From: Lin, Sharon
Location: EPA will call Asha
Importance: High
Subject: Canceled: TORRANCE REFINERY TP
Start Date/Time: Mon 11/21/2016 9:30:00 PM
End Date/Time: Mon 11/21/2016 10:00:00 PM

Hi, Asha,

Thanks for the TP information. Kandice and I will call you on Monday to discuss. Thanks.

sharon

To: Crossland, Andy[Crossland.Andy@epa.gov]; Jones, Joel E.[Jones.Joel@epa.gov]; Schofield, John[Schofield.John@epa.gov]
Cc: McDaniel, Doug[McDaniel.Doug@epa.gov]; Minor, Dustin[Minor.Dustin@epa.gov]; Sugerman, Rebecca[Sugerman.Rebecca@epa.gov]; Saenz, Diana[Saenz.Diana@epa.gov]; Stephanos, Ann[Stephanos.Ann@epa.gov]; Bellamy, Kandice[Bellamy.Kandice@epa.gov]; Moore, Letitia[Moore.Letitia@epa.gov]; Vega, Jackie[Vega.Jackie@epa.gov]
From: Lin, Sharon
Sent: Mon 9/19/2016 5:46:45 PM
Subject: RE: Valero Case Discussion
ValeroBenicia HEB Pad NEIC Inspection Photos.pdf

Hi, Thanks for setting up the meeting. I am attaching the Valero Benicia Heat Exchanger Bundle Cleaning Pad pictures in the NEIC investigation report, so folks can get a visual of what NEIC observed on the day of EPA's inspection. Hope this helps.

Look forward to the call.

Sharon

-----Original Appointment-----
From: Crossland, Andy
Sent: Monday, September 19, 2016 8:55 AM
To: Jones, Joel E.; Schofield, John
Cc: McDaniel, Doug; Minor, Dustin; Sugerman, Rebecca; Saenz, Diana; Stephanos, Ann; Lin, Sharon; Bellamy, Kandice; Moore, Letitia
Subject: Valero Case Discussion
When: Monday, September 26, 2016 1:00 PM-2:00 PM (UTC-05:00) Eastern Time (US & Canada).
Where: Greg's office

This looked like the closest we could come to a quorum in the short term. I hope most folks can make it!
-Andy

Call in: 866-299-3188; Code: 202-564-0574#

To: Arora, Asha@DTSC[Asha.Arora@dtsc.ca.gov]
Cc: Bellamy, Kandice[Bellamy.Kandice@epa.gov]; Wu, Brian@DTSC[Brian.Wu@dtsc.ca.gov]
From: Lin, Sharon
Sent: Fri 12/9/2016 7:36:58 PM
Subject: FW: Question - Selenium Treatment Unit at Torrance Refinery Centrifuge
Selenium Treatment Unit Process Flow Diagram.pdf

Forgot to mention the selenium wastewater going into the first tank is a characteristic waste (>1ppm for Selenium TCLP).

sharon

From: Lin, Sharon
Sent: Friday, December 09, 2016 11:32 AM
To: 'Arora, Asha@DTSC' <Asha.Arora@dtsc.ca.gov>
Cc: Bellamy, Kandice <Bellamy.Kandice@epa.gov>; 'Wu, Brian@DTSC' <Brian.Wu@dtsc.ca.gov>
Subject: Question - Selenium Treatment Unit at Torrance Refinery Centrifuge

Hi, Asha,

We inspected the Torrance refinery this week (Kandice, Brian Wu and I). I have a question on the selenium treatment unit. It appears from the information that I had received from you, that the CA-1 unit only includes three tanks. The three tanks are the Oxidation Tank, Reactor/Clarifier and Thickener (see attached process flow diagram). The tanks are managed by the refinery. There is also a dewatering process after the thickener which is a two phase centrifuge (polymer is also added during this centrifuge process). The solids after the centrifuge are shipped off site in roll off bins as California Hazardous wastes. The water returns back to the thickener for reprocessing. The centrifuge operation is managed by the refinery's contractor, PSC.

My question for you is whether the 2-phase centrifuge should have some type of permit coverage. Please advise. Thanks.

sharon

To: Arora, Asha@DTSC[Asha.Arora@dtsc.ca.gov]
Cc: Bellamy, Kandice[Bellamy.Kandice@epa.gov]; Wu, Brian@DTSC[Brian.Wu@dtsc.ca.gov]
From: Lin, Sharon
Sent: Fri 12/9/2016 7:32:27 PM
Subject: Question - Selenium Treatment Unit at Torrance Refinery Centrifuge
Selenium Treatment Unit Process Flow Diagram.pdf

Hi, Asha,

We inspected the Torrance refinery this week (Kandice, Brian Wu and I). I have a question on the selenium treatment unit. It appears from the information that I had received from you, that the CA-1 unit only includes three tanks. The three tanks are the Oxidation Tank, Reactor/Clarifier and Thickener (see attached process flow diagram). The tanks are managed by the refinery. There is also a dewatering process after the thickener which is a two phase centrifuge (polymer is also added during this centrifuge process). The solids after the centrifuge are shipped off site in roll off bins as California Hazardous wastes. The water returns back to the thickener for reprocessing. The centrifuge operation is managed by the refinery's contractor, PSC.

My question for you is whether the 2-phase centrifuge should have some type of permit coverage. Please advise. Thanks.

sharon

To: Nelson, Cheryl[Nelson.Cheryl@epa.gov]
Cc: Gorini, Kelly[Gorini.Kelly@epa.gov]; Chaudhari, Narendra[Chaudhari.Narendra@epa.gov]; Kirkland, Kim[Kirkland.Kim@epa.gov]
From: Elliott, Ross
Sent: Wed 9/30/2015 1:59:20 PM
Subject: RE: ACTION; Would like your opinion on potential Petroleum Refinery K-listed waste
F037 F038 final rule.pdf
f037_f038_bkgnd.pdf

Quick, initial reaction is that the approach taken in the spreadsheet appears correct and reasonable for answering this kind of question. To independently confirm whether or not the conclusions are themselves correct and reasonable, would require a bit of research (i.e., the statements that particular equipment was not in use during the period of operation, etc.). I honestly don't know when heat exchange bundles, hydrotreating catalysts, API separators, etc., first came into service, but that would be how one might verify the conclusions. Again, the approach being used appears reasonable.

I did not see reference to F037 and F038, which are also petroleum refinery waste codes, related to sludges from primary wastewater treatment (as distinguished from biological treatment, often referred to as 'secondary' treatment). As used in the listings, however, 'primary' (F037) and 'secondary' (F038) refer to two phases of what amounts to primary treatment (i.e., oil/water/solids separation). Actually, EPA's stated goal in adding these two listings was to broaden the scope of regulated WWT sludges beyond those sludges defined by the equipment being used (API separator, DAF float). Does that mean any soil dug up from what were former wastewater treatment trenches or ponds, is F037 or F038? That is a site-specific call, perhaps one that is less easily made by simply pointing to the absence of a technology. But it certainly is not automatic, either. One would have to walk through the same process to make a determination one way or the other. I have attached some info that might be helpful for whomever might be looking at this further. Sorry I could not be of more help…antique petroleum refining is not my area!

From: Nelson, Cheryl
Sent: Wednesday, September 23, 2015 8:14 PM
To: Elliott, Ross
Cc: Gorini, Kelly
Subject: ACTION; Would like your opinion on potential Petroleum Refinery K-listed waste

Hi Ross-

I wonder if I might ask your opinion on something that the State of California has asked me? They are working on a clean-up/re-development of a site that was a former petroleum refinery in the late 1800's. The site soil is contaminated with various constituents. They are trying to determine if, when the soil is dug up (e.g. "generated") if it potentially could be deemed to "contain" a listed hazardous waste per EPA's contained in policy? (The plan for redevelopment is for housing and it appears that at least some of soil will be removed from the site to accommodate the development).

They provided some information (see email below and attached files). The attached excel spreadsheet came from a consultant with a local city (who is a party to the redevelopment) who concluded that the contaminated soils could not "contain" any of the listed hazardous wastes. In the spreadsheet he goes through each potential K-listing for petroleum listed wastes and makes an argument/justification on why it couldn't be listed. His analysis seems reasonable to me, but I am not a refinery "expert". I was wondering your opinion on if his analysis looks reasonable?

At a minimum, the overseeing regulatory agency will require the owner/developer to "make a waste determination under RCRA" for the soil that will be dug up and disposed offsite. But they wanted to get a sense if it's ***probable*** that any of the contaminated soils would be listed hw.

BTW- The state agency that is asking for our opinion is the overseeing regulatory agency for this site but is NOT the state agency who is authorized for the RCRA program. Long story…but essentially the RCRA authorized state agency punted this to EPA ☺.

Thanks for any insight you have on this one!

Cheryl Nelson

Manager Planning & State Development Office
Land Division

US EPA Region 9

75 Hawthorne Street, LND-1-1

San Francisco, CA 94105

415-972-3291

415-947-3530 (fax)

From: Hashimoto, Yemia@Waterboards [mailto:Yemia.Hashimoto@Waterboards.ca.gov]
Sent: Tuesday, September 22, 2015 2:45 PM
To: Nelson, Cheryl
Subject: Additional information on the Tarry Refinery Waste (TRW) at Alameda Point

Cheryl,

We spoke last week about determining if the tarry refinery waste at Alameda Point may be considered listed. I understand that my supervisor, David Elias, contacted you yesterday for further information. He suggested that I provide you an email with some additional details on the tarry refinery waste (TRW).

Attached are the figures and tables with the data.

The following samples are WITHIN the area containing TRW:

AP13-007

AP13-008

AP13-041

AP13-043

AP13-044

AP13-093

AP13-094

The sample with the high benzene, AP13-148, is outside the TRW area. Based on those 7 soil samples listed above, the analytical does not seem to show hazardous waste concentrations. My supervisor is concerned that the material may be a listed waste. Attached in excel is a list of the potential listed wastes it could be and a summary of why the City of Alameda's consultant does

NOT consider any of the categories to suffice.

Additional text from that investigation report concludes that the material is not very mobile. I've attached information on the history and the material characteristics below, if you need additional information:

THE PROCESS by WHICH TRW GENERATED AND DISPOSED

Petroleum refinery operations in the late 1800s consisted of

distilling crude oil to kerosene and fuel oil. Wastes from this type of operation would be

expected to include heavier-end hydrocarbons that weather to an asphaltic-like

consistency. The type and quantity of wastes and location of disposal are not

documented; however, it is reasonable to hypothesize that the refinery wastes and

asphaltic residues were disposed of at the site, the surrounding tidal lands, and the native

sediments of San Francisco Bay (SulTech, 2005a).

HISTORICAL SHORELINE

Additionally, in the area where TRW has been observed at the surface is proximal to the

historic shoreline of San Francisco Bay and may have been a preferred area for the

disposal of TRW at the time of the operation of the refinery, and may represent the top of

piled waste.

TRW COMPOSITION

The horizontal and vertical extent of TRW at OU-2A has been defined by the

advancement of 182 SCAPS LIF pushes and the collection and analysis of 16 soil samples. The extent of TRW as interpreted by three dimensional modeling is graphically depicted on Figure 5-6. Based upon the results of the investigation and previous investigations at the site, the TRW contains very low volatile or semi-volatile fraction as expected from a refinery waste that has been in-place for over 100 years. The TRW appears to be mainly comprised of solid long chain alkanes, and it appears the low pH conditions reported in previous investigations is localized and may have been removed during previous removal actions of trenching operations at the site.

MORE DETAILS ON CONSTITUENTS IN TRW

The laboratory results for samples collected from the area inferred to contain TRW during this investigation (AP13-07-S-02, AP13-41-S-01, and AP13-43-S-02) reported or estimated relatively lower VOCs and PAHs, specifically benzene and PAHs as Benzo(a)pyrene equivalents, than soil samples collected to evaluate elevated LIF in the non-TRW petroleum impacted area to the east adjacent to LIF pushes AP13-148, -169, and -170. The relative lack of elevated benzene and PAHs is consistent with the presumed origin and age of the TRW deposition. Benzene was not produced as a petroleum distillate during the time period of the operation of the former refinery.

WHETHER THE TRW CAN FLOW

Soil samples collected and analyzed to assess the potential for TRW mobility did not reveal density data that conclusively shows the in-place TRW is currently mobile. Visual observations of the TRW at the surface within IR Site 13 during the timeframe of this

investigation (Fall and Winter 2007) did not reveal any trends in TRW mobility.

Thank you for all your assistance.

Yemia Hashimoto, PG, CHG

Engineering Geologist

SF Bay Regional Water Board

1515 Clay Street, Suite 1400

Oakland, CA 94612

(510)622-2756

Water Boards

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Parts 261, 271, and 302

[FRL-3807-1]

RIN 2050-AB70

Hazardous Waste Management Systems: Identification and Listing of Hazardous Waste; CERCLA Hazardous Substance Designation—Petroleum Refinery Primary and Secondary Oil/Water/Solids Separation Sludge Listings (F037 and F038)

AGENCY: Environmental Protection Agency.

ACTION: Final rule.

SUMMARY: The Environmental Protection Agency (EPA) is today promulgating regulations under the Resource Conservation and Recovery Act (RCRA) to add two wastes to the list of hazardous wastes under 40 CFR 261.31. These wastes, designated F037 and F038, are generated in the separation of oil/water/solids from petroleum refinery process wastewaters and oily cooling wastewaters.

EPA is also amending Appendix VII of 40 CFR 261 to add the organic and inorganic constituents for which these wastes are listed. In addition, EPA is adding these wastes to the list of hazardous substances under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and setting their reportable quantities at the statutory level of one pound.

EPA is taking this action because these wastes, when improperly treated, stored, transported, disposed of, or otherwise managed, are potentially capable of posing a substantial hazard to human health or the environment. Today's rulemaking will extend RCRA and CERCLA coverage to all oil/water/solids separation sludges and floats generated from wastewaters from petroleum refineries regardless of the type of device used to separate the wastes from the process wastewaters and oily cooling wastewaters and regardless of where treatment takes place.

The effect of listing these wastes will be to subject them to the hazardous waste regulations of 40 CFR 124, 262 through 266, 270, and 271 of this Chapter; the notification requirements of section 3010 under RCRA; and the notification requirements of section 103 under CERCLA.

EFFECTIVE DATE: This final rule is effective May 2, 1991.

ADDRESSSES: The official record for this rulemaking is identified as Docket Number F-90-PTSF-FFFFF and is located in the EPA RCRA Docket, Room M2427, 401 M Street SW., Washington, DC 20460. The docket is open from 9 a.m. to 4 p.m., Monday through Friday, except Federal holidays. To review docket materials, the public must make an appointment by calling (202) 475-9327. The public may copy a maximum of 100 pages of material from any one regulatory docket at no cost; additional copies cost $0.15 per page.

FOR FURTHER INFORMATION CONTACT: For general information about this rulemaking contact the RCRA/Superfund Hotline at (800) 424-9346 or (202) 382-3000. For technical information, contact John Austin, Office of Solid Waste (WH-562), U.S. Environmental Protection Agency, 401 M Street SW., Washington, DC 20460 or by telephone at (202) 382-4789. For further information on the CERCLA portions of this rule, contact Barbara Hostage, Office of Emergency and Remedial Response (WH-548), U.S. Environmental Protection Agency, 401 M Street SW., Washington, DC 20460; (202) 382-2198.

SUPPLEMENTARY INFORMATION:

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I. Background

With the promulgation of today's listings, the EPA reaches the last stage in a ten-year Agency commitment to list as hazardous waste under section 3001 of the Resource Conservation and Recovery Act (RCRA), as amended, all sludges generated in the primary treatment of process wastewaters and oily cooling wastewaters in the petroleum refining industry. The objective of this protracted dialogue with the public and regulated community has been to ensure

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equivalent regulatory treatment for all sludges of similar composition. As EPA has explained from the beginning of this process, the sludges proposed for listing as hazardous are those generated from primary, not secondary wastewater treatment. The search for language to express this intention and the effort to dispel confusion about the scope of the listings, however, has proved a challenging exercise for the Agency.

Todays decision to list primary treatment sludges does not constitute a decision not to list wastes from secondary wastewater treatment. The Agency maintains that secondary biological sludges were not within the scope of the proposed listings. Such sludge may warrant listing, but EPA has not fully studied it nor provided notice of any intended listings of the secondary (biological) sludges. The limited data (noticed in 53 FR 12162) and engineering knowledge available to the Agency suggest that there are differences in the composition and level of constituents in secondary (biological) sludges, when compared to primary treatment sludges.

On May 19, 1980, as part of its final and interim final regulations implementing section 3001 of RCRA, EPA published a list of hazardous wastes (40 CFR 261.32 Subpart D), which included five wastes generated by the petroleum refining industry (see 45 FR 33123). Among these were the following:

—"Dissolved Air Flotation (DAF) Float from the Petroleum Refining Industry" (K048); and

—"API Separator Sludge from the Petroleum Refining Industry" (K051).

The other three petroleum refining wastes included slop oil emulsion solids (K049), heat exchanger bundle cleaning sludge (K050), and leaded tank bottoms (K052). These five listings were promulgated in final form on November 12, 1980 (45 FR 74884).

The K048 and K051 wastes are generated in units used for the primary treatment of process wastewater and oily cooling wastewaters at petroleum refineries. Petroleum refining industry wastewater is treated in two phases: primary treatment and secondary (biological) treatment.

Primary treatment is distinguished by the physical and/or chemical separation of oil, water and solids from the wastewater stream. Primary treatment is conducted in two stages: (1) Primary (gravitational) oil/water/solids separation, and (2) secondary (emulsified) oil/water/solids separation.[1]

Secondary biological treatment follows primary treatment. Secondary treatment relies on microorganisms to digest and degrade dissolved oil and soluble biodegradable wastewater pollutants to levels suitable for reuse or discharge. While there may be some incidental biological degradation during primary treatment [2], secondary treatment is distinguished from primary treatment by active measures to promote and increase naturally occurring biological activity. Active biological treatment requires agitation of the wastewater to ensure an oxygen-rich environment for efficient microbial degradation of pollutants. Biological units include activated sludge units, trickling filters, rotating biological contactors and other units employing active measure to increase biological processes.

Subsequent to the May 19, 1980, proposed listings of the petroleum refining wastes, the Agency received a petition from Envirex, Inc., requesting that the Agency amend the K048 and K051 listings because they were underinclusive and specific to particular types of equipment, i.e., the DAF and API separators. Envirex asked that EPA amend the listings to list as hazardous all those petroleum refining sludges resulting from primary or secondary oil/water/solids separation regardless of the equipment or process used in the separation step because all such sludges would be similar in composition. Envirex cited EPA's Effluent Guidelines Development Document for the petroleum refining category [3] as support for the contention that other processes and equipment produced a similar solids residue.

After evaluating the rulemaking petition, the Agency proposed (on November 2, 1980, at 45 FR 74893) that the K051 and K048 listings be amended to read, respectively: "Primary oil/water/solids separation sludge in the petroleum refining industry"; and "Secondary (emulsified) oil/water/solids separation sludge in the petroleum refining industry." EPA tentatively concluded that the K051 and K048 listings were too narrow and that they omitted other petroleum wastes, generated in processes and equipment other than API separators and DAF equipment, with composition similar to the listed wastes. Consequently, the Agency proposed to amend the listings to reflect the hazardous character of the wastes and to include all oily separation sludges generated in the physical or chemical treatment of petroleum refinery wastewaters, regardless of the specific type of separation unit or process used.

Commenters on the 1980 proposal raised a number of concerns emphasizing two major issues. First, they believed the proposed amendment to the K048 listing was unclear and, as a result, the proposal could be read to apply equally to secondary (biological) treatment sludges, and not just to primary treatment systems using primary and secondary oil/water/solids separation equipment and processes. Second, commenters believed that the Agency had not demonstrated that the various categories of units potentially subject to the expanded listing contained lead and chromium—the hazardous constituents on which the listings were based—at levels of concern.

To address these issues, the Agency embarked on a comprehensive review of petroleum refining wastewater treatment processes and a waste characterization effort to further substantiate the bases for the expansion of the listings. For example, EPA gathered data on the levels of toxic inorganic and organic hazardous constituents that would be found in the wastes subject to the proposed listing. As part of this effort, the Agency also conducted extensive work to improve the precision and accuracy of methods for the analysis of organic constituents in oily wastes.

On November 8, 1984, the Hazardous and Solid Waste Amendments of 1984 (HSWA) were enacted. Section 3001(e)(2), one of the many provisions added by HSWA, directed EPA to make a decision on whether to list as hazardous, several wastes, including refining wastes. HSWA also prohibits the land disposal of certain hazardous wastes that have not been treated to specified levels. It requires the Agency to set levels or methods of treatment that substantially diminish the toxicity of the waste or substantially reduce the likelihood of migration of hazardous constituents from the waste so that threats to human health and the environment are minimized. Hazardous wastes that meet the treatment standards are not prohibited and may be disposed in a land disposal facility

[1] The preamble uses the terms "primary oil/water/solids separation" and "secondary oil/water/solids separation" to distinguish these stages of primary treatment (sedimentation, flocculation) from secondary biological treatment. For further discussion see April 13, 1988 Notice of Data Availability in this rulemaking. 53 FR 12162, 12164–65.

[2] To the extent that biological matter is present in the wastewater during primary treatment, biological activity will occur, though at a low level.

[3] Development Document for Effluent Limitations, Guidelines and Standards for the Petroleum Refining Point Source Category (EPA 440/1-82/014) October, 1982.

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meeting the requirements of subtitle C of RCRA. Under EPA regulations, the treatment standards are based on the performance of the best demonstrated available technologies (BDAT) to treat the waste. For a waste identified or listed after HSWA was enacted, HSWA provides that the Agency has 6 months to determine whether to prohibit the waste from one or more methods of land disposal and promulgate BDAT standards simultaneously with any prohibitions. RCRA 3004(g)(4), 3004(m)(1).[4]

Based on the Agency's data gathering effort, a Notice of Data Availability was published in the **Federal Register** on February 11, 1985 (50 FR 5637), presenting data collected from 1981 to 1984 from petroleum refining wastewater treatment systems. The compositional data identified the types and concentrations of organic and metal constituents detected in sludges and floats from the following types of units and sources:

- storm runoff ponds
- primary settling ponds
- flocculation tanks
- sumps
- emulsion tanks
- induced air flotation tanks
- evaporation ponds
- equalization ponds
- primary clarifiers
- cleaning chemical pits
- ponds with an oil skimmer

The data showed that sludges from these various sources contain lead and chromium at levels similar to the levels found in sludges from DAF units (K048) and API separators (K051). In addition, benzene and toluene were detected in the sludges at concentrations as high as 4,600 and 11,000 ppm, respectively (dry weight basis). Specific polynuclear aromatic hydrocarbons (PAHs), such as benzo(a)pyrene, chrysene, and pyrene were also detected at maximum concentrations ranging between 600 and 1,700 ppm (dry weight basis).

Commenters were uncertain about the scope of the listing description "secondary (emulsified) oil/water/solids separation sludge" and indicated confusion about its applicability to secondary (biological) treatment sludges. The Agency also reaffirmed that the scope of any final listings. EPA explained that the final listings would apply only to wastes from primary wastewater treatment processes (which include both primary and secondary oil/water/solids separation units), and not to wastes from secondary (*i.e.*, biological) wastewater treatment processes, such as biological oxidation sludges. In addition, EPA identified activated sludge and trickling filters as specific examples of biological wastewater treatment processes that generate sludges that were not proposed for listing. The notice also solicited comments on the replacement of the K048 and K051 listings with a single, consolidated listing of "sludge from primary wastewater treatment in the petroleum refining industry."

The Agency received comments on the 1985 Notice of Data Availability stating that the scope of the listing continued to be unclear and controversial. Much of the debate centered on the inclusion of "incidentally" generated sludge in the listing.[5] These comments reflect the challenges the Agency has faced in crafting the listing definitions finalized today so as to distinguish clearly the second step of primary wastewater treatment from secondary treatment. Specifically, many refineries use a series of settling/oxidation ponds in their wastewater treatment system. Whether these ponds are primary wastewater treatment units performing secondary oil/water/solids separation or are secondary (biological) treatment units depends on (a) the efficiency of the primary treatment units preceding the ponds, and (b) the refinery's effectiveness in keeping suspended and emulsified oil out of the units.

As a result of the comments received in the 1985 Notice, the Agency conducted additional sampling and analysis in order to characterize the differences between settling/oxidation ponds used for secondary oil/water/solids separation and those performing secondary (biological) treatment. EPA sought to identify an indicator parameter to correlate the wastewater treatment system's transition from oil/water/solids separation to predominantly biological treatment. Such an indicator would clearly distinguish biological—and therefore non-listed—secondary treatment sludge from primary treatment sludge. The Agency evaluated a number of alternatives to incorporate this type of indicator parameter in the listing definition (a) to distinguish between secondary separation sludges and secondary treatment (biological) sludges and (b) to ensure that wastewater treatment units that were clearly performing biological oxidation would not be regulated as hazardous waste treatment units by this listing.

The American Petroleum Institute (API), whose membership includes a significant number of petroleum refineries likely to be affected by today's action, expressed considerable interest in this approach to resolving confusion over the scope of the listing. At the Agency's request, API provided information on phenolic removal efficiencies (percent removal of total phenolic compounds in the wastewater) achieved in different types of wastewater treatment units. Specifically, API provided data that suggested that a total phenolic removal efficiency of 80 percent or higher for a given unit would indicate that biological treatment of the wastewaters had occurred. Because only minimal levels of biological treatment occur in primary treatment units,[6] API believed this test would offer a clear indication of when secondary (biological) treatment had commenced in a particular system. Thus, API suggested that EPA distinguish listed primary separation wastes from secondary biological sludges by phenolic removal efficiency.

Believing that the API proposal had merit, the Agency initiated another sampling program in the fall of 1987 to validate the phenolic removal efficiency data provided by API. As part of that sampling effort, the Agency also collected information on the oil, water, and solids contents of the sludges. The Agency published a Notice of Data Availability on April 13, 1988, describing the data collected (53 FR 12182). The 1988 Notice also restated the Agency's definitions of primary oil/water/solids and secondary oil/water/solids separation sludges and of segregated stormwater units. EPA again sought to explain the scope of the proposed listings by restating its intention in the proposed listings to extend regulatory coverage to all primary wastes with composition similar to wastes generated from processes and equipment other than API separators and DAF equipment

[4] Under RCRA section 3004(g)(5), EPA must prohibit a method of hazardous waste disposal unless the Administrator finds the method will be protective of human health and the environment for as long as the waste remains hazardous.

[5] Today's preamble contains references to "intentionally" and "incidentally" generated sludges. Commenters used these terms to distinguish sludges that were deposited in a device designed to remove oil and solid wastes "intentionally" (the commenters cited an API separator in this regard) from those sludges that were deposited "incidentally" in devices designed for another function (the commenters cited sump and flow equalization sludges as examples). As this preamble makes clear, the Agency views the distinction as irrelevant for purposes of the listing because of the absence of any demonstration that sludge composition is different.

[6] Primary treatment units separate oil/water/solids through physical and chemical processes and any biological activity is incidental to active separation processes.

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(K051 and K048). The Agency also reaffirmed that only sludges and floats generated in the primary and secondary oil/water/solids separation stage of primary wastewater treatment were subject to the proposed listings.

The Agency recognized that some of the commenters in certain cases still had difficulty under the language of its proposed listings in distinguishing secondary separation sludge units from secondary (biological) units.[7] The Agency explained that it had not itemized the factors distinguishing the two because the distinction was clear at most refineries. In the case of inadequate primary treatment, primary treatment might be prolonged so as to make it difficult to pinpoint clearly those units in which biological treatment was taking place.

> Failure to remove oils and emulsions prolongs the primary treatment process since the presence of significant quantities of oil in the wastewaters inhibits bacterial growth and delays the onset of biological treatment. As a consequence, multiple units covering many acres may be used for primary treatment. Past and present data demonstrate that regardless of the number of acres and/or units dedicated to primary treatment, all units will continue to generate sludges which are similarly composed to the currently listed wastes. Because only the primary treatment units are covered by the original proposal, it is critical that individual refineries have a clear picture of where biological treatment commences in their systems. 52 FR 12165.

Because of this uncertainty, EPA considered two approaches that relied on alternative indicator parameters for describing units that generate sludge similar to the already listed wastes.

The first approach was to develop definitions based on the suggestion of API to identify biological treatment units as measured by phenolic removal efficiency. The second approach defined biological treatment in terms of the percent oil content of the sludges computed on a dry weight basis (i.e., moisture free basis). The objective of both definitions was to identify the units within a given treatment train that generated secondary oil/water/solids separation sludge from those that generated secondary (biological) treatment sludge.

While hopeful that the first approach would provide an accurate means for distinguishing primary from secondary (biological) sludges, EPA saw several problems with the proposal including how to implement it for multipurpose units. The Agency also explained its concern that the use of activated carbon and oxidizing agents in clearly primary treatment units would boost phenolic removal to the level of the suggested approach. This might result in a unit that clearly generated primary sludge escaping regulation.

Most of the refineries responding to the 1988 Notice of Data Availability favored the phenolic removal efficiency approach to distinguish secondary oil/water/solids separation sludges from secondary (biological) treatment sludges, provided the Agency used a specific value (*e.g.*, <70 percent) for establishing a phenolic removal efficiency test as an indicator parameter in the listing definition.

The Agency received other comments, however, that identified several problems with the phenolic removal efficiency approach. In particular, the phenolic removal efficiency approach could inappropriately identify intermittent flow basins as secondary (biological) wastewater treatment units. This approach could also encourage the use of larger primary surface impoundments so that the initial treatment step would attain the criteria for biologically treated wastewaters. Phenolic pretreatment could also be used in the production area to drop phenolic levels to below the detection limit in order to circumvent the intent of the listing. Thus, facilities could escape listing while generating sludges and floats with the same constituents as those proposed for regulation, a result clearly at odds with the EPA's expressed intention to ensure equal treatment for all primary treatment units and processes generating sludges of the same composition. Therefore, the Agency has abandoned the phenolic removal efficiency approach as a means to distinguish secondary oil/water/solids separation sludges from secondary (biological) treatment sludges.

The second approach considered in defining the scope of the listing (based on the percent oil content of the sludge) also received extensive comment. A number of commenters supported the use of this approach to differentiate between primary treatment sludges and secondary (biological) treatment sludges, provided that the Agency modify the baseline oil level determination (the Agency proposed using the lowest percent oil content of K051 sludges generated at each facility as a baseline). In particular, these commenters suggested that the average oil content of K051 sludges at each refinery be used as a baseline. Other commenters believed the approach to be workable but pointed out that certain refinery specific waste generation practices may result in the misclassification of secondary (biological) treatment sludges as primary treatment sludges. For example, the sludges from an API separator receiving largely surface runoff from the process area may have very low oil content because most of the solids are surface dirt that will release free oil to the separator surface, and then settle to form a low oil content sludge. Thus, with the low oil content sludge of this hypothetical API separator as the basis for comparison, secondary (biological) sludges may be misclassified as listed primary treatment sludges. Many of the commenters also expressed concern about the precision and accuracy of the analytical methods required for the percent oil content approach. But, the commenters offered no data to substantiate their concerns and did not suggest alternate methods for determining the percent oil content of sludge.

As a result of comments on the precision and accuracy of the proposed analytical methods, the Agency re-analyzed the noticed data. The findings of this effort, which are presented in the rulemaking docket for the 1988 Notice (See **ADDRESSES**), suggest that method variability is outside of the acceptance criteria established in EPA publication SW-846, 3rd Edition, November 1986. Therefore, a definition based on percent oil content of the sludge was not considered implementable at this time.

Because analytical tests proved unreliable indicators for distinguishing secondary separation sludges and floats from biological treatment sludges, the Agency has decided not to adopt such an approach. The Agency has decided instead to adopt comprehensive listing descriptions for primary wastewater treatment sludges in order to respond to the commenters' clearly expressed desire for listings that clearly differentiate primary from secondary (biological) sludges. Consequently, the listings first indicate the treatment process (whether primary gravitational or secondary (emulsified) separation) generating the listed sludges, then identifies specific units generating the sludges without limiting the listing to sludges from such units. Finally, the listings identify those sludges not included in the listings and identify units or processes that would not generate the listed sludges. Only sludges and floats from units using aggressive biological treatment methods are not included in

[7] The Agency did identify units that were clearly recognized as performing biological treatment. These were activated sludge systems, trickling filters, and biodiscs. 53 FR 12166. These same systems were explained in the Development Document that Envirex had referenced in its original petition to expand the K048 and K051 listings. See Development Document, p. 156.

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today's listings. This ensures that sludges generated in systems with passive, incidental biological activity that are, in fact, relying on gravity separation for oil/water/solids, that generate a sludge similar in composition to other primary wastewater treatment sludges, do not escape regulation.

In order to address commenters' concern that the listings should clearly identify factors distinguishing secondary separation from biological oxidation, the listing defines the unlisted secondary (biological) sludges as those generated in "aggressive biological treatment units".[8] The listings identify aggressive biological treatment units (and hence units not generating the listed sludges) as units employing one of four treatment methods: activated sludge, trickling filter, rotating biological contactor (RBC), or high rate aeration. Both the 1985 and 1988 Notices had earlier identified activated sludge, trickling filters and RBCs as units performing a clearly biological function (50 FR 5638, 53 FR 12164, 12166).

The fourth category, high-rate aeration, is a general description of other secondary treatment processes that promote biological activity by introducing additional oxygen to the treatment system through mechanical aeration. (53 FR 12165) The Agency has adapted the definitions of RCRA section 3005(j)(12)(A) for clarifying the inapplicability of the listings to secondary (biological) treatment sludges. Thus, the Agency defines high-rate aeration as a system of impoundments or tanks in which intense mechanical aeration is used to completely mix the waste in order to enhance biological activity. In order to clarify that only true biological systems fall outside of the listings, the listing describes "high-rate aeration" in terms of a required level of mechanical aeration and the total retention time in the tank or impoundment. This guarantees against primary wastewater treatment systems purporting to be secondary systems based on minimal aeration.[9] Thus, the requirement for 6 horsepower aeration per million gallons of treatment capacity ensures that a refinery could not escape the listings through such minimal aeration.

In addition to the comments discussed above, the Agency received a number of other comments on the 1988 Notice of Data Availability. These comments, all other comments on previous notices, and comments on the original proposal have been reviewed by the Agency. All comments identified by the Agency as major comments are discussed in section IV of this Preamble; the remaining comments are addressed in the Response to Comment Background Document, which is available in the EPA RCRA Docket supporting today's rule.

In summary, after a careful review and analysis of the available information, the Agency is today promulgating two new listings, identified as F037 and F038, for wastes generated from the treatment of petroleum refining wastewaters. The Agency is listing the following wastes as hazardous under 40 CFR 261.31:

F037 Petroleum refinery primary oil/water/solids separation sludge—Any sludge generated from the gravitational separation of oil/water/solids during the storage or treatment of process wastewaters and oily cooling wastewaters from petroleum refineries. Such sludges include, but are not limited to, those generated in: oil/water/solids separators; tanks and impoundments; ditches and other conveyances; sumps; and stormwater units receiving dry weather flow. Sludges generated in stormwater units that do not receive dry weather flow, sludges generated in aggressive biological treatment units as defined in § 261.31(b)(2) (including sludges generated in one or more additional units after wastewaters have been treated in aggressive biological treatment units) and K051 wastes are not included in this listing.

F038 Petroleum refinery secondary (emulsified) oil/water/ solids separation sludge—Any sludge and/or float generated from the physical and/or chemical separation of oil/water/solids in process wastewaters and oily cooling wastewaters from petroleum refineries. Such wastes include, but are not limited to, all sludges and floats generated in: induced air flotation (IAF) units, tanks and impoundments, and all sludges generated in DAF units. Sludges generated in stormwater units that do not receive dry weather flow, sludges generated in aggressive biological treatment units as defined in § 261.31(b)(2) (including sludges generated in one or more additional units after wastewaters have been treated in aggressive biological treatment units) and F037, K048, and K051 wastes are not included in this listing.

In addition, for the F037 and F038 listings, the Agency is providing the following listing specific definitions under 40 CFR 261.31(b):

(b) Listing Specific Definitions and Requirements.

(1) For the purposes of the F037 and F038 listings, oil/water/solids is defined as oil and/or water and/or solids.

(2)(i) For the purposes of the F037 and F038 listings, aggressive biological treatment units are defined as units which employ one of the following four treatment methods: activated sludge; trickling filter; rotating biological contactor for the continuous accelerated biological oxidation of wastewaters; or high-rate aeration. High-rate aeration is a system of surface impoundments or tanks, in which intense mechanical aeration is used to completely mix the wastes, enhance biological activity, and (A) the unit employs a minimum of 6 hp per million gallons of treatment volume; and either (B) the hydraulic retention time of the unit is no longer than 5 days; or (C) the hydraulic retention time is no longer than 30 days and the unit does not generate a sludge that is a hazardous waste by the Toxicity Characteristic.

(ii) Generators and treatment, storage and disposal facilities have the burden of proving that their sludges are not included in the listing as F037 and F038 wastes under this definition. Generators and treatment, storage and disposal facilities must maintain, in their operating or other onsite records, documents and data sufficient to prove that: (A) the unit is an aggressive biological treatment unit as defined in this subsection; and (B) the sludges not included in the descriptions of F037 and/or F038 were actually generated in the aggressive biological treatment unit.

(3)(i) For the purposes of the F037 listing, sludges are considered to be generated at the moment of deposition in the unit, where deposition is defined as at least a temporary cessation of lateral particle movement.

(ii) For the purposes of the F038 listing, (A) sludges are considered to be generated at the moment of deposition in the unit, where deposition is defined as at least a temporary cessation of lateral particle movement, and

[8] The term "aggressive biological treatment units" derives from section 3005(j)(3)(A) of RCRA. This section provides that certain surface impoundments are not subject to the minimum technology requirement of RCRA section 3004(o)(1)(A) if they contain "treated waste water during the secondary or subsequent phases of an aggressive biological treatment facility." 42 U.S.C. § 6925(j)(3).

[9] In the Senate discussion concerning the adoption of section 3005(j)(3)(A), Senator Bentsen discussed the differences between primary and secondary wastewater treatment processes (130 Cong. Rec. S9183, July 25, 1984): The exclusion for wastewater treatment surface impoundments applies only to the secondary or tertiary phases. It does not apply to primary treatment operations. The exclusion would not apply to primary treatment operations which someone would attempt to make appear to be secondary treatment, such as putting an aerator in a primary operation in the hope that some biological activity would take place * * *.

Another issue which has been raised is what constitutes an "aggressive biological treatment facility." This term is used to describe a facility which has biological treatment as a planned and primary function of its operation. An example would be an impoundment system in which some or one of the ponds would include aeration. Thus the use of the word "aggressive" is included to distinguish between the types of facilities and impoundment systems where biological activity is an incidental rather than primary purpose of the impoundment system. An example of where a biological activity is an incidental purpose would be evaporation ponds that rely upon extended retention periods during which some biological activity will occur * * *.

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(B) floats are considered to be generated at the moment they are formed in the top of the unit.

By listing these wastes as hazardous EPA achieves its expressed intention to treat sludges and floats of similar composition in the same manner regardless of the primary wastewater treatment unit generating the waste. The Agency is returning to the structure of the listings proposed in November 1980 and is providing a clarification as to which wastewater treatment sludges and which sludge-generating units will be covered under today's rule. The Agency is distinguishing oil/water/solids separation sludges from biological treatment sludges—the listed primary sludges from the unlisted secondary sludges—by defining the aggressive biological treatment units and the sludges (biosludges or digested biomass) generated from these units that are not included in today's listings. These listings are discussed further in today's rule.

II. Summary of Today's Rule

In today's action, the Agency is finalizing two new listings for sludges generated from primary treatment of petroleum refining wastewaters: F037, primary oil/water/solids separation sludges, and F038, secondary oil/water/solids separation sludges. In this section, the Agency will (1) describe industry and wastewater treatment systems that generate these sludges; (2) further clarify the scope of the listings; (3) discuss the basis for listing for these wastes; and (4) summarize the anticipated impacts of this rule.

A. Industry Overview

1. Industry Description

Petroleum refineries are defined as "establishments primarily engaged in the production of gasoline, kerosene, distillate fuel oils, residual fuel oils, naphtha, liquified refinery gases, and lubricants through the integration of fractionation and/or straight distillation of crude oil, redistillation of unfinished petroleum derivatives, cracking, or other processes" (Office of Management and Budget (OMB), 1987). The Standard Industrial Classification (SIC) code for petroleum refineries is 2911, which excludes establishments producing gasoline from natural gas or organic chemicals. The major products of petroleum refineries are motor gasoline, kerosene, diesel, aviation fuels, distillate fuel oil, residual fuel oil, liquified petroleum gases, jet fuel, lubricants, petroleum coke, and asphalt (DPRA, 1985).

At the beginning of 1989, there were 204 operating refineries in the U.S. (excluding U.S. territories) with a total crude oil distillation capacity of 15.7 million barrels per calendar day.[10] Petroleum refineries are located across the country with at least one installation in each of 35 states. Three states—Texas with 34, California with 32, and Louisiana with 22—dominate the distribution, with a combined total of 43 percent of all refineries and 57 percent of U.S. capacity. Another 12 states had six or more refineries within their borders.

The refineries were owned by 106 companies. Of these companies, nine possessed over half (57 percent) of the crude distillation capacity, and another 21 companies controlled an additional 30 percent. The remaining 75 companies accounted for only 9 percent of the total U.S. capacity. Of these 75 companies, most had less than 50,000 barrels per calendar day capacity and generally owned only one refinery, although one company owned three. In addition, these 75 companies were generally non-integrated. That is, they did not produce their own crude oil but purchased it from other companies, or that they did not market their products but sold their products to other companies for distribution to the public. In contrast, the 31 largest companies were mainly integrated companies with the largest 24 being exclusively integrated companies. These 24 companies represent some of the largest corporations in the nation.

A petroleum refinery can be characterized according to the refining processes employed by the facility. Refineries may be categorized as follows:

Refinery Type	Processes
A	Crude Topping Primarily Crude Distillation Units.
B	Topping and Cracking.
C	Topping, Cracking, and Petrochemicals.
D	Topping, Cracking, and Lubricating Oil Processing.
E	Topping, Cracking, Lubricating Oil Processing, and Petrochemicals.

This characterization is based on ascending process complexity and has been used as a basis for subsequent characterization of waste generation.

Petroleum refining may involve several manufacturing operations and processes, including crude desalting, atmospheric and vacuum distillation, hydrotreating, catalytic cracking, thermal processing and residual upgrading, light hydrocarbon processing, hydrocracking, catalytic reforming, extraction, isomerization, lubricating oil processing, sulfur removal and recovery, and product blending and inventory. A spectrum of products is manufactured from petroleum refining including hydrogen, fuel gas, sulfur, liquified petroleum gas, butane, aromatic feedstocks, leaded and unleaded motor gasolines, jet fuel, kerosene, diesel, heating oil, fuel oil, asphalt, and coke.

2. Petroleum Refining Wastewater Treatment

Petroleum refining operations generate large amounts of wastewater that require treatment in order to reduce wastewater pollutants and produce effluents that meet discharge requirements specified under Clean Water Act (CWA) programs. In general, these wastewaters are either treated in an on-site wastewater treatment facility and discharged to surface waters or are pretreated on site and discharged to an off-site wastewater treatment facility, e.g., a Publicly Owned Treatment Works (POTW). Discharges to surface waters are controlled under the National Pollutant Discharge Elimination System (NPDES) and require an NPDES permit, while discharges to a POTW are subject to State and national pretreatment standards.

Treatment systems must be designed to accommodate wastewaters from a variety of sources. Wastewaters may be generally classified as process, oily cooling, oil-free, and sanitary wastewaters. Sanitary wastewaters generated from locker rooms and lavatories throughout the plant generally are managed in a refinery sewage plant or sent to a municipal sewage system. The other three types of wastewaters are treated in wastewater treatment systems. Sludges generated from the treatment of completely segregated oil-free and sanitary wastewaters are not affected by today's listings.

Wastewater treatment systems at petroleum refineries generally consist of the following elements: (1) A drainage and collection system to collect and carry wastewaters to treatment units, (2) a primary treatment system to separate oil/water/solids (o/w/s), and (3) a secondary (biological) treatment system to remove soluble biodegradable wastewater pollutants. Figures 1 and 2 present flow diagrams for two generalized wastewater treatment systems. Figure 1 represents a treatment system that would be impacted only

[10] Draft Regulatory Impact Analysis, DPRA, June 18, 1990.

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minimally by today's rule. Figure 2 represents a system that would be more significantly impacted by today's rule. While the Agency understands that there is no typical refinery wastewater treatment system, discussion of the differences between these two generalized treatment systems will help clarify the scope of today's listings.

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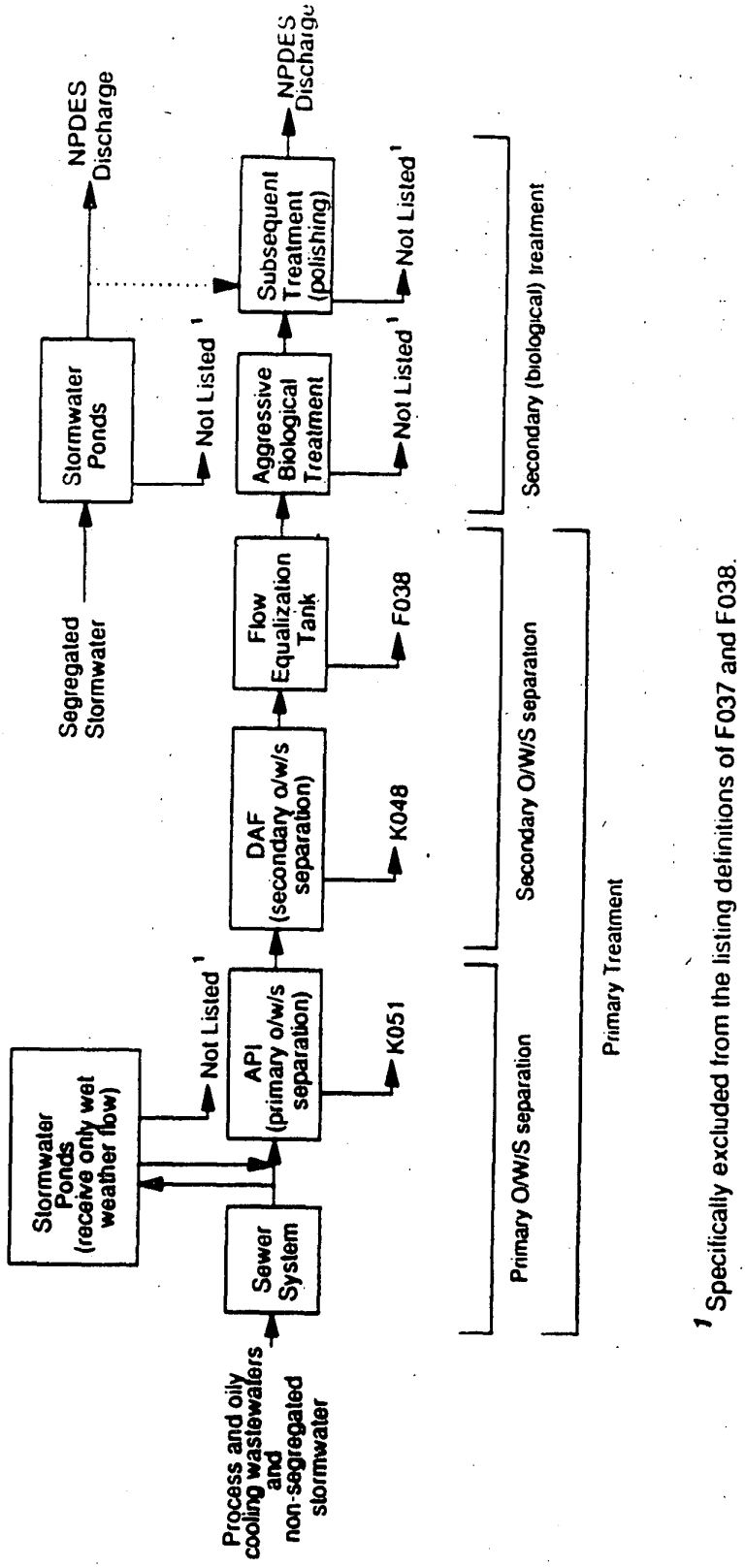
FIGURE 1

MINIMALLY IMPACTED REFINERY WASTEWATER TREATMENT SYSTEM



1 Specifically excluded from the listing definitions of F037 and F038.

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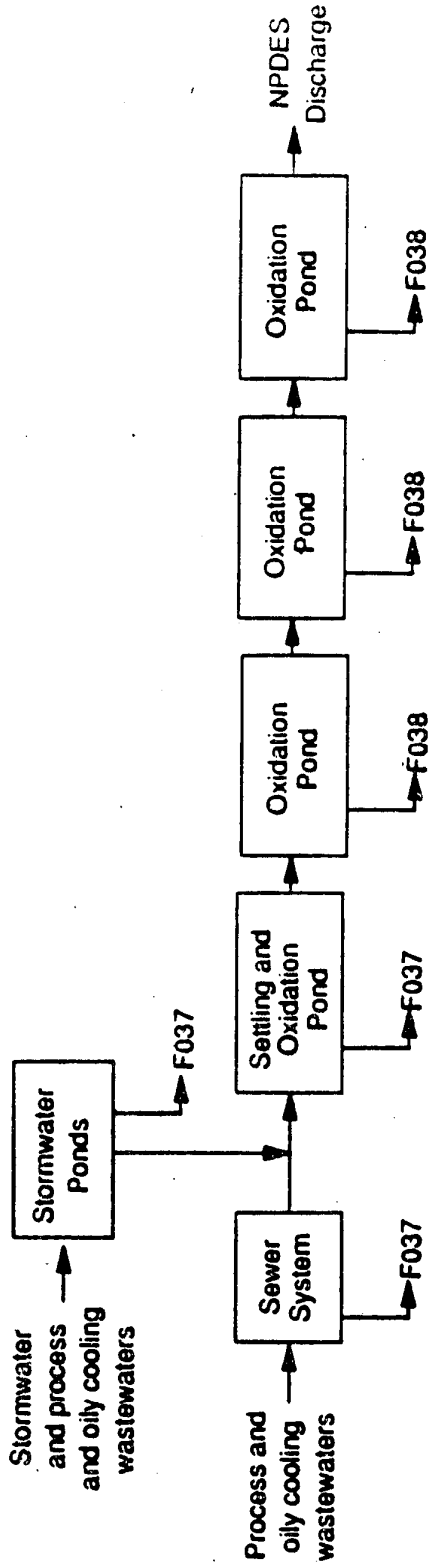
FIGURE 2

SIGNIFICANTLY IMPACTED REFINERY WASTEWATER TREATMENT SYSTEM



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Wastewater drainage and collection systems may be segregated to allow for treatment by waste class, or may be nonsegregated, routing all wastewaters to common wastewater treatment. A facility as depicted in Figure 1 will segregate oil-free wastewaters from process wastewaters and oily cooling wastewaters to the fullest extent possible. Such facilities will also minimize the generation of emulsions in the drainage and collection system by avoiding turbulent flow and mixing, and will minimize accumulation of sludges in the drainage and collection system by incorporating properly sloped collection systems. Sludges deposited from process wastewaters and oily cooling wastewaters in drainage and collection systems are listed under today's rule as hazardous waste F037.

Using a segregated collection system, stormwater, the largest contributor to the oil-free wastewater stream, is handled in segregated stormwater ponds that receive flow only during storm events. Waters routed to these ponds during storm events either are discharged under an NPDES permit when the effluent quality is high enough or are returned to the wastewater treatment system. In cases where stormwater cannot be collected in storm sewers (e.g., process sewers are used to collect stormwater), stormwater ponds are used to receive surge flow from the process sewers during storm events. Such facilities will route only wet weather flow (mixed process and stormwater) to these segregated ponds. Sludges generated from segregated stormwater ponds that do not receive dry weather flow (*i.e.*, any process wastewaters or oily cooling wastewaters) are not included in today's listings.

On the other hand, a facility (as depicted in Figure 2) may route process wastewaters and oily cooling wastewaters to stormwater ponds during dry weather. Nonsegregated stormwater ponds that receive dry weather flow of process wastewaters and oily cooling wastewaters generate sludges that meet the listing description of F037.

Primary treatment may be divided into two stages: primary oil/water/solids separation, which is based on gravitational separation, and secondary oil/water/solids separation, which uses other physical or chemical processes to separate emulsified oil/water/solids that are not amenable to gravitational separation. Primary (gravitational) oil/water/solids separation for process wastewaters and oily cooling wastewaters is necessary in almost all cases to meet effluent standards and to recover oil for reprocessing. The extent to which secondary oil/water/solids separation (separation of emulsified solids) is required depends on the amount of emulsified oils in the wastewater.

Primary oil/water/solids separation is conducted in gravitational separators designed to allow sufficient time under low turbulence conditions for oil to rise to the top and coalesce for removal by skimming, and for solids to settle to the bottom. Properly designed primary oil/water/solids separators provide for the removal of the majority of the nonemulsified oil and settleable solids. Separators used at earlier points (i.e., regional separators) may be employed to treat individual waste streams prior to commingling at the main wastewater treatment system. While the API separator is most widely used, there exist other types of effective primary oil/water/solids separators (for example, corrugated plate interceptor (CPI) separators and separators of circular design). API separator sludge currently is regulated as hazardous waste K051. Gravitational separation sludges generated in all other primary oil/water/solids separators meet the F037 listing description.

Secondary oil/water/solids separation uses physical or chemical methods to separate emulsified oils from refinery wastewaters. Where such treatment is used, many facilities utilize systems for secondary oil/water/solids separation that involve air flotation. Air flotation achieves separation of emulsified oils and suspended solids from wastewater by introducing air into the bottom of a unit. As this air passes up through the wastewater it agglomerates oil and suspended solids to form an intimate mixture of gas (air) and particulates that is lighter than water. This mixture floats to the top of the unit where it is skimmed as surface float for treatment and disposal. The two types of air flotation units are dissolved air flotation (DAF) and induced air flotation (IAF), which differ in the means by which air is introduced in the unit. In each case, chemicals may be added to the wastewater influent to improve emulsion breaking and removal and agglomeration of particulates. Float generated from DAF units is currently regulated as hazardous waste K048. In addition, under today's listing, all sludges and other floats generated from induced air flotation and other secondary oil/water/solids separation units meet the F038 listing definition.

Facilities may also conduct secondary oil/water/solids separation in a series of settling ponds where extended holding times are used to break emulsions. Such facilities also may pass wastewaters that still have settleable solids from a primary oil/water/solids separator to these ponds. Serial settling ponds may have skimming devices to remove oil that rises to the surface or may rely on oxidation and photodegradation to degrade these oils. Some biological activity may occur within these units in addition to secondary oil/water/solids separation, depending on the number of treatment units included in a treatment train and the length of time wastewater is retained in each treatment unit to complete separation of oil and solids from wastewater.

Sludges from the treatment of process wastewaters and oily cooling wastewaters that are clearly biological treatment sludges, K048, or K051 are not included in today's listings. For the purposes of today's rule, sludges that are clearly biological treatment sludges are defined as those sludges generated from aggressive biological treatment. The four types of treatment considered aggressive biological treatment by the Agency in this rule are described below. All sludges (except for K048 and K051) that are generated in treatment units prior to aggressive biological treatment of wastewater and that are not primary oil/water/solids separation (gravitational) sludges (F037) are considered to meet the listing definition for F038.

To meet effluent discharge limitations, refinery wastewaters (primarily process wastewater streams) require biological treatment to reduce soluble (organic) wastewater pollutants. Aggressive biological treatment allows a facility to minimize the size of required treatment units while maximizing treatment efficiency. For purposes of today's listings, the Agency recognizes the following four types of treatment as aggressive biological treatment: activated sludge, trickling filter, rotating biological contactor units, and high-rate aeration. These technologies, described below in further detail, facilitate the detoxification and digestion of organic chemicals in wastewaters.

The Agency has reviewed the wastewater treatment systems for the majority of the U.S. refineries and is unaware of any other biological treatment processes that achieve equivalent levels of organic chemical removal and thus would qualify as aggressive biological treatment. Solids generated following the aggressive biological treatment of process wastewaters and oily cooling

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wastewaters are "true" biological sludges because they contain acclimatized bacteria and dead biomass. However, if a facility believes it has a treatment process that should be considered as aggressive biological treatment, the facility may submit a rulemaking petition under 40 CFR 260.20. Facilities may also petition the Agency to delist specific wastes under 40 CFR 260.22.

The activated sludge process is a biological treatment technique primarily used for removal of organic materials from wastewater. This process is characterized by a suspension of aerobic and facultative microorganisms maintained in a relatively homogenous condition by mechanical mixing or by the turbulence induced by mechanical aeration in an aeration basin. These microorganisms oxidize soluble organic materials and agglomerate colloidal and particulate solids in the presence of dissolved oxygen. The aeration step is followed by clarification to separate biological sludge from the treated wastewater. Most of the biological mass is recycled to the aeration basin to be combined with incoming wastewater while the remaining sludge is routed to a sludge treatment and disposal facility.

The trickling filter operates by passing wastewater over a stationary bed of microorganisms. The filter consists of a suitable containment structure packed with a medium (usually rock, wood, or plastic) on which a biological mass (slime) is grown. Wastewater is distributed over the packing and biomass by a spray system. As wastewater flows over the slime, organic compounds are degraded to CO_2 and water, and suspended particulate and colloidal materials are removed by sorption processes. The sorbed material is oxidized by microorganisms in the presence of oxygen. Oxygen is provided to the trickling filter by convection of air through the unit. A thin film of water is maintained on the slime, which allows absorption of oxygen from the air and rapid transfer of oxygen to the microorganisms. Treated water may be recycled to the filter to control sloughing of the biomass and hydraulic and organic loading to the unit and to obtain the desired organic concentration reduction.

The rotating biological contactor passes a thin film of wastewater over a biological mass growing on a medium that is dipped into the wastewater stream. The contactor consists of a disk of suitable material mounted on a horizontal shaft that is supported so that the disk is approximately 50 percent immersed in the wastewater stream. The disk slowly rotates so that the water forms a thin film across the biomass. Oxygen from the air is easily absorbed by the water film and is rapidly transferred to the microorganism mass on the disk. Organics in the wastewater are assimilated and oxidized by the biomass during their life cycle. Excess microorganisms and solids are removed continuously from the disk by shearing forces created by rotation of the disk in the water.

High-rate aeration usually occurs in an earthen pond or other basin, with (or without) an impervious lining, in which adequate aerators are provided both to mix the contents of the pond and to provide dissolved oxygen to support biological activity. Adequate aeration devices ensure uniform concentration of dissolved oxygen and suspended solids throughout the basin to maximize the biological treatment efficiency. The biomass created by assimilation of the organic components in the wastewater is discharged from the pond with the treated water and requires a clarification unit downstream for separation of solids from the treated water. Normally, biomass is not recycled to the lagoon. Based on general Agency [11] and industry [12] design criteria, high-rate aeration employs a minimum of 6 hp per million gallons of treatment volume for mixing, and has a hydraulic detention time of up to 5 days under normal operating condition. Hydraulic detention times of up to 30 days are also allowed, provided the units do not generate a sludge that is a hazardous waste by the Toxicity Characteristic. Units which fail to meet the above description would not be considered aggressive biological treatment and, thus, are subject to today's rule.

For the purposes of this rule, waste stabilization ponds that do not employ mechanical aeration, and those ponds that employ only minimal mechanical (*i.e.*, low rate) aeration are termed nonaggressive biological treatments. These nonaerated ponds, often called "facultative" lagoons, use both algae and bacteria for the reduction of organic matter, and may employ some mechanical stirring to mix the liquid but not to supply oxygen. Hydraulic detention times generally range from 10 to 30 days. The Agency considers these units to provide largely gravitational treatment, and to form similarly hazardous sludges. Thus, sludges generated in these types of units are subject to today's rule.

Secondary (biological) treatment may be followed by nonaggressive treatment involving polishing of wastewaters prior to final discharge. Any sludges generated from treatment that follows aggressive biological treatment are not included in today's listings.[13]

B. Scope of the Listings

Today's listings for primary oil/water/solids separation (gravitational) sludges (F037) and secondary oil/water/solids separation (emulsified) sludges (F038) effectively regulate as hazardous waste all separation sludges generated from petroleum refining process wastewaters and oily cooling wastewaters that are not already regulated as either API separator sludge (K051) or DAF float (K048). These wastes are being added to the list of wastes from nonspecific sources in 40 CFR 261.31 in order to regulate sludges generated at wastewater treatment facilities on site at petroleum refineries as well as sludges generated at off-site wastewater treatment facilities [14].

F037 and F038 sludges are generated from the treatment of process wastewaters and oily cooling wastewaters. Process wastewaters include, but are not limited to, the following:

1. Desalter water;
2. Tank emulsion and water draw-offs;
3. Condensate from steam stripping operations;
4. Pump gland cooling water;
5. Barometric condenser water containing emulsions;
6. Intermediate and product treating plant wash water; and
7. Other wastewaters containing emulsions, heavy oils, or tar.

Oily cooling wastewaters include, but are not limited to, the following:

1. Once through cooling water from C_6 (six-carbon) hydrocarbons and heavier operations;
2. Blowdown from cooling towers servicing C_6 and heavier operations;
3. Uncontrolled oily storm water from refinery processing and tankage areas; and
4. Controlled oily storm water released from diked areas or surge ponds.

[11] USEPA. 1983. U.S. Environmental Protection Agency. Treatability manual, Volume III, EPA 600/2-82/001C, January 1983. pp.III 3.2.1-1 to 3.2.1-57.

[12] American Petroleum Institute. 1969. Manual on Disposal of Refinery Wastes, Volume on Liquid Wastes API 769.7 man. Ch. 13.

[13] It should be noted that units not included in today's rule could be regulated under other RCRA provisions either because they are generating or receiving characteristically hazardous wastes or sludges.

[14] It should be noted that if wastewaters generated at petroleum refineries are discharged to a POTW and such wastewaters are mixed with domestic sewage from nonindustrial sources, the sludges generated in the POTW are covered under the domestic sewage exclusion and are not included in today's listings.

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Sludges subject to today's listing may be generated in units that are designed to perform primary treatment (e.g., CPI separator or IAF unit) or may be generated incidentally in sumps, conveyances, equalization units, nonaggressive biological treatment units, or other wastewater treatment units prior to aggressive biological treatment. The intent of today's listings is to capture all primary treatment (separation) sludges, including gravitational and emulsified sludges wherever they are generated.

The Agency has defined those sludges that it believes are clearly biological treatment sludges—and not included in today's listings—as sludges generated from aggressive biological treatment units. In addition, sludges generated in units downstream of aggressive biological treatment units that do not receive any process wastewaters or oily cooling wastewaters that have not undergone aggressive biological treatment are also not included in today's listings.

Data collected and noticed in 1988 by the Agency and supplemented by data provided by commenters indicate that sludges generated in stormwater units that only receive rain water or storm flow during storm events do not generate sludges similar in composition to those generated in primary treatment units. Thus, sludges that are generated in stormwater units that do not receive dry weather flow are also not being included in today's listings. Sludges generated in stormwater units that do receive dry weather flow, however, meet the listing definition for F037.

While the Agency is unaware of any facilities that currently utilize spray irrigation as a disposal technique for petroleum refining wastewaters, such disposal of petroleum wastewaters prior to aggressive biological treatment would result in the generation of one of today's listed hazardous wastes. Wastewater solids forming a residual layer on the soil surface and the underlying soil layer following spray irrigation of wastewaters would also become or contain listed wastes under today's rulemaking.

C. Basis of Listing

Many commenters questioned the Agency's basis for listing these wastes as hazardous. This section summarizes the basis of listing today's wastes as hazardous, and section IV addresses the major concerns raised by commenters; all other comments are addressed in the Response to Comments Background Document that is available in the docket to this rulemaking.

