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DAMES & MOORE

2360 MARYLAND ROAD, WILLOW GROVE, PENNSYLVANIA 19090
(215) 657-5000 FAX: (215) 657-5454

January 13, 1993

Chevron USA Products Company
30th Street & Penrose Avenue
Philadelphia, Pennsylvania 19145

Attention: Mr. John Harris
Environmental Department

Re: Progress Report No. 13
RCRA Corrective Actions Project
Chevron Refinery
Philadelphia, Pennsylvania
November 14, 1992, through January 8, 1993

Dear John:

This letter presents the twelfth progress report to Chevron detailing the activities conducted by Dames & Moore for the RCRA Verification Investigation (VI) and RCRA Facility Investigation (RFI) at Chevron's Philadelphia Refinery. The VI involves the investigation of thirteen solid waste management units (SWMUs) situated in various locations throughout the Refinery. The RFI includes the investigation of seven SWMUs. This progress report covers the period of November 14, 1992 through January 8, 1993.

Activities this period focused on data reduction and interpretation, data validation, data management, and preparation of the VI report, including the screening risk assessment. In addition, Dames & Moore has started to prepare various portions of the RFI report, including field measurement and data tables, soil boring logs, and monitoring well construction diagrams.

1. Data Reduction and Interpretation

Soil boring logs, monitoring well construction diagrams, and site/sample location maps were constructed for inclusion in the RFI/VI reports. In addition, Dames & Moore personnel developed tables listing various field measurement data related to surface and subsurface soil sampling, monitoring well installation, and ground water sampling.

2. Data Validation

Dames & Moore personnel evaluated the quality of the RFI/VI analytical data. These data were qualified and qualifiers were transcribed on the analytical data tables. In addition, quality assurance reports were prepared that detail RFI/VI data validation procedures and results.

3. Data Management

Our data management group developed a database for the RFI/VI analytical data. Raw RFI/VI data was electronically imported from laboratory computer disks into the database and tables of the raw data were created. Data validation qualifiers were transcribed onto the raw data tables and validated data tables were created. The format of the validated data tables was then revised for inclusion in the RFI/VI reports.

4. Report Preparation

Dames & Moore personnel reviewed the RFI/VI analytical data and prepared a draft version of the VI report, including appendices. This draft report was submitted to Chevron on November 25, 1992. Revisions were incorporated based on the results of the screening risk assessment and Chevron's comments. The VI report was submitted to the USEPA on January 30, 1992.

5. Screening Risk Assessment

Dames & Moore's risk assessment group in Sacramento, California reviewed the validated VI analytical data for risk assessment purposes. A screening risk assessment was performed for each of the VI SWMUs. The risk assessment results were presented in an appendix to the VI report.

6. Project Schedule and Future Activities

During the next month, Dames & Moore will continue activities related to the RFI report. In addition, Dames & Moore will initiate the second quarterly round of RFI ground water sampling and begin planning other RFI field activities, including geotechnical sampling, bulkhead reconnaissance, and pumping tests.

I trust that this report satisfies your requirements. If you should have any questions, please call me or Ralph Golia at (215) 657-5000.

Very truly yours,

DAMES & MOORE

for Thomas J. Glancey
Project Geologist

AAW02CAA

DAMES & MOORE

2360 MARYLAND ROAD, WILLOW GROVE, PENNSYLVANIA 19090
(215) 657-5000 FAX: (215) 657-5454

November 16, 1992

Chevron USA Products Company
30th Street & Penrose Avenue
Philadelphia, Pennsylvania 19145

Attention: Mr. John Harris
Environmental Department

Re: Progress Report No. 12
RCRA Corrective Actions Project
Chevron Refinery
Philadelphia, Pennsylvania
October 8 through November 13, 1992

Dear John:

This letter presents the twelfth progress report to Chevron detailing the activities conducted by Dames & Moore for the RCRA Verification Investigation (VI) and RCRA Facility Investigation (RFI) at Chevron's Philadelphia Refinery. The VI involves the investigation of thirteen solid waste management units (SWMUs) situated in various locations throughout the Refinery. The RFI includes the investigation of seven SWMUs. This progress report covers the period of October 8 through November 13, 1992.

Field activities this period focused on the RFI ground water sampling (Quarterly Round One) and monitoring well upgrades. Other tasks performed during this period included data reduction, interpretation, validation, and management as part of the preparation of the VI report.

1. RFI Ground Water Sampling (Quarterly Round One)

Ground water samples were collected from 50 on-site monitoring wells as part of the first quarter RFI ground water sampling event. These samples were collected to assess ground water quality in the vicinity of RFI SWMUs 87, 88, 89, 90, 91, 92, 93, 94, 95 and 101. Collected ground water samples were submitted for laboratory analysis for Skinner List Constituents. Several RFI monitoring wells contained free-phase hydrocarbon during this sampling event. Samples of the hydrocarbon were submitted for GC fingerprint analysis.

2. Monitoring Well Upgrades

Existing on-site monitoring wells to be sampled as part of the RFI were repaired/replaced to ensure their integrity when samples were collected.

3. Report Preparation

The majority of the text, tables and figures for the VI Report were prepared during this period. In addition, all laboratory analytical data was electronically manipulated in a database to construct tables of the analytical results for surface soil, subsurface soil, and ground water sampling conducted as part of the VI. The laboratory data was validated in accordance with USEPA guidelines, and the qualifiers were transcribed onto the data tables.

4. Project Schedule and Future Activities

During the next month, Dames & Moore will continue activities related to the RFI/VI reports. A draft VI report will be submitted to Chevron on November 25, 1992.

I trust that this report satisfies your requirements. If you should have any questions, please call me at (215)530-4251 or (302) 530-5512, or Ralph Golia at (215) 657-5000.

Very truly yours,

DAMES & MOORE

Thomas J. Glancey
Project Geologist

AAW02CAA

DAMES & MOORE
2360 MARYLAND ROAD, WILLOW GROVE, PENNSYLVANIA 19090
(215) 657-5000 FAX: (215) 657-5454

October 8, 1992

Chevron USA Products Company
30th Street & Penrose Avenue
Philadelphia, Pennsylvania 19145

Attention: Mr. John Harris
Environmental Department

Re: Progress Report No. 11
RCRA Corrective Actions Project
Chevron Refinery
Philadelphia, Pennsylvania
October 1 through October 7, 1992

Dear John:

This letter presents the eleventh progress report to Chevron detailing the activities conducted by Dames & Moore for the RCRA Verification Investigation (VI) and RCRA Facility Investigation (RFI) at Chevron's Philadelphia Refinery. The VI involves the investigation of thirteen solid waste management units (SWMUs) situated in various locations throughout the Refinery. The RFI includes the investigation of seven SWMUs. This progress report covers the period of October 1 through October 7, 1992.

Activities this week focused on the RFI for SWMU 101, well development as part of the RFI ground water program, the installation of bumper posts at RFI/VI monitoring well locations, and the removal of drill cuttings from RFI well locations. The following sections present this week's activities.

