Doc #1727839
Remediation Project #14050
Spill/Release ID #466240

STATE OF COLORADO

Arauza - DNR, Steven <steven.arauza@state.co.us>

Grizzly Operating-COGCC Remediation Project # 14050, COGCC Doc # 402260331, COGCC Facility ID 466240 (GGU 13-29)

Scott Ghan <sghan@grizzlyenergyllc.com> Fri, May 29, 2020 at 11:52 AM
To: "Arauza - DNR, Steven" <steven.arauza@state.co.us>
Cc: Alex Fischer - DNR <alex.fischer@state.co.us>, Shane Collett <scollett@grizzlyenergyllc.com>, Mike McKenna <mmckenna@grizzlyenergyllc.com>, Chris McKisson <cmckisson@ltenv.com>

Steven,

I think further clarification is needed regarding some of the key details associated with the excavation. It appears we need to have further discussion regarding the soil sample collected at 26' to clarify the statement "Excavation of all impacted material has not been demonstrated, neither has compliance of remaining in situ material with Table 910-1. The application of GAC is intended to address groundwater impacts but there is nothing in the project file to indicate an attempt to address residual soil impacts at 26'." and the statement that "As it stands currently, my hands are tied on closure of the project because there is no documentation of remediation or compliance for the soil at 26' as required by Rule 909.b.(5)." This response intends to address both of these statements regarding the 26' sample and move this project forward. Although there has been a tremendous amount of communication regarding this project, the amount of communication may be creating confusion or causing key details or data to be overlooked.

I have personally been on the location throughout every phase of this remediation project since the initial spill response and my comments are based on my personal observations and extensive knowledge of the project. If this was not previously understood, I feel this is a crucial aspect as we continue this discussion.

On 7/25/2019, sample *E. Floor @ 26'* was collected and analytical results indicated elevated TPH. This sample was collected at the base of the excavation where bedrock was encountered and observed. The determination of bedrock was later confirmed in both the direct push drilling event and the hollow stem auger drilling event where blow counts were conducted. The accuracy of soil sample depths, especially in deep excavations, is not precisely accurate. The depth of this sample was recorded using a tape measure along the sidewall of the excavation. The key point is that this sample was collected from the top of the bedrock. It was not until the following day that water was observed in the base of the excavation and there were no indications during the excavation activities that we had encountered the saturated zone or groundwater. The *E. Floor @ 26'* sample was collected from what was initially thought to be the vadose zone, but based on the observed water accumulation within the excavation the following day; information and data derived from future drilling activities; and data collected from future water sampling events, it was determined that this sample was collected from within the saturated zone.

On 8/7/2020, due to safety concerns associated with the 26'deep excavation, the excavation was partially backfilled and GAC was applied to the water bearing zone within the excavation prior to backfill. All this was discussed via a phone conversation between you and LT Environmental and then confirmed with the COGCC in the attached email. The second backfill event was approved by the COGCC with the approval of Document # 402191075. This backfill event was needed to allow for the installation of the monitoring well.

On 9/13/2019, direct push drilling technology was utilized to collect soil sample *SB-05 25-27.5'*. This sample was collected from the exact location of former sample *E. Floor @ 26'* and represented the same depth. Direct push refusal was tagged at 27.5 feet bgs. This measurement is more exact than the depth measurement associated with sample *E. Floor @ 26'* collected on 7/25/2019; however, the fact that refusal was observed indicates the two samples were collected from the same depth which was immediately on top of the bedrock confining layer. Soil sample *SB-05 25-27.5'* is a remediation confirmation soil sample and laboratory analytical results indicate all hydrocarbon concentrations are below the laboratory detection limit. A copy of the previously submitted SB-05 boring log has been attached for reference.