Section 3001(a) requires the Agency to promulgate criteria for identifying the characteristics of hazardous wastes and for listing certain hazardous wastes. 42 U.S.C. 6921(a). The criteria promulgated by EPA for listing a waste as hazardous are presented in 40 CFR 261.11, which states in part:

(a) The Administrator shall list a solid waste as a hazardous waste only upon determining that the solid waste meets one of the following criteria * * *:

(3) It contains any of the toxic constituents listed in Appendix VIII unless, after considering the following factors, the Administrator concludes that the waste is not capable of posing a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported or disposed of, or otherwise managed * * *.

The sampling and analysis data collected in support of these listings and noticed in the February 11, 1985 (50 FR 5637) and April 13, 1988 (53 FR 12182) **Federal Register** notices clearly demonstrate that primary treatment sludges routinely and consistently contain 40 CFR 261, Appendix VIII constituents. For example, the wastes consistently contained metals such as lead, chromium, nickel, and arsenic, and organics including benzene, toluene, and numerous PAHs such as benzo(a)pyrene, benzo(a)anthracene, dibenz(a,h)anthracene, chrysene, pyrene, and phenanthrene; five of these constituents, benzene, benzo(a)pyrene, chrysene, lead and chromium, consistently were found at sufficiently high concentrations to warrant inclusion in Appendix VII as the basis of listing for these wastes. Table A summarizes the range and average concentrations for these five constituents. While some of these sludges may contain low or non-detectable amounts of certain of the hazardous constituents, these sludges almost always contain one or more of the hazardous constituents at levels that may pose risk to human health and the environment.

In order to evaluate the criteria for listing these wastes as hazardous, the Agency considered each of the factors specified in CFR 261.11(a)(3) (i) through (xi) to determine if these wastes were indeed capable of posing a substantial threat to human health and the environment. The results of this evaluation are presented below.

TABLE A.—PRIMARY TREATMENT SLUDGE CONSTITUENTS OF CONCERN AND RANGE OF MEASURED CONCENTRATIONS

[All Values in PPM; Wet Weight Basis]

Constituent	F037				F038			
	No. of samples analyzed	No. of samples with detectable levels	Range[a]	Average[b]	No. of samples analyzed	No. of samples with detectable levels	Range[a]	Average[b]
Benzene	20	18	ND-200	31	15	8	ND-90	12
Benzo(a)pyrene	20	15	ND-83	49	24	16	ND-68	10
Chrysene	20	16	ND-138	28	24	19	ND-125	23
Lead	8	9	3-4570	552	6	6	1-3900	515
Chromium	14	14	3-2290	702	14	14	15-1950	522

[a] ND—not detected
[b] Arithmetic averages are based on ½ the practical quantitation limit for constituents detected below quantitation limits and for constituents not detected.

1. Toxic Nature of the Constituents

Each of the constituents presented in Table A is highly toxic. For these constituents, EPA has developed chronic toxicity reference levels and/or, in some cases, cancer potency factors for two human exposure routes (inhalation and oral). For the purpose of listing wastes as hazardous under RCRA, the Agency customarily uses three basic types of toxicity data from animal studies and epidemiological studies when analyzing the toxic potential of a constituent: (1) Maximum Contaminant Levels (MCLs); (2) Risk Specific Doses (RSDs); and (3) Reference Doses (RfD's). Based on different criteria, each of these types of data estimate the maximum doses or

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acceptable human exposure levels. Exposure to chemicals below these levels is not likely to cause detectable health effects, but exposure to chemicals above these concentrations can be toxic or detrimental and may pose significant risk to human health. The criteria for establishing the toxicity levels are outlined below.

MCLs are final Drinking Water Standards under section 1412 of the Safe Drinking Water Act of 1974, as amended in 1984 for both carcinogenic and noncarcinogenic compounds. In setting MCLs, EPA considers a range of pertinent factors cited in 52 FR 25697–25698, July 8, 1987.

For certain carcinogenic compounds, the Agency has not promulgated MCLs but has developed RSDs. The RSD is a dose that corresponds to a specific level of risk to an individual of contracting cancer over a 70-year lifetime because of the intake of contaminated drinking water. Modeling procedures are used to extrapolate low-exposure levels to levels expected from human contact with the carcinogen in the environment. The slope of the line from this extrapolation is used to develop a cancer potency factor for the carcinogen. The cancer potency factor is used with a specific risk level to develop an RSD. The oral and inhalation RSDs for carcinogenic agents are established at the 10^{-6} risk level, which means that one in one million people could develop cancer if exposed to the carcinogen at the specified dosage for a lifetime. This approach is consistent with the risk levels used to delist specific waste streams as part of the RCRA delisting process. Based on the quality and adequacy of epidemiological data and experimental animal data demonstrating carcinogenic responses, constituents are assigned to five classes via a weight-of-evidence system developed by the Agency.

With respect to the "weight-of-evidence" system, the Agency promulgated guidelines for carcinogenic risk assessment (see 51 FR 32656, September 24, 1986), which incorporate an assessment of the quality of experimental data for the overall hazard assessment for carcinogens. These guidelines specify the following five classifications:

Class A: Human carcinogen (sufficient evidence from epidemiologic studies)
Class B: Probable human carcinogen
Class B_1: Limited evidence of carcinogenicity in humans
Class B_2: A combination of sufficient evidence in animals and adequate or no evidence in humans
Class C: Possible human carcinogen (limited evidence of carcinogenicity in the absence of human data)
Class D: Not classifiable as to human carcinogenicity (inadequate human and animal evidence of carcinogenicity or no data available)
Class E: Evidence of noncarcinogenicity for humans (no evidence of carcinogenicity in at least two adequate animal tests in different species or both in adequate epidemiologic and animal studies).

The Agency regards constituents classified in Class A or B as suitable for quantitative risk assessment. The suitability of Class C constituents for quantitative risk assessment requires a case-by-case review because some Class C constituents do not have a data base of sufficient quality or quantity to perform a quantitative carcinogenicity risk assessment. The weight-of-evidence basis was used to eliminate Group D and E constituents from further consideration as carcinogens.

Based on these guidelines, four of the five constituents are either "carcinogenic to humans" or are considered to be probable human carcinogens. The carcinogenic constituents of concern that are present in F037 and F038 for which there are no MCLs are either known (Class A) or probable human carcinogens (Class B1 and B2). Table B identifies the cancer potency factors for carcinogens present in these waste streams. EPA's Carcinogen Risk Assessment Endeavor Workgroup (CAVE) has determined that there is sufficient evidence to suggest that benzene, and chromium (VI) are carcinogens (Class A), and that benzo(a)pyrene (BaP), chrysene, and lead are probable carcinogens (Class B_2).

TABLE B.—CONSTITUENTS OF CONCERN AND CORRESPONDING TOXICITY VALUES (CANCER POTENCY FACTORS)

Hazardous constituents	CAG[a] Cancer Potency Factors	
	Oral (mg/kg/day)$^{-1}$	Inhalation mg/kg/day)$^{-1}$
Inorganic:		
Chromium VI	N.A.	4.1×10^{1}
Organic:		
Benzene	2.9×10^{-2}	2.9×10^{-2}
Benzo(a)pyrene	11.5	6.1
Chrysene[b]	11.5	6.1

[a] Carcinogen Assessment Group.
[b] Class C carcinogen, however, the Agency is basing the cancer potency of chrysene on that of Benzo(a)pyrene based on structure relationships. The cancer potency factor of Benzo(a)pyrene is assumed for other polynuclear aromatic hydrocarbons.

Oral and inhalation RfD's, on the other hand, are established for noncarcinogens (systemic toxicants). An RfD is an estimate of daily exposure of the human population (including sensitive subgroups such as children) to a substance that would not represent an appreciable risk of deleterious effects during a lifetime. If frequent exposures that exceed the RfD occur, the probability that adverse effects may be observed increases. The method for estimating the RfD endpoints for noncarcinogenic constituents was described in the proposal for the Toxicity Characteristic rule (51 FR 21648, June 13, 1988).

Constituents exhibiting carcinogenic or other chronic systemic effects on humans or laboratory animals have been determined to be present in today's wastes. These toxicants are present in sufficiently high concentrations (*i. e.*, concentrations greater than the EPA established RfDs, RSDs, or MCLs) to pose a substantial threat to human health and the environment under plausible mismanagement scenarios. A brief summary of the toxicity of these constituents is presented below. For additional information on the toxicity of the hazardous constituents, see the Health and Environmental Effects Profiles (HEEPs) (available at the EPA Headquarters and EPA Regional Libraries).

Benzene is a Class A carcinogen. Benzene is carcinogenic in rats following exposure through gavage and in mice following inhalation exposure (IARC, 1982). An epidemiological study that correlated benzene exposure with the incidence of leukemia provided sufficient evidence to demonstrate that benzene is carcinogenic in humans (NTP, 85–002).

Benzo(a)pyrene (BaP) is a Class B_2 carcinogen. BaP is perhaps one of the most potent, known animal carcinogens. Microgram quantities have been shown to induce tumors in a number of experimental animal species through various routes of exposure, including oral, inhalation, and dermal application (IARC, 1973). The types of tumors seen after exposure to BaP include mammary tumors in rats (IARC, 1973); squamous cell papillomas and/or carcinomas of the forestomach in mice (Rigdon and Neal, 1966); and skin tumors in mice (Poel, 1963). BaP can also act as a transplacental carcinogen in mice (Bulay and Wattenberg, 1971).

In addition to their ability to act as carcinogens, several of the PAH compounds (*e.g.* chrysene), plus others (*e.g.* dibenz(a,h)anthracene) that display no carcinogenicity on their own, have been found to act as co-carcinogenic agents (initiators or promoters) causing skin tumors in mice following dermal exposure. This indicates that health-

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based numbers developed for certain PAHs are extremely conservative estimates of the toxicity of these compounds but, that when present in the wastes as mixtures of PAHs containing both carcinogens and cocarcinogens, these mixtures may collectively induce tumor formation at lower concentrations.

Benzene and BaP have also been shown to be embryotoxic and/or teratogenic in experimental animals (IARC, 1982 and Shum *et al.*, 1979).

Chrysene is classified a Class B_2 carcinogen, however sufficient data are not available to make a quantitative estimate of cancer potency. The Agency has established cancer potency factors for selected PAHs (benzo(a)pyrene) only. The conservative approach that the Agency follows for assessing health risks for exposure to the PAHs belonging to Class B_2 or C carcinogens is to use the cancer potency factor for benzo(a)pyrene, and to assign an order of magnitude less risk to the estimate.

Among the inorganic constituents of concern, hexavalent chromium has been classified as a known human carcinogen (Class A) by the inhalation route. EPA developed an inhalation cancer potency factor for hexavalent chromium based on an increased incidence of lung cancer in workers exposed to chromium over a 6-year period and followed for approximately 40 years.[15] EPA derived an oral RfD of 5.0×10^{-3} mg/kg/day for hexavalent chromium based on a study by MacKenzie *et al.* (1958) in which no observable adverse effects were observed in rats exposed to less than 2.4 mg/kg/day of hexavalent chromium in drinking water for 1 year.[16] Rats receiving a dose corresponding to 2.4 mg/kg/day showed an approximate 20 percent reduction in water consumption and an abrupt rise in tissue chromium concentration.

With respect to lead, recent information indicates that physiological and/or biochemical effects in humans caused by lead can occur at blood concentration levels that are lower than the 25 ug/L value established by the Centers for Disease Control, which is used as an acceptable level of blood lead. Therefore, the Agency has established a provisional oral RfD of 5×10^{-4} mg/kg/day and a provisional inhalation RfD of 4.3×10^{-4} mg/kg/day for adults based on the long-term acceptable daily intakes (ADIs) and National Ambient Air Quality Standards, respectively.[17, 18] The Agency has established an MCL for lead of 50 parts per billion (ppb) and has proposed reducing the MCL to 5 ppb (see 53 FR 31516). Although these RfD's for lead have not been verified through the formal EPA peer review process, after considering the toxicity data summarized above, the Agency believes that lead is clearly an appropriate basis for listing these wastes as hazardous.

2. Concentration of Toxic Constituents in Wastes

Table A presents concentration ranges and average values for each of the five constituents that form the basis of listing for the F037 and F038 waste streams. This table also identifies the number of samples analyzed and the number of samples in which detectable concentrations (*i.e.*, concentrations greater than the analytical detection limits) were measured. As shown in the table, lead and total chromium were detected in every waste sampled, while the remaining constituents of concern were each detected in over 50 percent of the samples analyzed. In addition, the Agency identified other Appendix VIII constituents in both types of sludge samples. These include arsenic, nickel, benzo(a)anthracene, dibenz(a,h)anthracene, pyrene, and phenanthrene.

Tables C and D present the health-based levels for the water consumption exposure scenario for the hazardous constituents detected in F037 and F038, respectively. The first four columns in each table present the constituents, the average measured concentrations of those constituents, their respective water health-based levels, and the bases used to calculate those levels. The remaining six columns provide an exposure assessment analysis that is discussed further in this section and section II.C.3. The health-based levels presented in these tables are based on two exposure assumptions: (1) The average exposed individual weighs 70 kg and, (2) the exposed individual drinks, on average, 2 liters of water daily. The resultant acceptable water intake concentrations range from 3.0×10^{-6} ppm (BaP and chrysene) to 5.0×10^{-2} ppm (lead and chromium). That is, in the case of BaP and chrysene, consumption of 2 liters of water daily with a concentration of 3.0×10^{-6} ppm would not threaten human health. Two of the five constituents of concern (benzene, and chromium VI) are known human carcinogens. BaP, chrysene, and lead are probable human carcinogens. Lead is also a systemic toxicant.

[15] Mancuso, T.F. 1975. International Conference on Heavy Metals in the Environment, Toronto, Canada.

[16] Mackenzie, R.D., Byerum, R.V., Decker, C.F., Hopport, C.A., and Longham, F.L. 1958. Chronic Toxicity Studies II. Hexavalent and trivalent chromium administered in drinking water to rats. Arch. Ind. Health 18:232–234.

[17] EPA, 1988. Drinking Water Regulations, Maximum Contaminant Level Goals and National Primary Drinking Water Regulations for Lead and Copper. 53 FR 31516–31577, August 18, 1988.

[18] EPA, 1986. Air Quality Criteria for Lead, Environmental Criteria and Assessment Office, EPA, Research Triangle Park, NC.

TABLE C. BASIS FOR LISTING: HEALTH EFFECTS OF THE CONSTITUENTS OF CONCERN IN F037

Hazardous constituent	Average measured waste concentration (ppm)	Water concentration (health-based) limits (ppm)	Basis [c]	Estimated drinking well concentrations [a] (ppm)			Estimated well concentration to health-based level ratios [b]		
				DA 100	DA 1,000	DA 10,000	DA 100	DA 1,000	DA 10,000
Benzene	39	5.0×10^{-3}	MCL (Class A)	0.39	0.039	0.0039	78	7.8	0.78
Benzo(a)pyrene	14	3.0×10^{-6}	RSD (Class B_2)	0.14	0.014	0.0014	46,600	4,600	460
Chrysene	28	3.0×10^{-5}	RSD (Clams B_2)	0.28	0.028	0.0028	9,000	900	90
Lead	552	5.0×10^{-2}	MCL (Class B_2)	5.52	0.552	0.0552	110	11	1.1
Chromium[d]	702	5.0×10^{-2}	MCL (Class A)	7.02	0.702	0.0702	140	14	1.4

[a] Calculated for three dilution/attenuation (DA) factors of 100, 1,000, and 10,000.

[b] Ratio obtained by dividing estimated drinking well concentration column by water concentration (health-based) limit column, for all three dilution/attenuation (DA) levels.

[c] Reference Dose (RfD), Risk Specific Dose (RSD), and Maximum Contaminant Level (MCL) are explained elsewhere in the preamble, as are the classes of RSDs. Benzo(a)pyrene is based on an exposure limit at a 10^{-6} risk level. Chrysene, a Class B_2 carcinogen, is based on an exposure limit at a 10^{-6} risk level, and the health limit is assumed to be that of Benzo(a)pyrene based on structure activity relationships.

[d] Concentration limits are for total chromium only.

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TABLE D.—BASIS FOR LISTING: HEALTH EFFECTS OF THE CONSTITUENTS OF CONCERN IN F038

Hazardous constituent	Average measured waste concentration (ppm)	Water concentration (health-based) limits (ppm)	Basis [c]	Estimated drinking well concentrations [a] (ppm)			Estimated well concentration to health-based level ratios [b]		
				DA 100	DA 1,000	DA 10,000	DA 100	DA 1,000	DA 10,000
Benzene	12	5.0×10^{-3}	MCL (Class A)	0.12	0.012	0.0012	24	2.4	0.24
Benzo(a)pyrene	10	3.0×10^{-6}	RSD (Class b_2)	0.10	0.010	0.0010	33,300	3,300	330
Chrysene	23	3.0×10^{-5}	RSD (Class b_2)	0.23	0.023	0.0023	7,600	760	77
Lead	515	5.0×10^{-2}	HCL (Class b_2)	5.15	0.515	0.0515	103	10.3	1.03
Chromium [d]	522	5.0×10^{-2}	MCL (Class A)	5.22	0.522	0.0522	104	10.4	1.04

[a] Calculated for three dilution/attenuation (DA) factors of 100, 1,000, and 10,000.
[b] Ratio obtained by dividing estimated drinking well concentration column by water concentration (health-based) limit column, for all three dilution/attenuation (DA) levels.
[c] Reference Dose (RfD), Risk Specific Dose (RSD), and Maximum Contaminant Level (MCL) are explained elsewhere in the preamble, as are the classes of RSDs. Benzo(a)pyrene is based on an exposure limit at a 10^{-6} risk level. Chrysene, a Class B_2 carcinogen, is based on an exposure limit at a 10^{-5} risk level, and the health limit is assumed to be that of Benzo(a)pyrene based on structure activity relationships.
[d] Concentration limits are for total chromium only.

As shown in the last three columns of Tables C and D, the concentrations of constituents of concern in F037 and F038 are at least four orders of magnitude greater than the corresponding health-based limits. If mismanaged, therefore, given the potential for migration and persistence discussed below, the Agency believes that the constituents of concern are present in these wastes at levels clearly capable of posing a threat to human health and the environment.

The Agency has also evaluated potential environmental damages for API and DAF sludges based on data submitted by refiners as part of their delisting petition applications. The Agency, using this industry data and a variety of ground-water transport models (including the Organic Leaching Model (OLM), Vertical and Horizontal Spread (VHS) dispersion model, and the Land Treatment Model (LTM)), has concluded that concentrations of the constituents of concern in wastes (K048 and K051) are capable of migrating to the receptor points. The concentrations of the constituents of concern in the drinking water wells at receptor points exceed the corresponding drinking water standards. This is one of the reasons the Agency decided to deny many of the delisting petitions submitted by the petroleum refineries. Since the wastes listed today are similar to the previously listed wastes, the Agency believes that the constituents of concern in the wastes listed today can potentially reach receptor points and can pose risks to human health. A summary of the **Federal Register** notices announcing the Agency's action on each of the delisting petitions has been placed in the Regulatory Docket supporting this rule.

3. Fate and Transport of Toxic Constituents in the Environment

The Agency evaluated the mobility and persistence of the F037 and F038 constituents of concern in the environment. To assess mobility, the Agency considered the physical and chemical characteristics of the constituents of concern. The factors considered include the physical state of the sludges, their water solubility, the octanol-water partition coefficient (K_{ow}), and the soil-sorption coefficient (K_{oc}).

Table E summarizes these quantitative measures of mobility for each of the organic constituents, as well as a qualitative assessment of these data in terms of each constituent's potential for migration and persistence in the event of waste mismanagement. Compared to other constituents in the sludges, some of these constituents (*e.g.*, benzene) are more degradable than others. Chemical and biological degradation may occur in soil, if physical (*e.g.*, soil temperature, humidity and moisture, particle size, and water holding capacity of soil), chemical (*e.g.*, soil pH), and biological (*e.g.*, types of microorganisms) characteristics are conducive to facilitate degradation of chemical constituents. However, as evidenced by the contamination of soil and ground water, typically degradation is insufficient to prevent environmental damage if the wastes are mismanaged.

TABLE E.—Ground Water Mobility and Persistence of Organic Constituents of Concern

Constituents of concern	Water concentration (health-based) limits (ppm)	Water solubility (ppm)	Log K_{ow} [b]	K_{oc} [c]	Mobility [a]		Persistence
					Slightly [d] contaminated medium	Highly [e] contaminated medium	
Benzene	5.0×10^{-3}	1.75×10^{-3}	2.13	83	moderate	moderate	low.
Benzo (a) pyrene	3.0×10^{-6}	3.8×10^{-3}	6.25	5,500,000	low	high	high.
Chrysene	3.0×10^{-3}	2×10^{-3}	5.61	200,000	not known	not known	not known.

[a] Qualitative relative evaluation of mobility and persistence, based on water solubility, log K_{ow}, and K_{oc}. For more details, see the Background Document.
[b] K_{ow} = Octanol-water partition coefficient; see Background Document for data sources.
[c] K_{oc} = Soil-sorption coefficient; see Background Document for data sources.
[d] Slightly contaminated medium represents a mismanagement scenario where release of hazardous constituents does not result in saturation of the underlying soil by organic hazardous constituents.
[e] Highly contaminated medium represents a mismanagement scenario where release of hazardous constituents results in saturation of the underlying soil by organic hazardous constituents.

Because some of the constituents of concern (particularly benzene) are water soluble to some extent, they can (1) leach out of the wastes in a water-soluble form, (2) be transported through the subsurface environment from the waste, (3) eventually reach ground-water bodies, and (4) contaminate drinking-water wells. One measure of migration potential is the ability of a given constituent to partition between octanol and water. If a compound is not

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easily soluble in water but is soluble in octanol, it is slightly mobile in soil. Table E gives the logarithm of the octanol-water partition coefficient (log K_{ow}) values for the constituents of concern. A log K_{ow} of 2.13 for benzene indicates that it is moderately soluble in water and, hence, moderately mobile in soil. On the other hand, all the PAHs found in F037 and F038 have high log K_{ow} values suggesting that they would be relatively immobile (*i.e.*, less mobile than benzene) in the soil. However, evidence exists that these constituents may move more readily in soil with low organic content or if codisposed with other solvents or oils. Because wastes listed today typically contain high concentrations of oils, the mobility of the PAHs is expected to be quite high due to cosolvent effects. Therefore, it is reasonable to assume that wastes containing these constituents could pose a significant threat to human health via ground-water contamination if mismanaged.

In order to conduct a more qualitative evaluation of fate and transport of F037 and F038, the Agency evaluated potential risks to human health posed by exposure to a drinking water/waste mixture. EPA examined hypothetical ground-water concentrations by assuming that, through subsurface transport, dilution and attenuation (DA) processes will reduce the concentrations of the hazardous constituents of concern by a given factor. The Agency evaluated three DA factors: 100; 1,000; and 10,000. These three values correspond to drinking-well water-contaminant concentrations at 1, 0.1, and 0.01 percent of the contaminant's original concentration in the waste.

The three DA factors used in this analysis are intended to encompass a broad range of possibilities. While the DA factors were not selected to represent any particular environmental condition or range of environmental conditions, they represent assumptions varying from a moderate amount of dilution and attenuation to a high degree of dilution and attenuation. As shown in Tables C and D, the wastes examined pose a potential threat to human health and the environment across this wide range of assumptions.

The Agency believes that the DA factors used in assessing the potential migration of the constituents of concern in petroleum separation sludges are not unrealistic. To assess the effectiveness of the hypothetical concentrations (by assuming a set of three DA factors) in representing the real-life leaching and migration processes, the Agency compared average concentrations of certain constituents (chromium, fluoranthene, pyrene, anthracene, and naphthalene) in wood preserving wastes and ground-water contamination data from the damage cases related to the wood preserving industry. The Agency assumed that, in the past, wood preserving wastes containing high concentrations (higher than averages calculated for the rulemaking activity) were disposed of on land, which resulted in contaminated ground water as evidenced by the damage cases. The comparison provided the Agency with a mechanism to determine the potential migration of toxic and hazardous constituents from oily wastes in soil.

The results of the comparison suggested that metals such as chromium and semivolatile compounds such as anthracene, fluoranthene, chrysene, and pyrene are released from the oily wastes and, hence, are capable of contaminating ground water. The calculated DA factors for these semivolatile compounds in oily waste range from 10 to 100,000. Based on this preliminary comparison, the Agency concludes that the constituents of concern in oily wastes can be carried over to receptor points as agueous leachates at concentrations ranging from 10 to 0.001 percent and 1 to 0.01 percent of the original concentration of semivolatile compounds and metals respectively, in the oily wastes.

As shown in Tables C and D, for each of the organic constituents, the ratio of drinking-water well concentrations to health-based levels is greater than 1 in all cases except for the DA factor of 10,000 for benzene, the most mobile of the organic constituents. For F037 sludges, the ratios range from a low of about 0.78 (benzene at 10,000 DA) to a high of over 46,000 (B(a)P at 100 DA), and for F038, these values range from 0.24 (benzene at 10,000 DA) to over 33,000 (B(a)P at 100 DA). The Agency, therefore, believes that the potential for human exposure is significant and provides a basis for listing these wastes as hazardous.

These DA factor-derived estimates of potential significant human exposure are further substantiated by Agency-collected data from petroleum refining sites. For example, the Agency has information for down-gradient ground-water contamination from a petroleum refinery suggesting that the constituents of concern identified in F037 and F038 wastes have been released from a sludge pile and have reached ground water at concentrations that exceed the health-based numbers. The Agency believes that the data are convincing and support its conclusion that the current disposal practices used at this refinery are not acceptable and given the contaminants, may not represent management of waste consistent with protection of human health and the environment. There are numerous instances of ground-water contamination at petroleum refineries; and in some cases the contamination is of such magnitude that oil is recovered from the aguifer. Environmental damage at refineries is extensive and is generally attributable to the following contaminant sources (or combinations thereof): crude oil spills, refined product spills, and waste management. The Agency reviewed 21 refinery sites in Region VI and found at 17 of the facilities that groundwater contamination could not be traced solely to waste management. However, the Agency expects that waste management in unlined surface impoundments significantly contributed to the environmental damage based on our modeling. At the remaining four facilities clear evidence of groundwater damage as a result of waste management was detected. This provides additional evidence of the mobility of oily materials and wastes. Additional instances of environmental damage resulting from mismanagement are presented in Appendix I of the Background Document supporting todays rule. The data demonstrate that the hazardous constituents in these wastes are sufficiently mobile and persistent to pose a threat to human health and the environment when the wastes are mismanaged.

4. Potential for Bioaccumulation

Under the Clean Water Act, the Agency has established acceptable fish tissue concentrations for approximately 50 ecologically significant chemicals that tend to either bioconcentrate in fatty tissue and/or bioaccumulate in aquatic species and are likely to be transferred to higher organisms at different trophic levels (*i.e.*, in the food web). For each of the chemicals, the Agency has established a bioconcentration factor (BCF) that may be used to estimate the concentration of the chemical in biological tissue following exposure to a contaminated medium (*i.e.*, food or water). This list of 50 chemicals includes the three organic constituents of concern present in the F037 and F038 wastes. To protect humans from the consumption of contaminated fresh water and salt water species, the Agency has also established chronic water quality criteria for a large number of chemicals including all five of the constituents of concern for F037 and

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F038 wastes. Table F presents BCFs and the chronic water quality criteria for the primary constituents of concern for today's listings. The BCF of a chemical represents the potential for its bio-uptake, its accumulation in tissue, and the degree of its metabolism and biotransformation; and is balanced by the excretion of the chemical. The higher the BCF value, the more readily the chemical will be taken up and stored, and not be degraded nor excreted.

TABLE F.—EPA-ESTABLISHED VALUES FOR POTENTIAL BIOCONCENTRATION IN AQUATIC SPECIES

Constituents	BCF	Chronic water quality criteria (μg/L)	
		Fresh water	Salt water
Benzene	5.2	N/A	700
Benzo(a)pyrene	28,200	N/A	*300
Chrysene	11,700	N/A	*300
Lead	N/D	3.2	5.6
Chromium VI	N/D	11	50

*For all PAHs, only one acute water quality criterion is established.
N/A—Not available.
N/D—Not developed.

The BCF is estimated as the concentration of the chemical in biological tissue following exposure to contaminated food and/or water divided by concentration of the chemical in the exposure medium. For example, chrysene has a BCF value of 11,700 indicating that if the concentration in salt water were 3 μg/L (one-one hundredth of the chronic water quality criteria value), it would be likely that salt water organisms would show chrysene concentrations of 35,100 μg/kg (35.1 ppm) in the tissues of their bodies. A BCF of 1000 indicates a potential for bioaccumulation, and both chrysene and benzo(a)pyrene are an order of magnitude or more higher than a value of 1,000, which is indicative of bioaccumulation in fish tissue.

Animal toxicity data available in the literature also shows that the constituents of concern, especially metals, remain in the edible animal tissue. The National Academy of Sciences (NAS) has established mineral tolerance levels for domestic animals.[19] These levels are referred to as maximum tolerable levels (defined as the dietary level that, when fed for a limited period, will not impair animal performance and should not produce unsafe residues in human food derived from the animal). The limits were established following the evaluation of the literature relating to 35 dietary minerals of both essential and "toxic" nature. Information such as the form of element, length of study, criteria for response, and species of test animals were taken into consideration. In establishing these limits, the adverse health affects to the domestic animals were also considered as the primary criteria for response.

The NAS limits are recommended for use during formulation of diet for domestic animals used as supplemental food in addition to forages, a primary food source for grazing animals.

Dietary mineral levels for selected metals such as cadmium, lead, and mercury were also based on human food considerations (*i.e.*, their potential for bioaccumulation in edible tissue used for human consumption). For example, cadmium accumulates in the liver and kidney tissue where it has a very long biological half-life, *i.e.*, is retained without any significant degradation. Domestic animals grazing on forage grown on soil contaminated with high levels of constituents of concern in petroleum wastes may be toxic to animals and may in turn accumulate in animal tissue at levels higher than those acceptable for human consumption.

These data, obtained from fish studies and animal tissue analyses, suggest that all the primary constituents present in F037 and F038 could pose significant risks to human health and environment via bioaccumulation.

5. Types of Mismanagement

Management practices for F037 and F038 sludges include storage in wastewater treatment tanks and surface impoundments, and final disposal in land disposal units including subtitle D landfills and land farms. However, sludges may remain in surface impoundments for very long periods. Only about 30 percent of the refineries have conducted periodic clean-out of at least some of their sludge generating ponds as of 1983. During wastewater treatment (i.e., settling, sedimentation, and gravity separation), solids deposit at the bottom of settling ponds, surface impoundments, or treatment lagoons. Many of these units are in locations where the soil is highly permeable and the ground-water table is relatively high. The solids settled in these units pose a significant risk to human health and the environment because (1) the settled solids typically contain significant levels of PAHs, benzene, lead, chromium, and other hazardous constituents; (2) these constituents have demonstrated mobility in the environment; and (3) these units typically are not fitted with leachate control measures. The site specific data collected by the Agency indicate that toxic constituents in the deposited solids have been transported from the source and have reached and contaminated ground water (see Response to Comments Background Document in the docket for this rulemaking).

6. Quantities of Waste Generated

EPA estimates that approximately 408,000 metric tons of F037 and F038 sludge are generated annually by the 204 petroleum refineries in the United States. Of this amount EPA estimates that between 256,000 and 300,000 metric tons per year are not covered by the Toxicity Characteristic. The original listings for K048 and K051. captured approximately 610,000 MT/yr of sludges (310,000 and 300,000 MT/yr, respectively).

7. Severity of Damage

The data available to the Agency indicate that the mismanagement of separation sludges has resulted in damage to the environment. Detailed damage information is presented in Appendix I in the Background Document Supporting today's rule. The damage incidents have shown ground-water contamination at levels in excess of health-based limits, soil migration and contamination of surface waters, and mortality of wildlife attracted to treatment lagoons.

8. Other Environmental Regulations

During the development of the F037 and F038 listings, the Agency evaluated the potential for other environmental regulations to provide protection for human health and the environment from mismanagement of petroleum refining primary treatment sludges. The Toxicity Characteristic, which was being developed at the same time as the expanded listings, was identified as having potential to identify the primary treatment sludges as hazardous and thus provide such protection. Specifically, a number of commenters to the April 13, 1988 Notice of Data Availability (53 FR 12182) expressed their belief that the TC rule would provide adequate protection from these wastes.

The Agency analyzed wastewater treatment sludges collected during the waste characterization effort for the expanded listings to determine the extent to which the TC would regulate primary treatment sludges. The results of these analyses were published in the April 13, 1988 Notice of Data Availability. The Agency has identified

[19] National Academy of Sciences, 1980. Mineral Tolerance of Domestic Animals. National Academy Press. National Academy of Sciences, Washington, DC. July 1980.

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two major problems in relying on the TC to identify primary treatment sludges as hazardous. The first is that there exist significant levels of hazardous constituents not covered by the TC. Specifically, neither benzo(a)pyrene nor chrysene, both constituents which form the basis of listing for today's F037 and F038 listings, are covered by the TC. Second, Agency studies[20] have shown that the EP test, as well as the newly developed TCLP, tends to underestimate the leachability of hazardous constituents from oily wastes.

For these reasons, the EPA has decided that no other existing regulations would protect human health and the environment from the mismanagement of primary treatment sludges from the petroleum refining industry to the extent of today's listings for F037 and F038. The Agency previously developed regulations (listing of K048 and K051 wastes) to control hazardous wastes generated from the primary treatment of petroleum refinery wastewaters. Today's action will extend RCRA and CERCLA coverage to all similar wastes, providing a significant increase in controls on petroleum refinery waste management practices and further protection of human health and the environment.

9. Other Factors

The Agency is unaware of any other factors which would rebut the presumption that these wastes are hazardous.

10. Conclusion

In summary, after evaluating the criteria specified in 40 CFR 261.11(a)(3), the Agency has determined that the wastes are capable of posing a substantial present or potential hazard to human health and the environment when improperly managed. The Agency today concludes that F037 and F038 sludges should be added to the list of hazardous wastes at 40 CFR 262.31 because these wastes typically and frequently contain high concentrations of Appendix VIII constituents and after considering the factors specified in 40 CFR 261.11(a)(3) (i)-(xi), the Agency has reason to believe that these wastes are capable of posing a substantial present or potential hazard to human health or the environment when mismanaged.

[20] Research Triangle Institute, *Evaluation and Modification of Method 1311 for Determining the Release Potential of Difficult-to-Filter Wastes*, Final Report, April, 1990.

III. Interaction with Other Regulations

A. Characteristics of Hazardous Waste

As one of the mandates of HSWA, the Agency revised the Toxicity Characteristic (TC) (see 55 FR 11798, March 29, 1990). Some of the EP toxic metals and several of the constituents added to the TC rule are likely to be found in the wastes listed today. Some of the wastes listed today may fail the EP or the revised TC due to the presence of TC-listed constituents, or may exhibit the characteristic of ignitability and, therefore, may already be regulated as characteristic hazardous wastes. After the effective date of today's rule, as discussed below, these wastes will be regulated as listed hazardous wastes in addition to being regulated as characteristic wastes in some cases.

Furthermore, characteristically hazardous sludges that meet today's listing and that were previously not considered solid wastes when reclaimed (under the exclusion for reclaimed materials of 40 CFR 261.2(c)(3)) will become RCRA-regulated hazardous wastes by virtue of this listing. Consequently, generators conducting oil reclamation from any newly listed wastes that were previously characteristically hazardous may now require a permit for storage of these materials prior to processing the sludges.

Today's rule will regulate certain wastes generated from petroleum refinery wastewaters as listed hazardous wastes. Wastes that were already hazardous by virtue of exhibiting any of the characteristics of hazardous waste, including the revised TC, will continue to be regulated as characteristic wastes after the effective date of this listing. However, after the effective date, these wastes will require a new hazardous waste number to reflect the fact that they are listed hazardous wastes.

B. Minimum Technology Requirements for Surface Impoundments

RCRA section 3004(o)(1)(A) specifies minimum technology requirements (MTRs) for new, replacement, or lateral expansions of surface impoundments that contain hazardous wastes. RCRA section 3005(j)(1) requires surface impoundments that were in existence and that qualified for interim status on the date of enactment of HSWA [November 8, 1984] cease receiving, storing, or treating hazardous waste or comply with the minimum technology requirements of section 3004(o)(1)(A) within four years of the date of enactment, i.e., November 8, 1988. RCRA section 3005(j)(6)(A) also provides that surface impoundments that become eligible for interim status after November 8, 1984, as a result of receiving wastes that are hazardous due to additional listings or characteristics authorized by section 3001, must either comply with MTRs of section 3004(o)(1)(A) within 4 years of promulgation of the new listing or characteristic, or must cease receiving hazardous wastes no later than that date (see discussion in next section on the effective dates for land disposal restrictions). Requirements for closure of impoundments that cease to receive hazardous wastes are set forth in 40 CFR 264113 and 265.113 (see 54 FR 33376, August 14, 1989).

C. Land Disposal Restrictions

HSWA mandated that the Agency promulgate land disposal prohibition determinations for wastes identified prior to the enactment of HSWA under a specific schedule (RCRA section 3004(g)(4), 42 U.S.C. 6924(g)(4)). If the Agency failed to promulgate land disposal restrictions by the dates specified in section 3004(g)(4), the wastes are prohibited from land disposal after May 8, 1990. HSWA also requires the Agency to make a land disposal prohibition determination for any hazardous waste that is newly identified or listed in 40 CFR 261 after November 8, 1984, within 6 months of the date promulgating the new listing (RCRA section 3004(g)(4), 42 U.S.C. 6924(g)(4)). However, the statute does not provide for automatic restriction or prohibition of the land disposal of such wastes if EPA fails to meet this deadline.

DAF float and API separator sludge from the petroleum refining industry (K048 and K051) were evaluated as part of the First Third land disposal prohibition determination, and treatment standards were promulgated for these wastes on August 17, 1988 (see 53 FR 31138). However, in the Third Third final rule (published in the **Federal Register** on June 1, 1990, 55 FR 22520), the Agency rescheduled these wastes to the third third of the schedule and established revised treatment standards. In addition, the Agency granted these wastes a six-month national capacity extension from the effective date of the rule (May 8, 1990).

Although the wastes covered by today's notice are being listed because of the presence of hazardous constituents at levels similar to those found in K048 and K051, F037 and F038 are newly listed wastes, and therefore, the treatment standards for K048 and K051 do not apply to today's newly

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listed wastes. The Agency has not yet completed treatability and capacity analyses for these newly listed wastes. For this reason, the Agency will address land disposal restrictions for the wastes listed today at a later date. Until that time, these wastes are not subject to 40 CFR 268, unless they exhibit one or more of the characteristics of hazardous waste, namely corrosivity, ignitability, reactivity, or EP toxicity. Wastes that exhibit the newly promulgated Toxicity Characteristic are considered newly identified as hazardous and are not covered by the LDR (unless also EP Toxic) (see the Third Third Land Disposal Restrictions Rule, June 1, 1990, 55 FR 22520).

The following discussion of requirements that may be imposed under the land disposal restrictions is provided to assist facilities managing the wastes listed today in preparing for requirements that may become applicable in the future. The Agency recommends that facility owner/operators begin taking the actions necessary to come into compliance with these requirements in anticipation of future effective dates.

The Land Disposal Restrictions program may restrict the management of the wastes listed today in various ways, depending on the timing and substance of a number of future regulatory actions. It should be noted that because the statute does not provide for automatic restriction or prohibition of land disposal of newly identified wastes until such restrictions are promulgated, land disposal of these wastes will not be restricted or prohibited until the Agency promulgates land disposal restrictions (unless the wastes exhibit one of the restricted hazardous characteristics or are subject to other land disposal restrictions).

Finally, it should be noted that several other RCRA rulemaking actions may affect the regulatory status of units managing the wastes listed today; including the Toxicity Characteristic (55 FR 11798), the Third Third land disposal restrictions rule (55 FR 22520), and promulgation of land disposal restrictions for TC hazardous wastes. The net effect of these regulations for any specific unit will be determined by the wastes managed in the unit, whether the wastes are hazardous due to being listed or exhibiting a characteristic, the effective dates of rules that cause each waste to be regulated as hazardous, and the treatment levels and effective dates promulgated for each hazardous waste managed in the unit. Each facility owner/operator must evaluate the applicable current and future regulations for each unit to determine the appropriate regulatory and technical actions for that unit.[21]

D. "Mixture" and "Derived From" Rules

The mixture rule (40 CFR 261.3(a)(2)(iv)) provides that any mixture of a listed waste and a solid waste is itself a RCRA hazardous waste with certain limited exceptions. Wastewater flowing downstream from units generating the listed sludges will not ordinarily be hazardous by virtue of the mixture rule in the absence of some activity, such as scouring, that causes the settled listed sludge to be reintroduced into the wastewater.

The "derived from" rule (40 CFR 261.3(c)) states that any waste derived from the treatment, storage, or disposal of a listed hazardous waste is itself a hazardous waste. Often water from dewatering of wastewater treatment sludges is recycled to process operation or returned to the treatment system. It is the Agency's position that such a wastewater is not a "derived from" hazardous waste if it can be demonstrated that the water removed from the sludge is no more contaminated than the original influent to the treatment unit from which the sludge was removed for dewatering.

E. Corrective Action

Under sections 3008(h) and 3004(u) of RCRA, all solid waste management units that are located at facilities subject to interim status or permitting are subject to RCRA corrective action requirements for releases of hazardous waste or constituents to the environment. It should be noted 'that regulated hazardous waste management units are also solid waste management units. Under these provisions, units that managed sludges that would have met today's listings in the past but that cease managing these wastes prior to the effective date of today's listings are solid waste management units and, if located at facilities subject to interim status or permitting under subtitle C of RCRA, are subject to the corrective action provisions. Wastewater treatment units that are exempt from the standards of 40 CFR 264 and 265 are also solid waste management units and, if they are located at facilities subject to interim status or permitting under subtitle C of RCRA, are also subject to the corrective action provisions.

IV. Response to Comments

The Agency is responding in this preamble to all major comments received in response to the original proposal and subsequent notices. The major issues raised by the commenters that are addressed in this section are:

- Scope of the listing
- Data adequacy
- Demonstration of hazard
- Implementation issues.

Other comments received by the Agency are addressed in the Response to Comments Background Document that is available in the docket associated with this rulemaking.

A. Scope of the Listings

Since the Agency originally proposed these listings, numerous comments have been received regarding the types of wastewater treatment units that would be subject to the listing.[22] Comments on the scope of the oil/water/solids separation sludge listings that are being finalized today have been subdivided into three major categories:

- Incidental versus Intentional Generation
- Applicability to Stormwater Basins
- Alternative Definitions.

The Agency's responses to these comments are presented below.

1. Incidental versus Intentional Generation

Many commenters suggested that the Agency restrict applicability of the listing to units that were designed and

[21] Particularly, it is possible that wastewaters from which the wastes listed today are generated will be identified as hazardous waste prior to the effective date of this rule through the revised Toxicity Characteristic (TC) (see 55 FR 11798, March 29, 1990). Thus, the applicability of unit-specific requirements such as the technical standards of 40 CFR 264 and 265, the MTR retrofitting requirements, and the requirements imposed by land disposal restrictions to units managing both the wastes listed today, and wastewaters that exhibit the Toxicity Characteristic, will be driven by requirements associated with TC wastes as well as those associated with the wastes listed today. As previously noted, any inconsistencies that may arise among these requirements will be addressed in future rulemakings which concern these issues.

[22] As discussed in section II.A of this preamble, the Agency differentiates between primary wastewater treatment sludges (oil/water/solids separation sludge) and secondary wastewater treatment sludges (sludges generated in aggressive biological treatment units) as follows:

■ Oil/water/solid separation sludges are generated during primary physical and/or chemical treatment of wastewaters to separate oil, water, and solids. These sludges typically come either from gravitational units (*e.g.*, API separators) generating primary oil/water/solids separation sludges or emulsion breaking units (*e.g.*, DAF units) generating secondary oil/water/solids separation sludges. Oil/water/solids separator sludge also includes sludges generated "incidentally" in units such as sumps, sewers, and oil skimmers that are upstream of aggressive biological treatment units. All of these sludges are within the scope of today's new listings.

■ Biological sludges or digested biomass solids are sludges generated in aggressive biological treatment units.

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operated for the primary separation of oil, water, and solids from wastewaters. Commenters believed intentional generation of waste (*i.e.*, generation in units functionally similar to API separators and DAFs) was the premise of the original Envirex petition and that the Agency should limit the listing to these types of primary sludge-generating devices. Several commenters responding to the 1985 and 1988 Notices of Data Availability maintained that the Agency, until the 1985 notice, had not provided any indication that units (located upstream of the secondary biological treatment unit) that accumulated sludge incidentally (*i.e.*, deposition in devices that were intended to transport or store wastewater rather than deposit sludge) were to be covered by the listing. The Agency, thus, had not provided an opportunity for comment on the full scope of the listing. However, some of the same commenters had expressed concern in their comments on the original listing proposal of 1980 that the original listing proposal could potentially apply to incidentally generated sludges. One commenter maintained that the 1985 clarification was essential to ensuring consistent application of the original proposal.

The Agency disagrees with the commenters' contention that the original intent of the listing was to capture only those primary sludge separator units that were functionally equivalent to API separators and DAF units. The following quotes from the preamble to the 1980 proposal (see 45 FR 74893) illustrate that the Agency's intent on the scope of the primary sludge listings has been consistent:

> * * * *any* petroleum refinery sludge resulting from primary and secondary oil/water/solids separation will be comparably composed regardless of the type of equipment used in the separation step.
>
> Likewise, the API separator is only one of the many equipment types which function as a primary oil/water/solids separator (other processes producing similar sludges include * * * storm equalization lagoons and ballast water-holding tanks.)
>
> * * * the Agency agrees that the listings must be modified to reflect the hazardous character of the wastes themselves, rather than the type of equipment or processes generating the waste.

Based on comments received since the 1980 and subsequent proposals, it appears that some commenters' understanding of when a listed hazardous waste is generated and becomes subject to regulation has changed. Originally, some commenters failed to realize that the Agency considers sludge generation to occur when oily wastewater is treated by physical and/or chemical processes to segregate oil and solids from the wastewater. The solids formed at the bottom of a sludge-generating unit are wastes potentially subject to the RCRA regulations. As a consequence of their misinterpretation, some commenters erroneously concluded that the original proposal did not include sump sludges and other incidentally deposited sludges. A commenter responding to the 1988 notice acknowledged that EPA has provided a satisfactory clarification of which sludge-generating units would be covered by the proposed rule.

Commenters identified a number of "incidental" accumulators of primary oil/water/solids separation sludge that the commenters believed were inappropriately included in the listing scope. These included sumps, concrete sewers, pits, pipes and pipelines, emulsion tanks, separation tanks and impoundments, gravity separators, ditches, storm-water basins, flow equalization basins, chemical cleaning pits, and oil skimmers as well as oil retention units not used for the emergency spill control. The Agency has collected samples from all major incidental accumulator units at a variety of refineries and compiled analytical data on the sampled sludges. Analyses of these samples demonstrate that these sludges are similar to oil/water/solids separation sludges from API separators and/or DAFs at the same refinery (see docket number F-88-PTSA-S0005 included in the regulatory docket for the analytical results). This outcome is not surprising, inasmuch as the sludges are generated from the treatment of similarly composed wastewaters through gravity sedimentation. While commenters expressed the belief that units operated for different purposes would produce sludges of different characteristics and that the Agency should require and conduct specific analyses of unintentionally (*i.e.*, incidentally) generated sludges before regulating such sludges as hazardous, they failed to provide data to substantiate their claims. Furthermore, no valid theoretical basis has been put forth in support of the claims that the API separator sludge and the sludges generated in the incidental units are dissimilar.

A comparison of the data generated by the Agency for the sludges from the incidental units and the API separator sludge indicates that both types of sludges are similar in composition and contain hazardous constituents at significant concentrations (see document number F-88-PTSA-S0005 included in the regulatory docket). The Agency, therefore, disagrees with the commenters and is applying these listings to the sludge-generating units with sludge deposits that are incidental to the primary wastewater treatment system regardless of the location of these units. In the Agency's opinion all the incidental units identified earlier in this section and intentional units such as API separators and DAF's used to separate oil, water, and solids from process wastewaters and oily cooling wastewaters physically and/or chemically are covered by today's rule.

The Agency, therefore, is finalizing the proposed listings for F037 and F038 wastes that capture sludges generated in both the incidental and intentional sludge-generating units. The F037 listing definition includes the sludges generated from gravitational separation during storage or treatment of process wastewaters and oily cooling wastewaters from petroleum refineries. Such sludges include, at a minimum, those generated in oil/water/solids separators, tanks and impoundments, ditches and other conveyances, sumps, and stormwater units receiving dry weather flow. The F038 listing definition includes, at a minimum, sludges generated in secondary oil/water/solids separation units, such as IAF units, and tanks or impoundments not covered in the definition of either F037, K048, or K051.

The F037 and F038 listing definitions, however, do not include the following sludges:

- —The sludges included in the hazardous waste listings K048 and K051;
- —The sludges generated in stormwater units that do not receive dry weather flow; and
- —The sludges generated in the aggressive biological treatment units and units that do not receive any process wastewaters or oily cooling wastewaters that have not undergone aggressive biological treatment.

The Agency believes that today's listings and the previous listings of K048 and K051 cover all types of oil/water/solids separation sludges generated using either primary or secondary separation in primary treatment units. In other words, the petroleum refinery sludges not covered either in today's listings or the previous listings are not included in the intended scope of the original listings because they are not similar in composition to the listed wastes and are not generated in the primary or secondary oil/water/solids separation processes (*i.e.*, physical and chemical separation).

The Agency believes that the scope of today's listing definitions provides an incentive to refiners to use and properly maintain a well-designed wastewater treatment system, thus minimizing the

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potential generation of separation sludges in incidental units. During sampling site visits, the Agency noted that at many locations the primary wastewater treatment systems are operated inefficiently. This increases the quantities of sludges generated in downstream separator ponds and impoundments. The Agency believes that a wastewater treatment system could be better maintained and operated to (a) improve treatment efficiencies, (b) minimize sludge quantities especially in the incidental units, and (c) reduce the need for potential compliance with the RCRA-imposed minimum technology requirements.

2. Applicability to Stormwater Retention Basins

Numerous commenters expressed concern that stormwater retention basins generally handle a high volume of storm or rain water run-off and a relatively low volume of contaminated wastewaters. These commenters believed that these units should be distinguished from other primary treatment units. Commenters expressed the belief that the sludges generated in these units would be different from those in units which typically and frequently receive oily process wastewaters and/or oily cooling wastewaters. Commenters indicated that the use of oil skimmers in association with these units is necessitated by Spill Prevention Control and Countermeasure (SPCC) plans instituted by many refineries and does not necessarily reflect an expectation that the stormwater retention basin will receive an oily wastewater influent. One commenter submitted TCLP data that, according to the commenter, substantiated differences between primary oil/water/solids separation sludge and stormwater retention basin sludge.

The Agency examined a number of stormwater and flow equalization units in the course of its data collection efforts. These data were noticed on February 11, 1985 (see 50 FR 5637) and April 13, 1988 (see 53 FR 12162). The compositional data demonstrated that sludges from units that received dry weather flows were similar to other primary treatment sludges at the refinery. The similarity between sludges generated in stormwater retention units used exclusively for stormwater flow equalization and sludges generated in units used for primary treatment is less clear. Refineries generally collect the stormwater that falls on and runs off the surface of process areas of their operations. The stormwater is retained in basins for treatment and possible discharge. Some refineries collect stormwater in the process sewer system during storm events and thus may send some process wastewater along with their stormwater to stormwater retention basins. The Agency agrees with the commenters that stormwater units that receive process wastewaters in this manner, and do not receive any process wastewaters or oily cooling wastewaters during dry weather flow, do not routinely generate sludges that are similar in composition to the primary treatment sludges subject to today's listings. Thus, for the purposes of these listings, any stormwater unit that receives process or oily cooling wastewaters during non-storm events (*i.e.*, dry weather flow) will be considered to be generating a listed sludge.

One commenter submitted TCLP data that, while lacking important total waste compositional information, provided some additional confirmation for the Agency's view that units that are used for process and/or oily cooling water flow equalization in *addition* to stormwater retention will be significant accumulators of sludge, and that those sludges will be similar in composition to other primary treatment sludges generated at the refinery. The Agency, therefore, has concluded that sludge generated in stormwater collection devices that receive dry weather flows (*i.e.*, units used for wastewater flow equalization) are within the scope of the listing. Those devices not receiving dry weather flow and used exclusively for stormwater retention are not included in today's listings.

3. Alternative Definitions

In the 1988 proposal to list oil/water/solids separation sludges as hazardous, the Agency discussed the potential use of phenolic removal efficiency and percent oil content as criteria to differentiate between the sludges from primary and secondary oil/water/solids separation and sludges generated from biological treatment of wastewaters. Several commenters supported the use of phenolic removal efficiency as an indicator of when sludges are biological treatment sludges. A few commenters also supported the use of percent oil content in combination with phenolic removal efficiency as an appropriate indicator to differentiate between primary and secondary oil/water/solids separation sludges and secondary (biological) treatment sludges. After a careful review of the Agency-collected data and the public comments, the Agency concluded that it is not feasible to define the scope of the sludge listing based on chemical differences between the primary and secondary (biological) treatment sludges. The Agency believes that the available data are not adequate to apply either of these parametric tests to differentiate between secondary oil/water/solids separation and secondary (biological) treatment sludges. Specifically, these tests yielded both false negative and false positive results at a frequency unacceptable for regulatory decision-making (see section I, Background above). The Agency believes that the final listing definitions clearly identify affected units and are more easily implementable and enforceable because they do not impose additional testing and data interpretation requirements for the regulated community.

B. Data Adequacy

This section covers two major issues raised by commenters: (1) Sampling protocols, and; (2) data variability and representativeness of the samples. Commenters raised questions concerning the adequacy of the Agency's sampling procedures. They also maintained that sludges included in the previous listings and those proposed for the new listings are not comparable and equivalent in terms of constituents and their concentrations; hence, these sludges are not similar to K048 and K051 wastes and cannot be classified as K048 and K051 wastes. Each of these issues is discussed further below.

1. Sampling Protocols

Commenters raised a number of questions regarding the sampling and analytical procedures used to collect sludge data in support of today's listing. The major comment on sampling protocols of relevance to today's listings relates to the Agency's use of grab samples to characterize wastewater treatment sludges. Commenters expressed concern that the concentration of sludge constituents would vary temporally and spatially within a sludge-generating unit (particularly impoundments and conveyances). Commenters felt that the Agency's sludge sampling activity did not reflect and adhere to the SW-846 sampling protocols.

The Agency disagrees with these commenters. For example, when sampling surface impoundments, the sampling teams typically probed the unit to determine the extent of sludge accumulation prior to taking a set of samples. The sludges sampled generally reflected long-term (longer than one year) deposition and, thus, were temporally significant, that is, reflective of long-term concentrations. Also,

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samples were obtained from predetermined sampling locations (*i.e.*, grid approach) within the impoundment to ensure spatial representativeness, thus, the Agency considered the potential for both spatial and temporal variability of sludge within the unit and designed the sampling approach to ensure that representative samples were obtained. Aliquoting of subsamples, when necessary, was performed in accordance with the SW-846 protocols. When surface impoundments were sampled from the banks of the unit (usually because the refinery refused to allow the sampling team on the impoundment), grab samples were collected around the perimeter of the unit.

Great care also was taken to sample incidental sludge-generation units, both those units that serviced small portions of the refinery and those that centrally serviced the refinery's wastewater treatment needs. Ditches where sludges accumulated incidentally were sampled to compare with sludges intentionally generated in separators. Surge basins that performed varying degrees of stormwater retention versus flow equalization also were sampled. The result of this extensive sampling program was the collection of samples from the entire spectrum of wastes potentially subject to the listings.

In a small number of cases, grab samples were collected from a single operating cycle of units that generated sludges on a continuous basis. However, when the hazardous constituent levels of these wastes were examined on a dry basis, the observed values were well within the concentration ranges for similar classes of sludge-generating units and for other units at the refinery. Therefore, the Agency believes that it was successful in obtaining samples that are representative of the long-term waste-generation practices of sludges from the treatment of petroleum refining wastewaters.

2. Data Variability and Class Representativeness

Numerous commenters responding to the 1980 and 1985 **Federal Register** notices expressed concern that the Agency had not provided data on large classes of units that were subject to the listing (*e.g.*, stormwater and flow equalization basins and the other sources specifically mentioned in the February 11, 1985, notice). To address the commenters' concerns, the Agency had included in the 1988 notice docket the relevant data (see docket number F-88-PTSA-S0005 included in the regulatory docket).

Commenters responding to the April 13, 1988, notice expressed concerns regarding the adequacy of the Agency's data collection effort. Commenters also raised several new concerns. Among the commenters' concerns with the data noticed in 1988 were:

—Variability of constituent levels within a given unit throughout the class of wastes,
—Whether the data established quantitatively the equivalency of the proposed sludges to K048 and/or K051 waste listings, and
—Whether lead and chromium levels were still of concern in any refinery sludges.

These comments are discussed below.

a. *Constituent Level Variability.* The response to the above comments about the extent of sampling and adherence to the SW-846 sampling protocols explain the rationale for the Agency's conclusion that collected samples were representative and that a comprehensive sample collection activity was undertaken. Similarly, the Agency stresses that an extensive sampling effort was completed to illustrate the similarity between the F037 and F038 sludges, and the API separator sludge (K051) and the DAF float (K048). Care was taken to obtain samples from possible sludge-generating units servicing small portions of the refinery as well as those centrally servicing the refinery's wastewater treatment needs. For example, ditches that incidentally accumulated sludges were sampled for comparison with sludges intentionally generated in separators. Surge basins that performed varying degrees of stormwater retention versus flow equalization were also sampled. The objective of this sampling program was to determine the constituent level variability and/or similarity in support of the potential listings.

Considering the diverse population of sludge-generating units and operating conditions, it was not unexpected that lead and chromium concentrations varied over three orders of magnitude. Similar variations in inorganic contents were seen in the analytical values used as the basis for the original API separator sludge listing. Likewise, API separators sampled at different refineries over the past several years also exhibited three orders of magnitude variation in metals concentrations. Despite this apparent inter- and intra-facility diversity, side-by-side comparison of API separator sludge and primary oil/water/solids separation sludge concentrations showed consistent and strong similarity in terms of the sample means, concentration ranges, and variances (see document number F-88-PTSA-S0005 included in the regulatory docket). Data obtained during the development of Land Disposal Restrictions for K048 and K051 shows similar variability. Despite this variability, most samples analyzed by the Agency showed high concentrations of one or more toxic constituents.[23]

The Agency views the strong similarities among the characterization results for the sludges generated in these many types of units with varying degrees of sludge-generating capacities as clear support for the premise that a similar class of units is being addressed in today's listings. Similarity of organic hazardous constituent levels in the sampled sludges further supports the Agency's contention that all of these sludges belong to the same category of primary wastewater sludges.

b. *Equivalency to K048 and K051 Listings.* In 1980, Envirex petitioned the Agency to extend the K048 and K051 listings to all similarly composed sludges, regardless of the unit type in which the sludges were generated. When the Agency proposed to list primary and secondary oil/water/solids separation sludges on November 12, 1980 (see 45 FR 74893), it did so to ensure that all primary treatment sludges would be regulated in similar fashion. As discussed in the previous section, the Agency believes that the data noticed in 1988 clearly validate the premise of the original Envirex petition. The Agency compared the lead and chromium levels found in the API separator sludges and DAF floats with those levels in wastes listed today and concludes that the two sets of compositional data are equivalent with over 99 percent confidence based on the use of a standard "t" test on the log-normally distributed data (see document number F-88-PTSA-S0005 included in the regulatory docket).

c. *Changes in Lead and Chromium Levels.* Several commenters responding to the proposed rule expressed the opinion that lead and chromium levels have decreased in API separator sludges since the original rulemaking. Commenters reasoned that these changes have resulted from the phase-out of lead in gasoline and from the reduced usage of chromium in cooling water. Commenters concluded that the Agency should reexamine the need for the existing listings rather than adding new ones.

In response, the Agency evaluated all of the data noticed to date on API

[23] If the concentrations of each Appendix VIII constituent is sufficiently low, the refiner may elect to delist the waste under the procedures specified in 40 CFR 260.22.

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separator sludges. Three groups of analytical data were considered: the original data collected in the mid-1970's in support of the K051 listing, data on API separator sludges collected in the early 1980's and noticed in the February 11, 1985 **Federal Register**, and additional data collected from units sampled in 1987 and noticed in 1988. The Agency believes that these data offer an opportunity to examine the chronological changes in sludge composition over a period of 15 years.

First, it should be noted that the Agency does not believe that the lead in gasoline is the major contributor to the lead observed in wastewater treatment sludges. As can be seen from Table G, average lead values have not decreased with time in API separator sludge (K051), rather, they have increased by at least three fold since 1985, and by more than eight fold since the-mid 1970's. The Agency is uncertain as to the precise cause of this phenomena but based on the data the Agency concludes that the concentrations of lead in the sludges is not a strong function of gasoline lead concentrations.

TABLE G.—API SEPARATOR SLUDGE COMPOSITION DATA

Constituent	Average concentration (mg/kg)		
	Mid-1970	1985	1987
Lead	26	75	222
Chromium	190	370	197

The chromium values presented in Table G, on the other hand, suggest that recently sampled and analyzed sludges contain lower chromium levels than those analyzed in the early 1980's. However, the average 1987 chromium levels (197 mg/kg) are virtually identical to those measured in the mid-1970's (190 mg/kg) that warranted the original listing of the API separator sludge. Whatever the variability in the chromium values, the data show the levels remain high. Therefore, the Agency believes that both lead and chromium continue to be present in API separator sludges at levels of concern, and API separator sludges will continue to be listed as hazardous wastes.

C. Demonstration of Hazard

Commenters from the regulated community generally opposed the expansion of the K048 and K051 listings, while the environmental and regulatory community uniformly favored the expansion "to reflect the hazardous character of the wastes themselves." Opposition to the expansion of the listings was based on a variety of factors that generally reflect a concern that the Agency has not adequately demonstrated that the wastes pose a hazard to human health or the environment. The commenters, however, neglected the fact that the Agency had already made such a determination of hazard as required by 40 CFR 261.11 in its original decision to list API separator sludge (K051) and DAF float (K048) (see 46 FR 4618, January 16, 1981). Furthermore, the importance of regulating the primary wastewater treatment sludges as hazardous is increased by the fact that these wastes may be generated in surface impoundments and land-based conveyances, posing a threat to human health and the environment if these land-based units are not properly designed or operated. This section discusses the following four issues:

1. Hazard of currently listed wastes
2. Differences in management practices
3. Inadequate ground-water data for hazard assessment
4. Establishment of pass/fail criteria

1. Hazard of Currently Listed Wastes

Several commenters believe that the extraction procedure (EP) toxicity characteristic data specific to the currently listed wastes (*i.e.*, K048 and K051) suggest that the wastes do not pose a hazard to human health or the environment. In addition, commenters reasoned that because the wastes only occasionally exhibited a hazardous (EP toxic) characteristic and because the delisting process is complex and resource intensive, the Agency should promulgate a "properly designed" unit as the criterion for listing of wastes.

The Agency disagrees with the commenters' contentions that the currently listed wastes do not pose a hazard. In 1980, the Agency finalized the listing of K051 and K048 without challenge to the original bases for listing. Since 1980, the data collected by the Agency have demonstrated not only that lead and chromium levels are high and have remained at similar levels, but that the wastes also contain significant levels of hazardous organic constituents including benzene, benzo(a)pyrene, and chrysene. Commenters, on the other hand, have provided no new waste composition information that would refute the original determination or the more recent proposals. To the contrary, the only compositional information provided to the Agency has come by way of delisting petitions submitted under 40 CFR 260.20 and 260.22 and data submitted in response to the Land Disposal Restrictions for K048 and K051. In every instance the data show that untreated wastes contain high levels of toxic constituents. To date, none of the K048 or K051 delisting petitions for untreated wastes (which consist of more than 35 petitions) submitted by refineries have met the delisting criteria because they contain significant levels of the Appendix VIII constituents.

