

Bratcher, Mike, EMNRD

From: Kristin Pope <kristin@rthicksconsult.com>
Sent: Friday, June 23, 2017 8:58 AM
To: Weaver, Crystal, EMNRD; Bratcher, Mike, EMNRD; Billings, Bradford, EMNRD
Cc: Randy Hicks; mike@rthicksconsult.com; 'Jerry Smith'; mbarrett@limerockresources.com
Subject: Lime Rock ASAU #150: proposed MW locations
Attachments: MW2log.pdf; Fig_2MoreProposedWells.pdf

Crystal et al.,

As I mentioned a few days ago, benzene exceeds standards at MW-2, which we sampled on 6/12/2017 (see BTEX below). We noticed a sheen on the purge water during development but none at the time of sampling. On 6/13/17 we took a DTW measurement at MW-1 which we believe is accurate. To avoid the need to calculate the water elevation due to floating hydrocarbon, we capped a small-diameter PVC tube with a membrane and placed it in the well at several feet below the LNAPL-water interface. We then ruptured the membrane and allowed the water to equilibrate with the surrounding water in the well and measured the DTW. On 6/20/17 we used a contractor laser level to determine elevations of the monitoring wells using the nearest production well as our benchmark. From this data, we determined a gradient of 0.6464 ft/50 ft (between MW-1 and MW-2). This gradient of 0.013 is significantly greater than the calculated gradient of 10 ft/mile (0.002) from Figure 2 map submitted with the notice of groundwater impact and could point to the nearby arroyo (Penasco Draw) as a recharge area—are simply the difference between the gradient of the shallow-most groundwater zone and the gradient of the entire unit penetrated by nearby supply wells that were used for our regional map.

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1706764

Date Reported:

CLIENT: R.T. Hicks Consultants, LTD

Client Sample ID: MW-2

Project: Lime Rock Asau 150 Release

Collection Date: 6/12/2017 11:02:00 AM

Lab ID: 1706764-001

Matrix: AQUEOUS

Received Date: 6/14/2017 9:55:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8260: VOLATILES SHORT LIST						Ana
Benzene	930	100		µg/L	100	6/15/2017 10:45:53
Toluene	4.7	1.0		µg/L	1	6/15/2017 6:08:11
Ethylbenzene	11	1.0		µg/L	1	6/15/2017 6:08:11
Xylenes, Total	34	1.5		µg/L	1	6/15/2017 6:08:11
Surr: 1,2-Dichloroethane-d4	101	70-130		%Rec	1	6/15/2017 6:08:11
Surr: 4-Bromofluorobenzene	98.7	70-130		%Rec	1	6/15/2017 6:08:11
Surr: Dibromofluoromethane	101	70-130		%Rec	1	6/15/2017 6:08:11
Surr: Toluene-d8	105	70-130		%Rec	1	6/15/2017 6:08:11

Based on this information, we propose the following locations from the next 2 wells (shown on the attached figure), scheduled to begin drilling on Tuesday, June 27, 2017:

- MW-3 approx. 200 ft east of MW-2
- MW-4 approx. 250 ft south of MW-3 in our estimated flow path.

We will drill MW-3 first and when we reach TD, we will clean out the hole, and then lift the auger a few feet above total depth. We will monitor DTW through the auger stem until we obtain a static level and then use the laser level to determine the elevation to the top of the auger. We will use the static water level and elevation measurements obtained the same day from all wells to fine-tune the location of MW-4, by determining the slope of the water table based upon the three wells (MW-1, MW-2, MW-3).

Please let me know if this approach meets OCD's approval. Thank you for your help with this project.

Kristin Pope
R.T. Hicks Consultants
Carlsbad Field Office
575.302.6755

From: Weaver, Crystal, EMNRD [<mailto:Crystal.Weaver@state.nm.us>]
Sent: Wednesday, June 21, 2017 9:57 AM
To: Kristin Pope; Billings, Bradford, EMNRD; Bratcher, Mike, EMNRD
Cc: Randy Hicks; mike@rthicksconsult.com; mbarrett@limerockresources.com; 'Jerry Smith'
Subject: RE: Lime Rock ASAU #150 release: MW Sampling Notice

Hello Miss Pope,

I am wanting to follow up with you regarding the sampling event that took place last Monday (6/12/17) that OCD was regrettably unable to make. However, I am hoping to get a report of the results from the sampling event as soon as possible because if I am not mistaken you all were planning on having the rig ready to drill MW-3 during the week of June 26th correct? IS that still scheduled for next week?

Thank you and we look forward to hearing from you all regarding this matter.

Sincerely,

Crystal Weaver
Environmental Specialist
OCD – Artesia District II
811 S. 1st Street
Artesia, NM 88210
Office: 575-748-1283 ext. 101
Cell: 575-840-5963
Fax: 575-748-9720

From: Weaver, Crystal, EMNRD
Sent: Thursday, June 8, 2017 9:20 AM
To: 'Kristin Pope' <kristin@rthicksconsult.com>; Billings, Bradford, EMNRD <Bradford.Billings@state.nm.us>; Bratcher, Mike, EMNRD <mike.bratcher@state.nm.us>
Cc: Randy Hicks <r@rthicksconsult.com>; mike@rthicksconsult.com; mbarrett@limerockresources.com; 'Jerry Smith' <JSmith@limerockresources.com>
Subject: RE: Lime Rock ASAU #150 release: MW Sampling Notice

Kristin,

Thank you and Mr. Stubblefield for keeping us informed regarding the schedule on this project. Myself and whoever else from OCD that is able to join will be out there on Monday.