1. Well Point Installation

Monitoring well points WP-7 and WP-8 were successfully installed. During installation of well points WP-6, WP-9, and WP-10, obstructions were encountered between 3 and 5 feet below ground surface. On Tuesday, October 6, 1992, Dames & Moore excavated the soil in the vicinity of WP-10 to reveal 6-inch-diameter steel out-of-service piping. The pipes were assumed to be present at WP-9, and thus, no excavation was performed in this area. A concrete slab larger than the 4-foot square excavation pit was encountered at WP-6.

The locations of well points WP-9 and WP-10 were moved approximately 50 feet and will be installed early next week upon receiving underground utility clearance from Bob Kijewski (Chevron). Well point WP-6 will not be installed as there does not appear to be an accessible area.

2. Well Development

RFI wells were developed during the week of October 1 through October 7 using a centrifugal pump. Purging of each well continued for a minimum of 1 hour or until the well water was generally free of sediment. The purged volumes and rates were recorded by Dames & Moore. Purge water was pumped to a polyethylene tank. The water from the tank was then pumped to drains connected to Chevron's Waste Water Treatment Plant.

3. Bumper Post Installation

Dames & Moore supervised the installation of bumper posts around the newly installed RFI/VI monitoring wells. The bumper post installation was completed by Marcor (drilling subcontractor). Typical surface completion consisted of three 5-foot-long steel posts placed into a 2.5- to 3-foot-deep auger hole and secured by bag mix concrete. The steel posts were capped with concrete to prevent rainwater from filling up the posts. At this time, newly installed wells in SWMU 1/2, 30, 45, 87, 88, 89, 90, 91, 92, 93, 94, and 95 have bumper posts. The steel protective casings and the posts will be painted fluorescent yellow early next week.

Completing the 2.5- to 3-foot auger holes proved to be a difficult task due to the presence of large rocks, concrete, and bricks within the unconsolidated fill material surrounding various well locations.

4. Removal of Drill Cuttings

Drill cuttings generated during RFI well installation have been removed from the various RFI well locations and placed into the storage dumpster. This material will have to be classified prior to removal from the site.

5. Project Schedule and Future Activities

During the next week, Dames & Moore will continue installing bumper posts around all RFI monitoring wells, and will attempt to complete well points WP-9 and WP-10. In addition, Dames & Moore has begun various office activities related to the RFI/VI reports.

I trust that this report satisfies your requirements. If you should have any questions, please call me at (215)530-4251 or (302) 530-5512, or Ralph Golia at (215) 657-5000.

Very truly yours,
DAMES & MOORE

Thomas J. Glancey
Project Geologist

AAW02CAA

DAMES & MOORE
2360 MARYLAND ROAD, WILLOW GROVE, PENNSYLVANIA 19090
(215) 657-5000 FAX: (215) 657-5454

October 1, 1992

Chevron USA Products Company
30th Street & Penrose Avenue
Philadelphia, Pennsylvania 19145

Attention: Mr. John Harris
Environmental Department

Re: Progress Report No. 10
RCRA Corrective Actions Project
Chevron Refinery
Philadelphia, Pennsylvania
September 24 through September 30, 1992

Dear John:

This letter presents the tenth progress report to Chevron detailing the activities conducted by Dames & Moore for the RCRA Verification Investigation (VI) and RCRA Facility Investigation (RFI) at Chevron's Philadelphia Refinery. The VI involves the investigation of thirteen solid waste management units (SWMUs) situated in various locations throughout the Refinery. The RFI includes the investigation of seven SWMUs. This progress report covers the period of September 24 through September 30, 1992.

Activities this week focused on the RFI for SWMUs 95 and 101, and well development as part of the RFI ground water program. The following sections present this week's activities.

1. Drilling Location Utility Clearance

Bob Kijewski (Chevron) cleared background soil sampling locations BG-1, BG-2, and BG-3, located near the main building. These locations changed based on recent developments (i.e., floating hydrocarbon) in this area. In addition, although locations previously cleared by Chevron (Design and Construction), Jack Tiedman (Chevron-Utilities) raised some concern about drilling well points in SWMU 101 near the bulkhead. Dames & Moore personnel walked the length of SWMU 101 with Mr. Tiedman and showed him all the well point locations. He cleared all locations, but asked that we speak with Charlie Schwenger of Blending and Shipping before we drill. Dames & Moore personnel spoke with Mr. Schwenger, who didn't know of any active underground product lines in the area. He did, however, caution that there were many out of service lines in the area, and suggested we make sure they have been checked with a line finder. Dames & Moore contacted Bob Kijewski and asked him to check and re-clear each well point location with a line finder.

2. Soil Boring/Subsurface Soil Sampling

A total of 13 borings were completed by MARCOR (driller) under the supervision of Dames & Moore during this week within SWMU 95. Most of these borings were drilled with the tripod rig. In addition, three background borings were completed in the vicinity of the main building.

The samples collected from these soil borings were submitted for laboratory analysis for Target List constituents (Table 4-1 of RFI Work Plan) and 25% were submitted for Skinner List analyses (Table 4-2 of RFI Work Plan), including VOCs, B/Ns, AEs, metals, and other inorganics. One or two samples were collected from each boring from the 2-foot intervals containing the greatest headspace measurements. Headspace analysis measurements recorded with an OVA-FID ranged from 0 to greater than 10,000 OVA units, and measurements recorded with an OVM-PID ranged from 0 to 500 OVM units.

3. Monitoring Well Installation

MARCOR (driller) drilled and installed two monitoring wells under the supervision of Dames & Moore from September 24 through September 30, 1992, as part of the RFI. One of the wells (B126) was installed within SWMU 95, and another (A118) in SWMUs 93/94. Each of the wells was installed using a drill rig. In addition, eight well points were installed within SWMU 101. Where possible, the well points were installed with a drill rig. Well points located in areas inaccessible to a drill rig were installed with a portable auger. Three of the well points (WP-6, WP-9, and WP-10) could not be installed due to obstruction (probably concrete) encountered at two feet. Dames & Moore will retain a backhoe and operator to excavate down to the obstruction in the areas. If the obstruction is concrete, a jackhammer will be used to advance through the obstruction, and drilling will continue. These well points will be installed next week. The wells will be sampled at a later date to provide ground water quality data in the vicinity of this SWMU.

4. VI Surveying Activities

Penoni Associates (surveyor) completed surveying horizontal coordinates for both VI borings and monitoring wells, and elevations for the monitoring wells.

5. Well Development/Well Integrity Inspection

Dames & Moore personnel have started developing the newly installed RFI monitoring wells. Development activities should be completed during the next week. In addition, Dames & Moore conducted a well integrity inspection at all previously-installed monitoring wells.

6. Project Schedule and Future Activities

The RFI soil boring well installation program is generally completed.

During the next week, Dames & Moore will continue monitoring well development, and will begin installing bumper posts around all RFI monitoring wells.

I trust that this report satisfies your requirements. If you should have any questions, please call me at (215)530-4251 or (302) 530-5512, or Ralph Golia at (215) 657-5000.

