DAUB & ASSOCIATES, INC. November 2, 2012	1985 ½ SOUTH BROADWAY GRAND JUNCTION, CO 81507-9649 (970) 254-1224 FAX (970) 242-8438 email: gjdaub@daubandassociates.com www.daubandassociates.com
November 2, 2012 Mr. Paul Daggett US DOI BLM	RECEIVED
White River Field Office 220 East Market Street, Meeker, CO 81641	NOV 0 5 2012 GRAND JUNCTION FIELD OFFICE DIVISION OF RECLAMATION MINING & SAFETY
Re: Natural Soda, Inc. Monitoring Well 4A-1V, 4A-5M, and 94-1M Plugging and Abandonment	, 4A-5M, and 94-1M Plugging and
Dear Mr. Daggett: Natural Soda, Inc. (NSI) has successfully plugged and hydrologic/subsidence monitoring wells 4A-1V, 4A-5M, and 94-1M. been cut off below grade and buried. The well pads have been exi if they were not already interim reclaimed, and may soon be unde release.	successfully plugged and abandoned the ls 4A-1V, 4A-5M, and 94-1M. The casings have The well pads have been extensively reclaimed imed, and may soon be under consideration for
Please find attached:	
 4A-1V Sundry Notice, Plugging and operations, and P&A diagram 4A-5M Sundry Notice, Plugging and operations, and P&A diagram 94-1M Sundry Notice, Plugging and operations, and P&A diagram 	4A-1V Sundry Notice, Plugging and Abandonment Report summarizing operations, and P&A diagram 4A-5M Sundry Notice, Plugging and Abandonment Report summarizing operations, and P&A diagram 94-1M Sundry Notice, Plugging and Abandonment Report summarizing operations, and P&A diagram
Should you have any questions or comments, please contact me at (970) 254- (970) 216-1010 (c), or Bob Warneke at (970) 878-3674 x14.	ease contact me at (970) 254-1224 or -3674 x14.
Regards,	
Gerald J. Daub, PG CPG President, Daub & Associates, Inc.	
Cc: Bob Warneke Vice President of Operations Natural Soda, Inc.	
Travis Marshall w/ enc. Colorado DRMS	

SPECIALIZING IN PROFESSIONAL GEOLOGICAL, ENVIRONMENTAL, HYDROLOGICAL, GEOTECHNICAL AND PERMITTING SERVICES

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PUCATE - Other instructions on page 2. 7 I'll ini of CA/Agreement, Name and/or Name Image: Description 3h Phone No. <i>(include area code)</i> 9 AFIV Wall Name and No. A: VIV 4A: VIV 9 AFIV Wall No 9 B: Trig: Bage: reprintent (970) 878-3674 10 Field and Pool or Exploratory Area B: Trig: Bage: reprintent (1) Country or Parish, State 11 Country or Parish, State B: Trig: Bage: reprintent (1) Despen 11 Country or Parish, State 10 Fire Casing Despen Production (Saur/Resume) Wall No Wall No Wall No citize Despen Production (Saur/Resume) Wall Saure Shut Off Wall Saure Shut Off fire Casing Production Production (Saur/Resume) Well Integrity Well Integrity unge Phane Prog and Anadon Temporanity Abandon Other Other anvert to lopection Pring Back Wate Shut Off Other Other Caser state all pertinent details, including estimated stating date of any proposed work and approximate duration betterf Other Other Trans to logical of 9	SUNDRY NOT Do not use this forn abandoned well. Use	FICES AND REPORTS C m for proposals to drill form 3160-3 (APD) fo	or to re-enter an r such proposals.	C-0118327 6. If Indian, Allottee or N/A	Tribe Name
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Natural Soda, Inc. Plug and Abandonment Report Dissolution Surface/Subsidence Monitor Well 4A-1V

Prepared for Natural Soda, Inc. by Daub & Associates, Inc. Summer 2012

Introduction

The Natural Soda, Inc. 4A-1V was vertically drilled as a brine recovery well in February of 1995. The 4A-1V was converted to a hydrologic and subsidence monitoring well upon cessation of cavity four operations. Well 4A-1V was drilled in the Green River Formation in the Piceance Creek Basin of western Colorado. The well is located on U.S. Department of the Interior, Bureau of Land Management (BLM) property in the NW quarter of the SW quarter of Section 26, Township 1 South, Range 98 West, in Rio Blanco County, CO. The as-built location is 39.93125° North latitude, 108.36467° West longitude, referenced to NAD 27. The as-built ground elevation is 6,696.8 feet above mean sea level. Depths mentioned in the text are reported relative to ground level.

