

C/007/022 Incoming

#4491

SAVAGE

Savage Services Corporation
Coal & Power Services Group
2025 East 5000 South
Box 1001
Price, UT 84501

(435) 637-5664
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Mr. Daron Haddock
Coal Regulatory Program Manager
Utah Division of Oil, Gas & Mining
1594 West North Temple, Suite 1210
P.O. Box 145801
Salt Lake City, Utah 84114-5801

Re: Response to Deficiency
Abandonment of Well S-2-GW
Savage Services Corporation
Savage Coal Terminal
C/007/0022 , Task ID #4445

Dear Mr. Haddock:

Enclosed is the response to the deficiency identified in your letter of December 4, 2013, concerning the proposal to abandon Groundwater Monitoring Well S-2-GW at the Savage Coal Terminal. The entire amendment is being resubmitted, along with an additional Appendix 7-4 which provides the justification required.

Upon approval, the well pipe at S-2-GW will be cut off at least 6" below ground level and filled with sand to within 12" of the top of the pipe. The upper 12" (minimum) of the pipe will then be filled with concrete and the well abandoned.

It is our hope this amendment can be approved, since this well is no longer serving a purpose, and will likely produce false sample data in the future.

A required C1/C2 Form is enclosed, along with 1 copy of revised pages and maps. If you have any questions, or need additional information, please let me know.

Sincerely,



Garth Nielsen
General Manager

RECEIVED

JAN 03 2014

Div. of Oil, Gas & Mining

Cc: Steve Demczak
Dan Guy
File

APPLICATION FOR COAL PERMIT PROCESSING

Permit Change New Permit Renewal Exploration Bond Release Transfer

Permittee: Savage Services Corporation

Mine: Savage Coal Terminal

Permit Number: C/007/0022

Title: Response to Deficiency - Removal of Ground Water Monitoring Well S-2-GW

Description, Include reason for application and timing required to implement:

Response to Deficiency to the request to approve removal of ground water monitoring well S-2-GW.

Instructions: If you answer yes to any of the first eight questions, this application may require Public Notice publication.

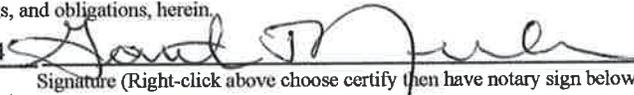
- | | | |
|---|--|---|
| <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No | 1. Change in the size of the Permit Area? Acres: _____ Disturbed Area: _____ <input type="checkbox"/> increase <input type="checkbox"/> decrease. |
| <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No | 2. Is the application submitted as a result of a Division Order? DO# _____ |
| <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No | 3. Does the application include operations outside a previously identified Cumulative Hydrologic Impact Area? |
| <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No | 4. Does the application include operations in hydrologic basins other than as currently approved? |
| <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No | 5. Does the application result from cancellation, reduction or increase of insurance or reclamation bond? |
| <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No | 6. Does the application require or include public notice publication? |
| <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No | 7. Does the application require or include ownership, control, right-of-entry, or compliance information? |
| <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No | 8. Is proposed activity within 100 feet of a public road or cemetery or 300 feet of an occupied dwelling? |
| <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No | 9. Is the application submitted as a result of a Violation? NOV # _____ |
| <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | 10. Is the application submitted as a result of other laws or regulations or policies? |

Explain: Deficiency Response _____

- | | | |
|---|--|--|
| <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No | 11. Does the application affect the surface landowner or change the post mining land use? |
| <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No | 12. Does the application require or include underground design or mine sequence and timing? (Modification of R2P2) |
| <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No | 13. Does the application require or include collection and reporting of any baseline information? |
| <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No | 14. Could the application have any effect on wildlife or vegetation outside the current disturbed area? |
| <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No | 15. Does the application require or include soil removal, storage or placement? |
| <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No | 16. Does the application require or include vegetation monitoring, removal or revegetation activities? |
| <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | 17. Does the application require or include construction, modification, or removal of surface facilities? |
| <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | 18. Does the application require or include water monitoring, sediment or drainage control measures? |
| <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | 19. Does the application require or include certified designs, maps or calculation? |
| <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No | 20. Does the application require or include subsidence control or monitoring? |
| <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No | 21. Have reclamation costs for bonding been provided? |
| <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No | 22. Does the application involve a perennial stream, a stream buffer zone or discharges to a stream? |
| <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No | 23. Does the application affect permits issued by other agencies or permits issued to other entities? |
| <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No | 24. Does the application include confidential information and is it clearly marked and separated in the plan? |

