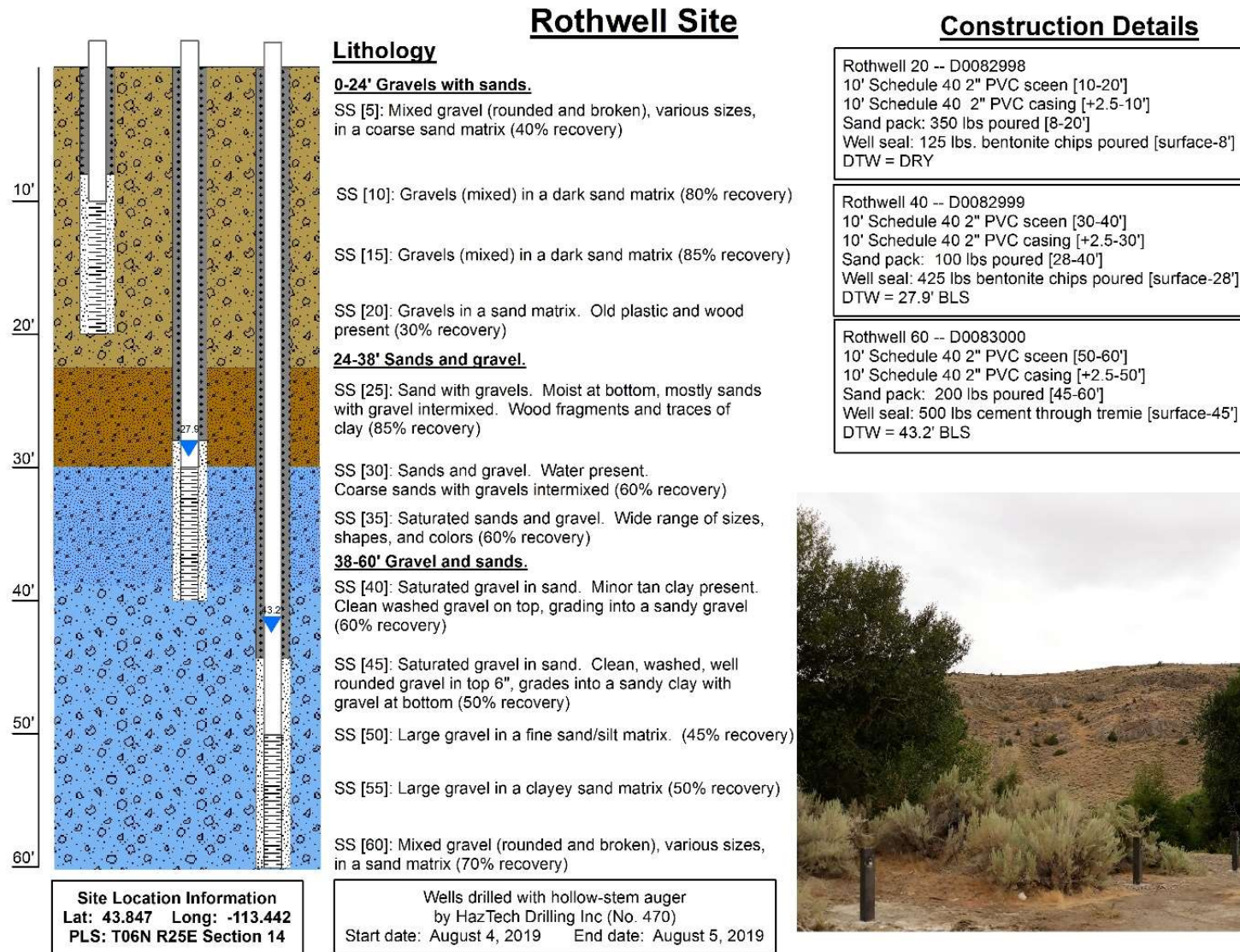


Figure 39. Construction and lithologic details of the Rothwell Monitoring Wells

Stennett 20/40/50

The Stennett site is located west of Darlington, Idaho, on a parcel of property owned by the Idaho Department of Fish and Game (Figure 40). Drilling commenced on August 4, 2019, and was completed on August 5, 2019 by HazTech Drilling. Three wells were installed to depths of 20', 40', and 50'. Construction and lithologic details can be seen in Figure 41. In general, the upper 50' of the subsurface at this site was gravel, underlain by a sequence of tan clay. Bedrock was encountered at 46' in the deep well and limited the total depth to 50', rather than the proposed 60' target depth. The 20' well was dry, while depth to water was 39' bls and 47' bls for the 40' and 50' wells, respectively, indicating that the Big Lost River is perched in this area.