The most recent primary objective of the 4A-1V was to monitor the Dissolution Surface (DS) Aquifer in the inactive solution mining Panel 1 and act as a subsidence monitoring well. The well was scheduled for plugging and abandonment (P&A) due to cessation of operations in Mine Panel 1, its age, and its lack of service to Natural Soda Inc.

The P&A contractor was Red Rock Well Service (RRWS) based out of Blanding, Utah. RRWS used workover rig number RR-3 to P&A the well. RRWS worked in 12-hour day shifts and traveled to and from location from Rifle, Colorado daily.

Meeker Sand and Gravel (MSG), based out of Meeker, Colorado, provided all of the cement for the plugging operations.

Weatherford (Precision Wireline) based out of Grand Junction, Colorado ran the Cement Bond Log (CBL).

Rocky Mountain Wireline Services (RMWS) out of Grand Junction, Colorado performed the perforation operation prior to the P&A.

Daub & Associates, Inc. (D&A), based in Grand Junction, Colorado, engineered the P&A and secured the contract. A geologist from D&A was on-site during all phases of the abandonment operation. D&A geologists merformed the following during during the following during during the following during during the following during during the following during during during the following during du

- performed the following duties:
- provided QA/QC of all operations
- maintained a chronological log of daily activities
- coordinated contractor operations

Daub & Associates, Inc.

Daub & Associates, Inc. Page 2 of 3 93-2M Plug and Abandonment Report
On June 12, 2012 RRWS tripped in with 2.875 inch tubing and tagged cement at 1,601 feet. According to volume calculations, approximately 202 gallons of cement flowed out of the slotted intermediate casing into the annulus. RRWS began cementing by pumping 4 totes (approximately 900 gallons, 94 sacks) of 14.6 lb. /gal Portland Type II/V cement with 2% High Early accelerator down 2.875 inch trim pipe. One hundred gallons of fresh water was pumped down the pipe in order to flush the pipe. The pipe was tripped out of the hole to a
Rocky Mountain Wireline Services (RMWS) rigged up their wireline unit at 17:00 hours to perforate the 9.625 inch steel intermediate casing. RMWS shot three 0.43 inch shots per foot at depth intervals of 1160 to 1161 feet, 990 to 991 feet, and 200 to 201 feet. Upon completion, RMWS rigged down and left location
On June 11, 2012 RRWS tripped into the well with 2.875 inch pipe, and washed down using reverse circulation from 1,910 to 1,918 feet. The CIBP was tagged at 1,918 feet. Approximately 25 bbls of fresh water was pumped down hole. The 8.75 inch bit was then tripped out of the hole and was noted to be plugged again, requiring a wet trip. RRWS tripped in the hole with 2.875 inch open ended pipe with a mule shoe to a depth of 1,912 feet and set up to pump cement. Twenty bbls of fresh water was pumped ahead of the cement. One hundred and five sacks of 14.6 lb. /gal Portland type II/V cement was then pulled up seven joints, and twenty one sacks of 14.6 lb. /gal Portland type II/V cement with 275 gallons of water.
On June 9, 2012, the rig crew began to trip out of the hole wet, and a small discharge pit was dug to collect fluids. The last joint was full of cement and bicarbonate, and the bit was found to be plugged. Weatherford ran a cement bond log (CBL) to 1,910 feet and found fluid level in the well to be at 536 feet. The CBL was run to determine the perforation intervals.
At a depth of 279 feet, RRWS began to pump hot water down the hole while rotary drilling. RRWS continued to trip in the hole, and continued reaming through the restriction. The restriction was cleared at a depth of 322 feet. RRWS continued reaming down to 373 feet with no more obstructions being encountered. Native fill was tagged at 1,858 feet. RRWS set up to reverse circulate the well. RRWS rotated and washed down from 1,860 feet to clean and condition the well. Returns were noted to contain cement with some sodium bicarbonate. Losses in returns were noted at a depth of 1,880 feet. Subsequently, a drop in fluid levels occurred due to perforations being flushed out. All returns were lost at approximately 1,907 feet and drilling was shut down to recalculate depths. When RRWS resumed pumping and rotating, the well pressured up.
On June 8, 2012 at 07:00 hours, Red Rock Well Services arrived on location and mobilized rig RR-3 from the 12H-R pad to the 4A-1V location. After removing the pressure transducer and cover from the well, RRWS began rigging up over the well. The well head was rigged up on an 11 inch 3,000 lb. wellhead flange. An 8.75 inch tri-cone bit was picked up and tripped into the hole. At 268 feet, a "ledge" was tagged (possibly bicarbonate or cement). Water was pumped down the 2.875 inch EUE tubing at a rate of 2 bbl/min to establish circulation. Circulation to surface was noted.
Plugging and Abandonment
On June 9, 2012, Jet West completed a video log inspection of the well. A CBL was run on June 9, 2012 by Weatherford to examine the quality of the intermediate casing cement. The CBL logs run in 1995 were inadequate to determine the proper intervals to perforate the casing, for proper plug and abandonment procedure.
Logging