Please attach three (3) review copies of the application. If the mine is on or adjacent to Forest Service land please submit four (4) copies, thank you. (These numbers include a copy for the Price Field Office)

I hereby certify that I am a responsible official of the applicant and that the information contained in this application is true and correct to the best of my information and belief in all respects with the laws of Utah in reference to commitments, undertakings, and obligations, herein.

<u>Garth Nielsen</u>	<u>General Manager</u>	<u>01/03/2014</u>	
Print Name	Position	Date	Signature (Right-click above choose certify then have notary sign below)

Subscribed and sworn to before me this 2 day of Jan, 2014

Notary Public: Tami L. McKendrick, state of Utah.

My commission Expires: 07-02-2014 }
 Commission Number: 893388 } ss:
 Address: 1179 E. Main }
 City: PRICE State: UT Zip: 84501 }



For Office Use Only:	Assigned Tracking Number:	Received by Oil, Gas & Mining RECEIVED JAN 13 2014 DIV. OF OIL, GAS & MINING
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Regional Groundwater Hydrology

Published groundwater data for the area surrounding the Savage Coal Terminal site is limited. However, the U.S. Geologic Survey (1979) has compiled the published selected groundwater data in the Wasatch Plateau and Book Cliffs area. Also, drilling logs for oil and gas wells drilled in the area were obtained from the Utah Division of Oil, Gas and Mining. This data is sufficient to give a good indication as to the existence and relative location of water bearing strata in the area.

Logs of oil and gas wells drilled in the area indicate that regional groundwater was first encountered in the Ferron Sandstone approximately 500 feet below the surface. Five of thirteen wells recovered brackish or salty water from this strata. The other 8 wells did not find water in this strata. Because of the variable and discontinuous nature of the sandstone and the poor quality of the water, the Ferron is not an important aquifer in this area.

A water table does exist in some locations above the impermeable Bluegate shale. In the general area, this water table exists in the alluvium or weathered shale and gravelly pods above the Bluegate Shale.

Ground Water Levels

Note: The following discussion on the observation wells is included for informational purposes, although all of the wells described have been decommissioned and removed at this time. 2 new wells were drilled in 2006, and one in 2012; however, there is very limited data available on them at this time.

The measurements in the observation wells as recorded in Table 7-1 indicate that there is no regional ground water table at the site, although a perched water table exists at some locations on the site. The aerial extent of this perched water table could not be precisely determined from existing monitoring well network.

Wells No. CV0W, CV7W, and CV9W were dry indicating that no water table exists above the Bluegate Shale at these locations. Well CV2W was also dry throughout much of the baseline monitoring. Well CV0W was apparently influenced by the French Drain intercepting shallow groundwater flow from the north and west. Well CV9W may also be influenced by the other French

Ten additional wells were drilled during the summer of 1980 in order to better characterize the shallow groundwater associated with the Savage Coal Terminal Facility. Chemical analysis of water samples taken from Savage Coal Terminal wells are reported in Tables 7-5 through 7-14. Also, water quality samples were taken from the French Drain at the pump house and are reported in Table 7-4.

Available data is presented separately for each station by two tables.

The first table for each well presents the results of field and laboratory chemical analyses for each sampling performed on that well. Those parameters for which concentrations are outside the standards for aquatic or agricultural use are also identified.

The second table for each well presents the quality standards for aquatic and agricultural use. This table summarizes chemical quality data by presenting the maximum, minimum and mean concentration including the standard deviation for each parameter for the period of record. The second table also summarizes the number of times each parameter exceeded the standard or limiting range for that particular parameter with respect to domestic, agricultural use. The source for quality standards for domestic, aquatic or agriculture used in the tables were determined from the numeric stream standards for the Price River below Castle Gate. There are no domestic standards for this reach of the Price River.

