

2RF-166 -
MOBLEY
CONTAINMENTS #1
AND #2 FACILITY ID
fVV2131951088
C-147/Conditions of
Approval/
Correspondence

[371643] SOLARIS WATER
MIDSTREAM, LLC
January 20, 2022

District I
1625 N. French Dr., Hobbs, NM 88240
District II
811 S. First St., Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy Minerals and Natural Resources
Department
Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-147
Revised April 3, 2017

Recycling Facility and/or Recycling Containment

Type of Facility: ☒ Recycling Facility ☐ Recycling Containment*
Type of action: ☐ Permit ☒ Registration
☐ Modification ☐ Extension
☐ Closure ☐ Other (explain) _____

*** At the time C-147 is submitted to the division for a Recycling Containment, a copy shall be provided to the surface owner.**

Be advised that approval of this request does not relieve the operator of liability should operations result in pollution of surface water, ground water or the environment. Nor does approval relieve the operator of its responsibility to comply with any other applicable governmental authority's rules, regulations or ordinances.

1.

Operator: Solaris Midstream LLC OGRID #: 371643
Address: 9811 Katy Freeway, Suite 900, Houston, TX, 77024
Facility or well name (include API# if associated with a well): Mobley Containments #1 and #2
OCD Permit Number: 2RF-166 (For new facilities the permit number will be assigned by the district office)
U/L or Qtr/Qtr: C Section: 19 Township: 23S Range: 30E County: Eddy
Surface Owner: ☐ Federal ☐ State ☒ Private ☐ Tribal Trust or Indian Allotment

2.

☒ **Recycling Facility:**
Location of (if applicable): Latitude: 32.2962510 N Longitude: 103.9242565 W approximately (NAD83)
Proposed Use: ☒ Drilling* ☒ Completion* ☒ Production* ☒ Plugging *
***The re-use of produced water may NOT be used until fresh water zones are cased and cemented**
☐ Other, requires permit for other uses. Describe use, process, testing, volume of produced water and ensure there will be no adverse impact on groundwater or surface water.
☒ Fluid Storage
☒ Above ground tanks ☒ Recycling containment ☐ Activity permitted under 19.15.17 NMAC explain type _____
☐ Activity permitted under 19.15.36 NMAC explain type: _____ ☐ Other explain _____
☐ For multiple or additional recycling containments, attach design and location information of each containment
☐ **Closure Report (required within 60 days of closure completion):** ☐ Recycling Facility Closure Completion Date: _____

3.

☒ **Recycling Containment #1 and #2:**
☐ Annual Extension after initial 5 years (attach summary of monthly leak detection inspections for previous year)
Center of Recycling Containment (if applicable) Latitude: 32.2968844 N Longitude: 103.9242565 W approx. (NAD83)
☐ For multiple or additional recycling containments, attach design and location information of each containment
☒ Lined ☐ Liner type: Thickness See Attached Engineer Drawings1 ☐ LLDPE ☒ HDPE ☐ PVC ☐ Other _____
☐ String-Reinforced
Liner Seams: ☐ Welded ☐ Factory ☐ Other Volume: See Attachment Drawings and Plans Dimensions _____
☐ Recycling Containment Closure Completion Date: _____

4.

Bonding:

- ☐ Covered under bonding pursuant to 19.15.8 NMAC per 19.15.34.15(A)(2) NMAC (These containments are limited to only the wells owned or operated by the owners of the containment.)
- ☒ Bonding in accordance with 19.15.34.15(A)(1). Amount of bond \$ _____ (work on these facilities cannot commence until bonding amounts are approved)
- ☒ Attach closure cost estimate and documentation on how the closure cost was calculated. (See Transmittal Letter)

5.

Fencing:

- ☒ Four-foot height, four strands of barbed wire evenly spaced between one and four feet **IF REQUESTED BY DISTRICT OFFICE**
- ☐ Alternate. Please specify: Game Fence.

6.

Signs:

- ☒ 12"x 24", 2" lettering, providing Operator's name, site location, and emergency telephone numbers
- ☐ Signed in compliance with 19.15.16.8 NMAC

7.

Variances:

Justifications and/or demonstrations that the proposed variance will afford reasonable protection against contamination of fresh water, human health, and the environment.

Check the below box only if a variance is requested:

- ☐ Variance(s): Requests must be submitted to the appropriate division district for consideration of approval. If a Variance is requested, include the variance information on a separate page and attach it to the C-147 as part of the application.

If a Variance is requested, it must be approved prior to implementation. See Volume 2 for Variances

8.

Siting Criteria for Recycling Containment

Instructions: The applicant must provide attachments that demonstrate compliance for each siting criteria below as part of the application. Potential examples of the siting attachment source material are provided below under each criteria.

General siting**Ground water is less than 50 feet below the bottom of the Recycling Containment.**

NM Office of the State Engineer - iWATERS database search; USGS; Data obtained from nearby wells **FIGURES 1-2**

☐ Yes ☒ No
☐ NA

Within incorporated municipal boundaries or within a defined municipal fresh water well field covered under a municipal ordinance adopted pursuant to NMSA 1978, Section 3-27-3, as amended.

