MARATHON OIL COMPANY
NOTICE OF COMPLETION REPORT FOR
INTERIM RECLAMATION OF
596-29C

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INTRODUCTION

This report covers the activities associated with the closure of the on-site reserve pit at Marathon Oil Company's 596-29C well pad. At the time of the initial site visit, the pit contained what appeared to be drill cuttings in an unlined pit (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 May 26, 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).

596-29C 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, Jacobs 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 haul truck, and a D8 bulldozer were transported to the 596-29C well pad on May 25, 2011, by Jacobs. A sheep's foot compactor was also used to facilitate the pit closure.

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 596-29C 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. Native soil was obtained from portions of the pad slated for removal during re-contouring activities necessary for interim reclamation. A haul truck was used to transport the soil from the pad's southeast corner to the edge of the pit where it could be used as clean material for mixing with the pit's contents (Photo 2). 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 and bulldozer to turn and mix the materials (Photos 3 and 4).

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 (Photo 5). Samples of the mixed soil were collected for laboratory analysis. These samples were tested only for the constituents that previously exceeded COGCC Table 910-1 limits. 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.

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 (Photos 6 and 7). The mixed material was placed load-by-load into the excavation with each load being thoroughly compacted using the tracks of a dozer and a sheep's foot compactor. 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 June 21, 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 hydro-seeded and hydro-mulched. Seeding operations began on October 18, 2011, and concluded on October 20, 2011.

TABLE 1

Table 1: Analytical Data Summary for Marathon 596-29C		
Parameter Name	Final Concentrations of Remediated Material	Units of Measure
Organic Compounds		
Acenaphthene	0.19	mg/kg
Anthracene	0.27	mg/kg
Benzene	0.15	mg/kg
Benzo(A)anthracene	1.03	mg/kg
Benzo(A)pyrene	0.71	mg/kg
Benzo(B)fluoranthene	1.15	mg/kg
Benzo(K)fluoranthene	0.65	mg/kg
Chrysene	0.97	mg/kg
Dibenzo(A,H)anthracene	0.25	mg/kg
Ethylbenzene	0.44	mg/kg
Fluoranthene	1.54	mg/kg
Fluorene	0.35	mg/kg
Indeno(1,2,3-CD)pyrene	0.49	mg/kg
Naphthalene	0.97	mg/kg
Pyrene	1.23	mg/kg
Toluene	2.98	mg/kg
TPH	457.61	mg/kg
Xylenes	3.30	mg/kg
Metals		
Arsenic	8.17	mg/kg
Barium	1282.67	mg/kg
Boron	10.48	mg/kg
Cadmium	1.95	mg/kg
Calcium	297.00	mg/l
Chromium, Total	13.55	mg/kg
Chromium, Hexavalent	1.95	mg/kg
Chromium, Trivalent	13.12	mg/kg
Copper	25.25	mg/kg
Lead	19.30	mg/kg
Magnesium	13.30	mg/l
Mercury	0.03	mg/kg
Nickel	13.02	mg/kg
Selenium	9.72	mg/kg
Silver	5.87	mg/kg
Sodium	2280.00	mg/l
Zinc	47.07	mg/kg
Liquid Hydrocarbons		
Diesel Range Organics (DRO)	454.17	mg/kg
Gasoline Range Organics (GRO)	3.45	mg/kg
General Chemistry		
Electrical Conductivity (EC)	3510.00	umhos/cm
pH	8	su
Sodium Adsorption Ratio (SAR)	10.70	ratio

APPENDIX A - Photographs

Photo 1 – 596-29C reserve pit containing drill cuttings.

Photo 2 – Haul truck providing clean material for mixing.

Photo 3 – Track hoe mixing pit contents with clean material within pit.

Photo 4 – D8 and track hoe mixing pit contents with clean material within pit.

Photo 5 – Front end loader and D8 rolling material to achieve homogenous mixture.

Photo 6 – Pit during backfilling operations.

Photo 7 – Pit during backfilling operations.

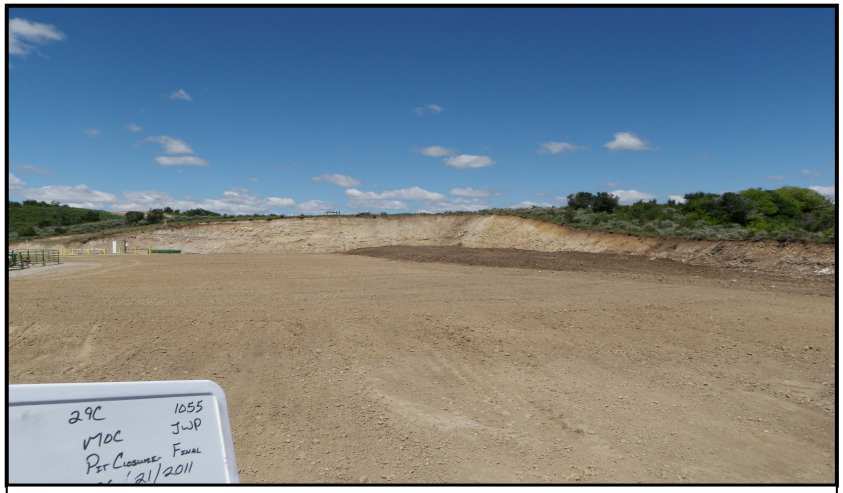

Photo 8 – Well pad after pit closure and reclamation.

596-29C pad location
Interim Reclamation
Revegetation - Seeding

Approximately 6,125 cubic yards moved during pad reclamation.
Remaining pad area 92,294 SQ. FT. – 2.12 acres
10/18/2011 grading and seeding began 10/20/2011 grading and seeding complete
Photos taken 5/20/2014

Former location of pit

Eastern edge of pad

Southeast corner of pad

Southern edge of pad and top soil pile

Top soil pile

Reclaimed area and southern fill slope

Top soil pile

Top soil pile

Southern fill slope

Looking north across pad

Southwest corner of pad