depth of 1,334 feet. RRWS pumped 3.75 totes (approximately 845 gallons, 88 sacks) of 14.6 lb. /gal Portland Type II/V cement with 2% High Early accelerator down the hole. One hundred gallons of fresh water was pumped down the hole and 10 joints were pulled. Another 100 gallons of fresh water was pumped down the hole and the pipe was tripped out of the well. RRWS tripped back in the hole with 2.875 inch pipe and tagged cement at 1,112 feet. They then pulled pipe up to 1,085 feet and flushed the well with 100 gallons of fresh water of fresh water and totes (approximately 900 gallons, 94 sacks) of 14.5 lb/gal Portland Type II/V cement with 2% High Early accelerator down the 2.875 inch trim pipe. RRWS flushed the pipe with 100 gallons, 94 sacks) of 14.5 lb/gal Portland Type II/V cement with 2% High Early accelerator down the 2.875 inch trim pipe. RRWS flushed the pipe with 100 gallons, 94 sacks) of 14.5 lb/gal Portland Type II/V cement with 2% High Early accelerator followed by 75 gallons fresh water. The tremie pipe was tripped out of hole.

June 13, 2012, RRWS tripped in 2.875 inch pipe and tagged top of cement at 513 feet (29 feet higher than expected). 50 gallons of fresh water was pumped down hole followed by 675 gallons (2.6 cubic meters, approximately 70 sacks) of 14.6 lb/gal Portland Type II/V cement. The pipe was pulled up to approximately 197 feet, and 900 gallons (3.4 cubic meters, 94 sacks) of cement was pumped down hole until returns to surface were noted. Cement was later poured down the annulus to top off the cement to surface. Excess cement was discharged to DVPW pit.

Conclusion

The Natural Soda, Inc. hydrologic and subsidence monitoring well 4A-1V was successfully plugged and abandoned on June 13, 2012. The casing was perforated between the depths of 1,160 to 1,161 feet, 990 to 991 feet, and 200 to 201 feet prior to plugging in order to ensure a good annular seal. Approximately 660 sacks of Portland Type II/V cement were pumped down hole to plug it from a depth of 1,912 (CIBP) feet to surface level. The intermediate casing was cut off below surface, and a dry hole marker was welded onto the well head prior to reclamation of the pad.