☐ Yes ☒ No
☐ NA

- Written confirmation or verification from the municipality; written approval obtained from the municipality **FIGURE 3**

Within the area overlying a subsurface mine.

☐ Yes ☒ No

- Written confirmation or verification or map from the NM EMNRD-Mining and Minerals Division **FIGURE 4**

Within an unstable area.

☐ Yes ☒ No

- Engineering measures incorporated into the design; NM Bureau of Geology & Mineral Resources; USGS; NM Geological Society; topographic map **FIGURE 5**

Within a 100-year floodplain. FEMA map **FIGURE 6**

☐ Yes ☒ No

Within 300 feet of a continuously flowing watercourse, or 200 feet of any other significant watercourse, or lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark).

☐ Yes ☒ No

- Topographic map; visual inspection (certification) of the proposed site **FIGURE 7**

Within 1000 feet from a permanent residence, school, hospital, institution, or church in existence at the time of initial application.

☐ Yes ☒ No

- Visual inspection (certification) of the proposed site; aerial photo; satellite image **FIGURE 8**

Within 500 horizontal feet of a spring or a fresh water well used for domestic or stock watering purposes, in existence at the time of initial application. **FIGURES 1 and 7**

☐ Yes ☒ No

- NM Office of the State Engineer - iWATERS database search; visual inspection (certification) of the proposed site

Within 500 feet of a wetland. **FIGURE 9**

☐ Yes ☒ No

- US Fish and Wildlife Wetland Identification map; topographic map; visual inspection (certification) of the proposed site

9.

Recycling Facility and/or Containment Checklist:*Instructions: Each of the following items must be attached to the application. Indicate, by a check mark in the box, that the documents are attached.*

- ☒ Design Plan - based upon the appropriate requirements.
- ☒ Operating and Maintenance Plan - based upon the appropriate requirements.
- ☒ Closure Plan - based upon the appropriate requirements.
- ☒ Site Specific Groundwater Data -
- ☒ Siting Criteria Compliance Demonstrations -
- ☒ Certify that notice of the C-147 (only) has been sent to the surface owner(s)

10.

Operator Application Certification:

I hereby certify that the information and attachments submitted with this application are true, accurate and complete to the best of my knowledge and belief.

Name (Print): Bradley Todd Carpenter Title: Operations Manager
Signature: Todd Carpenter Date: 08/14/21
e-mail address: todd.carpenter@solarismidstream.com Telephone: (432) 203-9020

11.

OCD Representative Signature: Victoria Venegas Approval Date: 01/19/2022Title: Environmental Specialist OCD Permit Number: 2RF-166

- ☒ OCD Conditions
- ☒ Additional OCD Conditions on Attachment

Venegas, Victoria, EMNRD

From: Venegas, Victoria, EMNRD
Sent: Thursday, January 20, 2022 9:43 AM
To: Michael Incerto; 'Todd Carpenter'; 'Teena Robbins'
Cc: Enviro, OCD, EMNRD; r@rthicksconsult.com; 'Erica M. Hart'; Claudius Sanchez
Subject: 2RF-166 - MOBLEY CONTAINMENTS #1 AND #2 FACILITY ID fVV2131951088
Attachments: C-147 2RF-166 MOBLEY CONTAINMENTS 01.19.2022.pdf

2RF-166 - MOBLEY CONTAINMENTS #1 AND #2 FACILITY ID [fVV2131951088](#)

Good morning,

NMOCD has reviewed the recycling containment permit application and related documents, submitted by [371643] SOLARIS WATER MIDSTREAM, LLC on September 11, 2021 for 2RF-166 - MOBLEY CONTAINMENTS #1 AND #2 FACILITY ID [fVV2131951088](#) in Unit Letter C, Section 19, Township 23S, Range 30E, Eddy County, New Mexico. The form C-147 and related documents for 2RF-166 - MOBLEY CONTAINMENTS #1 AND #2 FACILITY ID [fVV2131951088](#) is approved with the following conditions of approval:

- [371643] SOLARIS WATER MIDSTREAM, LLC shall construct, operate, maintain, close, and reclaim 2RF-166 - MOBLEY CONTAINMENTS #1 AND #2 FACILITY ID [fVV2131951088](#) in compliance with 19.15.34 NMAC.
- 2RF-166 - MOBLEY CONTAINMENTS #1 AND #2 FACILITY ID [fVV2131951088](#) is approved for five years of operation from the date of permit application. 2RF-166 - MOBLEY CONTAINMENTS #1 AND #2 FACILITY ID [fVV2131951088](#) permit expires on September 11, 2026. If [371643] SOLARIS WATER MIDSTREAM, LLC, LLC wishes to extend operations past five years, an annual permit extension request must be submitted using an OCD form C-147 through [OCD Online](#) by August 1, 2026.
- [371643] SOLARIS WATER MIDSTREAM, LLC cannot receive produced water in 2RF-166 - MOBLEY CONTAINMENTS #1 AND #2 FACILITY ID [fVV2131951088](#) until after the original copy of the financial assurance has been accepted by OCD.
- Per Rule 19.15.34.15.A.(1) operators without existing financial assurance pursuant to 19.15.8 NMAC shall furnish financial assurance acceptable to the division in the amount of the recycling containment's estimated closure cost. The total closure cost estimate provided in the application in the amount of \$205,982.94 for 2RF-166 - MOBLEY CONTAINMENTS #1 AND #2 FACILITY ID [fVV2131951088](#) meets the requirements of NMAC 19.15.34.15.A.(1).
- The financial assurance bond should be mailed to the Oil Conservation Division; Bonding and Compliance; 1220 South St Frances Drive; Santa Fe, NM 87505. NMOCD will notify you when the bond has been received and approved.
- [371643] SOLARIS WATER MIDSTREAM, LLC shall notify OCD when construction of 2RF-166 - MOBLEY CONTAINMENTS #1 AND #2 FACILITY ID [fVV2131951088](#) commences.
- [371643] SOLARIS WATER MIDSTREAM, LLC shall notify OCD when recycling operations commence and cease at 2RF-166 - MOBLEY CONTAINMENTS #1 AND #2 FACILITY ID [fVV2131951088](#).
- A minimum of 3-feet freeboard must be maintained at 2RF-166 - MOBLEY CONTAINMENTS #1 AND #2 FACILITY ID [fVV2131951088](#), at all times during operations.