Very truly yours,

DAMES & MOORE

Thomas J. Glancey
Project Geologist

AAW029A5

DAMES & MOORE
2360 MARYLAND ROAD, WILLOW GROVE, PENNSYLVANIA 19090
(215) 657-5000 FAX: (215) 657-5454

September 24, 1992

Chevron USA Products Company
30th Street & Penrose Avenue
Philadelphia, Pennsylvania 19145

Attention: Mr. John Harris
Environmental Department

Re: Progress Report No. 9
RCRA Corrective Actions Project
Chevron Refinery
Philadelphia, Pennsylvania
September 10 through September 16, 1992

Dear John:

This letter presents the ninth progress report to Chevron detailing the activities conducted by Dames & Moore for the RCRA Verification Investigation (VI) and RCRA Facility Investigation (RFI) at Chevron's Philadelphia Refinery. The VI involves the investigation of thirteen solid waste management units (SWMUs) situated in various locations throughout the Refinery. The RFI includes the investigation of seven SWMUs. This progress report covers the period of September 17 through September 23, 1992.

Activities this week focused on the RFI for SWMUs 94 and 95 and surveying conducted as part of the VI ground water program. The following sections present this week's activities.

1. Drilling Location Utility Clearance

Bob Kijewski (Chevron) cleared monitoring well locations B125 and B126 (SWMU 95). In addition, Mr. Kijewski cleared monitoring well A118 (SWMU 94). Monitoring well A118 had to be relocated as a result of an overhead line above the initial location. Background soil sampling locations BG-1, BG-2, and BG-3, located near the main building, have not been staked as of yet. These locations may change based on recent developments (i.e., floating hydrocarbon) in this area.

2. Soil Boring/Subsurface Soil Sampling

A total of 22 borings were completed by MARCOR (driller) under the supervision of Dames & Moore during this week within SWMU 94. Most of these borings were drilled with the tripod rig. A total of 7 soil borings were completed within SMWU 95. All of these borings were drilled with a tripod rig.

The samples collected from these soil borings were submitted for laboratory analysis for Target List constituents (Table 4-1 of RFI Work Plan) and 25% were submitted for Skinner List analyses (Table 4-2 of RFI Work Plan), including VOCs, B/Ns, AEs, metals, and other inorganics. One or two samples were collected from each boring from the 2-foot intervals containing the greatest headspace measurements. Headspace analysis measurements recorded with an OVA-FID ranged from 0 to greater than 10,000 OVA units, and measurements recorded with an OVM-PID ranged from 0 to 547 OVM units.

3. Monitoring Well Installation

MARCOR (driller) drilled and installed three monitoring wells under the supervision of Dames & Moore from September 17 through September 23, 1992, as part of the RFI. All three of the wells (B123, B124, and B125) were installed within SWMU 95. Each of the wells was installed using a drill rig. The wells will be sampled at a later date to provide ground water quality data in the vicinity of this SWMU.

4. VI Surveying Activities

Penoni Associates (surveyor) continued surveying horizontal coordinates for both VI borings and monitoring wells, and elevations for the monitoring wells. The VI surveying is generally complete.

5. Project Schedule and Future Activities

Dames & Moore has gained approximately two days on the schedule of field activities as projected in Progress Report No. 8. This puts the soil boring program and the well installation program ahead of schedule by approximately one week.

During the next week, Dames & Moore will continue drilling soil borings and monitoring wells associated with the RFI. Dames & Moore will continue implementation of the RFI at SWMU 95 (Buried Lead Sludge Area 9). Drilling of RFI soil borings and monitoring wells will be completed by September 25, 1992. Well points (SWMU 101) and background soil borings (BG-1, BG-2, and BG-3) will be installed between September 28 and October 2, 1992.

I trust that this report satisfies your requirements. If you should have any questions, please call me at (215)530-4251 or (302) 530-5512, or Ralph Golia or Eileen Snyder at (215) 657-5000.

Very truly yours,

DAMES & MOORE

Thomas J. Glancey
Project Geologist

AAW029A5

DAMES & MOORE
2360 MARYLAND ROAD, WILLOW GROVE, PENNSYLVANIA 19090
(215) 657-5000 FAX: (215) 657-5454

September 16, 1992

Chevron USA Products Company
30th Street & Penrose Avenue
Philadelphia, Pennsylvania 19145

Attention: Mr. John Harris
Environmental Department

Re: Progress Report No. 8
RCRA Corrective Actions Project
Chevron Refinery
Philadelphia, Pennsylvania
September 10 through September 16, 1992

Dear John:

This letter presents the eighth progress report to Chevron detailing the activities conducted by Dames & Moore for the RCRA Verification Investigation (VI) and RCRA Facility Investigation (RFI) at Chevron's Philadelphia Refinery. The VI involves the investigation of thirteen solid waste management units (SWMUs) situated in various locations throughout the Refinery. The RFI includes the investigation of seven SWMUs. This progress report covers the period of September 10 through September 16, 1992.

Activities this week focused on the RFI for SWMUs 90 and 93 and surveying conducted as part of the VI ground water program. The following sections present this week's activities.

1. Drilling Location Utility Clearance

Bob Kijewski (Chevron) cleared all boring and well locations within SWMU 95 with the exceptions of monitoring wells B125 and B126. In addition, Mr. Kijewski cleared monitoring well C109 (SWMU 90). Background soil sampling locations BG-1, BG-2, and BG-3, located near the main building, have not been staked as of yet. These locations may change based on recent developments (i.e., floating hydrocarbon) in this area.

2. Soil Boring/Subsurface Soil Sampling

A total of 31 borings were completed by MARCOR (driller) under the supervision of Dames & Moore during this week within SWMU 93. Eight of these borings were drilled with the drill rig and twenty-three with the tripod rig.

The samples collected from these soil borings were submitted for laboratory analysis for Target List constituents (Table 4-1 of RFI Work Plan) and 25% were submitted for Skinner List analyses (Table 4-2 of RFI Work Plan), including VOCs, B/Ns, AEs,

metals, and other inorganics. One or two samples were collected from each boring from the 2-foot intervals containing the greatest headspace measurements. Headspace analysis measurements recorded with an OVA-FID ranged from 0 to greater than 10,000 OVA units, and measurements recorded with an OVM-PID ranged from 0 to 531 OVM units.

3. Monitoring Well Installation

MARCOR (driller) drilled and installed four monitoring wells under the supervision of Dames & Moore from September 10 through September 16, 1992, as part of the RFI. One of these wells (C109) was installed within SWMU 90, and three others (A118, A119, and A122) were installed within SWMU 93. Each of the wells was installed using a drill rig. The wells will be sampled at a later date to provide ground water quality data in the vicinity of these SWMUs.

4. VI Surveying Activities

Penoni Associates (surveyor) arrived on-site Monday, September 14, 1992, and began running a traverse to gain control for the VI surveying. On September 15, 1992, Penoni began surveying horizontal coordinates for both VI borings and monitoring wells, and elevations for the monitoring wells. The VI surveying should be completed by September 18, 1992.

5. Project Schedule and Future Activities

Dames & Moore has gained approximately two days on the schedule of field activities as projected in Progress Report No. 7. This puts the soil boring program and the well installation program ahead of schedule.

