



OGMCOAL DNR <ogmcoal@utah.gov>

---

**Fwd: Northwater Mitigation Report**

1 message

---

**Amanda Daniels** <amandadaniels@utah.gov>  
To: OGMCOAL DNR <ogmcoal@utah.gov>

Thu, Oct 16, 2014 at 8:24 AM

----- Forwarded message -----

From: **Amanda Richard** <arichard@bowieresources.com>  
Date: Thu, Oct 16, 2014 at 8:15 AM  
Subject: Northwater Mitigation Report  
To: Amanda Daniels <amandadaniels@utah.gov>  
Cc: Vicky Miller <vmiller@bowieresources.com>

Amanda,

Attached is the report we have discussed. I will send a copy of this report to Kyle Beagley also. I am working on getting an as-built of the spring location for you also. If you need any other information, please let me know.

Thanks,

Amanda

Amanda Richard  
Environmental Engineer  
Canyon Fuel Company- Sufco Mine  
(435) 286-4489  
arichard@bowieresources.com

--  
Amanda Daniels  
Utah Division of Oil, Gas and Mining

# Northwater Mitigation Report

CFC Sufco Mine

Sufco constructed a system to transport water from spring MSP-89 to the existing piping system at EFB-11. MSP-89 is located on the north-facing slope between the main stem and East Fork of Box Canyon. The spring is approximately 400 ft below the canyon rim. To limit impact, construction materials were delivered to the spring location by helicopter or horse.

Two solar panels were placed on the canyon rim above MSP-89 to power the submersible pumps in the spring collection box. The panels were enclosed in a cedar posts and lodge pole fence to protect them from damage by livestock and wildlife.



The water from spring MSP-89 was captured from beneath a rock outcrop. To assist in directing and capturing the spring flow a layer of clay material was used, in addition a layer of gravel was placed below the spring source and spring box. The gravel was then covered with filter fabric.

Although the majority of the water was captured in the spring box, approximately 5 gpm could not be captured. The 5 gpm of water was collected and piped beneath the spring box and discharged into the natural channel.



The spring box was designed to have the back plate removed, but to help control sediment flowing into the box and to protect the pumps Sufco drilled holes in the box back plate instead of removing it.