- If less than 20% of the total fluid capacity is utilized every six months, beginning from the first withdrawal, operation of the facility is considered ceased and notification of cessation of operations should be sent electronically to [OCD Online](#). An extension to extend the cessation of operation, not to exceed six months, may be submitted using a C-147 form through [OCD Online](#).
- [371643] SOLARIS WATER MIDSTREAM, LLC shall submit monthly reports of recycling and reuse of produced water drilling fluids, and liquid oil field waste on OCD form C-148 through [OCD Online](#) even if there is zero activity.
- [371643] SOLARIS WATER MIDSTREAM, LLC shall comply with 19.15.29 NMAC Releases in the event of any release of produced water or other oil field wastes at 2RF-166 - MOBLEY CONTAINMENTS #1 AND #2 FACILITY ID [fVV2131951088](#).

Please reference number 2RF-166 - MOBLEY CONTAINMENTS #1 AND #2 FACILITY ID [fVV2131951088](#) in all future communications.

Regards,

Victoria Venegas • Environmental Specialist

Environmental Bureau

EMNRD - Oil Conservation Division

811S. First St. | Artesia, NM 88210

(575) 909-0269 | Victoria.Venegas@state.nm.us

<http://www.emnrd.state.nm.us/OCD/>



From: [Erica M. Hart](#)
To: [Venegas, Victoria, EMNRD](#); r@rthicksconsult.com; [Claudius Sanchez](#)
Cc: [Teena Robbins](#); [Todd Carpenter](#); [Michael Incerto](#)
Subject: RE: [EXTERNAL] RE: Solaris Mobley In-Ground Containment Registration
Date: Thursday, November 11, 2021 8:05:07 AM
Attachments: [image004.png](#)
[image005.jpg](#)
[image006.png](#)
[image007.png](#)

Good morning Ms. Venegas,

In response to your question regarding the leak detection system design, we recommended placing a 60 mil HDPE (textured) rub sheet directly above the 60 mil HDPE primary liner in the in the sump area to provide additional protection of primary liner. While rub sheets are not a specific requirement in Rule 34, the rub sheet serves as a barrier between the primary liner and hoses that may create excessive hydrostatic force or mechanical damage at discharge and suction points (19.15.34.12.A.6 NMAC).

Thank you,



Erica M. Hart, PG (TX)
Magrym Consulting, Inc.
110 W. Louisiana Ave., Ste. 314
Midland, TX 79701
C: (575) 704-2526
O: (432) 999-2737

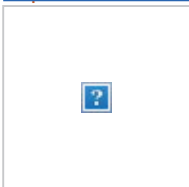
Magrym Consulting, Inc. EMAIL CONFIDENTIALITY NOTICE: The contents of this email message and any attachments are intended solely for the addressee(s) and may contain confidential and/or privileged information and may be legally protected from disclosure. If you are not the intended recipient, or the employee or agent responsible to deliver to the intended recipient, you are hereby notified that any use of this communication is strictly prohibited. If you have received this in error, please reply and notify the sender (only) and delete this message. Thank you.

From: Venegas, Victoria, EMNRD <Victoria.Venegas@state.nm.us>
Sent: Tuesday, November 9, 2021 4:44 PM
To: r@rthicksconsult.com; Erica M. Hart <erica.hart@magrym.com>; Claudius Sanchez <claudius.sanchez@magrym.com>
Cc: 'Teena Robbins' <Teena.Robbins@ariswater.com>; 'Todd Carpenter' <todd.carpenter@solariswater.com>
Subject: RE: [EXTERNAL] RE: Solaris Mobley In-Ground Containment Registration

Thanks so much for your quick response.
Best regards,

Victoria Venegas • Environmental Specialist
Environmental Bureau

EMNRD - Oil Conservation Division
811S. First St. | Artesia, NM 88210
(575) 909-0269 | Victoria.Venegas@state.nm.us
<http://www.emnrd.state.nm.us/OCD/>



From: r@rthicksconsult.com <r@rthicksconsult.com>
Sent: Tuesday, November 9, 2021 3:33 PM
To: Venegas, Victoria, EMNRD <Victoria.Venegas@state.nm.us>; 'Erica M. Hart' <erica.hart@magrym.com>; 'Claudius Sanchez' <claudius.sanchez@magrym.com>
Cc: 'Teena Robbins' <Teena.Robbins@ariswater.com>; 'Todd Carpenter' <todd.carpenter@solariswater.com>
Subject: RE: [EXTERNAL] RE: Solaris Mobley In-Ground Containment Registration

Ms. Venegas

Magrym should be responding to you and Solaris shortly. Solaris is measuring the distance between the watercourse and the containment. Solaris will upload all three documents to OCD.Online.

