

# Nipomo Community Services District



## Supplemental Water Project Bid Package 1 (BP 1) Santa Maria River Crossing Monthly Progress Report



Prepared By:  
MNS Engineers, Inc.

**September 2013**

# Schedule and Budget Summary

## Schedule Summary

Notice to Proceed	July 10, 2013
Original Contract Days	141
Contract Days Added	0
Revised Contract Days	141
Elapsed Time (Days)	(77)
Remaining Time (Days)	64
Contract Completion Date	November 28, 2013
Time Elapsed to Date	55%
Work Completed to Date	65%
Approved Change Orders (Days)	0 days

## Budget Summary

Original Contract Amount	\$5,847,090.00
Approved Change Orders (Cost)	\$48,821.00
Revised Contract Amount	\$5,895,911.00
Previous Payments	\$503,107.50
Current Month Pay Request	\$3,352,541.54
Total Work Completed	\$3,855,649.04
Work Remaining	\$2,040,261.96

# **Progress Summary**

## **Horizontal Directional Drill**

ARB mobilized drilling equipment to both the north and south sites of the project. Surveyors from MNS Engineers set centerline stakes for the pipe between the south and the north sites and located the entry/exit holes. To perform the directional drill, ARB first installed two 54-inch diameter welded steel casings, approximately 60 feet in length, to stabilize the entry and exit holes for the drill and prevent settlement at the drilling entrance. Next they installed centralizers inside the 54-inch casings, and then installed a smaller 12-inch diameter casing inside the centralizer to guide the drilling pipes.

While ARB was installing the casings and setting up drill equipment, Horizontal Technology, Inc., ARB's surveyors, were setting stakes off the pipe centerline for placing tracing wires across the ground which were used to identify the horizontal and vertical locations of the pilot hole drill.

On September 5, when drill rigs and equipment were ready on both the north and the south sites, ARB started drilling the 12-inch pilot hole from the south site to the north site, by pushing the pipe from the south. The pilot hole drill encountered cobble and rock as well as the Paso Robles formation, all of which was identified in the soils report, and which made the drilling process slow in those areas where it was encountered. ARB drilled the pilot hole from south to north for four days when due to mechanical problems, they decided to mobilize the drilling process to drill from the north to the south. On September 9 they started drilling the pilot hole again from the north to south and completed the pilot hole when the 12-inch drill exited the 54-inch casing on the south site on September 13.

In order to drill the pilot hole, and subsequent reaming passes, ARB pumps bentonite through the pipe attached to the drill and out holes in the drill head, to flush out material and lubricate or swab the hole. The "mud" is returned to the site through the pumping process where it is cleaned and the clean portion is reused. A mud engineer monitors the mud returns and makes adjustments with additives for optimum viscosity. Material cleaned from the mud is hauled off in containers to a waste facility in Santa Barbara County.

After removing the 12-inch drill and pushing a string of pipe from north to south to create 10 - 300 foot segments of pipe to be used for "tail strings", ARB installed the 26-inch drill for the first reaming pass at the south site. On September 15 they started the 26-inch ream, by pulling with the drill rig on the north site, removing 30 foot lengths of pipe as it progressed at the north site, and attaching 300 foot strings of pipe at the south site. They completed the 26-inch ream on September 19 and repeated the same process for the 36-inch ream from September 20 to 23.

The last ream, using a 42-inch drill was started on September 24 and was still in progress on September 25.

## **South Site – Santa Maria River**

### **Summary of Work:**

In addition to the work described above for the horizontal directional drill process, ARB also received shipment of 2,700 feet of 24-inch inner diameter HDPE pipe (outer diameter 30-inches). The pipe was delivered in 6 shipments throughout the week. The District secured use of property from the site running east along the north side of the SBCFC levee, for the lay down area during pipe fusing and testing. Pipe supports were set every 50 feet along the levee and the segments were fused together and pulled along the rolling supports until all 54 pieces were fused to make one continuous 2,700 foot pipe.

Due to soft and uncompactable material below the preserved top soil on the south site, ARB installed a DG access road into the site to prevent equipment and trucks from getting stuck. They also installed a gate at the entrance to secure the site.

### **Pictures:**



Aerial photo of the south side with ARB drill rig and equipment mobilized.



Delivery of 54-inch diameter steel casing, 40 foot section.



ARB unloading 20 foot section of 54-inch diameter steel casing.



ARB mobilizing the casing to the drill entrance area for installation.



Surveyors from Horizontal Technology, Inc. placing stakes for tracing wires by using MNS Engineers survey stakes for pipe centerline.



54-inch casing being installed at entry point on the south site.



54-inch casing with centralizer installed.



ARB building access road into south site due to soft, uncompacting native soils.



Gates installed at entrance of the south site.





ARB drill rig and equipment mobilized to south site and ARB starting set-up.



