USIBWC Habitat Restoration Sites and Groundwater Monitoring Wells

MONITORING NOTES AND PHOTOGRAPHS

SUMMER 2023

U.S. Section International Boundary and Water Commission

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August 14, 2023

BACKGROUND

The U.S. Section, International Boundary and Water Commission (USIBWC) signed a Record of Decision (ROD) for River Management Alternatives of the Rio Grande Canalization Project (RGCP) in 2009. The ROD committed the USIBWC to implementing over 550 acres of riparian habitat restoration along the Rio Grande in southern New Mexico and west Texas. Through interagency agreements and commercial contracts, USIBWC has implemented 22 sites on 509 acres, with various habitat target types, starting in 2011. Some sites also target the development of habitat (dense shrub) for the endangered southwestern willow flycatcher or woodland for the threatened yellow billed cuckoo.

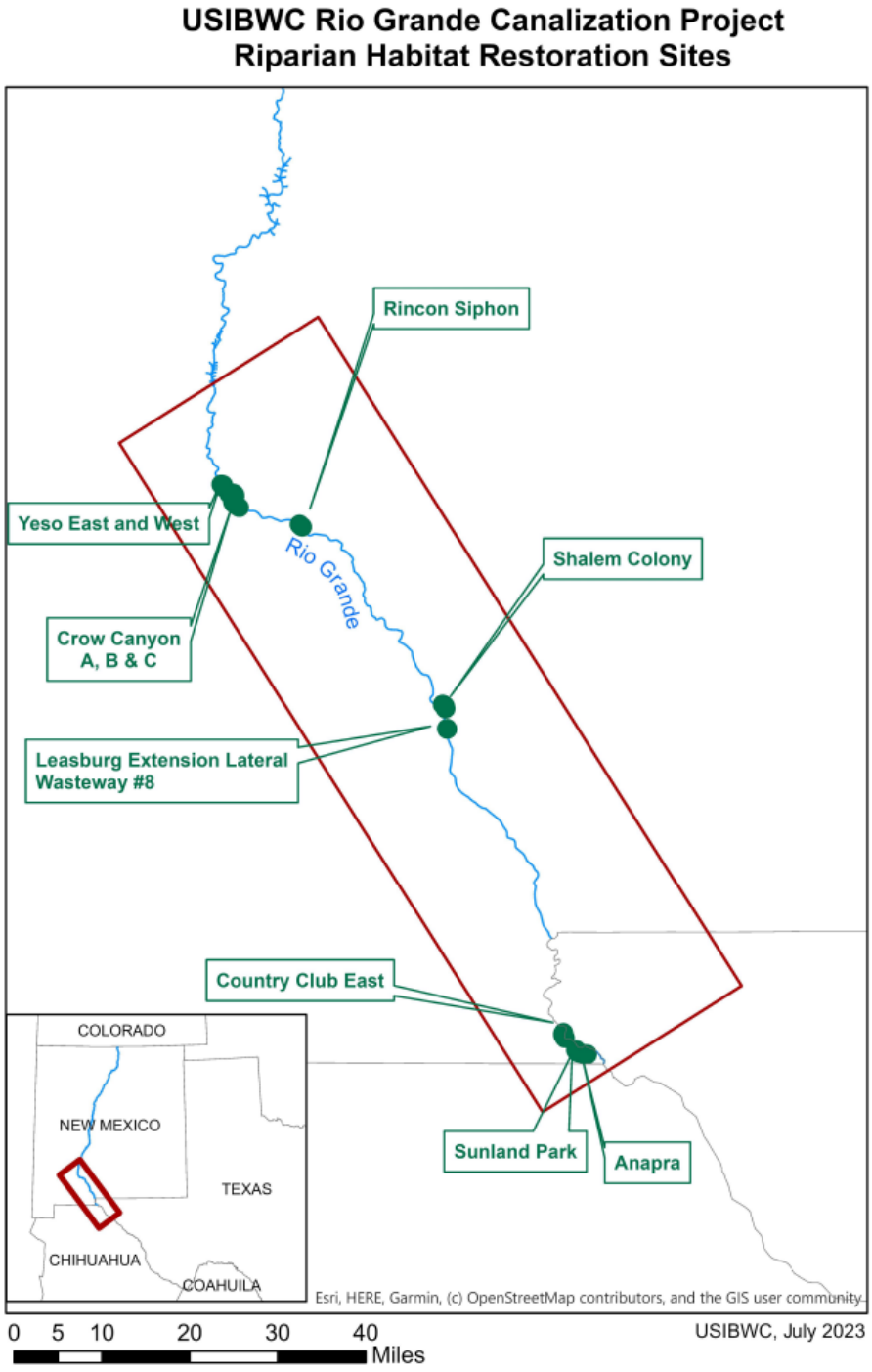
STUDY INFORMATION

This document summarizes conditions of nine restoration sites in summer of 2023, 12 years after initial implementation of the first sites. The purpose is intended to document qualitative progress of the restoration sites to determine future maintenance and/or improvement requirements. Monitoring was conducted by USIBWC intern Sebastian Ceballos with assistance from USIBWC Cultural Resources Specialist Mark Howe and USIBWC intern Jennifer Herrera from July 7th-August 7th. USIBWC Natural Resources Specialist Elizabeth Verdecchia assisted with coordinating field locations and reviewing reporting.

Monitoring included collecting photographs, measuring depth to groundwater from a network of shallow groundwater monitoring wells, and collecting basic biologic data such as relative abundance of native and nonnative species, and condition of certain plantings, as well as any notable observations. This monitoring is not a rigorous biological monitoring effort but intended to provide qualitative data on the restoration sites and measured groundwater levels.

Sites are listed from southernmost first, going north. Table 1 lists the monitoring results from the groundwater wells monitored in this 2023 study.

Additional information on the USIBWC restoration sites and related projects can be found at the RGCP website: https://www.ibwc.gov/reports-studies/rgcp/.



This map shows the sites visited by Sebastian Ceballos July 7th – August 7th and covered by this report

Note: For the map of all USIBWC restoration sites, see https://www.ibwc.gov/reports-studies/rgcp/

ANAPRA BRIDGE RESTORATION SITE

7.7.2023