In addition, the commenters claim that leaching data do not suggest any potential hazard to human health and the environment. These commenters overlooked several points relevant to the mobility of oily wastes in the environment. The Agency developed 40 CFR 261.21 through 261.24 characteristics to identify those wastes that clearly pose a significant threat to human health and the environment. The Agency has always maintained that wastes that do not exhibit any of the promulgated characteristics may still be hazardous for other reasons (*e.g.*, mismanagement scenarios unaccounted for in the TC). The Agency's leaching test (as described in 40 CFR 261.24) models constituent mobility in a slightly acidic (pH at or below 5.0) aqueous leaching environment. Agency studies have shown that the EP test, as well as the newly developed TCLP, tends to underestimate the leachability of hazardous constituents from oily wastes.[24] The potential shortcomings of the existing tests for oily wastes and the presence of significant levels of hazardous constituents not covered by the TC are major reasons why the Agency cannot rely solely on the characteristics to identify primary treatment sludges as hazardous. (EPA is continuing to investigate, however, whether the existing tests may be adjusted to more accurately reflect the leaching potential of oily wastes. For instance, in the context of its used oil lising decision, EPA will soon notice for public comment data on the characteristics of oily wastes using a modified TC protocol.)

Several commenters expressed interest in the Agency's perspective on the significance of leaching data for releases of metals from oily wastes. The Agency did develop an oily waste extraction procedure (OWEP) to evaluate the EP toxic metals in petitioned oily wastes. In response to the commenters, the Agency reviewed industry-submitted OWEP data on API separator sludge (K051) and included a

[24] Research Triangle Institute, *Evaluation and Modification of Method 1311 for Determining the Release Potential of Difficult-to-Filter Waste*, Final Report, April, 1990.

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report on this review in the 1985 notice docket.[25]

The OWEP data must be evaluated within the context of its intended use in the evaluation of delisting petitions for oily wastes. In evaluating delisting petitions, the Agency considers, among other factors, the appropriateness of a ground-water modeling approach and alternative disposal scenarios and identifies a reasonable worst-case management scenario.

The modeling approach used for delisting generally includes a ground-water transport scenario, incorporating conservative, generic hydrogeologic parameters to predict reasonable worst-case contaminant levels at the point of exposure (*i.e.*, concentrations in ground water at a hypothetical receptor well). The use of conservative, generic modeling parameters to determine potential human health exposure rather than extensive site-specific factors is premised on the fact that once the waste is delisted, it will no longer be subject to hazardous waste control. Conservative modeling assumptions, therefore, assure public health protection even when the waste may be poorly managed.

In delisting evaluations for large-volume oily wastes, inorganic constituent leachate levels (as determined by the OWEP) that exceeded the health-based levels were used as one of the criteria to support decisions to deny delisting petitions. Based on models that have been used in these delisting evaluations, EPA predicted the levels of hazardous constituents in the oily waste leachate and compared these with health-based levels. Applying these health-based criteria to the sludge data reported in the ERM report cited earlier, the Agency determined that 10 out of 11 sludges leached either lead or chromium at levels exceeding the compliance-point concentrations.

The waste composition data for API separator sludge (K051) cited in the ERM report are similar to the composition data for primary oil/water/solids separation sludges cited in the docket for the 1988 notice (see document number F-88-PTSA-S0005 included in the regulatory docket). Because these wastes are similar in composition, the Agency believes that the hazardous constituents in the waste proposed for listing should, therefore, leach from the waste and migrate to ground water in similar fashion. Consequently, the inference by the commenters that leaching data suggest that the wastes are not hazardous and would generally be delisted is contradicted by the Agency's assessment of the potential leaching and migration of API separator sludge-containing hazardous constituents to the ground water. Through the analysis of available data, the Agency has determined that the sludges listed today pose unreasonable risks to human health and the environment because of the presence of unacceptable levels of inorganic and organic constituents.

In commenting on the hazard posed by K048 and K051 sludges, commenters also took issue with the inclusion of total chromium as a constituent of concern. Commenters asserted that the Agency's movement away from regulating trivalent chromium, the lack of evidence to substantiate that the chromium contained in the sludges was hexavalent, and the Agency's misrepresentation of the hazards associated with exposure to sludges containing 1,000 mg/kg of trivalent chromium, were all reasons for the Agency to reconsider the basis for the original listings of K048 and K051.

The Agency believes that its approach to regulating chromium-bearing wastes is sound. While the Agency acknowledges that trivalent chromium is less toxic than hexavalent chromium, trivalent chromium can be converted to the hexavalent form under certain plausible mismanagement conditions. Recent evidence suggests that the trivalent to hexavalent chromium conversion may occur in a number of environmental situations (see 51 FR 26420, July 23, 1986). For example, chromium has been found to oxidize readily in the presence of catalyst such as manganese dioxide found in many field soils and sediments. Moreover, it has been shown that process-water treatment involving chlorination (not an uncommon practice in the refining industry to reduce phenol levels) 112 will effectively transform trivalent chromium to its hexavalent form. Also, the normal presence of residual oxidizing capacity in treated water throughout municipal water treatment systems is capable of maintaining dissolved chromium in the higher valence state (see 50 FR 46966, November 13, 1985). Thus, if trivalent chromium is present in high concentrations in well water, chlorination can result in correspondingly high concentrations of hexavalent chromium at the point of exposure (i.e., at the tap). For these reasons the Agency elected to promulgate TC based on hexavalent chromium, but requires that total chromium be measured when performing the TCLP.

For all of the above reasons, EPA is concerned with the potential for trivalent chromium to be converted to hexavalent chromium. Furthermore, beyond the Agency's concerns about trivalent chromium, a significant possibility exists that some portion of the chromium present in the sludges is in the hexavalent form. Unfortunately, the oily matrix interferes with the Agency's analytical methods for determining what portion of the chromium is present in the hexavalent form. When the Agency first proposed to modify the K048 and K051 listings in 1980, the basis of listing cited hexavalent chromium as one of the constituents of concern. Commenters have provided no data to establish that hexavalent chromium is absent from primary separation sludge. On the contrary, the Agency's background information has provided ample justification for the assumption that hexavalent chromium is present in refinery wastewaters. Hexavalent chromium is used at many refineries, and it has been frequently observed in the water phase of refinery wastewater treatment systems.

2. Differences in Management Practices

Several commenters believed that typical management practices for K048 and K051 differ from those for the surface impoundment sludges captured by the new listings. They asserted that the sludges posed no appreciable risk when managed *in situ* because the sludges are infrequently removed from the impoundments (see document number F-88-PTSA-00009 included in the regulatory docket). Commenters further claimed: (1) That the differences in typical management practices necessitated. consideration of factors beyond constituent level equivalency between wastes identified in the listing proposal and K048 and K051, and (2) that EPA must demonstrate that the wastes proposed for listing can pose risks to human health and the environment as required under 40 CFR 261.11(a)(3) and under sections 1004(5)(B) and 3001(a) of HSWA. Commenters stated that the Agency should consider additional parameters, such as quantities of waste managed, potential of constituents to leach and migrate, and/or degradation of hazardous constituents into nonharmful constituents, under the plausible types of mismanagement. Commenters also suggested that, even if the Agency did not agree with the need for consideration of additional factors to make a listing determination, it should

[25] Multi-Participant study for establishing Threshold Concentrations for Delisting Oil Refinery Wastes. ERM-Southwest, Inc., Houston, Texas, 1984.

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consider these factors as a basis for making a determination that the sludges, even though generated, would not be regulated until they were removed from the sludge-generating units.

As discussed previously, the Agency has considered all factors specified under 40 CFR 261.11(a)(3) and has also considered these factors as part of the original K048 and K051 listing decisions. Contrary to the commenters' contention, the Agency believes that the sludges do pose an appreciable risk to human health and the environment.

The first issue raised by the commenters was whether or not the Agency has realistically identified total quantities of sludges requiring disposal and plausible types of mismanagement practices for the waste of interest. Some commenters expressed the opinion that the sludges have always been managed in the ponds where they were generated and that the sludges accordingly, should be evaluated under different mismanagement scenarios than those used for K048 and K051.

The Agency disagrees with the commenters. The 1982 survey of refinery waste management practices conducted for the API, which is included in the 1985 Notice of Data Availability docket, and RCRA section 3007 questionnaire responses to the petroleum refinery survey conducted by EPA clearly indicate that primary oil/water/solids separation sludges are generated in significant volumes. EPA estimates that approximately 408,000 MT/yr of F037 and F038 are generated annually from the petroleum refining industry. Much of this waste remains in surface impoundments in the refinery wastewater treatment system. On-site landfarming and off-site land disposal are the predominant methods of disposal for these wastes when they are removed from the wastewater treatment units. The Agency, therefore, believes that it is entirely reasonable to consider the types of waste management practices to which the primary separation sludges are currently subjected and as "plausible types of mismanagement" to which these sludges might be subjected if they were not listed.

Turning to the question of an exemption for surface impoundments that manage wastes listed in today's rule and that are used for *in situ* treatment, the Agency sees no basis for making this distinction. The Geraghty and Miller report cited by the commenters and included in the regulatory docket as document number F-88-PTSA-00009 concludes, among other things, that "The ratings of the ten refinery sites . . . show a moderately high ground water contamination potential from many sites. . . ." Furthermore, the sites were uniformly found to have inadequate ground-water monitoring systems. Also, the report states that many refinery impoundments have been constructed in highly permeable alluvial zone or fill materials. In some regions of the country (*e.g.*, the Western Alluvial Basins), the report concludes that leachate will move downward without much attenuation and that "major endangerment problems could arise because of the dependence of much of the [Western] region on the ground water resources." The Agency has concluded that the commenter-cited report provides no decisive evidence that would lead the Agency to reconsider its assessment that the storage and *in situ* treatment of hazardous wastes in unlined surface impoundments may pose a significant risk to human health and the environment. To the contrary, the report's findings confirm the Agency's previous findings and substantiate its assessment that these wastes are likely to be mismanaged if not listed.

3. Inadequate Ground Water Data for Hazard Assessment

Commenters argued that the noticed data did not establish that the wastes posed a health hazard due to the presence of contaminated ground water in wells downgradient from the units. Commenters asserted that the Agency should not move forward with the listing until data were presented for comment that substantiated impoundment releases and corresponding contamination of ground water at levels that posed a risk to human health and the environment.

The Agency disagrees with the commenters about the need to prove that active, health-threatening ground-water contamination is occurring before deciding to list a waste as hazardous. To the contrary, the criteria specified in 40 CFR 261.11(a)(3) require only that the Agency assess potential for health-threatening ground-water contamination. The Agency must evaluate the presence of hazardous constituents in a waste and consider specified factors such as type of waste management, waste quantities, and generic hydrogeologic characteristics. The ground-water data included in the 1988 Notice of Data Availability docket illustrate the highly mobile nature of organic hazardous constituents associated with the oily waste matrix. These data also indicate the presence of persistent metals such as lead and chromium in the oily waste matrix. The Agency also has collected additional data (see Appendix I of the Background Document in the docket supporting today's rule) demonstrating that the wastes pose a threat to human health and the environment. This reaffirms the Agency's determination that these wastes are hazardous.

4. Establishment of Pass/Fail Criteria

Several commenters maintained that the Agency had not established criteria for what constituted a hazard for any of the constituents in the subject wastes. Commenters expressed an opinion that specification of pass/fail criteria was essential to the evaluation of the class of refinery wastes because hazardous constituent concentrations in several of the wastes were below the levels that lead the Agency to list the wastes in the first place.

The Agency disagrees with the commenters on the need to establish pass/fail criteria as part of the listing process. The Agency promulgated its listing criteria in 1980 at 40 CFR 261.11. These criteria are based on the requirements of section 3001 of the statute. Using these RCRA listing criteria, the data presented by the Agency clearly demonstrate that the hazardous constituents are routinely and typically present in the wastes at levels well in excess of the health-based levels. The RCRA statute allows the Agency to list wastes as hazardous even if only one hazardous constituent is demonstrated to be present at a significant concentration (*i.e.*, a level "many times" greater than health-based level) in a waste. If a refinery believes that his waste is not hazardous (*i.e.*, contains low concentration of hazardous constituents) he may petition the Agency through the procedures specified in 40 CFR 260.22).

D. Implementation Issues

Commenters raised a number of concerns regarding the timing of various regulatory requirements that would be imposed as a consequence of listing primary treatment sludges and the industry's ability to comply with these regulations. Central to the arguments of several commenters is the premise that continuous operation of the refinery is only possible with continued use of primary treatment surface impoundments for wastewater treatment for a 4- to 6-year period. The commenters further indicated that any disruption in the wastewater treatment systems (*e.g.*, retrofitting of primary treatment surface impoundments to comply with MTRs specified on July 15, 1985) would result in shutdown of the operation. They requested that the

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Agency extend (1) the effective date of listing beyond a 6-month period and (2) the MTR compliance period for surface impoundments beyond 4 years.

The following four major issues are discussed in this section.

—Effective date of listing
—Water Quality impact
—New versus amended listings
—Impact of land disposal restriction determination

1. Effective Date of Listing

A number of commenters requested an extension of the effective date of the listing. Several commenters were concerned that refineries that cannot complete closure of impoundments containing the primary oil/water/solids separation sludge before the effective date of the listing would be forced to expend considerable resources needlessly in subtitle C closure efforts. Commenters reasoned that these unnecessary costs could be avoided by extending the effective date of the listing, which would enable refineries to close impoundments under the less costly subtitle D closure requirements.

HSWA sets forth a requirement that the effective date be no later than 6 months from the promulgation of the new listing. A period of 6 months from the effective date of the listing is generally adequate time for the removal of sludges from impoundments and for cleanup of incidental sludge-generating units. It also should be an adequate amount of time for the industry to undertake the following corrective steps:

—"Fine tune" wastewater systems to prevent future generation of the sludges in stormwater and flow equalization impoundments.
—Implement improved operation, inspection, and maintenance steps as part of standard operating procedures to guarantee that most of the sludge would be generated in units intended for the wastewater treatment and not in the incidental units identified in this preamble.

The Agency realizes that refiners using devices other than API separators, DAF units, and aggressive biological treatment units may not be able to complete all remedial activities within a 6-month period. These refineries may have been managing potentially hazardous wastes in an inadequate fashion for quite some time and may already have experienced releases of hazardous constituents into soils and ground water. Future releases at refineries that do not use API separators, DAF units or aggressive biological treatment technologies have a significant potential to pose a hazard to human health and the environment. Therefore the Agency believes that resources expended in ensuring the proper closure of these units under Subtitle C provide a necessary step towards mitigating future impacts on human health and the environment.

A second concern of the commenters was that refineries choosing to continue operation of affected surface impoundments that contain the wastes listed today may not be able to retrofit impoundments within the 4-year period specified for the compliance with MTRs. These commenters requested that the Agency consider delaying the effective date as a means of deferring the imposition of the MTRs.

The 4-year compliance deadline for the MTRs is a statutory requirement and is beyond the Agency's power to change. Regardless of this point, however, the Agency disagrees with the commenters about the impact of a 4-year MTR compliance period. The Agency believes that refineries could retrofit their wastewater treatment systems by selecting one or more of the following options:

—Operating properly designed flow equalization tanks and segregated stormwater units.
—Using properly maintained primary oil/water/solids separation systems.
—Converting to a more aggressive form of biological treatment to eliminate future generation of the listed wastes.
—Removing both the wastes in the sludge-generating units and the underlying contaminated soils (if present), thus, eliminating the need for MTR compliance.

Following the application of the first two retrofitting options, all the sludges would be generated and deposited upstream of affected ponds. The selection of the third option would totally eliminate the need for future storage or treatment ponds/impoundments. Similarly, under the last option, one-time removal of the preexisting sludges and contaminated soils would allow refineries to avoid the MTR compliance costs and to perform closure under the less-costly Subtitle D requirements. If none of these options appear to be feasible, then refineries must retrofit units within the 4-year compliance period. For further discussion of MTR compliance requirements, see also section V.D.4., Impact of Land Disposal Restrictions Determinations.

2. Water Quality Impacts

Three commenters expressed concern that the listing of primary separation sludge would leave some refineries with no option but to shut down affected impoundments. Commenters were concerned that the listing could force refineries into NPDES noncompliance and result in surface water deterioration.

As stated earlier in this preamble, the Agency does not believe that surface impoundment closure will necessarily lead to increases in water pollutant discharges. Rather, the Agency believes that conscientious upgrading and use of a well-operated and maintained wastewater treatment system will eliminate the potential generation of hazardous wastes in incidental and downstream units. The listings will, consequently, provide an incentive to the industry to improve the ability of primary wastewater treatment systems and secondary biological treatment units to treat the wastewaters with improved efficiencies. Therefore, the Agency believes that the impact of the listing will be to improve surface water quality.

3. New versus Amended Listings

Numerous commenters requested that the Agency consider wastes subject to the listings to be newly listed wastes, rather than amending the existing listings of DAF float (K048) and API separator sludge (K051). Commenters' concerns were also related to the many additional requirements for hazardous waste management imposed by the HSWA. Commenters reasoned that the subject wastes were not generally managed as hazardous at the present time and, therefore, consolidation of the listings could be erroneously construed to imply retroactive application of the listings. At a minimum, commenters were concerned that the situation would be a confusing one.

EPA agrees, in part, with the commenters. Inasmuch as the listing adopted today is a listing promulgated pursuant to section 3001 of RCRA and offered in satisfaction of the requirements of section 3001(e)(2), the Agency clearly will consider it to be a new listing and is assigning the proposed wastes new RCRA hazardous waste numbers. This distinction between existing wastes and newly listed wastes eliminates confusion and will facilitate RCRA listing compliance.

4. Impact of Land Disposal Restrictions Determinations

Commenters responding to the proposed rulemaking repeatedly expressed concern about the potential impact of land disposal restrictions determinations that follow the promulgation of a new listing. HSWA requires that the Agency make a land disposal prohibition determination for newly listed hazardous wastes within 6 months of the date of listing (RCRA

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section 3004(g)(4), 42 U.S.C. § 6924(g)(4)). However, the statute does not provide for an automatic prohibition of the land disposal of such wastes if EPA fails to meet this statutory deadline. Nevertheless, the commenters presumed that the Agency would meet the 6-month deadline because the wastes involved in this listing are similar in composition to K048 and K051 for which a land disposal restrictions determination has already been made. Commenters raised three issues that assume a similar determination would be made for primary separation sludge.

First, some commenters contended that the land disposal restrictions (LDRs) should not apply until sludges were removed from the generating impoundments or incidental sludge-generating units. These commenters maintained that the Agency does not consider the sludges to be generated until they are removed from the unit and disposed on the land.

The Agency disagrees with the commenters. The Agency has always maintained that sludges are generated at the moment of their deposition at the bottom of a unit. The commenters have apparently misunderstood the exclusion from certain regulations for hazardous sludges generated in product storage tanks (40 CFR 261.4(c)), which does not apply either to other waste management units or to surface impoundments used in any manner. Furthermore, the commenter's belief that 40 CFR 261.4(c) states that the sludges are not generated is in error; 40 CFR 261.4(c) states that sludges are not subject to regulation until removed from the product storage tanks.

Second, the commenters requested that the Agency verify that the land disposal restrictions would not apply to sludges at the time of generation in impoundments because the sludges had not actually been placed upon the land. The commenters reasoned that: (1) The deposited wastes did not meet the criteria for listing until they were removed from the bottom of the impoundment and (2) the land disposal restrictions only prohibit placement of a hazardous waste on the land, not its formation on the land or in land-based units.

The Agency disagrees with the commenters and again notes that the wastes listed today are generated through gravitational separation and/or chemical or physical deemulsification of oil/water/solids from refinery wastewaters. Consistent with the K048 and K051 listings, these wastes are considered to be generated at the moment of deposition in the unit. Note that deposition is defined as a condition where there has been at least a temporary cessation of lateral particle movement (OSW Policy Directive 9441.29 (85)). When land disposal restrictions are promulgated for these newly identified hazardous wastes, surface impoundments in which these newly identified wastes are generated must either comply with the MTRs of 3004(o)(l)(A) within four years of promulgation of the new listing or characteristic or must cease receiving hazardous waste no later than that date. Additional requirements imposed by the land disposal restrictions will be addressed when land disposal restrictions are promulgated for these newly listed wastes.

The third point raised by the commenters relates to imposition of MTRs on surface impoundments storing listed hazardous wastes subject to the LDRs. Commenters stated that the 6-month compliance deadline for imposition of the MTRs would necessitate an immediate shutdown of the impoundments and, as a consequence of CWA regulations, closure of the refinery. Commenters expressed the opinion that shutdowns should be unnecessary, especially because a 6-month timetable for imposition of the MTRs would be in direct conflict with Congressional intent (suggested by section 3005(j)(6) of RCRA, which allows 4 years for impoundment retrofitting).

The Agency believes that it is unlikely that refinery closures would result from a 6-month timetable for imposition of the MTRs. As stated previously, many refineries will require only minor modifications to their wastewater treatment systems to prevent future generation of today's wastes in any large impoundment or in incidental sludge-generating units. Most other refineries will have a broad range of options available that could be implemented in this time frame to avoid impoundment retrofitting and refinery closure. For example, petroleum refineries typically have huge volumes of tank storage capacity. Refineries that are unable to complete primary wastewater treatment in an existing treatment system could temporarily convert product storage tank capacity to storage of wastewater awaiting further treatment until the wastewater treatment system upgrade is completed or until surface impoundments have been retrofitted to comply with MTRs. Review of RCRA section 3007 questionnaire responses suggests that no refinery would have to convert more than 10 percent of its crude and product storage capacity to handle the surface impoundment-based primary wastewater treatment operation at a given site. Given that refineries typically maintain a large excess of tank capacity over daily needs, negligible impact on production capacity would be expected to result from temporary conversion of tank capacity.

Regardless of the compliance strategies ultimately adopted by the various refineries, it is important to keep in mind that today's notice does not in any way set land disposal restrictions for these wastes. Consequently, the potential statutory conflict referred to by commenters does not yet exist (i.e., there is not conflict between the statutory deadlines imposed by land disposal restrictions and minimum technology requirements until the Agency develops land disposal restrictions for the wastes). Therefore, the Agency notes the commenter's concern and will address the issue in the proposed determination on the land disposal restrictions.

V. Compliance and Implementation

A. State Authority

1. Applicability of Rules in Authorized States

Under section 3006 of RCRA, EPA may authorize qualified States to administer and enforce the RCRA program within the State. Following authorization, EPA retains enforcement authority under RCRA sections 3008, 3013, and 7003, although authorized States have primary enforcement responsibility. The standards and requirements for authorization are found in 40 CFR 271.

Prior to HSWA, a State with final authorization administered its hazardous waste program in lieu of EPA administering the Federal program in that State. The Federal requirements no longer applied in the authorized State, and EPA could not issue permits for any facilities that the State was authorized to permit. When new, more-stringent Federal requirements were promulgated or enacted, the State was obliged to enact equivalent requirements within specified time frames. New Federal requirements did not take effect in an authorized State until the State adopted the requirements as State law.

In contrast, under RCRA section 3006(g) (42 U.S.C. § 6926(g)), new requirements and prohibitions imposed by HSWA take effect in authorized States at the same time that they take effect in unauthorized States. EPA is directed to carry out these requirements and prohibitions in authorized States, including the issuance of permits, until the State is granted interim or final

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authorization to do so. While States must still adopt HSWA-related provisions as State law to retain final authorization, HSWA applies in authorized States in the interim. Today's rule is promulgated pursuant to section 3001 of RCRA (42 U.S.C. 6921). Therefore, this rule has been added to Table 1 in 40 CFR 271.1(j), which identifies the Federal program requirements that are promulgated pursuant to HSWA and take effect in all States, regardless of their authorization status. States may apply for either interim or final authorization for the HSWA provisions in Table 1, as discussed in the following section.

2. Effect on State Authorizations

As noted above, EPA will implement today's rule in authorized States until their programs are modified to adopt these rules and the modification is approved by EPA. Because the rule is promulgated pursuant to HSWA, a State submitting a program modification may apply to receive either interim or final authorization under RCRA section 3006(g)(2) or 3006(b), respectively, on the basis of requirements that are substantially equivalent or equivalent to EPA's. The procedures and schedule for State program modifications for either interim or final authorization are described in 40 CFR 271.21. It should be noted that HSWA interim authorization will expire on January 1, 1993 (see § 271.24(c)).

40 CFR 271.21(e)(2) requires States that have final authorization to modify their programs to reflect Federal program changes and, subsequently, to submit the modification to EPA for approval. State program modifications must be made by July 1, 1992, if only regulatory changes are necessary or July 1, 1993, if statutory changes are necessary. These deadlines can be extended in exceptional cases (see 40 CFR 271.21(e)(3)).

States with authorized RCRA programs may have requirements similar to those in today's rule. These State regulations have not been assessed against the Federal regulations being promulgated today to determine whether they meet the tests for authorization. Thus, a State is not authorized to implement these requirements in lieu of EPA until the State program modification is approved. Of course, States with existing standards may continue to administer and enforce their standards as a matter of State law. In implementing the Federal program, EPA will work with States under cooperative agreements to minimize duplication of efforts. In many cases EPA will be able to defer to the States in their efforts to implement their programs rather than take separate actions under Federal authority.

States that submit official applications for final authorization less than 12 months after the effective date of these regulations are not required to include standards equivalent to these standards in their applications. However, the State must modify its program by the deadlines set forth in 40 CFR 271.21(e). States that submit official applications for final authorization 12 months after the effective date of these standards must include standards equivalent to these standards in their application. 40 CFR 271.3 sets forth the requirements a State must meet when submitting its final authorization application.

B. Effective Date

The effective date of today's rule is May 2, 1991. As discussed above, since today's rule is issued pursuant to HSWA authority, EPA will regulate the management of F037 and F038 until States are authorized to regulate these wastes. Thus, EPA will apply Federal regulations to these wastes and to their management in both authorized and unauthorized States.

C. Section 3010 Notification

Pursuant to RCRA section 3010, the Administrator may require all persons who handle hazardous wastes to notify EPA of their hazardous waste management activities within 90 days after the wastes are identified or listed as hazardous. This requirement may be applied even to those generators, transporters, and treatment, storage, and disposal facilities (TSDF's) that have previously notified EPA with respect to the management of other hazardous wastes. The Agency has decided to waive this notification requirement for persons who handle wastes that are covered by today's listings and have already (1) notified EPA that they manage other hazardous wastes; and (2) received an EPA identification number. The Agency has waived the notification requirement in this case because it believes that most, if not all, persons who manage these wastes have already notified EPA and received an EPA identification number. However, any person who generates, transports, treats, stores, or disposes of these wastes and has not previously received an EPA identification number, must obtain an identification number pursuant to 40 CFR 262.12 to generate, transport, treat, store, or dispose of these hazardous wastes by January 31, 1991.

D. Generators and Transporters

Persons that generate F037 and F038 wastes may be required to obtain an EPA identification number, if they do not already have one (as discussed in section V.C, above). In order to be able to generate or transport these wastes after the effective date of this rule generators of the wastes listed today will be subject to the generator requirements set forth in 40 CFR 262. These requirements include standards for hazardous waste determination (40 CFR 262.11), compliance with the manifest (40 CFR 262.20 to 262.23), pretransport procedures (40 CFR 262.30 to 262.34), generator accumulation (40 CFR 262.34), recordkeeping and reporting (40 CFR 262.40 to 262.44), and import/export procedures (40 CFR 262.50 to 262.60). It should be noted that the generator accumulation provisions of 40 CFR 262.34 allow generators to accumulate hazardous wastes without obtaining interim status or a permit only in units that are container storage units or tank systems; the regulations also place a limit on the maximum amount of time that wastes can be accumulated in these units. If these wastes are managed in surface impoundments or other units that are not tank systems or containers, these units are subject to the permitting requirements of 40 CFR 264 and 265, and the generator is required to obtain interim status and seek a permit (or modify interim status or a permit, as appropriate). Persons who transport F037 and F038 wastes will be required to obtain an EPA identification number as described above and will be subject to the transporter requirements set forth in 40 CFR 263.

E. Facilities Subject to Permitting

1. Facilities Newly Subject to RCRA Permit Requirements

Facilities that treat, store, or dispose of F037 and F038, but have not received a permit pursuant to section 3005 of RCRA and are not currently operating pursuant to interim status, might be eligible for interim status under HSWA (see section 3005(e)(1)(A)(ii) of RCRA, as amended). In order to operate pursuant to interim status, eligible facilities will be required to provide any required notice under section 3010 by, and to submit a Part A permit application not later than May 2, 1991. Such facilities are subject to regulation under 40 CFR 265 until a permit is issued.

In addition, under section 3005(e)(3), not later than May 4, 1992 land disposal facilities qualifying for interim status under section 3005(e)(1)(A)(ii) also must

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submit a Part B permit application and certify that the facility is in compliance with all applicable ground-water monitoring and financial responsibility requirements. If the facility fails to submit these certifications and a permit application, interim status will terminate on May 4, 1992.

2. Interim Status Facilities

Pursuant to 40 CFR 270.72(a)(1), all existing hazardous waste management facilities (as defined in 40 CFR 270.2) that treat, store, or dispose of F037 and F038 and are currently operating pursuant to interim status under section 3005(e) of RCRA must file an amended Part A permit application with EPA no later than May 2, 1991. By doing this, the facility may continue managing the newly listed wastes. If the facility fails to file an amended Part A application by May 2, 1991, the facility will not receive interim status for management of the newly listed wastes, and may not manage F037 or F038 until the facility receives either a permit or a change in interim status allowing such activity (40 CFR 270.10(g)).

3. Permitted Facilities

Under regulations promulgated by EPA on September 28, 1988, (see 53 FR 37912), a hazardous waste management facility that has received a permit pursuant to section 3005 of RCRA and is "in existence" as a hazardous waste facility for the newly listed wastes, may be eligible to continue managing the new wastes under 40 CFR 270.42(g) while steps necessary to obtain a permit modification to allow the facility to manage the wastes are taken. To continue to manage the newly listed F037 and F038 wastes, eligible facilities must be in compliance with 40 CFR 265 requirements with respect to management of the newly listed wastes and submit a Class 1 modification request no later than May 2, 1991. This modification is essentially a notification to the Agency that the facility is handling the waste. As part of the procedure, the permittee must also notify the public within 90 days of submittal to the Agency.

The permittee must then submit a Class 2 or 3 permit modification to the Agency by 180 days after the effective date of the listing. A Class 2 modification is required if the newly listed wastes will be managed in existing permitted units or in newly regulated tank or container units and will not require additional or different management practices than those authorized in the permit. A Class 2 modification requires public notice by the facility owner of the modification request, a 60 day public comment period, and an informal meeting between the owner and the public within the 60 day period. The Class 2 process includes a "default provision," which provides that if the Agency does not reach a decision within 120 days, the modification is automatically authorized for 180 days. If the Agency does not reach a decision by the end of that period, the modification is permanently authorized.

A Class 3 modification is required if management of the newly listed wastes requires additional or different management practices than those authorized in the permit or if newly regulated landbased units are involved. The initial public notification and public meeting requirements are the same as for Class 2 modifications. However, after the end of the 60 day public comment period, the Agency will develop a draft permit modification, open a public comment period of 45 days, and hold a public hearing if requested. There is no default provision for Class 3 modifications.

Under 40 CFR 270.42(g)(1)(v), for newly regulated land disposal units, permitted facilities must certify that the facility is in compliance with all applicable 40 CFR 265 ground-water monitoring and financial responsibility requirements no later than May 4, 1992. If the facility fails to submit these certifications, authority to manage the newly listed wastes under 40 CFR 270.42(g) will terminate on that date.

F. Compliance Options for Specific Units

Facilities that treat, store, or dispose F037 and F038 wastes will have several options for complying with the RCRA regulatory requirements. Facilities may alter existing wastewater treatment systems to limit the units in which these wastes will be generated and managed and, thereby, may control which units will be subject to RCRA Subtitle C regulation. For example, wastewater treatment surface impoundments, which are subject to RCRA Subtitle C regulation, could be replaced with wastewater treatment tanks, which are excluded from regulation as long as the provisions under 40 CFR 264.1(g)(6) and 265.1(c)(10) are met. Alternatively, facilities may cease managing these wastes in units that would be subject to regulation (such as surface impoundments) prior to the effective date of today's rule in order to avoid the application of RCRA permitting standards. These options are discussed in more detail in the following sections.

1. Tank Systems

Because the wastes listed today are generated from the treatment of wastewaters, it is likely that, in the future, much of the waste will be generated in tanks that are part of wastewater treatment systems. Under 40 CFR 264.1(g)(6) and 265.1(o)(10), tanks and tank systems that meet the definition of wastewater treatment unit in 40 CFR 260.10 are not subject to the permitting and interim status requirements of 40 CFR 264 and 265. The wastewater treatment unit definition includes devices that (1) are part of a wastewater treatment facility that is subject to section 402 or 307(b) of the Clean Water Act; and (2) treat or store an influent wastewater that is a hazardous waste, or that generate and accumulate a wastewater treatment sludge that is a hazardous waste, or that treat or store a wastewater treatment sludge which is a hazardous waste; (3) meet the definition of tank or tank system in 40 CFR 260.10 (see 53 FR 34079). Therefore, all tanks and tank systems that meet the wastewater treatment unit definition, and in which the newly listed wastes are generated, accumulated, treated, or stored, are exempt from the regulatory requirements of 40 CFR 264 and 265. Because the definition of tank system includes all connected ancillary equipment as defined in 40 CFR 260.10, which includes piping, fittings, flanges, valves, and pumps, any such equipment that is part of an exempt wastewater treatment unit in which the newly listed wastes are generated, accumulated, treated, or stored is also excluded from the requirements of 40 CFR 264 and 265. (See 53 FR 34079 for further discussion of the scope of the exemption.) However, the listed sludges, once removed from the excluded units in which they are generated, are subject to all applicable Subtitle C regulations.

It should also be noted that wastes being generated at treatment, storage, or disposal facilities may qualify for the permit exemption under 40 CFR 262.34 (see discussion in section C.1 above). This exemption applies only to tank and container units for specified periods of time.

Any tanks or tank systems that manage the newly listed wastes but that do not meet the wastewater treatment unit definition or other permit exemption will be subject to the applicable requirements of 40 CFR 264 and 265, including requirements for secondary containment and leak detection, as well as closure and financial responsibility.

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2. Surface Impoundments

Because the wastes listed today are generated from the treatment of wastewaters, it is likely that those sludges not generated in exempt wastewater treatment units will be generated in surface impoundments that are part of wastewater treatment systems. Because surface impoundments are not excluded from regulation under the wastewater treatment unit exemption, and in addition are "land disposal" units for purposes of the land disposal restrictions (under section 3004(k), all surface impoundments are land disposal), the regulatory status of these units for permitting purposes is dependent on several factors. Surface impoundments generating F037 and F038 wastes are subject to the same regulations applicable to surface impoundments managing RCRA hazardous wastes in any other manner. The factors which determine the surface impoundment regulatory status for permitting purposes and their compliance options are discussed below.

Facilities with impoundments in which F037 and F038 wastes currently are generated and/or disposed may cease operation of the units prior to the effective date of today's listings. If all sludges containing F037 and F038 are removed from the surface impoundments prior to the effective date of today's listing, the units will not be subject to RCRA Subtitle C. If the removed sludges are not actively managed after the effective date of today's listing, they will also not be subject to Subtitle C. If operation of these units ceases prior to the effective date, these inactive units would not be subject to regulation under 40 CFR 264 or 265. However, any sludges that meet the listing descriptions contained in the inactive units, and that are actively managed after the effective date would be subject to regulation. For example, if the sludges were excavated for treatment and disposed of elsewhere, they would be regulated as hazardous wastes at the time of excavation and would be required to be managed at a RCRA subtitle C facility. It should be noted that any inactive units that are located at facilities otherwise subject to RCRA interim status or permitting are considered to be solid waste management units subject to corrective action requirements under sections 3008(h) and 3004(u) of RCRA (see corrective action discussion in section III.D.).

However, facilities with surface impoundments in which F037 and F038 wastes have been generated and/or managed may also choose to redesign or reconfigure the existing wastewater treatment system such that F037 and F038 wastes are no longer generated or managed in some or all units of the treatment train after the effective date of this listing. Under this scenario, there may be surface impoundments containing F037 and F038 sludges which were deposited prior to the effective date, and which cease to receive hazardous wastes after the effective date. If (1) any sludge or waste that meets the description of F037 or F038 remains in the surface impoundment on the effective date of today's listings, and (2) the unit does not receive or generate any other hazardous wastes on or after the effective date, and (3) the impoundment is the final disposal site for the wastes, then the impoundment is not subject to RCRA Subtitle C. The Agency does not view one time removal of waste as part of a closure as changing the status of the unit, as long as there has not been ongoing management of the waste in the impoundment. Removal of waste in the context of a closure provides human health and environmental benefits since it eliminates potential sources of ground water pollution. This approach is consistent with current operational procedures for landfills under identical circumstances with respect to newly regulated TC wastes.

A unit not receiving hazardous wastes may, however, generate hazardous wastes. For example, even if the unit containing the newly listed sludge is not considered to be actively managing the sludge, if any influent to the unit, including that which is nonhazardous, causes that sludge to be scoured from the unit, any effluent from the unit would be considered hazardous, because the "mixture rule" would be applicable. Thus, any surface impoundment receiving that hazardous effluent would be subject to the Subtitle C management standards and would need to be under interim status or obtain a permit.

Facilities with units in which F037 and F038 wastes are generated and/or managed after the effective date of the listings may continue to use these units to manage F037 and F038 wastes if all applicable RCRA Subtitle C requirements are satisfied. These facilities will be required to obtain interim status and apply for a permit (or modify interim status or a permit, if appropriate) in accordance with the compliance dates discussed in section IV.B, above. The units will be subject to the applicable requirements of 40 CFR 264 and 265 as of the effective date of the listing.

With regard to the land disposal restrictions (LDR), treatment or storage in a land based unit is considered land disposal and potentially subject to LDR prohibitions. The key to LDR applicability is whether there has been placement of the hazardous waste into a land-based unit after the effective date of the LDR regulations.

3. Other Units

Units in which F037 and F038 are generated or managed will be subject to all applicable requirements of 40 CFR 264 and 265, unless the unit is excluded from such permitting by other provisions such as the wastewater treatment tank exclusions (40 CFR 264.1(g)(6) and 265.1(c)(10)), and the product storage tank exclusion (40 CFR 261.4(c)). Examples of units to which these exclusions could never apply include landfills, land treatment units, waste piles, incinerators, and any other miscellaneous units in which these wastes may be generated or managed.

4. Closure

All units in which F037 and F038 wastes are treated, stored, or disposed after the effective date of this regulation that are not excluded from the requirements of 40 CFR 264 and 265 are subject to both the general closure and post-closure requirements of Subpart G and the unit-specific closure requirements set forth in the applicable unit technical standards Subpart of 40 CFR 264 or 265. Additionally, EPA recently promulgated a final rule that allows, under limited circumstances, regulated landfills, surface impoundments, or land treatment units to cease managing hazardous waste but to delay Subtitle C closure to allow the unit to continue to manage non-hazardous waste for a period of time prior to closure of the unit (see 54 FR 33376, August 14, 1989). Units for which closure is delayed continue to be subject to all applicable 40 CFR 264 and 265 requirements. Dates and procedures for submittal of necessary demonstrations, permit applications, and revised applications are detailed in 40 CFR 264.113(c) through (e) and 265.113 (c) through (e).

VI. Regulatory Impact Analysis

Pursuant to Executive Order 12291, the Agency has determined that today's rule may constitute a "major regulation" since it could result in an annual cost to the economy in excess of $100 million. Consequently, the Agency has conducted a regulatory impact analysis

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(RIA) in support of today's rule. The complete RIA document, *Regulatory Impact Analysis for the Listing of Primary and Secondary Oil/Water/Solid Separation Sludges from the Treatment of Petroleum Refinery Wastewaters* (hereafter, "RIA Document"), is available for review in the public docket for today's rule, and also was submitted to the Office of Management and Budget for review as required by E.O. 12291. EPA's response to OMB's views is available in the docket supporting today's rule.

This section of the preamble summarizes the RIA in three parts. The first part provides an overview of the U.S. petroleum refining industry and identifies and profiles the affected management practices, estimated sludge quantities, number of refineries, and expected subtitle C compliance scenarios for affected refineries. The second part provides an overview of estimated compliance costs, including general methods employed, expected national economic impacts, and direct industry impacts. The third part illustrates the types of human health and ecological hazards likely to be associated with these separation sludges under baseline management practices and typical petroleum refinery environmental settings. It also provides results from EPA's effort to quantify the major baseline damages and regulatory benefits.

A. Industry Overview and Profile of Affected Facilities

1. The U.S. Petroleum Refining Industry

At the beginning of 1989 (the base year for this analysis), there were 204 operating petroleum refineries in the United States with a combined capacity of 15.7 million barrels per calendar day (BPCD) of crude oil distillation capacity. Following a 5-year period of contraction from an historical peak of 324 refineries and 18.6 million BPCD of capacity at the end of 1980, the industry has been relatively stable, with moderately increasing capacity since 1985. As an industry, petroleum refining is distributed widely across the country, with at least one installation in each of 35 states, and 12 states having six or more refineries.[26] The top three states—Louisiana with 22, California with 32, and Texas with 34—dominate, representing 43 percent of all refineries and 57 percent of U.S. capacity.

[26] Unless otherwise noted, general refinery and petroleum statistics are from the U.S. Department of Energy, *Petroleum Supply Annual 1988* (May 1989).

2. Profile of Affected Refineries

As discussed, today's rule would require all primary and secondary oil/water/solids separation sludges generated in treatment of process wastewaters and oily cooling wastewaters from petroleum refineries to be managed as hazardous waste under RCRA Subtitle C regulations.

As background for rule development as well as for the regulatory impact analysis, the Agency conducted a detailed evaluation of refinery wastewater treatment practices, unit processes, and system configurations to develop an understanding of pond types and sizes, sludge characteristics and generation rates, and current baseline sludge management practices. The principal source of empirical information for these evaluations was the Agency's 1984 (and subsequent follow-up) mail survey of the refining industry which provided 1983 data on a total of 182 refineries. Using current U.S. Department of Energy data, individual refining capacities were updated and closed facilities were deleted from the original data base. After these changes, the Agency had data on 167 refineries, which represents 82 percent of the operating refineries and over 94 percent of operating crude distillation capacity as of the beginning of 1989.

Based on this data and evaluation of individual refinery wastewater system flowsheets, the Agency estimates that almost 90 percent of the 204 operating U.S. refineries, or 182 refineries, generated at least some oil/water/solids separation sludge from primary wastewater treatment in 1989. These affected refineries vary enormously in size and complexity, from less than 5,000 to more that 400,000 BPCD of crude oil processing capacity.

Many of the sludges subject to today's rule, however, are also hazardous wastes under the Toxicity Characteristics (TC) rule which was promulgated on March 29, 1990. In addition to the sludges, oily wastewaters at a majority of petroleum refineries are also expected to be TC hazardous wastes due to benzene concentrations. Refineries where either the sludges or wastewaters or both would be captured by the TC rule will need to modify their wastewater treatment systems to achieve compliance with RCRA. These modifications, which typically include constructing additional wastewater treatment tanks and bringing surface impoundments into compliance, are very similar to modifications that would otherwise be needed for today's rule. Therefore, the prior promulgation of the TC rule substantially reduces the impact attributable to today's rule.

Based on EPA Toxicity Characteristics Leaching Procedure (TCLP) data for petroleum refinery wastes, the Agency estimates that about 84 percent of refineries (about 150, termed "Group A") have wastewaters and/or sludges that exceed the new TC regulatory level for benzene. The remaining 16 percent of refineries (29 refineries, termed "Group B") that generate oil/water/solids separation sludges are estimated to be unaffected by the TC rule. Similar to the compliance response for the TC rule, these Group B facilities will need to modify their wastewater treatment systems by bringing surface impoundments into compliance and constructing wastewater treatment tanks. Extrapolating from the mail survey data, EPA estimates that these 29 refineries generate about 48,000 metric tons per year of primary treatment sludges, utilizing approximately 65 unlined surface impoundments with a combined surface area of 225 acres nationwide, subject to today's listing. These impoundments are also estimated to contain 430,000 metric tons of accumulated sludges.

Although the TC rule accounts for most of the compliance activities at Group A facilities, these refineries may still generate, after completion of wastewater treatment system modifications, non-TC sludges that are subject to today's rule. Although the wastewaters are characteristic hazardous wastes under the TC rule, a substantial but highly uncertain portion of the oily sludges generated from these waste waters may not test TC hazardous using the standard TCLP laboratory procedures for reasons discussed above. Because the Agency does not have adequate data on the amount of sludge that would be captured by the TC rule after TC rule compliance modifications at the 153 Group A refineries, EPA bounded the impact estimates by assuming two scenarios: (1) 30 percent of the sludges are not captured by TC, and; (2) 70 percent of these sludges are not captured by TC. This results in a range of 108,000 to 252,000 metric tons at Group A refineries estimated to be affected by today's listing. Adding the 48,000 metric tons from Group B facilities gives a combined range of sludge quantities affected by today's rule of 156,000 metric tons for the 30 percent scenario and 300,000 metric tons for the 70 percent scenario.

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3. Baseline Waste Manaqement Practices and Assumed Compliance Scenarios

Sludges subject to today's listing can be deposited at virtually any point in the oily wastewater collection and oil/water/solids separation system upstream or prior to aggressive biological treatment units. However, the principal sources of such sludge generation and accumulation will include a variety of small or large ponds and, to a lesser extent, flow equalization basins or non-regulated primary treatment tanks located at various points in typical refinery wastewater flow system configurations. Characteristic pond types include:

- stormwater runoff retention ponds that are also used for primary treatment;
- flow equalization ponds upstream of primary treatment units (API separator or dissolved air flotation (DAF) units); and
- wastewater treatment ponds downstream of, or used instead of, secondary oil/water/solids separation, but before biological treatment, or before offsite discharge in the absence of biological treatment.

Current Sludge Management Practices. The bulk of the sludges subject to today's listing have historically been deposited and stored in unlined ponds. According to the EPA survey data, about 30 percent of the refineries had conducted periodic clean-out of at least some of their sludge generating ponds as of 1983. However, most of the ponds in the survey had not been dredged up to 1983, and thus were serving as indefinite sludge accumulation and storage impoundments. As these ponds continue to accumulate solids, it is likely that many more would eventually require sludge clean-out in order to operate adequately in a primary wastewater treatment capacity. Historically, dredged primary sludge has been disposed in landfill or land treatment units, either on-site or off-site, primarily under unregulated or State-regulated Subtitle D conditions. A few states, such as California, may be treating some of these sludges as Subtitle C hazardous wastes when removed from primary treatment ponds, although this was not accounted for in the present cost assessment due to lack of specific data.

Regulatory compliance scenarios. Under Subtitle C of RCRA, oil/water/solids separation sludges can no longer be generated or managed in unlined surface impoundments. As a result, refineries with non-compliance sludge ponds would be required to alter current waste generation and management practices in two manners:

(1) To reconfigure oily wastewater treatment systems to eliminate the use of unlined surface impoundments for primary or secondary oil/water/solids separation; and

(2) To retrofit, close, or otherwise convert existing primary sludge impoundments to other uses, under various possible options.

For regulatory compliance purposes, the Agency anticipates that oily wastewater treatment systems at affected refineries will be redesigned to capture all oil/water/solids separation sludges in tank or basin units, including the possible use of additional mechanical separation equipment. Although some small ponds may be excavated and retrofitted as settling basins with liners meeting Subtitle C specifications, this will probably be the exception.

Therefore, for cost estimating purposes, the Agency assumed the refinery wastewater redesign strategy will typically involve: (1) Construction of flow equalization tanks or basins to improve the performance of existing mechanical sludge separation equipment; (2) the construction of new DAF flotation devices for oil removal; and (3) the separation of stormwater runoff ponds from oily wastewater sources to eliminate their use as primary oily-sludge settling ponds. This engineering design approach was applied systematically to a sample of 24 Group B refineries in EPA's refinery database assumed not affected by the TC rule to determine equipment needs and sizing as a basis for estimating the capital and operating costs of wastewater treatment system modifications.

In addition to wastewater treatment system modifications and new sludge management requirements, compliance with Subtitle C also will require that existing impoundments containing these sludges be closed or otherwise brought into compliance with current regulations to prevent or control hazardous releases. For purposes of estimating compliance costs the Agency assumed that, by the effective date of this listing, all refineries will have responded in one of three ways as possible compliance strategy options for managing existing oil/water/solids separation ponds:

(1) Dredging listed sludges from pond storage areas *prior to* the effective date of the rule and disposing them as Subtitle D wastes. Pond sites would then be converted to another use or left idle. This is the minimum cost compliance option considered in this regulatory impact assessment.

(2) Closing the pond as a Subtitle C land unit. Pond sludge is first solidified *in situ* with fly ash. The impoundment is then filled to grade with native soil, and an EPA-recommended cover, consisting of a drainage system, a synthetic membrane, and two feet of compacted clay, is added. Groundwater monitoring and post-closure care are provided. This is an intermediate cost option.

(3) "Clean closure," in which the sludge and two feet of underlying soil are dredged and disposed as a Subtitle C hazardous waste. The Agency assumed, for present purposes, that this disposal would occur prior to implementation of land disposal restrictions for this sludge. Soil analysis and groundwater monitoring are provided during the closure period. Closed pond areas are convertible to other impoundment uses or other nonwater system uses. This is the high cost option for purposes of this assessment.

The Agency estimated compliance costs for all three options, recognizing that individual site conditions and company compliance policies will underlie choices at individual refineries. However, it should be noted that Option 1 (dredge and dispose as Subtitle D waste prior to effective date of listing) could engender future removal or damage cost liabilities, either on-site or off-site, where local disposal conditions allow contaminant migration. Possible additional costs of this type have not been included under Option 1.

Oil/water/solid separation sludges generated after wastewater system modifications, both in response to this rule and the TC rule, will be subject to today's listing if not captured by the TC rule. For present cost estimation purposes, EPA is expecting the listed sludge to be subject to the same land disposal restrictions as other refinery sludges under EPA's "First Thirds Rule" (53 FR 31138) and "Third Thirds Rule" (55 FR 22520). Sludge incineration and solvent extraction in Subtitle C permitted units are the standard "best demonstrated available technologies" (BDAT) under these restrictions. Although incineration was investigated in most detail, due to the recent promulgation of solvent extraction as an acceptable option, the Agency also conducted a less extensive evaluation of solvent extraction and oil recovery as the more likely choice by industry. Other state-of-the-art recycling and waste minimization technologies as alternatives to Subtitle C incineration were also investigated but not specifically costed. The results of this analysis are summarized in the RIA document.

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B. Economic Costs and Impacts

Based on individual refinery wastewater system flowsheets and EPA engineering cost functions for basic unit processes, the Agency estimated baseline and Subtitle C regulatory compliance costs for 24 randomly-chosen refineries in the EPA Survey database likely to be subject to this sludge listing but not to the TC rule (Group B refineries). Three compliance scenarios, following the descriptions outlined in the previous section, were simulated to account for possible variations in company decisions regarding initial impoundment closure or conversion options. Capital costs were calculated for wastewater treatment system modifications, pond closure (including sludge clean-out, landfill closure or clean closure), and (for Options 1 and 3 only) disposal of initial cleanout sludge. Operating and maintenance costs for the new wastewater treatment system installations and annual cost of sludge removal, treatment, and disposal for future sludge generation were the other principal costs estimated. Engineering assumptions for waste management involved on-site sludge dewatering and solvent extraction followed by cement stabilization of sludge residues as the principal treatment technology, followed by off-site land disposal in Subtitle C commercial facilities. On-site sludge treatment and off-site disposal was sized on the basis of total refinery sludge generation including previously listed, TC, and newly listed Subtitle C sludges.

In addition to total compliance costs for the Group B refineries, EPA also estimated treatment and disposal costs for the 30 to 70 percent of non-TC sludges generated at a large sample of over 100 Group A (TC-affected) refineries, using the same BDAT waste management assumptions as for Group B.

All costs were extrapolated from the EPA data-base to the total universe of operating U.S. refineries using relative refinery capacity as the basis for extrapolation.

1. Nationwide Economic Costs

Table H summarizes the total national costs of today's sludge listing for the three alternative impoundment closure options studied by the Agency. National costs were extrapolated upwards from the Agency's sample data base of individual facility cost estimates, based on the data base coverage of 94% of total U.S. refinery capacity. Compliance costs in Table H represent total resource or social costs of this regulation, measured before any business expense tax write offs available to affected companies. Capital investment costs are annualized here over a 20-year lifetime at a real discount rate of 3.0 percent.

As seen in Table H, the Agency estimates compliance costs for initial investment at Group B refineries to range between $42 and $407 million, and total annualized costs for all refineries to be in the range of $57 to $131 million per year, depending on company decisions relating to pond closure options and percent of affected future sludge at Group A refineries attributed to this listing rule rather than the TC rule. Pond closure options have the dominant influence on total initial investment costs. The total annual cost estimates, however, are more influenced by the amount of future sludge which is or is not captured by the TC rule.

TABLE H.—TOTAL NATIONAL COMPLIANCE COSTS, BY POND CLOSURE OPTION

[Dollars in millions]

	Option 1		Option 2		Option 3	
	Dredge only; subtitle D disposal		Subtitle C landfill closure		Clean Closure	
Capital Costs (Dollars in millions)						
1. Wastewater Treatment System [1]	$29		$29		$29	
2. Impoundment dredge and closure [1]	2		185		231	
3. Sludge disposal [1]	11		0		147	
Total initial cost [1]	$42		$214		$407	
Annual Costs (Dollars in millions)						
1. Annualized Capital [1]	$3		$14		$27	
2. Annual O & M [1]	1		5		1	
3. Annual Sludge Disposal [2]						
30% non-TC sludges	53		53		53	
70% non-TC sludges		102		102		102
Total annual cost	$57	$106	$72	$121	$81	$130

[1] For "Group B" refineries unaffected by the TC Rule. Capital costs annualized over 20 years at 3 percent.
[2] Includes non-TC sludges at refineries both unaffected and affected by the TC Rule.

Other Waste Management Options. The costs presented here for annual future sludge disposal are based on the assumption that companies will choose to meet land disposal restrictions regulations by treating the newly listed wastes by solvent extraction instead of incineration. Generally, the Agency's cost evaluations indicate that incineration would be a slightly higher cost option. Solvent extraction recycles recovered oil back to the refinery for reprocessing at an estimated rate of about one barrel of oil per metric ton of sludge. Other waste minimization or recycling options, not addressed in this analysis due to the site specific nature of these options, could also reduce the cost of the rule. Examples of such options might include reducing oily waste inflow to the oily wastewater treatment system by waste segregation, using efficient over design to manage process upsets, incorporating better operating practices such as spill prevention and proper materials handling, and recycling sludge to the coking oven (potentially available at about one quarter of the refineries).

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Potential Corrective Action Costs. The Agency did not include potential corrective action costs for on-site solid waste management units (under Section 3004(u) of RCRA) within the scope of the RIA for today's rule. The Corrective Action Rule itself is still under development and methods and assumptions for assessing costs are highly uncertain. The Agency's best present estimate is that, as an upper bound, approximately 9 to 12 refineries would be likely to become subject to corrective action as a direct consequence of this listing rule, with a combined total annual cost of about $4 million to $22 million per year.

This estimate is based on the observation that 60 to 70 percent of U.S. refineries are already subject to corrective action based on current Subtitle C on-site management permitting data, and assumes that only "Group B" refineries could be newly subject to corrective action as a consequence of this listing rule. It also assumes that all 9 to 12 refineries would chose to manage the newly listed sludge on-site (requiring a new permit and hence triggering Section 3004(u)). Unit costs of facility-wide corrective action of $400 thousand to $1.8 million per year per refinery (a provisional estimate from the draft Corrective Action RIA) [27] were used to derive the $4 to $22 million per year total national cost estimate for the 9 to 12 refineries.

2. Industry Impacts

As a principal measure of this rule's impact on individual refinery competitiveness, the Agency compared annual incremental compliance costs to annual product revenue for each of the 149 refineries in EPA's database that generate sludges of the type subject to today's rule. Product revenue was calculated using individual facility product line proportions from the 1983 survey, together with 1989 reported U.S. average refinery-level product prices, and scaling each refinery's total production to a normalized 1989 refinery utilization rate of 86 percent of its reported crude oil refining capacity.

For purposes of evaluating annual compliance costs as a percent of annual sales (cost/sales ratio), the Agency recomputed compliance costs on an after-tax basis, allowing for private company cost savings attributable to corporate tax deductions for pollution control capital depreciation and operating expenses. In reformulating private costs of compliance, EPA used a private sector discount rate for analyzing capital costs of 10.6 percent, based on recent estimates of the real cost of capital for petroleum industry investment.

Based on an analysis of private compliance cost-to-sales ratios, the impact on the refining industry is assessed to be modest, although not necessarily insignificant. A small number of refineries in the EPA database showed cost/sales ratios exceeding one or two percent, a level which has often been taken as a first stage indicator of significant adverse impact in EPA regulatory analyses.[28] Comparing the low and high TC affected sludge scenarios, 4 to 8 refineries show ratios greater than one percent of sales; but only three refineries exceed two percent, even under the highest cost scenario. Conversely, nine out of ten affected refineries in the highest cost scenario fall below 0.5 percent, and over three-quarters fall below 0.25 percent according to the Agency's calculations.

For the small number of refineries that might become competitively vulnerable based on the cost/sales ratio criterion, the Agency also evaluated the type of vertical integration of the companies owning the potentially vulnerable refineries. The assumption here is that fully or partially integrated companies (i.e., those with ownership of crude oil production, petrochemical, and/or product marketing interests) would be in a position to absorb refinery compliance costs more readily than companies operating only at the refining stage. Of the potentially vulnerable refineries with cost/sales ratios greater than one percent under the highest cost scenario, as many as seven refineries are operated by non-integrated petroleum companies and could therefore be considered possibly more vulnerable than the others in this group.

The Agency was not able to conduct a more extensive analysis of potential facility closures or possible direct employment effects because of a lack of plant-specific information on costs, cash flows, and balance sheet items that would be required for such an evaluation. However, based on the analysis performed, the Agency projects only small overall impacts on the U.S. refining industry with a few facilities possibly incurring substantial adverse financial impacts to the point of closure.

3. Product Prices

The Agency does not believe that today's rule will have any measurable impact on consumer-level product prices for products including gasoline, diesel fuels, heating oils, or petrochemicals. For those refineries most affected by this rule (Group B), the average after-tax compliance cost is barely 0.2 percent of total refinery sales revenue. For Group A facilities (the majority), average costs attributable to today's rule will be much less; and it appears that many refineries (at least 1 percent or more) will not be directly affected by this rule because of prior commitment to closed system wastewater management and recycling of oily sludges. As a result of both of these factors, plus the presence of some foreign competition in refined products, it seems unlikey that companies incurring compliance costs would be able under existing competitive conditions to pass these costs forward to final product prices to any significant degree. However, even if all costs were to be passed thru, equivalent price increases at retail would be about 0.05 percent.

4. International Trade

Although in principal a domestic cost increase will tend to favor foreign refinery competition, the Agency does not anticipate a measurable impact from this rule on international trade flows or the U.S. balance of payments. Since 1984, net refined petroleum product imports have been relatively constant at about 1.4 million barrels per day, or about 9 percent of domestic U.S. refined product supply. Under the conditions described above, with many U.S. refineries unaffected by this listing regulation and the most affected group of refineries (Group B) incurring an average compliance cost of only 0.2 percent of sales revenue under the high cost option, a measurable loss of refined product market to foreign competition due to this regulation is unlikely.

C. Benefits of Primary Sludge Listing

The Agency used a two-stage approach to estimate the total national benefits attributable to today's rule. First, EPA conducted a general assessment of a number of factors relating to primary wastewater treatment sludge characteristics, management practices, and the environmental settings typical of petroleum refinery locations in the United States. The Agency then conducted limited quantitative modeling in order to estimate the magnitude of potential damages associated with baseline sludge management practices.

Based on this general assessment and modeling study, the Agency concluded that there is a high probability that

[27] *Draft Regulatory Impact Analysis for the Proposed Rulemaking on Corrective Action for Solid Waste Management Units.* September 13, 1988.

[28] Many RIA's have used 5% as the cutoff for determining significant adverse impacts.

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historical and current generation and management of this waste degrades the environment and poses potential human health risks at a significant number of U.S. petroleum refineries. Material for this section of the preamble is presented in more detail in Chapter 4 and Appendices D, E, and F of the RIA Document.

1. General Assessment of Hazardous Potential

In assessing the damage potential from primary refinery wastewater treatment sludges the Agency conducted extensive evaluations of toxic constituent concentrations, sludge management practices, geophysical settings, and other factors affecting potential pollutant release, transport, and fate for typical petroleum refineries.

Sludge Quantities and Characteristics. As noted above, U.S. refineries generate a total of 156,000 to 300,000 metric tons per year of primary and secondary oil/water/solids separation sludges that will be affected by today's rule.[29] Although quantities vary greatly at individual refineries, approximately 70 percent of generators produce more than 500 metric tons per year, approximately 30 percent generate more than 2,000 metric tons per year, and 2 to 6 refineries (2 to 4 percent) generate over 10,000 metric tons per year. On-site accumulations in ponds at individual refineries may amount to up to ten years or more of waste generation, depending on pond dredging frequency and sludge disposal histories. On-site landfills and land farms may also contain sludge quantities equivalent to many years' waste generation. The substantial sludge generation rates and accumulations provide one indication that these wastes have the potential to threaten human health and the environment.

Further evidence of the potential hazard posed by these sludges is found in the toxicity of constituents present in the sludges. As discussed above, today's listing is based on the high concentrations of five Appendix VIII constituents (benzene, benzo(a)pyrene, chrysene, lead, and chromium) frequently detected in the waste. Results from the Agency's 1987 field survey on chemical constituents from sludges in 44 units at 11 typical refineries (see 53 FR 12162) document the pervasive presence of these five hazardous constituents and seven other toxic constituents at levels warranting further evaluation from a hazardous waste perspective.[30]

In particular, lead, chromium, benzene, benzo(a)pyrene, and chrysene, as well as arsenic, nickel, toluene, benzo(a)anthracene, and dibenzo(a,h)anthracene, were commonly tested at concentrations that are tens to thousands of times higher than standard EPA health-based and ecological protection reference levels. These levels strongly indicate potentials for damages to human health, aquatic ecosystems, and ground-water quality under a variety of plausible mismanagement scenarios.

Baseline Management Practices and Release Potential. Given implementation of the Toxicity Characteristics Rule as a baseline assumption, sludge subject to today's rule would be generated in wastewater treatment tanks or cement-lined basins at all Group A refineries, or in unlined ponds at a smaller number of Group B refineries. As discussed above, many oily wastewaters and wastewater treatment sludges at petroleum refineries are hazardous wastes under the TC rule, and the Agency has assumed for purposes of this RIA that refineries currently using unlined primary settling ponds would modify their wastewater treatment systems (i.e., construct wastewater treatment tanks) to comply with design and operating requirements under the TC rule.

Based on these assumed wastewater treatment system modifications and assumptions about the amount of sludge subject to today's regulation that will not exhibit the toxicity characteristic, EPA estimates that approximately 53 to 114 refineries would generate non-characteristic sludge subject to today's rule in tanks and approximately 22 refineries would generate non-TC-Characteristic sludge subject to today's rule in unlined impoundments. EPA assumes that the refineries with wastewater treatment tanks would generate an average of up to 2,600 metric tons of non-characteristic, affected sludge in tanks each year, and the refineries with unlined impoundments would generate an average of 2,200 metric tons of sludge per year in ponds averaging about 10 acres in total area per facility.

EPA estimates that the entire quantity of sludge generated in tanks and a portion of that generated in ponds, an average of 2,600 metric tons per year at approximately 63 to 124 refineries, would be removed periodically from the wastewater treatment units and disposed in landfills or land farms under typical Subtitle D conditions in the absence of today's rule.