Thanks!

Randall Hicks, PG
505-238-9515 (cell)
505-266-5004
901 Rio Grande Blvd. NW
Suite F-142
Albuquerque, NM 87104

From: Venegas, Victoria, EMNRD <Victoria.Venegas@state.nm.us>
Sent: Tuesday, November 9, 2021 2:23 PM
To: r@rthicksconsult.com
Subject: RE: [EXTERNAL] RE: Solaris Mobley In-Ground Containment Registration

Good afternoon Mr. Hicks,
Sorry, but I couldn't find "**RESPONSE TO ITEM 3 Please see the attached response from Magrym Consultants**" in the attached document. Am I missing something?
Please submit all the documentation through OCD.online
Thank you for your cooperation.

Regards,

Victoria Venegas • Environmental Specialist
Environmental Bureau
EMNRD - Oil Conservation Division
811S. First St. | Artesia, NM 88210
(575) 909-0269 | Victoria.Venegas@state.nm.us
<http://www.emnrd.state.nm.us/OCD/>



From: r@rthicksconsult.com <r@rthicksconsult.com>
Sent: Thursday, November 4, 2021 4:54 PM
To: Venegas, Victoria, EMNRD <Victoria.Venegas@state.nm.us>; 'Michael Incerto' <michael.incerto@solariswater.com>; 'Teena Robbins' <Teena.Robbins@solariswater.com>; fcon673@gmail.com
Cc: Enviro, OCD, EMNRD <OCD.Enviro@state.nm.us>; 'Todd Carpenter' <todd.carpenter@solariswater.com>; 'Sara Foster' <sara.foster@solariswater.com>; 'Erica M. Hart' <erica.hart@magrym.com>
Subject: [EXTERNAL] RE: Solaris Mobley In-Ground Containment Registration

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Ms. Venegas:

Attached is our response to your email below. Solaris will upload this correspondence to the portal upon your request.

We were fortunate to have ground penetrating excavators in lieu of ground penetrating radar in order to provide absolute assurance that our conclusions in the C-147 were correct.

Please expect

SOLARIS - Will provide the measurement from the anchor trench of the southernmost containment to the northern edge of the mapped drainage to the south.

MAGRYM – Will provide the response to item 3

Indeed, this location is within BLM-mapped high karst for good reason. With respect to ground stability and the lack of solutions features, the Solaris location was fortuitously located over a massive 25-foot thick, very hard gypsum horizon. This location was not lucky with respect to the difficulty of construction.

Thanks for your attention to detail.

Randall Hicks, PG
505-238-9515 (cell)
505-266-5004
901 Rio Grande Blvd. NW
Suite F-142
Albuquerque, NM 87104

From: Venegas, Victoria, EMNRD <Victoria.Venegas@state.nm.us>
Sent: Wednesday, October 6, 2021 2:11 PM
To: Michael Incerto <michael.incerto@solariswater.com>; Teena Robbins <Teena.Robbins@solariswater.com>; Randall Hicks <r@rthicksconsult.com>; fcon673@gmail.com
Cc: Enviro, OCD, EMNRD <OCD.Enviro@state.nm.us>; Todd Carpenter <todd.carpenter@solariswater.com>; Sara Foster <sara.foster@solariswater.com>
Subject: RE: Solaris Mobley In-Ground Containment Registration

Mobley Containments #1 and #2 & Mobley AST Containment.

Good afternoon Mr. Incerto,
NMOCD is reviewing the recycling containment application and related documents, submitted by [371643] SOLARIS WATER MIDSTREAM, LLC, on 8/23/2021 and 09/01/2021, for the proposed Mobley Containments #1 and #2 & Mobley AST Containment in Unit Letter C, Section 19, T-23S, R-30E, Eddy County, New Mexico.

To continue with the evaluation of this application, [371643] SOLARIS WATER MIDSTREAM, LLC, must submit the following information:

1. Given the proposed recycling facility is in a high karst area, [371643] SOLARIS WATER MIDSTREAM, LLC needs to conduct a Geotechnical Survey including Ground Penetrating Radar and submit to NMOCD the interpretation of results.
2. The application states that the USGS mapping of an ephemeral stream (dashed blue line) about 200 feet south of the containment area is valid. NMAC 19.15.34.11.A.(2) states that a recycling containment shall not be located within 200 feet of any other significant watercourse or lakebed, sinkhole or playa lake (measured from the ordinary high-water mark). [371643] SOLARIS WATER MIDSTREAM, LLC needs to provide the actual distance of the ephemeral stream from the recycling containment along with any supporting documentation. If the ephemeral stream is within 200 feet of the recycling containment, SOLARIS would need to request a variance meeting the requirements

of [19.15.34.16](#) NMAC.