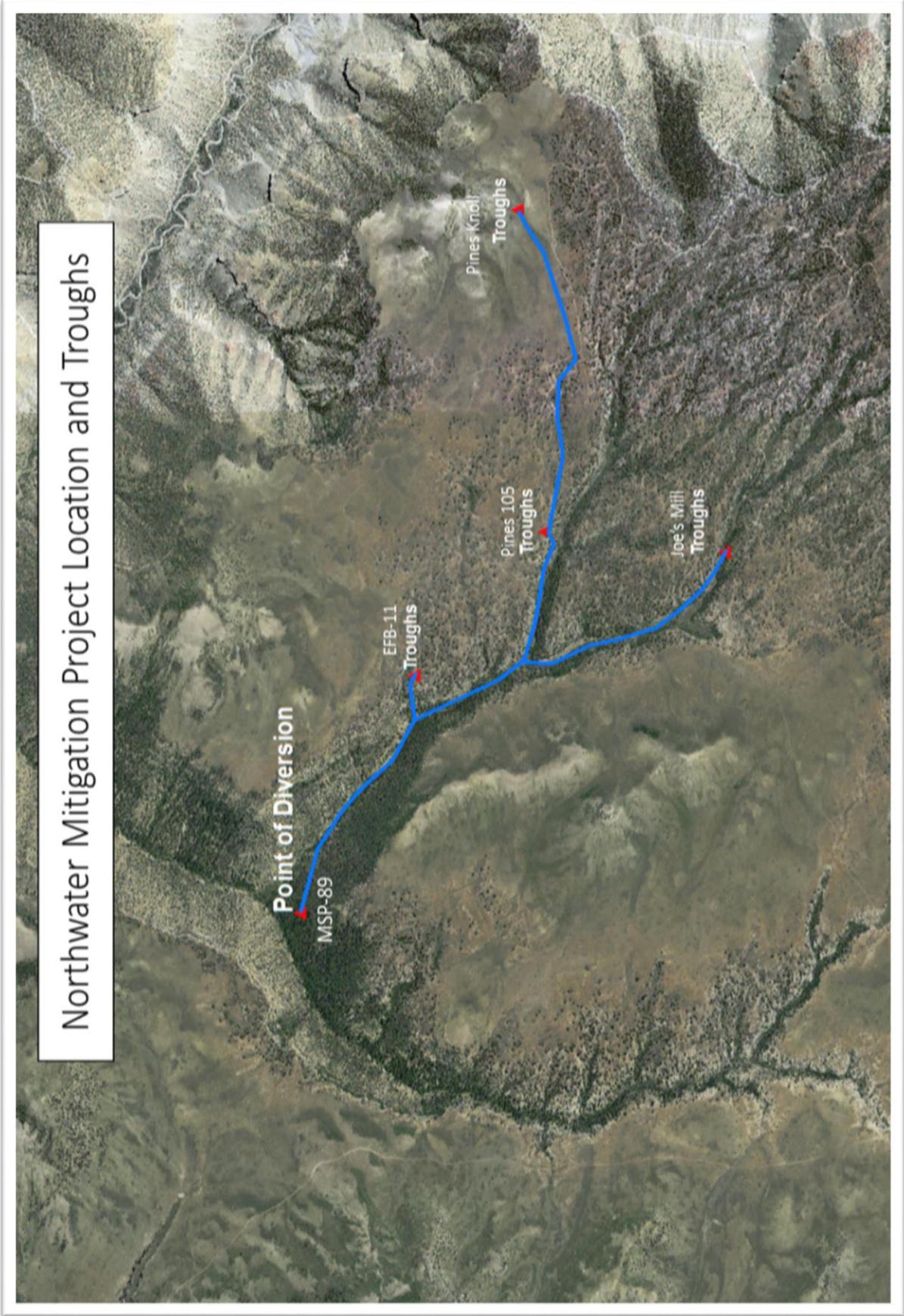


A spring collection box was installed at MSP-89 with two submersible pumps. The collection box and pumps supplied 10-15 gallons of water to the existing pipeline (2" HDPE) at EFB-11.



MSP-89 Spring Collection

By September 2013 the spring box and solar panel installation was complete. However, Sufco was not able to connect the power cable from the solar panels to the pumps until May 2014.



Once the cable was hooked up to the panels, the cable was connected to the pumps located in the spring collection box at MSP-89. The installation was completed and the system was running by June 14, 2014. The pumps ran off the solar panels approximately 8 hours a day, 7 days a week, except in incumbent weather.

When the system first started, the flow was reaching the troughs at EFB-11, but not the other troughs. After walking the pre-existing waterlines, several leaks were found and repaired. The water began flowing into the Joes Mill troughs, but the two troughs at Pines 105 still had no water in them.

### Northwater Flows at Each Trough Location

Date	EFB-11 (gpm)	Pines 105 (gpm)	Joes Mill (gpm)	Comments
9/26/2014				Shut system off for the year. Took solar panels off and pumps out for winter.
9/24/2014		4		
9/22/2014		6		
9/15/2014		6		
9/9/2014		3		
9/8/2014		1		
9/5/2014		6		
9/3/2014		2		
8/28/2014		5		
8/27/2014		3		
8/21/2014		3		
8/18/2014		5		
8/14/2014		4.5		
8/11/2014		6.5		Switched all water over to Pines 105
8/6/2014			6	
8/4/2014			6	
7/31/2014			2.7	
7/28/2014	2.9			Switched all water over to Joes Mill to fill pond.
7/24/2014	0.1		4.5	
7/21/2014	0	0.2	6.4	Sent a larger flow to Joes Mill
7/10/2014	6.5			Fourth pump was installed in spring box
7/2/2014	2.5	5	2.5	Cattle were moved weekend of July 4th
6/30/2014	2.22	4.63	1.72	Third pump was installed in spring box
6/26/2014	3.4	4	2	
6/17/2014	3.5	2	1	Ball Valves installed in lines near EFB-11 to help regulate flow at each trough

To help regulate the amount of water delivered to each set of troughs, ball valves were installed on the waterline at EFB-11. The ball valves regulated the flow to the two troughs at EFB-11 and the two troughs at Joes Mill, allowing water to flow to the two troughs at Pines 105.