The timeline presented above factually represents the events and the collection of data for the soil sample identified as *E. Floor @ 26'*. As previously stated, the location of soil sample *E. Floor @ 26'* is also represented by *SB-05* and *MW-01*. The identified TPH concentrations in sample *E. Floor @ 26'* have been removed/remediated and the analytical results of *SB-05 25-27.5'* absolutely confirm this statement. Also previously stated, the ongoing water sampling events will confirm that any dissolved phase hydrocarbons are remediated within the saturated zone. I will again point out that the most recent analytical results from MW-01 indicated compliance with Table 910-1 and MW-01 was recently sampled as part of a quarterly sampling event and results are pending.

PLEASE NOTE NEW COMPANY NAME AND EMAIL ADDRESS

GRIZZLY ENERGY

Scott Ghan

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From: Arauza - DNR, Steven [mailto:steven.arauza@state.co.us]
Sent: Thursday, May 21, 2020 10:08 AM
To: Scott Ghan
Cc: Alex Fischer - DNR; Shane Collett; Mike McKenna; Chris McKisson
Subject: Re: Grizzly Operating-COGCC Remediation Project # 14050, COGCC Doc # 402260331, COGCC Facility ID 466240 (GGU 13-29)

Scott,

I understand your assessment of the situation. The fact remains that exceedances of Table 910-1 in soil have been documented at 26'. Excavation of all impacted material has not been demonstrated, neither has compliance of remaining in situ material with Table 910-1. The application of GAC is intended to address groundwater impacts but there is nothing in the project file to indicate an attempt to address residual soil impacts at 26'.

Had the soil impacts and groundwater encounter been brought to the COGCC's attention prior to backfill, options for documentation and compliance goals may have been agreed upon at that time. As it stands currently, my hands are tied on closure of the project because there is no documentation of remediation or compliance for the soil at 26' as required by Rule 909.b.(5). There were soil samples collected from 20-25' and 25-27' in SB-05 on 9/3/19, but my understanding is that the excavation had been backfilled with clean material prior to advancement of those borings. We could discuss those results further.

In my opinion, and Alex can correct me if I'm wrong here, you can make a case for closure through the variance request process when the time comes to do so (i.e., when compliance is demonstrated for the impacts at 18' and the groundwater). This would enlist the managers and supervisors in Denver to review the information that you've provided of the impacts at 26'. In order for me to approve closure as the area EPS, demonstration of compliance with Table 910-1 for all previously-documented exceedances will be required.

Alex is in the field this week, but we can continue this discussion upon his return.

Steven J. Arauza, P.G.
Environmental Protection Specialist

COLORADO
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Department of Natural Resources

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On Mon, May 11, 2020 at 3:35 PM Scott Ghan <sghan@grizzlyenergyllc.com> wrote:

> Steven,
>
> Regarding the “S. Wall W. Side @18'” sample, it appears we both agree with the actions I proposed for this sample location. If laboratory analytical results of this one confirmation soil sample indicate Table 910-1 compliance for

TPH and BTEX, Grizzly and the COGCCC will consider this area remediated and no further action is necessary. We reflect these details in the pending Form 27.

In response to your comment “Similar screening should be considered for the remaining impacts to soil at the location of E. Wall @26', possibly after groundwater remediation has been demonstrated”. It has been documented in the past submittals, the location of sample “E. Wall @26'” was excavated to bedrock during the excavation activities. The soils from which “E. Wall @26'” was previously collected were removed and transported to Greenleaf for third- party disposal. This location was then backfilled with clean imported fill material to accommodate the installation of monitoring well MW-01. As I stated in my initial email, MW-01 represents the area of this former sample and the former sample location is within the saturated zone (below the water table). By placing 400 lbs of chemically oxidized granular activated carbon (GAC) into the excavation at the water level prior to backfilling to remediate any residual dissolved phase hydrocarbons in the saturated zone and excavating all the impacted soil to bedrock, remediation of the area represented by sample “E. Wall @26'” will be demonstrated through laboratory analysis of water collected from MW-01. My initial email informed you that the February sample of MW-01 was non-detect for benzene and the existing data is indicating that the remediation efforts performed to date have proven to be effective. All this information is included in the previous COGCC submittals for this remediation project. Based on this, we ask that you reconsider your request for “Similar screening should be considered for the remaining impacts to soil at the location of E. Wall @26', possibly after groundwater remediation has been demonstrated”.