Mark, Sebastian and Jennifer visited the Anapra Restoration Site on July 7, 2023 to collect well water level readings. Around 9:15 am, we located well AB-MW-1 downstream of Sunland Park Drive. The yellow steel casing stuck up about 3-4ft out of the ground, but it was not upright. It seemed that something had knocked it over slightly, and because of this the well was obstructed and we were unable to obtain a water level reading; the probe hit a sediment patch near the ground surface with no audible water or readings. Getting to the first well was easy, but the second well had more vegetation. In both areas, vegetation was along river and seems to be doing fine. Some mulching visible in the area.

The second well, AB-MW-2, also had structural damage and had no water level reading; willows and brush surround the dry well. Not much vegetation in the area aside from the riverbank having a 100% coverage of Coyote Willows. There are sporadic young tree plantings that are surviving.

SUNLAND PARK RESTORATION SITE

7.7.2023

We visited the Sunland Park Restoration Site on July 7, 2023, starting at the southernmost part of the area near SP-MW-3, which had a lot of native brush around it. We started will monitoring well 3 and moved up to 1. These wells did give us readings and we took these readings from 9:32-10:05. There was significant amount of vegetation surrounding the sites but nothing to note aside from that, almost overgrown. Lots of green grass, no trees in sight.

The restoration site tells a very different story, however. This has very few cottonwoods and there is a massive wood pile in the distance. We did not observe any wildlife species in the area.

In the middle of this image, you can see a photo point marker for the restoration site. Very little vegetation.

The wood pile seems to never stop as we went along the restoration site. Survival rate of cotton woods is low.

View from well SP-MW-2, tree on the left and wood and bark debris on the right. Some of these trees seem to be dying and a cause of this could mistletoe or some sort of fungal infection.

Another wood pile (background) next to a big cottonwood tree on the right of the image.

Left side of the restoration site

Right side of the restoration site. The trees seem to be decaying or dying off due to mistletoe or some fungal infection. No notable wildlife species in the area.

The Monitoring Well SP-MW-1 was relatively clear of vegetation except for a row of cotton woods around 20 meters from the well; vegetation on this side of the river was dry/decaying and the area was mostly clear of any vegetation. A bunch of wood shavings everywhere.

Sunland Park monitoring well, and lettering is in good condition. As compared to years before this area looks completely different compared to 2021.

COUNTRY CLUB EAST RESTORATION SITE

7.7.2023

We visited Country Club East on July 7, 2023. A few sporadic salt cedar shrubs here at monitoring well CCE-MW-3 around 10:30 am. The well lock was rusty, but we were able to open it and get a reading. We found monitoring well #2 and #3 from 10:30-11:15; there was some sporadic salt cedar and mesquite. Along the riverbank there is good coverage of Coyote willows.