3. The leak detection system design includes a rub sheet liner 60 mil HDPE (texture) on top of the 60 mil HDPE primary liner (see figure below). However, the Design and Construction Plan -page 34 C-147 Mobley In-Ground Containment C-147 Registration Packet- does not mention the rub sheet liner. Could you please clarify.

Diagram? ? Description automatically generated



Please note that the application submitted by [371643] SOLARIS WATER MIDSTREAM, LLC on 09/01/2021 is administratively incomplete. The documentation does not include the closure cost estimate for the inground containment. If [371643] SOLARIS WATER MIDSTREAM, LLC commences to operate the proposed AST & Containments before the Application and all variances is approved, and the closure cost estimate is approved, Solaris will be in violation of 19.15.34 NMAC and subject to enforcement under 19.15.5 NMAC – *Enforcement and Compliance*.

Please let me know if you have any questions or concerns.

Regards,

Victoria Venegas • Environmental Specialist

Environmental Bureau

EMNRD - Oil Conservation Division

811S. First St. | Artesia, NM 88210

(575) 909-0269 | Victoria.Venegas@state.nm.us

<http://www.emnrd.state.nm.us/OCD/>



From: Teena Robbins <Teena.Robbins@solariswater.com>

Sent: Wednesday, September 1, 2021 7:23 AM

To: Randall Hicks <r@rthicksconsult.com>; Venegas, Victoria, EMNRD <Victoria.Venegas@state.nm.us>;

fcon673@gmail.com

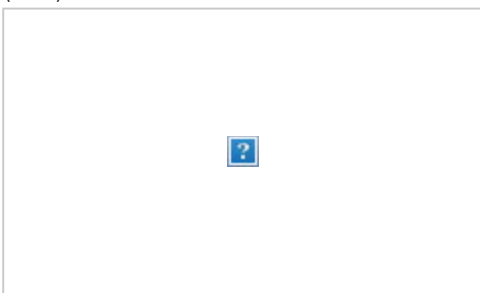
Cc: Michael Incerto <michael.incerto@solariswater.com>; Todd Carpenter <todd.carpenter@solariswater.com>; Sara Foster <sara.foster@solariswater.com>

Subject: RE: Solaris Mobley In-Ground Containment Registration

Documents uploaded.

Thank you,

Teena Robbins
Office Manager
Solaris Water Midstream, LLC
(432)203-9024 ofc
(432)425-0718 cell



From: Randall Hicks <r@rthicksconsult.com>

Sent: Tuesday, August 31, 2021 10:32 PM

To: 'Venegas, Victoria, EMNRD' <Victoria.Venegas@state.nm.us>; fcon673@gmail.com

Cc: Teena Robbins <Teena.Robbins@solariswater.com>; Michael Incerto <michael.incerto@solariswater.com>; Todd Carpenter <todd.carpenter@solariswater.com>; Sara Foster <sara.foster@solariswater.com>

Subject: RE: Solaris Mobley In-Ground Containment Registration

Ms. Venegas

This transmission is to provide a demonstration that Solaris has delivered a copy of the C-147 to the surface owner.

The Siting Criteria Demonstration is the same document for this AST Permit and the In-ground containment Registration under Rule 34. Please note that the Section Township Range on the title page of the attached document is correct and agrees with the C-147 Form.

Solaris will upload these documents to the OCD.Online portal shortly.

Thank you.

Randall T. Hicks PG

R.T.Hicks Consultants LTD
901 Rio Grande Blvd. NW F-142
Albuquerque, NM 87104

505-238-9515 (mobile and best contact)
505-266-5004 (office land line)

Disclaimer

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R. T. HICKS CONSULTANTS, LTD.

901 Rio Grande Blvd NW ▲ Suite F-142 ▲ Albuquerque, NM 87104 ▲ 505.266.5004 ▲ Since 1996

November 1, 2021

Mr. Mike Bratcher
NMOCD - District 2, Supervisor
811 S. First St.
Artesia, NM 88210
Via E-Mail

Ms. Victoria Venegas
NMOCD - District 2
811 S. First St.
Artesia, NM 88210
Via E-Mail

RE: Solaris Water Midstream, Mobley Containments, Section 9, T26S, R32E, Eddy County
Examination of Ground Stability, Collapse Features and Voids

Ms. Venegas:

We are working on generating the closure cost estimate and are waiting on receipt of a bid for closure from the contractor.

For the benefit of Solaris, your inquiry relative to the Mobley C-147 permit and registration is reproduced below.