We do not intend to request a variance to Table 910-1, as we fully intend to indicate to the COGCC that all impacts associated with Remediation Project 14050 have been remediated to Table 910-1 concentration levels. The additional excavation and sampling at “S. Wall W. Side @18'” and four consecutive quarters of Table 910-1 compliant analytical data from MW-01 that we are proposing will fully demonstrate that this project has been fully remediated and qualifies for COGCC closure of Remediation Project # 14050.

PLEASE NOTE NEW COMPANY NAME AND EMAIL ADDRESS

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From: Arauza - DNR, Steven [mailto:steven.arauza@state.co.us]
Sent: Monday, May 11, 2020 11:32 AM
To: Scott Ghan
Cc: Alex Fischer - DNR
Subject: Re: Grizzly Operating-COGCC Remediation Project # 14050, COGCC Doc # 402260331, COGCC Facility ID 466240 (GGU 13-29)

Scott,

Grizzly's plan to screen for residual impacts in the location of S. Wall W. Side @18' sample sounds like a viable option to demonstrate compliance of the soil in that area with Table 910-1. Similar screening should be considered for the remaining impacts to soil at the location of E. Wall @26', possibly after groundwater remediation has been demonstrated.

The fact of the matter is that closure of Remediation Project #14050 cannot be approved at a staff level until remediation of documented impacts to soil at 18' and both soil and groundwater at 26' are verified with confirmation sampling. The COGCC does not currently allow for risk-based closure of remediation projects that do not meet Table 910-1. Per Rule 909.b.(5) the documented soil exceedances at 18' and 26' in the former excavation areas shall be remediated and documented in accordance with Rule 910.b.(3).C, "to confirm remediation."

Without confirmation sampling to verify compliance of impacted media with Table 910-1, the only possible path to closure is through a Rule 502.b variance request. While Grizzly is welcome to request a variance to Table 910-1 to grant closure of the project, final approval would be subject to approval by the COGCC Management and Director.

Steven J. Arauza, P.G.
Environmental Protection Specialist

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On Fri, May 8, 2020 at 1:59 PM Scott Ghan <sghan@grizzlyenergyllc.com> wrote:

> Steven,
>
> Thank you for approving the most recent Form 27 for Remediation Project # 14050. I have reviewed both your comments and your COAs. As a result of this review, I am responding with comments pertaining to each COA to provide clarification and other general comments to expedite the closure of this remediation project. Please realize that we remain fully committed to remediating the impacts and bringing this project to closure status as quickly as possible. I am hopeful that this dialog will expedite the project towards closure; eliminate some of the perceived burdens; provide clear direction forward for both parties; and satisfy the surface owner's requests.
>
> Since this project began in July, 2019, I believe there have been six individual reports submitted to the COGCC (3 Form 19s and 3 Form 27s). There has also been an extensive subsurface investigation and remediation of a very localized area of impact that has was defined by this investigation. To date, we have completed 8 soil borings (two separate drilling events); removed 440 cubic yards of soil, applied 400 pounds of chemically oxidized granular activated carbon; installed a monitor well, and performed two monitoring well sampling events. All of this was done for an area of impact that has been delineated within a 30'x30' area. My intent is to always close remediation projects as quickly as possible, but this project has been burdensome and seems to be progressing at a snail pace. The surface owner has made multiple requests that the work be completed on the location, but I have explained to him, in detail, the reason that the project is taking longer than he would like.

I would like to create a documented dialog with you, via this email, so that both parties (Grizzly and COGCC) have a clear and concise direction before any additional work is initiated on the project. Once we have developed and agreed on a plan that precisely details the actions to achieve COGCC closure of this remediation project, we will document the plan and details in a pending Form 27. We have tried our best to be completely transparent and provide as much detail as possible in our six prior submittals, but after each submittal we seem to end up with additional COAs which extend the duration of the project.

