MARATHON OIL COMPANY
NOTICE OF COMPLETION REPORT FOR
INTERIM RECLAMATION OF
697-12A

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TABLE OF CONTENTS

Page

LIST OF TABLES

Table

LIST OF APPENDICES

Appendix

INTRODUCTION

This report covers the activities associated with the closure of the on-site reserve pit at Marathon Oil Company's 697-12A well pad. At the time of the initial site visit, the pit contained what appeared to be drill cuttings and fluid (Photo 1, Appendix A).

Marathon retained InterTech Environmental & Engineering, L.L.C. (InterTech), to manage the reclamation of this pit. Pit closure activities began on July 22, 2011, and included mixing the pit's contents with clean soil such that the resulting mixture complied with constituent concentration limits as specified in Table 910-1 of the 900-Series E&P Waste Management section of the Colorado Department of Natural Resources Oil and Gas Conservation Commission (COGCC) Rules (Table 910-1).

697-12A SITE ACTIVITIES

Daily Tailgate Health & Safety Meetings

All personnel attended a daily Tailgate Health & Safety Meeting (Tailgate) and evaluated the site as an excavation utilizing Marathon's excavation safety checklist. These meetings were conducted to refresh all personnel on safety and potential environmental issues relevant to the day's activities. The excavation safety checklist was used to ensure safety and evaluate the need for safe work permits as conditions and tasks changed. A record of each document was kept and all participants were required to sign the Tailgate attendance roster.

Background Sampling

In 2010, field-wide background sampling occurred to provide baselines for each representative gulch. The Marathon Oil Company 2011-2012 Closure Plan for Piceance Asset Pits, Garfield County, Colorado (2011 Pit Closure Plan), depicts the background grab soil sample locations. The soil samples were submitted to Accutest Laboratories under chain-of-custody protocols and were analyzed for the constituents listed in COGCC's Table 910-1. The 2011 Pit Closure Plan summarizes the analytical results for the background samples.

According to the 2011 Pit Closure Plan, Form 4 Sundry Notices will be submitted for arsenic and PAH concentrations. These concentrations are attributed to naturally-occurring background concentrations of arsenic in the region and the PAH concentrations of the Green River Formation's Mahogany Zone. Please refer to the 2011 Pit Closure Plan for additional information.

Equipment Mobilization and Start-up

Prior to commencement of closure activities, Moody Construction arranged for the location and marking of all underground utility lines at the facility. Following utility marking, a vacuum truck was used to remove the standing fluids from the pit surface. Equipment consisting of a track hoe, a front-end loader, and a D8 bulldozer were transported to the 697-12A well pad on July 21, 2011, by Moody. A grader was also used during part of the project to assist in material management activities.

Sectioning, Removal, and Management of the Pit Liner Material

The pit liner system was comprised of 25 mil and 30 mil synthetic (i.e., polyethylene) liners and an underlayment of felt material. The presence of the felt underlayment indicated that preventative and precautionary measures were taken during the construction of the liner system in order to aid in the preservation of the system's integrity.

The pit liner and felt materials were extracted using a track hoe after the mixing and removal of the pit's contents. Any debris or liquid remaining on the liner as it was removed was shaken-off, and the sections of liner were laid on the pad to dry (Photo 2). Once the liner material was dry, Moody Construction, in association with Production Transport, loaded and transported the liner to ECDC in East Carbon, Utah, for disposal.

Pit Entry Management

The pit fence was maintained throughout the mixing process. Sections were taken down as needed to facilitate mixing, but were set-up again at the end of each day. This occurred until all of the pit material was mixed and bailed from the pit. After all of the pit material had been removed, a berm approximately three feet in height was maintained around the pit to prevent accidental entry by vehicles. Additionally, the entry ramp was blocked each night by a piece of heavy equipment to prevent unauthorized vehicle entry.

Pit Contents Sampling

In 2010, pit characterization samples from six locations within the pit were collected by Golder and Associates. The samples were submitted to Accutest Laboratories under chain-of-custody protocols where they were analyzed for the constituents listed in COGCC's Table 910-1. Based on the results from the characterization samples, only the parameters that exceeded Table 910-1 limits were analyzed during mix ratio composite sampling.