Another side view from CCE-MW-2 Monitoring well in the distance there is not much vegetation with the exception of the riverbank area. Some salt cedar resprouts.

Cottonwoods seem to be doing very good in the southern end located closer to the riverbank. The surrounding plant life is doing very good. We estimated that the plantings had a survival rate of around 80%. Most trees are between 5 and 10 feet tall and had a good number of plantings that are surviving.

Cottonwoods and Gooding's Willows flourishing at Country Club East restoration Site. Coyote Willow covering the riverbank edge.

Overlooking downstream you can see some mature mesquite, sporadic salt cedar, and Cottonwood plantings. In the foreground is a pole that did not survive.

This is further north at the Country Club East site. The floodplain widens and the more upland area near the levees has more scrub habitat. Willows are along the background by the river. The plantings appear to have a high survival rate. No observable wildlife species in this area of the restoration site.

Big mesquite and some cotton woods, survival rate does not look as high, but this is looking north, and the rest of the site looks like it's in good shape.

Good vegetation here, including cottonwood plantings, some mesquite, some salt cedar resprouts, and some brush here and there.

Here are some additional photos taken close to a restoration site marker. Good quality of plantings in the distance.

Plenty of vegetation flourishing. Lots of greenery towards the back of this image.

Thriving cottonwood in foreground; cottonwoods in swale in background, left.

In the distance you can see a cluster of cottonwoods in the planted swale; survival rate is high.

LEASBURG EXTENSION LATERAL WASTEWAY #8 RESTORATION SITE

7.11.2023

On July 11, 2023, from 10:16-10:38, we visited Leasburg Extension Lateral Wasteway #8 to monitor al four wells. LEL-MW-3 pictured above is at the southern end of the site and is outside of the irrigated area. The well was stuck so we were not able to measure water level. All these wells had some brush that we had to push away so that we could access the wells.

A bunch of brush near the well LEL-MW-3 with a willow stand nearby.

There are some willows in the distance from LEL-MW-3. This was the monitoring well that we could not measure. We then decided to come back at a later date to see if we could break open the lock or force it open.

Picture of the irrigated area at well LEL-MW-2. Lots of vegetation including this large Gooding's willow, and it was hard to get to because of the overgrowth of the area.

This is the monitoring well that had the sonde in it, we took some time, but we extracted the data and now it is a plotted graph on the HOBOware field laptop. Area was full of vegetation. At LEL-MW-4, we collected the Sonde data using the HOBO Shuttle device.

This was LEL-MW-1 another hard well to locate only because of the foliage in the area. This well is also within the irrigated area. The lock was hard to open but we used the WD-40 to get it lubricated and opened it up to collect a water level reading.

LEASBURG EXTENSION LATERAL WASTEWAY #8 RESTORATION SITE

7.18.23

We revisited LEL-MW-3 on 7/18/23 after going to Rincon Siphon. Very hard to see but this is the well with the lock that was stuck. We were able to open the lock and got a water level reading.

Shrubs close to the well and willows nearby, healthy and alive.

LEASBURG EXTENSION LATERAL WASTEWAY #8 RESTORATION SITE

IRRIGATION EVENT

8.7.2023

Around 9:20, Mark, Jennifer and I arrived at the Leasburg Extension Lateral Wasteway #8 site, and we immediately began to take pictures. We met with David Casares, USIBWC Las Cruces Field Office supervisor, and he showed us around the irrigation area. There was already most of the area irrigated so we couldn't get into the site without being ankle deep in water. This is a picture at the top of the site (north end where the culvert comes in from Wasteway #8) and as you can see this area is already flooded.

Tall cottonwoods shade the entire area as well as some brush.

A picture by the river showing the riverside of the restoration site.

Following David, we can see more thriving vegetation and everything in this area looks really good and green. Survivability of this area is very high, and I estimate that it is above 80%.

The path that the machinery made so it was easier to access the areas. There is machinery just straight ahead of David. Lots of greenery this is a good sign.

One of the monitoring wells that we were able to locate just visually (LEL-MW-1), some other wells were not as easy to spot in the thick foliage, and as you can see, there is a lot of water, and the irrigation continues to flow throughout the site.

Tall cotton woods enjoying the irrigation.

Lots of greenery in the site before the irrigation continues to flow.