Figure 40. Map of the SEP Stennett Monitoring Wells

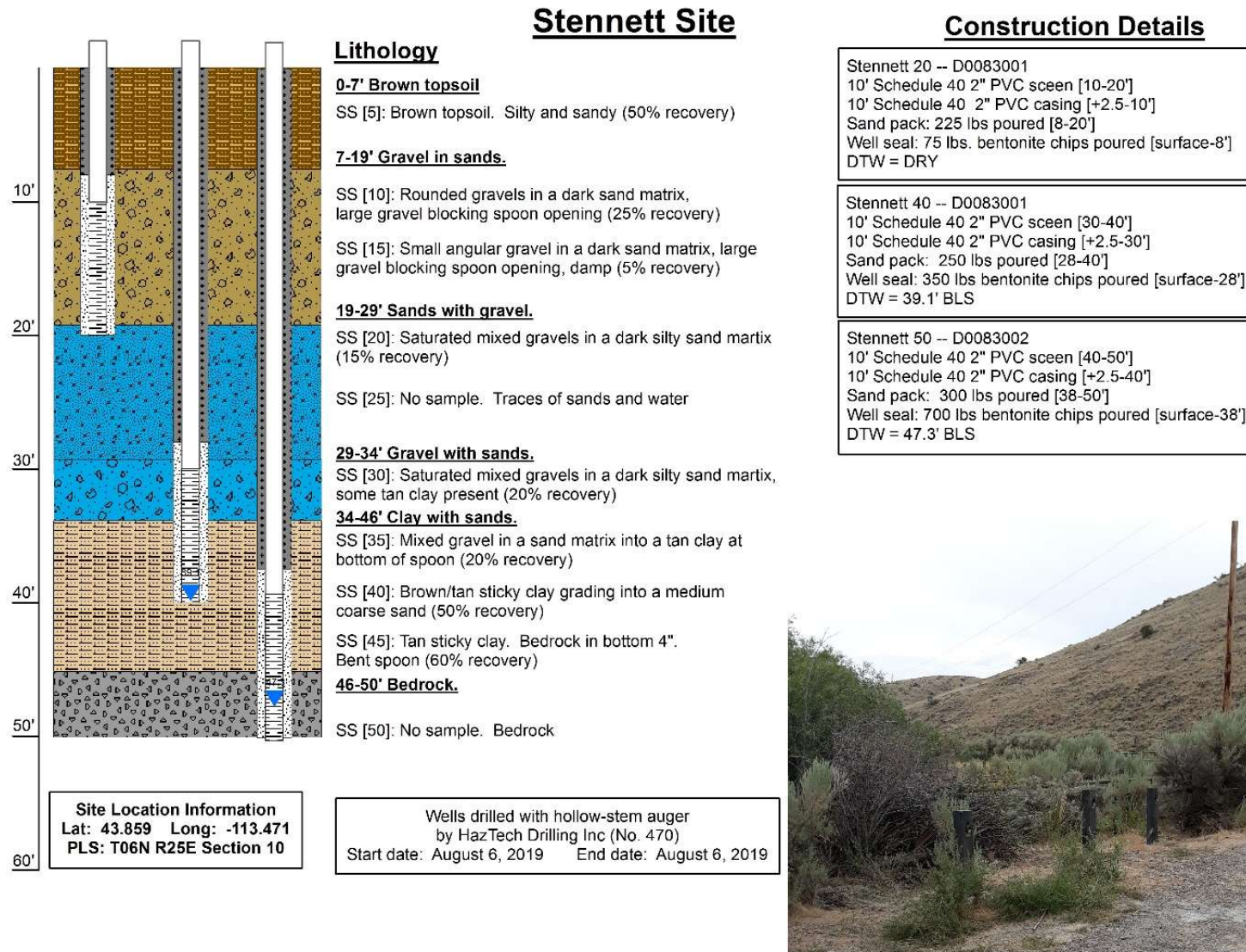


Figure 41. Construction and lithologic details of the SEP Stennett Monitoring Wells