Thirteen Hundred head of cattle were herded into the area June 14, 2014. Keeping the troughs full became a challenge. To make sure the cattle and wildlife still had water while the troughs were filling and refilling, Sufco supplemented the water supply by adding additional troughs within grazing area.

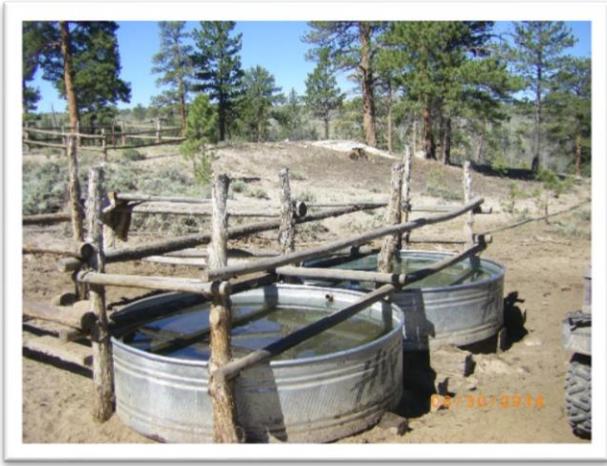
After the Forest Service gave permission, the additional troughs were filled with water hauled by truck from the North Fork of Quitchupah. Not only did the truck fill the additional troughs, but when necessary would top off the troughs at EFB-11 and Pines 105. The contractor hauling water for Sufco also assisted in filling the troughs at Pines Knolls when the cattlemen's pump failed to maintain flow.



Due to weather, the solar panels would not power the pumps long enough during the day to fill the troughs. Sufco determined that it would be beneficial to add a third pump and use a generator to assist in filling the troughs. The generator was used to run the pumps for approximately 5 hours after the sun went down.

An employee would go up every morning and night to check the system. After the sun set, the generator ran for 17 days to power the solar panels.

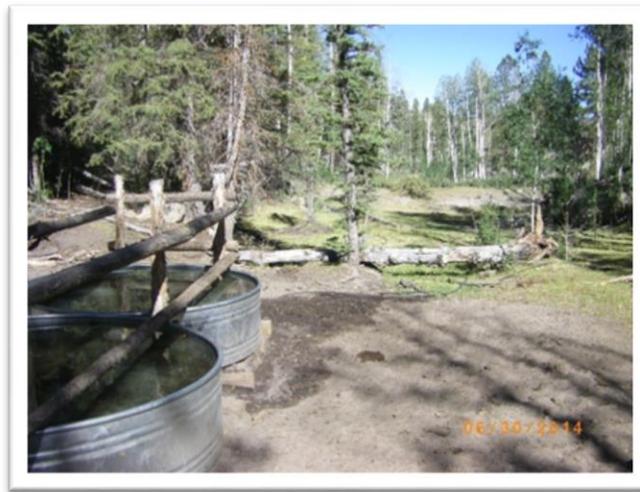
A third and fourth pump were plumbed into the spring box to increase the flow to the connected troughs. To allow each pump to be run separately by the solar panels and generator, check valves were installed in the spring box for each pump.



EFB-11 troughs



Pines 105 troughs



Joes Mill troughs

The Cattlemen's pump was not functioning while plumbed to their set of solar panels at Pines 105. Sufco plumbed a submersible pump to their panels to ensure the pumps were working properly, by the end of June the water began to fill the Pines Knolls troughs.



The cattlemen moved the livestock from these areas the weekend of July 4, 2014. Even though the cattle had left, Sufco kept the system running.

On July 14, 2014 a majority of the water had been switched from EFB-11 and Pines 105 to Joes Mill troughs, which when full would over flow filling the adjacent Joes Mill pond.



Joes Mill Pond

The Northwater system was shut off on September 26, 2014. Employees removed the solar panels and stored them for the winter months. In addition, Sufco flew the spring box pumps out by helicopter for winter storage. With the system down, Sufco walked the lines and installed vents and drains, with the intent of preventing leaks in the lines come spring.

The line from EFB-11 to Joes Mill began as a 2-inch HDPE line, but was reduced to a 1-inch line half way to the Joes Mill troughs. The end of September, Sufco replaced the 1-inch line with a 2-inch HDPE line.

A table in the text is provided which includes dates, flows and other information.