Water coming out of some of the holes in the ground near the back end of the site. Apparently, water sometimes hardly reaches the end, but they had around an hour and a half and most of this water was reaching the end which is very good.

Irrigation is just started on the expanded southern side of LELWW8.

Small little shrub planting that has survived. Shrub plantings typically had low overall survival rates. Here David is standing nearby.

Family of cute skunks hiding under a cottonwood that evacuated their habitat due to the irrigation.

There is a lot of land in this photo but the whole site looks very healthy and green.

Wide shot of the site near the sign and I can say that this site is going to do well in the upcoming years if it continues to get this treatment. The habitat of all the animals living here will benefit greatly from this irrigation.

Close up of the sign near the site with beautiful vegetation in the back and native brush in the foreground.

SHALEM COLONY RESTORATION SITE

7.11.23

We passed by Shalem Colony Restoration Site on July 11, 2023. This is the southern end of the site near Wasteway #5. Some saltcedar is resprouting and there are mature mesquites.

Shalem Colony site, southern end, looking upstream along the levee.

RINCON SIPHON NO MOW ZONE

7.18.23

Mark and I visited Rincon Siphon No Mow Zone area on July 18, 2023. A lot of it was unfortunately inaccessible. The only 2 wells that had any visibility in the overgrown area was #7 and #4. Pictured above is RS-MW-7, and it was along the road leading up to it and very easy to access. In the picture you can see a lot of mesquite and some salt cedar, and the vegetation is engulfing the well site. This well is in the No Mow Zone outside of the Rincon Siphon Restoration Site.

Road leading up to the monitoring well #7. Both sides are surrounded by the same type of brush (mostly mesquite).

Lots of mesquite and brush but the path to the well was maintained.

RINCON SIPHON D RESTORATION SITE

7.18.23

Pictured above is RS-MW-4 at Rincon Siphon Restoration Site, Parcel D. This is a big open area near the river. We had a high reading close to 4 ft, meaning the groundwater is only about a foot and a half below the ground surface. This site has recovered from previous brush fires, and native grasses have returned in abundance.

In and around the area was very thick with mud since the water table was so high.

And as you can see there is a lot of native grass with different plants all surrounding the well. Bullrush is also present, indicating the shallow groundwater.

Here is a different angle of the well along with some additional vegetation.

Some cotton woods flourishing in the hot summer sun. These are plantings done by USFWS sometime after 2016.

CROW CANYON C RESTORATION SITE

7.18.23

We visited Crow Canyon C on July 18, 2023. This was well CCB-MW-3 at Crow Canyon C. This site was targeted for dense riparian shrub habitat so it had more plantings than Crow Canyon A. We were overlooking a hill so you can see the riverbank just filled with coyote willow and shrubs here and there surrounding the well site.

Looking down and to the left. Here we can see that the vegetation present by the well continues to the riverbank which has dense coyote willows.

Looking down and to the right side of the well site. There is a massive old cottonwood with some smaller ones surrounding it. The smaller ones are plantings from 2017 and are surviving well at this site without irrigation.

CROW CANYON B RESTORATION SITE

7.18.23

This is monitoring well #2 for Crow Canyon B, which is alongside the road and surrounded by vegetation. There was also some notable trash near the road leading up to the well.

Road with some trash near the bushes. Some trash is visible.

A struggling cottonwood tree in the distance.

Big cotton wood near the well site. This one seems to be doing a lot better than the others.

This was the first monitoring well of Crow Canyon B #1 and as you can see there is a lot more other vegetation such as mesquite surrounding the well. Around this time, it was 10:35.

This was to the right of the well site.

CROW CANYON A RESTORATION SITE

7.18.2023

We visited Crow Canyon A on July 18, 2023. This is one of the first cottonwoods we spotted in Crow Canyon A. There was very little survivability of Cottonwoods in Crow Canyon A. Although Yeso East has close proximity to Crow Canyon, the target habitat types were different, so they are difficult to compare. Fewer cottonwoods were planted at Crow Canyon A than at Yeso East.

We visited in Crow Canyon well CCA-MW-3 around 9:55 and we finished around 10:55 for the Crow Canyon restoration site. Well #3 is upland and is surrounded by flowering yucca.