Mud cleaning equipment placed on plastic for environmental protection.



Drill heads delivered to site.



ARB unloading deadman front section which supports the drill rig.



ARB positioning front of drill rig on deadman at south site.



Steel "teeth" welded onto the end of the 12-inch casing to assist with installing it.



ARB installing 12-inch casing with steel "teeth" into centralizer.



12-inch casing drilled into place inside the centralizer and 54-inch casing.



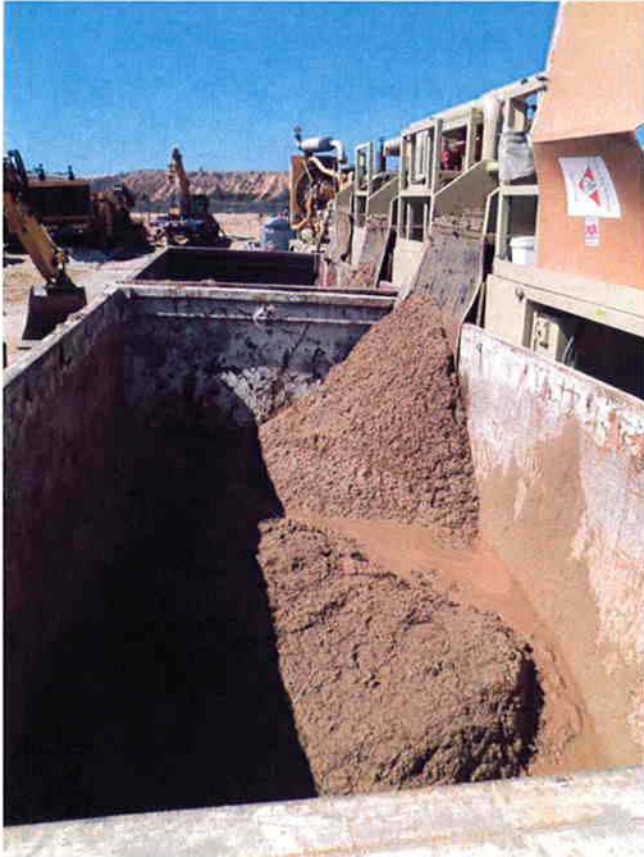
ARB's welder cutting the end of the 12-inch casing after it is in place.



ARB preparing to start the pilot hole drill.



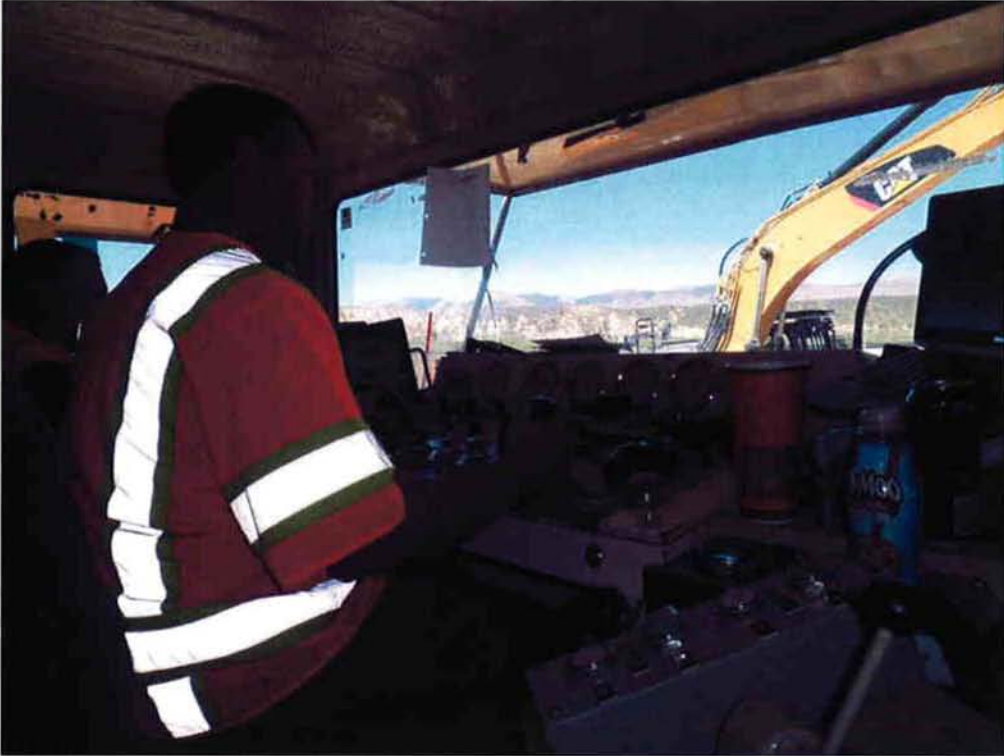
Pilot hole drilling in progress.