The following are responses to your most recent COAs which were attached to the approval of COGCC Document # 402260331. These responses were developed after I discussed the COAs and overall project in detail with our third-party environmental consultant LT Environmental, Inc. who has been actively involved with this project on our behalf.

COA: *This remediation project will not be eligible for closure with documented TPH impacts to soil at depth. Operator shall demonstrate compliance of TPH impacted areas (E. Floor @ 26' and S. Wall W. Side @ 18') via a Supplemental eForm 27.*

It appears that the most feasible option to advance this project to closure is to perform additional excavation in the exact location of “S. Wall W. Side @ 18'”. We will have to remove 18 feet of documented clean overburden to reach this previous sample’s depth. Based on the previous analytical results from the excavation samples, soil boring SB-07 and other soil borings, the remaining soils which exceed COGCC Concentration Levels for TPH at this former sample location will likely be minuscule, if they even exist at all. Based on this assumption, we will plan to excavate a pothole from the GPS identified surface location of sample “S. Wall W. Side @ 18'” and remove 18’ of clean overburden until we reach a depth of 18’ bgs. At this point, we will field screen (PID and Petro Flag) the soils at 18’ bgs for potential hydrocarbon impacts. If the results of the field screening indicate that hydrocarbons are not present, one sample will be collected at this location and submitted of laboratory analysis of TPH-GRO, TPH-DRO, and BTEX. If field screening does indicate the presence of hydrocarbons at 18’ bgs, the pothole excavation will be advanced to a depth were screening indicates a single confirmation sample can be collected and all soils been remediated. If laboratory analytical results of the confirmation soil sample indicate Table 910-1 compliance for TPH and BTEX, Grizzly and the COGCCC will consider this area remediated and no further action is necessary.

The depth to water at previous sample “E. Floor @ 26'“ is 23 feet bgs, as observed in MW-01. MW-01 was installed at same location as “E. Floor @ 26'”. This data indicates that the area represented by this former sample is in the saturated zone. As stated in the Form 27, Grizzly mixed 400 lbs of chemically oxidized granular activated carbon (GAC) into the excavation at the water level prior to backfilling to remediate any residual dissolved phase hydrocarbons in the saturated zone. Complete remediation of this area will be demonstrated through laboratory analysis of water collected from MW-01. Water samples will be collected on a quarterly basis until four consecutive quarters of Table 910-1 compliance can be demonstrated through laboratory analysis. Since the commencement of the remediation described above, benzene concentrations in MW-01 have decreased from 45 ug/L on 9/5/2019 to non-detect on 2/19/2020. The 2/19/2020 data will be provided in the next pending Form 27.

COA: *Operator shall provide results for groundwater sampling via quarterly project updates to be submitted on a Supplemental eForm 27. In addition to groundwater sampling results, the operator shall report gauge and report depths to groundwater.*

Water samples and depth to water data will be collected and reported on a quarterly basis until four consecutive quarters of Table 910-1 compliance can be demonstrated through laboratory analysis. At this point Grizzly will request closure of Remediation Project #: 14050.

Please let me know your thoughts regarding the information that has been presented above and we will begin preparing the pending Form 27 based on this discussion.

Thanks and have a great weekend,

PLEASE NOTE NEW COMPANY NAME AND EMAIL ADDRESS

Scott Ghan

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---------- Forwarded message ----------
From: Chris McKisson <cmckisson@ltenv.com>
To: "Arauza - DNR, Steven" <steven.arauza@state.co.us>
Cc:
Bcc:
Date: Fri, 9 Aug 2019 15:08:14 +0000
Subject: Vanguard (Grizzly) GGU 13-29 Excavation

Steven,

Yesterday we put about 400 lbs of activated carbon into the excavation prior to backfill. We plan to close the F19 and continue under a F27. I am assuming that we should report the excavation soil samples and carbon application on the F27 and not the F19, correct? Please contact me if you'd like to discuss.

Thank you,

Chris McKisson

West Slope Manager

(970) 285-9985 office

(970) 620-5743 cell

2 attachments

Vanguard (Grizzly) GGU 13-29 Excavation.eml
6K

SB05.pdf
112K