Mixing Calculations

Based on the closed-loop drilling system that was utilized, it was determined that mixing clean soil with the pit contents at a ratio of 1.5:1 should result in a soil mixture with constituent concentrations below COGCC Table 910-1 limits. Once the 1.5:1 ratio had been achieved, soil was collected from two distinct locations (which were documented on field forms) within the mixed materials and composited into one sample. This process was then repeated in order to obtain a total of two composite samples. The analytical results demonstrated that the 1.5:1 ratio mixture was within COGCC Table 910-1 limits; as such, the final mix ratio was 1.5:1. Table 1 summarizes the analytical results for the 697-12A 1.5:1 mix ratio composite samples.

Mixing of the Cuttings with Native Soil

The mixing of pit contents with clean soil occurred inside of the pit prior to pit liner removal. Native soil was obtained from portions of the pad slated for removal during re-contouring activities necessary for interim reclamation. A bulldozer was used to push soil from the pad's western edge and southwest corner onto its interior surface where it could be used as clean material for mixing with the pit's contents (Photo 3). After a pile of clean soil had been established on the pad, the clean soil was systematically added to the cuttings inside of the pit

using an excavator to turn and mix the materials (Photo 4). Mixing efforts did not affect the integrity of the pit liner.

The mixing was performed within the pit in order to dry and solidify the pit material, as well as to dilute the concentrations of its COGCC Table 910-1 constituents. The mixed material was then placed on the drilling pad where a bulldozer continued the mixing process by combining additional clean soil with the extracted material and rolling the two together to reach a dry, homogenous mixture (Photos 5 and 6). Samples of the mixed soil were collected for laboratory analysis. These samples were tested for all of the constituents listed in COGCC's Table 910-1. The final mixing ratio of clean soil to pit material was 1.5:1. The resulting analytical data indicated that the constituent concentrations of the mixture were below COGCC Table 910-1 limits. The results further demonstrated that constituent concentrations were below CDPHE agricultural standards.

As per the 2011 Pit Closure Plan, three feet of clean fill was not required within the pit, so topsoil was placed over the mixed material upon completion of backfilling operations.

Sub-liner Sampling

In order to verify the integrity of the pit liner and to ensure sub-liner contamination was prevented, a sample was collected at the lowest point of the pit. The sample was sent for laboratory analysis using chain-of-custody protocols and was analyzed for the constituents listed in COGCC's Table 910-1. Table 1 summarizes the analytical results for the 697-12A sub-liner sample.

Backfilling of the Excavation

Backfilling of the excavation was achieved by placing the 1.5:1 mixture of clean soil and cuttings back into the excavation (Photo 7). The mixed material was placed load-by-load into the excavation with each load being thoroughly compacted using the tracks of a dozer. This process continued until the excavation was completely filled.

Once the excavation had been backfilled, areas of the well pad no longer required for production were roughly graded to their original contour (Photo 8). These re-contoured areas were then top-soiled, thereby mitigating the potential effects of physical parameters on reclamation success. Backfilling and re-contouring operations concluded on September 8, 2011.

Seeding and Stabilization

Western States Reclamation (WSR) evaluated the well pad and developed a site-specific plan for seeding. Seed, fertilizer, hydro-mulch, and additional soil amendments were ordered in sufficient quantities to ensure growth and stabilization. Areas of the site that were no longer required for production operations were seeded through a combination of hydro-seeding and drill seeding techniques. Areas safe for tractor-work were drill seeded and straw crimped, while all other seeded areas were hydro-seeded and hydro-mulched. Seeding operations began on October 15, 2011, and concluded on November 1, 2011.