To continue with the evaluation of this application, [371643] SOLARIS WATER MIDSTREAM, LLC, must submit the following information:

- 1) Given the proposed recycling facility is in a high karst area, [371643] SOLARIS WATER MIDSTREAM, LLC needs to conduct a Geotechnical Survey including Ground Penetrating Radar and submit to NMOCD the interpretation of results.*
- 2) The application states that the USGS mapping of an ephemeral stream (dashed blue line) about 200 feet south of the containment area is valid. NMAC 19.15.34.11.A.(2) states that a recycling containment shall not be located within 200 feet of any other significant watercourse or lakebed, sinkhole or playa lake (measured from the ordinary high-water mark). [371643] SOLARIS WATER MIDSTREAM, LLC needs to provide the actual distance of the ephemeral stream from the recycling containment along with any supporting documentation. If the ephemeral stream is within 200 feet of the recycling containment, SOLARIS would need to request a variance meeting the requirements of [19.15.34.16](#) NMAC.*
- 3) The leak detection system design includes a rub sheet liner 60 mil HDPE (texture) on top of the 60 mil HDPE primary liner (see figure below). However, the Design and Construction Plan -page 34 C-147 Mobley In-Ground Containment C-147 Registration Packet- does not mention the rub sheet liner. Could you please clarify.*

RESPONSE TO #1

Geologic data, engineering design and observations during construction obviate the need for ground penetrating radar. We employed ground-penetrating excavators and pneumatic rock hammers that provide significantly better data than ground penetrating radar.

November 1, 2021

Page 2

Surface Geologic Observations and Auger Boring Evidence

As stated in the C-147, our surface examination of exposures of gypsum in and near the recycling area found no evidence of open solution features that would provide a conduit between ground surface and groundwater and no collapse features.

Numerous rills, a major drainage to the south and a minor drainage to the north expose the bedrock and are documented in numerous photographs in the C-147. Neither in the drainages nor between them is any evidence of collapse or fractures showing evidence of expanded openings due to solution. In the drainages, there is no evidence of open fractures and within and adjacent to the recycling area there is no surface evidence of collapse features.

An engineering geologist with Magrym Consultants examined the nature of the geology of the subsurface and identified no evidence of ground stability or solution features (see attached boring log).

Another observation also mentioned in the C-147 is the presence of numerous oil wells on three sides of the recycling area. Vibration, large loads, and changes in loads caused by oil well drilling are a recipe for failure of unstable ground. If such failures occurred in the area, BLM would not have designated a drilling island in this area.

Observations During Construction

The clearest evidence of ground stability and the absence of solution features is ground penetrating excavation and air hammering that allows direct observation of the underlying massive gypsum horizon. This is the subject of the attached memorandum.

RESPONSE TO ITEM 2

Solaris will provide a distance measurement between the southern anchor trench of the southern containment and the northern edge of the large watercourse to the south.

RESPONSE TO ITEM 3

Please see the attached response from Magrym Consultants.

Sincerely,
R.T. Hicks Consultants, Ltd.

A handwritten signature in black ink, appearing to read "Randall Hicks", written in a cursive style.

Randall Hicks
Principal

Copy – Solaris Water Midstream

R. T. HICKS CONSULTANTS, LTD.

901 Rio Grande Blvd NW ▲ Suite F-142 ▲ Albuquerque, NM 87104 ▲ 505.266.5004 ▲ Fax: 505.266-0745

Memorandum

From: Kristin Pope and Randall Hicks

Date: October 25, 2021

**RE: Solaris Water Midstream – Mobley Containment C-147 registration
Inspection of foundation during construction and liner installation**

Ms. Pope met a representative of the excavation contractor, Joseph Florez, on site at approximately 1:30 p.m. MST. Construction of the smaller, southern containment was ongoing with a trackhoe with a hammer attachment and a D6 bulldozer. The floor was approximately 12-feet deep. Ms. Pope inspected the current foundation of the southern containment which consisted of massive gray gypsum with some dolomite. The foreman, Jonathan, who also operated the dozer, reported that the excavation of the southern pit has been consistent throughout—hard, massive gypsum (Fig. 1).



Figure 1: Ongoing Excavation of Floor of South Containment

Concurrently, the northern and larger pit was undergoing liner installation and was approximately 17-feet deep. Jonathan excavated the northern containment and reported that the lithology encountered was similar except small areas at the eastern one-third of the pit. Jonathan relayed that through the upper 8 feet of the excavation on the east side, he observed two linear “veins” of a softer material. His experience as an operator caused him to reason the

Page 2

"veins" as a softer solid, and not pockets of air or voids, approximately 1- or 2-foot wide. Upon inspection, he stated that the material had the appearance of "petrified wood." In addition to the softer material, Jonathan stated that the northern pit consisted of layers of siltstone/mudstone near the surface, interbedded with the gypsum.

Ms. Pope was unable to inspect the floor of the northern containment because the liner was already in place but inspected the anchor trenches around the eastern perimeter of the containment. Observed lithology was consistent with that described by the operator. In the muster area, Joseph Florez and Ms. Pope observed a large cobble (~12 in.) that had the appearance of "petrified wood" as described by Jonathan (Fig. 2). The cobble and others like it appear to be vertically friable gypsum caused by near-surface chemical weathering. All samples of this material exhibited weathering patterns only on one half of the stratum. This limited "vein" and weathering pattern suggests that drainage channels that existed across the eastern third of the northern pit are filled with alluvium. The cessation of the erosion of the gypsum in these channels and deposition of alluvium is clearly the result of changing draining patterns, common with alluvial fans. Figure 1b of the C-147 shows mapped alluvium throughout the area of the containments.

