

July 10, 2008

Bob Coleman, Marathon Oil Company  
David Lee, Nonsuch Natural Gas, Inc.  
John Nussbaumer, Petroleum Development Corporation  
Mike Paules, Williams Production RMT Company

Sent via e-mail

RE: COGCC Review of Phase I Site Investigation Work Plan  
Prather Spring Investigation

Colorado Oil & Gas Conservation Commission (COGCC) Staff has reviewed the Phase I Site Investigation Work Plan for the Prather Spring Investigation prepared by URS and provided in support of the Form 27 submitted jointly by Williams Production RMT (Williams), Marathon Oil Company (Marathon), Petroleum Development Corporation (PDC), and Nonsuch Natural Gas (Nonsuch) (collectively, the "Companies"). Staff has determined that the proposed work plan is inadequate to fully address the items of concern associated with this action. The following document provides a synopsis of what additional actions will be required.

**Prather Spring:** The work plan defines the Prather Spring as a permitted man-made well based on State Engineers Office (SEO) data. According to the property owner, it is a natural spring with minor improvements based on the construction of a spring box. It appears that incorrect paperwork was filed with the SEO on behalf of the property owner when the spring was registered resulting in the spring appearing in the SEO database as a man-made well. The legal status and corresponding description needs to be confirmed and clarified in the work plan and should be taken into consideration during planned field activities.

**Impacted Media:** The Form 27 and subsequent sections of the work plan indicate that the only impacted media is groundwater. The Form 27 must be revised to reflect all impacted media including:

- soils/sediments (contaminated soils are present at two locations)
- vegetation (distressed vegetation is present at two locations)
- groundwater (the subject spring)
- surface water (both the stock pond and a reach of approximately 1,000 foot of an unnamed tributary to McKay Gulch)

The work plan should also be revised to include investigation of all impacted media as well.

**Data Continuity:** All groundwater, surface water and soils analytical data collected by the companies to date, and all future data, must be consolidated into a common database with necessary nomenclature changes to ensure continuity of the sampling locations. An example is provided in attached Table 1.

**Monitoring Plans:** A comprehensive monitoring plan that includes both groundwater and surface water sampling locations needs to be included. The plan must include ongoing collection and analysis of samples from existing sampling locations as well as samples from planned new monitoring locations and must use a common nomenclature for the sample locations (see Data Continuity and Table 1).

**Areal Extent of Investigation:** The area proposed for investigation needs to be expanded to account for significant topographic changes in the vicinity and provide a mechanism to differentiate between potential source locations. The proposed well locations are clustered in one area which will make it difficult to quantify source locations if impacts are identified. In addition, where potential source areas have already been positively identified the investigation should include screening or data collection between those sources and Prather Spring (i.e. upgradient investigation).

**Site Activities:** This section needs to be updated to include the following:

- A multi-gas meter should also be used in addition to the photo ionization detector (PID) during drilling and sampling in case well leakage is the actual source and methane is present.
- Auger decontamination – all augers must be decontaminated between each well, not just the lead auger. It is critical that cross-contamination not occur.
- Well development protocols must be specified.
- Well purging must be for a minimum of three (3) borehole volumes (i.e. not casing volumes) or until field parameters stabilize.
- Coring or the collection of split spoon samples must be conducted at each boring location.
- Should impacts be identified either visibly or with ambient-temperature headspace screening using the PID, then soil samples will be collected and submitted for analyses; not just a “possible submittal” as stated in the work plan.
- It would also be prudent to collect at least one soil sample at the colluvium/alluvium bedrock interface for each location and submit for analysis to demonstrate the absence of impacts.
- If potentially impacted soils are found during PID screening, samples will be collected for analysis of Total Volatile Petroleum Hydrocarbons (TVPH) / Total Extractable Petroleum Hydrocarbons (TEPH).
- Positive results (>5mg/kg TVPH and/or >100mg/kg TEPH) from preliminary soil analysis will trigger subsequent VOC and SVOC analyses.
- One aqueous sample (of the six (6) proposed) shall be collected in duplicate and submitted to a second lab for any and all analytical procedures performed by the primary lab. If more than six (6) aqueous samples are collected in Phase 1 the frequency of samples submitted to a secondary lab shall be 10% or greater of those collected and submitted for analysis at the primary lab.