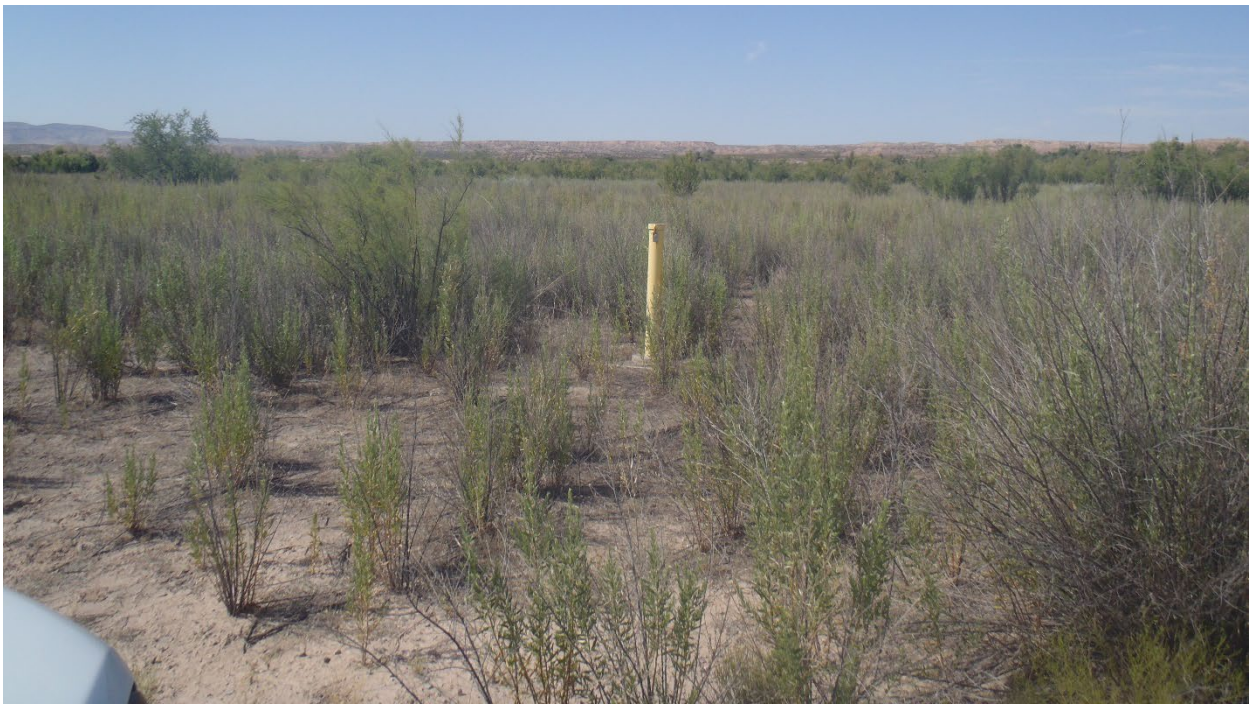
A better view from the well you can see an abundance of upland vegetation in the back.

Well #2 was surrounded by tall brush barely visible from the picture. In the back you can see a dying cottonwood and on the right of this pictures you can see more dying old cottonwood trees.

A better picture of the ailing cottonwoods.

We can also observe the same pattern of dying plants on the left as well.

More dying cotton woods in Crow Canyon A, with mixed native and nonnative brush throughout the site.



This was the well CCA-MW-1 that had the additional sonde. Unfortunately, it was not retrievable, and the well was obstructed so we couldn't get any reading on it.

Struggling to pull the sonde out. We decided to leave it and move on to the next well.

NEAR the YESO WEST RESTORATION SITE

7.11.2023

We attempted to travel up to the Yeso West site on July 11, 2023. The site was inaccessible due to heavy, thorny mesquite and other brush. The photo above is Sebastian inside the dry bed of Arroyo Yeso, approximately 0.1 mile upstream of its mouth at the Rio Grande. This is not the Yeso West site.

This is saltcedar and mesquite along the Arroyo Yeso. The Yeso West site was inaccessible.

YESO EAST RESTORATION SITE

7.18.2023

We visited the Yeso East site on July 18, 2023. A row of thriving cottonwoods near the well site at Yeso East YE-MW-1; this is within the irrigated area. A lot of vegetation near and around the well site. Compared to years before this area seems to be getting better with more greenery, and considering the heat this area looks good. In other areas (further away from irrigated area) the plantings are thriving less, and vegetation is scarce.

This area has nice flourishing vegetation of cottonwoods and arrow weed and other brush and grasses. The cottonwood survival in Yeso East is very high, around 80%.

Heading towards the first monitoring well of Yeso East shaded by the cottonwoods.