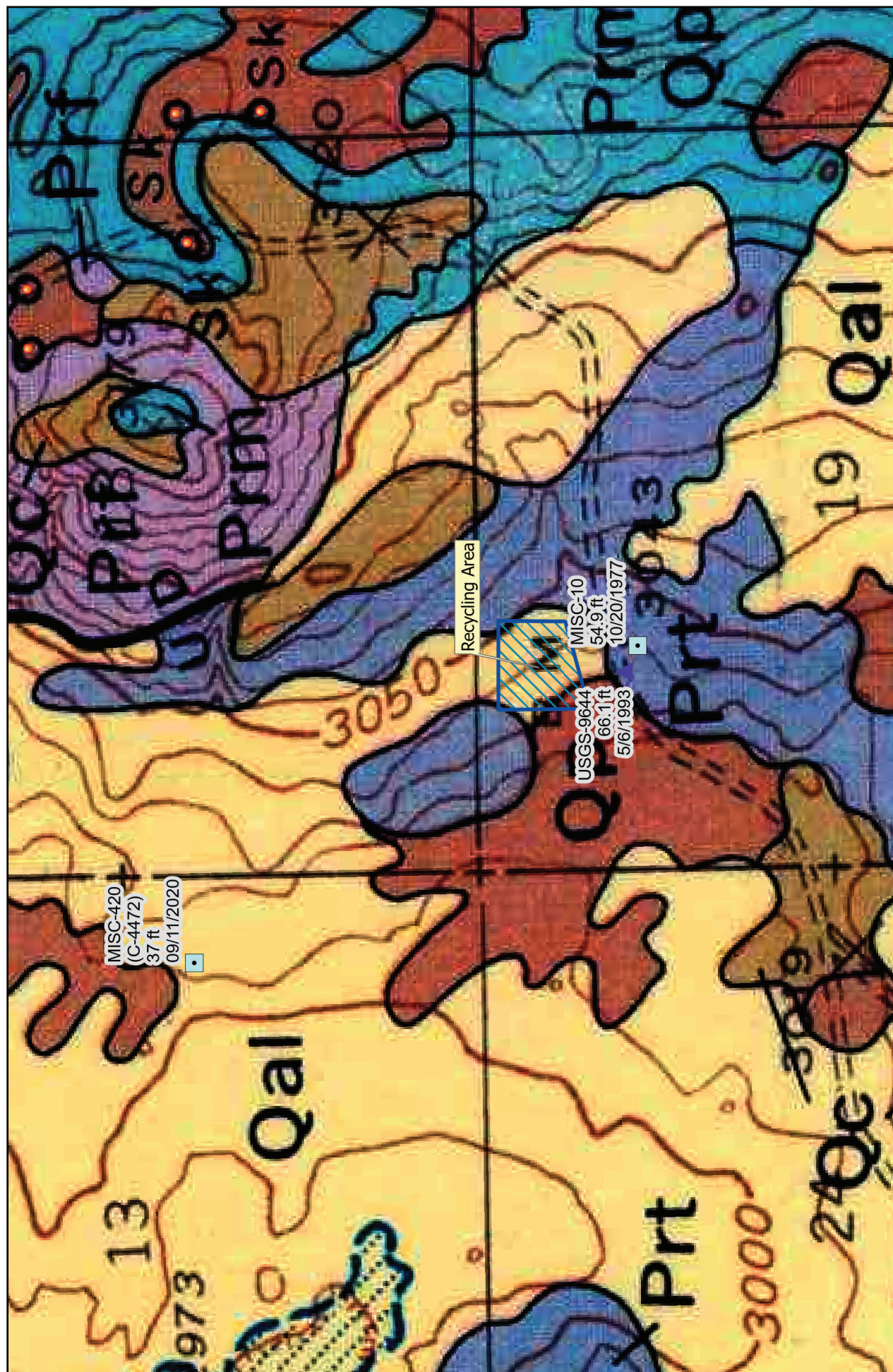


Figure 2: Chemically weathered gypsum near the anchor trench of the northern excavation; Liner installation in top-background.

Observations, geologic knowledge, accounts from the excavator and examination of nearby sinkholes and the domal karst hill to the northeast (see Figure 1b) permit a conclusion that erosion of gypsum occurred within small drainage channels as described in the C-147 and presented in the site photos. Erosion removes near surface weathered gypsum from active channels (see site photos). Changing channel patterns with subsequent channel filling by alluvium allowed infiltration of precipitation to focus chemical weathering in the former channel at the contact between gypsum and the overlying, thin alluvium. We contend that the west-southwest slope of the ground caused by the karst dome to the northeast prevented ponding of water, as is true today, and caused spatially limited and shallow dissolution of the underlying massive gypsum.

The site investigation of Mr. Hicks and this investigation by Ms. Pope did not identify any voids, cavities, or other evidence of instability. During excavation and hammering of the massive gypsum horizon, the contractors did not encounter instability or voids.