Ground water quality is generally poor and dominated by sodium sulfate. Seasonal variation in TDS or conductivity is found to occur in many of the wells. Some exhibit higher concentrations during the winter and spring than in summer or fall. In other wells, no definite pattern is discernible.

It should be noted that all of the above ground water monitoring wells have been removed and plugged as of May 1999. This was approved by the Division under an amendment to the plan. Two new ground water monitoring wells were installed in 2006 and one in 2012. One of the 2006 wells (S-2-GW) has since been removed and abandoned.

WATER MONITORING PROGRAM

Station	Location	Type	Frequency	Flow Device	Results To	Remarks
CV-1-W	Pumphouse	French Drain	Bi-annually	Time/Volume or Depth	DOGM	Sample during 2 nd and 4 th Quarters.
CV-14-W	N.E. Corner Property	Ditch	Bi-annually	Time/Volume	DOGM	Sample during 2 nd and 4 th Quarters.
CV-15-W	Sediment Pond Discharge	Pond Outlet	Monthly	Hand-Held Time/Volume	E.P.A., DOGM, Utah Health Dept.	Monitored per UPDES Permit
S-1-GW	South of French Drain	Ground Water Monitoring Well	Quarterly	Grab Sample Depth	DOGM	Quarterly - 2 years Bi-Annual - After
S-3-GW	East of Pumphouse	Ground Water Monitoring Well	Quarterly	Grab Sample Depth	DOGM	Quarterly - 2 years Bi-Annual - After

Note: In addition to the above regular water monitoring schedule, baseline sampling will be completed on all stations at least once each 5 years. Baseline samples were taken in the 4th Quarter of 2009 and are scheduled to be taken again in the 4th Quarter of 2014. Baseline samples are analyzed per the parameter list on Table 7-17.

Water monitoring will include parameters on Table 7-17. Results will be submitted to the Division within 60 days following the end of each sampling cycle.

In 2009, 2 new ground monitoring wells were installed as required by the Division. These wells were designated S-1-GW and S-2-GW, and were placed near the northeast corner of the site and below (east) of the refuse pile respectively. A new well (S-3-GW) was added east of the pumphouse in June 2012. Although originally dry, it is hoped this well will provide some additional data in the future.

The measurements in the observation wells as recorded in Table 7-1 of Chapter 7 indicate that there is no regional ground water table at the site, although a perched water table exists at some locations on the site. The aerial extent of this perched water table could not be precisely determined from existing monitoring well network.

As previously mentioned, the original wells were monitored for 18 years at this site. When the wells were finally approved for removal, 5 of the 8 remaining wells had been dry for more than 5 years, 2 wells showed some ground water which appeared to be recharged by the irrigation canal south of the site. Water from one of these wells is also evident as ground water in Sediment Pond No. 5. The last remaining well was in an irrigated field east of the site, on land not controlled by Savage Services Corporation.

Of the 2 new wells installed in 2009, one remained dry and has been replaced. The other has provided consistent data, until recently. The entire refuse pile has now been removed, and in the process, a considerable amount of loading and grading was done around the well site. In addition, recent construction for the transloading system has also taken place close to the well S-2-GW. These recent activities have resulted in coal/refuse particles and other sediments getting into the well and causing anomalous sample readings. Since the well was installed to gauge the effects of the refuse pile, and no new

refuse has been added and the entire pile has been removed, the well was no longer serving a useful purpose, and was removed in late 2013.

When the facilities were first constructed in 1977 - 1978, ground water was present throughout the site, ranging in depths from 0' to 20' from the surface. A French Drain system was placed along the western and northern edge of the property to intercept a majority of the ground water, which appears to be recharged primarily by the irrigation canal systems located west of the property. This ground water is collected in a deep tank located at the northeastern corner of the property, and is regularly monitored as point CV-1W.

The French Drain has been in operation for approximately 28 years, and has been monitored on a regular basis. The inflow continues to range from 20 to 25 gpm. Water quality is poor - typical of ground water in this area - with TDS concentrations running approximately 10,000 mg/l.

Proposed Facilities

The only proposed change to the present system will be the removal of well S-2-GW, as previously mentioned. Wells S-1-GW and S-3-GW will continue to be monitored according to the approved plan.