- A minimum of 1 soil replicate will be collected and submitted to a secondary lab if any soil samples are collected and submitted for analyses to the primary lab. If multiple soil samples are collected the frequency of samples submitted to a secondary lab shall be at a frequency of 10% or greater of those collected and submitted for analysis at the primary lab.
- The subject spring box and all contaminated soils around it must be removed and the spring box replaced. Collection and analysis of soil samples will be required to confirm the effectiveness of the removal action.
- The cistern associated with the spring box must be removed and replaced. Samples of any sediment or other solid materials within the cistern will be collected and submitted for laboratory analysis.
- Either replace the hot water heater inside Mr. Prather's cabin or evaluate the potential for inhalation of benzene while using his shower.

**Data Delivery:** Copies of all data should be submitted to the COGCC in electronic format and should include all raw data, validation data, chromatograms and supporting documentation. Location coordinates should also be included in NAD 83 as well as UTM in accordance with COGCC Rule 215.

Please be aware that Staff believes, given the geology of the area, it may be necessary to install nested monitoring points to adequately characterize the area as the impacts may not be confined to the colluvium/alluvium and may actually be travelling in shallow fractured bedrock. If results of Phase 1 activities support this assumption, additional monitoring point installation may require bedrock drilling and/or tracer studies.

If you have any questions please contact me either by phone at 970-625-2497, extension 3 or via e-mail at [chris.canfield@state.co.us](mailto:chris.canfield@state.co.us).

Respectfully,

Chris Canfield, P.G.  
Environmental Protection Specialist, Northwest Region

Attachments: Table 1, Common Data Nomenclature

Table 1  
Common Data Nomenclature

<b>Facility ID</b>	<b>Name in COGCC-WQ Database</b>	<b>COGCC Sample Locations (06/04/08)</b>	<b>Marathon Sample Locations (06/06/08 &amp; 06/09/08)</b>	<b>EarthTech/COGCC Sample Locations (06/19/08)</b>
<b>705381</b>	<b>Ned Prather Spring</b>	Ned's Spring	Ned Prather Spring (also referred to by Marathon as the "source spring" or "system outlet")	Ned's Spring
<b>705394</b>	<b>Ned Prather Cabin (inside)</b>	Ned's Cabin		N/A
<b>705386</b>	<b>Ned Prather Cabin (outside)</b>	N/A	Cabin (aka Ned Prather Cabin)	Ned's Cabin Bypass
<b>705382</b>	<b>Second Spring</b>	Second Spring	Spring No. 2	Unnamed Tributary to McKay Gulch
<b>705382</b>	<b>Second Spring</b>	N/A	N/A	Second Unnamed Tributary to McKay Gulch
<b>705384</b>	<b>Ned Prather Stock Pond</b>	Ned's Stock Pond	Pond (06/09 sample), Stock Pond (06/20 sample)	
<b>705392</b>	<b>Ned Prather Stock Pond (West Side)</b>	N/A	N/A	Ned's Pond North
<b>705391</b>	<b>Ned Prather Stock Pond (South Side)</b>	N/A	N/A	Ned's Pond West
<b>705390</b>	<b>Ned Prather Stock Pond (East Side)</b>	N/A	N/A	Ned's Pond East
<b>705383</b>	<b>Dick Prather Cabin (inside)</b>	Dick's Spring	DP Faucet or D Cabin	N/A
<b>705395</b>	<b>Dick Prather Cabin (outside)</b>	N/A	N/A	Dick's Cabin Outside
<b>705396</b>	<b>Dick Prather Stock Pond</b>	N/A	N/A	Dick's Pond
<b>705397</b>	<b>Spring Below Dick Prather Cabin</b>	N/A	N/A	Spring Below Dick's Cabin
<b>705393</b>	<b>Stream Below Ned Prather Stock Pond</b>	N/A	N/A	Below Ned's Stock Pond
<b>705385</b>	<b>Donna's Stock Tank</b>	Donna's Spring	Stock Tank	Donna's Stock Tank
<b>API 045-07948</b>	<b>CSOC 697-14 1</b>	CSOC 697-14 No. 1 Produced Water	N/A	N/A