Wastewater treatment tanks in which sludge is generated are typically concrete-lined and do not accumulate and store large quantities of sludge over long periods of time. Although the Agency has not investigated potential releases of sludge constituents from these tanks in detail, EPA believes these units pose a relatively small hazard because of their engineered containment and relatively small accumulated sludge quantities. In contrast, the traditional unlined settling ponds and land disposal units that accumulate the majority of the sludge affected by today's listing are generally not equipped with protective liners, caps, leachate collection or ground-water monitoring systems, or other protective measures during their operating or post-closure periods. To the extent these ponds and land disposal units lack protective controls during operating or post-closure periods, they may be subject to toxic constituent releases in a variety of possible forms. These could include leaching into ground water, migration from groundwater into surface water, direct erosion or surface runoff from storm events, or volatile emissions from pond or land farm surfaces. Migration and transport pathways could thus involve ground water to water-supply wells or to surface waters, land surface to surface waters, or air transport directly to human receptors or other environmental media or points in the food chain.

EPA's damage assessment focused principally on the groundwater pathway, and in this respect the leachability of sludge constituents from unlined ponds or land management units is of particular importance. Although subject to scientific debate regarding specific predictive processes, there is substantial evidence that considerable quantities of toxic constituents from oily wastes can and do leach through containing walls or bottoms of unlined land storage or disposal facilities. For example, recent EPA column leachate studies have documented substantial release potentials for several oily wastes similar to the sludges affected by today's rule, including API separator

[29] The range of sludge quantities reflects the Agency's assumption, in the absence of adequate data on the amount of sludge captured by the Toxicity Characteristic (TC) rule, that 30 to 70 percent of the sludge at facilities that currently generate a wastewater or wastewater treatment sludge that exhibits the TC will not be captured by the TC and will be affected by today's rule.

[30] Constituent concentration data for primary wastewater treatment sludges are presented in *Summary of Data and Engineering Analyses Performed for Petroleum Refining Wastewater Treatment Sludges* (prepared by MRI for the Office of Solid Waste, U.S. EPA), April 1988.

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sludge.[31] Depending on solubilities and other factors, various sludge constituents may migrate out of containment units either directly in an oil phase, or as an oil/water emulsion, or dissolved in an aqueous leachate.

Mobility in Ground Water. Sludge constituents in ground water may be transported and/or attenuated in several complex ways.

A fraction of the more water soluble constituents, such as arsenic and chromium, is expected to seep from management units in an aqueous phase. In this form, the constituents will tend to travel with the ground-water flow, but will become diluted and, to varying degrees, removed from the flow by sorption to soil particles, as they are transported from the source.

Other constituents, such as the polynuclear aromatic hydrocarbons (PAHs) will tend to be concentrated more in an oily phase, which can form as a layer upon or near the ground-water table. An oily layer can move at varying speeds relative to ground-water flow itself, and may be subject to less dilution or attenuation by sorption or other mechanisms. As oil continues to migrate from the management units and move on the surface of the water table, the sorptive capacity of the soil will be decreased, and toxic constituents in the oily phase may move downgradient with the ground water in a largely unretarded fashion. The migrating oil also will tend to retain a high concentration of contaminants because the immiscibility of oil and water precludes dilution.[32] That is, the oil phase will spread, becoming thinner, rather than mixing with the ground water and becoming more dilute. Intermediate oil/water emulsions may also be involved in the transport/decay process, as toxic constituents move from a source towards receptors.

Because of the complexities involved in these multi-phase leaching and transport processes, predictive modeling of oily waste migration is extremely difficult, and results are subject to great uncertainty. However, a growing body of empirical evidence indicates that oily waste constituents can and do travel in groundwater systems over substantial distances and often at relatively high concentrations. For example, in its Report to Congress on oil and gas production wastes, EPA described several damage cases involving the migration of hydrocarbons from unlined waste pits into ground water.[33] In one case in New Mexico, hydrocarbons were detected in ground water 50 meters downgradient from unlined produced water pits. Sands above the water table were found to be stained with oil, and a black, oily film was discovered on the water itself.

In a separate study of petroleum refinery wastewater treatment sludges, EPA found concentrations of PAHs (phenanthrene, pyrene, and chrysene) of up to 2,000 parts per million (ppm) in a well located 200 meters downgradient from primary wastewater treatment units.[34] At a coal-tar waste site in Minnesota, municipal wells drilled 1,000 meters away were found to be contaminated with several organic compounds, including several of the PAHs commonly present in oil/water/solids separation sludge.[35] The coal-tar waste was oily in composition and most of the compounds detected downgradient from this site were slightly more concentrated in an oily phase. These and other documented cases of oily phase migration substantiate the Agency's concern about potential for sludge constituents to be released into and migrate through the environment.

Environmental settings. Several factors relating to the environmental settings of petroleum refineries contribute to the general potential for damages from toxic sludges, as borne out by EPA survey and file data, as well as research by the American Petroleum Institute.

First, refineries and their impoundments tend to overlie relatively shallow aquifers. An EPA mapping study of 20 refinery locations, using available hydrogeologic maps, showed 90 percent of the sites with ground-water tables 20 meters or less from the land surface and 75 percent with water tables that are less than 7 meters deep. Similar, more precise field data from thirteen EPA site visits have documented the distance between the bottoms of surface impoundments and the ground-water table. Over half of the impoundments at these refineries extended either into or within 1.5 meters of the water table; and the water table was within 6 meters (20 feet) of the base of all the ponds at 12 out of 13 refineries in the sample.

The American Petroleum Institute (API) also found that the water table underlying petroleum refinery wastewater treatment impoundments was very shallow at a sample of 10 refineries and, more generally, in several regions where refineries tend to be concentrated.[36] In addition, API found that these refineries and regions generally are underlain by unconsolidated soil that has a high permeability. Short distances to ground water and high subgrade permeability enhance migration potential for leachate and thus enhance the probability of ground-water contamination and other damages.

Distances to typical receptors are also important locational considerations, affecting both time of travel and extent of dilution or attenuation of toxic constituents between points of release and points of exposure. The EPA site visits referenced above also measured distances from impoundments to surface waters at 31 refineries. Seventy-five percent had distances under 1,200 meters, and 50 percent were within 250 meters. These distances are all generally within the range at which various toxic constituents can be transported by ground water, in either an aqueous or oily phase, at concentrations that can be damaging to natural resources and human health.

Little data are readily available on distances from refineries to active drinking water wells, a principal indicator of direct human health threats. However, the Agency reviewed U.S. Geological Survey (USGS) maps for a sample of 40 representative refinery sites to identify the presence and location of downgradient residences that appear to be outside the range of public water systems (PWSs). Residences outside of PWS service areas are likely to have private wells. For the same sample of 40 sites, the Agency also used the USGS maps along with data from the Federal Reporting Data System (FRDS) to identify the location of PWS wells.

At 18 of the 40 refineries mapped (45 percent), residences that are expected to have private wells were present within 1,600 meters (1 mile), and at 9 of 40 refineries (23 percent), residences that

[31] For example, see: *Evaluation of Method 1311 for Determining the Release Potential of Oily Wastes.* Draft final report prepared by Research Triangle Institute for the Office of Solid Waste, U.S. EPA, November 1988.

[32] Alfoldi, L., "Movement of Oils in Ground Water and in Rocks," in *Proceedings of International Symposium on Ground Water Pollution by Oil Hydrocarbons.* Prague, June 1978.

[33] U.S. EPA, *Report to Congress: Management of Wastes from the Exploration, Development, and Production of Crude Oil, Natural Gas, and Geothermal Energy.* Volume 3, EPA/530-SW-88-003, December 1987.

[34] *Summary of Data and Engineering Analyses Performed for Petroleum Refining Wastewater Treatment Sludges,* prepared by MRI for the Office of Solid Waste, U.S. EPA, April 1988.

[35] Rostad, C.E., Perieira, W.E., and M.F. Hult, "Partitioning Studies of Coal-Tar Constituents in a Two-Phase Contaminated Ground-Water System", *Chemosphere.* Vol. 14, No. 8, pp 1023-1036, 1985.

[36] American Petroleum Institute, *Assessment of Potential Hazards to Ground Water Posed by Refiner Wastewater Impoundments.* March 1980.

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are expected to have private wells were within 400 meters. Four of the 40 refineries (10 percent) have a public well within 1,600 meters downgradient. Using current census data on the average number of people per residence (2.6) and data from FRDS on the total population dependent on potentially affected PWSs, and extrapolating the sample results across the universe of affected refineries, EPA estimates that from 9,500 to 66,000 people could be exposed to the sludge contaminants via either private or public wells within 1,600 meters downgradient of 39 to 71 refineries. Although certainly not conclusive, these data suggest the potential for drinking water contamination at a substantial proportion of refineries and the potential for a large number of people to be exposed.

Overall, of the 40 refinery sites evaluated by mapping, 90 percent showed either downgradient residences that may have drinking water wells, or surface waters, or both within 1,200 meters.

Conclusions from General Assessment. Based on (1) the substantial quantities of primary and secondary oil/water/solids separation sludge in unlined impoundments and land disposal units, (2) the high concentrations of several toxic constituents in the raw sludge, (3) the demonstrated capability of these sludge constituents to migrate out of containment units, (4) the shallow ground-water tables and high soil permeabilities beneath most refineries, and (5) the relatively short distances to surface waters and/or drinking water wells at a substantial proportion of locations, the Agency concludes that there is a high probability that these sludges are contributing substantially to environmental degradation and possible human health damage under current management practices at a significant number of U.S. petroleum refineries.

2. Quantitative Damage Estimates

In an effort to quantify the benefits from this regulation, the Agency undertook a modeling study of the ground-water damage pathway to estimate baseline toxic constituent concentrations at receptor points and to evaluate potential damages associated with this contamination.

Approach and Methods. The approach used sample data for representative refineries to estimate typical damage potentials for all refineries producing primary wastewater treatment sludge. The principal data included: (1) Sludge quantity estimates for 149 refineries; (2) field data on toxic constituents in sludges sampled at 44 waste management units at 11 refineries; (3) downgradient distance to surface water for 31 representative refineries; (4) downgradient distance to nearest residence (as a proxy for drinking water wells) for 40 representative refineries; and (5) total population potentially exposed to ground-water contamination via private and public water supply wells located within one mile downgradient of 40 representatives refineries.

To develop modeling inputs from the data on toxic constituent concentrations in the sludge, the Agency estimated leachate concentrations using all available sludge sampling data and accounting for the oily nature of the sludge. The Agency did not use toxicity characteristic leaching procedure (TCLP) direct data in this analysis because only limited sample data were available and the TCLP may underestimate actual leaching due to the oily nature of the sludges.[37] Instead, the Agency estimated leachate concentrations for all 44 sludge samples using available EPA methods that account for the oily character of these sludges.[38] The estimated leachate concentrations are many times higher than leachate concentrations that would be expected from the TCLP. However, while this approach may appear to be conservative (i.e., may overstate aqueous phase leaching from the sludge), it is designed to more realistically account for leaching from a mobile oily phase, which is not well simulated by the TCLP.

Because the sludge that is affected by today's rule only includes that which does not exhibit the TC, the Agency based this analysis only on samples that the Agency considered likely to pass TC regulatory levels using standard laboratory test procedure. By comparing measured TCLP concentrations to estimated leachate concentrations from sludge samples taken from the same units, the Agency identified a small number of sludge samples that would likely exceed TC regulatory levels using the TCLP test and excluded these from the data base, leaving estimated leachate concentrations for 30 sludge management sources from 9 refineries. Although TCLP test method concentrations for these 30 samples would likely lie below TC regulatory levels, the approach used to estimate leachate concentrations produces concentrations that exceed the TC regulatory levels for benzene, chromium, or lead for 16 of the 30 samples. For model input, the Agency used facility-level leachate concentration estimates derived by averaging constituent concentrations across all samples at a given refinery.

These baseline data were used as input into the Agency's VHS ground-water model [39] to produce probabilistic frequency distributions of expected risks representative of all affected sludge generators. Downgradient ground-water concentrations were thus estimated both for landfills (or land farms) at 63 to 124 refineries and for impoundments at 22 refineries.

From these ground-water concentrations, EPA developed estimates of two types of damages:

(1) *Human health effects* (both carcinogenic and noncarcinogenic) through drinking water well contamination for "maximally exposed individuals," based on distances to nearest residences, and for total exposed populations, based on both private residences and public wells; and

[37] In particular, the TCLP appears to underestimate the contribution of the mobile oily phase, which is likely to contain most of the sludge's hydrophobic PAHs, to the extent that any portion of the oil phase passes through the filtering step of the TCLP. In such cases, the filterable oil is treated as part of the "initial liquid" during the remainder of the procedure. Also, there is evidence that the oil fraction decreases the exposure of the solid fraction of the waste to the TCLP leaching medium.

[38] Concentrations of metals in sludge leachate were calculated using a conservative procedure developed for the delisting program. Concentrations of organics in sludge leachate were calculated by different methods to distinguish between the character of leachate generated from impoundments and landfills/land farms. Both approaches account for the contribution of a mobile oily phase to the concentrations of organic constituents in the leachate. (See Chapter 4 of the RIA document for additional detail on the leachate estimation procedures.)

[39] The Vertical and Horizontal Spread (VHS) model (50 FR 48897) was used to estimate the dilution of ground-water contamination caused by impoundments, landfills, and land treatment units. EPA recognizes that the VHS model does not account for an unsaturated zone, in which dilution due to dispersion can occur. This would tend to underestimate the dilution of constituents in the aqueous phase (i.e., overpredict the exposure point concentrations) in cases where an unsaturated zone exists. However, since the depth to ground water at refineries is relatively small, this error is not expected to be especially large. On the other hand, the model will overestimate the dilution that will be experienced by constituents that are mobilized in the oil phase and are subsequently released to the aqueous phase as the oil phase degrades. This is because the area of the degrading oil phase will be larger than the leachate source assumed by the model. (The area of the degrading oil phase will be equal to the leachate source area plus the area over which the oil phase spreads before it degrades). Additionally, the constituents in the oil phase will be released at points closer to the receptor point than the assumed leachate source. While the Agency believes that the magnitude of the error introduced by these factors cannot be accurately quantified due to the complex site-specific nature of the issues involved, it is noted that the factors act in opposite directions on the model's results and are thus, to some extent, offsetting.

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(2) *Concentration of toxic constituents entering surface water bodies,* through ground water, based on distances to surface water, for those constituents that are damaging to fresh and saline water ecosystems.

The estimated health risks may be over estimated because they are calculated on the assumption that exposed populations would drink untreated water even though it might exceed taste and odor thresholds for oil and certain constituents, and because PWSs may routinely treat water to meet drinking water standards. These issues are discussed below, together with estimates of costs for providing alternate drinking water supplies.

Ground-Water Resource Damages. An upper bound dollar value of the cost of avoiding the health effects described above can be obtained by estimating the cost of replacing drinking water that comes from affected down-gradient wells. Ground-water resource damages were defined in this analysis by exceedences of maximum contaminant levels (MCL's) defined by primary drinking water standards established under the Safe Drinking Water Act for five potential contaminants, including three metals (arsenic, chromium, and lead) and two organic compounds (benzene and toluene).[40] Contaminant concentrations were estimated at fixed distances between 200 and 1,200 meters from sludge management units.

All told, 70 to 80 percent of the refineries that manage affected sludge in landfills or land farms showed exceedences for at least one contaminant, even at the 1,200 meter distance, with the figure rising to 90 to 95 percent having exceedences at 200 meters. For refineries managing sludges in impoundments, 95 percent showed exceedences for at least one contaminant at 1,200 meters, and all showed exceedences at 200 meters. This translates into about 70 to 130 refinery sites producing damages to ground water at 200 meters and 60 to 110 sites showing damages at 1,200 meters. The total area of ground water contaminated above MCLs at these refineries is estimated to be 13 to 25 square miles. Multiple MCL exceedences (up to four contaminants) were typical for a majority of cases at all distances up to 1,200 meters.

The predicted *magnitudes* of the MCL exceedences were also substantial for a large percentage of refineries. For example, for 60 percent of landfill and land farm sites and for 95 percent of the impoundment sites, MCL exceedences were greater than a factor of 10 at 200 meters. At 1,200 meters, the proportion of sites with MCL exceedences greater than a factor of 10 declined to 25 to 40 percent of landfill/land farm sites and 75 percent of impoundment sites. MCL exceedences at 200 meters were greater than a factor of 100 for at least one contaminant at 10 to 20 percent of landfill/land farm sites and at 60 percent of impoundment sites. MCL exceedences at 1,200 meters were greater than a factor of 100 for 30 percent of refineries that have impoundments containing affected sludge.

In general, chromium accounted for the largest number of MCL threshold exceedences across all refineries and produced the greatest absolute MCL exceedance levels—up to 2,500 times the threshold—at more than 90 percent of the affected refineries that dispose of sludge in landfills and land farms and all 22 refineries that accumulate the sludge in impoundments. Lead exceedences were predicted for 70 to 80 percent of the facilities with landfills and land farms and all 22 refineries with impoundments containing the affected sludge. Benzene exceedences were predicted at 10 to 50 percent of the affected refineries, depending on distance. Only toluene among the five constituents did not result in an exceedance of the MCL at any sites within the 200 to 1,200 meter range of distances modeled.

In addition to the ground-water damage estimates from modeled exceedance of MCLs, current sludge management may also contaminate ground water with levels of oil that can be tasted, smelled, or even seen. In this analysis, the Agency has assumed that sludge constituents are released, in part, in an oil phase that migrates in ground water. Given the assumption of a mobile oil phase, it is likely that ground water downgradient of sludge management units will not be usable because oil concentrations in the ground water will be well above taste and odor thresholds.

Human Health Damages. To quantify potential human health damages, the Agency modeled cancer risks.[41] and noncarcinogenic (lead and chromium) health effect threshold exceedance levels as a function of sludge characteristics and distances to drinking water wells. The Agency estimated both maximally exposed individual (MEI) risks at individual refineries and total population risks. Virtually all refineries estimated to have drinking water wells at distances under 1,200 meters (45 percent of refineries) indicated potential cancer risks and also exceedences of health effect thresholds for both lead (neurotoxic effects in sensitive populations) and chromium (liver and kidney damages). Because of the simplified nature of the VHS model and uncertainties in predicting contaminant concentrations far from a release source, the Agency modeled concentrations only out to 1,200 meters. Therefore, results for the remainder of refineries (55 percent with the nearest downgradient residence beyond 1,200 meters or beyond an intervening surface water body) were either inconclusive or assumed to yield low risks.

EPA's carcinogenic risk modeling results for the sludges affected by today's listing predicted MEI risks greater than 10^{-5} for all refineries with residences within 1,200 meters (45 percent of all refineries), and greater than 10^{-4} for 40 percent of all affected refineries. For up to 25 percent of affected refineries with the greatest predicted risks—i.e., those with higher carcinogenic constituent concentrations, larger sludge volumes, and closer distances to wells—EPA predicted MEI lifetime risks equal to or greater than 10^{-2} (one case in 100 similar lifetime exposures) for these wastewater sludges under current management practices and distances to existing residences. Multiplying the median individual lifetime cancer risk estimates at three downgradient distances by the total population potentially exposed via downgradient drinking water wells at those distances, the Agency predicts that baseline sludge management practices could cause anywhere from one to three cancer cases per year.

Neurotoxicological damage to sensitive persons (infants or pregnant women) can occur at threshold concentration levels of lead greater than 0.02 ppm in drinking water.[42] Levels exceeding two times this amount are predicted by the EPA modeling results at up to 30 percent of refineries that manage sludge in landfills or land farms and 40 percent of refineries managing affected sludge in impoundments. Levels exceeding 100 times this concentration are predicted at up to 5 percent of refineries with landfills and land farms and 15 percent of refineries with impoundments. Kidney and/or liver damage from chromium ingestion can occur at drinking water concentrations

[40] For toluene the analysis used the proposed MCL of 2.0 mg/L.

[41] Carcinogenic constituents included arsenic, benzene, and various PAHs [benzo(a)pyrene, benzo(a)anthracene, dibenz(a,h)anthracene, and chrysene].

[42] Based on an MCLG of 0.02 mg/liter previously proposed by EPA's Office of Drinking Water (50 FR 46930, November 13, 1985).

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of chromium greater than 0.18 ppm.[43] The EPA model results for all refineries suggest that this threshold may be reached at 25 to 30 percent of refineries that manage sludge in landfills or land farms and 40 percent of refineries managing affected sludge in impoundments. According to the modeling results, this threshold would be exceeded by 100 times at about 10 percent of all refineries managing affected sludges in impoundments.

Overall, the model results indicate that up to an estimated 6,400 to 32,000 people could be exposed to drinking water concentrations of lead and/or chromium in excess of their respective health effect thresholds as described above.

Taste and odor. In cases where taste and odor thresholds in tap water are exceeded, households or public water systems may take a variety of actions to avoid exposures to contaminated supplies and thus avoid any health effects. Our analysis has shown that benzene and toluene are sometimes in this range where taste or odor threshold exceedences could tend to preclude use of water. Highly sensitive persons can detect toluene (the more critical of the two constituents) in water at 0.024 mg/L, and our ground-water modeling results indicate that this concentration level could be reached at the MEI risk locations (nearest residential user) at about 20 percent of refineries with current downgradient private residences. However, for less sensitive persons at MEI residences and/or for other (non-MEI) residences further downgradient, taste and odor for toluene could be much less a factor in forestalling health risks for private well users.

In addition, if the oil phase is mobile and reaches exposure points (as is assumed in estimating health effects), it is possible that oil could be tasted and smelled in drinking water at any of the facilities where the Agency estimated cancer risk or lead or chromium threshold exceedences. However, since the oily phase of the contaminant plume is generally expected to occur at the surface of the contaminated aquifer, wells would have to be withdrawing from the aquifer surface for users to detect the oil itself.

Replacement Costs For Contaminated Water Supplies. As an alternate measure of damages, the Agency estimated the costs of replacing ground water that is currently used as a drinking water supply and that may be contaminated by baseline sludge management practices. We estimated these costs using a standardized resource damage model,[44] along with our estimates of potentially exposed populations and the frequency of exceedences of MCLs in downgradient ground water.

Based on the Agency's projections, the nationwide annualized cost of replacing contaminated ground water that is currently used at downgradient locations ranges from $4.2 to $7.8 million, depending on the proximity of alternative water sources and the number of refineries affected by today's rule.[45] The estimated total number of people placed on alternative water supplies ranges from 7,600 to 14,000. These replacement costs are based on the assumption that ground water, from either nearby or distant locations, will provide the replacement water supply. If surface water is used as the replacement supply, the annualized replacement costs would be from 8 to 28 percent higher than presented above. Similarly, if the Agency considered the replacement of ground water contaminated above taste and odor thresholds rather than MCLs the annualized replacement costs could also be slightly higher than presented above.[46] In addition, these estimates only include replacement costs for current water demand and do not include replacement or treatment costs for future growth in demand.

Surface Water Pollution. The EPA modeling effort estimated concentration levels of toxic constituents predicted to reach nearby rivers, lakes, estuarine, or coastal water bodies through ground water. As noted above, EPA estimates that 75 percent of refineries are within 1,100 meters, and 50 percent within 250 meters, of a surface water body. In addition, 25 percent are within 800 meters of other wetland areas (swamps or bogs).

Results from modeling predict that constituent *concentrations* reaching these surface waters may be substantially higher than standard water quality criteria for ecological protection (i.e., acute ambient water quality criteria and criteria developed from toxicity test results presented in EPA water quality criteria documents). Although the results are not conclusive because they do not provide quantitative estimates on the mass flows of pollutants, they provide an indication of the potential for ecological harm. In addition, it may be noted that several of these sludge constituents, particularly lead, chromium, the PAHs, and (to a lesser extent) nickel and arsenic, could tend to bioaccumulate in aquatic organisms or, under certain circumstances, deposit in benthic sediments. Damages to surface water through ground-water transport were not estimated in terms of total acreage or number of stream miles damaged.

3. Regulatory Benefits

Regulatory benefits from today's rule can be measured in terms of reductions in current damages (or prevention of increased future damages) to ground-water resources, human health risks (potential mortality or illnesses due to cancer and other organ dysfunctions), and ecological damage avoided through reduced pollutant loadings to fresh and saline surface waters or other wetlands near refineries or near off-site sludge disposal areas.

Basically, Subtitle C regulations will require that current sludge management units be closed (generally in a manner that will reduce future constituent releases) and that future sludge generation be managed either by incineration, solvent extraction, or by some other means that precludes the migration of toxic pollutants into ground waters or surface waters. No new unlined primary oily sludge treatment or storage ponds would be constructed, either at existing or future new refineries, and no future oil/water/solids separation sludge would be disposed of under uncontrolled conditions in land management units. Instead, the sludge would accumulate and be stored in tanks or basins in accord with containment controls, and final disposal would occur under best demonstrated available technology (BDAT) specifications.

As an example of the damage reductions to be expected, the analysis has considered future health risks from carcinogens and metals. The Agency has estimated that damages to human health via contaminated drinking water may be occurring presently at up to 52 percent of U.S. refineries currently generating these sludges, or at between 39 and 71 locations. If the 22 refineries with impoundments adopt either of the two more likely Subtitle C closure scenarios for existing surface impoundments (closure in place or clean closure), toxic

[43] Based on the reference dose from EPA's Integrated Risk Information System.

[44] ICF Incorporated, *Subtitle D Risk Model: Draft Appendix E, Resource Damage Submodel*, September 1988.

[45] These values were calculated from the sum of all discounted costs incurred over 90 years with a discount rate of 3 percent and a payment period of 20 years.

[46] Because the taste and odor thresholds for principal sludge contaminants are lower than the MCLs, the volume and replacement costs of water contaminated above taste and odor thresholds could be larger than those corresponding to MCL exceedances alone.

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releases will either be essentially eliminated or future monitoring and corrective actions should substantially protect against future off-site migration at all of these 22 locations. Future oil/water/solids separation sludge management at all sites will be regulated according to BDAT—i.e., solvent extraction or incineration under Subtitle C, Subpart 0 conditions. This typically results in hazardous organic constituents being recycled, destroyed, or removed at levels greater than 99.995 percent. In addition, cement stabilization of solvent extraction treatment residuals and proposed metals emission regulations are designed to control carcinogenic MEI risks below 10^{-5} levels, and noncarcinogenic metals risks to levels below MEI health effect threshold levels. Thus, the Agency anticipates that MEI health risks due to cancer would be reduced from present levels, ranging from 10^{-4} to 10^{-2} at 35 to 60 locations, down to a maximum of 10^{-5} (most likely substantially below 10^{-5}) under expected regulated conditions. An estimated one to three cancer cases per year would be avoided. Noncarcinogenic effect levels would be similarly controlled, under BDAT regulations, to levels below health risk thresholds. The number of people potentially exposed to lead and chromium concentrations above noncarcinogenic effect thresholds in drinking water, as a result of contaminant migration from the sludge, would be reduced by 6,400 to 32,000.

An alternative measure of benefits is the reduction of costs of treating or replacing contaminated ground water from private and public wells. These replacement costs would be reduced or prevented at almost all of the estimated 75 to 136 affected petroleum refineries as a result of this regulation. This would result in an annual savings of more than $4.2 to $7.8 million per year that would otherwise have to be spent to replace existing drinking water supplies.

An additional benefit, not quantified in this RIA, is that pollutant loadings to surface waters and wetlands through groundwater migration and transport at 56 to 102 refineries (about 75 percent of sludge generators) should also be substantially reduced or eliminated as a result of this rule.

D. Summary of Analytical Limitations and Qualifications

As described above, the benefit assessment has estimated benefits alternatively in terms of reduced health risks/damages and water supply cost savings. Many uncertainties and assumptions made in developing the quantitative estimates could lead to over- or underestimates. Specific factors noted in the analysis are summarized below. Paragraphs or factors in this section marked with * relate to health risk factors that would be precluded or obviated by groundwater source supply replacement or public system drinking water treatment.

1. Factors That Tend To Overestimate Benefits

Simplified VHS Model used in groundwater transport. The VHS model is a steady state model that projects long-term equilibrium groundwater plume contaminant levels based on the assumption that contaminant releases are continuous (i.e., the site acts as an infinite source). Although steady state modeling is efficient, it ignores many important temporal factors and can tend to overestimate the geographical extent, duration, and maximum contaminant levels. In addition, the VHS model, by failing to address specific retardation factors and dilution in an unsaturated zone, can tend to substantially overestimate contaminant levels for certain chemicals in the aqueous phase of the oil/water plume.

*Agency dose-response functions.** The Agency's procedures for estimating dose-response relationships, upon which the health benefit estimates are based, result in an upper limit of health risks. Carcinogenic potency factors are conservative, tending to overstate risk. Furthermore, with respect to the carcinogenic potency of PAHs the Agency used the potency factor for benzo(a)pyrene (the PAH for which there is a potency assessment, albeit a relatively high potency among carcinogenic PAHs) for all the analyzed carcinogenic PAHs in the sludge data base. Similarly, the reference level used for lead represents a level that could result in neurotoxicological damage to sensitive persons (infants or pregnant women), not an average population. The estimates also assume that individuals in the exposed populations drink 2 liters of untreated contaminated ground water per day over 70 years. To the extent that the average person consumes less water and/or obtains liquids from other sources over a lifetime, actual risks will be lower. Thus the benefits do not represent "most likely" or "best" estimates of risk in this respect.

Assumed hydraulic connection with drinking water wells. The Agency's health benefit estimates are based on the assumption that downgradient drinking water wells withdraw water from a geologic zone that can be contaminated by waste ponds, landfills, or land treatment units at petroleum refineries. Moreover, the estimates assume that wells are located along the downgradient centerline of a contaminant plume and that they draw water from the surface layer of the plume, which would have higher contaminant concentrations than locations on either side of the centerline or deeper in the aquifer. Downgradient drinking water wells may actually be protected from contamination by impervious geologic strata and/or may be located in less concentrated areas of a contaminant plume.

*Other intervening regulations.** EPA's health benefit estimates do not take into account contemporaneous or future regulatory actions initiated by other regulatory authorities, including other EPA offices. In particular EPA's Office of Drinking Water has promulgated or proposed major rules that require the installation of treatment technologies at public water systems. The health risks that are estimated to be avoided in this rulemaking may be already substantially prevented for the populations of public water users as a result of these or future regulatory actions. There still can be risks, however, for private well users, not protected under the Safe Drinking Water Act. In addition, some constituents may not yet be covered by the current regulations.

*Taste and odor.** In cases where taste and odor thresholds in contaminated tap water are exceeded, households or public water systems may take a variety of actions to avoid exposures to contaminated supplies and thus preclude any health effects. Our analysis has shown that benzene and toluene are sometimes in this range where taste or odor threshold exceedances could tend to preclude use of water. Highly sensitive persons can detect toluene (the more critical of the two constituents in the present analysis) in water at 0.024 mg/l, and our groundwater modeling results indicate that this threshold concentration level could be exceeded at the MEI risk location (nearest residential user) at about 20 percent of refineries with estimated MEI risks.

However, for persons of more average taste and odor sensitivity at MEI residences and/or for other (non-MEI) residences further downgradient, taste and odor for individual constituents like toluene or benzene rapidly diminish as factors protecting against consumption of contaminated drinking water. For residences using private wells where taste and odor thresholds are *not* exceeded, substantial health risks can still be present, either for other constituents like lead or arsenic where

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taste and odor are not a factor, or for constituents like benzene, for example, where the taste and odor threshold even for the most sensitive persons averages 0.07 mg/l, about 14 times higher than the benzene MCL (0.005). For oil itself, the taste and odor threshold is particularly low; and since oil tends to stay at or very near the surface of the contaminant plume, households withdrawing from the surface of the contaminated aquifer may thus detect the plume at substantial distances and avoid using contaminated water.

2. Factors That May Underestimate Benefits

*Toxic constituents not included in the analysis.** The risk modeling was based on a limited list of constituent chemicals expected to be present. Additional chemicals may be present that were not analyzed or for which health-risk factors have not yet been developed. For example, there is very recent evidence that dioxins are present in some refinery sludges at levels that could pose health risks. In addition, lead has recently been listed as a Class B-2 carcinogen, but was not so treated in the risk assessment.

*Background response not included in the analysis.** The health risk analysis did not account for segments of the population exposed to background doses of carcinogenic or noncarcinogenic toxicants from work place or other sources. Segments of the population already subject to significant background doses of either carcinogens or noncarcinogenic toxicants from work place or other exposures were not included in the analysis.

Pathways not explored or quantified. The risk assessment did not attempt to quantify any health risk pathways other than groundwater-to-drinking water ingestion. Other health risk pathways would include: dermal absorption and inhalation via water supply (showering, for example)*; inhalation of volatiles or dust particles from landfarming of sludges; food chain ingestion via crops grown on contaminated land surfaces; food chain via contaminated surface waters (fish and shellfish).

Ecological damages not quantified. Damages to natural ecosystems—either through overland flows during flooding or erosion or via groundwater contamination and seepage to land or surface waters—were not quantified in this study. It was shown however, that surface waters exist downgradient within 1200 meters at 75 percent of refineries and that other wetlands (swamps, bogs, etc.) are equally nearby at over 25 percent of refineries. Modeling results indicated that contaminants could migrate over these distances and several chemicals present in the sludge are known to bioaccumulate and/or concentrate in the benthic layer which is critical to the invertebrate elements of the food chain.

Fractured flow systems. The VHS model assumes a homogeneous isotropic subsurface. Certain sites are subject to fractures or are particularly porous, leading to exceptionally rapid transport and less dilution than predicted by the model.

Risk/damages related to future population growth or regional development were not counted. The Agency has only attempted to estimate health risks or groundwater resource damages for existing populations and water use patterns. No account has been made for possible future residential development or other future growth in water resource demands upon aquifers presently contaminated or subject to future contamination by these petroleum refinery sludges.

Only benefits within one mile are quantified. Due to data limitations and modeling constraints, the Agency only considered the health risks and resource damages prevented within one mile downgradient from refineries. The Agency acknowledges, however, that contamination from the sludge could extend for greater distances, making the overall benefits from this rulemaking greater than estimated.

VII. Regulatory Flexibility Act Screening Assessment

The Regulatory Flexibility Act (RFA) of 1980 (Pub. L. 90-34), which amends the Administrative Procedures Act, requires Federal regulatory agencies to consider "small entities" throughout the regulatory process. The RFA requires, in section 603, an initial screening analysis to be performed to determine whether a substantial number of small entities will be significantly affected by a regulation. If so, regulatory alternatives that eliminate or mitigate the impacts must be considered.

According to EPA's guidelines and criteria for conducting regulatory flexibility analyses, if over 20 percent of the population of small businesses is likely to experience financial adversity based on the costs of a rule, then the Agency is required to consider that the rule will have a significant economic effect on a substantial number of entities and to perform a formal RFA assessment. The Agency has conducted an initial screening analysis to evaluate the potential economic effect of today's final rule on small entities and has concluded that the rule will not have a significant adverse effect on a substantial number of small petroleum refining companies.

A. Definition of Affected Small Entities

EPA has identified the enterprises directly affected by this rule as petroleum refineries that use primary settling ponds or other non-regulated structures for oil/water/solids sludge separation from oily wastewaters. The Agency has estimated in the Regulatory Impact Analysis (RIA) for this regulation that about 182 out of 204 U.S. refineries produced such sludges at the beginning of 1989, primarily under unregulated conditions, and could therefore incur costs for new regulatory controls under Subtitle C of RCRA. However, as noted, a substantial portion of these sludges—possibly the major part—would come under the recently promulgated Toxicity Characteristic Rule (55 FR 11798) and would therefore be subject to regulation prior to the effective date of today's regulation.

According to current U.S. Department of Energy (DOE) records, these 204 U.S. refineries are owned and operated by 106 identifiable business entities, primarily U.S. corporations (Petroleum Supply Annual, 1989). These 106 companies vary widely in size and general character. The largest 25 companies are either fully integrated petroleum companies or broadly based natural resource or other conglomerates ranking high among the nation's top 100 or 500 largest corporations. The majority are smaller, nonintegrated companies that typically operate only one petroleum refinery.

For purposes of this regulatory analysis, the Agency has chosen to define affected small entities as those small petroleum refining companies that control company-level crude oil refining capacity of under 50,000 barrels per day (BPD). This definition of small company was chosen for the following reasons:

(1) A capacity level of 50,000 BPD represents 60 percent of the total number of companies (64 out of 106), but these 64 companies together control only 9 percent of capacity.

(2) Companies operating at less than 50,000 capacity BPD are predominantly nonintegrated, independent companies that operate only one refinery each.

(3) The 50,000 BPD cutoff is consistent with one of the Small Business Administration's (SBA) criteria for defining small businesses in the petroleum refining industry (SIC Code 2911), as published in SBA's Small Business Size Regulations (13 CFR 121).

The Agency has chosen not to use SBA's second criterion, which would define a small business as one that has less than 1,500 employees, because (a) very few refineries employ more than

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1,500 employees, and (b) data on the number of employees per facility/refinery are much less readily available than are production capacity data.

It may be noted that the concept of a small entity as applied to petroleum refining companies is a strictly relative concept. For example, the 50,000 BPD company used as our cutoff criterion would, under current market conditions, generate an average annual sales revenue of about $350 million per year. This revenue level would rank such a company well above 95 percent of all U.S. corporations in annual sales. A company with 5,000 BPD capacity would generate about $35 million in annual sales.

B. Impact Screening Analysis

In conducting the RIA for this rule, the Agency used a data file that included 167 of the 204 operable refineries in the United States. Compliance costs and annual sales were estimated for all facilities in this data base, including 46 refineries operated by 40 companies meeting the Agency's criterion as small petroleum refining companies with under 50,000 BPD of crude oil refining capacity. The Agency has based its screening analysis for small business impacts on a review of the compliance cost and sales estimates for these 40 companies, which comprise 63 percent of all small refining companies.

Using a criterion of annual compliance costs greater than 1 percent of annual sales as the measure of "substantial" adverse impact, the Agency estimates that no more than 13 or so small refining companies (20%) would experience substantial impacts from today's rule even under the highest cost set of costing assumptions used in the RIA. Conversely, using lower cost assumptions from the RIA, the number of firms with compliance cost-to-sales ratios greater than one percent approaches zero. Given unexploited potentials for waste minimization and recycling as a preferred option to incineration for sludge disposal, the Agency's best estimate is that less than six (10%) of the small (less than 50,000 BPD) refining companies would be adversely affected at the one percent of sales criterion level.

Based on this screening analysis and the criteria presented, the Agency has concluded that this regulation will not have a substantial adverse impact on a significant proportion of small companies in the petroleum refining industry. The Agency has not, therefore, conducted a formal Regulatory Flexibility Analysis for this rule.

VIII. Cercla Designation and Reportable Quantities

All hazardous wastes listed in 40 CFR 261.31 through 261.33, as well as any solid waste that meets one or more of the characteristics of a RCRA hazardous waste (as defined at 40 CFR 261.21 through 261.24), are hazardous substances under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended, pursuant to CERCLA section 101(14). Therefore, the waste streams listed as hazardous in today's notice will, on the effective date of the final rule, automatically become hazardous substances. CERCLA hazardous substances are listed in Table 302.4 at 40 CFR 302.4 along with their reportable quantities (RQs). CERCLA section 103(a) requires that the person in charge of a vessel or facility from which a hazardous substance has been released in a quantity that is equal to or exceeds its RQ shall immediately notify the National Response Center of the release. In addition, section 304 of the Superfund Amendments and Reauthorization Act of 1986 (SARA) requires the owner or operator of a facility to report the release of a CERCLA hazardous substance or a SARA Title III extremely hazardous substance to the appropriate state emergency response commission (SERC) and local emergency planning committee (LEPC) when the amount released equals or exceeds the RQ for the substance (or one pound where no RQ has been set).

The release of a hazardous waste to the environment must be reported when the amount released equals or exceeds the RQ for the waste, unless the concentrations of the constituents of the waste are known (48 FR 23566, May 25, 1983). If the concentrations of the constituents of the waste are known, then the mixture rule may be applied. According to the "mixture rule" used in notification under CERCLA and SARA (40 CFR 302.6(b)), the release of mixtures and solutions containing hazardous waste would need to be reported to the NRC, and to the appropriate LEPC and SERC, when the RQ of any of its component hazardous substances is equalled or exceeded. RQs of different hazardous substances are not additive under the mixture rule (except for radionuclides, see 54 FR 22536, May 24, 1980), so that spilling a mixture containing half an RQ of one hazardous substance and half an RQ of another hazardous substance does not require a report.

Under section 102(b) of CERCLA, all hazardous wastes newly designated under RCRA will have a statutory RQ of one pound unless and until the RQ is adjusted by regulation under CERCLA. In order to coordinate the RCRA and CERCLA rulemakings with respect to new waste listings, the Agency today is adding the wastes F037 and F038 to 40 CFR 302.4, the codified list of CERCLA hazardous substances, and listing their statutory RQs of one pound. In a Notice of Proposed Rulemaking published elsewhere in today's **Federal Register**, the Agency proposes to adjust the statutory RQs for waste streams F037 and F038 to one pound pursuant to section 102(a) of CERCLA.

IX. Paperwork Reduction Act

This rule does not contain any information collection requirements subject to OMB review under the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 et seq.

List of Subjects

40 CFR Part 261

Hazardous wastes, hazardous constituents, recycling.

40 CFR Part 271

Administrative practice and procedure, Hazardous materials transportation, Hazardous waste, Reporting and recordkeeping requirements, Water pollution control, Water supply, Interim and final State authorizations.

40 CFR Part 302

Air pollution control, Chemicals, Hazardous materials, Hazardous substances, Intergovernmental relations, Natural resources, Reporting and recordkeeping requirements, Superfund, Water pollution control, Water supply.

Dated: October 19, 1990.

F. Henry Habicht, II,

Deputy Administrator.

For the reasons set out in the preamble, title 40 of the Code of Federal Regulations is amended as follows:

PART 261—IDENTIFICATION AND LISTING OF HAZARDOUS WASTE

1. The authority citation for part 261 continues to read as follows:

Authority: 42 U.S.C. 6905, 6912(a), and 6922.

2. Section 261.31 is amended by adding in alphanumeric order the following hazardous waste listings:

§ 261.31 Hazardous wastes from non-specific sources.

* * * * *

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Industry and EPA hazardous waste No.	Hazardous waste	Hazard code
*	* * * * * *	*
F037	Petroleum refinery primary oil/water/solids separation sludge—Any sludge generated from the gravitational separation of oil/water/solids during the storage or treatment of process wastewaters and oily cooling wastewaters from petroleum refineries. Such sludges include, but are not limited to, those generated in: oil/water/solids separators; tanks and impoundments; ditches and other conveyances; sumps; and stormwater units receiving dry weather flow. Sludges generated in stormwater units that do not receive dry weather flow, sludges generated in aggressive biological treatment units as defined in § 261.31(b)(2) (including sludges generated in one or more additional units after wastewaters have been treated in aggressive biological treatment units) and K051 wastes are exempted from this listing..	(T)
F038	Petroleum refinery secondary (emulsified) oil/water/solids separation sludge—Any sludge and/or float generated from the physical and/or chemical separation of oil/water/solids in process wastewaters and oily cooling wastewaters from petroleum refineries. Such wastes include, but are not limited to, all sludges and floats generated in: induced air flotation (IAF) units, tanks and impoundments, and all sludges generated in DAF units. Sludges generated in stormwater units that do not receive dry weather flow, sludges generated in aggressive biological treatment units as defined in § 261.31(b)(2) (including sludges generated in one or more additional units after wastewaters have been treated in aggressive biological treatment units) and F037, K048, and K051 wastes are exempted from this listing..	(T)
*	* * * * * *	*

3. Section 261.31 is amended by designating the introductory text and the table as paragraph (a) and by adding paragraph (b) to read as follows:

§ 261.31 Hazardous wastes from non-specific sources.

* * * * *

(b) Listing Specific Definitions: (1) For the purposes of the F037 and F038 listings, oil/water/solids is defined as oil and/or water and/or solids.

(2) (i) For the purposes of the F037 and F038 listings, aggressive biological treatment units are defined as units which employ one of the following four treatment methods: activated sludge; trickling filter; rotating biological contactor for the continuous accelerated biological oxidation of wastewaters; or high-rate aeration. High-rate aeration is a system of surface impoundments or tanks, in which intense mechanical aeration is used to completely mix the wastes, enhance biological activity, and (A) the units employs a minimum of 6 hp per million gallons of treatment volume; and either (B) the hydraulic retention time of the unit is no longer than 5 days; or (C) the hydraulic retention time is no longer than 30 days and the unit does not generate a sludge that is a hazardous waste by the Toxicity Characteristic.

(ii) Generators and treatment, storage and disposal facilities have the burden of proving that their sludges are exempt from listing as F037 and F038 wastes under this definition. Generators and treatment, storage and disposal facilities must maintain, in their operating or other onsite records, documents and data sufficient to prove that: (A) the unit is an aggressive biological treatment unit as defined in this subsection; and (B) the sludges sought to be exempted from the definitions of F037 and/or F038 were actually treated in the aggressive biological treatment unit.

(3) (i) For the purposes of the F037 listing, sludges are considered to be generated at the moment of deposition in the unit, where deposition is defined as at least a temporary cessation of lateral particle movement. (ii) For the purposes of the F038 listing, (A) sludges are considered to be generated at the moment of deposition in the unit, where deposition is defined as at least a temporary cessation of lateral particle movement and (B) floats are considered to be generated at the moment they are formed in the top of the unit.

4. Section 261 is amended by amending Appendix VII to add the following waste streams in alphanumeric order as follows:

APPENDIX VII.—BASIS FOR LISTING HAZARDOUS WASTE

EPA hazarous waste No.	Hazarous constituents for which listed
* * * * * * *	
F037	Benzene, benzo(a)pyrene, chrysene, lead, chromium.
F038	Benzene, benzo(a)pyrene chrysene, lead, chromium.
* * * * * * *	

PART 271—REQUIREMENT FOR AUTHORIZATION OF STATE HAZARDOUS WASTE PROGRAMS

5. The authority citation for part 271 continues to read as follows:

Authority: 42 U.S.C. 6905, 6912(a), and 6926.

6. Section 271.1(j) is amended by adding at the end the following entry to Table 1.

TABLE 1.—REGULATIONS IMPLEMENTING THE HAZARDOUS AND SOLID WASTE AMENDMENTS OF 1984

Promulgation date	Title of regulation	Federal Register reference	Effective date
*	* * * * * *	*	
November 2, 1990	Petroleum refinery primary and secondary oil/water/solids separation sludge listings.	(Insert Federal Register page citation)	May 2, 1991.
*	* * * * * *	*	

* * * * *

PART 302—DESIGNATION, REPORTABLE QUANTITIES, AND NOTIFICATION

7. The authority citation for part 302 continues to read as follows:

Authority: 42 U.S.C. 9602; 33 U.S.C. 1321 and 1361.

8. Section 302.4 is amended by adding in alphanumeric order the waste streams F037 and F038 to Table 302.4. The appropriate footnotes to Table 302.4 are republished without change.

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TABLE 302.4.—LIST OF HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES

Hazardous substance	CASRN	Regulatory synonyms	Statutory			Proposed RQ	
			RQ	Code	RCRA waste No.	category	Pounds (kg)
* * *	*	*	*			*	
F037			*1	4	F037	X	1 (0.454)
Petroleum refinery primary oil/water/solids separation sludge—Any sludge generated from the gravitational separation of oil/water/solids during the storage or treatment of process wastewaters and oily cooling wastewaters from petroleum refineries. Such sludges include, but are not limited to, those generated in: oil/water/solids separators; tanks and impoundments; ditches and other conveyances; sumps; and stormwater units receiving dry weather flow. Sludges generated in stormwater units that do not receive dry weather flow, sludges generated in aggressive bological treatment units as defined in § 261.31(b)(2) (including sludges generated in one or more additional units after wastewaters have been treated in aggressive biological treatment units) and K051 wastes are exempted from this listing.							
* * *	*	*	*			*	
F038			*1	4	F038	X	1 (0.454)
Petroleum refinery secondary (emulsified) oil/water/solids separation sludge—Any sludge and/or float generated from the physical and/or chemical separation of oil/water/solids in process wastewaters and oily cooling wastewaters from petroleum refineries. Such wastes include, but are not limited to, all sludges and floats generated in: induced air flotation (IAF) units, tanks and impoundments, and all sludges generated in DAF units. Sludges generated in stormwater units that do not receive dry weather flow, sludges generated in aggressive bological treatment units as defined in § 261.31(b)(2) (including sludges generated in one or more additional units after wastewaters have been treated in aggressive biological treatment unts) and F037, K048, and K051 wastes are exempted from this listing.							
* * *	*	*	*			*	

*Indicates the statutory source as defined by 4 below.
[4] Indicates that the statutory source for designation of this hazardous substance under CERCLA is RCRA section 3001.
[1] *Indicates that the 1-pound RQ is a CERCLA statutory RQ.

[FR Doc. 90-25637 Filed 11-1-90; 8:45 am]
BILLING CODE 6560-50-M

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F037
+
F038

Appendix A:

Background Document for the Listing of Primary and Secondary Oil/Water/Solids Separation Sludges from the Treatment of Petroleum Refinery Wastewaters -- Recorded Environmental Damages

U.S. Environmental Protection Agency
Office of Solid Waste
401 M Street, SW
Washington, D.C. 20460

August 20, 1990

1. INTRODUCTION

The U.S. Environmental Protection Agency is required to take the lead role in ensuring coordinated and effective governmental action to assure the protection of the environment by abating and controlling pollution on a systematic basis (40 CFR §1.3). To enable it to fulfill this mission with respect to solid wastes, Congress has given the Agency the authority, under §3001 of the Resource Conservation and Recovery Act, to list wastes as hazardous and to require that they be managed in accordance with the Agency's hazardous waste management system.

The Agency has previously determined that two oil/water separation sludges from the petroleum refining industry, Dissolved Air Flotation (DAF) float (listed as RCRA hazardous waste K048) and API separator sludge (K051), are commonly hazardous because of their content of mobile lead and chromium, and has included them in the lists of hazardous wastes in 40 CFR Part 261, Subpart D.

The Agency believes that a large number of oil/water separation sludges which are similar in composition to DAF float and API separator sludge pose a threat to the environment, and are not managed as hazardous solely because they are generated by units which are not dissolved air flotation devices or API

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separators. The Agency has proposed to amend the definition of RCRA hazardous wastes to encompass all primary oil/water separation sludges from the petroleum refining sector. This background document provides evidence to support the Agency's listing effort for these wastes. More specifically, this document presents evidence of environmental damage and waste mobility supporting the Agency's hazard determination.

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2. APPROACH

This background document makes and sustains the assertion that the primary oil/water separation sludges studied in this document and covered by the final rule have posed and continue to pose a significant potential for damage to human health and the environment. This assertion is supported by documented instances of damage at a number of sites throughout the United States, and by numerous Agency studies of these wastes in other regulatory contexts.

This assertion is considered in Section 3.0, Recorded Environmental Damage from Petroleum Refinery Oil/Water Separation Sludges. This section presents data from a number of sources. All delisting petitions for K048 and K051 and resultant Agency actions were examined to identify trends and potential damage incidents. The States of Texas, Louisiana, Minnesota, and California were polled for information regarding damage from refinery sludges. Additional information was received from EPA Region IX. Based on an evaluation of these materials, EPA Region VI (Texas, Arkansas, Louisiana, Oklahoma, and New Mexico) was selected for special study. This region was chosen because a large number of refining facilities fall within its jurisdiction. A member of the study group, assisted by Region VI experts, examined both RCRA and CERCLA files at Regional Headquarters in

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Dallas and compiled a list of relevant damage cases in the Region. Section 3.0 gives a detailed description of individual damage incidents, along with an overview of some concerns common to many sites handling refinery sludges.

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3.0 RECORDED ENVIRONMENTAL DAMAGE FROM REFINERY OIL/WATER SEPARATION SLUDGES

3.1 Delisting Petitions

Sections 260.20 and 260.22 provide opportunities for the regulated community to submit rulemaking petitions to the Agency to modify or revoke aspects of the hazardous waste management system regulations. Section 260.22 specifically provides hazardous waste generators with an opportunity to petition the Agency to remove their wastes, on a "generator-specific" basis, from the lists of hazardous wastes found in 40 CFR §§261.31 and 261.32. These petitions are generally referred to as "delisting petitions."

At least 57 facilities have filed delisting petitions for wastes classified as RCRA Hazardous Waste K048 or K051. The Agency has granted only one of these petitions as a permanent exclusion. Many of the others were found to be incomplete upon review of EPA and were dismissed (after the petitions were given an opportunity to complete their petitions). An additional group of petitions were rendered moot due to the "Skinner memo" and referrals to authorized states. All of the remaining petitions failed to satisfy EPA's delisting criteria when subjected to technical review. The Agency sent these petitioners denial/ withdrawal letters, informing the petitioners of the Agency's

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intent to publish in the Federal Register a formal denial notice, and providing the petitioners with an opportunity to withdraw their petitions to avoid publication of the negative findings. The single exclusion that was granted was for a waste that had been stabilized using a novel treatment technology. The Delisting Program has not reviewed any petitions for untreated K048 or K051 wastes that met the delisting criteria. This is *prima facie* evidence of the hazard posed by primary petroleum refinery wastewater treatment sludges.

In the petition described below, the Agency found evidence of environmental damage attributable to petroleum refinery wastewater treatment sludges:

> *Unocal, Nederland, TX (Petition #0486B):* The petitioner operated two API separators, generating a total of 1,200 cubic yards of sludge per year. The sludge was managed in an on-site surface impoundment. Ground water downgradient of the surface impoundment contained elevated levels of lead, chromium, and benzene. Sludge samples from the first API separator contained hazardous amounts of 1,4-dioxane. Samples from the second separator contained sufficient quantities of chromium to render them EP toxic, as well as benzene, benz(a)anthracene, and phenanthrene at levels of regulatory concern. Material taken from the surface impoundment showed antimony, mercury, chromium, lead, selenium, benzene, 1,4-dioxane, benz(a)anthracene, phenanthrene, benzo(a)pyrene, and benzo(a)fluoranthene at levels of concern. More specifically, when the analytical data were used as input to the Agency's Organic Leachate Model (OLM) and Vertical and Horizontal Spread (VHS) dispersion model, the predicted concentrations at a hypothetical receptor well exceeded the health-based levels of concern for these constituents.

In the following cases, the Agency determined that the petitioned waste did not meet the delisting criteria and was

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likely to cause environmental damage if disposed of in an unregulated manner. The Agency found sufficient basis to deny these petitions, based on waste characterizations. In most cases, ground-water monitoring data were not available (since many of these petitions were submitted before the Subpart F requirements were in place). However, if such data had been submitted, the Agency believes that ground-water contamination may have been detected.

Diamond Shamrock, Sunray, TX (Petition #0416): The petitioner requested an exclusion for K048, generated at a rate of 960 tons per year, and K051, generated at a rate of 20,000 tons per year. The wastes were landfarmed at the time of petition submittal. The Agency granted a temporary exclusion on February 26, 1982. EPA later re-evaluated the petition in the light of the Hazardous and Solid Waste Amendments (HSWA) of 1984, and decided to withdraw the temporary exclusion and issue a denial (date, 51 FR 37148). When the analytical data for the DAF float (K048) was used as input to the VHS model, the Agency found that the predicted compliance-point concentrations exceeded health-based standards for arsenic, antimony, nickel, selenium, benzo(a)pyrene, benz(a)anthracene, benzo(b)fluoranthene, benzene, and dibenz(a,h)anthracene. The API sludge (K051) failed the OLM and VHS model evaluations for arsenic, mercury, antimony, selenium, chrysene, benzo(a)pyrene, benzene, and benzo(b)fluoranthene, benz(a)anthracene, and dibenz(a,h)anthracene.

Hill, Houston, TX (Petition #0202): The petitioner requested an exclusion for API separator sludge and DAF float, produced at a fully integrated refining facility with a refining capacity of 70,000 barrels per day. A sample of the DAF float was found to be EP toxic for chromium. Both the API separator sludge and the DAF float failed the OLM and VHS model evaluation for antimony, chromium, selenium, anthracene, benzene, benzo(a)anthracene, benzo(b)fluoranthene, benzo(a)pyrene, chrysene, and phenanthrene. In addition, the DAF float contained hazardous levels of dibenz(a,h)anthracene.

Murphy Oil, Superior, WI (Petition #0441): The petitioner generated 12,100 gallons per year of API separator sludge at

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the time the petition was submitted. The sludge was found to be EP toxic due to its selenium content, and failed an OLM and VHS model evaluation for mercury, selenium, antimony, benzene, benzo(a)anthrene, and phenanthrene.

American Recovery, East Chicago, IN (Petition #0585): The petitioner operates an oil recovery facility in a major industrial area, generating a maximum of 720 cubic yards of K048, K049, and K051. Samples of sludge obtained during an Agency spot check were found to be EP toxic for lead, and to fail an OLM and VHS model evaluation for chromium, lead, nickel, benzene, benzo(a)anthracene, benzo(a)pyrene, and phenanthrene.

Rock Island, Indianapolis, IN (Petition #0237): The petitioned waste was a filter cake derived from API separator sludge. Data submitted by the petitioner failed the OLM and VHS model evaluations for chromium, methylene chloride, and benzene. A sample collected during an Agency spot check showed excessive (failing?) levels of benzo(a)anthracene, benzo(a)pyrene, chrysene, fluorene, phenanthrene, and dibenzo(a,h)anthracene.

Exxon, Baton Rouge, LA (Petition #0396): The petitioner requested an exclusion for DAF float that has been mixed with spent biological sludge and dewatered. The Agency evaluated the available analytical data using its Land Treatment Model (LTM), having concluded that the waste would most likely continue to be landfarmed if delisted. The waste failed the OLM and LTM model evaluations for benzo(a)anthracene, arsenic, lead, mercury, and selenium.

BP Alliance, Belle Chase, LA (Petition #0717): At the time of the petition submittal, the petitioner was mixing a series of refinery sludges, listed as RCRA hazardous wastes K048 through K052, treating the combined sludge by solvent extraction, and using the residual waste as a weed killer. The petitioner stated its intent to landfarm the material if an exclusion was granted. The Agency found that the waste failed an evaluation using the OLM and LTM for benzo(a)anthracene and benzo(a)pyrene.

3.2 Superfund Sites

Many abandoned petroleum refineries have been studied in detail by EPA Superfund staff for possible inclusion on the

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National Priorities List (NPL), and a number are already included on that list. While it is generally difficult to obtain operational data for these sites or to determine exactly what kinds of wastes were disposed of in particular parts of the facility, Regional NPL coordinators strongly suspect that oil/water separation sludges were responsible for at least some of the observed damage.

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Refining Sites on the National Priorities List

NPL Rank	Facility Name	City/County	St
58	Peak Oil	Tampa	FL
71	Gold Coast Oil	Miami	FL
82	Old Inger Oil Refinery	Darrow	LA
122	Sinclair Refinery	Wellsville	NY
183	Brio Refining	Friendswood	TX
229	York Oil	Moira	NY
322	Arrowhead Refining	Hermantown	MN
407	PetroProcessors of Louisiana	Scotlandville	LA
664	Dixie Oil Processors	Friendswood	TX
757	Moss-American (Kerr-McGee)	Milwaukee	WI
818	Koch Refining	Pine Bend	MN
830	Double Eagle Refining	Oklahoma City	OK
839	Fourth Street Refinery	Oklahoma City	OK
867	Pester Refinery	El Dorado	KS

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3.3 Region VI Facilities

At least 21 active petroleum refineries in EPA Region VI have come to the notice of the Region because of environmental damage at the site. Environmental damage at refineries is generally attributable to the following contaminant sources (or combinations thereof): crude oil spills, refined product spills, and waste management. For some facilities, contamination is os pervasive that it is impossible to discern sources. Many refineries pump hydrocarbon layers beneath their operations for subsequent product reclamation or refining[1]. In 16 of the Region VI cases, the damage was not attributable to refinery sludges, and could be traced to hydrocarbon pools (both crude and product) under the site, or to other sources. In one case, an impoundment containing K051 was located over an old hazardous waste landfill; ground-water damage was observed, but may be due to either the old or the new waste management unit or both. In the following cases, the Agency found clear evidence of ground-water damage from K048 and K051:

> *Fina, Big Spring, TX:* A RCRA Facility Assessment of this site was carried out by the Texas Water Commission in January 1987. The report concluded that "ground-water monitoring data downgradient of...[three API separators] indicated elevated concentrations of benzene, toluene,

[1] Memorandum dated July 22, 1988 from Mark Coleman, Oklahoma Department of Health Services, to Glen Sullivan, Oklahoma Department of Natural Resources.

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phenol, and nickel, all of which are present in the wastes handled by these units. Therefore, it is likely that a release has occurred based on the fact that these units are old, in-ground units of questionable integrity." The same investigation showed that 4 surface impoundments received wastewater treatment sludges which are not currently RCRA listed wastes but have been assigned numbers by the Texas Water Commission (TWC 249890, 248620, 240150, and 278620), and that elevated levels of phenol and toluene have been found in ground water downgradient of each of these units.

Navajo, Artesia, NM: At this facility, RCRA wastes K049 through K052 are applied to an on-site landfarm. Due to the similarity of these wastes, the ground-water damage cannot be definitively attributed to any one of them. However, wastewater from the API separators is sent to an evaporation pond via a 3-mile long unlined earthen ditch. In 1981, an inspector noted "a heavy layer of black oil on the top of the water in the ditch and very thick oily deposits on the vegetation and sediments on the banks." Heavy rains in Spring 1979 caused the ditch to overflow and surrounding farmland was contaminated by oily material. In a further investigation in 1985, the ditch and the pond showed "levels of chromium which exceeded the EP toxicity limit for a characteristic hazardous waste." Birds have been killed by oil in the wastewater evaporation ponds, and the entire pond system is "regularly flooded by the Pecos River." If the effluent from the water side of the API separators has caused this kind of damage, the sludge from the same units would also be expected to be hazardous.

Citgo, LA: At this facility, RCRA hazardous wastes K048, K049 and K051 were co-disposed. A naphthalene plume was observed in the ground water underneath the waste management unit.

Plateau, Bloomfield, NM: EPA Region VI conducted a sampling mission at this site in May 1984. The site has a number of different types of waste management units and there have been on-site oil spills in the past, complicating any interpretation of observed damage. However, the sampling team found that a ditch became contaminated as it passed the API separator ponds, and that the contaminants found in the ditch (polynuclear aromatic hydrocarbons in the water, substituted benzenes in the soil) were also found in samples of the pond sludge.

3.4 California

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The State of California lists all primary oil/water separation sludges under California Waste Code 222, and has designated treatment standards for these wastes. These wastes must be treated to reduce the total organic content below 1 percent prior to land disposal. California has determined that this level of source reduction can be achieved by using either incineration or solvent extraction. The State believes that sufficient incineration capacity will not be available in California in the foreseeable future, and that incineration would not allow for the recovery of the oil bound up in these sludges. It has therefore chosen solvent extraction as the Best Demonstrated Available Technology for treating such waste. In the study supporting these treatment standards, the State demonstrates that most oily petroleum wastes, including oil/water separation sludges, exceed EPA standards for benzene, toluene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, arsenic, chromium, lead, dibenz(a,h)anthracene, and phenanthrene.

3.5 Other Damage Cases

As part of this investigation, the Agency reviewed the Damage Incident Data Base for damage cases involving petroleum refineries or refinery waste management facilities. While this data source is by no means exhaustive, several sites of interest were identified:

Frenchy's Oil Company, Crowley, LA: This site consisted of surface impoundments used to reclaim waste oil from barge

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cleaning and petroleum plants. Pit sediments showed high levels of heavy metals, oil, anthracene/phenanthrene, and phenols. Visible soil contamination was observed in off-site ditches and in areas where spills had occurred.

Consolidated Oil Sales, Tulsa, OK: This site was a three acre surface impoundment facility for waste oil and sludges that were trucked in from a number of refineries. The waste contained naphthalene, methyl naphthalene, anthracene, phenanthrene, fluoranthene, pyrene, chrysene, benzo(a)anthracene, benzo(b)fluroanthrene, benzo(k)fluoranthrene, and benzo(a)pyrene. Surface water samples were found to contain anthracene, phenanthrene, benzene, methylene chloride, and toluene.