Effects of Operations on Groundwater

This site has been in operation for over 31 years with no negative impacts to the ground water. During this time, the site has had coal washing and refuse generating activities, as well as a long period of operating as a coal storage and loadout facility.

The only potential for negative impact from the proposed facilities would be from possible acid/toxic contamination of the groundwater from the coal or refuse. This potential ~~will be~~ has been minimized by regular testing of the refuse for acid/toxic potential, as well as regular monitoring of the groundwater. The refuse pile has now been completely removed.

Based on the past history of the site, and the present new operating and testing procedures, there should be no negative impact to the groundwater resources on this site.

Surface Water Hydrology

Regional Surface Water Hydrology

The regional area is drained by tributaries to the Green and Colorado Rivers; principal

Appendix 7-4
Justification to Remove
Groundwater Monitoring Well S-2-GW

Savage Services Corporation
Savage Coal Terminal

Appendix 7-4 Justification to Remove Groundwater Well S-2-GW

In November 2013, Savage Services Corporation submitted an amendment to the Savage Coal Terminal MRP, requesting approval to abandon Groundwater Monitoring Well S-2-GW. Upon review of the amendment, the Division issued a deficiency requesting more information to justify removal of the well. The deficiency stated in part ...”For the Division to release well S-2-GW the data generated must demonstrate that no impacts were observed. To demonstrate this the applicant shall present and analyze the data from S-2-GW with comparison to other wells and/or historic data”.

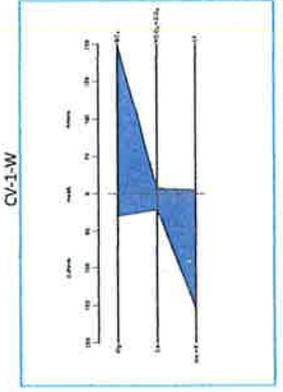
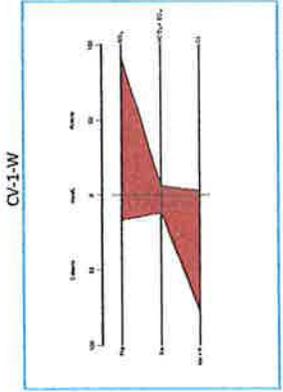
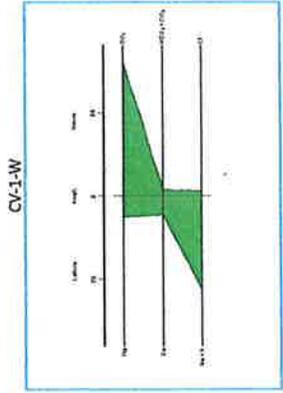
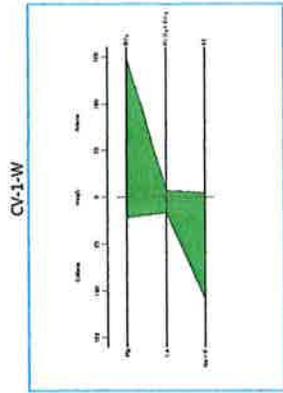
The following information is therefore provided to demonstrate, as requested by the deficiency, that "no impacts were observed" in S-2-GW.

First, as noted in the initial Savage request, the intent of S-2-GW was to tract potential effects of new refuse storage, but no new refuse was brought to the site. Thus, the potential for impact is by default nil.

Second, the attached Stiff diagrams were prepared to show that general groundwater quality as reflected by data obtained from S-2-GW remains spatially and temporally consistent. Monitoring site CV-1-W is used in the demonstration. As background, the approved MRP demonstrates that shallow groundwater in the area "is generally poor and dominated by sodium sulfate" (MRP Chapter 7, page 10). CV-1-W samples a "French Drain intercepting shallow groundwater flow from the north and west" (MRP Chapter 7, page 10).