During the next week, Dames & Moore will continue drilling soil borings and monitoring wells associated with the RFI. Dames & Moore will continue implementation of the RFI at SWMU 93 (Buried Lead Sludge Area 7), which is located in the vicinity of tank fields containing Tanks 201 through 203, 205 through 209, former Tank 210, Tank 219, Tank 226, and Tank 269. Upon completion of the RFI in these areas, Dames & Moore will mobilize to SWMU 94.

I trust that this report satisfies your requirements. If you should have any questions, please call me at (215)530-4251 or (302) 530-5512, or Ralph Golia or Eileen Snyder at (215) 657-5000.

Very truly yours,
DAMES & MOORE

Thomas J. Glancey
Project Geologist

AAW029A5

DAMES & MOORE
2360 MARYLAND ROAD, WILLOW GROVE, PENNSYLVANIA 19090
(215) 657-5000 FAX: (215) 657-5454

EVS F43

September 24, 1992

Chevron USA Products Company
30th Street & Penrose Avenue
Philadelphia, Pennsylvania 19145

Attention: Mr. John Harris
Environmental Department

Re: Progress Report No. 9
RCRA Corrective Actions Project
Chevron Refinery
Philadelphia, Pennsylvania
September 10 through September 16, 1992

Dear John:

This letter presents the ninth progress report to Chevron detailing the activities conducted by Dames & Moore for the RCRA Verification Investigation (VI) and RCRA Facility Investigation (RFI) at Chevron's Philadelphia Refinery. The VI involves the investigation of thirteen solid waste management units (SWMUs) situated in various locations throughout the Refinery. The RFI includes the investigation of seven SWMUs. This progress report covers the period of September 17 through September 23, 1992.

Activities this week focused on the RFI for SWMUs 94 and 95 and surveying conducted as part of the VI ground water program. The following sections present this week's activities.

1. Drilling Location Utility Clearance

Bob Kijewski (Chevron) cleared monitoring well locations B125 and B126 (SWMU 95). In addition, Mr. Kijewski cleared monitoring well A118 (SWMU 94). Monitoring well A118 had to be relocated as a result of an overhead line above the initial location. Background soil sampling locations BG-1, BG-2, and BG-3, located near the main building, have not been staked as of yet. These locations may change based on recent developments (i.e., floating hydrocarbon) in this area.

2. Soil Boring/Subsurface Soil Sampling

A total of 22 borings were completed by MARCOR (driller) under the supervision of Dames & Moore during this week within SWMU 94. Most of these borings were drilled with the tripod rig. A total of 7 soil borings were completed within SMWU 95. All of these borings were drilled with a tripod rig.

The samples collected from these soil borings were submitted for laboratory analysis for Target List constituents (Table 4-1 of RFI Work Plan) and 25% were submitted for Skinner List analyses (Table 4-2 of RFI Work Plan), including VOCs, B/Ns, AEs, metals, and other inorganics. One or two samples were collected from each boring from the 2-foot intervals containing the greatest headspace measurements. Headspace analysis measurements recorded with an OVA-FID ranged from 0 to greater than 10,000 OVA units, and measurements recorded with an OVM-PID ranged from 0 to 547 OVM units.

3. Monitoring Well Installation

MARCOR (driller) drilled and installed three monitoring wells under the supervision of Dames & Moore from September 17 through September 23, 1992, as part of the RFI. All three of the wells (B123, B124, and B125) were installed within SWMU 95. Each of the wells was installed using a drill rig. The wells will be sampled at a later date to provide ground water quality data in the vicinity of this SWMU.

4. VI Surveying Activities

Penoni Associates (surveyor) continued surveying horizontal coordinates for both VI borings and monitoring wells, and elevations for the monitoring wells. The VI surveying is generally complete.

5. Project Schedule and Future Activities

Dames & Moore has gained approximately two days on the schedule of field activities as projected in Progress Report No. 8. This puts the soil boring program and the well installation program ahead of schedule by approximately one week.

During the next week, Dames & Moore will continue drilling soil borings and monitoring wells associated with the RFI. Dames & Moore will continue implementation of the RFI at SWMU 95 (Buried Lead Sludge Area 9). Drilling of RFI soil borings and monitoring wells will be completed by September 25, 1992. Well points (SWMU 101) and background soil borings (BG-1, BG-2, and BG-3) will be installed between September 28 and October 2, 1992.

I trust that this report satisfies your requirements. If you should have any questions, please call me at (215)530-4251 or (302) 530-5512, or Ralph Golia or Eileen Snyder at (215) 657-5000.

Very truly yours,

DAMES & MOORE

Eileen M. Snyder

Thomas J. Glancey
Project Geologist

AAW029A5

DAMES & MOORE
2360 MARYLAND ROAD, WILLOW GROVE, PENNSYLVANIA 19090
(215) 657-5000 FAX: (215) 657-5454

September 9, 1992

Chevron USA Products Company
30th Street & Penrose Avenue
Philadelphia, Pennsylvania 19145

Attention: Mr. John Harris
Environmental Department

Re: Progress Report No. 7
RCRA Corrective Actions Project
Chevron Refinery
Philadelphia, Pennsylvania
September 3 through September 9, 1992

Dear John:

This letter presents the seventh progress report to Chevron detailing the activities conducted by Dames & Moore for the RCRA Verification Investigation (VI) and RCRA Facility Investigation (RFI) at Chevron's Philadelphia Refinery. The VI involves the investigation of thirteen solid waste management units (SWMUs) situated in various locations throughout the Refinery. The RFI includes the investigation of seven SWMUs. This progress report covers the period of September 3 through September 9, 1992.

Activities were focused this week on the RFI SWMUs 92 and 93 and the VI ground water sampling program. The following sections present this week's activities.

1. Drilling Location Utility Clearance

Bob Kijewski (Chevron) returned from vacation on September 8, 1992. Dames & Moore informed Bob that we will need him to clear boring and well locations within SWMU 95. Previously staked soil borings and monitoring well locations will be cleared by Mr. Kijewski within the next week. In addition, Mr. Kijewski will clear monitoring well C109 (SWMU 90) and background soil sampling locations BG-1, BG-2, and BG-3, located near the main building.

2. Soil Boring/Subsurface Soil Sampling

A total of 26 borings were completed by MARCOR (driller) under the supervision of Dames & Moore during this week.

Ten soil borings were completed with the tripod rig in SWMU 92. Two soil borings were completed with the tripod rig in SWMU 101, and fourteen soil borings were completed within SWMU 93 (two with the drill rig and twelve with the tripod rig).

The samples collected from these soil borings were submitted for laboratory analysis for Target List constituents (Table 4-1 of RFI Work Plan) and 25% were submitted for Skinner List analyses (Table 4-2 of RFI Work Plan), including VOCs, B/Ns, AEs, metals, and other inorganics. One or two samples were collected from each boring from the 2-foot intervals containing the greatest headspace measurements. Headspace analysis measurements recorded with an OVA-FID ranged from 70 to 2,300 OVA units, and measurements recorded with an OVM-PID ranged from 1.4 to 503 OVM units.