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4. CONCLUSIONS

This background document has shown clear evidence of the following factors relevant to the listing of oily wastes:

1. Mobile amounts of metals and organics in these sludges, determined using a variety of standardized leaching procedures and fate and transport models, generally exceed regulatory standards, particularly in respect to lead, chromium, benzene, benzo(a)pyrene, benzo(a)-anthracene, benzo(b)fluoranthene, and phenanthrene. Other organics and metals, including selenium, antimony, arsenic, pyrene, toluene, naphthalene, and chrysene are also routinely observed.

2. Improper management of these sludges has resulted in verifiable ground-water damage at a number of active refineries, and is suspected at certain abandoned sites.

In the light of this evidence, it is clear that oil/water separation sludges from the petroleum refining industry is, by reason of their content of constituents listed in 40 CFR Part 261, Appendix VIII and the observed mobility of these constituents, do pose and are currently posing a substantial threat to human health and the environment. Therefore these wastes satisfy the criteria for listing hazardous wastes given at 40 CFR §261.11, and may be listed by the Administrator in order to ensure their safe management.

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F Ø37
FØ38

SUPERFUND MANAGEMENT REVIEW

WORKPLAN

NUMBER: 1.B

TITLE: Address Worst Sites, Worst Problems First

FULL TEXT: After abating the immediate threat, EPA will initiate the earliest remedial work to address those problems that retain high priority when compared with competing problems. (p. 1-10)

LEAD OFFICE: OERR

IMPLEMENTATION PRODUCTS AND DUE DATES:

1. Issue procedures for ranking unplanned "quick" response activities - 10/89

2. Issue final RA prioritization of FY 90 sites - 3/90
   - Complete prioritization of previously unranked 4th quarter constructions, and those projects in quarters 1-3 that have slipped into 4th quarter

3. Issue final procedures for prioritization of FY 91 sites - 6/90
   - Publish RA prioritization procedures to be used in FY 91

FINAL COMPLETION DATE: 6/90

To: Fernandez, Daniel[Fernandez.Daniel@epa.gov]
From: Rinehart, Thomas W
Sent: Wed 6/14/2017 11:52:23 PM
Subject: Hawaii Refinery Inspection Report

Dan –

Thanks for contacting me about the Hawaii refinery inspection report. Since Chevron sold the refinery, you should send it directly to the current owner, Island Energy Services. The contact there is:

Mark Dexter

Environmental Health and Safety Manager

IES Downstream LLC

91-480 Malakole Street

Kapolei, HI 96707

If you would like to contact me, I am in the Bay Area this week, so please call my cell phone.

Thanks.

- Tom

Tom Rinehart
Regulatory Affairs Manager

Chevron Environmental Management Company
685 South Chevron Way
North Salt Lake, UT 84054

E-mail: tom.rinehart@chevron.com
Office: (801) 539-7206
Cell: (801) 643-1233

Please consider the environment before printing this email.

To: Fernandez, Daniel[Fernandez.Daniel@epa.gov]
Cc: Parker, Tim[tim.parker@islandenergyservices.com]
From: Dexter, Marc
Sent: Thur 6/22/2017 7:11:04 PM
Subject: NEIC Audit Results - IES (former Chevron) Hawaii refinery

Good Morning Daniel,

I just wanted to follow up on this and see if you have been able to determine whether IES can get a copy of the letter the EPA sent to Chevron regarding the results of the 2016 NEIC audit at our refinery.

I appreciate you checking into this, could you drop me a quick email when you have a chance and let me know what you were able to determine?

Thanks and have a good afternoon!

Marc Dexter PG, REM

Health, Environmental, and Safety Manager

Island Energy Services, LLC

91-480 Malakole Street

Kapolei, Hawaii 96707

marc.dexter@islandenergyservices.com

808.682-3145 (office)

808.864.3591 (cell)

ISLAND ENERGY

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To: Dexter, Marc[marc.dexter@islandenergyservices.com]
From: Fernandez, Daniel
Sent: Thur 6/22/2017 9:56:08 PM
Subject: RE: NEIC Audit Results - IES (former Chevron) Hawaii refinery

Hi Marc,

I talked to Chevron and they told me that I should send you the report, however, since they claimed portions of the report Confidential Business Information we can't just release it without checking if we can do it legally. If we do, we will most likely have to get something in writing from Chevron. Our attorney is looking into that, however, we feel that Chevron is still or should be part of this matter because there could be some monetary penalties and I don't think you would like that. Not for sure but it is a possibility.

I imagine I will hear from our attorney next week, and I will let you know what are we doing.

From: Dexter, Marc [mailto:marc.dexter@islandenergyservices.com]
Sent: Thursday, June 22, 2017 12:11 PM
To: Fernandez, Daniel <Fernandez.Daniel@epa.gov>
Cc: Parker, Tim <tim.parker@islandenergyservices.com>
Subject: NEIC Audit Results - IES (former Chevron) Hawaii refinery

Good Morning Daniel,

I just wanted to follow up on this and see if you have been able to determine whether IES can get a copy of the letter the EPA sent to Chevron regarding the results of the 2016 NEIC audit at our refinery.

I appreciate you checking into this, could you drop me a quick email when you have a chance and let me know what you were able to determine?

Thanks and have a good afternoon!

Marc Dexter PG, REM

Health, Environmental, and Safety Manager

Island Energy Services, LLC

91-480 Malakole Street

Kapolei, Hawaii 96707

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To: Kristi.Mitchum@Chevron.com[Kristi.Mitchum@Chevron.com]
Cc: FRANCIS, RICHARD[Francis.Richard@epa.gov]; Lin, Sharon[Lin.Sharon@epa.gov]; Goodnight, Lorna[Goodnight.Lorna@epa.gov]; Tekrony, Linda[Tekrony.Linda@epa.gov]; Parker, David[Parker.David@epa.gov]
From: Vega, Jackie
Sent: Thur 2/18/2016 11:02:46 PM
Subject: Notification of inspection next week
Notification.pdf
Document Request List.pdf

;
Hi Kristi,

Attached is the notification letter and document request list that we discussed during our phone call today. Please call me with any questions. We will see you Wednesday, February 24 at 8:00 a.m.

Thank You,

Jackie Vega

CHEVRON PRODUCTS COMPANY – HAWAII REFINERY
KAPOLEI, HAWAII
NEIC RECORDS/DOCUMENTS REQUEST

GENERAL PROCEDURE

During the Resource Conservation and Recovery Act (RCRA) compliance investigation at the Chevron Hawaii Refinery, EPA inspectors will be reviewing records kept for your facility. In order to expedite this portion of the investigation, EPA is providing you advanced notification of the records that will likely be reviewed on-site. For most documents, EPA will review the records on-site and request copies, as needed. In certain cases, document copies will be requested for later review at EPA.

In preparation for this RCRA compliance investigation, EPA has broken up this record and document request into two parts. The first part consists of documents that EPA would like available and copies prepared (as noted) on February 24, 2016. The second part consists of general and specific documents that will most likely be requested by EPA inspectors. Other documents may also be requested that are not listed. During the investigation, EPA will work with Chevron Hawaii to develop a schedule to review these documents.

PART 1 - Please have these documents and copies (as noted) available on February 24, 2016

1. Provide descriptions for all process areas including the following information:

    1. Simplified process flow diagrams **(multiple copies – one for each team member)**
    2. Material balances
    3. Pollution control equipment
    4. Raw materials used and annual usage
    5. Products made
    6. Waste streams produced

2. Management organization chart (including environmental department). **(1 copy)**

3. Site map of the facility. **(multiple copies – one for each team member)**

4. Provide a list of solid/hazardous waste generated on-site by process area, equipment that generates it, and how it is handled ***(*1 copy*)***

6. Provide all variances and/or exemptions from the RCRA requirements along with any related correspondence. **(1 copy)**

7. Provide any current delistings for hazardous wastes generated on-site and related correspondence. **(1 copy)**

8. Part B permits (most recent version) and permit applications, including any modifications **(1 copy)**

9. NPDES discharge permit and associated permit application (most recent version), including any separate storm water permits **(1 copy)**

10. Any wastewater pretreatment permit agreements **(1 copy)**

11. Plans and/or written descriptions of the sewer system (including by-pass capability), monitoring stations, and outfall locations. Include process, sanitary, and storm water sewers. **(1 copy)**

12. Description of all wastewater treatment systems, including schematic diagrams and any process changes **(multiple copies – one for each team member)**

PART 2- Documents likely to be requested by NEIC inspectors (Schedule to be determined)

1. Solid waste and hazardous waste determinations, and any waste analysis data used to support these determinations

2. Documentation of any spills and/or releases of hazardous substances at the facility for the last 3 years.

3. All records for responses to any spills in the last 5 years, including types and quantities of materials spilled, locations, analytical data, and response measures taken

4. Records of all hazardous wastes brought on-site for treatment, recycling, or disposal

5. Documentation of off-site waste shipments for the past 3 years, including manifests and associated land disposal restriction (LDR) paperwork, bills of lading, recycling certifications, used oil shipping records, etc.

6. Exception reports for any manifests not received back from the designated facility (last 3 years).

7. Latest biennial report

8. Waste analysis plan for treating, storing, or disposing of any hazardous wastes.

9. Training plan, and employee training records for hazardous waste handlers, including job titles and descriptions and name of each employee.

10. Contingency plan and documentation for any incidents that required implementation of the plan.

11. Plot plan showing locations of all less than 90 day accumulation areas and tanks. Also identify locations of all waste operation points and satellite accumulation areas.

12. Inspection schedules, logs/summaries for all container storage areas and <90 day accumulation areas (last 3 years).

13. Groundwater analyses and reports for any impoundment, landfill, or land treatment facilities on-site.

14. For each of the facility ponds:
    - Regulatory status, including any claimed exemptions
    - Description of pond construction
    - Description of the dimensions
    - Description of pond maintenance activities including scope and frequency of inspections and repair
    - Analysis of materials discharged into each pond
    - Description of pond operations, such as aeration, skimming, cleaning, water cannons, dredging
    - Analysis of any sludges or wastewater contained in the pond

15. List of units, and supporting documentation, that are subject to Subpart AA. This applies to process vents associated with distillation, fractionation; thin-film evaporation, solvent extraction, or air/steam stripping operations that manage hazardous wastes with organic concentrations of at least 10 ppmw.

16. List of units, and supporting documentation, that are subject to Subpart BB. This applies to equipment that contains or contacts hazardous wastes with organic concentrations of at least 10 percent by weight.

17. List of units, and supporting documentation that are subject to Subpart CC. This applies to tanks, containers, and surface impoundments that treat, store, or dispose of hazardous waste that contain a volatile organic concentration of more than 500 ppmw.

18. Documentation of ongoing corrective action activities and workplans.

19. Any enforcement actions currently in effect or issued in the last 5 years (including Notices of Violation (NOVs), consent decrees, orders, and agreements), and all related correspondence.

ED_001593_00006196

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF CRIMINAL ENFORCEMENT, FORENSICS AND TRAINING
NATIONAL ENFORCEMENT INVESTIGATIONS CENTER
P.O. BOX 25227, DENVER FEDERAL CENTER
DENVER, COLORADO 80225

February 18, 2016

E-MAIL and HAND DELIVERED

Kristi Mitchum, Manager
Health Environmental Safety and Security
Chevron Products Company, Hawaii Refinery
91-480 Malakole Street
Kapolei, Hawaii 96707

Re: RCRA Compliance Investigation at Chevron Products Company – Hawaii Refinery, Kapolei, Hawaii

Dear Ms. Mitchum:

The U.S. Environmental Protection Agency's (EPA) National Enforcement Investigations Center (NEIC) will conduct a Resource Conservation and Recovery Act (RCRA) compliance investigation of the Chevron Hawaii Refinery beginning Wednesday, February 24. 2016. The compliance investigation, and the associated document request, is authorized pursuant to EPA regulations and Federal environmental statutes, including but not limited to:

- Section 3007 (a) and 9005 (a) of the Resource Conservation and Recovery Act, 42 U.S.C. §§ 6927 (a) and 6991 (a)

The purpose of the inspection is to determine compliance with applicable environmental statutes, regulations, rules, decrees, approvals, and permits. A list of records and documents needed by our EPA inspectors is enclosed. We believe that many of these records are, or should be, readily available at your facility. Other documents may be requested while on-site as additional information is needed.

You may, if you desire, assert a confidentiality claim covering part of or all of the information requested, pursuant to 40 C.F.R. § 2.203(b), by attaching to such information, at the time it is submitted, a cover sheet, stamped or typed legend, or other suitable form of notice employing language such as "trade secret" or "proprietary" or "company confidential." Information covered by such a claim will be disclosed by EPA only to the extent, and only by means of the procedures set forth in the regulations at 40 C.F.R. Part 2 Subpart B. If no such claim accompanies the information when it is received by EPA, it may be made available to the public by EPA without further notice to you. In any event, you should read the above cited

regulations carefully before asserting a business confidentiality claim, since certain categories of information are not properly the subject of such a claim.

If you have questions about this inspection, please contact Jacquelyn Vega, NEIC project manager at (303) 462-9260.

We thank you in advance for your cooperation.

Sincerely,

David Parker
Civil Program Coordinator, NEIC

Enclosure

cc: Richard Francis, EPA Region 9
Sharon Lin, EPA Region 9

To: Vega, Jackie[Vega.Jackie@epa.gov]; Goodnight, Lorna[Goodnight.Lorna@epa.gov]; Tekrony, Linda[Tekrony.Linda@epa.gov]
Cc: FRANCIS, RICHARD[Francis.Richard@epa.gov]
From: Lin, Sharon
Sent: Wed 2/3/2016 4:58:05 PM
Subject: FW: Chevron-Hawaii-Semi-Annual Progress Report 2H15- 29-01-16
signed doc 1-29-2016 Consent Decree Semiannual report Jul-Dec 2015.pdf

FYI.

Sharon Lin, P.E.

U.S. Environmental Protection Agency Region 9

Enforcement Division

Air, Waste and Toxics Branch, ENF-2-2
75 Hawthorne Street

San Francisco, CA 94105

Tel: (415) 972-3446

Email: Lin.Sharon@epa.gov

From: McDaniel, Doug
Sent: Wednesday, February 03, 2016 6:38 AM
To: Lin, Sharon <Lin.Sharon@epa.gov>; FRANCIS, RICHARD <Francis.Richard@epa.gov>
Subject: FW: Chevron-Hawaii-Semi-Annual Progress Report 2H15- 29-01-16

FYI

Douglas K. McDaniel

Chief, Waste and Chemical Section

Enforcement Division

U.S. EPA Region 9

(415) 947-4106

From: Basinger, David
Sent: Wednesday, February 03, 2016 6:37 AM
To: Mintz, Tom <Mintz.Tom@epa.gov>
Cc: Chew, Andrew <Chew.Andrew@epa.gov>; McDaniel, Doug <McDaniel.Doug@epa.gov>; Lawrence, Kathryn <Lawrence.Kathryn@epa.gov>
Subject: FW: Chevron-Hawaii-Semi-Annual Progress Report 2H15- 29-01-16

From: Samantha Adler [mailto:sadler@matrixneworld.com]
Sent: Tuesday, February 02, 2016 11:24 AM
To: Foley, Patrick; Burke, Shaun; Chew, Andrew; Basinger, David
Cc: Dan Roper (Dan.Roper@erg.com); Dykes, Teresa; Gairola, Sounjay
Subject: Chevron-Hawaii-Semi-Annual Progress Report 2H15- 29-01-16

Attached please find the following for your review:

Deliverable Semi-Annual Progress Report

Deliverable Date: January 29, 2016

Refinery: Chevron- Hawaii

Marquee Issue: Recordkeeping

Nature of Review: EPA review only.

EPA Review and Turnaround Time: NA

Total Review Time (per CD): NA

Due Date for National Expert/Regional Contact to provide comments to Headquarters: NA

Due Date for Headquarters to submit written response to refinery: NA

Completeness Review Conducted by Matrix

Matrix conducted a review of the attached document for completeness purposes only. This review included the following:

- Timely submittal of document (per requirements of CD)
- Document included basic elements set forth in CD
- Completeness of document (i.e. no pages missing)

Attached document was submitted within the 60-day requirement set forth in the CD.

Attached document appears to contain all requirements set forth in the CD.

Chevron

Jon Mauer
Refinery Manager

Hawaii Refinery
Chevron Products Company
91-480 Malakole St
Kapolei HI 96707
Tel 808 682 5711
Fax 808 682 2324
JonMauer@chevron.com

January 29, 2016

CERTIFIED MAIL NO. 7015 0640 0003 9266 0267
RETURN RECEIPT REQUESTED

Director, Air Enforcement Division
Office of Regulatory Enforcement
U.S. Environmental Protection Agency
Mail Code 2242-A
1200 Pennsylvania Avenue, N.W.
Washington, DC 20460-0001

Consent Decree, *U.S. v. Chevron USA Inc.*, Case No. C-03-04650 (N.D. Cal.)
Hawaii Refinery Semi-Annual Progress Report (July – December 2015)

Dear Sir or Madam:

Pursuant to Paragraph 115 of the Consent Decree, this letter, along with all of its attachments, constitutes Hawaii Refinery's semi-annual progress report for the period of July 1, 2015 through December 31, 2015.

The reporting requirements for each subject area outlined in Paragraph 115 of the Consent Decree are provided as follows:

1. Progress report on the implementation of the requirements of Section V (Affirmative Relief/Environmental Projects) of the Consent Decree at the Hawaii Refinery: *This is contained in Attachment 1.*

2. A summary of the emissions data for the Hawaii Refinery that is specifically required by the reporting requirements of Section V of the Consent Decree for the period covered by the report: *The Consent Decree does not specifically require any emissions data to be reported for the Hawaii Refinery.*

3. A description of any problems anticipated with respect to meeting the requirements of Section V of the Consent Decree at the Hawaii Refinery: *None anticipated.*

4. A description of all SEPs being conducted at the Hawaii Refinery in accordance with Paragraph 109 of the Consent Decree: *This information was provided in previous Semi-Annual Reports and submittals.*

5. Any such additional matters as Chevron believes should be brought to the attention of EPA: *No such additional matters are included in this Progress Report.*

6. BWON materials required to be submitted by Paragraph 82 of the Consent Decree:
   This information is contained in Attachment 2.

7. LDAR information required to be submitted by Paragraph 97 of the Consent Decree:
   No submittals during the reporting period.

If you have any questions or require additional information, please contact Kristi Mitchum, HES Manager, at (808) 682-3145.

CERTIFICATION

I certify under penalty of law that this information was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my directions and my inquiry of the persons who manage the system, or the persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.

Sincerely,

Attachments

cc: **CERTIFIED MAIL NO. 7015 0640 0003 9266 0274**
RETURN RECEIPT REQUESTED
Director, Air Enforcement Division
Office of Regulatory Enforcement
c/o Matrix New World Engineering Inc.
26 Columbia Tpke Ste 200
Florham Park, NJ 07932-2213
Attn: Clare Sullivan

CERTIFIED MAIL NO. 7015 0640 0003 9266 0281
RETURN RECEIPT REQUESTED
Director, Air Division
Mail Code AIR-1
USEPA Region 9
75 Hawthorne Street
San Francisco, CA 94105

CERTIFIED MAIL NO. 7015 0640 0003 9266 0298
RETURN RECEIPT REQUESTED
Clean Air Branch
Environmental Management Division
Hawaii Department of Health
P. O. Box 3378
Honolulu, HI 96801-3378

Electronic copies to:
csullivan@matrixneworld.com
Foley.patrick@epa.gov

Attachment 1

Affirmative Relief / Environmental Projects Implementation Progress Report
For the period of July 1, 2015 – December 31, 2015

Section V.A. – NOx Emissions Reductions from FCCUs

Item to be Reported	Consent Decree Reference	Status
Establishing NOx Limits		
- Chevron shall immediately (or within ninety (90) days, if EPA's limit is more stringent than the limit proposed by Chevron) operate the FCCU so as to comply with the EPA-established emission limits.	¶13.b.	The Hawaii Refinery received notification from EPA on October 9, 2014 of their determination of final NOx limits for the FCCU. Other than during periods of startup, shutdown, or malfunction pursuant to Paragraph 13.c., the Hawaii Refinery complied with the approved emissions limits during the reporting period.
Demonstrating Compliance with FCCU NOx Emission Limits		
• Beginning no later than 4/10/05, use NOx and O_2 CEMS to monitor performance of the FCCU and to report compliance with the terms and conditions of this Consent Decree. The CEMS will be used to demonstrate compliance with the respective NOx emission limits pursuant to Paragraph 13.	¶15.	The NOx and O_2 CEMS were installed, certified, and calibrated by 4/10/05.

• Install, certify, calibrate, maintain and operate NOx and O_2 CEMS required by ¶15 in accordance with the provisions of 40 C.F.R. § 60.13 that are applicable to CEMs (excluding those provisions applicable only to Continuous Opacity Monitoring Systems) and Part 60 Appendices A and F, and the applicable performance specification test of 40 C.F.R. Part 60 Appendix B. With respect to 40 C.F.R. Part 60, Appendix F, in lieu of the requirements of 40 C.F.R. Part 60, Appendix F §§ 5.1.1, 5.1.3 and 5.1.4, conduct either a Relative Accuracy Audit ("RAA") or a Relative Accuracy Test Audit ("RATA") on each CEMS at least once every three (3) years. Conduct Cylinder Gas Audits ("CGA") each calendar quarter during which a RAA or a RATA is not performed.	¶15.	The NOx and O_2 CEMS continue to be calibrated, maintained, and operated according to the CD requirements.

Section V.B. – SO_2 Emissions Reductions from FCCUs

Item to be Reported	Consent Decree Reference	Status
Compliance with Specific SO_2 Emission Limits		
Use of SO_2 Reducing Catalyst Additives to Reduce SO_2		
• SO2 Reducing Catalyst Additives - Optimization Study - Commence and complete the optimization study of the SO_2 reducing additive in accordance with the approved protocol and Appendix A by the following dates: Commence Study: 9/30/07 Complete Study: 3/31/08	¶17.c.ii.	The Hawaii Refinery accepted final SO2 limits per Paragraph 17.d.v. (25 ppmvd @ 0% O2 on a 365-day rolling average and 50 ppmvd @ 0% O2 on a 7-day rolling average) on 9/30/07 in lieu of commencing and completing the Optimization Study, Demonstration Study, and the remaining obligations of Paragraphs 17 and 18. Other than during periods of Startup, Shutdown, or Malfunction pursuant to ¶16.e., the Hawaii Refinery complies with the 25 ppm 365-day rolling average @ 0% O2 and the 50 ppm @ 0% O2 7-day rolling average.
- Submit a report containing the results of the optimization study and propose optimized addition rates of all catalysts to be used for the demonstration period for approval by 4/30/08.	¶17.c.iv.	Not required. See status update for ¶17.c.ii.

Demonstrating Compliance with FCCU SO_2 Emission Limits		
• Beginning no later than 4/10/05, use SO_2 and O_2 CEMS to monitor performance of the FCCU and to report compliance with the terms and conditions of this Consent Decree. The CEMS will be used to demonstrate compliance with the respective SO_2 emission limits established pursuant to Paragraph 16.	¶20.	The SO_2 and O_2 CEMS were installed, certified, and calibrated by 4/10/05.
• Install, certify, calibrate, maintain, and operate all SO_2 and O_2 CEMS required by ¶20 in accordance with the provisions of 40 C.F.R. § 60.13 that are applicable to CEMs (excluding those provisions applicable only to Continuous Opacity Monitoring Systems) and Part 60 Appendices A and F, and the applicable performance specification test of 40 C.F.R. Part 60 Appendix B. With respect to 40 C.F.R. Part 60, Appendix F, in lieu of the requirements of 40 C.F.R. Part 60, Appendix F § 5.1.1, 5.1.3 and 5.1.4, conduct either a Relative Accuracy Audit ("RAA") or a Relative Accuracy Test Audit ("RATA") on each CEMS at least once every three (3) years. Conduct Cylinder Gas Audits ("CGA") each calendar quarter during which a RAA or a RATA is not performed.	¶20.	The SO2 and O2 CEMs continue to be calibrated, maintained and operated according to the CD requirements.

Section V.C. – PM Emissions Reductions from FCCUs

Item to be Reported	Consent Decree Reference	Status
• Chevron shall continue to control and may further reduce particulate matter ("PM") emissions by the operation and optimization of electrostatic precipitators ("ESPs")	Section V.C.	The Hawaii Refinery continues to operate an electrostatic precipitator to control PM emissions.

PM Emission Limits for Hawaii FCCU		
• By no later than 4/10/05, Chevron shall comply with an emission limit of 1.0 pounds of PM per 1000 pounds of coke burned on a 3-hour average basis for the Hawaii Refinery FCCU.	¶23.	Compliance with the emission limit was last verified based on stack tests conducted on December 3, 2014. The most recent stack test was performed on December 16, 2015, with report pending.
PM Testing for FCCUs		
• PM Testing for FCCU: Chevron shall follow the stack test protocol specified in 40 C.F.R. § 60.106(b)(2) to measure PM emissions on the Hawaii Refinery FCCU. Chevron shall propose and submit the stack test protocol for approval no later than three (3) months after the PM limit becomes effective.	¶23A.	Testing was conducted following the initial stack test protocol submitted to EPA on August 31, 2006. The most recent stack test protocol was submitted on Ocotber 16, 2015.
• Chevron shall conduct annual PM stack tests at the FCCU.	¶23A.	The Hawaii Refinery conducted the annual PM stack test at the FCCU on December 16, 2015 using Method 5B.
• Upon demonstrating through at least three (3) annual stack tests that the PM limits are not being exceeded at the FCCU, Chevron may request EPA approval to conduct tests less frequently than annually at the FCCU.	¶23A.	N/A for reporting period.
Opacity Monitoring at FCCUs		
• By 4/10/05, Chevron shall install and operate a Continuous Opacity Monitoring System ("COMS") to monitor opacity at the Hawaii Refinery FCCU.	¶25.	The COMS was installed, certified, and calibrated by 4/10/05. The COMS was replaced on 3/24/2015 and the new COMS passed the required quality assurance tests on 4/8/2015.
Chevron shall install, certify, calibrate, maintain, and operate all COMS required by this Consent Decree in accordance with 40 C.F.R. §§ 60.11, 60.13 and Part 60 Appendix A, and the applicable performance specification test of 40 C.F.R. Part 60 Appendix B.	¶25.	The COMS continues to be calibrated, maintained, and operated according to the CD requirements.

Section V.D. – CO Emissions Reductions from FCCUs

Item to be Reported	Consent Decree Reference	Status
CO Emissions Limits for Hawaii FCCU		
• By no later than 4/10/05, the Hawaii Refinery FCCU shall meet an emission limit of 500 ppmvd CO corrected to 0% O_2 on a 1-hour average basis.	¶27.	Other than periods of S/U, S/D, or malfunction pursuant to ¶28, the Hawaii Refinery complies with the emissions limits in ¶27.
Demonstrating Compliance with CO Emissions Limits		
• By no later than 4/10/05, Chevron shall use CO and O_2 CEMS to monitor compliance of each FCCU with the terms and conditions of Section V.D. of this Consent Decree. These CEMS will be used to demonstrate compliance with the CO emission limits established pursuant to this Section V.D of this Consent Decree.	¶29.	The CO and O_2 CEMS were installed, certified, and calibrated by 4/10/05.
• Chevron shall install, certify, calibrate, maintain, and operate all CO and O_2 CEMS required by ¶29 in accordance with the provisions of 40 C.F.R. § 60.13 that are applicable to CEMs (excluding those provisions applicable only to Continuous Opacity Monitoring Systems) and Part 60 Appendices A and F, and the applicable performance specification test of 40 C.F.R. Part 60 Appendix B. With respect to 40 C.F.R. Part 60, Appendix F, in lieu of the requirements of 40 C.F.R. Part 60, Appendix F §§ 5.1.1, 5.1.3 and 5.1.4, conduct either a Relative Accuracy Audit ("RAA") or a Relative Accuracy Test Audit ("RATA") on each CEMS at least once every three (3) years. Conduct Cylinder Gas Audits ("CGA") each calendar quarter during which a RAA or a RATA is not performed.	¶29.	A CO and O_2 CEMS continue to be calibrated, maintained, and operated according to the CD requirements

Section V.E. – NSPS Applicability to FCCU Regenerators

Item to be Reported	Consent Decree Reference	Status
• By 12/31/05, Chevron's FCCU Catalyst Regenerator at its Hawaii Refinery shall be an affected facility under NSPS Subpart J for SO_2, and Chevron shall comply with the applicable requirements of NSPS Subparts A and J for SO_2.	¶31.	The Hawaii Refinery is monitoring and reporting under, and as required by, NSPS Subparts A and J.
• By 4/10/05, Chevron's FCCU Catalyst Regenerator at its Hawaii Refinery shall be an affected facility under NSPS Subpart J for PM, and Chevron shall comply with the applicable requirements of NSPS Subparts A and J for PM.	¶31.	The Hawaii Refinery is monitoring and reporting under, and as required by, NSPS Subparts A and J. The Hawaii Refinery is determining the coke-burn rate using the equation described in the AMP submitted on 10/10/05.
• By 4/10/05, Chevron's FCCU Catalyst Regenerator at its Hawaii Refinery shall be an affected facility under NSPS Subpart J for CO, and Chevron shall comply with the applicable requirements of NSPS Subparts A and J for CO.	¶31.	The Hawaii Refinery is monitoring and reporting under, and as required by, NSPS Subparts A and J.
• By 4/10/05, Chevron's FCCU Catalyst Regenerator at its Hawaii Refinery shall be an affected facility under NSPS Subpart J for Opacity, and Chevron shall comply with the applicable requirements of NSPS Subparts A and J for Opacity.	¶31.	The Hawaii Refinery is monitoring and reporting under, and as required by, NSPS Subparts A and J.

Section V.F. – NOx Emissions Reductions from Heaters and Boilers

Item to be Reported	Consent Decree Reference	Status
Installation of NOx Control Technology		
• Chevron shall select one or any combination of the following "Qualifying Controls" to satisfy the requirements of ¶33 and ¶37: a. SCR or SNCR;	¶32.	The Hawaii Refinery selected Ultra-Low NOx burners as the qualifying control for the FCC Furnace F-5300. Refer to the NOx Control Plan previously submitted per paragraph 35 of the CD requirements.

b. Current Generation or Next Generation Ultra-Low NOx Burners; c. other technologies which Chevron demonstrates to EPA's satisfaction will reduce NOx emissions to 0.040 lbs. per mmBTU or lower; or d. permanent shutdown of a heater or boiler with revocation of its operating permit.		
• On or before 6/30/11, Chevron shall use Qualifying Controls to reduce NOx emissions from the heaters and boilers listed in Appendix B by at least 2777 tons per year, so as to satisfy the inequality in ¶33.	¶33.	Complete as of 6/30/2011.
• Chevron shall submit a detailed NOx control plan ("Control Plan") for review and comment by 6/30/04, with annual updates (covering the prior calendar year) on June 30 of each year thereafter until termination of the Consent Decree.	¶35.	The Annual NOx Control Plan update was submitted on 6/29/2015.
• By no later than 12/31/08, Chevron shall install qualifying controls on the FCCU heater at the Hawaii Refinery.	¶37.A.	The Hawaii Refinery installed Ultra-Low NOx burners on the FCC Furnace F-5300 in May 2008.
• Beginning no later than 180 days after installing Qualifying Controls on and commencing operation of a heater or boiler that will be used to satisfy the requirements of ¶33, Chevron shall monitor the heaters or boilers as outlined in ¶38.	¶38.	The Hawaii Refinery conducted the stack test at the FCC Furnace F-5300 on 10/21/08 using Method 7E.
• Chevron shall retain all records required to support its reporting requirements under this Section V.F. until termination of this Consent Decree.	¶41.	The Hawaii Refinery is retaining the records required to support reporting requirements under Section V.F. until termination of the Consent Decree.
• If Chevron transfers ownership of the Hawaii Refinery before achieving all of the NOx reductions required by ¶33, Chevron shall notify EPA and the appropriate Plaintiff-Intervenor of that transfer and shall submit an allocation to EPA and the appropriate Plaintiff-Intervenor	¶42.	N/A for reporting period.

for the Hawaii Refinery's share of NOx reduction requirements of ¶33 that will apply individually to the Hawaii Refinery after such transfer. If Chevron chooses, such allocation may be zero.		

Section V.G. – SO_2 Emissions Reductions from and NSPS Applicability to Chevron Heaters and Boilers and Other Specified Equipment

Item to be Reported	Consent Decree Reference	Status
NSPS Applicability to Heaters and Boilers and Other Specified Equipment		
• Upon Date of Entry, all heaters and boilers shall be affected facilities, under NSPS Subpart J, and shall comply with the applicable requirements of NSPS Subparts A and J for fuel gas combustion devices, except for those heaters and boilers listed in Appendix D, which shall be affected facilities and shall be subject to and comply with the applicable requirements of NSPS Subparts A and J for fuel gas combustion devices by the dates listed in Appendix D.	¶43.a.; Appendix D	The Hawaii Refinery is monitoring and reporting under, and as required by, NSPS Subparts J and A.
• By date listed in Appendix E, all equipment listed in Appendix E shall be affected facilities, under NSPS Subpart J, and shall be subject to and comply with the applicable requirements of NSPS Subparts A and J for fuel gas combustion devices.	¶43.b.; Appendix E	The Hawaii Refinery is monitoring and reporting under, and as required by, NSPS Subparts J and A.
Elimination / Reduction of Fuel Oil Burning		
• Effective on the Date of Entry, Chevron may burn Fuel Oil at its Hawaii Refinery due to the unavailability of natural gas and may burn Torch Oil in the FCCU regenerator to assist in starting, restarting, hot standby, or to maintain regenerator heat balance.	¶44.	The Hawaii Refinery has complied with the provisions of Paragraph 44 for the reporting period.

Section V.H. – Sulfur Recover Plants NSPS Applicability

Item to be Reported	Consent Decree Reference	Status
Optimization		
Chevron shall continue to maintain its Best Practices Team as a means to optimize Sulfur Recovery Plant operations.	¶50.b.	Chevron continues to use its Best Practices Team (now called a Business Improvement Network (BIN)) to optimize Sulfur Recovery Plant operations (including amine treating plants).
Good Operation and Maintenance		
• Chevron's changes to a PMO Plan related to minimizing Acid Gas Flaring and/or SO_2 emissions shall be summarized and reported on an annual basis.	¶51a.	The Acid and Amine Plant PMO was updated on 3/30/2015.
Chevron shall comply with the PMO Plan at all times, including periods of Startup, Shutdown and Malfunction of its sulfuric acid plant.	¶51a.	The Hawaii Refinery continues to comply with the PMO Plan at all times, including periods of Startup, Shutdown and Malfunction of its sulfuric acid plant according to the CD requirements.
• By no later than 12/31/03, Chevron shall install and operate a caustic scrubber at the Hawaii Refinery to eliminate Acid Gas Flaring during periods of sulfuric acid plant startup, shutdown, and Malfunction.	¶52.	The Hawaii Refinery continues to operate a caustic scrubber to eliminate Acid Gas Flaring during periods of sulfuric acid plant startup, shutdown, and malfunction.

Section V.I. – Flaring Devices – NSPS Applicability

Item to be Reported	Consent Decree Reference	Status
Good Air Pollution Control Practices		
• On and after the Date of Entry, Chevron shall at all times and to the extent practicable, including during periods of Startup, Shutdown, and/or Malfunction, implement good air pollution control practices for minimizing emissions consistent with 40 C.F.R. §60.11(d).	¶53.	The Hawaii Refinery at all times and to the extent practicable, including during periods of Startup, Shutdown, and Malfunction, implements good air pollution control practices for minimizing emissions.
Refinery Fuel Gases		
• By no later than 12/31/06, Chevron shall: i. Certify compliance with applicable NSPS requirements and accept NSPS Subpart J applicability for at least 50% of the Flaring Devices identified in Appendix F; and ii. Submit a schedule of activities that Chevron will undertake to ensure continuous compliance with applicable NSPS requirements as	¶54.a ¶54.a.i., ¶54.a.ii.	As previously reported, Chevron has certified compliance with and accepted NSPS J applicability for 26 of 26 Flaring Devices listed in Appendix F.

soon as practicable at all other Flaring Devices.		
• Except for a maximum of three flares, Chevron shall certify compliance with applicable NSPS Subpart J requirements and accept NSPS Subpart J applicability for all those Flaring Devices not previously addressed under Paragraph 54.a.i. by 12/31/08.	¶54.a.ii.	As previously reported, Chevron has certified compliance with and accepted NSPS J applicability for 26 of 26 Flaring Devices in Appendix F.
• For any remaining flares, Chevron shall certify compliance with applicable NSPS Subpart J requirements and accept NSPS Subpart J applicability for those Flaring Devices by 12/31/10.	¶54.a.ii.	See response in ¶54.a. above.

Section V.J. – Control of Acid Gas Flaring Incidents

Item to be Reported	Consent Decree Reference	Status
Investigating and Reporting		
• By no later than forty-five (45) days following the end of an Acid Gas Flaring Incident occurring after the Date of Entry, Chevron shall submit a report that sets forth the following…(listed in ¶57).	¶57.	No acid gas flaring incidents occurred during the reporting period.
• To the extent that completion of the implementation of corrective action(s), if any, is not finalized at the time of the submission of the report required under this Paragraph, then, by no later than thirty (30) days after completion of the implementation of corrective actions(s), Chevron shall submit a report identifying the corrective action(s) taken and the dates of commencement and completion of implementation.	¶57.viii.	N/A for reporting period.
Corrective Action		
• In response to an AG Flaring Incident occurring after the Date of Entry, Chevron shall take, as expeditiously as practicable, such interim and/or long-term corrective actions, if any, as are consistent with good engineering practice to minimize the likelihood of a recurrence of the Root Cause and all contributing causes of that AG Flaring Incident.	¶58.a.	N/A for reporting period.

Section V.K. – Control of Hydrocarbon Flaring Incidents

Item to be Reported	Consent Decree Reference	Status
• For Hydrocarbon Flaring Incidents occurring after the Date of Entry, Chevron shall follow the same investigative, reporting, and corrective action procedures as those outlined in paragraphs 57 and 58 for Acid Gas Flaring Incidents; provided however, that in lieu of analyzing possible corrective actions under Paragraph 57.v. and taking interim and/or long-term corrective action under Paragraph 58.a. for a Hydrocarbon Flaring Incident attributable to the Startup or Shutdown of a unit that Chevron has previously analyzed under this Paragraph, Chevron may identify such prior analysis when submitting the report required under this Paragraph.	¶67.	No hydrocarbon flaring events occurred during the reporting period.

Section V.L. – Benzene Waste NESHAP Program Enhancements

Item to be Reported	Consent Decree Reference	Status
Current Compliance Status		
On the Date of Entry, the Hawaii Refinery shall comply with the compliance option set forth at 40 C.F.R. § 61.342(c), utilizing the exemptions set forth in 40 C.F.R. § 61.342(c)(2) and (c)(3)(ii) (hereinafter referred to as the "2 Mg compliance option")	¶68.a.	The Hawaii Refinery continues to comply with the 2Mg compliance option.
One-Time Review and Verification of Each Refinery's TAB and Compliance with the Benzene Waste NESHAP, including the 2 MG Compliance Option		
• Phase Two of the Review and Verification Process. Based on EPA's review of the BWON Compliance Review and Verification Report(s), EPA may select up to 20 additional waste streams at each Refinery for sampling for benzene concentration. Chevron will conduct the required sampling and submit the results to EPA within sixty (60) days of receipt of EPA's request.	¶70.b.	N/A for reporting period.

• Chevron will use the results of this additional sampling to reevaluate the TAB and the uncontrolled benzene quantity and to amend the BWON Compliance Review and Verification Report, as needed.	¶70.b.	N/A for reporting period.
• Chevron shall submit an amended BWON Compliance Review and Verification Report within ninety (90) days following the date of the completion of the required Phase Two sampling, if Phase Two sampling is required by EPA.	¶70.b.	N/A for reporting period.
Implementation of Actions Necessary to Correct Non-Compliance or to Come Into Compliance		
• Review and Approval of Plans. Within sixty (60) days after receiving any notification of disapproval or request for modification from EPA, Chevron shall submit to a revised plan that responds to all identified deficiencies. Upon receipt of approval or approval with condition, Chevron shall implement the plan.	¶71.d.	Not applicable during this reporting period.
Carbon Canisters		
• By no later than seven (7) days after the installation of each secondary carbon canister (and by June 30, 2004 for in-series dual canister systems already used or installed prior to the Date of Entry), Chevron shall start to monitor for breakthrough between the primary and secondary carbon canisters at times when there is actual flow to the carbon canister, in accordance with the frequency specified in 40 C.F.R. §61.354(d), and shall monitor the outlet of the secondary canister on a monthly basis or at its design replacement interval (whichever is less) to verify the proper functioning of the system.	¶72.d.	The Hawaii Refinery met the monitoring requirements during the reporting period.
• Chevron shall replace the original primary carbon canisters (or route flow to an appropriate alternative control device) immediately when breakthrough is detected between the primary and secondary canister. The original secondary carbon canister (or a fresh carbon canister) will become the new	¶72.e.	The Hawaii Refinery follows the procedures for replacement of carbon canisters as required by ¶72.e.

primary carbon canister and a fresh carbon canister will become the secondary canister.		
• Chevron shall maintain a supply of fresh carbon canisters at the Refinery at all times.	¶72.g.	The Hawaii Refinery continues to follow the process established to maintain a supply of fresh carbon canisters at the refinery at all times.
• Records for the requirements of Paragraph 72 shall be maintained in accordance with 40 C.F.R. §61.356(j)(10).	¶72.h.	Records for the requirements of Paragraph 72 are maintained at the refinery in accordance with 40 C.F.R. §61.356(j)(10).
Annual Program		
• By not later than 6/30/04, Chevron shall establish an annual program of reviewing process information for the Refinery, including but not limited to construction projects, to ensure that all new benzene waste streams are included in the Refinery's waste stream inventory.	¶73.	The Hawaii Refinery continues to follow/use processes/tools (i.e., Management of Change (MOC) process, Compliance Assurance Process (CAP) database, and spill tracking forms) to ensure that all new benzene waste streams are included in the Refinery's waste stream inventory.
Laboratory Audits		
• During the life of this Consent Decree, Chevron shall conduct subsequent laboratory audits, such that each laboratory is audited every two (2) years.	¶74.c.	Test America/Irvine: 5/13/2015
Benzene Spills		
• Beginning on Date of Entry, for each spill at each Refinery, Chevron shall review such spills to determine if more than 10 pounds of benzene waste was generated in any 24 hour period. Chevron shall include the benzene generated by such spills in the TAB and in the uncontrolled benzene quantity calculation for each Refinery, as and to the extent required by Subpart FF.	¶75.	Spills continued to be reviewed to determine whether the benzene quantity must be included in the refinery TAB and in the uncontrolled benzene quantity calculation.
Training		
• By no later than 1/1/04, Chevron shall develop and begin implementation of annual (i.e., once each calendar year) training for all employees asked to draw benzene waste samples.	¶76.a.	The Hawaii Refinery conducted the required annual training for employees asked to draw benzene waste samples for this reporting period.
• Comparable training (regarding procedures for operating control devices) shall also be provided to any persons who subsequently become operators, prior to their assumption of this duty.	¶76.b.	Comparable training was provided to new hires and existing employees who become operators prior to their assuming this duty as required by 76.b. for this reporting period.
• "Refresher" training in these (control device) procedures shall be performed on a three year cycle.	¶76.b.	Refresher training regarding the Standard Operating Procedures for control devices is performed on a three year cycle or earlier. Refresher training was not required to be conducted during this reporting period.

• As part of Chevron's training program, Chevron must ensure that the employees of any contractors hired to perform the requirements of this Paragraph are properly trained to implement all applicable provisions of this Consent Decree.	¶76.c.	Training was provided to employees of contractors as required by 76.c. for this reporting period.
Waste Slop/Off-Spec Oil Management		
• At a mutually agreed upon time, Chevron shall submit revised schematics that reflect the Parties' agreements regarding the characterization of these oil streams and the appropriate control standards, if necessary.	¶77.a.	N/A for reporting period.
• Non-Aqueous Benzene Waste Streams. All waste management units handling non-exempt, non-aqueous benzene wastes, as defined in Subpart FF, shall meet the applicable control standards of Subpart FF.	¶77.b.	All waste management units handling non-exempt, non-aqueous benzene wastes, as defined in Subpart FF, met the applicable control standards of Subpart FF.
• Aqueous Waste Streams. All WMUs shall meet applicable control standards of Subpart FF or the uncontrolled benzene quantity shall be counted towards 2 Mg limit. Appropriate adjustments to calculations shall be made to avoid double counting.	¶77.c.	All uncontrolled waste slop/off-spec oil streams that became aqueous are counted towards the 2 Mg limit.
End of Line Sampling (2 Mg Compliance Option)		
• Chevron shall conduct a quarterly "end of the line" benzene determination at the Hawaii Refinery under the terms of this Paragraph 79.	¶79.	The Hawaii Refinery has implemented a quarterly "end of the line" benzene determination under the terms of ¶79.
• If changes in processes, operations, or other factors lead Chevron to conclude that its approved EOL Plan may no longer provide an accurate measure of the refinery's quarterly "end of line" benzene determination and/or its uncontrolled waste stream, Chevron shall submit a revised EOL Plan for approval.	¶79.b.	N/A for reporting period.
• Chevron shall commence sampling under its EOL Plan during the third calendar quarter of 2004.	¶79.c.	Sampling under the EOL Plan began at the Chevron Refinery began in the third quarter of 2004.
• Chevron shall take, and have analyzed, at least three representative samples from each approved sampling location.	¶79.c.	In accordance with the plan, three representative samples were taken from each sampling location.

• Chevron shall use the average of all samples and approved flow calculations to make its quarterly "end of the line" benzene determination and in estimating a calendar year value for the Refinery.	¶79.c.	Chevron used the average of all samples and applicable flow calculations to make its quarterly "end of the line" benzene determination..
• If the quarterly benzene determination exceeds 0.5 Mg/yr or if the estimated calendar year value exceeds 2 Mg/yr, Chevron shall prepare and provide a written summary and schedule of activities necessary to minimize benzene wastes at the Refinery so as to ensure that it complies with the 2 Mg compliance option that calendar year. This summary and schedule are due no later than sixty (60) days after the close of such quarter.	¶79.d	N/A for reporting period.
• After at least 8 quarters of sampling under an approved EOL Plan, Chevron may submit a report to EPA and the appropriate Plaintiff-Intervenor that places uncontrolled aqueous waste streams at a Refinery into three categories: (i) consistently <0.05 Mg/yr benzene that may not warrant continued sampling; (ii) consistently ≥0.05 Mg/yr benzene but with low variability that may warrant less frequent sampling; and (iii) all others that are consistently ≥0.05 Mg/yr benzene.	¶79.e.	N/A for reporting period.
Miscellaneous Measures		
• Manage all groundwater remediation wastes at each of its Refineries in appropriate waste management units under and as required by the Benzene Waste NESHAP	¶80.a.	Groundwater well purge water has been managed in appropriate waste management units since before 6/30/04, and continues to be managed, as required by the Benzene Waste NESHAP.
• Identify and mark all area drains that are segregated storm water drains	¶80.c.	As previously reported, the Hawaii Refinery has marked area segregated storm water drains as required.
• Conduct quarterly monitoring of the oil-water separators in accordance with the "no detectable emissions" provision in 40 C.F.R. §61.347.	¶80.e.	API separators have been monitored on a quarterly basis at the Hawaii Refinery since before 6/30/04 and continue to be monitored.
Projects/Investigations		
• Chevron may conduct a study of the effectiveness of the benzene and VOC limits under Paragraph 72.c. This study shall last no	¶81.b.	N/A for reporting period.

less than two (2) years and must be performed in accordance with the guidelines established in Appendix J.		
• Chevron shall submit a schedule and statement of work to EPA at least 90 days prior to beginning such work.	¶81.b.	N/A for reporting period.
• Chevron shall submit a report summarizing the results of the study within ninety (90) days of completion and may request a revision of the limits under Paragraph 72.c. based upon the results of that study and any other relevant information, including similar studies that may be performed by or for others.	¶81.b.	N/A for reporting period.
Recordkeeping and Reporting Requirements for Section V.L.		
• Chevron shall submit, as and to the extent required, the following materials in the progress report(s) for the quarter in which the following identified activities occurred or are required:	¶82	See below.
• BWON Compliance Review and Verification report as amended, if necessary (¶70.b.)	¶82.a.	N/A for reporting period.
• Schematics of waste slop/off-spec oil movements, as revised, if necessary (¶77.a.)	¶82.g.	N/A for reporting period.
• EOL Plans and revised EOL Sampling Plans, if necessary (¶¶ 79.a. and 79.b.)	¶82.i.	N/A for reporting period.
• Plan to ensure that uncontrolled benzene does not equal or exceed, 2 Mg/yr—or is minimized—based on projected calendar year uncontrolled benzene quantities as determined through EOL sampling (¶79.d.)	¶82.j.	N/A for reporting period.
• Results of the study of "breakthrough" in carbon canisters (¶81.b.)	¶82.k.	N/A for reporting period.
• Identify all laboratory audits completed during the preceding calendar year under ¶74.a., including the laboratory audited during that quarter, a description of the methods used in the audit and the results of the audit, in the progress report for the 4th quarter of that year.	¶82.l.	This information is contained in Attachment 2.
• Describe the measure taken that calendar quarter to comply with the training provisions of ¶76	¶82.m.	Refer to Paragraph 76.

• Provide all quarterly "end of line" benzene determinations and a summary of supporting sampling results for the preceding calendar year under ¶79 in the progress report for the 4th quarter of that year. The report shall include a list of all waste streams sample and the results of the benzene analysis for each sample	¶82.n.	This information is contained in Attachment 2.
• Describe the actions that Chevron is taking to identify and correct the source of the potentially elevated benzene quantities and/or to ensure continuing compliance with the Benzene Waste NESHAP under and as provided in ¶79.	¶82.o.	N/A for reporting period.

Section V.M. – Leak Detection and Repair ("LDAR") Program Enhancements

Item to be Reported	Consent Decree Reference	Status
Written Refinery-Wide LDAR Program		
• By no later than 6/30/04, Chevron shall develop and maintain a written LDAR program for compliance with all applicable federal, state, and local LDAR regulations applicable to equipment in light liquid or gas/vapor service at the Refinery.	¶83	A Written LDAR Program was developed by 6/30/04.
• Chevron shall update the program as may be necessary to ensure continuing compliance.	¶83	N/A for the reporting period.
Training		
• For personnel newly-assigned to LDAR responsibilities, Chevron shall require LDAR training prior to each employee beginning such work	¶84.a.	All employees newly assigned to LDAR responsibilities during the reporting period received LDAR training prior to beginning LDAR work.
• For all personnel assigned LDAR responsibilities, Chevron shall provide and require completion of annual LDAR training or require its LDAR contractor to provide such training (initial annual LDAR training for all such personnel will be completed not later than 12/31/04)	¶84.b.	All personnel assigned LDAR responsibilities receive annual LDAR training.
• "Initial" training shall be provided to Refinery operations and maintenance personnel (including contract personnel).	¶84.c.	LDAR training is provided to all employees prior to the assumption of duties. All required refresher training is provided.

"Refresher" training in LDAR shall be performed on a three year cycle.		
LDAR Audits		
• Third-Party Audits. Chevron shall retain a contractor(s) to perform a third-party audit of the Refinery's LDAR program at least once every four years.	¶85.b.	Not applicable for this reporting period.
• Internal Audits. Chevron shall conduct internal audits of each Refinery's LDAR program by sending personnel familiar with the LDAR program and its requirements from one or more of Chevron's other Refineries or locations to audit another Chevron Refinery.	¶85.c.	The Hawaii Refinery completed an internal audit using a Third-Party Contractor in January 2016. The audit report and corrective actions will be submitted in the semiannual progress report covering 1H2016.
• Chevron shall complete an internal LDAR audit by no later than two years from the date of the completion of the third-party audits required in Paragraphs 85.a. and 85.b.	¶85.c.	See response above.
• Chevron shall perform an internal audit of each Refinery's LDAR program at least once every four years. Chevron may elect to retain third-parties to undertake the internal audit, provided that an LDAR audit at each Refinery occurs every two (2) years.	¶85.c.	See response above.
Implementation of Actions Necessary to Correct Non-Compliance		
• If the results of any of the audits conducted pursuant to Paragraph 85 identify any areas of non-compliance, Chevron shall implement, as soon as practicable, all steps necessary to correct the area(s) of non-compliance and to prevent, to the extent practicable, a recurrence of the cause of such non-compliance.	¶86	An Internal Audit Report and list of corrective actions/schedule for outstanding non-compliance items was completed in January 2016. The Hawaii Refinery implemented all steps necessary to correct area(s) of non-compliance that were identified through the audit required by Paragraph 85.
• Chevron shall retain the audit reports generated pursuant to Paragraph 85 and shall maintain a written record of the corrective actions that Chevron takes in response to deficiencies identified in any audits.	¶86	Hawaii Refinery is retaining audit reports generated pursuant to ¶85 and maintains a written record of the corrective actions taken in response to deficiencies identified in any audits.

• In the quarterly report submitted pursuant to the provisions of Section IX of this Consent Decree (Recordkeeping and Reporting) for the first calendar quarter of each year, Chevron shall submit to EPA and the appropriate Plaintiff-Intervenor the audit reports and corrective action records for audits performed and actions taken during the previous year.	¶86	Not applicable for this reporting period.
Internal Leak Definition for Valves and Pumps		
• Leak Definition for Valves. By no later than 6/30/05, Chevron shall utilize an internal leak definition of no greater than 500 ppm VOCs for each Refinery's valves, excluding pressure relief devices.	¶87.a.	An internal leak definition of no greater than 500 ppm VOCs for valves, excluding pressure relief devices, was put into effect at the Hawaii Refinery by 6/30/05. The Hawaii Refinery continues to utilize the lower leak detection rate.
• Leak Definition for Pumps. By no later than 6/30/05, Chevron shall utilize an internal leak definition of no greater than 2000 ppm for each Refinery's pumps.	¶87.b.	An internal leak definition of no greater than 2,000 ppm VOCs for pumps was put into effect at the Hawaii Refinery by 6/30/05. The Hawaii Refinery continues to utilize the lower leak detection rate.
Reporting, Recording, Tracking Repairing and Remonitoring Leaks of Valves and Pumps Based on the Internal Leak Definitions		
• Recording, Tracking, Repairing and Remonitoring Leaks. Chevron shall record, track, repair and re-monitor all leaks in excess of the internal leak definitions of Paragraph 87 at such time as those definitions become applicable.	¶88.b.	No exceptions to report.
• Except as provided otherwise in this Section V.M., Chevron shall make a first attempt at repair within five (5) calendar days and either complete repairs and re-monitor leaks or place such component on the Refinery's delay of repair list within thirty (30) days.	¶88.b.	No exceptions to report.
Initial Attempt at Repair of Valves		
• By no later than 3/31/04, Chevron shall promptly make an "initial attempt" to repair any valve that has a reading greater than 100 ppm of VOCs, excluding control valves and components that LDAR personnel are not authorized to repair.	¶89	No exceptions to report.
• Chevron or its designated contractor shall re-monitor, within five (5) calendar days, all valves that LDAR personnel attempted to repair under this Paragraph.	¶89	All valves that LDAR personnel attempt to repair under this Paragraph are re-monitored within five calendar days.

LDAR Monitoring Frequency		
• Pumps. When the lower internal leak definition for pumps becomes applicable under Paragraph 87.b. and unless more frequent monitoring is required by applicable federal, state and/or local requirements, Chevron shall monitor pumps at the internal leak definition on a monthly basis.	¶90.a.	The Hawaii Refinery is complying with the monitoring requirements of this provision.
• Valves. When the lower internal leak definition for valves becomes applicable under Paragraph 87.a. and unless more frequent monitoring is required by applicable federal, state and/or local requirements, Chevron shall monitor valves at the internal leak definition on a quarterly basis (other than difficult to monitor or unsafe to monitor valves).	¶90.b.	The Hawaii Refinery is complying with the monitoring requirements of this provision.
• Monitoring After Turnaround or Maintenance. Chevron shall have the option of monitoring affected valves and pumps within process unit(s) after completing a documented maintenance, startup, or shutdown activity without having the results of the monitoring count as a scheduled monitoring activity, provided that Chevron monitors according to the following schedule:	¶90.d.	The Hawaii Refinery has not used this option to date.
• For events involving 1000 or fewer valves and pumps, monitor within one (1) week of the documented maintenance, start-up, or shutdown activity;	¶90.d.i.	See ¶90.d response.
• For events involving greater than 1000 but fewer than 5000 valves and pumps, monitor within two (2) weeks of the documented maintenance, start-up, or shutdown activity; and	¶90.d.ii.	See ¶90.d response.
• For events involving greater than 5000 pumps and valves, monitor within four (4) weeks of the documented maintenance, start-up, or shutdown activity.	¶90.d.iii.	See ¶90.d response.

Electronic Monitoring, Storing and Report of LDAR Data		
• Electronic Storing and Reporting of LDAR Data. Chevron has and will continue to maintain an electronic database for storing and reporting LDAR data. By no later than 1/1/04, the electronic database shall include data identifying the date and time of the monitored event, and the operator and instrument used in the monitored event.	¶91.a.	The Hawaii Refinery maintains an electronic database for storing and reporting LDAR data. By 1/1/04, the electronic database included data identifying the date and time of the monitored event, and the operator and instrument used in the monitored event.
• Electronic Data Collection During LDAR Monitoring and Transfer Thereafter. By no later than 1/1/04, Chevron shall maintain operational specifications for the data logger, software and monitoring equipment it elects to use under this Consent Decree.	¶91.b.	By 1/1/04, Hawaii Refinery began maintaining operation specifications for the data logger, software and monitoring equipment used under the Consent Decree.
• Chevron shall use dataloggers and/or electronic data collection devices during all LDAR monitoring.	¶91.b.	Hawaii Refinery uses data loggers and electronic data collection devices during all LDAR monitoring.
• Chevron, or its designated contractor, shall use its/their best efforts to transfer, by the end of the next business day electronic data from electronic data logging devices to the electronic database of Paragraph 91.a. For all monitoring events in which an electronic data collection device is used, the collected monitoring data shall include a time stamp and identify the operator/monitoring technician and the monitoring instrument used.	¶91.b.	The Hawaii Refinery LDAR contractor transfers by the end of the next business day, to the extent practical, electronic data from electronic data logging devices to the electronic database of ¶91.a. For all monitoring events in which an electronic data collection device is used, the collected monitoring data includes a time stamp and identifies the operator/monitoring technician and the monitoring instrument used.
• Chevron may use paper logs where necessary or more feasible (e.g., small rounds, re-monitoring, or when data loggers are not available or broken), and shall record, at a minimum, the identity of the technician, the date, monitoring starting and ending times, and an identification of the monitoring equipment.	¶91.b.	Hawaii Refinery uses paper logs where necessary or more feasible, and records, at a minimum, the identity of the technician, the date, monitoring starting and ending times, and an identification of the monitoring equipment.
• Chevron shall use its best efforts to transfer any manually recorded monitoring data to the electronic database of Paragraph 91.a. within seven days of monitoring.	¶91.b.	The Hawaii Refinery LDAR contractor transfers within seven days of monitoring, to the extent practical, manually recorded data to the electronic database of ¶91.a.

QA/QC of LDAR Data		
• By no later than 3/31/04, Chevron (or a third party contractor retained by Chevron) shall have developed and begun implementing procedures for quality assurance/quality control ("QA/QC") reviews of all data generated by LDAR monitoring technicians.	¶92.	By 3/31/04, Hawaii Refinery developed and began implementing procedures for quality assurance/quality control ("QA/QC") reviews of all data generated by LDAR monitoring technicians. The procedures are contained in the *LDAR Compliance Assistance Plan.*
• Chevron shall ensure that monitoring data provided by its contractors is periodically reviewed for QA/QC by the contractors.	¶92.	Monitoring data provided by the LDAR contractor are reviewed periodically for QA/QC by the contractor, as specified in the *LDAR Compliance Assistance Plan.*
• At least once per calendar quarter, Chevron shall perform a QA/QC review of each contractor's monitoring data which shall include, but not be limited to: number of components monitored per technician, time between monitoring events and abnormal data patterns.	¶92.	Hawaii Refinery has performed a QA/QC review of the LDAR contractor's monitoring data at least once per quarter since second quarter 2004. The review includes: number of components monitored per technician, time between monitoring events and abnormal data patterns.
LDAR Personnel		
• Chevron shall continue to maintain a position at each Refinery that is responsible for LDAR management and that has the authority to implement LDAR improvements.	¶93.	The Hawaii Refinery continues to maintain a position responsible for LDAR management that has the authority to implement LDAR improvements.
Adding New Valves and Pumps		
• By no later than 6/30/04, Chevron shall establish a tracking program for maintenance records (e.g., a Management of Change program) to ensure that valves and pumps added to the Refinery during maintenance and construction are integrated into each Refinery's LDAR program.	¶94	Prior to 6/30/04, Hawaii Refinery established a tracking program via the MOC and IMPACT processes to ensure that valves and pumps added to the Refinery during construction and maintenance are integrated into the LDAR program. A description of the MOC process as it relates to the LDAR program is included in the *LDAR Compliance Assistance Plan.*
Calibration/Calibration Drift Assessment		
• Calibration. Chevron shall conduct all calibrations of LDAR monitoring equipment using methane as the calibration gas, in accordance with 40 C.F.R. Part 60, EPA Reference Test Method 21.	¶95.a.	Calibrations of LDAR monitoring equipment are conducted using ultra pure zero air and methane gas at concentrations of 500 ppm, 2,000 ppm and 10,000 ppm.
• Calibration Drift Assessment. By no later than 1/1/04, Chevron shall conduct calibration drift assessments of LDAR monitoring equipment at the end of each monitoring shift, at a minimum.	¶95.b	Chevron Hawaii Refinery continues to conduct calibration drift assessments of LDAR monitoring equipment at the end of each monitoring shift, at a minimum.