Crystal Weaver

Environmental Specialist
OCD – Artesia District II
811 S. 1st Street
Artesia, NM 88210
Office: 575-748-1283 ext. 101
Cell: 575-840-5963
Fax: 575-748-9720

From: Kristin Pope [<mailto:kristin@rthicksconsult.com>]

Sent: Wednesday, June 7, 2017 3:51 PM

To: Billings, Bradford, EMNRD <Bradford.Billings@state.nm.us>; Bratcher, Mike, EMNRD <mike.bratcher@state.nm.us>; Weaver, Crystal, EMNRD <Crystal.Weaver@state.nm.us>

Cc: Randy Hicks <r@rthicksconsult.com>; mike@rthicksconsult.com; mbarrett@limerockresources.com; 'Jerry Smith' <JSmith@limerockresources.com>

Subject: Lime Rock ASAU #150 release: MW Sampling Notice

MW-2 was installed yesterday and developed today without issue. We will sample the new well at **9:00 am on Monday, June 12**. Please let me know if you have any questions. Thank you.

Kristin Pope
R.T. Hicks Consultants
Carlsbad Field Office
575.302.6755

From: Billings, Bradford, EMNRD [<mailto:Bradford.Billings@state.nm.us>]

Sent: Friday, June 02, 2017 10:52 AM

To: 'Michael Barrett'; Kristin Pope; Bratcher, Mike, EMNRD; Weaver, Crystal, EMNRD

Subject: RE: Lime Rock ASAU Trunk 2RP 3893`

Hello,

Your submitted work plan, as submitted by RT Hicks, 5/31/2017, is approved with the following conditions. In next submittal of investigation work effort, please include all draw down data from MW-1. Thank you for the recovery time data, but we also request all data (such as time to drawn down, volume of NAPL removed, etc.). Please submit, as well, the technical aspects of the proposed next monitor well. While we appreciate you indicating it will be as with MW-1, this needs to be stand-alone information, not referenced to previous work.

Additionally, your requested schedule/time change for placement of the monitor well identified as MW-2 is also approved.

Please gather and report all soils data possible, such as lithology at depth, visual appearance of soils encountered, appropriately garnered PID data, etc.

Sincerely,

Bradford Billings
OCD/Santa Fe – District II Artesia.

From: Kristin Pope [<mailto:kristin@rthicksconsult.com>]
Sent: Friday, June 2, 2017 9:01 AM
To: Billings, Bradford, EMNRD <Bradford.Billings@state.nm.us>; Bratcher, Mike, EMNRD <mike.bratcher@state.nm.us>
Cc: mike@rthicksconsult.com; 'Randall Hicks' <r@rthicksconsult.com>; 'Michael Barrett' <mbarrett@limerockresources.com>; Weaver, Crystal, EMNRD <Crystal.Weaver@state.nm.us>
Subject: RE: Lime Rock ASAU Trunk 2RP 3893`

Mr. Billings, et. al,

We have had to rearrange our drilling schedule next week and we can now drill the **MW-2 on TUESDAY, JUNE 6** instead of Friday as stated in the notice sent to you earlier this week. Please let me know if this will be a problem with OCD.

Kristin Pope
R.T. Hicks Consultants
Carlsbad Field Office
575.302.6755

From: Kristin Pope [<mailto:kristin@rthicksconsult.com>]
Sent: Tuesday, May 30, 2017 5:35 PM
To: 'Billings, Bradford, EMNRD'; 'Bratcher, Mike, EMNRD'
Cc: 'mike@rthicksconsult.com'; 'Randall Hicks'; 'Michael Barrett'; 'Weaver, Crystal, EMNRD'
Subject: RE: Lime Rock ASAU Trunk 2RP 3893`

Mr. Billings, et. al,

Please find the attached submission that will serve as our notice of groundwater impact and notice to drill additional wells this month as we discussed during our May 23 meeting. As I mentioned this morning, Randy's project will have the rig for most of the week so we will drill MW-2 here on Friday, June 9, 50 ft down-gradient from MW-1. We are scheduled to drill the next two wells the week of June 26.

Please let me know if this approach meets OCD approval. Thank again for your help.

Kristin Pope
R.T. Hicks Consultants
Carlsbad Field Office
575.302.6755

From: Billings, Bradford, EMNRD [<mailto:Bradford.Billings@state.nm.us>]
Sent: Tuesday, May 16, 2017 8:35 AM
To: Kristin Pope; Bratcher, Mike, EMNRD

Cc: mike@rthicksconsult.com; 'Randall Hicks'; 'Michael Barrett'; Weaver, Crystal, EMNRD
Subject: RE: Lime Rock ASAU Trunk 2RP 3893`

Hello All,

First, thanks for sending in the information/draft/ideas. Much appreciated. We can talk about protocol for sampling when next we meet.