YE-MW-1 view looking towards the south, good vegetation near the riverbank, but scarce in the floodplain outside of the irrigated area of the old river meander.

Horny lizard on the way to the next monitoring well enjoying the hot weather. Hard to see in the very similar sandy background.

View of YE-MW-3 looking southwest with some cotton woods in the back and mesquite.

Variety of plants and shrubs around the well site. Everything around the area looks healthy considering the heat this year.

Vegetation along the well site YE-MW-3. The well was surrounded by vegetation so it was hard to locate but once we got there the area around it was easy to access.

Cotton woods are thriving in Yeso East.

On our way to the last well. These are the Cottonwoods in the area.

A coverage of cottonwoods near the restoration site. Everything looks good hopefully these will fully grow in the next few years.

Big cottonwoods in the back of one of the Yeso East sites at YE-MW-2. No vegetation immediately surrounding Monitoring well #2.

Table 1. Groundwater level readings

Site	Well ID	Casing Height	Participants	Date	Time	Water Level to Top of Casing	Water Depth	Comments/ Observations
Anapra Bridge	AB-MW-1	3.41	Sebastian Ceballos, Mark Howe, Jennifer Herrera	7/7/2023	9:00	N/A	N/A	Blocked and well appears to be knocked off center
	AB-MW-2	3.35	Sebastian Ceballos, Mark Howe, Jennifer Herrera	7/7/2023	9:15	N/A	N/A	Blocked and well appears to be knocked off center
Sunland Park	SP-MW-1	3.46	Sebastian Ceballos, Mark Howe, Jennifer Herrera	7/7/2023	10:05	6.5	3.04	Well was in good condition
	SP-MW-2	3.43	Sebastian Ceballos, Mark Howe, Jennifer Herrera	7/7/2023	9:50	8	4.57	Well was in good condition
	SP-MW-3	3.5	Sebastian Ceballos, Mark Howe, Jennifer Herrera	7/7/2023	9:32	8	4.5	Well had vegetation surrounding it
Country Club East	CCE-MW-2	3.19	Sebastian Ceballos, Mark Howe, Jennifer Herrera	7/7/2023	11:15	6.5	3.31	
	CCE-MW-3	3.27	Sebastian Ceballos, Mark Howe, Jennifer Herrera	7/7/2023	10:30	9.25	5.98	
	CCE-MW-1	Inactive?						
Leasburg Extension Lateral WW 8	LEL-MW-1	3.01	Sebastian Ceballos, Mark Howe	7/11/2023	10:38	6.2	3.19	Easy to locate
	LEL-MW-2	3.04	Sebastian Ceballos, Mark Howe	7/11/2023	10:16	6.32	3.28	Easy to locate
	LEL-MW-3	3.11	Sebastian Ceballos, Mark Howe	7/18/2023	2:41	5.8	2.69	Opened the rusty lock

	LEL-MW-4	2.9	Sebastian Ceballos, Mark Howe	7/11/2023	10:32	5.6	2.7	Sonde was found; data downloaded
Rincon Siphon	RS-MW-4	2.95	Sebastian Ceballos, Mark Howe	7/18/2023	1:31	3.82	0.87	
	RS-MW-7	3.51	Sebastian Ceballos, Mark Howe	7/18/2023	12:48	6.4	2.89	
Crow Canyon C	CCB-MW-3	3.3	Sebastian Ceballos, Mark Howe	7/18/2023	10:55	6.6	3.3	
Crow Canyon A	CCA-MW-2	3.43	Sebastian Ceballos, Mark Howe	7/18/2023	9:55	10.7	7.27	
	CCA-MW-3	3.24	Sebastian Ceballos, Mark Howe	7/18/2023	9:48	9.8	6.56	
Crow Canyon B	CCB-MW-1	2.96	Sebastian Ceballos, Mark Howe	7/18/2023	10:35	6.2	3.24	Muddy Reading
	CCB-MW-2	3.24	Sebastian Ceballos, Mark Howe	7/18/2023	10:20	9.15	5.91	
Yeso East	YE-MW-1	3.12	Sebastian Ceballos, Mark Howe	7/18/2023	9:07	8.2	5.08	
	YE-MW-2	3.5	Sebastian Ceballos, Mark Howe	7/18/2023	9:31	8.85	5.35	
	YE-MW-3	2.88	Sebastian Ceballos, Mark Howe	7/18/2023	9:20	7.8	4.92	