• Chevron shall conduct the calibration drift assessment using a calibration gas with a concentration approximately equal to the applicable internal leak definition.	¶95.b	Chevron Hawaii Refinery continues to conduct the calibration drift assessment using a calibration gas with a concentration approximately equal to the applicable internal leak definition.
• If any calibration drift assessment after the initial calibration shows a negative drift of more than 10% from the previous calibration, Chevron shall re-monitor all valves that were monitored since the last calibration that had a reading greater than 100 ppm and shall re-monitor all pumps that were monitored since the last calibration that had a reading greater than 500 ppm.	¶95.b	Chevron Hawaii Refinery continues to re-monitor all components that were monitored after the initial calibration if the drift assessment shows a negative drift of more than 10% from the initial calibration.
Delay of Repair		
• By no later than 1/1/04, Chevron shall take the following actions for any equipment that it intends and is allowed to place on the "delay of repair" list under applicable regulations:	¶96.a.	Delay-of-Repair procedures are contained in the *LDAR* Compliance Assistance Plan.
• Require sign-off by the unit supervisor within thirty (30) days of identifying that a piece of equipment is leaking at a rate greater than the applicable leak definition that such equipment qualifies for delayed repair under applicable regulations,	¶96.a.i.	No exceptions to report.
• Include equipment that is placed on the "delay of repair" list in Chevron's regular LDAR monitoring,	¶96.a.ii.	The Hawaii Refinery conducts regular monitoring of equipment on the "delay of repair" list.
• Use its best efforts to isolate and repair pumps identified as leaking at a rate of 2000 ppm or greater	¶96.a.iii.	Hawaii Refinery began using its best efforts to isolate and repair pumps identified as leaking at the applicable leak rate or greater prior to 1/1/04
• By no later than 6/30/04, Chevron shall take the following actions for any equipment that it intends and is allowed to place on the "delay of repair" list under applicable regulations:	¶96.b.	See responses 96.b.i and 96.b.ii below.
• For valves, other than control valves and pressure relief valves, that qualify to be on the "delay of repair" list, use the "drill and tap" method (or an equivalent), rather than place a valve on the "delay of repair" list, if it is leaking at a	¶96.b.i.	For qualifying valves on the delay-of-repair list, Hawaii Refinery began using the "drill and tap" method prior to 6/30/04 for leaks at rates of 50,000 ppm or greater, unless a safety or major environmental concern is demonstrated. No exceptions to report.

rate of 50,000 ppm or greater unless Chevron can demonstrate that there is a safety or major environmental concern by attempting to repairing the leak in this manner.		
• Chevron shall perform the first "drill and tap" (or equivalent repair method) within fifteen days, except at the Hawaii Refinery which shall perform such a first attempt within twenty-one days, and a second attempt (if necessary) within thirty (30) days after the leak is detected.	¶96.b.i.	Hawaii Refinery began performing the first "drill and tap" within 21 days and a second attempt within 30 days after the leak is detected prior to 6/30/04. No exceptions to report.
• After two unsuccessful attempts to repair a leaking valve through the drill and tap (or equivalent) method, Chevron may place the leaking valve on its "delay of repair" list.	¶96.b.i.	After two unsuccessful attempts to repair a leaking valve through the drill and tap method, the leaking valve is allowed to remain on the "delay of repair" list. No exceptions to report.
• For valves, other than control valves and pressure relief valves, that qualify to be on the "delay of repair" list, use the "drill and tap" method (or an equivalent), rather than place a valve on the "delay of repair" list, if it is leaking at a rate of 10,000 ppm or greater unless Chevron can demonstrate that there is a safety or major environmental concern by attempting to repairing the leak in this manner.	¶96.b.ii.	For qualifying valves on the delay-of-repair list, Hawaii Refinery began using the drill and tap method prior to 6/30/04 for valves leaking at rates of 10,000 ppm or greater, unless a safety or major environmental concern was demonstrated. No exceptions to report.
• Chevron shall perform a first and (if necessary) a second "drill and tap" (or equivalent repair method) as soon as practicable but not later than 90 days after such leak was detected.	¶96.b.ii.	By 6/30/04, Hawaii Refinery began performing first and (if necessary) a second "drill and tap" as soon as practicable but not later than 90 days after such leak was detected. No exceptions to report.
• If a new valve repair method not currently in use by the refining industry is planned to be used by Chevron, Chevron will advise EPA prior to implementing such a method or, if prior notice is not practicable, as soon as practicable after implementation.	¶96.b.ii.	N/A for this reporting period.
Recordkeeping and Reporting Requirements for this Paragraph		
• <u>As Part of Quarterly Progress Reports – Section IX (Recordkeeping and Reporting).</u> Consistent with the requirements	¶97.a.	See responses ¶97.a.i - ¶97.a.viii below.

of Section IX (Recordkeeping and Reporting), Chevron shall include the following information in the progress report(s) for the quarter in which the identified activity occurred or was required:		
• An identification of the individual at the Refinery responsible for LDAR performance as required by ¶93	¶97.a.iv.	The current LDAR Program Administrator is Stefanie Poon.
• A copy of each Refinery's LDAR program under ¶83	¶97.a.viii.	N/A for this reporting period.
• Quarterly Progress Report for the First Calendar Quarter of Each Year. Chevron shall identify each audit that was conducted under Paragraph 85 in the previous calendar year, including an identification of the auditors, a summary of the audit results and the actions that Chevron took or intends to take to correct identified deficiencies.	¶97.b.	Not applicable for this reporting period
• In Each Report due under 40 C.F.R. § 63.654, Chevron shall include the information on LDAR monitoring outlined in ¶97.c.i - ¶97.c.ix.	¶97.c.	The MACT Semi-Annual Report will be submitted concurrently under a separate letter dated 1/29/2016 which includes the information outlined in ¶97.c.i - ¶97.c.ix.

Section V.N. – Incorporation of Consent Decree Requirements into Federally Enforceable Permits

Item to be Reported	Consent Decree Reference	Status
Obtaining Permit Limits for Consent Decree Emission Limits that Become Effective After Date of Entry		
• Except as set forth in Paragraph 99.b., as soon as practicable, but in no event later than the later of ninety (90) days after the effective date or establishment of any emission limits and standards under Section V of this Consent Decree or fifteen (15) days after the Date of Entry of this Consent Decree, Chevron shall submit applications to the appropriate Plaintiff-Intervenor to incorporate those emission limits and standards in federally enforceable minor or major new source review permits or other permits (other than Title V permits) which are federally enforceable. Upon issuance of	¶99.a	Not applicable for this reporting period.

such permit or in conjunction with such permitting, Chevron shall file any applications necessary to incorporate the requirements of the permit into the Title V permit of the refinery.		
• The Parties agree that the incorporation of any emission limits or other standards into the Title V permits for the Chevron Refineries as required by Paragraphs 98 and 99 shall be in accordance with the applicable state or local Title V rules.	¶100.	Because Hawaii has a unified permit system, an application to incorporate the emission limits from ¶27 and ¶17.c.ii.into the covered source permit was prepared for submission in accordance with applicable state Title V rules. The permit application for FCCU SO2 and CO was submitted on July 24, 2008. The permit application for the Area #1 Crude flare for NSPS J was submitted on 11/24/2008. The permit application for FCCU NOx limits was submitted on 1/15/2015.

Section XVIII. – Termination

Item to be Reported	Consent Decree Reference	Status
Certification of Completion: Paragraph 236		
Chevron may certify completion of the following Consent Decree (CD) Sections: • Section V.A.: FCCU • Section V.B. – V.E.: FCCU • Sections V.F. – V.G.: Heaters and Boilers • Section VIII: Supplemental Environmental Projects	¶236	The Hawaii Refinery submitted a certification of completion on 6/4/2013 for CD Section VIII: Supplemental Environmental Projects. As of the conclusion of this reporting period, EPA has not yet responded.

Attachment 2 Related to Benzene Waste NESHAPS (BWON) Program Enhancements

Summary of BWON Laboratory Audits conducted in 2015

Summary of EOL Determination for 2015

Summary of supporting Benzene Sampling Results for 2015

SUMMARY
BWON Laboratory Audits for 2015 – Hawaii Refinery

Laboratory	Date	Audit Protocol	Results
Test America Laboratory – Irvine, CA.	May 13, 2015	NELAP criteria	An audit was conducted of the Test America Laboratory to ensure that proper analytical and quality assurance/quality control procedures were followed to meet the BWON Program. The laboratory audit found several findings that were addressed by Test America and resolved in an email dated 9/17/2015.

NELAP - National Environmental Laboratory Accreditation Program

Hawaii Refinery 2015 EOL

Sample No.	Description	1st Quarter			2nd Quarter			3rd Quarter			4th Quarter			
		Average Conc. (ppm)	Flow (Mg)	Benzene Qty. (Mg)	Average Conc. (ppm)	Flow (Mg)	Benzene Qty. (Mg)	Average Conc. (ppm)	Flow (Mg)	Benzene Qty. (Mg)	Average Conc. (ppm)	Flow (Mg)	Benzene Qty. (Mg)	
EOL Samples														
1	TK-113 Water	1.0	1238	0.001										
2	TK-235 Transfer				15	201	0.003							
3	TK-108 WD				0.9	113	0.000							
4	TK-104 WD							0.6	73	0.000				
5	TK-105 WD							0.7	17	0.000				
6											No sampling events for 4th quarter 2015			
7														
8														
9														
10														
11														
12														
13														
14														
15														
16														
17														
18														
19														
	TOTAL Sampled Benzene Quantity (Mg/quarter)			0.001			0.003			0.000			0.000	**Annual EOL 2BQ Total (Mg/yr)**
	2MG List Waste >10 ppm Not Sampled (from 2015 TAB)			0.090			0.090			0.090			0.090	
	TOTAL Benzene Quantity (Mg/quarter)			**0.091**			**0.093**			**0.090**			**0.090**	**0.36**
>0.05 Mg and >10 ppm Samples														
	None													
>0.10 Mg and <10 ppm Samples														
	None													

Average Concentration is the mean benzene concentration of at least three samples taken in accordance with BWON regulations For line items that are a combination of multiple streams, the average concentration is weighted by flow.

2015 Data

Date of Waste Generation	Point of Generation	Sample Results for Benzene (ppmw)	Average Benzene Concentration (ppmw)	Quarterly Waste Quantity (Mg)	Quarterly Benzene Quantity (Mg)
	TK-113 Water				
2/4/2015		1.1			
2/4/2015		0.96			
2/4/2015		1			
	average	1.0	1.0	1238	0.00126
	TK-235 Transfer				
5/6/2015		15			
5/6/2015		14			
5/6/2015		15			
	average	14.7	14.7	201	0.00294
	TK-108 WD				
5/16/2015		0.89			
5/16/2015		0.9			
5/16/2015		0.91			
	average	0.9	0.9	113	0.00010
	TK-104 WD				
9/16/2015		0.58			
9/16/2015		0.56			
9/16/2015		0.56			
	average	0.6	0.6	73	0.00004
	TK-105 WD				
9/30/2015		0.68			
9/30/2015		0.64			
9/30/2015		0.64			
	average	0.7	0.7	17	0.00001
	TK-250 WD				
11/18/2015		1.6			
11/18/2015		1.6			
11/18/2015		1.6			
	average	1.6	1.6	171	0.00027

To: plynch@dtsc.ca.gov[plynch@dtsc.ca.gov]
Cc: Schofield, John[Schofield.John@epa.gov]; FRANCIS, RICHARD[Francis.Richard@epa.gov]
From: Sakow, Rick
Sent: Wed 2/3/2016 1:18:51 AM
Subject: RCRA Information Request issued to Phillips 66 Refinery in Carson
Signed LARC Information Request February 2 2016 Inspection Photos Redacted.pdf

Good afternoon Dan,

I'm forwarding you a PDF of an information request that EPA Region 9 mailed today to the Phillips 66 Refinery in Carson, CA. This request will supplement information gathered during EPA's August 24-28, 2015 process based inspection. I've redacted four inspection photos embedded within the information request because the facility has not yet had an opportunity to make any confidential business information claims for the inspection photos.

Please feel free to give me a call if you have any questions or wish to discuss.

Thank you,

-Rick

United States Environmental Protection Agency

Rick Sakow

RCRA Hazardous Waste and Clean Water Act Inspector

Enforcement Division – Waste and Chemical Section
US Environmental Protection Agency, Region 9

sakow.rick@epa.gov (415) 972-3495

75 Hawthorne St. (ENF-2-2), San Francisco, CA 94105

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IX
75 Hawthorne Street
San Francisco, CA 94105

FEB 0 2 2016

CERTIFIED MAIL NO. 7001 2510 0003 5943 4147
RETURN RECEIPT REQUESTED

Marshall Waller, P.E.
Superintendent, Environmental Services
Phillips 66
1660 West Anaheim Street
Wilmington, California 90744

RE: **Request for Information In re: Phillips 66 Los Angeles Refinery - Carson**
EPA Identification Number: CAD980881676

Dear Mr. Waller:

The United States Environmental Protection Agency (EPA), Region 9 hereby requests additional information following the August 24-28, 2015 compliance evaluation inspection conducted at the Phillips 66 Los Angeles Refinery Carson (LARC) facility, located at 1520 E. Sepulveda Blvd in Carson, California 90744. The information being requested will supplement observations made by the EPA inspection team.

Pursuant to EPA's authority under Section 3007(a) of the Resource Conservation and Recovery Act (RCRA) [42 U.S.C. § 6927(a)], LARC is required to submit the information and documents listed in Attachment I of this letter using the instructions included in Attachment II. Also, please complete and submit the certification included in Attachment III.

Failure to respond fully and truthfully may result in enforcement action by EPA pursuant to Section 3008(g) of RCRA (42 U.S.C. § 6928(g)). These statutory provisions authorize EPA to seek the imposition of penalties of up to $37,500 per day of noncompliance. Please be further advised that provision of false, fictitious or fraudulent statements or representations may subject you to criminal penalties under 18 U.S.C. § 1001. The information you provide may be used by EPA in administrative, civil or criminal proceedings.

This request for information is not subject to review by the Office of Management and Budget (OMB) under the Paperwork Reduction Act because it is not a collection of information within the meaning of 44 U.S.C. §§ 3502(3), 3507, and 3512. *See, also*, 5 CFR §§ 1320.3(c), 1320.5, and 1320.6(a). Furthermore, it is exempt from OMB review under the Paperwork Reduction Act because it is part of an investigation of a specific individual or entity. 44 U.S.C. § 3518(c)(1); 5 CFR § 1320.4.

Your response to this request must be made by letter, signed by a duly authorized official, and submitted to the EPA within thirty (30) calendar days from the date of your receipt of this letter. Please address the submittal to:

Rick Sakow
Mailcode: ENF-2-2
Waste and Chemical Section
Enforcement Division
U.S. Environmental Protection Agency
75 Hawthorne Street
San Francisco, CA 94105
Sakow.rick@epa.gov

In lieu of submitting the requested response by mail, LARC may submit the response as portable document files via electronic mail.

If you have any questions regarding this letter, please contact Rick Sakow at (415) 972-3495.

Sincerely,

Claire Mombadore

for Kathleen H. Johnson
Director, Enforcement Division

cc: Dan Lynch, California Department of Toxic Substances Control (with photos redacted)

Enclosures
Attachment I: List of information requested
Attachment II: Instructions
Attachment III: Certification of Answers

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ATTACHMENT I

Therefore, pursuant to EPA's authority under Section 3007(a) of RCRA, LARC is requested to submit to EPA the following information:

1. Sodium hydroxide material

   a. On 8/24/2015, inspectors noted white, powdered residue that had built up within the secondary containment structure of the sodium hypochlorite portable black plastic tank at the LARC Less Than 90 Day Hazardous Waste Accumulation Area (HWAA), as shown in the photographs below. Please provide any waste determination information and/or analysis, if available, for this material.

   b. If the secondary containment and tank has been cleaned and the clean-up material disposed off-site since the inspection, please provide a copy of any outgoing shipping documents (e.g., manifests) for this material. Also, provide a copy of the Waste Profile developed for this waste.

   c. If the secondary containment and tank have not been cleaned, please provide a reason.

IMG_0029 IMG_0030

2. Spent Carbon (O.R.U.) TK-1620

   a. On 8/24/2015, inspectors noted two unlabeled 55-gallon single scrubber containers at the LARC HWAA. Mr. Rob Martinez of Brinderson applied hazardous waste labels to the two unlabeled containers and marked them "Spent Carbon (O.R.U.) TK-1620" with an accumulation start date of 6/30/2015. Please provide any waste determination information and/or analysis, if available, for this material.

   b. Please describe how this material was disposed. If the material was shipped off-site, provide a copy of the shipping document(s) (i.e., manifest, bill of lading). If the material has not been shipped off-site, please describe how the material was managed by LARC.

3. TK-42

   a. On 8/25/2015, inspectors noted waste piles on the surface of the heat exchanger bundle cleaning pad. Mr. Ed Ascendo stated the material was placed on the pad by a HydroChem vacuum truck after the clean-out of TK-42. Please provide any waste determination information and/or analysis, if available, for this material.

b. Please describe the materials / waste streams held in TK-42.

c. Please describe how this material was managed by LARC. If the material was shipped off-site, provide a copy of the shipping document(s) (i.e., manifest, bill of lading). If the material has not been shipped off-site, please describe how the material was managed by LARC.

d. If known, please state how long the material had accumulated on the HEB cleaning pad, prior to being transferred to the HWAA.

4. Flasher Waste from FR-5

a. On 8/24/2015, inspectors noted three 55-gallon containers on a pallet at the LARC HWAA. One of the containers had a hazardous waste label which read "Sludge from FR 4,5,6" with an accumulation start date of 3/19/2015. The other two containers were unlabeled. Mr. Rob Martinez of Brinderson stated that the two unlabeled containers also held flasher exchange waste from FR-5. Please provide any waste determination information and/or analysis, if available, for this material.

b. Please describe how this material was managed by LARC. If the material was shipped off-site, provide a copy of the shipping document(s) (i.e., manifest, bill of lading). If the material has not been shipped off-site, please describe how the material was managed by LARC.

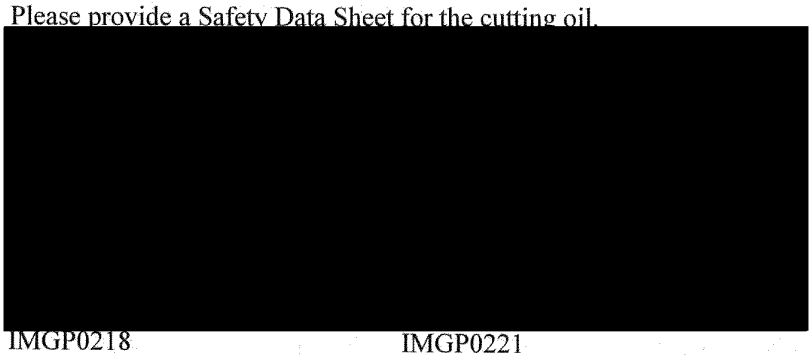
c. Please describe the equipment and source(s) that generated this flasher waste.

5. Cutting Oil

a. On 8/24/2015, inspectors noted a stream of black, oily liquid draining into an unlined surface impoundment located north of TK-12 and abutting Flares 5A-6 and SA-4, as shown in the photos below. LARC personnel stated that the liquid was cutting oil used to flush a pipe.

b. Please describe how this material was managed by LARC. If the material was shipped off-site, please provide a copy of the shipping document(s) (i.e., manifest, bill of lading). If the material has not been shipped off-site, please describe how the material was managed by LARC.

c. Please provide a Safety Data Sheet for the cutting oil.



IMGP0218 IMGP0221

6. Coker & Oil Recovery Unit

a. Please provide narrative description and a detailed schematic flow diagram of the oil recovery

unit processes and the wastewater system. EPA requested this information during the inspection and LARC's 10/2/2015 response references the wastewater permits, which do not adequately detail the processes.

b. Please provide a list of all oil-bearing hazardous secondary materials that are inserted into the oil recovery unit and/or the coker.

c. Please describe how LARC keeps records of the oil-bearing hazardous secondary materials that are inserted into the oil recovery unit and/or the coker.

d. If available, please provide copies of vacuum truck logs for all shipments of oil-bearing hazardous secondary materials from the LARW facility to LARC from 1/1/2012 to 8/25/2015.

e. Please describe the frequency in which LARC analyzes its coke product to ensure the coke is non-hazardous for benzene. Please include a copy of the most recent analysis conducted prior to the 8/24/2015 compliance evaluation inspection.

7. Temporary Heat Exchange Bundle Cleaning Pads

a. Please provide a list of all operations that occur at the temporary heat exchange bundle cleaning pad (pad) located at the HWAA. Please provide a list of the different types of equipment cleaned and materials / wastes placed on this pad. Please include the associated RCRA hazardous waste codes for each waste stream generated during a cleaning operation, if applicable.

b. Please describe all methods used to transport liquids and solids from this pad to the Oil Recovery Unit, HWAA waste management area and/or the coker. Describe the method (e.g., hard-piped, vacuum truck) of transferring liquids/solids to other facility operations.

c. Provide a copy of any written procedures LARC has developed that describes protocols for emptying wastes at this pad. If there are any written training related documents prepared by LARC for this task, provide a copy of the training materials.

d. Provide the date prior to EPA's 8/24/2015 compliance evaluation inspection that this pad was used to clean a heat exchange bundle.

e. If LARC maintains maintenance records for cleaning this pad, please provide copies of the records from 1/1/2012 – 8/28/2015.

8. Main Heat Exchange Bundle Cleaning Pad

a. Please list all operations that occur at the heat exchange bundle cleaning pad located immediately south of SB-4. Please provide a list of the different types of equipment cleaned and materials / wastes placed at this pad. Please include the associated RCRA hazardous waste codes for each, if applicable.

b. Please describe all methods used to transport liquids and solids from this pad to the Oil Recovery Unit, HWAA and/or the coker. Describe the method (e.g., hard-piped, vacuum truck) of transferring liquids/solids from the pad to other facility operations.

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c. Please provide a copy of any written procedures LARC has developed that describes protocols for emptying wastes at this pad. If there are any written training related documents prepared by LARC for this task, provide a copy of the training materials.

d. Provide the date prior to EPA's 8/24/2015 compliance evaluation inspection that this pad was used to clean a heat exchange bundle.

e. If LARC maintains maintenance records for cleaning this pad, please provide copies of the records from 1/1/2012 – 8/28/2015.

9. Additional Information Requested

a. On 8/24/2015, inspectors noted black, petroleum-like staining on the banks and surfaces of the unlined surface impoundment located north of TK-12 and abutting Flares 5A-6 and SA-4. Please describe all known processes and sources which would discharge hydrocarbons into this surface impoundment.

b. Please state whether or not LARC has analyzed any of those discharges into this surface impoundment for benzene. If such monitoring has occurred, please provide copies of the associated reports or records developed from 1/1/2012 – 8/28/2015.

c. Please provide any waste determination information and/or analysis, if available, for the petroleum material remaining in the surface impoundment.

10. Please provide a copy of the Exception Report for Manifest # 013004309 JJK, dated 11/14/2014. LARC's 10/16/2015 response to EPA did not include a copy of the Exception Report.

11. LARC's Post Closure Plan for the permitted and closed Process Water Pond states the following:

> "Bulk Operations personnel work in the vicinity of the PWP on a daily basis. Should any cracks form in the asphalt cover, or should precipitation runoff not occur appropriately, Bulk Operations will inform the Environmental Services department through the existing, refinery-wide incident reporting procedures."

Please provide any copies of Operators Logs or other documentation which demonstrates that inspections of the closed Process Water Pond have occurred within the last 5 years. If such inspections have not occurred, please confirm.

12. Please provide copies of the inspection records for the LARC hazardous waste accumulation areas from January 2012 to August 2015.

13. Please provide copies of manifests for all shipments of F-listed and K-listed hazardous wastes sent from LARC to a permitted treatment, storage and disposal facility from 1/1/2012 to 8/24/2015.

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ATTACHMENT II
INSTRUCTIONS

In responding to this Request for Information, apply the following instructions and definitions:

1. Answer Every Question Completely. A separate response must be made to each of the questions set forth in this Information Request. For each question contained in this letter, if information responsive to this Information Request is not in your possession, custody, or control, please identify the person(s) from whom such information may be obtained.

2. Number Each Answer. When answering the questions in Attachment I, please precede each answer with the corresponding number of the question and subpart to which it responds.

3. Number Each Document. For each document produced in response to this Information Request, indicate on the document, or in some other reasonable manner, the number of the question to which it corresponds.

4. Provide the Best Information Available. Provide responses to the best of Respondent's ability, even if the information sought was never put down in writing or if the written documents are no longer available. You should seek out responsive information from current and former employees/agents, if necessary. If you are unable to answer a request in a detailed and complete manner or if you are unable to provide any of the information or documents requested, indicate the reason for your inability to do so. If you have reason to believe that there is an individual who may be able to provide more detail or documentation in response to any request, state that person's name and last known address and phone number and the reasons for your belief.

   If anything is deleted from a document produced in response to this Request for Information, state the reason for and the subject matter of the deletion. If a document/information is requested but is not available, state the reason for its unavailability. In addition, identify any such document by author, date, subject matter, number of pages, and all recipients and their addresses.

5. Identify Sources of Answer. For each question, identify all the persons and documents that you relied on in producing your answer.

6. Continuing Obligation to Provide/Correct Information. If additional information or documents responsive to this Request become known or available to you after you respond to this Request, EPA hereby requests that you supplement your response to EPA.

7. Scope of Request. The scope of this request includes all information and documents independently developed or obtained by research on the part of your company, its attorneys, consultants or any of their agents, consultants or employees.

8. Have an Authorized Person Sign the Response and Certification (Attachment III). The signatory must be an officer or agent who is authorized to respond on behalf of the company or facility.

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9. **Confidential Information.** The information requested herein must be provided even though you may contend that it includes confidential information or trade secrets. You may assert a confidentiality claim covering part or all of the information requested, pursuant to Section 3007(b) of RCRA, 42 U.S.C. § 6927(b), and 40 C.F. R. § 2.203(b).

If you make a claim of confidentiality for any of the information you submit to EPA, you must prove that claim. For each document or response you claim confidential, you must separately address the following points:

i. clearly identify the portions of the information alleged to be entitled to confidential treatment;
ii. ii.. the period of time for which confidential treatment is desired (e.g., until a certain date, until the occurrence of a specific event, or permanently);
iii. measures taken by you to guard against the undesired disclosure of the information to others;
iv. the extent to which the information has been disclosed to others, and the precautions taken in connection therewith;
v. pertinent confidentiality determinations, if any, by EPA or other federal agencies, and a copy of any such determinations or reference to them, if available; and
vi. whether you assert that disclosure of the information would likely result in substantial harmful effects on your business' competitive position, and if so, what those harmful effects would be, why they should be viewed as substantial, and an explanation of the causal relationship between disclosure and such harmful effects.

To make a confidentiality claim, please stamp, or type, confidential on all confidential responses and any related confidential documents. Confidential portions of otherwise nonconfidential documents should be clearly identified. You should indicate the date, if any, after which the information need no longer be treated as confidential. Please submit your response so that all nonconfidential information, including any redacted versions of documents are in one envelope and all materials for which you desire confidential treatment are in another envelope that is clearly marked confidential.

All confidentiality claims are subject to EPA verification. It is important that you satisfactorily show that you have taken reasonable measures to protect the confidentiality of the information and that you intend to continue to do so, and that it is not and has not been obtainable by legitimate means without your consent. If no such claim accompanies the information when it is received by EPA, then it may be made available to the public by EPA without further notice to you.

If the EPA determines that the information so designated meets the criteria set forth in 40 C.F.R. § 2.208, the information will be disclosed only to the extent, and by means of the procedures specified in 40 C.F.R. Part 2, Subpart B..

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ATTACHMENT III
CERTIFICATION OF ANSWERS TO RESPONSES TO REQUEST FOR INFORMATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document (response to EPA Request for Information) and all documents submitted herewith, that the submitted information is true, accurate and complete, and that all documents submitted herewith are complete and authentic, unless otherwise indicated. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

_____

NAME (print or type)

_____

TITLE (print or type)

_____

SIGNATURE

_____

DATE

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To: Lin, Sharon[Lin.Sharon@epa.gov]; Tekrony, Linda[Tekrony.Linda@epa.gov]; Goodnight, Lorna[Goodnight.Lorna@epa.gov]; Vega, Jackie[Vega.Jackie@epa.gov]
From: FRANCIS, RICHARD
Sent: Tue 5/3/2016 5:29:13 PM
Subject: Chevron Case Screening Presentation ----------ENFORCEMENT CONFIDENTIAL----------
CHEVRON REFINERY - HAWAII.pptx

I apologize for such a late draft of the presentation. I have been going non-stop since my return to the office. Please let me know if there is anything that may need to be changed, or if there are any photos that you would like to include.

Richard Francis

Inspector, Waste and Chemical Section

Enforcement Division

U.S. EPA Region 9

(415) 972-3342

CHEVRON REFINERY - HAWAII

NEIC: Jackie Vega, Linda Tekrony, Lorna Goodnight
EPA R9: Richard Francis, Sharon Lin
05/04/2016

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FACILTY BACKGROUND

- Built in 1959 as Standard Oil of California
- SIC: 2911- Petroleum Refining
- Bought by Chevron in 1980
- Employs 225 personnel with approximately 100 contractors
- Main Processes:
  - Distillation, Fluid Catalytic Cracking,, Dimerization, Isomerization, Alkylation, Wastewater Treatment
- Secondary Processes:
  - Acid Manufacturing, Hydrogen Manufacturing, Hydrogenation Cogeneration, Blending, Benzene Recovery
- Products:
  - Motor Gasoline, Aviation Gasoline, Jet Fuel, Diesel
- Supplies fuel to Hawaii Islands. Does not export to the mainland.

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Chevron

COMPLIANCE HISTORY

- Current Permits:
  - Hawaii Department of Health NPDES Permit No. HI0000329
  - Hawaii Department of Health Covered Source Permit for Air Emissions No. 0088-01-C
  - Post Closure Permit for Land Treatment Facility
  - Benzene Waste Operations NESHAP (BWON)
- Previous RCRA Inspections (RCRA Info):
  - Last inspected on 03/07/2012 by Tom Brand of HDOH. No violations
  - Financial Record Review on 09/18/2013 by John Brock of EPA. No Violations
  - Last EPA CEI on 12/01/209. Three Violations

INSPECTION FINDINGS

Areas of Concern

- Failure to maintain records of four less-than-90-day Accumulation Area Inspections.
- Failure to maintain documentation showing wastewater flow to unlined south pond only occurred during wet weather flow.
- Failure to mark containers pending analysis as “hazardous waste.”

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POTENTIAL VIOLATIONS

- Failure to include proper waste codes on four manifests [40 CFR § 262.20(a)(1)
- Failure to submit a written exception report for a single manifest not returned within 45 days with signature of designated receiving facility and for five manifests with no signature from receiving facility. [40 CFR § 262.42(a)(1) and (2)]
- Failure to make a hazardous waste determination on heat exchanger bundle cleaning sludge (K050) that was shipped and identified as “Non-DOT Regulated Material (Sediment).” [40 CFR § 262.11]
- Failure to make a hazardous waste determination on spent carbon canisters that was shipped to a carbon regeneration facility. [40 CFR § 262.11] Carbon regeneration is a thermal treatment and not exempt reclamation. (56 FR 7200)
- Failure to make a hazardous waste determination on wastewater pumped from the stormwater API seperator to oxidation pond and on water pumped from storm bay sump to South Pond. [40 CFR § 262.11]
- Failure to obtain a permit to discharge benzene contaminated wastewater that bypasses the benzene recovery unit during shutdown on three occasions. [40 CFR § 270.1(c)]

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QUESTIONS?

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To: Vega, Jackie[Vega.Jackie@epa.gov]; Lin, Sharon[Lin.Sharon@epa.gov]
From: FRANCIS, RICHARD
Sent: Tue 2/16/2016 9:42:19 PM
Subject: RE: Project Agreement for RCRA Compliance Investigation of Chevron Hawaii

No comments. Thank you.

Richard Francis

Inspector, Waste and Chemical Section

Enforcement Division

U.S. EPA Region 9

(415) 972-3342

From: Vega, Jackie
Sent: Tuesday, February 16, 2016 1:40 PM
To: Lin, Sharon <Lin.Sharon@epa.gov>
Cc: FRANCIS, RICHARD <Francis.Richard@epa.gov>
Subject: RE: Project Agreement for RCRA Compliance Investigation of Chevron Hawaii

Thank you! Richard, do you have any comments?

Can't wait to see you guys next week!

Aloha,

Jackie

From: Lin, Sharon
Sent: Tuesday, February 16, 2016 2:25 PM
To: Vega, Jackie <Vega.Jackie@epa.gov>
Cc: FRANCIS, RICHARD <Francis.Richard@epa.gov>
Subject: RE: Project Agreement for RCRA Compliance Investigation of Chevron Hawaii

Aloha, Jackie,

My only comment is to indicate that Richard is the Region 9 project lead for this. Mahalo!

Sharon

From: Vega, Jackie
Sent: Tuesday, February 09, 2016 3:19 PM
To: Lin, Sharon <Lin.Sharon@epa.gov>; FRANCIS, RICHARD <Francis.Richard@epa.gov>
Cc: Tekrony, Linda <Tekrony.Linda@epa.gov>; Goodnight, Lorna <Goodnight.Lorna@epa.gov>; Au, Doreen <Au.Doreen@epa.gov>; Parker, David <Parker.David@epa.gov>; Coleman, Gloria <Coleman.Gloria@epa.gov>; Yarbrough, Kenna <Yarbrough.Kenna@epa.gov>
Subject: Project Agreement for RCRA Compliance Investigation of Chevron Hawaii

Provided below is the project agreement for the subject investigation. Please review and provide comments by Tuesday, February 16, 2016. If no comments are received by February 16, this will be considered the final project agreement. If comments are received, the project agreement will be revised and resubmitted. The project agreement discusses the proposed project description, scope of work, summary of deliverables/project timeline, risk management, and contact list for the investigation. Jacquelyn Vega is the NEIC project manager who will lead the investigation. Please contact me at (303)462-9260 if you have any questions.

PROJECT AGREEMENT

PROJECT DESCRIPTION and scope OF WORK

U.S. Environmental Protection Agency (EPA) Region 9 requested EPA's National Enforcement Investigations Center (NEIC) to conduct a Resource Conservation and Recovery Act (RCRA) compliance investigation of the Chevron Products Company, Hawaii Refinery (Chevron Hawaii) located at 91-480 Malakole Street in Kapolei, Hawaii and a training for Hawaii State Department of Health RCRA inspectors. The investigation will assess Chevron Hawaii's compliance with applicable RCRA regulations and permit requirements as follows.

Media	Source ID	Regulatory Status	Inspection Focus

RCRA		Process based inspection, focused on refinery RCRA issues
		Potential discharges to surface impoundments
EPA ID HIT160010005	RCRA large quantity generator (LQG)	Waste treatment methods and practices, including management of hazardous waste at maintenance areas (bundle cleaning pads, etc.)
		Potential hazardous waste treatment, storage, or disposal (TSD) activities
		Potential impact to groundwater and surface water

NEIC personnel will also document activities and conditions that, although not specifically regulated, have impacted or could potentially impact the environment.

NEIC will support the investigation objectives by conducting a training at the Hawaii State Department of Health on February 23, 2016 and an on-site inspection at the refinery February 24 through March 3, 2016.

Training will include the following topics:

- Process based inspections (focused on refineries)
- RCRA regulations applicable at a refinery
- Refinery RCRA inspection issues and strategies
- Sampling at refineries

Inspection activities will include the following:

•□□□□□□□□ Meeting with facility personnel to discuss process operations.

•□□□□□□□□ Conducting a walk-through tour of the facility to observe process operations and waste management procedures.

•□□□□□□□□ Reviewing and copying (as appropriate) facility documents, including operating plans, procedures, and records.

•□□□□□□□□ Evaluate sampling practices and procedures for wastewater management systems

•□□□□□□□□ Samples may be collected if needed, as determined by NEIC and Region 9 inspectors

•□□□□□□□□ If samples are collected, analysis of the samples will be conducted at the NEIC laboratory in Denver, Colorado.

•□□□□□□□□ Preparing a report documenting NEIC findings.

All activities of NEIC personnel will be performed in accordance with the NEIC quality system.

Summary of Deliverables and Project Timeline

Milestones and Deliverables	Description (Roles and Responsibilities)	Responsible Party	Target Work/Completion Dates
Region comments on project agreement	Region will review project agreement and provide comments	Sharon Lin, Richard Francis	February 16, 2016
Final project agreement	**Project manager (PM) will incorporate regional comments and deliver to Region via email**	**Jackie Vega**	**February 18, 2016**
Training at state office	Team arrives in Honolulu, HI, on 2/22/16 and provides in-office training on 2/23/16	Chris Rollins, NEIC project team	February 23, 2016
On-site inspection	Team arrives in Honolulu, HI, on 2/22/16 and plans to depart on 3/4/16	NEIC project team	February 24 – March 3, 2016
Draft preliminary findings	**Team meeting with the Region to discuss draft preliminary findings via email or conference call**	**EPA Region 9, NEIC project team**	**March 17, 2016**
External draft report to region	**NEIC draft report, including supporting documentation, provided to Region as electronic copies on compact disc (CD) and delivered via mail.**	**Jackie Vega**	**July 15, 2016**
Region comments on external draft report	Region will review external draft report and provide comments	Sharon Lin, Richard Francis	August 8, 2016
Final project report	**Final report, including supporting documentation, provided to Region as electronic copies on CD's and delivered via mail.**	**Jackie Vega**	**August 29, 2016**

* NEIC deliverables are in **bold.**

* Region responsibilities are highlighted in blue.

RISK Management

The project timeline table outlines completion dates for milestones and deliverables that are based on the following assumptions and constraints unique to this project. If any of the assumptions significantly change, this may affect the overall project timeline. The project timeline is considered tentative until the field inspection is completed. If any milestone or deliverable dates change after the final issuance of this project plan, the PM will adjust the timeline in coordination with NEIC management and the customer and notify all applicable stakeholders of the changes via email.

Assumption/Constraints	Impact to Project's Budget, Timeline, or Staffing Needs if Assumption is Not Met or Constraint Occurs
ASSUMPTION: NEIC inspectors will be given access to the facility's responsible officials and review of specified facility areas within a timely manner.	This could affect the duration of the inspection.
ASSUMPTION: Samples may be collected, but team is not able to be determined how many and of what type of media prior to the onsite inspection.	If a large amount of samples are collected, the NEIC laboratory may need additional time to conduct the analyses. If this occurs, the timeline for providing the draft report could be extended.

The above assumptions must hold true in order for this project to meet agreed upon objectives and/or deliverable deadlines.

CONTACT List

(Name/title/affiliation)	(Contact Information)	Role
Jackie Vega/environmental engineer/ NEIC (project manager)	303-462-9260; vega.jackie@epa.gov	Project manager and RCRA inspector
Lorna Goodnight/environmental engineer/ NEIC (project team member)	303-462-9306; goodnight.lorna @epa.gov	RCRA inspector
Linda TeKrony/environmental engineer/NEIC (project team member)	303-462-9259; tekrony.linda@epa.gov	RCRA inspector
Sharon Lin/EPA Region 9	415-972-3446; Lin.Sharon@epa.gov	Regional contact
Richard Francis/EPA Region 9	415-972-3342 ; francis.richard@epa.gov	Regional contact
Doreen Au/Acting Civil Services Section Chief/ NEIC	303-462-9266; au.doreen@epa.gov	NEIC supervisor
David Parker/ Program Coordinator/ NEIC	303-462-9012; parker.david@epa.gov	NEIC coordinator

To: Lin, Sharon[Lin.Sharon@epa.gov]
From: FRANCIS, RICHARD
Sent: Thur 2/11/2016 10:57:29 PM
Subject: RE: FYI - Hawaii Refinery - Chevron Haz Waste Disposal

Good information to know. Thanks.

Richard Francis

Inspector, Waste and Chemical Section

Enforcement Division

U.S. EPA Region 9

(415) 972-3342

From: Lin, Sharon
Sent: Thursday, February 11, 2016 2:22 PM
To: Tekrony, Linda <Tekrony.Linda@epa.gov>; Vega, Jackie <Vega.Jackie@epa.gov>; Goodnight, Lorna <Goodnight.Lorna@epa.gov>
Cc: FRANCIS, RICHARD <Francis.Richard@epa.gov>
Subject: FYI - Hawaii Refinery - Chevron Haz Waste Disposal

Hi, Richard and I forgot to mention on yesterday's call that the refinery hazardous wastes are being disposed of off of the island. Hawaii doesn't have a hazardous waste disposal facility. The wastes are usually transported via barges to the mainland. I looked at the California electronic manifests system. Some of the hazardous wastes generated by Chevron HI (not all) are shipped to Veolia ES Technical Solution in Azusa, California (CAD008302903), commercial TSD in Southern California.

Sharon Lin, P.E.

U.S. Environmental Protection Agency Region 9

Enforcement Division

Air, Waste and Toxics Branch, ENF-2-2
75 Hawthorne Street

San Francisco, CA 94105

Tel: (415) 972-3446

Email: Lin.Sharon@epa.gov

To: cheryl.d.cobb@p66.com[cheryl.d.cobb@p66.com]
From: FRANCIS, RICHARD
Sent: Fri 10/16/2015 5:13:34 PM
Subject: Notice of Information Request
P66 Wilmington 3007.pdf

Hello Cheryl,

I just wanted to reach out to you and let you know that I have sent a 3007 information request through certified mail. I have attached an unsigned copy of the letter with this email as an early notification. There is a timeframe for your response, but it will start from the date you received the official. Please let me know if you have any questions.

Also, it will take a bit of time for our inspection reports to be completed. We received your documents last week, though I was out of town, and got the lab reports in this week. When we have reviewed the documents we will get the report out soon after. Apologies for any inconvenience.

Thank you,

Richard Francis

Inspector, Waste and Chemical Section

Enforcement Division

U.S. EPA Region 9

(415) 972-3342

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IX
75 Hawthorne Street
San Francisco, CA 94105

Date: October 15, 2015

CERTIFIED MAIL NO. 7000 0520 0025 3715 5350
RETURN RECEIPT REQUESTED

Cheryl Cobb
Environmental Engineer
Phillips 66
1660 West Anaheim Street
Wilmington, California 90744

RE: **Request for Information In re: Phillips 66 Las Angeles Refinery - Wilmington. EPA Identification Number: CAD008237679**

Dear Ms. Cobb:

The United States Environmental Protection Agency (EPA), Region 9 hereby requests additional information following the August 28, 2015 compliance evaluation inspection conducted of the Phillips 66 Las Angeles Refinery Wilmington (LARW) operations located at 1660 West Anaheim Street Wilmington, California 90744, EPA Identification Number CAD008237679. The information being requested will supplement observations made by the EPA inspection team.
Pursuant to EPA's authority under Section 3007(a) of the Resource Conservation and Recovery Act (RCRA) [42 U.S.C. § 6927(a)], LARW is required to submit the information and documents listed in Attachment I of this letter using the instructions included in Attachment II. Also, complete and submit the certification included in Attachment III.

Failure to respond fully and truthfully may result in enforcement action by EPA pursuant to Section 3008(g) of RCRA (42 U.S.C. § 6928(g)). These statutory provisions authorize EPA to seek the imposition of penalties of up to $37,500 per day of noncompliance. Please be further advised that provision of false, fictitious or fraudulent statements or representations may subject you to criminal penalties under 18 U.S.C. § 1001. The information you provide may be used by EPA in administrative, civil or criminal proceedings.

This request for information is not subject to review by the Office of Management and Budget (OMB) under the Paperwork Reduction Act because it is not a collection of information within the meaning of 44 U.S.C. §§ 3502(3), 3507, and 3512. *See*, *also*, 5 CFR §§ 1320.3(c), 1320.5, and 1320.6(a). Furthermore, it is exempt from OMB review under the Paperwork Reduction Act because it is part of an investigation of a specific individual or entity. 44 U.S.C. § 3518(c)(1); 5 CFR § 1320.4.

Your response to this request must be made by letter, signed by a duly authorized official, and submitted to the EPA within thirty (30) calendar days from the date of your receipt of this letter. Please address the submittal to:

Richard Francis
Mailcode: ENF-2-2
Waste and Chemical Section
Enforcement Division
U.S. Environmental Protection Agency
75 Hawthorne Street
San Francisco, CA 94105
Francis.richard@epa.gov

In lieu of submitting the requested response by mail, LARW may submit the response as portable document files via electronic mail.

If you have any questions regarding this letter, please contact Richard Francis at (415) 972-3342.

Sincerely,

Douglas K. McDaniel
Chief, Waste and Chemical Section
Enforcement Division

Enclosures
Attachment 1: List of information requested
Attachment 2: Instructions
Attachment 3: Certification of Answers

ATTACHMENT I

Therefore, pursuant to EPA's authority under Section 3007(a) of RCRA, LARW is requested to submit to EPA the following information:

1. Provide Safety Data Sheets (SDSs) for all solvents used in the facility's laboratory operations.

2. Provide Standard Operating Procedures (SOPs) for waste management operations within the laboratory, including Knock Room and Product Storage.

3. Provide Standard Operating Procedures (SOPs) for management of accumulated material within the accumulation tank, post-accumulation.

4. Provide evidence (work orders, logs, or reports) for removal of discarded solvents from the laboratory accumulation tank adjacent to building.

5. Provide tank certification for laboratory accumulation tank.

ATTACHMENT II
INSTRUCTIONS

In responding to this Request for Information, apply the following instructions and definitions:

1. Answer Every Question Completely. A separate response must be made to each of the questions set forth in this Information Request. For each question contained in this letter, if information responsive to this Information Request is not in your possession, custody, or control, please identify the person(s) from whom such information may be obtained.

2. Number Each Answer. When answering the questions in Attachment I, please precede each answer with the corresponding number of the question and subpart to which it responds.

3. Number Each Document. For each document produced in response to this Information Request, indicate on the document, or in some other reasonable manner, the number of the question to which it corresponds.

4. Provide the Best Information Available. Provide responses to the best of Respondent's ability, even if the information sought was never put down in writing or if the written documents are no longer available. You should seek out responsive information from current and former employees/agents, if necessary. If you are unable to answer a request in a detailed and complete manner or if you are unable to provide any of the information or documents requested, indicate the reason for your inability to do so. If you have reason to believe that there is an individual who may be able to provide more detail or documentation in response to any request, state that person's name and last known address and phone number and the reasons for your belief.

   If anything is deleted from a document produced in response to this Request for Information, state the reason for and the subject matter of the deletion. If a document/information is requested but is not available, state the reason for its unavailability. In addition, identify any such document by author, date, subject matter, number of pages, and all recipients and their addresses.

5. Identify Sources of Answer. For each question, identify all the persons and documents that you relied on in producing your answer.

6. Continuing Obligation to Provide/Correct Information. If additional information or documents responsive to this Request become known or available to you after you respond to this Request, EPA hereby requests that you supplement your response to EPA.

7. Scope of Request. The scope of this request includes all information and documents independently developed or obtained by research on the part of your company, its attorneys, consultants or any of their agents, consultants or employees.

8. Have an Authorized Person Sign the Response and Certification (Attachment III). The signatory must be an officer or agent who is authorized to respond on behalf of the company or facility.

9. **Confidential Information.** The information requested herein must be provided even though you may contend that it includes confidential information or trade secrets. You may assert a confidentiality claim covering part or all of the information requested, pursuant to Section 3007(b) of RCRA, 42 U.S.C. § 6927(b), and 40 C.F. R. § 2.203(b).

If you make a claim of confidentiality for any of the information you submit to EPA, you must prove that claim. For each document or response you claim confidential, you must separately address the following points:

i. clearly identify the portions of the information alleged to be entitled to confidential treatment;
ii. ii.. the period of time for which confidential treatment is desired (e.g., until a certain date, until the occurrence of a specific event, or permanently);
iii. measures taken by you to guard against the undesired disclosure of the information to others;
iv. the extent to which the information has been disclosed to others, and the precautions taken in connection therewith;
v. pertinent confidentiality determinations, if any, by EPA or other federal agencies, and a copy of any such determinations or reference to them, if available; and
vi. whether you assert that disclosure of the information would likely result in substantial harmful effects on your business' competitive position, and if so, what those harmful effects would be, why they should be viewed as substantial, and an explanation of the causal relationship between disclosure and such harmful effects.

To make a confidentiality claim, please stamp, or type, confidential on all confidential responses and any related confidential documents. Confidential portions of otherwise nonconfidential documents should be clearly identified. You should indicate the date, if any, after which the information need no longer be treated as confidential. Please submit your response so that all nonconfidential information, including any redacted versions of documents are in one envelope and all materials for which you desire confidential treatment are in another envelope that is clearly marked confidential.

All confidentiality claims are subject to EPA verification. It is important that you satisfactorily show that you have taken reasonable measures to protect the confidentiality of the information and that you intend to continue to do so, and that it is not and has not been obtainable by legitimate means without your consent. If no such claim accompanies the information when it is received by EPA, then it may be made available to the public by EPA without further notice to you.

If the EPA determines that the information so designated meets the criteria set forth in 40 C.F.R. § 2.208, the information will be disclosed only to the extent, and by means of the procedures specified in 40 C.F.R. Part 2, Subpart B..

ED_001593_00006615

ATTACHMENT III
CERTIFICATION OF ANSWERS TO RESPONSES TO REQUEST FOR INFORMATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document (response to EPA Request for Information) and all documents submitted herewith, that the submitted information is true, accurate and complete, and that all documents submitted herewith are complete and authentic, unless otherwise indicated. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

_____
NAME (print or type)

_____
TITLE (print or type)

_____
SIGNATURE

_____
DATE

To: Mitchum, Kristi[Kristi.Mitchum@chevron.com]
Cc: Tekrony, Linda[Tekrony.Linda@epa.gov]; Goodnight, Lorna[Goodnight.Lorna@epa.gov]; Armstrong, Alice E[AliceArmstrong@chevron.com]; Graham, Jacob T[JGSG@chevron.com]; Rinehart, Thomas W[Tom.Rinehart@chevron.com]
From: Vega, Jackie
Sent: Mon 4/11/2016 8:04:26 PM
Subject: RE: Chevron Response to NEIC Outstanding Questions

Hi Kristi,

I did receive your e-mail with the attachments. Sorry I was out on an inspection last week, so I wasn't able to respond earlier. April 22 will be fine to respond to the other questions, and I'll let you know when we receive the paper response. Thank you for your responses and keeping us informed of the status of the other items.

Thank You,

Jackie Vega

303-462-9260

From: Mitchum, Kristi [mailto:Kristi.Mitchum@chevron.com]
Sent: Friday, April 08, 2016 3:02 PM
To: Vega, Jackie <Vega.Jackie@epa.gov>
Cc: Tekrony, Linda <Tekrony.Linda@epa.gov>; Goodnight, Lorna <Goodnight.Lorna@epa.gov>; Armstrong, Alice E <AliceArmstrong@chevron.com>; Graham, Jacob T <JGSG@chevron.com>; Rinehart, Thomas W <Tom.Rinehart@chevron.com>
Subject: Chevron Response to NEIC Outstanding Questions

Jackie – Chevron has prepared responses to Outstanding Questions Nos. 3c, 3e, 3h, 3j, 6, 7, 11, and 12. Due to the amount of records pulled in response to No. 6, we will be submitting paper copies to your office. We are still working on responses to Nos. 2 and 5 and request additional time to complete. Please let me know if April 22nd would be acceptable.

3. Answers to waste profile review. Provide documentation requested as well as a copy of the waste profile.

c. 790651: What was cleaned on the blast pad that generated sludge?

Chevron Response: *The equipment cleaned at the blast pad during the period November 2014*

to April 2015 was one non-cooling water heat exchanger (E-2040) and cleaning equipment related to the T-113 tank cleanout. This equipment included primary and secondary seal material from the roof of the tank, steam coils from the interior of the tank, and cleaning equipment from sludge removal within the tank. The waste profile is attached (Attachment 3c).

e. 796736: This profile is for toxic characteristic hazardous waste (D018) sludge but profiles 790652 and 790803 are for nonhazardous sludge. In addition there are two other waste profiles for additional waste being generated from tank 113 (797999 and 799178). How are the different materials segregated while being generated in the field? Describe the process used to complete the project that generated the materials covered by the five different waste profiles.

Chevron Response: *Tank 113 was cleaned out for maintenance in 2015. The materials were not segregated in the field but were segregated based on physical and hazardous characteristics for disposal. First, the tank roof was cleaned to remove residual hydrocarbon. This material was liquefied using diesel in a frac tank so that it could be reprocessed and was disposed utilizing waste profile number 790652 (Non-Haz/non-RCRA TK104/TK113 sludge) comprised of 5 drums. Once the tank was removed from service, the sediment was removed manually. The sediment was transferred to rolloff bins then drummed. The majority of this material was identified with waste profiles 797999 (Tank Sediment Contaminated with Benzene and Mercury) comprised of 148 drums and 798973 (Tank Sediment Contaminated with Benzene and Mercury – Liquids) comprised of 222 drums. After the majority of the sediment was removed, the interior of the tank was cleaned with high-pressure water that generated residual sediment and rust scale. This material was disposed utilizing waste profile number 790803 (Non-Haz TK113 Sludge and Rust Scale) comprised of 1 drum.*

Waste profile no. 799178 (TK113 Sediment – Non-Haz – Liquids) was used to dispose of 4 drums from which we collected samples and TCLP analytical indicated these drums were non-hazardous.

No waste was disposed utilizing waste profile 796736 (Water Draw Tank Sludge (TK113); Liquid hazardous waste generated from T-113 sediment removal was disposed utilizing waste profile number 798973.

All waste profiles noted above are attached (Attachment 3e).

h. 499455: TCLP analytical?

Chevron Response: *This material was heat exchanger sludge from cleaning heat exchangers at the Blast Pad after the execution of the 2013 Major Turnaround. Waste generated from the cleanout of multiple heat exchangers in cooling water service was consolidated. The material was identified as K050 and manifested as a hazardous waste. Analytical data and waste profile are attached (Attachment h).*

j. 514323: TCLP analytical?

Chevron Response: *This material was acid sludge/dirt. The manifest left the facility without a waste code assigned. Upon receipt at the TSDF, it was determined that D002 waste code was applicable. The manifest was updated accordingly. This waste was disposed as a hazardous waste. There is no TCLP analytical available for this material. The signed manifest and waste profile are attached (Attachment 3j).*

6. Copies of manifests and land disposal restriction notifications identified during the onsite inspection.

Chevron Response: *See summary table attached (Attachment 6). Hardcopies of manifests and land disposal restriction notifications will be mailed to your office.*

7. Provide a description of the project that generated heat exchanger bundle cleaning sludge from exchanger E-5118A. Include date project began, description of the entire project, when exchanger E-5118A was cleaned, what process was used to drum and label the sludge as non-hazardous. Also describe how the project matrix provided was developed and who this information is communicated to.

Chevron Response: *Heat exchanger E-5118A was cleaned as part of the Crude Unit Shutdown in May 2015. Refer to HES Matrix provided during onsite visit for details regarding scope of this project. This exchanger was cleaned on May 5, 2015. The HES Matrix is created by Operations and Maintenance representatives to include scope of project work; Safety and Environmental representatives review and populate requirements; the completed HES Matrix is provided to the shutdown team prior to the start of project for implementation. The waste was initially labeled by the contractor as non-hazardous upon generation. After subsequent analysis by Chevron, the waste was relabeled, shipped, and disposed as hazardous waste.*

11. For the drums by tank 301:

i. When were the strainers bypassed?

Chevron Response: *Based on operator knowledge, it has been several years since the strainers were used.*

ii. When and how were the materials in the drums managed?

Chevron Response: *Samples were collected from the strainer drum and analytical has indicated*

that this is mercury-impacted > 260 ppm Total Mercury but did not trigger TCLP Mercury. An evaluation of the process has confirmed that this material was generated from strainers that removed debris from the oil fraction after that oil had been removed from the tank. The strainers were emptied into the drum where oil was pressed out for processing. Therefore, this material is not considered to be any listed hazardous waste. The material is awaiting disposal per the refinery's mercury disposal practices. The non-hazardous labeled drum was filled with water which was reprocessed and the drum was triple rinsed and crushed for metal recycle.

12. For the spent carbon sent off-site for carbon regeneration:

i. Name and address of facility (or facilities) where the carbon is being sent

Chevron Response: *Primary facility receives waste and prepares it for transfer to secondary facility. The primary facility for spent carbon is:*

Veolia ES Technical Solutions

1704 W. First Street

Azusa, CA 91702

Secondary facility is an energy recovery facility which blends the spent carbon as a fuel source:

Green America Recycling, LLC

EPA ID #: MOD054018288

10107 Highway #79

Hannibal, MO 63401

ii. Bill of Ladings for spent carbon sent off during 2015 and 2016.

Chevron Response: *Manifest is attached for the 2016 shipment (Attachment 12.ii). RCRA Waste Management Code H061 was applied to this waste – fuel blending prior to energy recovery at another site.*

iii. Total amount of spent carbon sent off-site during 2013, 2014, and 2015.

Chevron Response:

2013 – 10 drums

2014 – 0 drums

2015 – 0 drums

iv. Any letters or other documentation used by Chevron to determine the regulatory status of the spent carbon.

Chevron Response: *Our understanding based on the completed supplier form was that this material was non-hazardous. See attached form (Attachment 12.iv).*

v. Has any spent carbon been sent off for disposal in the past? If so, when and how was it classified?

Chevron Response: *Our records show that the facility shipped spent carbon for regeneration in 2010, 2011, and 2013. This material was classified as non-hazardous.*

If you have any questions, please let me know.

Thanks,

Kristi

Kristi Mitchum

HES Manager

Hawaii Refinery

Chevron Products Company

91-480 Malakole Street

Kapolei, HI 96707

Tel 808 682 3145

Fax 808 682 2214

Mobile 808 351 5871

kristi.mitchum@chevron.com

The Hawaii Refinery will operate injury and incident free, and through operational discipline, produce sustainable financial results and create enterprise value.

This e mail message and any file, e-mail messages or documents attached to it contain data or information that is confidential, privileged or otherwise restricted from disclosure. If you are not the intended recipient, be aware that any disclosure, copying, distribution or use of any of the data or information contained herein or in any of the attachments is strictly prohibited. If you have received this document or transmission in error, please immediately notify the sender and destroy, delete or erase this document and all attachments.

To: Vega, Jackie[Vega.Jackie@epa.gov]
Cc: Tekrony, Linda[Tekrony.Linda@epa.gov]; Goodnight, Lorna[Goodnight.Lorna@epa.gov]; Armstrong, Alice E[AliceArmstrong@chevron.com]; Graham, Jacob T[JGSG@chevron.com]; Rinehart, Thomas W[Tom.Rinehart@chevron.com]
From: Mitchum, Kristi
Sent: Fri 4/8/2016 9:02:14 PM
Subject: Chevron Response to NEIC Outstanding Questions
3c WIP790651.pdf
3e TK113 WIPs.pdf
3h WIP499455.pdf
3h Analytical.pdf
3j WIP514323.pdf
3j Manifest.pdf
6 Manifest & LDR Tracking Sheet.pdf
12.iv Profile Addendum.pdf
12.ii Manifest and LDR for Spent Carbon.pdf

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Chevron Response: *See summary table attached (Attachment 6). Hardcopies of manifests and land disposal restriction notifications will be mailed to your office.*

7. Provide a description of the project that generated heat exchanger bundle cleaning sludge from exchanger E-5118A. Include date project began, description of the entire project, when exchanger E-5118A was cleaned, what process was used to drum and label the sludge as non-hazardous. Also describe how the project matrix provided was developed and who this information is communicated to.

Chevron Response: *Heat exchanger E-5118A was cleaned as part of the Crude Unit Shutdown in May 2015. Refer to HES Matrix provided during onsite visit for details regarding scope of this project. This exchanger was cleaned on May 5, 2015. The HES Matrix is created by Operations and Maintenance representatives to include scope of project work; Safety and Environmental representatives review and populate requirements; the completed HES Matrix is provided to the shutdown team prior to the start of project for implementation. The waste was initially labeled by the contractor as non-hazardous upon generation. After subsequent analysis by Chevron, the waste was relabeled, shipped, and disposed as hazardous waste.*

11. For the drums by tank 301:

i. When were the strainers bypassed?

Chevron Response: *Based on operator knowledge, it has been several years since the strainers were used.*

ii. When and how were the materials in the drums managed?

Chevron Response: *Samples were collected from the strainer drum and analytical has indicated that this is mercury-impacted > 260 ppm Total Mercury but did not trigger TCLP Mercury. An evaluation of the process has confirmed that this material was generated from strainers that removed debris from the oil fraction after that oil had been removed from the tank. The strainers were emptied into the drum where oil was pressed out for processing. Therefore, this material is not considered to be any listed hazardous waste. The material is awaiting disposal per the refinery's mercury disposal practices. The non-hazardous labeled drum was filled with water which was reprocessed and the drum was triple rinsed and crushed for metal recycle.*

12. For the spent carbon sent off-site for carbon regeneration:

i. Name and address of facility (or facilities) where the carbon is being sent

Chevron Response: *Primary facility receives waste and prepares it for transfer to secondary facility. The primary facility for spent carbon is:*

Veolia ES Technical Solutions

1704 W. First Street

Azusa, CA 91702

Secondary facility is an energy recovery facility which blends the spent carbon as a fuel source:

Green America Recycling, LLC

EPA ID #: MOD054018288

10107 Highway #79

Hannibal, MO 63401

ii. Bill of Ladings for spent carbon sent off during 2015 and 2016.

Chevron Response: *Manifest is attached for the 2016 shipment (Attachment 12.ii). RCRA Waste Management Code H061 was applied to this waste – fuel blending prior to energy recovery at another site.*

iii. Total amount of spent carbon sent off-site during 2013, 2014, and 2015.

Chevron Response:

2013 – 10 drums

2014 – 0 drums

2015 – 0 drums

iv. Any letters or other documentation used by Chevron to determine the regulatory status of the spent carbon.

Chevron Response: *Our understanding based on the completed supplier form was that this material was non-hazardous. See attached form (Attachment 12.iv).*

v. Has any spent carbon been sent off for disposal in the past? If so, when and how was it classified?

Chevron Response: *Our records show that the facility shipped spent carbon for regeneration in 2010, 2011, and 2013. This material was classified as non-hazardous.*

If you have any questions, please let me know.

Thanks,

Kristi

Kristi Mitchum

HES Manager

Hawaii Refinery

Chevron Products Company

91-480 Malakole Street

Kapolei, HI 96707

Tel 808 682 3145

Fax 808 682 2214

Mobile 808 351 5871

kristi.mitchum@chevron.com

The Hawaii Refinery will operate injury and incident free, and through operational discipline, produce sustainable financial results and create enterprise value.

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Veolia ES Technical Solutions, L

3c
WIP 790651

VEOLIA ENVIRONMENTAL SERVICES

WASTESTREAM INFORMATION

☐ Recertification
VEOLIA LOCATION ADDRESS CITY ST
☐ Invoice Address
☐ Manifest from - blank if direct

VEOLIA TSDF requested ____ Technology requested ____ Generator No. 598065 **Generator EPA ID** HIT160010005

1. Generator Name CHEVRON PRODUCTS COMPANY **Generator State #** ____

Address HAWAII REFINERY 91-480 MALAKOLE STREET **State Wastestream #** ____

City KAPOLEI **State** HI **Country** US **Zip** 96707 1807

SIC Code 2911 **1st NAICS Code** ____ **2nd NAICS Code** ____ **3rd NAICS Code** ____

Source G19 **Origin** ____ **Form** W603 **System Type** ____

2. Waste Name NON-HAZ / NON-RCRA BLAST PAD SLUDGE **Lab or Waste** ____

3. Process Generating DISPOSAL OF SLUDGE COLLECTED FROM BLAST PAD AREA

4. Shipping Name NON-RCRA HAZARDOUS WASTE SOLID

Hazard Class NO NE **UN/NA Number** NONE **PkgGrp** ____ **Sub Hzds** ____ **RQ Amt (lbs.)** 0

RQ Desc:	1.	2.
DOT Desc:	1. OILY SLUDGE	2.