As the current monitor well has significant product measured in the well casing on top of ground water, I do not think ground water depths would be reliable as a depth to water measuring point. As a result, I believe we would need at least three more monitor wells to be placed to gain a reasonable approximation of a ground water gradient. Two more would not be sufficient.

I suggest placement for two of these three well to be somewhat flexible based on data derived from the placement of the first of these three new wells. With an idea towards first of new wells in anticipated most likely general ground water flow direction.

The intent here, as well, is to delineate the potential/real ground water contamination plume. OCD believes it too early in the process to develop sampling schedules on a limited number of wells, without better knowledge of contamination plume structure. Following this diagnosis we can better discuss sampling aspects, and or remedial efforts. I think it not likely that only three more wells will define the plume, but, it is a start.

OCD does not have an issue, per se, with a bail down test of the product abiding within the current monitor well, however, the specifics of the test (method/timing/disposition of removals, etc.) would need to be detailed.

In light of your submitted draft, and the above thoughts by OCD, it seems a meeting would be most productive before plans and or budgets are defined. Both Mike and Crystal will have valuable input on this as well. I am not sure of schedules, but, I will be in Artesia next week for a couple of days, and albeit we already have several things scheduled, it may be that some time can be earmarked for a sit down. Mike and Crystal would be best to check with on this aspect.

Again, thanks for sending in the information. Look forward to getting this rolling.

Sincerely,
Brad Billings

From: Kristin Pope [<mailto:kristin@rthicksconsult.com>]
Sent: Monday, May 15, 2017 7:28 PM
To: Bratcher, Mike, EMNRD <mike.bratcher@state.nm.us>; Billings, Bradford, EMNRD <Bradford.Billings@state.nm.us>
Cc: mike@rthicksconsult.com; 'Randall Hicks' <r@rthicksconsult.com>; 'Michael Barrett' <mbarrett@limerockresources.com>
Subject: RE: Lime Rock ASAU Trunk 2RP 3893`

Mike and Brad,

Before we officially submit, we wanted you to look at the locations of the proposed MW-2 and MW-3 to see if they meet the expectations that you and Randy discussed last month. Regional data tell us that groundwater flows south-southeast here so we placed the southern well 50 ft from MW-1 in the general direction of flow. We also suspect that the draw may provide recharge from the north and add a more southerly component to the flow. The regional data shows a groundwater table slope of 0.0024 (20-foot drop/8237 feet SE vector). This means that we can expect a drop in the water table over a length of 50 feet along the flow path of only $50 \times 0.0024 = 0.12$ foot or 1.44 inches. Thus, the

location and separation of these wells will help us to pin down an accurate gradient. We will get these surveyed and sampled quickly after installation.

Figure 2 of the attached draft shows the proposed locations of the 2 additional wells. Once we can agree on their locations, we will clean up figure 2 a bit and formally submit. Thanks for your help.

Kristin Pope
R.T. Hicks Consultants
Carlsbad Field Office
575.302.6755

From: Bratcher, Mike, EMNRD [<mailto:mike.bratcher@state.nm.us>]
Sent: Thursday, May 11, 2017 4:35 PM
To: Michael Barrett (mbarrett@limerockresources.com)
Cc: mike@rthicksconsult.com; 'Jerry Smith'; 'Kristin Pope'; Randall Hicks; Billings, Bradford, EMNRD; Weaver, Crystal, EMNRD
Subject: RE: Lime Rock ASAU Trunk 2RP 3893`

RE: Lime Rock Resources * ASAU Trunk Line Release * **2RP-3893**

Mr. Barrett,

As we are now three months past the ground water sampling event for the above referenced release, OCD requests analytical data from that event, and, Lime Rock's proposal for moving forward on this project be submitted to OCD not later than 5/22/2017.

If you have any questions or concerns, please contact me, or Bradford Billings in the Santa Fe office.

Thank you,

Mike Bratcher
NMOCD District 2
811 South First Street
Artesia NM 88210
575-748-1283 Ext 108
mike.bratcher@state.nm.us

From: Randall Hicks [<mailto:r@rthicksconsult.com>]
Sent: Wednesday, February 8, 2017 10:16 AM
To: Billings, Bradford, EMNRD <Bradford.Billings@state.nm.us>; Bratcher, Mike, EMNRD <mike.bratcher@state.nm.us>
Cc: mike@rthicksconsult.com; 'Michael Barrett' <mbarrett@limerockresources.com>; 'Jerry Smith' <JSmith@limerockresources.com>; 'Kristin Pope' <kristin@rthicksconsult.com>
Subject: FW: Lime Rock ASAU Trunk 2RP 3893`

Bradford and Mike

The attached was written on 1/10 and you should have received it on the 11th.
I have no record that the attachment left my email. The well is being installed today, which is how I realized I had no record of this going out.

I believe I faithfully recorded the conversation with Bradford with respect to responding to the denial of the initial workplan.

Randall Hicks
R.T. Hicks Consultants
Cell: 505-238-9515
Office: 505-266-5004