TABLE 1

Table 1: Analytical Data Summary for Marathon 697-12A			
Parameter Name	Final Concentrations of Remediated Material	Sub-Liner Concentrations	Units of Measure
Organic Compounds			
Acenaphthene	0.18	0.066	mg/kg
Anthracene	0.14	0.066	mg/kg
Benzene	ND	0.059	mg/kg
Benzo(A)anthracene	0.95	0.17	mg/kg
Benzo(A)pyrene	0.66	0.17	mg/kg
Benzo(B)fluoranthene	1.27	0.17	mg/kg
Benzo(K)fluoranthene	0.60	0.17	mg/kg
Chrysene	0.99	0.17	mg/kg
Dibenzo(A,H)anthracene	0.28	0.17	mg/kg
Ethylbenzene	0.26	0.12	mg/kg
Fluoranthene	1.65	0.066	mg/kg
Fluorene	0.68	0.066	mg/kg
Indeno(1,2,3-CD)pyrene	0.42	0.2	mg/kg
Naphthalene	0.92	0.066	mg/kg
Pyrene	1.13	0.066	mg/kg
Toluene	0.61	0.12	mg/kg
TPH	99.50	ND	mg/kg
Xylenes	2.19	0.132	mg/kg
Metals			
Arsenic	3.10	3.5	mg/kg
Barium	582.90	275	mg/kg
Boron	32.42	4.9	mg/kg
Cadmium	1.60	0.97	mg/kg
Calcium	13.00	27.2	mg/l
Chromium, Total	7.68	37.5	mg/kg
Chromium, Hexavalent	1.76	0.4	mg/kg
Chromium, Trivalent	7.54	37.2	mg/kg
Copper	13.62	18.1	mg/kg
Lead	8.34	12.3	mg/kg
Magnesium	1.62	4.09	mg/l
Mercury	0.10	0.096	mg/kg
Nickel	6.48	22	mg/kg
Selenium	7.94	4.9	mg/kg
Silver	4.78	2.9	mg/kg
Sodium	453.00	110	mg/l
Zinc	24.18	46.1	mg/kg
Liquid Hydrocarbons			
Diesel Range Organics (DRO)	99.50	239	mg/kg
Gasoline Range Organics (GRO)	ND	12	mg/kg
General Chemistry			
Electrical Conductivity (EC)	2070.00	806	umhos/cm
pH	7	9	su
Sodium Adsorption Ratio (SAR)	1.79	5.19	ratio

APPENDIX A - Photographs

Photo 1 – 697-12A reserve pit containing drill cuttings with some fluids.

Photo 2 – Sections of liner and felt underlayment drying on pad.

Photo 3 – D8 providing clean fill material from sW corner to track hoe for mixing.

Photo 4 – Track hoe mixing pit contents with clean material within pit liner.

Photo 5 – D8 rolling material to achieve homogenous mixture.

Photo 6 – D8 rolling material to achieve homogenous mixture.

Photo 7 – Pit during backfilling operations.

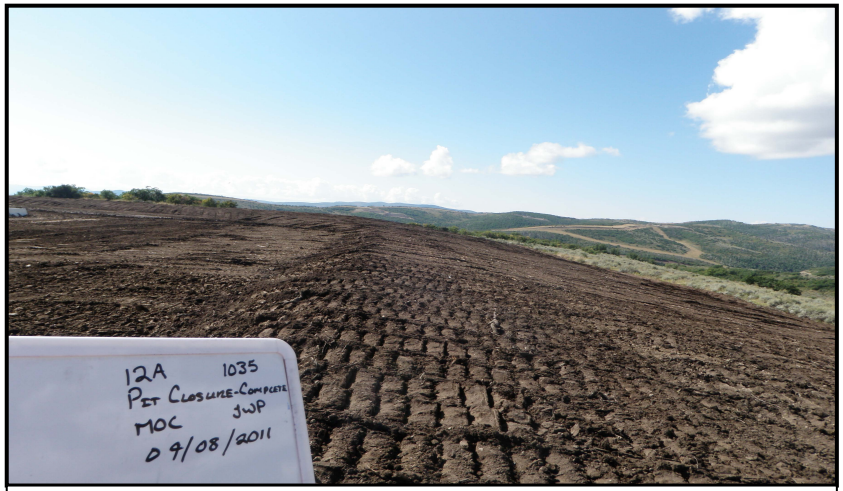

Photo 8 – Well pad after pit closure and reclamation.

697-12A pad location
Interim Reclamation - Revegetation

10/15/2011 grading and seeding began
11/01/2011 grading and seeding complete

Photos taken 5/21/2014

Northern edge of pad near northeast corner

Eastern edge of pad

Eastern edge of pad

Eastern edge of pad

Southern fill slope near southeast corner

Southern edge of pad

Reclaimed area south of pad

Reclaimed area south of pad

Reclaimed area southwest of pad

Reclaimed area southwest of pad

Reclaimed area west of pad

Reclaimed area west of pad

Reclaimed area west of pad

Looking east across pad