Form 3160-5 (August 2007)	UNITED STATES	TERIOR		FORM APPROVED OMB No. 1004-0137 Example July 31 2016
BUR SUNDRY 1	BUREAU OF LAND MANAGEMENT SUNDRY NOTICES AND REPORTS ON WELLS	GEMENT RTS ON WELLS	5. Lease Ser C-0118327 6. If Indian,	2
Do not use this abandoned well.	Do not use this form for proposals to drill or to re-enter an abandoned well. Use Form 3160-3 (APD) for such proposals	drill or to re-enter a. D) for such proposa	N/A	
SUBM	SUBMIT IN TRIPLICATE - Other in	Other instructions on page 2	7	If Unit of CA Agreement, Name and or No
1. Type of Well Gas V	Well Other Subs	Subsidence Monitor Well	8. Well Name and No 4A-5M	nd No.
2. Name of Operator Natural Soda, Inc			9. API Well No	
3a Address 3200 Rie Blanco County Road 31 Rifle CO 81650	3h. (97	3b. Phone No. (include area code) (970) 878-3674		10. Field and Pool or Exploratory Area
4 Location of Well (Footage, Sec. T, R, M, or Surren Latitude 39 92981 N Longitude 108 36539 W (NAD 27) S26 T1S	Description) R98W		11, Country or Parish, St Rio Blanco County, Co	Parish, State punty, Colorado
12. CHE	CHECK THE APPROPRIATE BOX(ES) TO INDICATE	(ES) TO INDICATE NATUR	NATURE OF NOTICE, REPORT OR OTHER	R OTHER DATA
TYPE OF SUBMISSION		ľ	TYPE OF ACTION	
Notice of Intent	Acidize	Deepen	Production (Start/Resume)	une) Water Shut-Off
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Gerald J Daub	ally or recomplete horizontally, and work will be performed or provi- ed operations. If the operation Abandomment Notices must be in final inspection.) mmary sacks of Portland Type II/V c sacks of Portland Type II/V c interact.	em details, including estimating et the Bond No. on file with results in a multiple completing entire all requirement. Cemented from 18 Tube Tube Preside	g estimated starting date of any propositions and measured and true vertical of life with BLM BLA. Required subseq completion or recompletion in a new quirements, including reclamation, ha from 1844.3 ft to ground surface.	
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Subsidence Monitoring Well 4A-5M Plug and Abandonment Report Natural Soda, Inc.

Daub & Associates, Inc. Natural Soda, Inc. Summer 2012 Prepared for ₿у

Introduction

of Land Management property in the SW quarter of the SW quarter of Section 26, Township 1 South, Range 98 the Piceance Creek Basin of western Colorado. The well is located on U.S. Department of the Interior, Bureau TDR cables remain functional and may still provide data. was to continuously monitor subsidence of the inactive solution mining Panel 1. Though the well is P&A'd, the in the text are measured depths reported relative to ground level. The primary objective of the 4A-5M well referenced to NAD 27. The as-built ground elevation is 6,507.7 feet above mean sea level. Depths mentioned West, in Rio Blanco County, CO. The as-built location is 39.92981° North latitude, 108.36539° West longitude, The Natural Soda, Inc. (NSI) 4A-5M was a vertically drilled rotary hole, drilled in the Green River Formation in

The P&A contractor was Red Rock Well Service (RRWS) based out of Blanding, Utah. RRWS used workover rig number RR-3 to P&A the well. RRWS worked in 12-hour day shifts and traveled to and from location from Rifle, Colorado daily.

operations. Meeker Sand and Gravel (MSG), based out of Meeker, Colorado, provided all of the cement for the plugging

log prior to the P&A. Rocky Mountain Wireline Services (RMWS) out of Grand Junction, Colorado performed the Gamma Ray/CCL

contract. A geologist from D&A was on-site during all phases of the abandonment operation, provided field coordination-supervision, and quality control of the P&A activity. The D&A geologist performed the following duties: Daub & Associates, Inc. (D&A), based in Grand Junction, Colorado, engineered the P&A and secured the

- provided QA/QC of all operations
- maintained a chronological log of daily activities
- coordinated contractor operations
- provided cost tracking and reporting

Plugging and Abandonment

On June 20, 2012, at 09:00 hours, RRWS cut the outer riser on the well down even with the 2.375 inch pipe and welded the cut-rite on the end of the 1 inch trim pipe. One inch trim pipe was then rigged up and tripped in to 1,189 feet to begin circulating water. The bottom of well was tagged at 1844.3 feet, and 10 bbls of water was circulated to flush the hole. At 17:00 hours, RMWS ran a Gamma Ray/CCL log from 1,085 feet to surface.