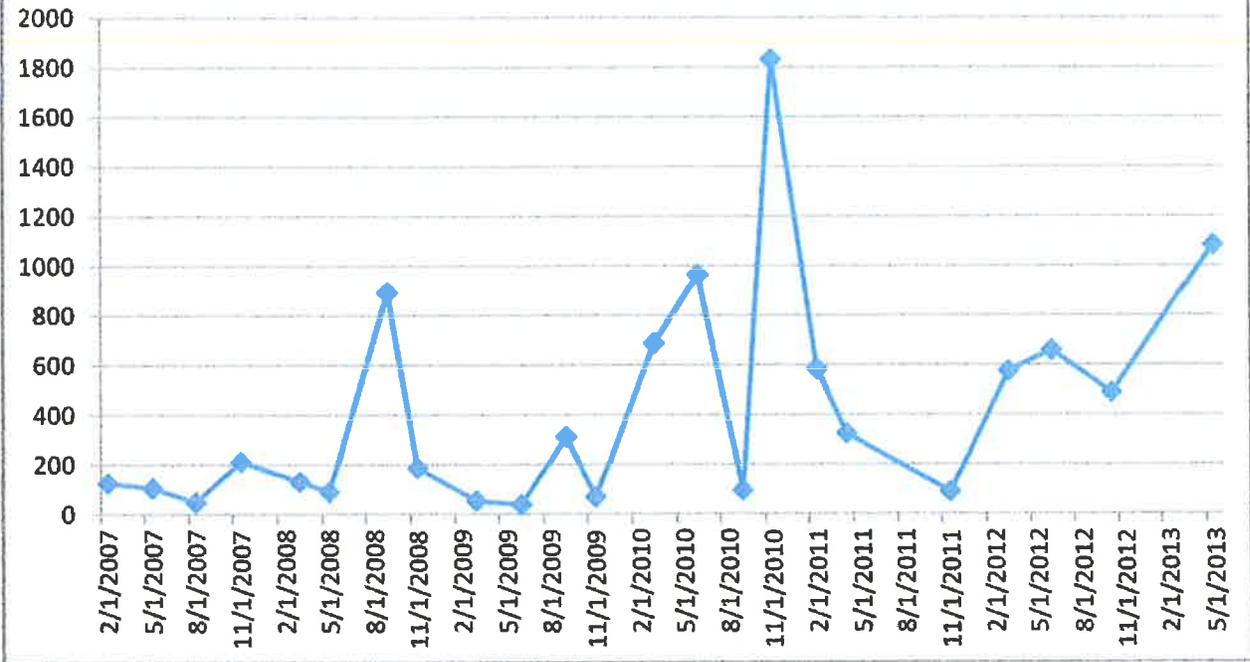
Three sets of Stiff diagrams are included. The first compares the four most recent paired samples from CV-1-W and S-2-GW. The second set compares the four earliest paired samples from these two sites (2007-2008). The last set provides data from CV-1-W from the earliest available samples with a complete set of ions analyzed (2000-2001). These Stiff diagrams show that: (1) the dominant cation and anion continue to be sodium and sulfate, respectively; and (2) differences in the proportional makeup of the major ions, either between the two sites or over time, are not distinguishable. Thus, S-2-GW currently appears to be collecting groundwater that has the same quality as when the well was first installed, and which is also the same as that collected currently (and previously) at the French Drain.