3. Monitoring Well Installation

MARCOR (driller) under the supervision of Dames & Moore drilled and installed four monitoring wells from September 3 through September 9, 1992, as part of the RFI. Two of these wells (C115 and C116) were installed within SWMU 92, and two others (A120 and A121) were installed within SWMU 93. Each of the wells was installed using a drill rig. The wells will be sampled at a later date to provide ground water quality data in the vicinity of these SWMUs.

4. VI Ground Water Sampling

Twelve monitoring wells were sampled by Dames & Moore between September 2 and September 4, 1992, as part of the RCRA VI. Eleven of these wells were installed as part of the VI, and one of the wells (A40) was a previously existing well. Ground water samples collected from these wells will be analyzed for Skinner List Constituents (Table 1 of the VI Work Plan), with the exception of samples collected from wells located in SWMUs 45 and 79, which will be analyzed for Appendix IX Parameters (Table 2 of the VI Work Plan). Monitoring wells B129 (SWMU 11) and A133 (SWMU 30) contained appreciable amounts of free-phase hydrocarbons. Therefore, ground water samples were not collected from these wells. Instead, a sample of the floating hydrocarbon from each well was submitted for GC fingerprint analysis.

5. Project Schedule and Future Activities

Dames & Moore has gained approximately one day on the schedule of field activities as projected in the Progress Report No. 6. This puts the soil boring program and the well installation program back on schedule.

With the collection of ground water samples from the VI monitoring wells, Dames & Moore has completed the scope of activities associated with the VI field work. During the next week, Dames & Moore will continue drilling soil borings and monitoring wells associated with the RFI. Dames & Moore will continue implementation of the RFI at SWMU 93 (Buried Lead Sludge Area 7), which is located in the vicinity of tank fields containing Tanks 201 through 203, 205 through 209, former Tank 210, Tank 219, Tank 226, and Tank 269. Upon completion of the RFI in these areas, Dames & Moore will mobilize to SWMU 94.

I trust that this report satisfies your requirements. If you should have any questions, please call me at (215)530-4251 or (302) 530-5512, or Ralph Golia or Eileen Snyder at (215) 657-5000.

Very truly yours,

DAMES & MOORE, INC.

Eileen M. Snyder

for Thomas J. Glancey
Project Geologist

AAW029A5

DAMES & MOORE
2360 MARYLAND ROAD, WILLOW GROVE, PENNSYLVANIA 19090
(215) 657-5000 FAX: (215) 657-5454

September 3, 1992

Chevron USA Products Company
30th Street & Penrose Avenue
Philadelphia, Pennsylvania 19145

Attention: Mr. John Harris
Environmental Department

Re: Progress Report No. 6
RCRA Corrective Actions Project
Chevron Refinery
Philadelphia, Pennsylvania
August 27 through September 2, 1992

Dear John:

This letter presents the sixth progress report to Chevron detailing the activities conducted by Dames & Moore for the RCRA Verification Investigation (VI) and RCRA Facility Investigation (RFI) at Chevron's Philadelphia Refinery. The VI involves the investigation of thirteen solid waste management units (SWMWs) situated in various locations throughout the Refinery. The RFI includes the investigation of seven SWMUs. This progress report covers the period of August 27 through September 2, 1992.

Activities were focused this week on the RFI SWMUs 91 and 92 and the VI ground water sampling program. The following presents this weeks activities.

1. Drilling Location Utility Clearance

Previously staked monitoring wells and soil boring locations in SWMU 91 and 92 were cleared of underground hazards by Bob Kijewski prior to his vacation. Well C114 which was not previously cleared, as reported last week, was installed. Soil and ground water conditions during the C114 well installation suggested that a former drain or sump may have been located near this well. However, there was no evidence in the borehole or on refinery blueprint drawings that an underground hazard was encountered.

2. Soil Boring/Subsurface Soil Sampling

A total of 33 borings were completed by Marcor (Driller) under the supervision of Dames & Moore during this week.

Fourteen borings were completed in SWMU 92 (10 with the drill rig and 4 with the tripod).

Nineteen borings were completed in SWMU 91 (9 with the drill rig and 10 with the tripod). Access to these locations required excavating portions of the containment dikes between various aboveground storage tanks. Each containment dike was rebuilt prior to the end of the work day.

The samples collected from these soil borings were submitted for laboratory analysis for Target List constituents (Table 4-1 of RFI Work Plan) and 25% were submitted for Skinner List analyses (Table 4-2 of RFI Work Plan), including VOCs, B/Ns, AEs, metals, and other inorganics. One or two samples were collected from each boring from the 2-foot intervals containing the greatest headspace measurements. Headspace analysis measurements recorded with an OVA-FID ranged from 5 to 10,000 OVA units, and measurements recorded with an OVM-PID ranged from 0.5 to 1,000 OVM units.

3. Monitoring Well Installation

MARCOR (driller) under the supervision of Dames & Moore drilled and installed two monitoring wells from August 27 through September 2, 1992. These wells (C110 and C111), were installed in SWMU 91, as part of the RFI. Each of the wells were installed using a drill rig. These wells will be sampled at a later date to provide ground water quality data in the vicinity of these SWMUs.

4. Well Development/Ground Water Sampling

The monitoring wells installed as part of the VI have been developed including the newly installed, relocated, SWMU 6 well MVI-12. Ground water sampling for the VI began on September 2 and will be completed by September 4, 1992.

5. Project Schedule and Future Activities

Dames & Moore has gained approximately two days on the schedule of field activities as projected in the Progress Report No. 5. This puts the soil boring program back on schedule and the well installation program approximately one day behind schedule.

During the next week, Dames & Moore will continue drilling soil borings and monitoring wells associated with the RFI. Dames & Moore will continue implementation of the RFI at SWMU 92 (Buried Lead Sludge Area 6), which is located in the vicinity of tank fields containing Tanks 250 and 251. Upon completion of the RFI in these areas, Dames & Moore will mobilize to SWMUs 93 and 94.

I trust that this report satisfies your requirements. If you should have any questions, please call me at (215)530-4251 or (302) 530-5512, or Ralph Golia or Eileen Snyder at (215) 657-5000.

Very truly yours,

DAMES & MOORE, INC.

Eileen M. Snyder

for Thomas J. Glancey
Project Geologist

AAW029A5

DAMES & MOORE

2360 MARYLAND ROAD, WILLOW GROVE, PENNSYLVANIA 19090
(215) 657-5000 FAX: (215) 657-5454

August 27, 1992

Chevron USA Products Company
30th Street & Penrose Avenue
Philadelphia, Pennsylvania 19145

Attention: Mr. John Harris
Environmental Department

Re: Progress Report No. 5
RCRA Corrective Actions Project
Chevron Refinery
Philadelphia, Pennsylvania
August 20-26, 1992

Dear John:

This letter presents the fifth progress report to Chevron detailing the activities conducted by Dames & Moore for the RCRA Verification Investigation (VI) and RCRA Facility Investigation (RFI) at Chevron's Philadelphia Refinery. The VI involves the investigation of thirteen solid waste management units (SWMWs) situated in various locations throughout the Refinery. The RFI includes the investigation of seven SWMUs. This progress report covers the period of August 20, 1992 through August 26, 1992.