On June 21, 2012, RRWS tripped into the hole with 1 inch trim pipe to a depth of 1,815 feet. RRWS pumped 225 gallons (1 cubic yard, 21 sacks) of 14.6 lb. /gal. Portland Type II/V cement down hole. The pipe was tripped out to a depth of 1,499 feet and 100 additional gallons (.5 cubic yards, 10.5 sacks) of cement was pumped down hole. The pipe was then pulled to 870 feet and 50 gallons (.25 cubic yards, 5.25 sacks) of cement was pumped down hole, followed by the pipe being raised to 245 feet and 25 gallons (.13 cubic yards, 2.6 sacks) of cement being pumped down hole. After this, two joints were run down the annulus to 58 feet and filled with cement to surface. At 15:30 hours, the cement job and P&A of 4A-5M was completed. Approximately 75 gallons (.4 cubic yards, 8.4 sacks) of excess cement was discharged into the pit.

Conclusion

The Natural Soda, Inc. 4A-5M was successfully plugged and abandoned on June 21, 2012. A total of approximately 39.4 sacks of Portland Type II/V cement were pumped down hole to plug the well from a depth of 1,844.3 feet to surface. The intermediate casing was cut off below surface, and a dry hole marker was welded onto the well head. The well pad has already been interim reclaimed.



NATURAL	
SODA	

Subsidence Monitoring Well 94-1M Plug and Abandonment Report Natural Soda, Inc.

Daub & Associates, Inc. Natural Soda, Inc. Summer 2012 Prepared for ₿у

Introduction

depths reported relative to ground level. The primary objective of the 94-1M was to monitor the Dissolution and its lack of service to Natural Soda Inc. Surface (DS) Aquifer in the inactive solution mining Panel 1 and act as a subsidence monitoring well. The well in the SE quarter of the NW quarter of Section 26, Township 1 South, Range 98 West, in Rio Blanco County, was scheduled for plugging and abandonment (P&A) due to cessation of mining operations in Mine Panel 1 as-built ground elevation is 6,659.0 feet above mean sea level. Depths mentioned in the text are measured CO. The as-built location is 39.93571° North latitude, 108.36127° West longitude, referenced to NAD 27. The monitoring well. The well was drilled in the Green River Formation in the Piceance Creek Basin of western Colorado. The well is located on U.S. Department of the Interior, Bureau of Land Management (BLM) property The Natural Soda, Inc. (NSI) 94-1M was a vertical rotary drilled well to be used as a hydrologic and subsidence

number RR-3 to P&A the well. RRWS worked in 12-hour day shifts and traveled to and from location from The P&A contractor was Red Rock Well Service (RRWS) based out of Blanding, Utah. RRWS used workover rig Rifle, Colorado daily.

ran the gamma ray log and controlled perforations prior to P&A. Rocky Mountain Wireline Services (RMWS) out of Grand Junction, Colorado set Cast Iron Bridge Plug (CIBP),

operations. Meeker Sand and Gravel (MSG), based out of Meeker, Colorado, provided all of the cement for the plugging

contract. A geologist from D&A was on-site during all phases of the abandonment operation, provided field coordination-supervision, and quality control of the P&A activity. The D&A geologist performed the following duties: Daub & Associates, Inc. (D&A), based in Grand Junction, Colorado, engineered the P&A and secured the

- provided QA/QC of all operations
- maintained a chronological log of daily activities
- coordinated contractor operations
- provided cost tracking and reporting
- **Plugging and Abandonment**

Conclusion

The Natural Soda, Inc. directional and rotary vertical monitor well 94-1M was successfully plugged and abandoned on June 19, 2012. The intermediate casing was perforated between the depths of 1,474-1,475 feet, 1,351-1,350 feet, 1,331-1,330 feet, 1,311-1,310 feet, 1,291-1,290 feet, 1,271-1,270 feet, 1,251-1,250 feet, 1,233-1,232 feet, 1,211-1,210 feet, 1,000-999 feet, 750-749 feet, 500-499 feet, and 200-199 feet prior to plugging in order to ensure a good annular seal. A total of 388 sacks of Portland Type II/V cement were pumped down hole to plug well from a depth of 1,920 feet (CIBP) to surface. The intermediate casing was cut off below surface, and a dry hole marker was welded onto the well head prior to reclamation of the pad.