Bingham 20/50/100

The Bingham wells are located along the Big Lost River, approximately halfway between the towns of Moore, Idaho and Mackay, Idaho (Figure 42). These shallow wells were sited near the Big Lost River to help provide information regarding the surface water and ground water interactions in this portion of the valley. Three wells were drilled and constructed to depths of 20', 50', and 100' bls, between July 6, 2021, and July 9, 2021, by HazTech Drilling using a hollow stem auger drilling method. The construction and lithologic details of the wells can be seen in Figure 43.

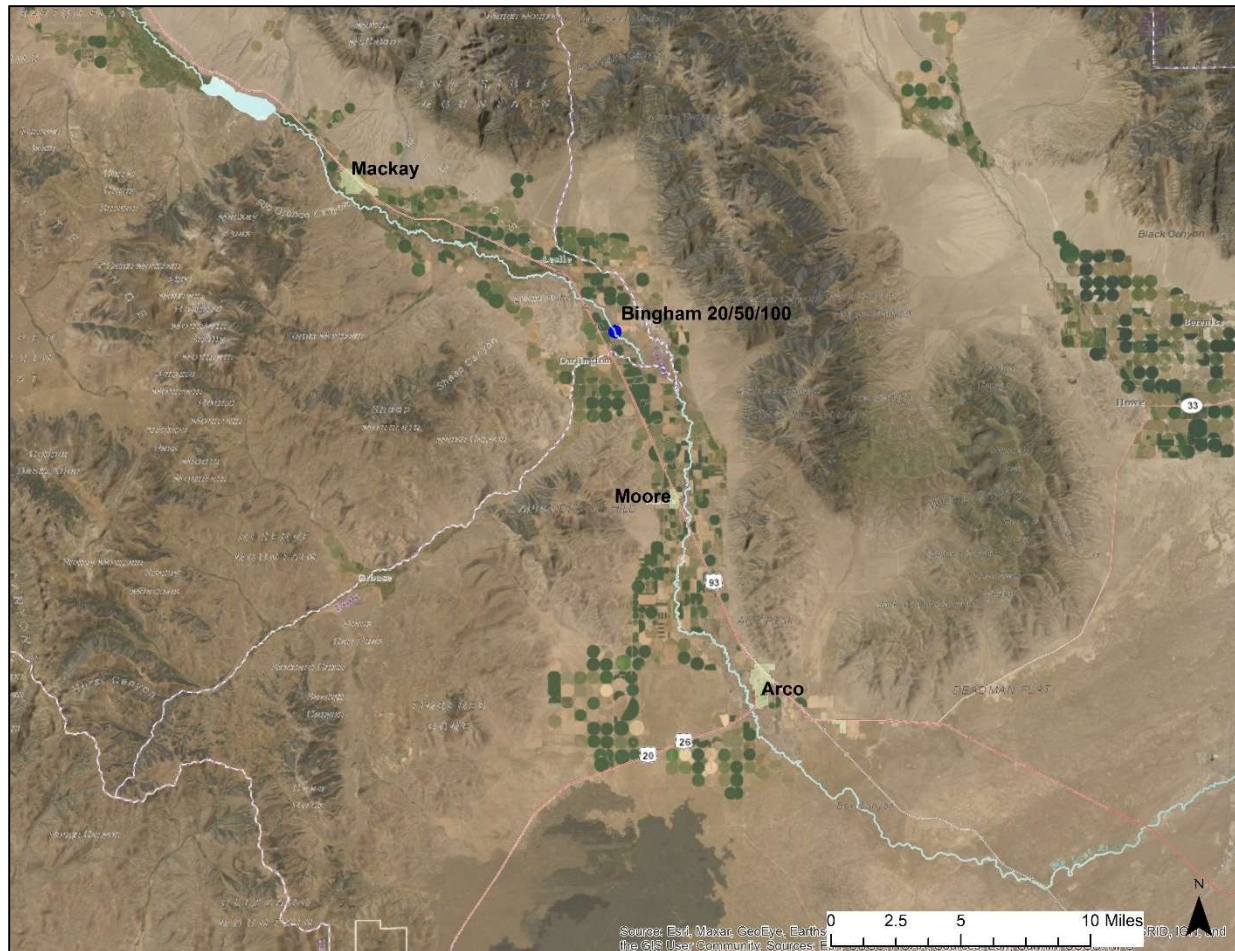


Figure 42. Map of SEP Bingham Monitoring Wells

Bingham Site

Lat: 43.8286 Long: -113.4106
PLS: T06N R26E Section 19

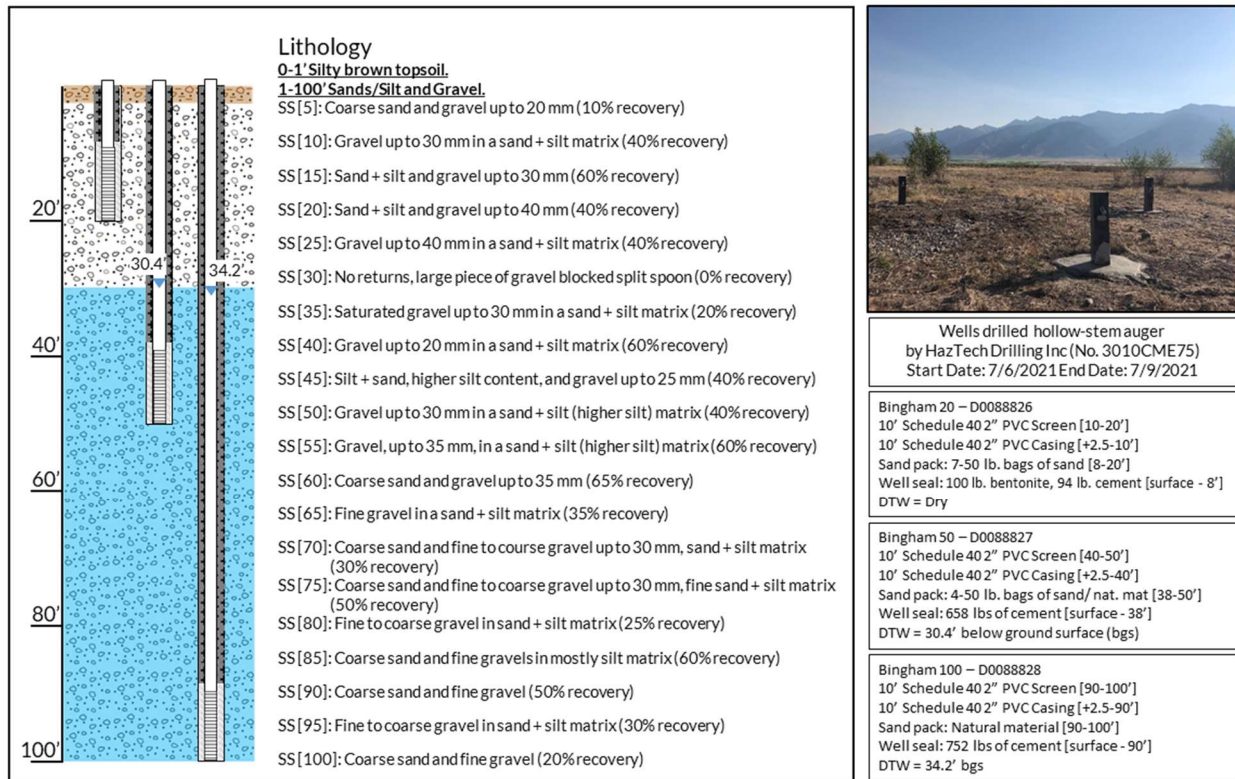


Figure 43. Construction and lithologic details of SEP Bingham Monitoring Wells

Granite Trust 200

The SEP Monitoring Well Granite Trust 200 is in Butte County, near the Big Lost River, approximately halfway between the towns of Moore, Idaho and Arco, Idaho (Figure 44). The purpose of this well was to provide lithologic and water level data from the deeper portion of the alluvial aquifer at this location in the valley. The well was sited near the existing monitoring wells at this location, that include a 20', 40', 60', and 800' deep monitoring wells. This well was drilled by the USGS using PQ wireline that allowed continuous sampling of the borehole. Core samples were examined, logged, and labeled in core boxes that are currently stored at the USGS well core warehouse in Idaho Falls, Idaho. The USGS also conducted a borehole geophysical log in a mud-filled borehole prior to the construction of the well. The well was drilled between August 16 to August 29, 2021. The results of the borehole geophysics and the construction and lithologic details of the well can be seen in Figure 45.