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R.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104 Ph: 505.266.5004	Nash Draw Geology and Depth to Water	Figure 1b
	Solaris Water Midstream - Mobley Containments	August 2021

Client: Solaris Water Midstream		Project Number: 21-190	Project: Mobley Site	MAGNUM
Boring No.: BH-1 (NE Corner)		Date Drilled: 7/12/2021	Drilling Contractor: Byrd Oilfield Services	Drill Rig Type Rotary Auger
Lat:	32.2976°	Groundwater Depth: 71' bgs	Elevation:	Total Depth of boring:
Long:	-103.9237°		~3053' (USGS topo map)	72'

Depth (feet)	Graphic Log	Sample Type	blows/foot (n-value)	Tests	Material Description and Comments
1					Tan Silty Sand
2					
3					
4					
5					White Chalky Gypsum
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					White Chalky Gypsum
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					Very Dense Caliche - Scraping 22-28'
27					
28					White Chalky Gypsum
29					
30					White Chalky Gypsum
31					

Total Depth: 72'

Client: Solaris Water Midstream		Project Number: 21-190	Project: Mobley Site	MAGNUM
Boring No.: BH-1 (NE Corner)		Date Drilled: 7/12/2021	Drilling Contractor: Byrd Oilfield Services	Drill Rig Type Rotary Auger
Lat:	32.2976°	Groundwater Depth: 71' bgs	Elevation:	Total Depth of boring:
Long:	-103.9237°		~3053' (USGS topo map)	72'

Depth (feet)	Graphic Log	Sample Type	blows/foot (n-value)	Tests	Material Description and Comments
32					Tan Silty Sand (Caliche)
33					
34					
35					
36					
37					Reddish Brown Silty Sand
38					
39					
40					
41					
42					Red Clay
43					
44					
45					
46					
47					White Chalky Gypsum
48					
49					
50					
51					
52					Tan Clay
53					
54					
55					
56					
57					Tan Clay
58					
59					
60					
61					
62					Tan Clay

Total Depth: 72'

Client: Solaris Water Midstream		Project Number: 21-190	Project: Mobley Site	MAGNUM
Boring No.: BH-1 (NE Corner)		Date Drilled: 7/12/2021	Drilling Contractor: Byrd Oilfield Services	Drill Rig Type Rotary Auger
Lat:	32.2976°	Groundwater Depth: 71' bgs	Elevation:	Total Depth of boring: 72'
Long:	-103.9237°		~3053' (USGS topo map)	

Depth (feet)	Graphic Log	Sample Type	blows/foot (n-value)	Tests	Material Description and Comments
63					Damp Greenish Tan Clay Ground water encountered.
64					
65					
66					
67					
68					
69					
70					
71					
72					
73					
74					
75					
76					
77					
78					
79					
80					

Total Depth: 72'

Venegas, Victoria, EMNRD

From: Todd Carpenter <todd.carpenter@solariswater.com>
Sent: Tuesday, November 16, 2021 3:19 PM
To: r@rthicksconsult.com
Cc: Teena Robbins
Subject: Solaris Mobley In-Ground Containment Registration

Teena,

The distance between the anchor trench of the southern containment and the northern edge of the watercourse to the South of the containment is 210 feet. Solaris staff measured several distances along the southern anchor trench with a measuring wheel.

Thank you,
Todd Carpenter

R. T. HICKS CONSULTANTS, LTD.

901 Rio Grande Blvd NW ▲ Suite F-142 ▲ Albuquerque, NM 87104 ▲ 505.266.5004 ▲ Since 1996

MOBLEY IN-GROUND CONTAINMENT

Financial Assurance Cost Estimate

Attached is the cost estimate for reclamation of the Mobley recycling in-ground containment. The attached cost estimate does not include removal of the AST Containment (\$32,500).

The quotation was based upon the standards in Rule 34. Patriot summarized the work below:

Estimate for pulling and disposing of liner, pushing in berms, spreading topsoil and seeding.

Solaris confirmed with Patriot that the description of “pushing in berms” includes grading the site to conform with surrounding topography and drainage. The reclamation must meet terms set forth in the surface lease agreement with the landowner, who received a copy of the August 31, 2021, registration and permit.

Please contact me or Todd Carpenter if you have any questions.

Patriot Environmental I

220 W. Carl Hubbell Blvd. #671
 Meeker, OK 74855
 USA

Voice: 405-279-6052
 Fax:

**QUOTATION**

Quote Number: 1826
 Quote Date: Dec 6, 2021
 Page: 1

Quoted To:

Solaris Water Midstream
 9811 katy freeway suite 700
 Houston, TX 77024
 USA

Customer ID	Good Thru	Payment Terms	Sales Rep
Solaris	1/5/22	Net 30 Days	

Quantity	Item	Description	Unit Price	Amount
1.00	Labor - Liner	Estimate for pulling and disposing of liner, pushing in berms, spreading topsoil and seeding.	194,400.000	194,400.00
Subtotal				194,400.00
Sales Tax				11,582.94
TOTAL				205,982.94

District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720
District III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

CONDITIONS

Action 62061

CONDITIONS

Operator: SOLARIS WATER MIDSTREAM, LLC 907 Tradewinds Blvd, Suite B Midland, TX 79706	OGRID: 371643
	Action Number: 62061
	Action Type: [C-147] Water Recycle Long (C-147L)

CONDITIONS

Created By	Condition	Condition Date
vvenegas	None	1/20/2022