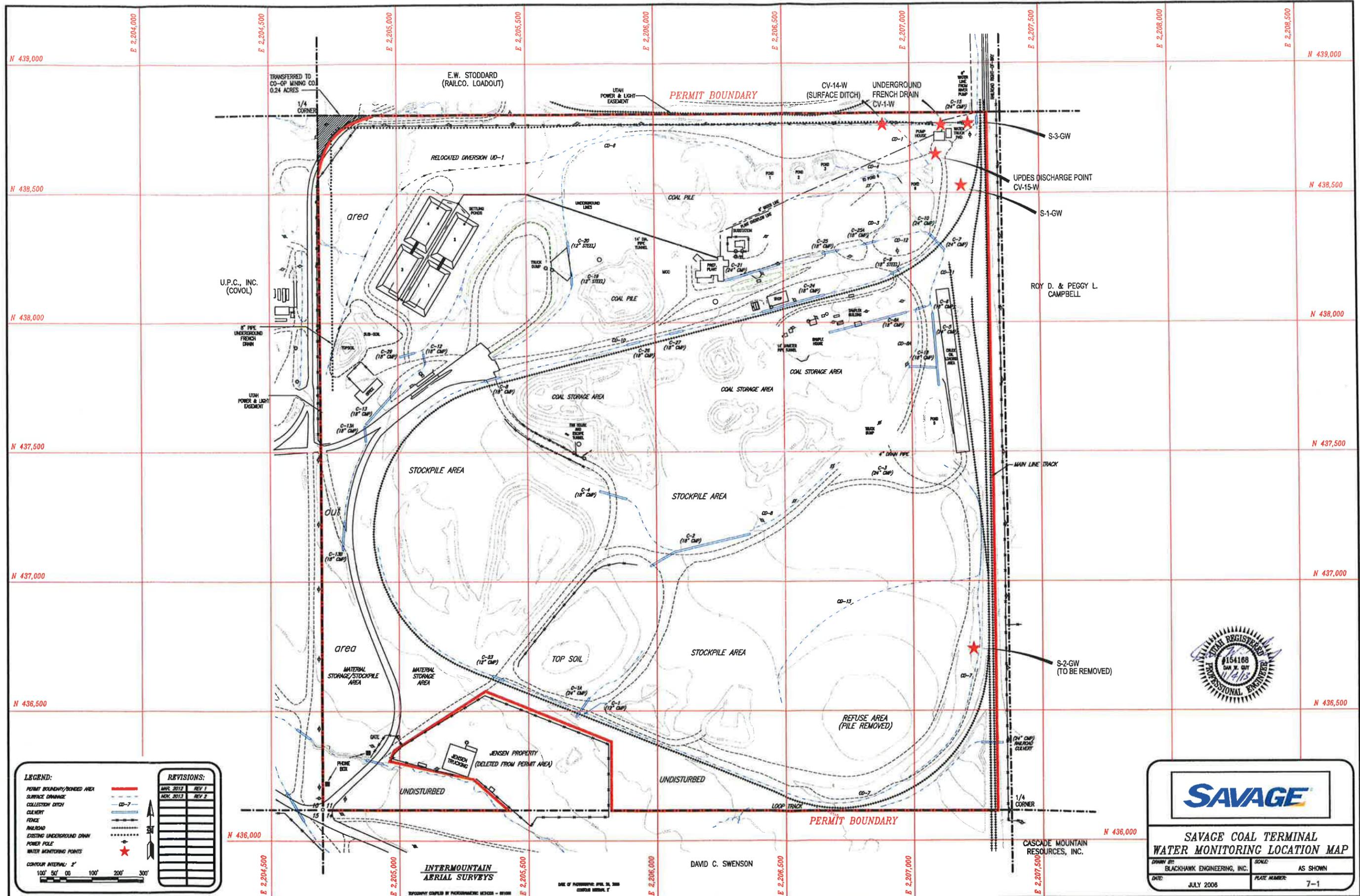
Third, as also noted in the initial Savage request, the recent surface activities near the well appear to have caused some anomalous sample results. The following graph shows total suspended solids concentrations over time, as measured in samples collected from S-2-GW. Many of these values are exceedingly high and obviously not a reflection of the TSS concentration of the actual groundwater. Instead, these levels indicate well casing or other well integrity issues, and provide confirmation of the statements made in the original request, that the well is now providing anomalous sample readings.



Major ions in the four earliest samples collected from CV-1-W

S-2-GW TSS





LEGEND:

- PERMIT BOUNDARY/BANDED AREA
- SURFACE DRAINAGE
- COLLECTION DITCH
- CONDUIT
- FENCE
- RAILROAD
- EXISTING UNDERGROUND DRAIN
- POWER POLE
- WATER MONITORING POINTS

REVISIONS:

DATE	REV	DESCRIPTION
APR. 2012	REV 1	
NOV. 2013	REV 2	

CONTOUR INTERVAL: 2'

100' 50' 00' 100' 200' 300'



SAVAGE

SAVAGE COAL TERMINAL WATER MONITORING LOCATION MAP

DRAWN BY: BLACKHAWK ENGINEERING, INC. SCALE: AS SHOWN

DATE: JULY 2006 PLATE NUMBER: 7-1

INTERMOUNTAIN AERIAL SURVEYS

TOPOGRAPHY COMPILED BY PHOTOGRAMMETRIC TECHNIQUE - 8/1998

DAVID C. SWENSON

CASCADE MOUNTAIN RESOURCES, INC.