Tom Glancey, the Dames & Moore Field Coordinator is on vacation the week of August 24, 1992. John Salvino is the acting Field Coordinator during his absence. Activities were focused this week on the RFI SWMUs 90 and 91 and completing minor VI tasks. The following presents this weeks activities.

1. Drilling Location Utility Clearance

Dames & Moore staked borings and monitoring wells in SWMU 90 and 91 during the week of August 10, 1991. SWMU 90 refers to the Buried Lead Sludge Area 5 and Storage Tanks 276, 277, 278, and 285 are located within the unit.

Two monitoring well locations C109 and C111 in SWMU 90, three monitoring well locations, C112, C113, and C114 and two boring locations, B91-8, B91-16 were not identified by Bob Kijewski (Chevron) prior to his two week leave for vacation. Mike Manigly (Chevron) suggested that we proceed with caution in these areas and continue to complete the work within the diked storage tank areas.

2. Soil Boring/Subsurface Soil Sampling

A total of 22 borings were completed by Marcor (Driller) under the supervision of Dames & Moore during this week.

Three borings were installed at SWMU 101, the Bulkhead Seepage Area located along the southwestern edge of the main plant, south of the Penrose Avenue Bridge. Two soil borings were postponed at this location for safety precautions associated with unloading activities in the area. These borings will be completed in the next few weeks.

The final boring was completed in SWMU 87 the Buried Lead Sludge Area 1 located in the northwestern part of the main plant.

Sixteen borings were completed in SWMU 90 (12 with the drill rig and 4 with the tripod) and three were completed in SWMU 91 with the tripod. Access to these locations required excavating portions of the containment dikes on the north end of SWMU 90 and between Tanks 278 and 277. The containment dike was rebuilt prior to the end of the work day.

The samples collected from these soil borings were submitted for laboratory analysis for Target List constituents (Table 4-1 of RFI Work Plan) and 25% were submitted for Skinner List analyses (Table 4-2 of RFI Work Plan), including VOCs, B/Ns, AEs, metals, and other inorganics. One or two samples were collected from each boring from the 2-foot intervals containing the greatest headspace measurements. Headspace analysis measurements recorded with an OVA-FID ranged from 10 to 10,000 OVA units, and measurements recorded with an OVM-PID ranged from 0.5 to 1,000 OVM units.

3. Monitoring Well Installation

MARCOR (driller) under the supervision of Dames & Moore drilled and installed three monitoring wells from August 20 through August 26, 1992. One monitoring well (MVI-12) was installed downgradient of SWMW 6 (Trash Incinerator), as part of the VI. The remaining two (C110 and C111) were installed in SWMU 9, as part of the RFI. All of the wells were installed using a drill rig. These wells will be sampled at a later date to provide ground water quality data in the vicinity of these SWMUs.

4. Well Development/Ground Water Sampling

All monitoring wells installed as part of the VI have been developed including the newly installed, relocated, SWMU 6 well MVI-12. Ground water sampling for the VI should commence on August 31, 1992.

5. Project Schedule and Future Activities

Dames & Moore has gained approximately two days on the schedule of field activities as projected in the Progress Report No. 4. This was due to excellent weather conditions, eliminating permitting delays, and the advanced planning of Tom Glancey and John Harris prior to their vacations.

During the next week, Dames & Moore will continue drilling soil borings and monitoring wells associated with the RFI. Dames & Moore will continue implementation of the RFI at SWMU 91 (Buried Lead Sludge Area 5), which is located in the vicinity of tank fields containing Tanks 276-278, 285, and 286. Upon completion of the RFI in these areas, Dames & Moore will mobilize to SWMUs 93 and 94.

I trust that this report satisfies your requirements. If you should have any questions, please call me at (215)530-4251 or Ralph Golia or Eileen Snyder at (215) 657-5000.

Very truly yours,

DAMES & MOORE, INC.

John N. Salvino
Project Geologist

AAW029A5

DAMES & MOORE
2360 MARYLAND ROAD, WILLOW GROVE, PENNSYLVANIA 19090
(215) 657-5000 FAX: (215) 657-5454

August 19, 1992

Chevron USA Products Company
30th Street & Penrose Avenue
Philadelphia, Pennsylvania 19145

Attention: Mr. John Harris
Environmental Department

Re: Progress Report No. 4
RCRA Corrective Actions Project
Chevron Refinery
Philadelphia, Pennsylvania
August 13-19, 1992

Dear John:

This letter presents the fourth progress report to Chevron detailing the activities conducted by Dames & Moore for the RCRA Verification Investigation (VI) and RCRA Facility Investigation (RFI) at Chevron's Philadelphia Refinery. The VI involves the investigation of thirteen solid waste management units (SWMWs) situated in various locations throughout the Refinery. The RFI includes the investigation of seven SWMUs. This progress report covers the period of August 13, 1992 through August 19, 1992.

1. Drilling Location Utility Clearance

Dames & Moore personnel staked boring and monitoring well locations within SWMUs 92, 93, 94, and 95 on August 13, 1992. SWMU 92, referred to as Buried Lead Sludge Area 6 in Chevron's RCRA Corrective Action Permit, is located in the east-central section of the Refinery in the vicinity of Tanks 243-246, 250, and 251. SWMU 93 is referred to as Buried Lead Sludge Area 7 and is located in the southeastern section of the Refinery in the vicinity of Tanks 201-203, 205-214, 219, and 226. SWMU 94 (Buried Lead Sludge Area 8) is located in the south-central section of the refinery in the vicinity of Tanks 215-218, 220, 221, and 223-225. SWMU 95 (Buried Lead Sludge Area 9) is located in the central section of the Refinery in the vicinity of former Tanks 426-440, 449, 450, 499, and 500. These locations will be cleared within the next few weeks by Bob Kijewski (Chevron) and Dames & Moore personnel.

2. Soil Boring/Subsurface Soil Sampling

A total of 14 borings were completed by MARCOR (driller) under the supervision of Dames & Moore from August 13 through August 19, 1992. Three of the borings were drilled within SWMU 89 (2031 Flare), five within SWMU 88 (7 Still), and six within SWMU 87 (6 Still). All of these SWMUs are part of the Northwestern Fill Area identified in Chevron's Corrective Action Permit.

The samples collected from these soil borings were submitted for laboratory analysis for Target List constituents (Table 4-1 of RFI Work Plan) and 25% were submitted for Skinner List analyses (Table 4-2 of RFI Work Plan), including VOCs, B/Ns, AEs, metals, and other inorganics. One or two samples were collected from each boring from the 2-foot intervals containing the greatest headspace measurements. Headspace analysis measurements recorded with an OVA-FID ranged from 200 to 5,000 OVA units, and measurements recorded with an OVM-PID ranged from 3 to 182 OVM units.

3. Monitoring Well Installation

MARCOR (driller) under the supervision of Dames & Moore drilled and installed four monitoring wells from August 13 through August 19, 1992. One monitoring well was installed downgradient of SWMW 71, as part of the VI. Two wells were installed within SWMU 88, and one well within SWMU 87, as part of the RFI. All of the wells were installed using a drill rig. These wells will be sampled at a later date to provide ground water quality data in the vicinity of these SWMUs.