Mud waste in mud cleaning bin.



Horizontal Technology, Inc. surveyor in control room monitoring progress of pilot hole drill.



ARB drill operator and manager in control room during pilot hole drill.



HDPE pipe arriving on site.





HDPE pipe being unloaded.



Wyo-Ben (mud engineer) on site testing mud samples using a filter press and viscometer.



Pull head delivered to site.



12-inch drill emerging from casing on south site, after drilling from the south site was terminated and started again for a successful completion from the north site to the south site.



ARB preparing for the 26-inch reaming pass from the south site to the north site.



ARB starting fusion welding of the 24-inch diameter HDPE carrier pipe.



ARB fusion welding equipment and operator welding the HDPE carrier pipe.



ARB moving another 50 foot section of HDPE pipe into place for fusion welding.



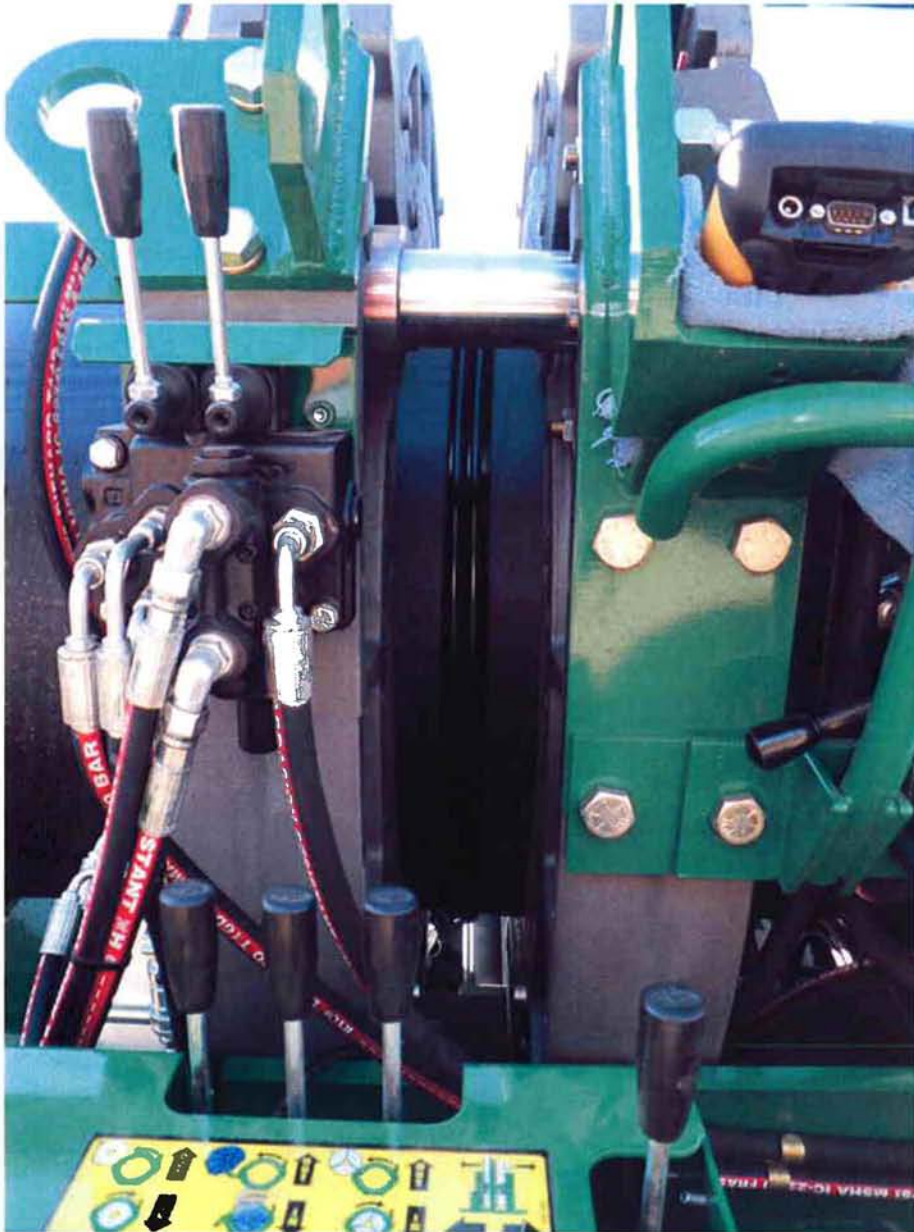
ARB fusion welding operator directing placement of the next section of pipe for welding.



ARB welding operator cutting the pipe ends to achieve a smooth surface for fusion welding.



Removing cuttings from the ends of the pipe.



Both ends of the pipe are heated to 400 degrees and they are pressed together to fuse and create a weld, making two beads around the joint.