5. Waste Codes 491

Wastewater (Y/N) N **Sub-Category** ____

6. Physical and chemical

pH Lo 5	**Specific Gravity Lo** 1	**Flash Point (F) Lo** 200	**Water Solubility Lo** 0	**BTU/lb Lo** 1000
pH Hi 9	**Specific Gravity Hi** 1.4	**Flash Point (F) Hi** 300	**Water Solubility Hi** 50	**BTU/lb Hi** 4000

Solids:

Suspended Lo 0	**Settleable (%) Lo** 80	**Dissolved (%) Lo** 0	**% Ash Lo** 0	**Free Liquid (%) Lo** 10
Suspended Hi 0	**Settleable (%) Hi** 90	**Dissolved (%) Hi** 10	**% Ash Hi** 0	**Free Liquid (%) Hi** 20

Physical State:
Physical State 1 S - solid
Physical State 2 L - liquid
Physical State 3 ____

Hazardous
Haz. Char. 1 ____
Haz. Char. 2 ____
Haz. Char. 3 ____

Layer B - Bi-layered
Top C - low (water)
Middle D - solid
Bottom ____

Halogens:

Bromine (%) Lo ____	**Chlorine (%) Lo** ____	**Fluorine (%) Lo** ____	**Iodine (%) Lo** ____
Bromine (%) Hi ____	**Chlorine (%) Hi** ____	**Fluorine (%) Hi** ____	**Iodine (%) Hi** ____

Color 1 BLK
Color 2 VAR
Intensity ____

Odor Intensity B - mild
Description HYDROCARBONS

Contains Used Oil? No **HOC < 1000 ppm** ____ **HOC > 1000 ppm** ____

WIP NO. 790651

7. Chemical Composition:

Component	Low	High	%/PPM/PPB
BENZENE (TOTAL)	0.95	1.5	PPM
MERCURY (TOTAL)	0.4	200	PPM
WATER	10	20	%
OILY SLUDGE	40	60	%
MISC. DEBRIS (WOOD, LEAVES, DIRT, RAGS, ABSORBENT, ROCKS)	20	40	%
HYDROCARBONS (MIXED)	15	20	%

Other	Yes/N		
8. Is the wastestream being imported into the USA?	No	**PCB concentration:**	0.00 **PPM**
9. Does the wastestream contain PCBs regulated by 40 CPR?	No		
10.Is the wastestream subject to the Marine Pollutant Regulations?	No		
11.Is the wastestream subject to Benzene NESHAP?	No	**Benzene concentration:**	0.00 **PPM**
If Yes, is the wastestream subject to Notification and Control Reqs?	No	**TAB at Facility:**	0.00 **Mg/Yr**
Does it contain >= 10% water?	No	**Vol. Org. Conc., if known:**	0.00 **PPMW**
12.Is the wastestream subject to RCRA subpart CC controls?			
CC approved analytical method? General Knowledge?			
13.Is the wastestream from a CERCLA or state mandated cleanup?	No		

14. Reclaim Composition: There are no reclaim components

15.Container Information (Identify UN container marking if

Packaging: Bulk ____ Type/Size _____ **Bulk Liquid:** ____ Type/Size _____ **Drum:** _____ Type/Size _____

Other: _____

Shipping Frequency: Units _____ Per Month _____ Quarter _____ Year _____ One Time _____ Other _____

16.Additional Information:

_____

_____

_____

Is analytical or an MSDS available that describes the waste? Yes ____ No ____ If Yes, please attach.

GENERATOR CERTIFICATION

I hereby certify that all information submitted in this and all attached documents contains true and accurate descriptions of this waste. Any sample submitted is representative as defined in 40 CFR 261 - Appendix I or by using an equivalent method. All relevant information regarding known or suspected hazards in the possession of the generator has been disclosed. I authorize sampling of any waste shipment for purposes of recertification.

NAME (Print or Type) _____ PHONE _____ DATE _____

SIGNATURE _____ TITLE _____

FACILITY

If approved for management, Veolia has all the necessary permits and licenses for the waste that has been characterized and identified by this profile.

TSDF PROCESSING USE ONLY: PPE REQUIRED? No **DESCRIBE:** _____

WIP NO. 790651

Veolia ES Technical Solutions

Attachment 3e.
Various profiles referencing Tank 113

VEOLIA ENVIRONMENTAL SERVICES

WASTESTREAM INFORMATION

☐ Recertification
VEOLIA LOCATION
☐ Invoice Address _____ ADDRESS _____ CITY
☐ Manifest from - blank if direct

VEOLIA TSDF requested ____ Technology requested ____ Generator No. 598065 **Generator EPA ID** HIT160010005

1. Generator Name CHEVRON PRODUCTS COMPANY **Generator State #** ____

Address HAWAII REFINERY 91-480 MALAKOLE STREET **State Wastestream #** ____

City KAPOLEI **State** HI **Country** US **Zip** 96707 1807

SIC Code 2911 **1st NAICS Code** ____ **2nd NAICS Code** ____ **3rd NAICS Code** ____

Source G14 **Origin** ____ **Form** W603 **System Type** ____

2. Waste Name WATER DRAW TANK SLUDGE (TK 113) **Lab or Waste** ____

3. Process Generating REMOVAL OF SLUDGE FROM WATER DRAW TANK (TK 113)

4. Shipping Name HAZARDOUS WASTE, LIQUID, n.o.s.

Hazard Class 9 **UN/NA Number** NA3082 **PkgGrp** III **Sub Hzds** ____ **RQ Amt (lbs.)** 0

RQ Desc:	1.	2.
DOT Desc:	1. BENZENE	2.

5. Waste Codes D018, 241

Wastewater (Y/N) N **Sub-Category** ____

6. Physical and chemical

pH Lo 5	**Specific Gravity Lo** 1	**Flash Point (F) Lo** 200	**Water Solubility Lo** 0	**BTU/lb Lo** 6000
pH Hi 9	**Specific Gravity Hi** 1.2	**Flash Point (F) Hi** 200	**Water Solubility Hi** 0	**BTU/lb Hi** 6000

Solids:

Suspended Lo 0	**Settleable (%) Lo** 70	**Dissolved (%) Lo** 0	**% Ash Lo** 0	**Free Liquid (%) Lo** 0
Suspended Hi 0	**Settleable (%) Hi** 100	**Dissolved (%) Hi** 0	**% Ash Hi** 0	**Free Liquid (%) Hi** 30

Physical State:	**Hazardous**	**Layer** B - Bi-layered
Physical State 1 S - solid	**Haz. Char. 1** ____	**Top** C - low (water)
Physical State 2 L - liquid	**Haz. Char. 2** ____	**Middle** D - solid
Physical State 3 ____	**Haz. Char. 3** ____	**Bottom** ____

Halogens:

Bromine (%) Lo ____	**Chlorine (%) Lo** ____	**Fluorine (%) Lo** ____	**Iodine (%) Lo** ____	**Color 1** VAR
Bromine (%) Hi ____	**Chlorine (%) Hi** ____	**Fluorine (%) Hi** ____	**Iodine (%) Hi** ____	**Color 2** BLK
				Intensity ____

Odor Intensity B - mild **Contains Used Oil?** No **HOC < 1000 ppm** ____ **HOC > 1000 ppm** ____

Description PETROLEUM

WIP NO. 796736

7. Chemical Composition:

Component	Low	High	%/PPM/PPB
ARSENIC (TCLP)	0	1	PPM
BARIUM (TCLP)	2	3	PPM
BENZENE (TOTAL)	20	50	PPM
MERCURY (TOTAL)	100	140	PPM
WATER	0	30	%
PETROLEUM TANK BOTTOM SLUDGE	70	100	%

Other	Yes/N		
8. Is the wastestream being imported into the USA?	No	**PCB concentration:**	0.00 **PPM**
9. Does the wastestream contain PCBs regulated by 40 CPR?	No		
10.Is the wastestream subject to the Marine Pollutant Regulations?	No		
11.Is the wastestream subject to Benzene NESHAP?	Yes	**Benzene concentration:**	50.00 **PPM**
If Yes, is the wastestream subject to Notification and Control Reqs?	Yes		
Does it contain >= 10% water?	Yes	**TAB at Facility:**	0.00 **Mg/Yr**
12.Is the wastestream subject to RCRA subpart CC controls?	Yes	**Vol. Org. Conc., if known:**	150.00 **PPMW**
CC approved analytical method? Yes **General Knowledge?** No			
13.Is the wastestream from a CERCLA or state mandated cleanup?	No		

14. Reclaim Composition: There are no reclaim components

15.Container Information (Identify UN container marking if

Packaging: Bulk ____ Type/Size _____ **Bulk Liquid:** ____ Type/Size _____ **Drum:** _____ Type/Size _____

Other: _____

Shipping Frequency: Units _____ Per Month _____ Quarter _____ Year _____ One Time _____ Other _____

16.Additional Information:

_____

_____

_____

Is analytical or an MSDS available that describes the waste? Yes ____ No ____ If Yes, please attach.

GENERATOR CERTIFICATION

I hereby certify that all information submitted in this and all attached documents contains true and accurate descriptions of this waste. Any sample submitted is representative as defined in 40 CFR 261 - Appendix I, or by using an equivalent method. All relevant information regarding known or suspected hazards in the possession of the generator has been disclosed. I authorize sampling of any waste shipment for purposes of recertification.

NAME (Print or Type) _____ PHONE _____ DATE _____

SIGNATURE _____ TITLE _____

FACILITY

If approved for management, Veolia has all the necessary permits and licenses for the waste that has been characterized and identified by this profile.

TSDF PROCESSING USE ONLY: PPE REQUIRED? No **DESCRIBE:** _____

WIP NO. 796736

Veolia ES Technical Solutions, L.L.C.

VEOLIA ENVIRONMENTAL SERVICES

WASTESTREAM INFORMATION

☐ Recertification
VEOLIA LOCATION
☐ Invoice Address
☐ Manifest from - blank if direct

ADDRESS _____ CITY _____ ST _____

Disposal Code _____

VEOLIA TSDF requested ____ Technology requested ____ Generator No. 598065 **Generator EPA ID** HIT160010005

1. Generator Name CHEVRON PRODUCTS COMPANY **Generator State #** _____

Address HAWAII REFINERY 91-480 MALAKOLE STREET **State Wastestream #** _____

City KAPOLEI **State** HI **Country** US **Zip** 96707 1807

SIC Code 2911 **1st NAICS Code** _____ **2nd NAICS Code** _____ **3rd NAICS Code** _____

Source G14 **Origin** _____ **Form** W409 **System Type** _____

2. Waste Name TK SEDIMENT CONT. W/ BENZENE & HG - LIQS **Lab or Waste** _____

3. Process Generating TANK CLEAN-OUT (TK 113 - WATER DRAW TK)

4. Shipping Name HAZARDOUS WASTE, LIQUID, n.o.s.

Hazard Class 9 **UN/NA Number** NA3082 **PkgGrp** III **Sub Hzds** _____ **RQ Amt (lbs.)** 0

RQ Desc:	1.	2.
DOT Desc:	1. BENZENE	2. MERCURY

5. Waste Codes D009-OM, D018, 241

Wastewater (Y/N) N **Sub-Category** OM - ORGANIC MERCURY>=260MG/KG TOTAL HG THAT IS NOT INCINERATORRESIDUE

6. Physical and chemical

pH Lo 5	**Specific Gravity Lo** 1	**Flash Point (F) Lo** 200	**Water Solubility Lo** 0	**BTU/lb Lo** 0
pH Hi 9	**Specific Gravity Hi** 1.4	**Flash Point (F) Hi** 300	**Water Solubility Hi** 0	**BTU/lb Hi** 0

Solids:

Suspended Lo 0	**Settleable (%) Lo** 70	**Dissolved (%) Lo** 0	**% Ash Lo** 0	**Free Liquid (%) Lo** 10
Suspended Hi 0	**Settleable (%) Hi** 90	**Dissolved (%) Hi** 0	**% Ash Hi** 0	**Free Liquid (%) Hi** 30

Physical State:		**Hazardous**		**Layer**	B - Bi-layered
Physical State 1	L - liquid	**Haz. Char. 1**		**Top**	C - low (water)
Physical State 2	S - solid	**Haz. Char. 2**		**Middle**	D - solid
Physical State 3		**Haz. Char. 3**		**Bottom**	

Halogens:

Bromine (%) Lo	**Chlorine (%) Lo**	**Fluorine (%) Lo**	**Iodine (%) Lo**	**Color 1** VAR
Bromine (%) Hi	**Chlorine (%) Hi**	**Fluorine (%) Hi**	**Iodine (%) Hi**	**Color 2** BLK
				Intensity

Odor Intensity A - none **Contains Used Oil?** No **HOC < 1000 ppm** ___ **HOC > 1000 ppm** ___

Description _____

WIP NO. 798973

7. Chemical Composition:

Component	Low	High	%/PPM/PPB
BENZENE (TCLP)	0.5	0.9	PPM
WATER	10	30	%
HYDROCARBONS	45	65	%
DIRT	15	25	%
RUST SCALE	10	15	%
MERCURY (TOTAL)	350	650	PPM

Other	Yes/N		
8. Is the wastestream being imported into the USA?	No	**PCB**	
9. Does the wastestream contain PCBs regulated by 40 CPR?	No	**concentration:**	0.00 **PPM**
10.Is the wastestream subject to the Marine Pollutant Regulations?	No		
11.Is the wastestream subject to Benzene NESHAP?	Yes	**Benzene**	
If Yes, is the wastestream subject to Notification and Control Reqs?	Yes	**concentration:**	0.80 **PPM**
Does it contain >= 10% water?	Yes	**TAB at Facility:**	0.00 **Mg/Yr**
12.Is the wastestream subject to RCRA subpart CC controls?	No	**Vol. Org. Conc.,**	
CC approved analytical method? General Knowledge?		**if known:**	0.00 **PPMW**
13.Is the wastestream from a CERCLA or state mandated cleanup?	No		

14. Reclaim Composition: There are no reclaim components

15.Container Information (Identify UN container marking if

Packaging: Bulk ____ Type/Size _____ **Bulk Liquid:** ____ Type/Size _____ **Drum:** _____ Type/Size _____

Other: _____

Shipping Frequency: Units _____ Per Month _____ Quarter _____ Year _____ One Time _____ Other _____

16.Additional Information:

_____

_____

Is analytical or an MSDS available that describes the waste? Yes ____ No ____ If Yes, please attach.

GENERATOR CERTIFICATION

I hereby certify that all information submitted in this and all attached documents contains true and accurate descriptions of this waste. Any sample submitted is representative as defined in 40 CFR 261 - Appendix I or by using an equivalent method. All relevant information regarding known or suspected hazards in the possession of the generator has been disclosed. I authorize sampling of any waste shipment for purposes of recertification.

NAME (Print or Type) _____ PHONE _____ DATE _____

SIGNATURE _____ TITLE _____

FACILITY

If approved for management, Veolia has all the necessary permits and licenses for the waste that has been characterized and identified by this profile.

TSDF PROCESSING USE ONLY: PPE REQUIRED? No **DESCRIBE:** _____

WIP NO. 798973

Veolia ES Technical Solutions, L.L.C.

VEOLIA ENVIRONMENTAL SERVICES

WASTESTREAM INFORMATION

☐ Recertification
VEOLIA LOCATION
☐ Invoice Address
☐ Manifest from - blank if direct

ADDRESS _____ CITY _____ ST _____

Disposal Code _____

VEOLIA TSDF requested _____ Technology requested _____ Generator No: 598065 **Generator EPA ID** HIT160010005

1. Generator Name CHEVRON PRODUCTS COMPANY **Generator State #** _____

Address HAWAII REFINERY 91-480 MALAKOLE STREET **State Wastestream #** _____

City KAPOLEI **State** HI **Country** US **Zip** 96707 1807

SIC Code 2911 **1st NAICS Code** 32411 **2nd NAICS Code** _____ **3rd NAICS Code** _____

Source G14 **Origin** _____ **Form** W409 **System Type** _____

2. Waste Name TANK SEDIMENT CONT. W/ BENZENE & MERCURY **Lab or Waste** _____

3. Process Generating TANK CLEAN-OUT (TK 113 - WATER DRAW TK)

4. Shipping Name HAZARDOUS WASTE, SOLID, n.o.s.

Hazard Class 9 **UN/NA Number** NA3077 **PkgGrp** III **Sub Hzds** _____ **RQ Amt (lbs.)** 0

RQ Desc:	1.	2.
DOT Desc:	1. BENZENE	2. MERCURY

5. Waste Codes D018, 241, D009-OM

Wastewater (Y/N) N **Sub-Category** OM - ORGANIC MERCURY >=260MG/KG TOTAL HG THAT IS NOT INCINERATOR RESIDUE

6. Physical and chemical

pH Lo 5	**Specific Gravity Lo** 1	**Flash Point (F) Lo** 200	**Water Solubility Lo** 0	**BTU/lb Lo** 0
pH Hi 9	**Specific Gravity Hi** 1.4	**Flash Point (F) Hi** 300	**Water Solubility Hi** 0	**BTU/lb Hi** 0

Solids:

Suspended Lo 0	**Settleable (%) Lo** 90	**Dissolved (%) Lo** 0	**% Ash Lo** 0	**Free Liquid (%) Lo** 0
Suspended Hi 0	**Settleable (%) Hi** 100	**Dissolved (%) Hi** 0	**% Ash Hi** 0	**Free Liquid (%) Hi** 10

Physical State:	**Hazardous**	**Layer** C - Single-Phase
Physical State 1 S - solid	**Haz. Char. 1** _____	**Top** D - solid
Physical State 2 _____	**Haz. Char. 2** _____	**Middle** _____
Physical State 3 _____	**Haz. Char. 3** _____	**Bottom** _____

Halogens:

Bromine (%) Lo _____	**Chlorine (%) Lo** _____	**Fluorine (%) Lo** _____	**Iodine (%) Lo** _____	**Color 1** VAR
Bromine (%) Hi _____	**Chlorine (%) Hi** _____	**Fluorine (%) Hi** _____	**Iodine (%) Hi** _____	**Color 2** BLK
				Intensity _____

Odor Intensity A - none **Contains Used Oil?** No **HOC < 1000 ppm** ___ **HOC > 1000 ppm** ___

Description _____

WIP NO. 797999

7. Chemical Composition:

Component	Low	High	%/PPM/PPB
BENZENE (TCLP)	0.5	0.9	PPM
WATER	0	10	%
HYDROCARBONS	50	75	%
DIRT	20	30	%
RUST SCALE	10	20	%
MERCURY (TOTAL)	350	650	PPM

Other	Yes/N		
8. Is the wastestream being imported into the USA?	No	**PCB**	
9. Does the wastestream contain PCBs regulated by 40 CPR?	No	**concentration:**	0.00 **PPM**
10.Is the wastestream subject to the Marine Pollutant Regulations?	No		
11.Is the wastestream subject to Benzene NESHAP?	Yes	**Benzene**	
If Yes, is the wastestream subject to Notification and Control Reqs?	Yes	**concentration:**	0.80 **PPM**
Does it contain >= 10% water?	No	**TAB at Facility:**	0.00 **Mg/Yr**
12.Is the wastestream subject to RCRA subpart CC controls?	No	**Vol. Org. Conc.,**	
CC approved analytical method? General Knowledge?		**if known:**	0.00 **PPMW**
13.Is the wastestream from a CERCLA or state mandated cleanup?	No		

14. Reclaim Composition: There are no reclaim components

15.Container Information (Identify UN container marking if

Packaging: Bulk ____ Type/Size _____ **Bulk Liquid:** ___ Type/Size _____ **Drum:** _____ Type/Size _____

Other: _____

Shipping Frequency: Units _____ Per Month _____ Quarter _____ Year _____ One Time _____ Other _____

16.Additional Information:

_____

_____

_____

Is analytical or an MSDS available that describes the waste? Yes ____ No ____ If Yes, please attach.

GENERATOR CERTIFICATION

I hereby certify that all information submitted in this and all attached documents contains true and accurate descriptions of this waste. Any sample submitted is representative as defined in 40 CFR 261 - Appendix I or by using an equivalent method. All relevant information regarding known or suspected hazards in the possession of the generator has been disclosed. I authorize sampling of any waste shipment for purposes of recertification.

NAME (Print or Type) _____ PHONE _____ DATE _____

SIGNATURE _____ TITLE _____

FACILITY

If approved for management, Veolia has all the necessary permits and licenses for the waste that has been characterized and identified by this profile.

TSDF PROCESSING USE ONLY: PPE REQUIRED? No **DESCRIBE:** _____

WIP NO. 797999

Veolia ES Technical Solutions, L.L.C.

VEOLIA ENVIRONMENTAL SERVICES

WASTESTREAM INFORMATION

☐ Recertification
VEOLIA LOCATION
☐ Invoice Address
☐ Manifest from - blank if direct

ADDRESS _____ CITY _____ ST _____

Disposal Code _____

VEOLIA TSDF requested _____ Technology requested _____ Generator No. 598065 **Generator EPA ID** HIT160010005

1. Generator Name CHEVRON PRODUCTS COMPANY **Generator State #** _____

Address HAWAII REFINERY 91-480 MALAKOLE STREET **State Wastestream #** _____

City KAPOLEI **State** HI **Country** US **Zip** 96707 1807

SIC Code 2911 **1st NAICS Code** _____ **2nd NAICS Code** _____ **3rd NAICS Code** _____

Source G14 **Origin** _____ **Form** W609 **System Type** _____

2. Waste Name NON-HAZ TK 113 SLUDGE & RUST SCALE **Lab or Waste** _____

3. Process Generating REMOVAL OF SEDIMENT & RUST SCALE FROM TK 113 CLEAN-OUT

4. Shipping Name NON-DOT REGULATED MATERIAL

Hazard Class NO NE **UN/NA Number** NONE **PkgGrp** _____ **Sub Hzds** _____ **RQ Amt (lbs.)** 0

RQ Desc:	1.	2.
DOT Desc:	1. SLUDGE	2. RUST SCALE

5. Waste Codes NONE

Wastewater (Y/N) N **Sub-Category** _____

6. Physical and chemical

pH Lo 5	**Specific Gravity Lo** 1	**Flash Point (F) Lo** 200	**Water Solubility Lo** 0	**BTU/lb Lo** 0
pH Hi 9	**Specific Gravity Hi** 1.4	**Flash Point (F) Hi** 300	**Water Solubility Hi** 50	**BTU/lb Hi** 2000

Solids:

Suspended Lo 0	**Settleable (%) Lo** 90	**Dissolved (%) Lo** 0	**% Ash Lo** 0	**Free Liquid (%) Lo** 0
Suspended Hi 0	**Settleable (%) Hi** 100	**Dissolved (%) Hi** 10	**% Ash Hi** 0	**Free Liquid (%) Hi** 10

Physical State:		**Hazardous**		**Layer**	B - Bi-layered
Physical State 1	S - solid	**Haz. Char. 1**		**Top**	C - low (water)
Physical State 2	L - liquid	**Haz. Char. 2**		**Middle**	D - solid
Physical State 3		**Haz. Char. 3**		**Bottom**	

Halogens:

Bromine (%) Lo	**Chlorine (%) Lo**	**Fluorine (%) Lo**	**Iodine (%) Lo**	**Color 1**	BLK
Bromine (%) Hi	**Chlorine (%) Hi**	**Fluorine (%) Hi**	**Iodine (%) Hi**	**Color 2**	VAR
				Intensity	

Odor Intensity B - mild **Contains Used Oil?** No **HOC < 1000 ppm** ___ **HOC > 1000 ppm** ___

Description HYDROCARBON

WIP NO. 790803

7. Chemical Composition:

Component	Low	High	%/PPM/PPB
MERCURY (TOTAL)	70	80	PPM
WATER	0	10	%
DIRT	40	60	%
RUST SCALE	30	50	%
HYDROCARBONS (MIXED)	0	20	%

Other	Yes/N		
8. Is the wastestream being imported into the USA?	No	**PCB**	
9. Does the wastestream contain PCBs regulated by 40 CPR?	No	**concentration:**	0.00 **PPM**
10.Is the wastestream subject to the Marine Pollutant Regulations?	No		
11.Is the wastestream subject to Benzene NESHAP?	No	**Benzene**	
If Yes, is the wastestream subject to Notification and Control Reqs?	No	**concentration:**	0.00 **PPM**
Does it contain >= 10% water?	No	**TAB at Facility:**	0.00 **Mg/Yr**
12.Is the wastestream subject to RCRA subpart CC controls?	No	**Vol. Org. Conc.,**	
CC approved analytical method? General Knowledge?		**if known:**	0.00 **PPMW**
13.Is the wastestream from a CERCLA or state mandated cleanup?	No		

14. Reclaim Composition: There are no reclaim components

15.Container Information (Identify UN container marking if

Packaging: Bulk ____ Type/Size _____ **Bulk Liquid:** ____ Type/Size _____ **Drum:**_____ Type/Size_____

Other: _____

Shipping Frequency: Units _____ Per Month _____ Quarter_____ Year _____ One Time _____ Other_____

16.Additional Information:

_____

_____

_____

Is analytical or an MSDS available that describes the waste? Yes ____ No ____ If Yes, please attach.

GENERATOR CERTIFICATION

I hereby certify that all information submitted in this and all attached documents contains true and accurate descriptions of this waste. Any sample submitted is representative as defined in 40 CFR 261 - Appendix I or by using an equivalent method. All relevant information regarding known or suspected hazards in the possession of the generator has been disclosed. I authorize sampling of any waste shipment for purposes of recertification.

NAME (Print or Type) _____ PHONE _____ DATE _____

SIGNATURE _____ TITLE _____

FACILITY

If approved for management, Veolia has all the necessary permits and licenses for the waste that has been characterized and identified by this profile.

TSDF PROCESSING USE ONLY: PPE REQUIRED? No **DESCRIBE:** _____

WIP NO. 790803

Veolia ES Technical Solutions, L.L.C.

VEOLIA ENVIRONMENTAL SERVICES

WASTESTREAM INFORMATION

☐ Recertification
VEOLIA LOCATION _____ ADDRESS _____ CITY _____ ST _____ Disposal Code
☐ Invoice Address
☐ Manifest from - blank if direct

VEOLIA TSDF requested _____ Technology requested _____ Generator No. 598065 **Generator EPA ID** HIT160010005

1. Generator Name CHEVRON PRODUCTS COMPANY **Generator State #** _____

Address HAWAII REFINERY 91-480 MALAKOLE STREET **State Wastestream #** _____

City KAPOLEI **State** HI **Country** US **Zip** 96707 1807

SIC Code 2911 **1st NAICS Code** _____ **2nd NAICS Code** _____ **3rd NAICS Code** _____

Source G14 **Origin** _____ **Form** W219 **System Type** _____

2. Waste Name TK 113 SEDIMENT - NON-HAZ - LIQS **Lab or Waste** _____

3. Process Generating TANK CLEAN-OUT (TK 113 - WATER DRAW TK)

4. Shipping Name NON-RCRA HAZARDOUS WASTE LIQUID

Hazard Class NO NE **UN/NA Number** NONE **PkgGrp** _____ **Sub Hzds** _____ **RQ Amt (lbs.)** 0

RQ Desc:	1.	2.
DOT Desc:	1.	2.

5. Waste Codes 241

Wastewater (Y/N) N **Sub-Category** _____

6. Physical and chemical

pH Lo 5	**Specific Gravity Lo** 1	**Flash Point (F) Lo** 200	**Water Solubility Lo** 0	**BTU/lb Lo** 0
pH Hi 9	**Specific Gravity Hi** 1.4	**Flash Point (F) Hi** 300	**Water Solubility Hi** 0	**BTU/lb Hi** 0

Solids:

Suspended Lo 0	**Settleable (%) Lo** 70	**Dissolved (%) Lo** 0	**% Ash Lo** 0	**Free Liquid (%) Lo** 10
Suspended Hi 0	**Settleable (%) Hi** 90	**Dissolved (%) Hi** 0	**% Ash Hi** 0	**Free Liquid (%) Hi** 30

Physical State:		**Hazardous**		**Layer**	B - Bi-layered
Physical State 1	L - liquid	**Haz. Char. 1**		**Top**	C - low (water)
Physical State 2	S - solid	**Haz. Char. 2**		**Middle**	D - solid
Physical State 3		**Haz. Char. 3**		**Bottom**	

Halogens:

Bromine (%) Lo	**Chlorine (%) Lo**	**Fluorine (%) Lo**	**Iodine (%) Lo**	**Color 1**	VAR
Bromine (%) Hi	**Chlorine (%) Hi**	**Fluorine (%) Hi**	**Iodine (%) Hi**	**Color 2**	BLK
				Intensity	

Odor Intensity A - none **Contains Used Oil?** No **HOC < 1000 ppm** ___ **HOC > 1000 ppm** ___

Description _____

WIP NO. 799178

7. Chemical Composition:

Component	Low	High	%/PPM/PPB
BENZENE (TCLP)	0	0.25	PPM
WATER	10	30	%
HYDROCARBONS	45	65	%
DIRT	15	25	%
RUST SCALE	10	15	%
MERCURY (TOTAL)	0	230	PPM

Other	Yes/N		
8. Is the wastestream being imported into the USA?	No	**PCB**	
9. Does the wastestream contain PCBs regulated by 40 CPR?	No	**concentration:**	0.00 **PPM**
10.Is the wastestream subject to the Marine Pollutant Regulations?	No		
11.Is the wastestream subject to Benzene NESHAP?	Yes	**Benzene**	
If Yes, is the wastestream subject to Notification and Control Reqs?	Yes	**concentration:**	0.00 **PPM**
Does it contain >= 10% water?	Yes	**TAB at Facility:**	0.00 **Mg/Yr**
12.Is the wastestream subject to RCRA subpart CC controls?	No	**Vol. Org. Conc.,**	
CC approved analytical method? General Knowledge?		**if known:**	0.00 **PPMW**
13.Is the wastestream from a CERCLA or state mandated cleanup?	No		

14. Reclaim Composition: There are no reclaim components

15.Container Information (Identify UN container marking if

Packaging: Bulk ____ Type/Size _____ **Bulk Liquid:** ____ Type/Size _____ **Drum:** ____ Type/Size _____

Other: _____

Shipping Frequency: Units _____ Per Month _____ Quarter _____ Year _____ One Time _____ Other _____

16.Additional Information:

_____

_____

_____

Is analytical or an MSDS available that describes the waste? Yes ____ No ____ If Yes, please attach.

GENERATOR CERTIFICATION

I hereby certify that all information submitted in this and all attached documents contains true and accurate descriptions of this waste. Any sample submitted is representative as defined in 40 CFR 261 - Appendix I or by using an equivalent method. All relevant information regarding known or suspected hazards in the possession of the generator has been disclosed. I authorize sampling of any waste shipment for purposes of recertification.

NAME (Print or Type) _____ PHONE _____ DATE _____

SIGNATURE _____ TITLE _____

FACILITY

If approved for management, Veolia has all the necessary permits and licenses for the waste that has been characterized and identified by this profile.

TSDF PROCESSING USE ONLY: PPE REQUIRED? No **DESCRIBE:** _____

WIP NO. 799178

Veolia ES Technical Solutions, L.L.C.

VEOLIA ENVIRONMENTAL SERVICES

WASTESTREAM INFORMATION

☐ Recertification
VEOLIA LOCATION
☐ Invoice Address
☐ Manifest from - blank if direct

ADDRESS | CITY | ST | Disposal Code

VEOLIA TSDF requested ____ Technology requested ____ Generator No. 598065 **Generator EPA ID** HIT160010005

1. Generator Name CHEVRON PRODUCTS COMPANY **Generator State #** ____

Address HAWAII REFINERY 91-480 MALAKOLE STREET **State Wastestream #** ____

City KAPOLEI **State** HI **Country** US **Zip** 96707 1807

SIC Code 2911 **1st NAICS Code** ____ **2nd NAICS Code** ____ **3rd NAICS Code** ____

Source G19 **Origin** ____ **Form** W603 **System Type** ____

2. Waste Name NON-HAZ / NON-RCRA TK 104/113 SLUDGE **Lab or Waste** ____

3. Process Generating DISPOSAL OF SLUDGE COLLECTED FROM TK 104/113 CLEAN-OUT

4. Shipping Name NON-RCRA HAZARDOUS WASTE SOLID

Hazard Class NO NE **UN/NA Number** NONE **PkgGrp** ____ **Sub Hzds** ____ **RQ Amt (lbs.)** 0

RQ Desc:	1.	2.
DOT Desc:	1. SLUDGE	2.

5. Waste Codes 491

Wastewater (Y/N) N **Sub-Category** ____

6. Physical and chemical

pH Lo 5	**Specific Gravity Lo** 1	**Flash Point (F) Lo** 200	**Water Solubility Lo** 0	**BTU/lb Lo** 1000
pH Hi 9	**Specific Gravity Hi** 1.4	**Flash Point (F) Hi** 300	**Water Solubility Hi** 50	**BTU/lb Hi** 4000

Solids:

Suspended Lo 0	**Settleable (%) Lo** 90	**Dissolved (%) Lo** 0	**% Ash Lo** 0	**Free Liquid (%) Lo** 0
Suspended Hi 0	**Settleable (%) Hi** 100	**Dissolved (%) Hi** 0	**% Ash Hi** 0	**Free Liquid (%) Hi** 10

Physical State:		**Hazardous**		**Layer**	B - Bi-layered
Physical State 1	S - solid	**Haz. Char. 1**		**Top**	C - low (water)
Physical State 2	L - liquid	**Haz. Char. 2**		**Middle**	D - solid
Physical State 3		**Haz. Char. 3**		**Bottom**	

Halogens:

Bromine (%) Lo	**Chlorine (%) Lo**	**Fluorine (%) Lo**	**Iodine (%) Lo**	**Color 1**	BLK
Bromine (%) Hi	**Chlorine (%) Hi**	**Fluorine (%) Hi**	**Iodine (%) Hi**	**Color 2**	VAR
				Intensity	D

Odor Intensity B - mild **Contains Used Oil?** No **HOC < 1000 ppm** ____ **HOC > 1000 ppm** ____

Description PETROLEUM

WIP NO. 790652

7. Chemical Composition:

Component	Low	High	%/PPM/PPB
MERCURY (TOTAL)	0.4	200	PPM
OILY SLUDGE	60	90	%
MISC. DEBRIS (WOOD, LEAVES, DIRT, RAGS, ABSORBENT, ROCKS)	20	40	%

Other	Yes/N		
8. Is the wastestream being imported into the USA?	No		
9. Does the wastestream contain PCBs regulated by 40 CPR?	No	**PCB concentration:**	0.00 **PPM**
10. Is the wastestream subject to the Marine Pollutant Regulations?	No		
11. Is the wastestream subject to Benzene NESHAP?	No		
If Yes, is the wastestream subject to Notification and Control Reqs?	No	**Benzene concentration:**	0.00 **PPM**
Does it contain >= 10% water?	No	**TAB at Facility:**	0.00 **Mg/Yr**
12. Is the wastestream subject to RCRA subpart CC controls?	No	**Vol. Org. Conc., if known:**	0.00 **PPMW**
CC approved analytical method? General Knowledge?			
13. Is the wastestream from a CERCLA or state mandated cleanup?	No		

14. Reclaim Composition: There are no reclaim components

15. Container Information (Identify UN container marking if

Packaging: Bulk ____ Type/Size _____ **Bulk Liquid:** ____ Type/Size _____ **Drum:** _____ Type/Size _____

Other: _____

Shipping Frequency: Units _____ Per Month _____ Quarter _____ Year _____ One Time _____ Other _____

16. Additional Information:

_____

_____

_____

Is analytical or an MSDS available that describes the waste? Yes ____ No ____ If Yes, please attach.

GENERATOR CERTIFICATION

I hereby certify that all information submitted in this and all attached documents contains true and accurate descriptions of this waste. Any sample submitted is representative as defined in 40 CFR 261 - Appendix I or by using an equivalent method. All relevant information regarding known or suspected hazards in the possession of the generator has been disclosed. I authorize sampling of any waste shipment for purposes of recertification.

NAME (Print or Type)	PHONE	DATE
SIGNATURE	TITLE	

FACILITY

If approved for management, Veolia has all the necessary permits and licenses for the waste that has been characterized and identified by this profile.

TSDF PROCESSING USE ONLY: PPE REQUIRED? No **DESCRIBE:** _____

WIP NO. 790652

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Honolulu
99-193 Aiea Heights Drive, Suite 121
Aiea, HI 96701
Tel: 808-486-5227

TestAmerica Job ID: HWH0111
Client Project/Site: [none]
Client Project Description: Chevron

For:
Chevron Hawaii Refinery
91-480 Malakole Street
Kapolei, HI 96707

Attn: Alice Armstrong

Kristie Reilly

Authorized for release by:
9/5/2013 4:54:59 PM

Kristie Reilly, Project Manager
Kristie.Brachmann@testamericainc.com

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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ED_001593_00007052

Definitions/Glossary

Client: Chevron Hawaii Refinery
Project/Site: [none]

TestAmerica Job ID: HWH0111

Qualifiers

Metals

Qualifier	Qualifier Description
4	MS, MSD: The analyte present in the original sample is 4 times greater than the matrix spike concentration; therefore, control limits are not applicable.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Case Narrative

Client: Chevron Hawaii Refinery
Project/Site: [none]

TestAmerica Job ID: HWH0111

Job ID: HWH0111

Laboratory: TestAmerica Honolulu

Narrative

The results listed within this Laboratory Report pertain only to the samples tested in the laboratory unless otherwise stated in the report. The analyses contained in this report were performed in accordance with the applicable certifications as noted. All soil samples are reported on a wet weight basis unless otherwise noted in the report. This Laboratory Report is confidential and is intended for the sole use of TestAmerica and its client. This report shall not be reproduced, except in full, without written permission from TestAmerica. TestAmerica Analytical Testing Corporation certifies that the analytical results contained herein apply only to the specific sample(s) analyzed.

The Chain(s) of Custody are included and are an integral part of this report. This entire report was reviewed and approved for release.

If you have any questions relating to this analytical report, please contact your Laboratory Project Manager at 1-(808)486-5227

LABORATORY REPORT

At sample receipt, the cooler/sample was 4 degrees C.
NELAC states that samples which require thermal preservation shall be considered acceptable if the arrival temperature is within 2 degrees C of the required temperature or the method specified range. For samples with a temperature requirement of 4 degrees C, an arrival temperature from 0 degrees C to 6 degrees C meets specifications. Samples that are delivered to the laboratory on the same day that they are collected may not meet these criteria. In these cases, the samples are considered acceptable if there is evidence that the chilling process has begun, such as arrival on ice.

The reported results were obtained in compliance with the 2003 NELAC standards unless otherwise noted.

Laboratory: TestAmerica Irvine

Narrative

Job Narrative
440-55790-1

Comments
No additional comments.

Receipt
The samples were received on 8/30/2013 9:45 AM; the samples arrived in good condition, properly preserved and, where required, on ice.
The temperatures of the 4 coolers at receipt time were 4.8º C, 5.0º C, 5.4º C and 5.6º C.

Metals
Method(s) 6010B: The following sample(s) was diluted due to the nature of the sample matrix: HWH0111-01 (440-55790-1), HWH0111-02 (440-55790-2), HWH0111-03 (440-55790-3), HWH0111-04 (440-55790-4). Elevated reporting limits (RLs) are provided.

No other analytical or quality issues were noted.

Organic Prep
No analytical or quality issues were noted.

ED_001593_00007052

Sample Summary

Client: Chevron Hawaii Refinery
Project/Site: [none]

TestAmerica Job ID: HWH0111

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
HWH0111-01	08231000 - UNKNOWN TRI WALL / SLUDGE	Solid/Soil	08/23/13 22:51	08/28/13 16:10
HWH0111-02	08231001 - UNKNOWN TRI WALL / DRY DUST	Solid/Soil	08/23/13 22:52	08/28/13 16:10
HWH0111-03	08231002 - UNKNOWN TRI WALL / DRY DUST	Solid/Soil	08/23/13 22:51	08/28/13 16:10
HWH0111-04	F-5700 - SPENT CATALYST	Solid/Soil	08/23/13 22:25	08/28/13 16:10
HWH0111-05	0517946B	Solid/Soil	08/23/13 09:45	08/28/13 16:10
HWH0111-06	042913 - TOWER CRUDE UNIT 404	Solid/Soil	08/28/13 09:00	08/28/13 16:10
HWH0111-07	813808 - EXCHANGER SLUDGE	Solid/Soil	08/28/13 08:36	08/28/13 16:10
HWH0111-08	DEMO PIPING BLAST PAD AREA	Solid/Soil	08/27/13 08:30	08/28/13 16:10
HWH0111-09	813804 - EXCHANGER SLUDGE	Solid/Soil	08/28/13 08:43	08/28/13 16:10
HWH0111-10	813807 - EXCHANGER SLUDGE	Solid/Soil	08/28/13 14:05	08/28/13 16:10
HWH0111-11	813859 - EXCHANGER SLUDGE	Solid/Soil	08/26/13 14:00	08/28/13 16:10
HWH0111-12	8081231 - BLAST PAD	Solid/Soil	08/26/13 13:10	08/28/13 16:10
HWH0111-13	0813805 - EXCHANGER SLUDGE	Solid/Soil	08/23/13 21:55	08/28/13 16:10
HWH0111-14	8081232 - BLAST PAD	Solid/Soil	08/23/13 22:52	08/28/13 16:10
HWH0111-15	8081230 - BLAST PAD	Solid/Soil	08/23/13 13:05	08/28/13 16:10

Detection Summary

Client: Chevron Hawaii Refinery
Project/Site: [none]

TestAmerica Job ID: HWH0111

Client Sample ID: 08231000 - UNKNOWN TRI WALL / SLUDGE — Lab Sample ID: HWH0111-01

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	2.0		1.0		mg/L	5		6010B	TCLP
Chromium	1.6		0.50		mg/L	5		6010B	TCLP
Mercury	19		2.0		mg/Kg	100		7471A	Total/NA

Client Sample ID: 08231001 - UNKNOWN TRI WALL / DRY DUST — Lab Sample ID: HWH0111-02

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	2.3		2.0		mg/L	10		6010B	TCLP
Chromium	2.2		1.0		mg/L	10		6010B	TCLP
Mercury	6.6		2.0		mg/Kg	100		7471A	Total/NA

Client Sample ID: 08231002 - UNKNOWN TRI WALL / DRY DUST — Lab Sample ID: HWH0111-03

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	3.5		1.0		mg/L	5		6010B	TCLP
Chromium	1.2		0.50		mg/L	5		6010B	TCLP
Mercury	0.0072		0.0020		mg/L	1		7470A	TCLP
Mercury	4.9		0.20		mg/Kg	10		7471A	Total/NA

Client Sample ID: F-5700 - SPENT CATALYST — Lab Sample ID: HWH0111-04

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.58		0.40		mg/L	2		6010B	TCLP
Cadmium	0.25		0.20		mg/L	2		6010B	TCLP
Mercury	0.079		0.039		mg/Kg	2		7471A	Total/NA

Client Sample ID: 0517946B — Lab Sample ID: HWH0111-05

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Mercury	1.3		0.20		mg/Kg	10		7471A	Total/NA

Client Sample ID: 042913 - TOWER CRUDE UNIT 404 — Lab Sample ID: HWH0111-06

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.52		0.20		mg/L	1		6010B	TCLP
Mercury	1.4		0.20		mg/Kg	10		7471A	Total/NA

Client Sample ID: 813808 - EXCHANGER SLUDGE — Lab Sample ID: HWH0111-07

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.83		0.20		mg/L	1		6010B	TCLP
Mercury	1.0		0.20		mg/Kg	10		7471A	Total/NA

Client Sample ID: DEMO PIPING BLAST PAD AREA — Lab Sample ID: HWH0111-08

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Mercury	590		20		mg/Kg	1000		7471A	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Honolulu

Detection Summary

Client: Chevron Hawaii Refinery
Project/Site: [none]

TestAmerica Job ID: HWH0111

Client Sample ID: 813804 - EXCHANGER SLUDGE — Lab Sample ID: HWH0111-09

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.22		0.20		mg/L	1		6010B	TCLP
Mercury	8900		200		mg/Kg	10000		7471A	Total/NA

Client Sample ID: 813807 - EXCHANGER SLUDGE — Lab Sample ID: HWH0111-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	0.46		0.20		mg/L	1		6010B	TCLP
Barium	0.68		0.20		mg/L	1		6010B	TCLP
Mercury	4.8		0.20		mg/Kg	10		7471A	Total/NA

Client Sample ID: 813859 - EXCHANGER SLUDGE — Lab Sample ID: HWH0111-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.89		0.20		mg/L	1		6010B	TCLP
Lead	0.13		0.10		mg/L	1		6010B	TCLP
Mercury	8.0		0.20		mg/Kg	10		7471A	Total/NA

Client Sample ID: 8081231 - BLAST PAD — Lab Sample ID: HWH0111-12

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Mercury	0.10		0.020		mg/Kg	1		7471A	Total/NA

Client Sample ID: 0813805 - EXCHANGER SLUDGE — Lab Sample ID: HWH0111-13

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Mercury	150		20		mg/Kg	1000		7471A	Total/NA

Client Sample ID: 8081232 - BLAST PAD — Lab Sample ID: HWH0111-14

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	7.8		0.20		mg/L	1		6010B	TCLP
Barium	0.49		0.20		mg/L	1		6010B	TCLP
Lead	0.11		0.10		mg/L	1		6010B	TCLP
Mercury	0.047		0.0020		mg/L	1		7470A	TCLP
Mercury	1.9		0.20		mg/Kg	10		7471A	Total/NA

Client Sample ID: 8081230 - BLAST PAD — Lab Sample ID: HWH0111-15

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	4.2		0.20		mg/L	1		6010B	TCLP
Mercury	2.1		0.20		mg/Kg	10		7471A	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Honolulu

Client Sample Results

Client: Chevron Hawaii Refinery
Project/Site: [none]

TestAmerica Job ID: HWH0111

Client Sample ID: 08231000 - UNKNOWN TRI WALL / SLUDGE

Lab Sample ID: HWH0111-01

Date Collected: 08/23/13 22:51
Date Received: 08/28/13 16:10

Matrix: Solid/Soil

Method: 6010B - Metals (ICP) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	2.0		1.0		mg/L		09/03/13 23:24	09/04/13 15:58	5
Barium	ND		1.0		mg/L		09/03/13 23:24	09/04/13 15:58	5
Cadmium	ND		0.50		mg/L		09/03/13 23:24	09/04/13 15:58	5
Chromium	1.6		0.50		mg/L		09/03/13 23:24	09/04/13 15:58	5
Lead	ND		0.50		mg/L		09/03/13 23:24	09/04/13 15:58	5
Selenium	ND		0.50		mg/L		09/03/13 23:24	09/04/13 15:58	5
Silver	ND		1.0		mg/L		09/03/13 23:24	09/04/13 15:58	5

Method: 7470A - Mercury (CVAA) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.0020		mg/L		09/03/13 14:02	09/03/13 19:26	1

Method: 7471A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	19		2.0		mg/Kg		09/03/13 11:28	09/03/13 20:10	100

Client Sample ID: 08231001 - UNKNOWN TRI WALL / DRY DUST

Lab Sample ID: HWH0111-02

Date Collected: 08/23/13 22:52
Date Received: 08/28/13 16:10

Matrix: Solid/Soil

Method: 6010B - Metals (ICP) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	2.3		2.0		mg/L		09/03/13 23:24	09/04/13 16:01	10
Barium	ND		2.0		mg/L		09/03/13 23:24	09/04/13 16:01	10
Cadmium	ND		1.0		mg/L		09/03/13 23:24	09/04/13 16:01	10
Chromium	2.2		1.0		mg/L		09/03/13 23:24	09/04/13 16:01	10
Lead	ND		1.0		mg/L		09/03/13 23:24	09/04/13 16:01	10
Selenium	ND		1.0		mg/L		09/03/13 23:24	09/04/13 16:01	10
Silver	ND		2.0		mg/L		09/03/13 23:24	09/04/13 16:01	10

Method: 7470A - Mercury (CVAA) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.0020		mg/L		09/03/13 14:02	09/03/13 19:34	1

Method: 7471A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	6.6		2.0		mg/Kg		09/03/13 11:28	09/03/13 20:03	100

Client Sample ID: 08231002 - UNKNOWN TRI WALL / DRY DUST

Lab Sample ID: HWH0111-03

Date Collected: 08/23/13 22:51
Date Received: 08/28/13 16:10

Matrix: Solid/Soil

Method: 6010B - Metals (ICP) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	3.5		1.0		mg/L		09/03/13 23:24	09/04/13 16:03	5
Barium	ND		1.0		mg/L		09/03/13 23:24	09/04/13 16:03	5
Cadmium	ND		0.50		mg/L		09/03/13 23:24	09/04/13 16:03	5
Chromium	1.2		0.50		mg/L		09/03/13 23:24	09/04/13 16:03	5

Client Sample Results

Client: Chevron Hawaii Refinery
Project/Site: [none]

TestAmerica Job ID: HWH0111

Client Sample ID: 08231002 - UNKNOWN TRI WALL / DRY DUST

Lab Sample ID: HWH0111-03

Date Collected: 08/23/13 22:51
Date Received: 08/28/13 16:10

Matrix: Solid/Soil

Method: 6010B - Metals (ICP) - TCLP (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	ND		0.50		mg/L		09/03/13 23:24	09/04/13 16:03	5
Selenium	ND		0.50		mg/L		09/03/13 23:24	09/04/13 16:03	5
Silver	ND		1.0		mg/L		09/03/13 23:24	09/04/13 16:03	5

Method: 7470A - Mercury (CVAA) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.0072		0.0020		mg/L		09/03/13 14:02	09/03/13 19:36	1

Method: 7471A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	4.9		0.20		mg/Kg		09/03/13 11:28	09/03/13 20:12	10

Client Sample ID: F-5700 - SPENT CATALYST

Lab Sample ID: HWH0111-04

Date Collected: 08/23/13 22:25
Date Received: 08/28/13 16:10

Matrix: Solid/Soil

Method: 6010B - Metals (ICP) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.40		mg/L		09/03/13 23:24	09/04/13 16:04	2
Barium	0.58		0.40		mg/L		09/03/13 23:24	09/04/13 16:04	2
Cadmium	0.25		0.20		mg/L		09/03/13 23:24	09/04/13 16:04	2
Chromium	ND		0.20		mg/L		09/03/13 23:24	09/04/13 16:04	2
Lead	ND		0.20		mg/L		09/03/13 23:24	09/04/13 16:04	2
Selenium	ND		0.20		mg/L		09/03/13 23:24	09/04/13 16:04	2
Silver	ND		0.40		mg/L		09/03/13 23:24	09/04/13 16:04	2

Method: 7470A - Mercury (CVAA) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.0020		mg/L		09/03/13 14:02	09/03/13 19:39	1

Method: 7471A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.079		0.039		mg/Kg		09/03/13 11:28	09/03/13 20:15	2

Client Sample ID: 0517946B

Lab Sample ID: HWH0111-05

Date Collected: 08/23/13 09:45
Date Received: 08/28/13 16:10

Matrix: Solid/Soil

Method: 6010B - Metals (ICP) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.20		mg/L		09/03/13 23:09	09/04/13 15:48	1
Barium	ND		0.20		mg/L		09/03/13 23:09	09/04/13 15:48	1
Cadmium	ND		0.10		mg/L		09/03/13 23:09	09/04/13 15:48	1
Chromium	ND		0.10		mg/L		09/03/13 23:09	09/04/13 15:48	1
Lead	ND		0.10		mg/L		09/03/13 23:09	09/04/13 15:48	1
Selenium	ND		0.10		mg/L		09/03/13 23:09	09/04/13 15:48	1
Silver	ND		0.20		mg/L		09/03/13 23:09	09/04/13 15:48	1

Client Sample Results

Client: Chevron Hawaii Refinery
Project/Site: [none]

TestAmerica Job ID: HWH0111

Client Sample ID: 0517946B

Lab Sample ID: HWH0111-05
Date Collected: 08/23/13 09:45
Matrix: Solid/Soil
Date Received: 08/28/13 16:10

Method: 7470A - Mercury (CVAA) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.0020		mg/L		09/04/13 09:05	09/04/13 16:45	1

Method: 7471A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	1.3		0.20		mg/Kg		09/03/13 11:28	09/03/13 20:25	10

Client Sample ID: 042913 - TOWER CRUDE UNIT 404

Lab Sample ID: HWH0111-06
Date Collected: 08/28/13 09:00
Matrix: Solid/Soil
Date Received: 08/28/13 16:10

Method: 6010B - Metals (ICP) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.20		mg/L		09/03/13 23:22	09/04/13 12:56	1
Barium	0.52		0.20		mg/L		09/03/13 23:22	09/04/13 12:56	1
Cadmium	ND		0.10		mg/L		09/03/13 23:22	09/04/13 12:56	1
Chromium	ND		0.10		mg/L		09/03/13 23:22	09/04/13 12:56	1
Lead	ND		0.10		mg/L		09/03/13 23:22	09/04/13 12:56	1
Selenium	ND		0.10		mg/L		09/03/13 23:22	09/04/13 14:31	1
Silver	ND		0.20		mg/L		09/03/13 23:22	09/04/13 12:56	1

Method: 7470A - Mercury (CVAA) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.0020		mg/L		09/03/13 14:02	09/03/13 17:51	1

Method: 7471A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	1.4		0.20		mg/Kg		09/03/13 11:28	09/03/13 20:27	10

Client Sample ID: 813808 - EXCHANGER SLUDGE

Lab Sample ID: HWH0111-07
Date Collected: 08/28/13 08:36
Matrix: Solid/Soil
Date Received: 08/28/13 16:10

Method: 6010B - Metals (ICP) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.20		mg/L		09/03/13 23:22	09/04/13 13:10	1
Barium	0.83		0.20		mg/L		09/03/13 23:22	09/04/13 13:10	1
Cadmium	ND		0.10		mg/L		09/03/13 23:22	09/04/13 13:10	1
Chromium	ND		0.10		mg/L		09/03/13 23:22	09/04/13 13:10	1
Lead	ND		0.10		mg/L		09/03/13 23:22	09/04/13 13:10	1
Selenium	ND		0.10		mg/L		09/03/13 23:22	09/04/13 13:10	1
Silver	ND		0.20		mg/L		09/03/13 23:22	09/04/13 13:10	1

Method: 7470A - Mercury (CVAA) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.0020		mg/L		09/03/13 14:02	09/03/13 17:58	1

Method: 7471A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	1.0		0.20		mg/Kg		09/03/13 11:28	09/03/13 20:29	10

Client Sample Results

Client: Chevron Hawaii Refinery
Project/Site: [none]

TestAmerica Job ID: HWH0111

Client Sample ID: DEMO PIPING BLAST PAD AREA

Lab Sample ID: HWH0111-08

Date Collected: 08/27/13 08:30
Date Received: 08/28/13 16:10

Matrix: Solid/Soil

Method: 6010B - Metals (ICP) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.20		mg/L		09/03/13 23:22	09/04/13 13:12	1
Barium	ND		0.20		mg/L		09/03/13 23:22	09/04/13 13:12	1
Cadmium	ND		0.10		mg/L		09/03/13 23:22	09/04/13 13:12	1
Chromium	ND		0.10		mg/L		09/03/13 23:22	09/04/13 13:12	1
Lead	ND		0.10		mg/L		09/03/13 23:22	09/04/13 13:12	1
Selenium	ND		0.10		mg/L		09/03/13 23:22	09/04/13 13:12	1
Silver	ND		0.20		mg/L		09/03/13 23:22	09/04/13 13:12	1

Method: 7470A - Mercury (CVAA) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.0020		mg/L		09/03/13 14:02	09/03/13 18:01	1

Method: 7471A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	590		20		mg/Kg		09/03/13 11:28	09/03/13 20:52	1000

Client Sample ID: 813804 - EXCHANGER SLUDGE

Lab Sample ID: HWH0111-09

Date Collected: 08/28/13 08:43
Date Received: 08/28/13 16:10

Matrix: Solid/Soil

Method: 6010B - Metals (ICP) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.20		mg/L		09/03/13 23:22	09/04/13 13:15	1
Barium	0.22		0.20		mg/L		09/03/13 23:22	09/04/13 13:15	1
Cadmium	ND		0.10		mg/L		09/03/13 23:22	09/04/13 13:15	1
Chromium	ND		0.10		mg/L		09/03/13 23:22	09/04/13 13:15	1
Lead	ND		0.10		mg/L		09/03/13 23:22	09/04/13 13:15	1
Selenium	ND		0.10		mg/L		09/03/13 23:22	09/04/13 13:15	1
Silver	ND		0.20		mg/L		09/03/13 23:22	09/04/13 13:15	1

Method: 7470A - Mercury (CVAA) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.0020		mg/L		09/03/13 14:02	09/03/13 18:03	1

Method: 7471A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	8900		200		mg/Kg		09/03/13 11:28	09/03/13 20:55	10000

Client Sample ID: 813807 - EXCHANGER SLUDGE

Lab Sample ID: HWH0111-10

Date Collected: 08/28/13 14:05
Date Received: 08/28/13 16:10

Matrix: Solid/Soil

Method: 6010B - Metals (ICP) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.46		0.20		mg/L		09/03/13 23:22	09/04/13 13:16	1
Barium	0.68		0.20		mg/L		09/03/13 23:22	09/04/13 13:16	1
Cadmium	ND		0.10		mg/L		09/03/13 23:22	09/04/13 13:16	1
Chromium	ND		0.10		mg/L		09/03/13 23:22	09/04/13 13:16	1
Lead	ND		0.10		mg/L		09/03/13 23:22	09/04/13 13:16	1
Selenium	ND		0.10		mg/L		09/03/13 23:22	09/04/13 13:16	1
Silver	ND		0.20		mg/L		09/03/13 23:22	09/04/13 13:16	1

Client Sample Results

Client: Chevron Hawaii Refinery
Project/Site: [none]

TestAmerica Job ID: HWH0111

Client Sample ID: 813807 - EXCHANGER SLUDGE

Lab Sample ID: HWH0111-10

Date Collected: 08/28/13 14:05
Matrix: Solid/Soil
Date Received: 08/28/13 16:10

Method: 7470A - Mercury (CVAA) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.0020		mg/L		09/03/13 14:02	09/03/13 18:06	1

Method: 7471A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	4.8		0.20		mg/Kg		09/03/13 11:28	09/03/13 20:37	10

Client Sample ID: 813859 - EXCHANGER SLUDGE

Lab Sample ID: HWH0111-11

Date Collected: 08/26/13 14:00
Matrix: Solid/Soil
Date Received: 08/28/13 16:10

Method: 6010B - Metals (ICP) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.20		mg/L		09/03/13 23:22	09/04/13 13:18	1
Barium	0.89		0.20		mg/L		09/03/13 23:22	09/04/13 13:18	1
Cadmium	ND		0.10		mg/L		09/03/13 23:22	09/04/13 13:18	1
Chromium	ND		0.10		mg/L		09/03/13 23:22	09/04/13 13:18	1
Lead	0.13		0.10		mg/L		09/03/13 23:22	09/04/13 13:18	1
Selenium	ND		0.10		mg/L		09/03/13 23:22	09/04/13 13:18	1
Silver	ND		0.20		mg/L		09/03/13 23:22	09/04/13 13:18	1

Method: 7470A - Mercury (CVAA) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.0020		mg/L		09/03/13 14:02	09/03/13 18:13	1

Method: 7471A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	8.0		0.20		mg/Kg		09/03/13 11:28	09/03/13 20:39	10

Client Sample ID: 8081231 - BLAST PAD

Lab Sample ID: HWH0111-12

Date Collected: 08/26/13 13:10
Matrix: Solid/Soil
Date Received: 08/28/13 16:10

Method: 6010B - Metals (ICP) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.20		mg/L		09/03/13 23:22	09/04/13 13:20	1
Barium	ND		0.20		mg/L		09/03/13 23:22	09/04/13 13:20	1
Cadmium	ND		0.10		mg/L		09/03/13 23:22	09/04/13 13:20	1
Chromium	ND		0.10		mg/L		09/03/13 23:22	09/04/13 13:20	1
Lead	ND		0.10		mg/L		09/03/13 23:22	09/04/13 13:20	1
Selenium	ND		0.10		mg/L		09/03/13 23:22	09/04/13 13:20	1
Silver	ND		0.20		mg/L		09/03/13 23:22	09/04/13 13:20	1

Method: 7470A - Mercury (CVAA) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.0020		mg/L		09/03/13 14:02	09/03/13 18:16	1

Method: 7471A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.10		0.020		mg/Kg		09/03/13 11:28	09/03/13 21:20	1

Client Sample Results

Client: Chevron Hawaii Refinery
Project/Site: [none]

TestAmerica Job ID: HWH0111

Client Sample ID: 0813805 - EXCHANGER SLUDGE

Lab Sample ID: HWH0111-13

Date Collected: 08/23/13 21:55
Date Received: 08/28/13 16:10

Matrix: Solid/Soil

Method: 6010B - Metals (ICP) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.20		mg/L		09/03/13 23:22	09/04/13 13:23	1
Barium	ND		0.20		mg/L		09/03/13 23:22	09/04/13 13:23	1
Cadmium	ND		0.10		mg/L		09/03/13 23:22	09/04/13 13:23	1
Chromium	ND		0.10		mg/L		09/03/13 23:22	09/04/13 13:23	1
Lead	ND		0.10		mg/L		09/03/13 23:22	09/04/13 13:23	1
Selenium	ND		0.10		mg/L		09/03/13 23:22	09/04/13 13:23	1
Silver	ND		0.20		mg/L		09/03/13 23:22	09/04/13 13:23	1

Method: 7470A - Mercury (CVAA) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.0020		mg/L		09/03/13 14:02	09/03/13 18:18	1

Method: 7471A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	150		20		mg/Kg		09/03/13 11:28	09/03/13 20:44	1000

Client Sample ID: 8081232 - BLAST PAD

Lab Sample ID: HWH0111-14

Date Collected: 08/23/13 22:52
Date Received: 08/28/13 16:10

Matrix: Solid/Soil

Method: 6010B - Metals (ICP) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	7.8		0.20		mg/L		09/03/13 23:22	09/04/13 13:25	1
Barium	0.49		0.20		mg/L		09/03/13 23:22	09/04/13 13:25	1
Cadmium	ND		0.10		mg/L		09/03/13 23:22	09/04/13 13:25	1
Chromium	ND		0.10		mg/L		09/03/13 23:22	09/04/13 13:25	1
Lead	0.11		0.10		mg/L		09/03/13 23:22	09/04/13 13:25	1
Selenium	ND		0.10		mg/L		09/03/13 23:22	09/04/13 13:25	1
Silver	ND		0.20		mg/L		09/03/13 23:22	09/04/13 13:25	1

Method: 7470A - Mercury (CVAA) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.047		0.0020		mg/L		09/03/13 14:02	09/03/13 18:21	1

Method: 7471A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	1.9		0.20		mg/Kg		09/03/13 11:28	09/03/13 20:57	10

Client Sample ID: 8081230 - BLAST PAD

Lab Sample ID: HWH0111-15

Date Collected: 08/23/13 13:05
Date Received: 08/28/13 16:10

Matrix: Solid/Soil

Method: 6010B - Metals (ICP) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	4.2		0.20		mg/L		09/03/13 23:07	09/04/13 12:43	1
Barium	ND		0.20		mg/L		09/03/13 23:07	09/04/13 12:43	1
Cadmium	ND		0.10		mg/L		09/03/13 23:07	09/04/13 12:43	1
Chromium	ND		0.10		mg/L		09/03/13 23:07	09/04/13 12:43	1
Lead	ND		0.10		mg/L		09/03/13 23:07	09/04/13 12:43	1
Selenium	ND		0.10		mg/L		09/03/13 23:07	09/04/13 12:43	1
Silver	ND		0.20		mg/L		09/03/13 23:07	09/04/13 12:43	1

Client Sample Results

Client: Chevron Hawaii Refinery
Project/Site: [none]

TestAmerica Job ID: HWH0111

Client Sample ID: 8081230 - BLAST PAD

Lab Sample ID: HWH0111-15

Date Collected: 08/23/13 13:05
Matrix: Solid/Soil
Date Received: 08/28/13 16:10

Method: 7470A - Mercury (CVAA) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.0020		mg/L		09/03/13 14:02	09/03/13 18:40	1

Method: 7471A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	2.1		0.20		mg/Kg		09/03/13 11:28	09/03/13 21:00	10

QC Sample Results

Client: Chevron Hawaii Refinery
Project/Site: [none]

TestAmerica Job ID: HWH0111

Method: 6010B - Metals (ICP)

Lab Sample ID: MB 440-128490/1-C
Matrix: Solid
Analysis Batch: 128957

Client Sample ID: Method Blank
Prep Type: TCLP
Prep Batch: 128788

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.20		mg/L		09/03/13 23:07	09/04/13 12:29	1
Barium	ND		0.20		mg/L		09/03/13 23:07	09/04/13 12:29	1
Cadmium	ND		0.10		mg/L		09/03/13 23:07	09/04/13 12:29	1
Chromium	ND		0.10		mg/L		09/03/13 23:07	09/04/13 12:29	1
Lead	ND		0.10		mg/L		09/03/13 23:07	09/04/13 12:29	1
Selenium	ND		0.10		mg/L		09/03/13 23:07	09/04/13 12:29	1
Silver	ND		0.20		mg/L		09/03/13 23:07	09/04/13 12:29	1

Lab Sample ID: LCS 440-128490/2-C
Matrix: Solid
Analysis Batch: 128957

Client Sample ID: Lab Control Sample
Prep Type: TCLP
Prep Batch: 128788

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	2.00	1.94		mg/L		97	80 - 120
Barium	2.00	1.98		mg/L		99	80 - 120
Cadmium	2.00	1.96		mg/L		98	80 - 120
Chromium	2.00	1.88		mg/L		94	80 - 120
Lead	2.00	1.92		mg/L		96	80 - 120
Selenium	2.00	1.76		mg/L		88	80 - 120
Silver	1.00	0.972		mg/L		97	80 - 120