4. Well Development/Ground Water Sampling

On August 19, 1992, Dames & Moore began developing the VI monitoring wells. This work should be completed on August 20, 1992, with the exception of the SWMU 6 well that will be installed upon clearance by Chevron ED&C. Ground water sampling for the VI wells should commence on August 31, 1992, and continue through September 3 or 4, 1992.

5. Project Schedule and Future Activities

The VI/RFI project is approximately one week behind schedule because of various difficulties, including obtaining work permits, rig breakdown, subsurface obstructions, and obtaining access to the tank fields associated with SWMUs 90 and 91. The VI field investigation, with the exception of the installation of the SWMU 6 well and the ground water sampling, was completed on August 13, 1992. Additionally, because existing well A24 is not situated directly downgradient of SWMU 6 as shown on the Chevron site map, Dames & Moore plans to install a well in this area. Also, the installation of the benzene/NESHAP piping in the area of SWMU 71A will prevent the installation of a monitoring in this SWMU.

During the next week, Dames & Moore will continue drilling soil borings and monitoring wells associated with the RFI. Dames & Moore will begin implementation of the RFI at SWMUs 90 and 91 (Buried Lead Sludge Areas 4 and 5), which are located in the vicinity of tank fields containing Tanks 287-292 and 300, and Tanks 276-278, 285, and 286, respectively. Upon completion of the RFI in these areas, Dames & Moore will mobilize to SWMUs 93 and 94.

I trust that this report satisfies your requirements. If you should have any questions, please call me at (215)530-4251 or Ralph Golia or Eileen Snyder at (215) 657-5000.

Very truly yours,

DAMES & MOORE, INC.

Thomas J. Glancey
Project Geologist

AAW029A5

DAMES & MOORE

2360 MARYLAND ROAD, WILLOW GROVE, PENNSYLVANIA 19090
(215) 657-5000 FAX: (215) 657-5454

August 13, 1992

Chevron USA Products Company
30th Street & Penrose Avenue
Philadelphia, Pennsylvania 19145

Attention: Mr. John Harris
Environmental Department

RE: Progress Report No. 3
RCRA Corrective Actions Project
Chevron Refinery
Philadelphia, Pennsylvania
August 6-12, 1992

Dear John:

This letter presents the third progress report to Chevron detailing the activities conducted by Dames & Moore for the RCRA Verification Investigation (VI) at Chevron's Philadelphia Refinery. The VI involves the investigation of thirteen solid waste management units (SWMWs) situated in various locations throughout the Refinery. This progress report covers the period of August 6, 1992 through August 12, 1992.

1. Drilling Location Utility Clearance

Dames & Moore personnel staked boring and monitoring well locations within SWMUs 90 & 91 on August 10 & 11, 1992. SWMU 90, referred to as Buried Lead Sludge Area 4 in Chevron's RCRA Corrective Action Permit, is located in the northeastern section of the Refinery in the vicinity of Tanks 287-292 and 300. SWMU 91 is referred to as Buried Lead Sludge Area 5 and is located in the northeastern section of the Refinery in the vicinity of Tanks 276-278, 285, and 286. These locations will be cleared within the next week by Bob Kijevvski (Chevron) and Dames & Moore personnel.

2. Surface Soil Sampling

Dames & Moore collected a total of nine surface soil samples (including duplicates) at the Refinery between August 6 and August 12, 1992. Two of the samples were collected from the Product Storage Sump (SWMU 9), three from the vicinity of the Additive Plant Drum Storage Area (SWMU 30), three in the vicinity of the former Empty Drum Storage Area (SWMU 45) and one from the

former Drum Storage Area (SWMU 79). The surface samples will be analyzed for Skinner List constituents (SWMUs 9 & 30) and Appendix IX parameters (SWMUs 45 & 79) including base/neutral (B/N) and acid extractable (AE) organic compounds, metals, and other inorganics (including sulfide and cyanide).

The samples were collected from areas exhibiting visible surface staining. Headspace analysis measurements recorded within an organic vapor analyzer (OVA) flame ionizing detector (FID) ranged from 0 to 10,000; measurements recorded with an organic vapor monitor (OVM) photoionization (PID) ranged from 0 to 250.

3. Soil Boring/Subsurface Soil Sampling

A total of 22 borings were completed by MARCOR (driller) under the supervision of Dames & Moore from August 6 through August 12, 1992. One of the borings was drilled within SWMU 9, three within SWMU 30, two within SWMU 45, two in the vicinity of SWMU 79, four within SWMUs 11/12 (Past Lagoon A; previous crude oil topping unit), six within SWMU 71 (Past Lagoon B), two within SWMU 71A (Past Lagoon B addition), and two within SWMU 29 (Tank 200 Past Lagoon).

The samples were submitted for laboratory analysis for Skinner List constituents and Appendix IX parameters (SWMUs 45 & 79), including volatile organic compounds (VOCs), B/Ns, AEs, metals, and other inorganics. One sample was collected from each boring from the 2-foot interval directly above the water table. Headspace analysis measurements recorded with an OVA-FID ranged from 0 to 10,000, and measurements recorded with an OVM-PID ranged from 0 to 56.

4. Monitoring Well Installation

MARCOR (driller) under the supervision of Dames & Moore drilled and installed six monitoring wells from August 6 through August 12, 1992. One monitoring well was installed downgradient of each of SWMWs 9, 29, 45, 79, 30, 11/12. All of the wells were installed using a drill rig with the exception of the well installed within SWMU 9 which was drilled with a tripod rig due to very limited accessibility. These wells will be sampled at a later date to provide ground water quality data in the downgradient vicinity of these SWMUs.

5. Project Schedule and Future Activities

The VI is approximately three days behind schedule because of various difficulties, including obtaining work permits, rig breakdown, subsurface obstructions, and the drilling of the SWMU 9 well which took approximately two days. The VI, with the exception of ground water sampling and the installation of two monitoring wells, was completed on August 12, 1992.

During the next week, Dames & Moore will begin drilling soil borings and monitoring wells associated with the RFI. Dames & Moore will begin implementation of the RFI at SWMUs 87, 88 and 89 (the Northwestern Fill Area), which are located in the vicinity of 6 Still, 7 Still, and 2031 Flare Unit, respectively. Upon completion of the RFI in these areas, Dames & Moore will mobilize to SWMU 90 and 91.

I trust that this report satisfies your requirements. If you should have any questions, please call me at (215)530-4251 or Ralph Golia or Eileen Snyder at (215) 657-5000.

Very truly yours,

DAMES & MOORE, INC.