Completed fusion weld on 24-inch HDPE carrier pipe (outer diameter 30-inches).



HDPE pipe laid out to the east of the site on rollers along the north side of the levee after being fusion welded.





Machine used to pull pipe along rollers when a weld is completed.



HDPE pipe with one of the 4-inch pipes next to it which will be inserted into the HDPE carrier pipe to provide a ballast and vent to prevent a vacuum when the pipe is pulled into place.



Small machine used to fuse weld the 4-inch ballast and vent pipes.



ARB positioning 36-inch drill.



36-inch drill entering 54-inch casing to start next reaming pass from south to north.



"Tail string" of pipe following the 36-inch drill being pulled from south to north.



The 42-inch drill being positioned to start reaming.



The 42-inch drill entering the 54-inch casing.



The 42-inch drill removed prior to completion of the reaming pass from south to north, after difficulty drilling through cobble, rock and the Paso Robles formation.

## **North Site & Access Road**

### **Summary of Work:**

In addition to the horizontal directional drilling described above, ARB also removed an existing drainage culvert from under the access road and installed a 40 foot long, 36-inch diameter steel casing and two 18-inch diameter RCPs at the request of the District. This work was originally part of Bid Package #4. However, due to the impact of environmental restrictions from the presence of the California Red Legged Frogs, the District decided to have ARB perform this work when it was apparent the annual removal and replacement of surrounding strawberry crops presented a dry environment which caused the frogs to migrate away from the existing culvert. Once the District **received clearance from Rincon that no CRLF's were present in the existing culvert or surrounding drainage ditch and ponds**, ARB installed the casing for the future 24-inch DI water pipe and the culverts.

### **Pictures:**



Aerial view of the north side of the project with ARB drill rig and equipment mobilized.



ARB drill equipment mobilizing to north site.



ARB positioning drill rig on front deadman.

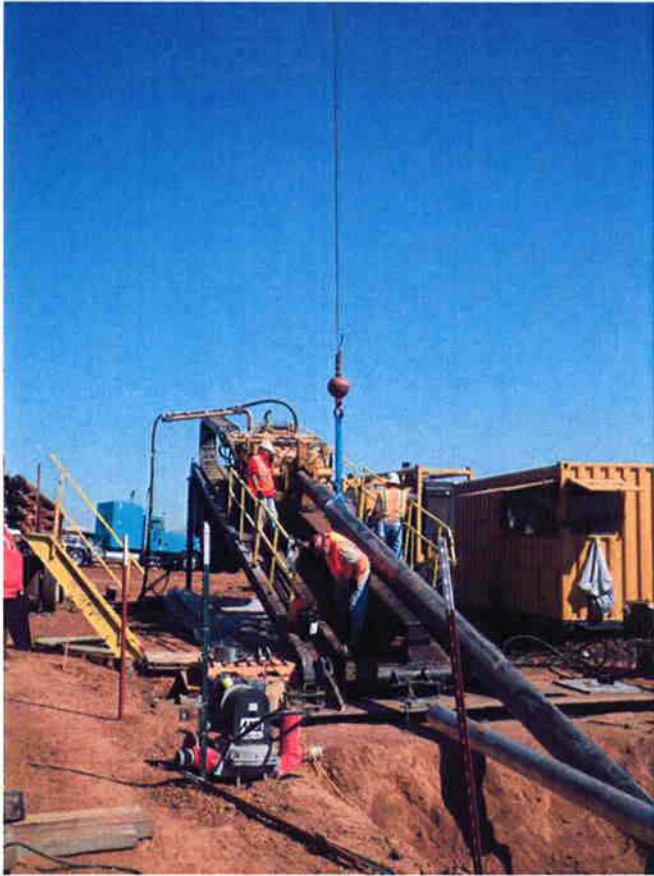


Drill rig being raised into place from rear deadman.



Drilling equipment, casing with centralizer and mud pit installed.





ARB installing 12-inch casing inside centralizer and 54-inch casing.



ARB welder cutting excess 12-inch casing once it was in place.



Tracer wire laid out across temporary construction easement from the north site to the bluff edge.



Starting pilot hole drill from the north site after demobilizing from the south site.



ARB removing centralizer from 54-inch casing to allow the 26-inch drill to come out of the casing.



The 26-inch drill emerging from the 54-inch casing completing the 26-inch ream.



The 36-inch drill after reaching the north side with extensive wear.



ARB layout for 36-inch diameter steel casing.



Steel casing installed with ends blocked.



ARB pouring slurry over steel casing before backfilling to install the 18-inch RCP pipes.



ARB installing the 18-inch RCPs with flared ends over the steel casing.



Slurry placed over the 18-inch RCPs.



ARB pouring concrete cut-off wall at the end of the 18-inch RCPs.



Rock rip-rap placed at both flared ends of the 18-inch RCPs to control erosion.