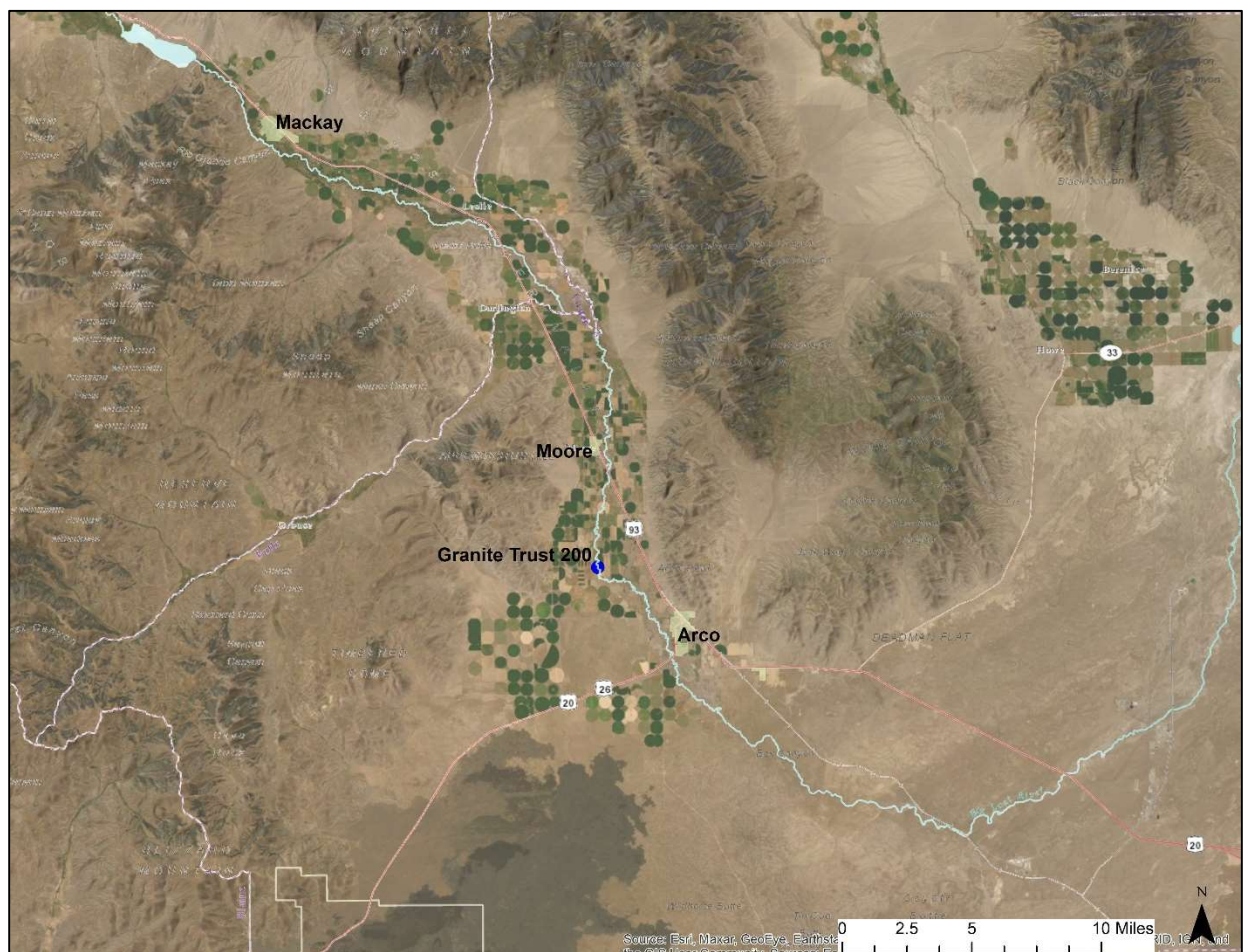


Figure 44. Map of SEP Granite Trust 200 Monitoring Well

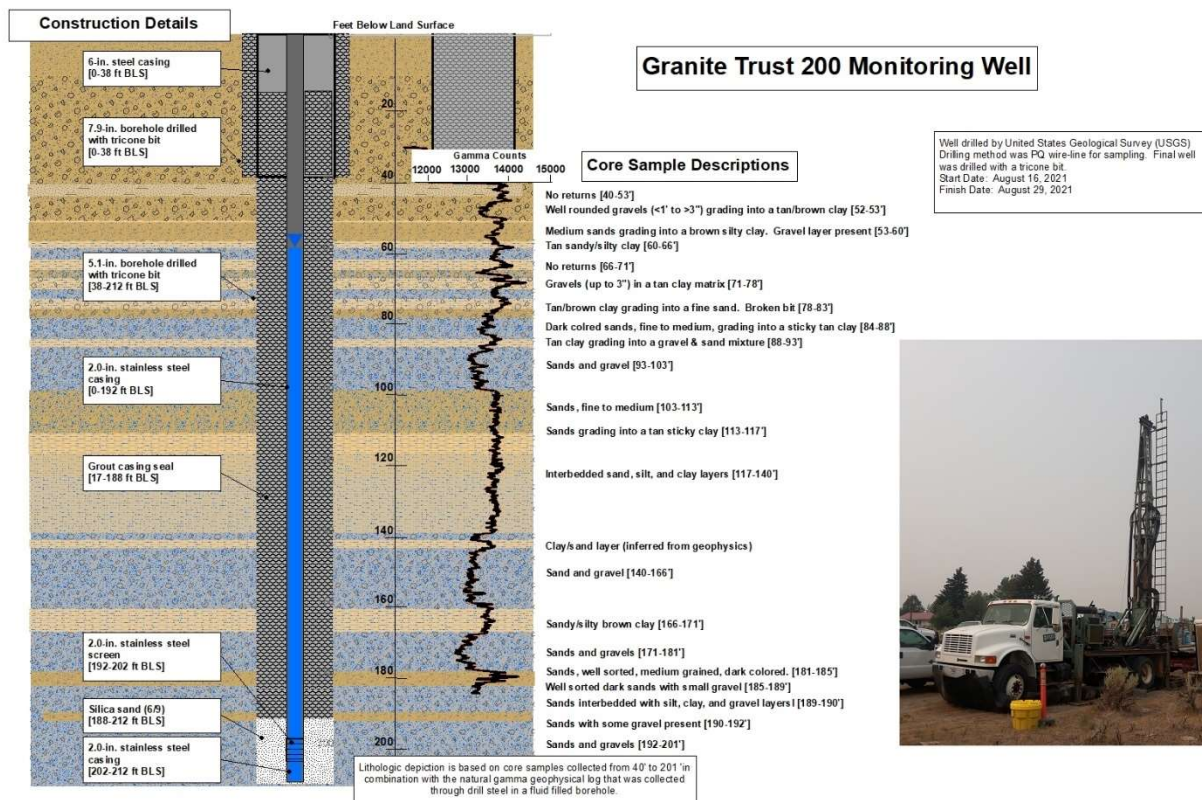


Figure 45. Construction and lithologic details of SEP Granite Trust 200 Monitoring Well

Conclusions

This project facilitated the drilling and construction of 36 monitoring wells, 14 in the ESPA and 22 in the Big Lost River Basin. The monitoring wells will provide water level and water quality data across the ESPA and Big Lost River valley for decades into the future. Data (water levels and water quality) are available to the public through the IDWR website or at <https://idwr-groundwater-data.idaho.gov/>.