Eileen M. Snyder

for Thomas J. Glancey
Project Geologist

AAW029A5

DAMES & MOORE

[illegible] ROAD, WILLOW GROVE, PENNSYLVANIA [illegible]
(215) 657-3000 FAX (215) 657-[illegible]

August 5, 1992

Chevron USA Products Company
30th Street & Penrose Avenue
Philadelphia, Pennsylvania 19145

Attention: Mr. John Harris
Environmental Department

RE: Progress Report No. 2
RFI/VI Project
Chevron Refinery
Philadelphia, Pennsylvania
August 3-5, 1992

Dear John:

This letter presents the second progress report to Chevron detailing the activities conducted by Dames & Moore for the RCRA Verification Investigation (VI) at Chevron's Philadelphia Refinery. The VI involves the investigation of thirteen solid waste management units (SWMWs) situated in various locations throughout the Refinery. This progress report covers the period of August 3, 1992 through August 5, 1992.

1. Site Kick-off Meeting

On August 3, 1992, a kick-off meeting was held at the Dames & Moore site trailer located at the Refinery. The field personnel, including those from Dames & Moore and MARCOR (driller), were briefed on the VI scope-of-work, health & safety, and process safety management. In addition, Refinery processes, rules, and regulations were also discussed.

2. Surface Soil Sampling

Dames & Moore collected a total of eight (8) surface soil samples at the Refinery between August 3 and August 5, 1992. Three of the samples were collected from the Empty Lube Oil Drum Storage Area (SWMU 1), two from the vicinity of the former trash incinerator (SWMU 6), and two in the vicinity of Tanks 357 and 358 (SWMUs 16 & 17). All eight of the surface samples will be analyzed for Skinner List constituents including base neutral (B/N) and acid extrable (AE) organic compounds, metals, and other inorganics (including sulfide and cyanide).

The samples were collected from areas exhibiting visible surface staining. Headspace analysis measurements recorded within an organic vapor analyzer (OVA) flame ionizing detector (FID)

ranged from 0 to 65, and measurements recorded with an organic vapor monitor (OVM) photoionization detector (PID) ranged from 0 to 47. In general, these headspace measurements are relatively low compared to other headspace analysis data recorded elsewhere at the Refinery.

3. Soil Boring/Subsurface Soil Sampling

A total of 17 borings were completed by MARCOR (driller) under the supervision of Dames & Moore from August 3 through August 5, 1992. Three of the borings were drilled within SWMU 1, four within SWMU 6, four within SWMU 17, and two in the vicinity of Tank 355 (SWMU 13). The samples were submitted for laboratory analysis for Skinner List constituents, including volatile organic compounds (VOCs), B/Ns, AEs, metals, and other inorganics. One sample was collected from each boring from the 2-foot interval directly above the water table. Headspace analysis measurements recorded with an OVA-FID ranged from 100 to 10,000, and measurements recorded with an OVM-PID ranged from 50 to 200.

4. Monitoring Well Installation

MARCOR (driller) under the supervision of Dames & Moore drilled and installed three monitoring wells from August 3 through August 5, 1992. One monitoring well was installed downgradient of each of SWMWs 1/2, 16/17, and 13. These wells will be sampled at a later date to provide ground water quality data in the downgradient vicinity of these SWMUs.

5. Project Schedule and Future Activities

The VI is approximately one day behind schedule because of various difficulties, inlcuding obtaining work permits. However, with the exception of ground water sampling, the VI should be completed by August 10 or 11, 1992.

During the next week, Dames & Moore will be completing the drilling of soil borings and monitoring wells with the VI SWMUs. Dames & Moore will also begin implementation of the RFI at SWMU 87, 88 and 89 (the Northwestern Fill Area), which are located in the vicinity of 6 Still, 7 Still, and 2031 Flare Unit, respectively.

I trust that his report satisfies your requirements. If you should have any questions, please call me at (215)530-4251 or Ralph Golia or Eileen Snyder at (215) 657-5000.

Very truly yours,

DAMES & MOORE, INC.

Eileen M. Snyder

for Thomas J. Glancey
Project Geologist

AAW029A5

DAMES & MOORE
2360 MARYLAND ROAD, WILLOW GROVE, PENNSYLVANIA 19090
(215) 657-5000 FAX: (215) 657-5454

July 30, 1992

Chevron USA, Inc.
30th and Penrose Avenue
Philadelphia, Pennsylvania 19145

Attention: John Harris

Re: Progress Report No. 1
RFI/VI
Chevron Refinery
Philadelphia, Pennsylvania

Dear John:

This letter presents the first progress report to Chevron detailing activities related to the implementation of the RFI/VI that is being conducted at the refinery. This progress report covers the period of July 20, 1992, through July 31, 1992.

1. Kick-Off-Meeting

On July 20, 1992, a kick-off meeting was held at the refinery between representatives of Chevron, Dames & Moore, MARCOR (driller), and Penoni Associates (surveyor). Halliburton NUS (laboratory) was not able to attend this meeting, however, Dames & Moore met with them on July 23, 1992.

2. Drilling Location Utility Clearance

Dames & Moore staked boring, monitoring well, and soil gas locations within all of the VI SWMUs and several RFI SWMUs at the site on July 21 and July 22, 1992. These locations were cleared during the week of July 27 through July 31, 1992, by Bob Kijewski (Chevron) and Dames & Moore personnel.

3. Mobilization

On July 27, 1992, Dames & Moore mobilized their equipment, supplies and trailer at the site.

4. RFI/VI Soil Gas Survey Results

Five soil gas surveys were performed by Dames & Moore at the Chevron Refinery from July 27 through July 29, 1992. The soil gas surveys were completed in the following areas:

- Container Storage Area (SWMU 11)
- Tank T-844 (SWMU 29)
- Separator No. 4/Tank 1136 (SWMU 71A)

- 7 Still (SWMU 88)
- Separator No. 3/2031 Flare (SWMU 89)

The surveys were conducted by penetrating the gravel surface in these areas with a one-inch stainless steel rod to a depth of approximately 4 feet (in some cases 6 feet) and withdrawing a soil gas sample via peristaltic pump. Each soil vapor sample was monitored with an organic vapor analyzer (OVA) equipped with a flame ionization detector (FID), and analyzed using a gas chromatograph (GC) equipped with a photoionization detector (PID). Because of probe refusal or the presence of surface/perched water, six soil gas samples were not obtained from locations within SWMU 88 (7 Still).

A preliminary review of the soil gas data indicates that petroleum hydrocarbons are present in the subsurface within each of the five areas of investigation. In most cases, the OVA-FID screening showed that concentrations of volatile compounds in the subsurface soil gas exceeded 10,000 parts per million (ppm). The GC analyses indicated that the subsurface soil gas primarily consisted of light-end volatile compounds with higher vapor pressures and thus, lower boiling points, than toluene. A detailed evaluation of the GC chromatograms has not been conducted, but it appears that most of GC fingerprints resemble those characteristic of gasoline.

5. Process Safety Meeting

On July 30, 1992, a meeting was held at Dames & Moore in Willow Grove, Pennsylvania to discuss process safety as required by Chevron USA.

6. Future Activities

During the next week, Dames & Moore will be supervising the drilling of soil borings and monitoring wells within all of the VI SWMUs.

I trust that this report satisfies your requirements. If you should have any questions or comments, please do not hesitate to contact me.

Very truly yours,

DAMES & MOORE, INC.

Thomas J. Glancey
Project Geologist

TJG:jw
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