Lab Sample ID: 440-55811-A-1-I MS
Matrix: Solid
Analysis Batch: 128957

Client Sample ID: Matrix Spike
Prep Type: TCLP
Prep Batch: 128788

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	1.2		2.00	3.15		mg/L		99	75 - 125
Barium	1.7		2.00	3.71		mg/L		99	75 - 125
Cadmium	ND		2.00	1.98		mg/L		97	75 - 125
Chromium	ND		2.00	1.90		mg/L		94	75 - 125
Lead	2.1		2.00	4.06		mg/L		98	75 - 125
Selenium	ND		2.00	1.82		mg/L		91	75 - 125
Silver	ND		1.00	0.968		mg/L		97	75 - 125

Lab Sample ID: MB 440-128488/1-B
Matrix: Solid
Analysis Batch: 129031

Client Sample ID: Method Blank
Prep Type: TCLP
Prep Batch: 128789

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.20		mg/L		09/03/13 23:09	09/04/13 15:43	1
Barium	ND		0.20		mg/L		09/03/13 23:09	09/04/13 15:43	1
Cadmium	ND		0.10		mg/L		09/03/13 23:09	09/04/13 15:43	1
Chromium	ND		0.10		mg/L		09/03/13 23:09	09/04/13 15:43	1
Lead	ND		0.10		mg/L		09/03/13 23:09	09/04/13 15:43	1
Selenium	ND		0.10		mg/L		09/03/13 23:09	09/04/13 15:43	1
Silver	ND		0.20		mg/L		09/03/13 23:09	09/04/13 15:43	1

QC Sample Results

Client: Chevron Hawaii Refinery
Project/Site: [none]

TestAmerica Job ID: HWH0111

Method: 6010B - Metals (ICP) (Continued)

Lab Sample ID: LCS 440-128488/2-B
Matrix: Solid
Analysis Batch: 129031

Client Sample ID: Lab Control Sample
Prep Type: TCLP
Prep Batch: 128789

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	2.00	1.92		mg/L		96	80 - 120
Barium	2.00	2.01		mg/L		100	80 - 120
Cadmium	2.00	1.96		mg/L		98	80 - 120
Chromium	2.00	1.91		mg/L		96	80 - 120
Lead	2.00	1.92		mg/L		96	80 - 120
Selenium	2.00	1.78		mg/L		89	80 - 120
Silver	1.00	1.00		mg/L		100	80 - 120

Lab Sample ID: 440-55790-5 MS
Matrix: Solid
Analysis Batch: 129031

Client Sample ID: HWH0111-05
Prep Type: TCLP
Prep Batch: 128789

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	ND		2.00	1.90		mg/L		95	75 - 125
Barium	ND		2.00	2.08		mg/L		98	75 - 125
Cadmium	ND		2.00	1.93		mg/L		96	75 - 125
Chromium	ND		2.00	1.92		mg/L		96	75 - 125
Lead	ND		2.00	1.94		mg/L		95	75 - 125
Selenium	ND		2.00	1.75		mg/L		87	75 - 125
Silver	ND		1.00	1.00		mg/L		100	75 - 125

Lab Sample ID: MB 440-128489/1-C
Matrix: Solid
Analysis Batch: 128974

Client Sample ID: Method Blank
Prep Type: TCLP
Prep Batch: 128793

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.20		mg/L		09/03/13 23:22	09/04/13 12:50	1
Barium	ND		0.20		mg/L		09/03/13 23:22	09/04/13 12:50	1
Cadmium	ND		0.10		mg/L		09/03/13 23:22	09/04/13 12:50	1
Chromium	ND		0.10		mg/L		09/03/13 23:22	09/04/13 12:50	1
Lead	ND		0.10		mg/L		09/03/13 23:22	09/04/13 12:50	1
Selenium	ND		0.10		mg/L		09/03/13 23:22	09/04/13 12:50	1
Silver	ND		0.20		mg/L		09/03/13 23:22	09/04/13 12:50	1

Lab Sample ID: LCS 440-128489/2-C
Matrix: Solid
Analysis Batch: 128974

Client Sample ID: Lab Control Sample
Prep Type: TCLP
Prep Batch: 128793

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	2.00	1.93		mg/L		96	80 - 120
Barium	2.00	1.98		mg/L		99	80 - 120
Cadmium	2.00	1.97		mg/L		99	80 - 120
Chromium	2.00	1.88		mg/L		94	80 - 120
Lead	2.00	1.92		mg/L		96	80 - 120
Selenium	2.00	1.70		mg/L		85	80 - 120
Silver	1.00	0.989		mg/L		99	80 - 120

QC Sample Results

Client: Chevron Hawaii Refinery
Project/Site: [none]

TestAmerica Job ID: HWH0111

Method: 6010B - Metals (ICP) (Continued)

Lab Sample ID: 440-55790-6 MS
Matrix: Solid
Analysis Batch: 128974

Client Sample ID: HWH0111-06
Prep Type: TCLP
Prep Batch: 128793

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	ND		2.00	2.15		mg/L		100	75 - 125
Barium	0.52		2.00	2.59		mg/L		104	75 - 125
Cadmium	ND		2.00	1.97		mg/L		98	75 - 125
Chromium	ND		2.00	1.87		mg/L		93	75 - 125
Lead	ND		2.00	1.97		mg/L		94	75 - 125
Selenium	0.12		2.00	1.74		mg/L		81	75 - 125
Silver	ND		1.00	0.971		mg/L		97	75 - 125

Lab Sample ID: MB 440-128487/1-C
Matrix: Solid
Analysis Batch: 129030

Client Sample ID: Method Blank
Prep Type: TCLP
Prep Batch: 128795

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.20		mg/L		09/03/13 23:24	09/04/13 15:02	1
Barium	ND		0.20		mg/L		09/03/13 23:24	09/04/13 15:02	1
Cadmium	ND		0.10		mg/L		09/03/13 23:24	09/04/13 15:02	1
Chromium	ND		0.10		mg/L		09/03/13 23:24	09/04/13 15:02	1
Lead	ND		0.10		mg/L		09/03/13 23:24	09/04/13 15:02	1
Selenium	ND		0.10		mg/L		09/03/13 23:24	09/04/13 15:02	1
Silver	ND		0.20		mg/L		09/03/13 23:24	09/04/13 15:02	1

Lab Sample ID: LCS 440-128487/2-C
Matrix: Solid
Analysis Batch: 129030

Client Sample ID: Lab Control Sample
Prep Type: TCLP
Prep Batch: 128795

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	2.00	1.92		mg/L		96	80 - 120
Barium	2.00	2.01		mg/L		101	80 - 120
Cadmium	2.00	1.98		mg/L		99	80 - 120
Chromium	2.00	1.92		mg/L		96	80 - 120
Lead	2.00	1.94		mg/L		97	80 - 120
Selenium	2.00	1.78		mg/L		89	80 - 120
Silver	1.00	1.01		mg/L		101	80 - 120

Lab Sample ID: 440-54881-A-3-I MS
Matrix: Solid
Analysis Batch: 129030

Client Sample ID: Matrix Spike
Prep Type: TCLP
Prep Batch: 128795

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	ND		2.00	1.99		mg/L		100	75 - 125
Barium	1.1		2.00	3.32		mg/L		109	75 - 125
Cadmium	ND		2.00	1.96		mg/L		98	75 - 125
Chromium	0.12		2.00	2.09		mg/L		99	75 - 125
Lead	0.12		2.00	2.10		mg/L		99	75 - 125
Selenium	ND		2.00	1.77		mg/L		89	75 - 125
Silver	ND		1.00	1.02		mg/L		102	75 - 125

QC Sample Results

Client: Chevron Hawaii Refinery
Project/Site: [none]

TestAmerica Job ID: HWH0111

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 440-128707/1-A
Matrix: Solid
Analysis Batch: 129047

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 128707

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.0020		mg/L		09/04/13 09:05	09/04/13 16:11	1

Lab Sample ID: LCS 440-128707/2-A
Matrix: Solid
Analysis Batch: 129047

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 128707

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	0.0800	0.0722		mg/L		90	80 - 120

Lab Sample ID: MB 440-128487/1-B
Matrix: Solid
Analysis Batch: 128769

Client Sample ID: Method Blank
Prep Type: TCLP
Prep Batch: 128597

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.0020		mg/L		09/03/13 14:02	09/03/13 19:12	1

Lab Sample ID: LCS 440-128487/2-B
Matrix: Solid
Analysis Batch: 128769

Client Sample ID: Lab Control Sample
Prep Type: TCLP
Prep Batch: 128597

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	0.0800	0.0938		mg/L		117	80 - 120

Lab Sample ID: 440-55658-A-1-D MS
Matrix: Solid
Analysis Batch: 128769

Client Sample ID: Matrix Spike
Prep Type: TCLP
Prep Batch: 128597

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	ND		0.0800	0.0937		mg/L		117	70 - 130

Lab Sample ID: 440-55658-A-1-E MSD
Matrix: Solid
Analysis Batch: 128769

Client Sample ID: Matrix Spike Duplicate
Prep Type: TCLP
Prep Batch: 128597

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	ND		0.0800	0.0946		mg/L		118	70 - 130	1	20

Lab Sample ID: MB 440-128489/1-B
Matrix: Solid
Analysis Batch: 128769

Client Sample ID: Method Blank
Prep Type: TCLP
Prep Batch: 128598

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.0020		mg/L		09/03/13 14:02	09/03/13 17:46	1

Lab Sample ID: LCS 440-128489/2-B
Matrix: Solid
Analysis Batch: 128769

Client Sample ID: Lab Control Sample
Prep Type: TCLP
Prep Batch: 128598

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	0.0800	0.0904		mg/L		113	80 - 120

QC Sample Results

Client: Chevron Hawaii Refinery
Project/Site: [none]

TestAmerica Job ID: HWH0111

Lab Sample ID: 440-55790-6 MS
Matrix: Solid
Analysis Batch: 128769

Client Sample ID: HWH0111-06
Prep Type: TCLP
Prep Batch: 128598

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Mercury	ND		0.0800	0.0897		mg/L		112	70 - 130		

Lab Sample ID: 440-55790-6 MSD
Matrix: Solid
Analysis Batch: 128769

Client Sample ID: HWH0111-06
Prep Type: TCLP
Prep Batch: 128598

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	ND		0.0800	0.0892		mg/L		111	70 - 130	1	20

Lab Sample ID: MB 440-128490/1-B
Matrix: Solid
Analysis Batch: 128769

Client Sample ID: Method Blank
Prep Type: TCLP
Prep Batch: 128625

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.0020		mg/L		09/03/13 14:02	09/03/13 18:23	1

Lab Sample ID: LCS 440-128490/2-B
Matrix: Solid
Analysis Batch: 128769

Client Sample ID: Lab Control Sample
Prep Type: TCLP
Prep Batch: 128625

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Mercury			0.0800	0.0909		mg/L		114	80 - 120		

Lab Sample ID: 440-55811-A-1-F MS
Matrix: Solid
Analysis Batch: 128769

Client Sample ID: Matrix Spike
Prep Type: TCLP
Prep Batch: 128625

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Mercury	ND		0.0800	0.0898		mg/L		112	70 - 130		

Lab Sample ID: 440-55811-A-1-G MSD
Matrix: Solid
Analysis Batch: 128769

Client Sample ID: Matrix Spike Duplicate
Prep Type: TCLP
Prep Batch: 128625

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	ND		0.0800	0.0919		mg/L		115	70 - 130	2	20

Lab Sample ID: 440-55695-A-1-C MS
Matrix: Solid
Analysis Batch: 129047

Client Sample ID: Matrix Spike
Prep Type: TCLP
Prep Batch: 128707

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Mercury	ND		0.0800	0.0735		mg/L		92	70 - 130		

Lab Sample ID: 440-55695-A-1-D MSD
Matrix: Solid
Analysis Batch: 129047

Client Sample ID: Matrix Spike Duplicate
Prep Type: TCLP
Prep Batch: 128707

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	ND		0.0800	0.0747		mg/L		93	70 - 130	2	20

QC Sample Results

Client: Chevron Hawaii Refinery
Project/Site: [none]

TestAmerica Job ID: HWH0111

Method: 7471A - Mercury (CVAA)

Lab Sample ID: MB 440-128409/1-A
Matrix: Solid
Analysis Batch: 128784

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 128409

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.020		mg/Kg		09/03/13 11:28	09/03/13 19:58	1

Lab Sample ID: LCS 440-128409/2-A
Matrix: Solid
Analysis Batch: 128784

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 128409

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	0.800	0.722		mg/Kg		90	80 - 120

Lab Sample ID: 440-55790-2 MS
Matrix: Solid
Analysis Batch: 128784

Client Sample ID: HWH0111-02
Prep Type: Total/NA
Prep Batch: 128409

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	6.6		0.784	7.84	4	mg/Kg		157	70 - 130

Lab Sample ID: 440-55790-2 MSD
Matrix: Solid
Analysis Batch: 128784

Client Sample ID: HWH0111-02
Prep Type: Total/NA
Prep Batch: 128409

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	6.6		0.784	7.42	4	mg/Kg		103	70 - 130	5	20

QC Association Summary

Client: Chevron Hawaii Refinery
Project/Site: [none]

TestAmerica Job ID: HWH0111

Metals

Prep Batch: 128409

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-55790-2 MS	HWH0111-02	Total/NA	Solid	7471A	
440-55790-2 MSD	HWH0111-02	Total/NA	Solid	7471A	
HWH0111-01	08231000 - UNKNOWN TRI WALL / SLUDGE	Total/NA	Solid/Soil	7471A	
HWH0111-02	08231001 - UNKNOWN TRI WALL / DRY DUST	Total/NA	Solid/Soil	7471A	
HWH0111-03	08231002 - UNKNOWN TRI WALL / DRY DUST	Total/NA	Solid/Soil	7471A	
HWH0111-04	F-5700 - SPENT CATALYST	Total/NA	Solid/Soil	7471A	
HWH0111-05	0517946B	Total/NA	Solid/Soil	7471A	
HWH0111-06	042913 - TOWER CRUDE UNIT 404	Total/NA	Solid/Soil	7471A	
HWH0111-07	813808 - EXCHANGER SLUDGE	Total/NA	Solid/Soil	7471A	
HWH0111-08	DEMO PIPING BLAST PAD AREA	Total/NA	Solid/Soil	7471A	
HWH0111-09	813804 - EXCHANGER SLUDGE	Total/NA	Solid/Soil	7471A	
HWH0111-10	813807 - EXCHANGER SLUDGE	Total/NA	Solid/Soil	7471A	
HWH0111-11	813859 - EXCHANGER SLUDGE	Total/NA	Solid/Soil	7471A	
HWH0111-12	8081231 - BLAST PAD	Total/NA	Solid/Soil	7471A	
HWH0111-13	0813805 - EXCHANGER SLUDGE	Total/NA	Solid/Soil	7471A	
HWH0111-14	8081232 - BLAST PAD	Total/NA	Solid/Soil	7471A	
HWH0111-15	8081230 - BLAST PAD	Total/NA	Solid/Soil	7471A	
LCS 440-128409/2-A	Lab Control Sample	Total/NA	Solid	7471A	
MB 440-128409/1-A	Method Blank	Total/NA	Solid	7471A	

Leach Batch: 128487

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-54881-A-3-I MS	Matrix Spike	TCLP	Solid	1311	
440-55658-A-1-D MS	Matrix Spike	TCLP	Solid	1311	
440-55658-A-1-E MSD	Matrix Spike Duplicate	TCLP	Solid	1311	
HWH0111-01	08231000 - UNKNOWN TRI WALL / SLUDGE	TCLP	Solid/Soil	1311	
HWH0111-02	08231001 - UNKNOWN TRI WALL / DRY DUST	TCLP	Solid/Soil	1311	
HWH0111-03	08231002 - UNKNOWN TRI WALL / DRY DUST	TCLP	Solid/Soil	1311	
HWH0111-04	F-5700 - SPENT CATALYST	TCLP	Solid/Soil	1311	
LCS 440-128487/2-B	Lab Control Sample	TCLP	Solid	1311	
LCS 440-128487/2-C	Lab Control Sample	TCLP	Solid	1311	
MB 440-128487/1-B	Method Blank	TCLP	Solid	1311	
MB 440-128487/1-C	Method Blank	TCLP	Solid	1311	

Leach Batch: 128488

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-55695-A-1-C MS	Matrix Spike	TCLP	Solid	1311	
440-55695-A-1-D MSD	Matrix Spike Duplicate	TCLP	Solid	1311	
440-55790-5 MS	HWH0111-05	TCLP	Solid	1311	
HWH0111-05	0517946B	TCLP	Solid/Soil	1311	
LCS 440-128488/2-B	Lab Control Sample	TCLP	Solid	1311	
MB 440-128488/1-B	Method Blank	TCLP	Solid	1311	

Leach Batch: 128489

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-55790-6 MS	HWH0111-06	TCLP	Solid	1311	
440-55790-6 MSD	HWH0111-06	TCLP	Solid	1311	
HWH0111-06	042913 - TOWER CRUDE UNIT 404	TCLP	Solid/Soil	1311	
HWH0111-07	813808 - EXCHANGER SLUDGE	TCLP	Solid/Soil	1311	
HWH0111-08	DEMO PIPING BLAST PAD AREA	TCLP	Solid/Soil	1311	
HWH0111-09	813804 - EXCHANGER SLUDGE	TCLP	Solid/Soil	1311	

QC Association Summary

Client: Chevron Hawaii Refinery
Project/Site: [none]

TestAmerica Job ID: HWH0111

Metals (Continued)

Leach Batch: 128489 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
HWH0111-10	813807 - EXCHANGER SLUDGE	TCLP	Solid/Soil	1311	
HWH0111-11	813859 - EXCHANGER SLUDGE	TCLP	Solid/Soil	1311	
HWH0111-12	8081231 - BLAST PAD	TCLP	Solid/Soil	1311	
HWH0111-13	0813805 - EXCHANGER SLUDGE	TCLP	Solid/Soil	1311	
HWH0111-14	8081232 - BLAST PAD	TCLP	Solid/Soil	1311	
LCS 440-128489/2-B	Lab Control Sample	TCLP	Solid	1311	
LCS 440-128489/2-C	Lab Control Sample	TCLP	Solid	1311	
MB 440-128489/1-B	Method Blank	TCLP	Solid	1311	
MB 440-128489/1-C	Method Blank	TCLP	Solid	1311	

Leach Batch: 128490

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-55811-A-1-F MS	Matrix Spike	TCLP	Solid	1311	
440-55811-A-1-G MSD	Matrix Spike Duplicate	TCLP	Solid	1311	
440-55811-A-1-I MS	Matrix Spike	TCLP	Solid	1311	
HWH0111-15	8081230 - BLAST PAD	TCLP	Solid/Soil	1311	
LCS 440-128490/2-B	Lab Control Sample	TCLP	Solid	1311	
LCS 440-128490/2-C	Lab Control Sample	TCLP	Solid	1311	
MB 440-128490/1-B	Method Blank	TCLP	Solid	1311	
MB 440-128490/1-C	Method Blank	TCLP	Solid	1311	

Prep Batch: 128597

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-55658-A-1-D MS	Matrix Spike	TCLP	Solid	7470A	128487
440-55658-A-1-E MSD	Matrix Spike Duplicate	TCLP	Solid	7470A	128487
HWH0111-01	08231000 - UNKNOWN TRI WALL / SLUDGE	TCLP	Solid/Soil	7470A	128487
HWH0111-02	08231001 - UNKNOWN TRI WALL / DRY DUST	TCLP	Solid/Soil	7470A	128487
HWH0111-03	08231002 - UNKNOWN TRI WALL / DRY DUST	TCLP	Solid/Soil	7470A	128487
HWH0111-04	F-5700 - SPENT CATALYST	TCLP	Solid/Soil	7470A	128487
LCS 440-128487/2-B	Lab Control Sample	TCLP	Solid	7470A	128487
MB 440-128487/1-B	Method Blank	TCLP	Solid	7470A	128487

Prep Batch: 128598

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-55790-6 MS	HWH0111-06	TCLP	Solid	7470A	128489
440-55790-6 MSD	HWH0111-06	TCLP	Solid	7470A	128489
HWH0111-06	042913 - TOWER CRUDE UNIT 404	TCLP	Solid/Soil	7470A	128489
HWH0111-07	813808 - EXCHANGER SLUDGE	TCLP	Solid/Soil	7470A	128489
HWH0111-08	DEMO PIPING BLAST PAD AREA	TCLP	Solid/Soil	7470A	128489
HWH0111-09	813804 - EXCHANGER SLUDGE	TCLP	Solid/Soil	7470A	128489
HWH0111-10	813807 - EXCHANGER SLUDGE	TCLP	Solid/Soil	7470A	128489
HWH0111-11	813859 - EXCHANGER SLUDGE	TCLP	Solid/Soil	7470A	128489
HWH0111-12	8081231 - BLAST PAD	TCLP	Solid/Soil	7470A	128489
HWH0111-13	0813805 - EXCHANGER SLUDGE	TCLP	Solid/Soil	7470A	128489
HWH0111-14	8081232 - BLAST PAD	TCLP	Solid/Soil	7470A	128489
LCS 440-128489/2-B	Lab Control Sample	TCLP	Solid	7470A	128489
MB 440-128489/1-B	Method Blank	TCLP	Solid	7470A	128489

Prep Batch: 128625

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-55811-A-1-F MS	Matrix Spike	TCLP	Solid	7471A	128490

QC Association Summary

Client: Chevron Hawaii Refinery
Project/Site: [none]

TestAmerica Job ID: HWH0111

Metals (Continued)

Prep Batch: 128625 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-55811-A-1-G MSD	Matrix Spike Duplicate	TCLP	Solid	7471A	128490
HWH0111-15	8081230 - BLAST PAD	TCLP	Solid/Soil	7470A	128490
LCS 440-128490/2-B	Lab Control Sample	TCLP	Solid	7470A	128490
MB 440-128490/1-B	Method Blank	TCLP	Solid	7470A	128490

Prep Batch: 128707

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-55695-A-1-C MS	Matrix Spike	TCLP	Solid	7470A	128488
440-55695-A-1-D MSD	Matrix Spike Duplicate	TCLP	Solid	7470A	128488
HWH0111-05	0517946B	TCLP	Solid/Soil	7470A	128488
LCS 440-128707/2-A	Lab Control Sample	Total/NA	Solid	7470A	
MB 440-128707/1-A	Method Blank	Total/NA	Solid	7470A	

Analysis Batch: 128769

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-55658-A-1-D MS	Matrix Spike	TCLP	Solid	7470A	128597
440-55658-A-1-E MSD	Matrix Spike Duplicate	TCLP	Solid	7470A	128597
440-55790-6 MS	HWH0111-06	TCLP	Solid	7470A	128598
440-55790-6 MSD	HWH0111-06	TCLP	Solid	7470A	128598
440-55811-A-1-F MS	Matrix Spike	TCLP	Solid	7470A	128625
440-55811-A-1-G MSD	Matrix Spike Duplicate	TCLP	Solid	7470A	128625
HWH0111-01	08231000 - UNKNOWN TRI WALL / SLUDGE	TCLP	Solid/Soil	7470A	128597
HWH0111-02	08231001 - UNKNOWN TRI WALL / DRY DUST	TCLP	Solid/Soil	7470A	128597
HWH0111-03	08231002 - UNKNOWN TRI WALL / DRY DUST	TCLP	Solid/Soil	7470A	128597
HWH0111-04	F-5700 - SPENT CATALYST	TCLP	Solid/Soil	7470A	128597
HWH0111-06	042913 - TOWER CRUDE UNIT 404	TCLP	Solid/Soil	7470A	128598
HWH0111-07	813808 - EXCHANGER SLUDGE	TCLP	Solid/Soil	7470A	128598
HWH0111-08	DEMO PIPING BLAST PAD AREA	TCLP	Solid/Soil	7470A	128598
HWH0111-09	813804 - EXCHANGER SLUDGE	TCLP	Solid/Soil	7470A	128598
HWH0111-10	813807 - EXCHANGER SLUDGE	TCLP	Solid/Soil	7470A	128598
HWH0111-11	813859 - EXCHANGER SLUDGE	TCLP	Solid/Soil	7470A	128598
HWH0111-12	8081231 - BLAST PAD	TCLP	Solid/Soil	7470A	128598
HWH0111-13	0813805 - EXCHANGER SLUDGE	TCLP	Solid/Soil	7470A	128598
HWH0111-14	8081232 - BLAST PAD	TCLP	Solid/Soil	7470A	128598
HWH0111-15	8081230 - BLAST PAD	TCLP	Solid/Soil	7470A	128625
LCS 440-128487/2-B	Lab Control Sample	TCLP	Solid	7470A	128597
LCS 440-128489/2-B	Lab Control Sample	TCLP	Solid	7470A	128598
LCS 440-128490/2-B	Lab Control Sample	TCLP	Solid	7470A	128625
MB 440-128487/1-B	Method Blank	TCLP	Solid	7470A	128597
MB 440-128489/1-B	Method Blank	TCLP	Solid	7470A	128598
MB 440-128490/1-B	Method Blank	TCLP	Solid	7470A	128625

Analysis Batch: 128784

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-55790-2 MS	HWH0111-02	Total/NA	Solid	7471A	128409
440-55790-2 MSD	HWH0111-02	Total/NA	Solid	7471A	128409
HWH0111-01	08231000 - UNKNOWN TRI WALL / SLUDGE	Total/NA	Solid/Soil	7471A	128409
HWH0111-02	08231001 - UNKNOWN TRI WALL / DRY DUST	Total/NA	Solid/Soil	7471A	128409
HWH0111-03	08231002 - UNKNOWN TRI WALL / DRY DUST	Total/NA	Solid/Soil	7471A	128409
HWH0111-04	F-5700 - SPENT CATALYST	Total/NA	Solid/Soil	7471A	128409
HWH0111-05	0517946B	Total/NA	Solid/Soil	7471A	128409

QC Association Summary

Client: Chevron Hawaii Refinery
Project/Site: [none]

TestAmerica Job ID: HWH0111

Metals (Continued)

Analysis Batch: 128784 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
HWH0111-06	042913 - TOWER CRUDE UNIT 404	Total/NA	Solid/Soil	7471A	128409
HWH0111-07	813808 - EXCHANGER SLUDGE	Total/NA	Solid/Soil	7471A	128409
HWH0111-08	DEMO PIPING BLAST PAD AREA	Total/NA	Solid/Soil	7471A	128409
HWH0111-09	813804 - EXCHANGER SLUDGE	Total/NA	Solid/Soil	7471A	128409
HWH0111-10	813807 - EXCHANGER SLUDGE	Total/NA	Solid/Soil	7471A	128409
HWH0111-11	813859 - EXCHANGER SLUDGE	Total/NA	Solid/Soil	7471A	128409
HWH0111-12	8081231 - BLAST PAD	Total/NA	Solid/Soil	7471A	128409
HWH0111-13	0813805 - EXCHANGER SLUDGE	Total/NA	Solid/Soil	7471A	128409
HWH0111-14	8081232 - BLAST PAD	Total/NA	Solid/Soil	7471A	128409
HWH0111-15	8081230 - BLAST PAD	Total/NA	Solid/Soil	7471A	128409
LCS 440-128409/2-A	Lab Control Sample	Total/NA	Solid	7471A	128409
MB 440-128409/1-A	Method Blank	Total/NA	Solid	7471A	128409

Prep Batch: 128788

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-55811-A-1-I MS	Matrix Spike	TCLP	Solid	3010A	128490
HWH0111-15	8081230 - BLAST PAD	TCLP	Solid/Soil	3010A	128490
LCS 440-128490/2-C	Lab Control Sample	TCLP	Solid	3010A	128490
MB 440-128490/1-C	Method Blank	TCLP	Solid	3010A	128490

Prep Batch: 128789

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-55790-5 MS	HWH0111-05	TCLP	Solid	3010A	128488
HWH0111-05	0517946B	TCLP	Solid/Soil	3010A	128488
LCS 440-128488/2-B	Lab Control Sample	TCLP	Solid	3010A	128488
MB 440-128488/1-B	Method Blank	TCLP	Solid	3010A	128488

Prep Batch: 128793

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-55790-6 MS	HWH0111-06	TCLP	Solid	3010A	128489
HWH0111-06	042913 - TOWER CRUDE UNIT 404	TCLP	Solid/Soil	3010A	128489
HWH0111-07	813808 - EXCHANGER SLUDGE	TCLP	Solid/Soil	3010A	128489
HWH0111-08	DEMO PIPING BLAST PAD AREA	TCLP	Solid/Soil	3010A	128489
HWH0111-09	813804 - EXCHANGER SLUDGE	TCLP	Solid/Soil	3010A	128489
HWH0111-10	813807 - EXCHANGER SLUDGE	TCLP	Solid/Soil	3010A	128489
HWH0111-11	813859 - EXCHANGER SLUDGE	TCLP	Solid/Soil	3010A	128489
HWH0111-12	8081231 - BLAST PAD	TCLP	Solid/Soil	3010A	128489
HWH0111-13	0813805 - EXCHANGER SLUDGE	TCLP	Solid/Soil	3010A	128489
HWH0111-14	8081232 - BLAST PAD	TCLP	Solid/Soil	3010A	128489
LCS 440-128489/2-C	Lab Control Sample	TCLP	Solid	3010A	128489
MB 440-128489/1-C	Method Blank	TCLP	Solid	3010A	128489

Prep Batch: 128795

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-54881-A-3-I MS	Matrix Spike	TCLP	Solid	3010A	128487
HWH0111-01	08231000 - UNKNOWN TRI WALL / SLUDGE	TCLP	Solid/Soil	3010A	128487
HWH0111-02	08231001 - UNKNOWN TRI WALL / DRY DUST	TCLP	Solid/Soil	3010A	128487
HWH0111-03	08231002 - UNKNOWN TRI WALL / DRY DUST	TCLP	Solid/Soil	3010A	128487
HWH0111-04	F-5700 - SPENT CATALYST	TCLP	Solid/Soil	3010A	128487
LCS 440-128487/2-C	Lab Control Sample	TCLP	Solid	3010A	128487
MB 440-128487/1-C	Method Blank	TCLP	Solid	3010A	128487

QC Association Summary

Client: Chevron Hawaii Refinery
Project/Site: [none]

TestAmerica Job ID: HWH0111

Metals (Continued)

Analysis Batch: 128957

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-55811-A-1-I MS	Matrix Spike	TCLP	Solid	6010B	128788
HWH0111-15	8081230 - BLAST PAD	TCLP	Solid/Soil	6010B	128788
LCS 440-128490/2-C	Lab Control Sample	TCLP	Solid	6010B	128788
MB 440-128490/1-C	Method Blank	TCLP	Solid	6010B	128788

Analysis Batch: 128974

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-55790-6 MS	HWH0111-06	TCLP	Solid	6010B	128793
HWH0111-06	042913 - TOWER CRUDE UNIT 404	TCLP	Solid/Soil	6010B	128793
HWH0111-07	813808 - EXCHANGER SLUDGE	TCLP	Solid/Soil	6010B	128793
HWH0111-08	DEMO PIPING BLAST PAD AREA	TCLP	Solid/Soil	6010B	128793
HWH0111-09	813804 - EXCHANGER SLUDGE	TCLP	Solid/Soil	6010B	128793
HWH0111-10	813807 - EXCHANGER SLUDGE	TCLP	Solid/Soil	6010B	128793
HWH0111-11	813859 - EXCHANGER SLUDGE	TCLP	Solid/Soil	6010B	128793
HWH0111-12	8081231 - BLAST PAD	TCLP	Solid/Soil	6010B	128793
HWH0111-13	0813805 - EXCHANGER SLUDGE	TCLP	Solid/Soil	6010B	128793
HWH0111-14	8081232 - BLAST PAD	TCLP	Solid/Soil	6010B	128793
LCS 440-128489/2-C	Lab Control Sample	TCLP	Solid	6010B	128793
MB 440-128489/1-C	Method Blank	TCLP	Solid	6010B	128793

Analysis Batch: 129009

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
HWH0111-06	042913 - TOWER CRUDE UNIT 404	TCLP	Solid/Soil	6010B	128793

Analysis Batch: 129030

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-54881-A-3-I MS	Matrix Spike	TCLP	Solid	6010B	128795
HWH0111-01	08231000 - UNKNOWN TRI WALL / SLUDGE	TCLP	Solid/Soil	6010B	128795
HWH0111-02	08231001 - UNKNOWN TRI WALL / DRY DUST	TCLP	Solid/Soil	6010B	128795
HWH0111-03	08231002 - UNKNOWN TRI WALL / DRY DUST	TCLP	Solid/Soil	6010B	128795
HWH0111-04	F-5700 - SPENT CATALYST	TCLP	Solid/Soil	6010B	128795
LCS 440-128487/2-C	Lab Control Sample	TCLP	Solid	6010B	128795
MB 440-128487/1-C	Method Blank	TCLP	Solid	6010B	128795

Analysis Batch: 129031

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-55790-5 MS	HWH0111-05	TCLP	Solid	6010B	128789
HWH0111-05	0517946B	TCLP	Solid/Soil	6010B	128789
LCS 440-128488/2-B	Lab Control Sample	TCLP	Solid	6010B	128789
MB 440-128488/1-B	Method Blank	TCLP	Solid	6010B	128789

Analysis Batch: 129047

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-55695-A-1-C MS	Matrix Spike	TCLP	Solid	7470A	128707
440-55695-A-1-D MSD	Matrix Spike Duplicate	TCLP	Solid	7470A	128707
HWH0111-05	0517946B	TCLP	Solid/Soil	7470A	128707
LCS 440-128707/2-A	Lab Control Sample	Total/NA	Solid	7470A	128707
MB 440-128707/1-A	Method Blank	Total/NA	Solid	7470A	128707

Lab Chronicle

Client: Chevron Hawaii Refinery
Project/Site: [none]

TestAmerica Job ID: HWH0111

Client Sample ID: 08231000 - UNKNOWN TRI WALL / SLUDGE

Lab Sample ID: HWH0111-01

Date Collected: 08/23/13 22:51
Date Received: 08/28/13 16:10

Matrix: Solid/Soil

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
TCLP	Leach	1311			128487	08/31/13 22:06	CH	TAL IRV
TCLP	Prep	7470A			128597	09/03/13 14:02	MM	TAL IRV
TCLP	Analysis	7470A		1	128769	09/03/13 19:26	DB	TAL IRV
Total/NA	Prep	7471A			128409	09/03/13 11:28	MM	TAL IRV
Total/NA	Analysis	7471A		100	128784	09/03/13 20:10	DB	TAL IRV
TCLP	Leach	1311			128487	08/31/13 22:06	CH	TAL IRV
TCLP	Prep	3010A			128795	09/03/13 23:24	CH	TAL IRV
TCLP	Analysis	6010B		5	129030	09/04/13 15:58	EN	TAL IRV

Client Sample ID: 08231001 - UNKNOWN TRI WALL / DRY DUST

Lab Sample ID: HWH0111-02

Date Collected: 08/23/13 22:52
Date Received: 08/28/13 16:10

Matrix: Solid/Soil

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
TCLP	Leach	1311			128487	08/31/13 22:06	CH	TAL IRV
TCLP	Prep	7470A			128597	09/03/13 14:02	MM	TAL IRV
TCLP	Analysis	7470A		1	128769	09/03/13 19:34	DB	TAL IRV
Total/NA	Prep	7471A			128409	09/03/13 11:28	MM	TAL IRV
Total/NA	Analysis	7471A		100	128784	09/03/13 20:03	DB	TAL IRV
TCLP	Leach	1311			128487	08/31/13 22:06	CH	TAL IRV
TCLP	Prep	3010A			128795	09/03/13 23:24	CH	TAL IRV
TCLP	Analysis	6010B		10	129030	09/04/13 16:01	EN	TAL IRV

Client Sample ID: 08231002 - UNKNOWN TRI WALL / DRY DUST

Lab Sample ID: HWH0111-03

Date Collected: 08/23/13 22:51
Date Received: 08/28/13 16:10

Matrix: Solid/Soil

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
TCLP	Leach	1311			128487	08/31/13 22:06	CH	TAL IRV
TCLP	Prep	7470A			128597	09/03/13 14:02	MM	TAL IRV
TCLP	Analysis	7470A		1	128769	09/03/13 19:36	DB	TAL IRV
Total/NA	Prep	7471A			128409	09/03/13 11:28	MM	TAL IRV
Total/NA	Analysis	7471A		10	128784	09/03/13 20:12	DB	TAL IRV
TCLP	Leach	1311			128487	08/31/13 22:06	CH	TAL IRV
TCLP	Prep	3010A			128795	09/03/13 23:24	CH	TAL IRV
TCLP	Analysis	6010B		5	129030	09/04/13 16:03	EN	TAL IRV

Lab Chronicle

Client: Chevron Hawaii Refinery
Project/Site: [none]

TestAmerica Job ID: HWH0111

Client Sample ID: F-5700 - SPENT CATALYST — Lab Sample ID: HWH0111-04

Date Collected: 08/23/13 22:25 — **Matrix: Solid/Soil**
Date Received: 08/28/13 16:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
TCLP	Leach	1311			128487	08/31/13 22:06	CH	TAL IRV
TCLP	Prep	7470A			128597	09/03/13 14:02	MM	TAL IRV
TCLP	Analysis	7470A		1	128769	09/03/13 19:39	DB	TAL IRV
Total/NA	Prep	7471A			128409	09/03/13 11:28	MM	TAL IRV
Total/NA	Analysis	7471A		2	128784	09/03/13 20:15	DB	TAL IRV
TCLP	Leach	1311			128487	08/31/13 22:06	CH	TAL IRV
TCLP	Prep	3010A			128795	09/03/13 23:24	CH	TAL IRV
TCLP	Analysis	6010B		2	129030	09/04/13 16:04	EN	TAL IRV

Client Sample ID: 0517946B — Lab Sample ID: HWH0111-05

Date Collected: 08/23/13 09:45 — **Matrix: Solid/Soil**
Date Received: 08/28/13 16:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	7471A			128409	09/03/13 11:28	MM	TAL IRV
Total/NA	Analysis	7471A		10	128784	09/03/13 20:25	DB	TAL IRV
TCLP	Leach	1311			128488	08/31/13 22:18	CH	TAL IRV
TCLP	Prep	3010A			128789	09/03/13 23:09	CH	TAL IRV
TCLP	Analysis	6010B		1	129031	09/04/13 15:48	EN	TAL IRV
TCLP	Leach	1311			128488	08/31/13 22:18	CH	TAL IRV
TCLP	Prep	7470A			128707	09/04/13 09:05	MM	TAL IRV
TCLP	Analysis	7470A		1	129047	09/04/13 16:45	DB	TAL IRV

Client Sample ID: 042913 - TOWER CRUDE UNIT 404 — Lab Sample ID: HWH0111-06

Date Collected: 08/28/13 09:00 — **Matrix: Solid/Soil**
Date Received: 08/28/13 16:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
TCLP	Leach	1311			128489	08/31/13 22:26	CH	TAL IRV
TCLP	Prep	7470A			128598	09/03/13 14:02	MM	TAL IRV
TCLP	Analysis	7470A		1	128769	09/03/13 17:51	DB	TAL IRV
Total/NA	Prep	7471A			128409	09/03/13 11:28	MM	TAL IRV
Total/NA	Analysis	7471A		10	128784	09/03/13 20:27	DB	TAL IRV
TCLP	Analysis	6010B		1	128974	09/04/13 12:56	EN	TAL IRV
TCLP	Leach	1311			128489	08/31/13 22:26	CH	TAL IRV
TCLP	Prep	3010A			128793	09/03/13 23:22	CH	TAL IRV
TCLP	Analysis	6010B		1	129009	09/04/13 14:31	EN	TAL IRV

Client Sample ID: 813808 - EXCHANGER SLUDGE — Lab Sample ID: HWH0111-07

Date Collected: 08/28/13 08:36 — **Matrix: Solid/Soil**
Date Received: 08/28/13 16:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
TCLP	Leach	1311			128489	08/31/13 22:26	CH	TAL IRV

Lab Chronicle

Client: Chevron Hawaii Refinery
Project/Site: [none]

TestAmerica Job ID: HWH0111

Client Sample ID: 813808 - EXCHANGER SLUDGE

Lab Sample ID: HWH0111-07
Date Collected: 08/28/13 08:36
Matrix: Solid/Soil
Date Received: 08/28/13 16:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
TCLP	Prep	7470A			128598	09/03/13 14:02	MM	TAL IRV
TCLP	Analysis	7470A		1	128769	09/03/13 17:58	DB	TAL IRV
Total/NA	Prep	7471A			128409	09/03/13 11:28	MM	TAL IRV
Total/NA	Analysis	7471A		10	128784	09/03/13 20:29	DB	TAL IRV
TCLP	Leach	1311			128489	08/31/13 22:26	CH	TAL IRV
TCLP	Prep	3010A			128793	09/03/13 23:22	CH	TAL IRV
TCLP	Analysis	6010B		1	128974	09/04/13 13:10	EN	TAL IRV

Client Sample ID: DEMO PIPING BLAST PAD AREA

Lab Sample ID: HWH0111-08
Date Collected: 08/27/13 08:30
Matrix: Solid/Soil
Date Received: 08/28/13 16:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
TCLP	Leach	1311			128489	08/31/13 22:26	CH	TAL IRV
TCLP	Prep	7470A			128598	09/03/13 14:02	MM	TAL IRV
TCLP	Analysis	7470A		1	128769	09/03/13 18:01	DB	TAL IRV
Total/NA	Prep	7471A			128409	09/03/13 11:28	MM	TAL IRV
Total/NA	Analysis	7471A		1000	128784	09/03/13 20:52	DB	TAL IRV
TCLP	Leach	1311			128489	08/31/13 22:26	CH	TAL IRV
TCLP	Prep	3010A			128793	09/03/13 23:22	CH	TAL IRV
TCLP	Analysis	6010B		1	128974	09/04/13 13:12	EN	TAL IRV

Client Sample ID: 813804 - EXCHANGER SLUDGE

Lab Sample ID: HWH0111-09
Date Collected: 08/28/13 08:43
Matrix: Solid/Soil
Date Received: 08/28/13 16:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
TCLP	Leach	1311			128489	08/31/13 22:26	CH	TAL IRV
TCLP	Prep	7470A			128598	09/03/13 14:02	MM	TAL IRV
TCLP	Analysis	7470A		1	128769	09/03/13 18:03	DB	TAL IRV
Total/NA	Prep	7471A			128409	09/03/13 11:28	MM	TAL IRV
Total/NA	Analysis	7471A		10000	128784	09/03/13 20:55	DB	TAL IRV
TCLP	Leach	1311			128489	08/31/13 22:26	CH	TAL IRV
TCLP	Prep	3010A			128793	09/03/13 23:22	CH	TAL IRV
TCLP	Analysis	6010B		1	128974	09/04/13 13:15	EN	TAL IRV

Client Sample ID: 813807 - EXCHANGER SLUDGE

Lab Sample ID: HWH0111-10
Date Collected: 08/28/13 14:05
Matrix: Solid/Soil
Date Received: 08/28/13 16:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
TCLP	Leach	1311			128489	08/31/13 22:26	CH	TAL IRV
TCLP	Prep	7470A			128598	09/03/13 14:02	MM	TAL IRV
TCLP	Analysis	7470A		1	128769	09/03/13 18:06	DB	TAL IRV

Lab Chronicle

Client: Chevron Hawaii Refinery
Project/Site: [none]

TestAmerica Job ID: HWH0111

Client Sample ID: 813807 - EXCHANGER SLUDGE

Lab Sample ID: HWH0111-10
Date Collected: 08/28/13 14:05
Matrix: Solid/Soil
Date Received: 08/28/13 16:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	7471A			128409	09/03/13 11:28	MM	TAL IRV
Total/NA	Analysis	7471A		10	128784	09/03/13 20:37	DB	TAL IRV
TCLP	Leach	1311			128489	08/31/13 22:26	CH	TAL IRV
TCLP	Prep	3010A			128793	09/03/13 23:22	CH	TAL IRV
TCLP	Analysis	6010B		1	128974	09/04/13 13:16	EN	TAL IRV

Client Sample ID: 813859 - EXCHANGER SLUDGE

Lab Sample ID: HWH0111-11
Date Collected: 08/26/13 14:00
Matrix: Solid/Soil
Date Received: 08/28/13 16:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
TCLP	Leach	1311			128489	08/31/13 22:26	CH	TAL IRV
TCLP	Prep	7470A			128598	09/03/13 14:02	MM	TAL IRV
TCLP	Analysis	7470A		1	128769	09/03/13 18:13	DB	TAL IRV
Total/NA	Prep	7471A			128409	09/03/13 11:28	MM	TAL IRV
Total/NA	Analysis	7471A		10	128784	09/03/13 20:39	DB	TAL IRV
TCLP	Leach	1311			128489	08/31/13 22:26	CH	TAL IRV
TCLP	Prep	3010A			128793	09/03/13 23:22	CH	TAL IRV
TCLP	Analysis	6010B		1	128974	09/04/13 13:18	EN	TAL IRV

Client Sample ID: 8081231 - BLAST PAD

Lab Sample ID: HWH0111-12
Date Collected: 08/26/13 13:10
Matrix: Solid/Soil
Date Received: 08/28/13 16:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
TCLP	Leach	1311			128489	08/31/13 22:26	CH	TAL IRV
TCLP	Prep	7470A			128598	09/03/13 14:02	MM	TAL IRV
TCLP	Analysis	7470A		1	128769	09/03/13 18:16	DB	TAL IRV
Total/NA	Prep	7471A			128409	09/03/13 11:28	MM	TAL IRV
Total/NA	Analysis	7471A		1	128784	09/03/13 21:20	DB	TAL IRV
TCLP	Leach	1311			128489	08/31/13 22:26	CH	TAL IRV
TCLP	Prep	3010A			128793	09/03/13 23:22	CH	TAL IRV
TCLP	Analysis	6010B		1	128974	09/04/13 13:20	EN	TAL IRV

Client Sample ID: 0813805 - EXCHANGER SLUDGE

Lab Sample ID: HWH0111-13
Date Collected: 08/23/13 21:55
Matrix: Solid/Soil
Date Received: 08/28/13 16:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
TCLP	Leach	1311			128489	08/31/13 22:26	CH	TAL IRV
TCLP	Prep	7470A			128598	09/03/13 14:02	MM	TAL IRV
TCLP	Analysis	7470A		1	128769	09/03/13 18:18	DB	TAL IRV
Total/NA	Prep	7471A			128409	09/03/13 11:28	MM	TAL IRV
Total/NA	Analysis	7471A		1000	128784	09/03/13 20:44	DB	TAL IRV

Lab Chronicle

Client: Chevron Hawaii Refinery
Project/Site: [none]

TestAmerica Job ID: HWH0111

Client Sample ID: 0813805 - EXCHANGER SLUDGE

Lab Sample ID: HWH0111-13

Date Collected: 08/23/13 21:55
Matrix: Solid/Soil
Date Received: 08/28/13 16:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
TCLP	Leach	1311			128489	08/31/13 22:26	CH	TAL IRV
TCLP	Prep	3010A			128793	09/03/13 23:22	CH	TAL IRV
TCLP	Analysis	6010B		1	128974	09/04/13 13:23	EN	TAL IRV

Client Sample ID: 8081232 - BLAST PAD

Lab Sample ID: HWH0111-14

Date Collected: 08/23/13 22:52
Matrix: Solid/Soil
Date Received: 08/28/13 16:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
TCLP	Leach	1311			128489	08/31/13 22:26	CH	TAL IRV
TCLP	Prep	7470A			128598	09/03/13 14:02	MM	TAL IRV
TCLP	Analysis	7470A		1	128769	09/03/13 18:21	DB	TAL IRV
Total/NA	Prep	7471A			128409	09/03/13 11:28	MM	TAL IRV
Total/NA	Analysis	7471A		10	128784	09/03/13 20:57	DB	TAL IRV
TCLP	Leach	1311			128489	08/31/13 22:26	CH	TAL IRV
TCLP	Prep	3010A			128793	09/03/13 23:22	CH	TAL IRV
TCLP	Analysis	6010B		1	128974	09/04/13 13:25	EN	TAL IRV

Client Sample ID: 8081230 - BLAST PAD

Lab Sample ID: HWH0111-15

Date Collected: 08/23/13 13:05
Matrix: Solid/Soil
Date Received: 08/28/13 16:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
TCLP	Leach	1311			128490	08/31/13 23:26	CH	TAL IRV
TCLP	Prep	7470A			128625	09/03/13 14:02	MM	TAL IRV
TCLP	Analysis	7470A		1	128769	09/03/13 18:40	DB	TAL IRV
Total/NA	Prep	7471A			128409	09/03/13 11:28	MM	TAL IRV
Total/NA	Analysis	7471A		10	128784	09/03/13 21:00	DB	TAL IRV
TCLP	Leach	1311			128490	08/31/13 23:26	CH	TAL IRV
TCLP	Prep	3010A			128788	09/03/13 23:07	CH	TAL IRV
TCLP	Analysis	6010B		1	128957	09/04/13 12:43	MP	TAL IRV

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

Certification Summary

Client: Chevron Hawaii Refinery
Project/Site: [none]

TestAmerica Job ID: HWH0111

Laboratory: TestAmerica Honolulu

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Florida	NELAP	4	E87907	06-30-14
Hawaii	State Program	9	N/A	06-28-14
USDA	Federal		HON-S-206	01-31-15

Laboratory: TestAmerica Irvine

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Alaska	State Program	10	CA01531	06-30-14
Arizona	State Program	9	AZ0671	10-13-13
California	LA Cty Sanitation Districts	9	10256	01-31-14
California	NELAP	9	1108CA	01-31-14
California	State Program	9	2706	06-30-14
Guam	State Program	9	Cert. No. 12.002r	01-28-14 *
Hawaii	State Program	9	N/A	01-31-14
Nevada	State Program	9	CA015312007A	07-31-14
New Mexico	State Program	6	N/A	01-31-14
Northern Mariana Islands	State Program	9	MP0002	01-31-14
Oregon	NELAP	10	4005	09-12-13
USDA	Federal		P330-09-00080	06-06-14
USEPA UCMR	Federal	1	CA01531	01-31-15

* Expired certification is currently pending renewal and is considered valid.

Method Summary

Client: Chevron Hawaii Refinery
Project/Site: [none]

TestAmerica Job ID: HWH0111

Method	Method Description	Protocol	Laboratory
6010B	Metals (ICP)	SW846	TAL IRV
7470A	Mercury (CVAA)	SW846	TAL IRV
7471A	Mercury (CVAA)	SW846	TAL IRV

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

Honolulu
99-193 Aiea Heights Drive
Suite 121
Aiea, HI 96701
phone 808.486.5227 fax 808.486.2456

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

Client Contact	Project Manager: Alice Armstrong	Site Contact:	Date: 8/28/2013	COC No:
Chevron Hawaii Refinery	Tel/Fax: 682-2205 / 682-2214	Lab Contact:	Carrier:	___ of ___ COCs
91-480 Malakole St.	Analysis Turnaround Time			Job No. HWH0115 8/28/13
Kapolei, HI 96707	Calendar (C) or Work Days (W) _____			SDG No. HWH0111
Phone 808-682-5711	TAT if different from Below			
FAX 808-682-2214	☐ 2 week			
Project Name:	☐ 1 week			
Site:	☐ 2 days			
P O #	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type	Matrix	# of Cont.	Filtered Sample		TCLP RCRA Metals	TCLP RCRA benzene	Total Benzene	Total Mercury	pH	Water Content	Total Lead	TCLP Semi-Volatiles	TCLP Volatiles	Total Metals	PCBs	Total Chromium	Total Sulfur	BTU				Sample Specific Notes:
08231000 - Unknown Tri Wall w/ sludge	8/23/13	10:51 PM	grab	solid	1			X			X														HWH0111-01
08231001 - Unknown Tri Wall w/ dry dust	8/23/13	10:52 PM	grab	solid	1			X			X														-02
08231002 - Unknown Tri Wall w/ dry dust	8/23/13	10:51 PM	grab	solid	1			X			X														-03
F-5700 - Spent Catalyst	8/23/13	10:25 PM	grab	solid	1			X			X														-04
0517946B	8/23/13	9:45 AM	grab	*	1			X			X														-05
042913 - Tower Crude Unit 404	8/28/13	9:00 AM	grab	solid	1			X			X														-06
813808 - Exchanger Sludge	8/28/13	8:36 AM	grab	sludge	1			X			X														-07
Demo Piping Blast Pad Area	8/27/13	8:30 AM	grab	solid	1			X			X														-08
813804 - Exchanger Sludge	8/28/13	8:43 AM	grab	sludge	1			X			X														-09
813807 - Exchanger Sludge	8/28/13	2:05 PM	grab	sludge	1			X			X														-10
813859 - Exchanger Sludge	8/26/13	2:00 PM	grab	sludge	1			X			X														-11
8081231 - Blast Pad	8/26/13	1:10 PM	grab	solid	1			X			X														-12

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other ___Chill___XX_____

Possible Hazard Identification
☐ *Non-Hazard* ☐ *Flammable* ☐ *Skin Irritant* *Poison B* ☐ *Unknown* ☑

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ *Return To Client* ☑ *Disposal By Lab* ☐ *Archive For* _____ *Months*

Special Instructions/Requirements & Comments: Email results per previous instructions to mmlo@chevron.com and AliceArmstrong @chevron.com **1 WEEK TAT REQUESTED for all samples/ NOTE:**
***Line 21 sample mixture of solid and liquid**

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Alice Armstrong	Chevron Hawaii Refinery	8/28/13 11:55 AM	[illegible]	TA	8/28/13 1600
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
			[illegible]		
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:

9/5/2013

Honolulu
99-193 Aiea Heights Drive
Suite 121
Aiea, HI 96701
phone 808.486.5227 fax 808.486.2456

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

Client Contact	Project Manager: Alice Armstrong	Site Contact:	Date: 8/28/2013	COC No:
Chevron Hawaii Refinery	Tel/Fax: 682-2205 / 682-2214	Lab Contact:	Carrier:	____ of ____ COCs
91-480 Malakole St.	Analysis Turnaround Time			Job No. HWH0111
Kapolei, HI 96707	Calendar (C) or Work Days (W) _____			SDG No.
Phone 808-682-5711	TAT if different from Below			
FAX 808-682-2214	☐ 2 week			
Project Name:	☐ 1 week			
Site:	☐ 2 days			
P O #	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type	Matrix	# of Cont.	Filtered Sample	TCLP RCRA Metals	TCLP RCRA benzene	Total Benzene	Total Mercury	pH	Water Content	Total Lead	TCLP Semi-Volatiles	TCLP Volatiles	Total Metals	PCBs	Total Chromium	Total Sulfur	BTU	Sample Specific Notes:
0813805 - Echanger Sludge	8/23/13	9:55 PM	grab	solid	1		X			X											HWH0111-13
8081232 - Blast Pad	8/23/13	10:52 PM	grab	sludge	1		X			X											-14
8081230 - Blast Pad	8/23/13	1:05 PM	grab	solid	1		X			X											-15

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other ___Chill___XX____

Possible Hazard Identification
☐ *Non-Hazard* ☐ *Flammable* ☐ *Skin Irritant* *Poison B* ☐ *Unknown* ☑

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ *Return To Client* ☑ *Disposal By Lab* ☐ *Archive For* _____ *Months*

Special Instructions/Requirements & Comments: Email results per previous instructions to mmlo@chevron.com and AliceArmstrong @chevron.com **1 WEEK TAT REQUESTED for all samples/ NOTE:**
***Line 21 sample mixture of solid and liquid**

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Alice Armstrong	Chevron Hawaii Refinery	8/28/13 11:53AM		TA	8/28/13 1610
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Rush TAT Confirmation (Initial/Date) _____

Sample Receipt Checklist

Client Name: Chevron Date/ Time Received: 8/28/13 1610

Received By: n

Matrices: Solid Carrier: CUH Airbill# :

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Chain of Custody present?	Yes ☑	No ☐	☐
Chain of Custody Signed when relinquished and received?	Yes ☑	No ☐	
Chain of Custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sample containers on ice?	Yes ☑	No ☐	Type: Wet
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Water - VOA Vials have Zero Headspace?	Yes ☐	No ☐	No VOA vials present ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	Not Checked: ☑
pH Adjusted?	Yes ☐	No ☑	Final pH:
Encores / Mi-VOC / 5035 Vials Present?	Yes ☐	No ☑	Location:
Sample Filtration Needed?	Yes ☐	No ☑	Filtered in Field: ☐
Dry Weight Corrected Results?	Yes ☐	No ☑	Take Action: ☐
DODQSM / QAPP Project?	Yes ☐	No ☑	Type:

Temperature Blank Present? Yes ☐ No ☑

Sample Container Temperature: 4 °C

Comments/ Sampling Handling Notes:

ED_001593_00007052

Veolia ES Technical Solutions, L.L

3h WIP 499455

VEOLIA

WASTESTREAM INFORMATION

☐ Recertification
VEOLIA LOCATION ☐ Invoice Address ☐ Manifest from - blank if direct

ADDRESS _____ CITY _____ ST _____

VEOLIA TSDF requested _____ Technology requested _____ Generator No. 598065 **Generator EPA ID** HIT160010005

1. Generator Name CHEVRON PRODUCTS COMPANY **Generator State #** _____

Address HAWAII REFINERY 91-480 MALAKOLE STREET **State Wastestream #** _____

City KAPOLEI **State** HI **Country** US **Zip** 96707 1807

SIC Code 2911 **1st NAICS Code** 32411 **2nd NAICS Code** _____ **3rd NAICS Code** _____

Source G14 **Origin** _____ **Form** W603 **System Type** _____

2. Waste Name EXCHANGER SLUDGE W/ MERCURY K050 **Lab or Waste** _____

3. Process Generating REMOVAL OF SLUDGE FR0M HEAT EXCHANGER

4. Shipping Name HAZARDOUS WASTE, LIQUID, n.o.s.

Hazard Class 9 **UN/NA Number** NA3082 **PkgGrp** III **Sub Hzds** _____ **RQ Amt (lbs.)** 0

RQ Desc:	1.	2.
DOT Desc:	1. PETROLEUM SLUDGE, MERCURY	2.

5. Waste Codes K050, D009-IM, 241

Wastewater (Y/N) N **Sub-Category** IM - INORGANIC MERCURY >=260MG/KG TOTAL HG THAT INCLUDES INCINERATOR & RMERC RESIDUES

6. Physical and chemical

pH Lo 5	**Specific Gravity Lo** 1	**Flash Point (F) Lo** 200	**Water Solubility Lo** 0	**BTU/lb Lo** 6000
pH Hi 9	**Specific Gravity Hi** 1.2	**Flash Point (F) Hi** 200	**Water Solubility Hi** 0	**BTU/lb Hi** 6000

Solids:

Suspended Lo 0	**Settleable (%) Lo** 100	**Dissolved (%) Lo** 0	**% Ash Lo** 0	**Free Liquid (%) Lo** 0
Suspended Hi 0	**Settleable (%) Hi** 100	**Dissolved (%) Hi** 0	**% Ash Hi** 0	**Free Liquid (%) Hi** 0

Physical State:	**Hazardous**	**Layer** C - Single-Phase
Physical State 1 L - liquid	**Haz. Char. 1** _____	**Top** A - high (syrup)
Physical State 2 _____	**Haz. Char. 2** _____	**Middle** _____
Physical State 3 _____	**Haz. Char. 3** _____	**Bottom** _____

Halogens:

Bromine (%) Lo _____	**Chlorine (%) Lo** _____	**Fluorine (%) Lo** _____	**Iodine (%) Lo** _____	**Color 1** BLK
Bromine (%) Hi _____	**Chlorine (%) Hi** _____	**Fluorine (%) Hi** _____	**Iodine (%) Hi** _____	**Color 2** _____
				Intensity _____

Odor Intensity B - mild
Description PETROLEUM

Contains Used Oil? ___ **HOC < 1000 ppm** ___ **HOC > 1000 ppm** ___

WIP NO. 499455

7. Chemical Composition:

Component	Low	High	%/PPM/PPB
ARSENIC	2.9	2.9	PPM
BENZ(A)ANTHRACENE	1	5	PPM
BENZENE	20	40	PPM
CHRYSENE	2	10	PPM
ETHYL BENZENE	10	30	PPM
FLUORENE	0	1	PPM
MERCURY-TOTALS	0.81	0.81	PPM
NAPHTHALENE (CRUDE OR REFINED)	90	130	PPM
PYRENE	5	15	PPM
TOLUENE	20	40	PPM
BENZO (G,H,I) PERYLENE	0	1	PPM
XYLENE	70	100	PPM
PETROLEUM TANK BOTTOM SLUDGE	99	100	%

Other	Yes/N		
8. Is the wastestream being imported into the USA?	No	**PCB concentration:**	0.00 **PPM**
9. Does the wastestream contain PCBs regulated by 40 CPR?	No		
10.Is the wastestream subject to the Marine Pollutant Regulations?	No		
11.Is the wastestream subject to Benzene NESHAP?	Yes	**Benzene concentration:**	40.00 **PPM**
If Yes, is the wastestream subject to Notification and Control Reqs?	Yes	**TAB at Facility:**	0.00 **Mg/Yr**
Does it contain >= 10% water?	No	**Vol. Org. Conc., if known:**	501.00 **PPMW**
12.Is the wastestream subject to RCRA subpart CC controls?	Yes		
CC approved analytical method? No **General Knowledge?** Yes			
13.Is the wastestream from a CERCLA or state mandated cleanup?	No		

14. Reclaim Composition: There are no reclaim components

15.Container Information (Identify UN container marking if

Packaging: Bulk ____ Type/Size _____ **Bulk Liquid:** ___ Type/Size _____ **Drum:**_____ Type/Size_____

Other: _____

Shipping Frequency: Units _____ Per Month _____ Quarter_____ Year _____ One Time _____ Other_____

16.Additional Information:

_____

_____

_____

Is analytical or an MSDS available that describes the waste? Yes ____ No ____ If Yes, please attach.

WIP NO. 499455

GENERATOR CERTIFICATION

I hereby certify that all information submitted in this and all attached documents contains true and accurate descriptions of this waste. Any sample submitted is representative as defined in 40 CFR 261 - Appendix I or by using an equivalent method. All relevant information regarding known or suspected hazards in the possession of the generator has been disclosed. I authorize sampling of any waste shipment for purposes of recertification.

NAME (Print or Type)	PHONE	DATE
SIGNATURE	TITLE	

FACILITY

If approved for management, Veolia has all the necessary permits and licenses for the waste that has been characterized and identified by this profile.

TSDF PROCESSING USE ONLY: PPE REQUIRED? _____ **DESCRIBE:** _____

WIP NO. 499455

27634735

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST	1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Manifest Tracking Number
	HIT160010005	2	800-424-9300	002080341 GBF

5. Generator's Name and Mailing Address
CHEVRON REFINERY COMPANY
91-480 MALAKOLE STREET
KAPOLEI, HAWAII 96707
Generator's Phone: 808 682-5711

Generator's Site Address (if different than mailing address)

6. Transporter 1 Company Name: OASIS ENVIRONMENTAL GROUP, LLC — U.S. EPA ID Number: HIT000140756

7. Transporter 2 Company Name: MATSON NAVIGATION — U.S. EPA ID Number: CAD006912620

8. Designated Facility Name and Site Address
VEOLIA ENVIRONMENTAL SERVICES-AZUSA
1704 WEST FIRST STREET
AZUSA, CA 91702
Facility's Phone: 626-334-5117
U.S. EPA ID Number: CAD008302903

9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes		
X	1. ~~UN1950, Waste Aerosols, flammable, (each not exceeding 1 L capacity), 2.1~~ DWK				P			
2 X	2. UN1307, Waste Xylene Solutions (Contains Dimethylbenzene and ETHYL BENZENE), 3, PGIII FP=<23°C	1	DF 55	48	P	D001	331	
3 X	3. UN3265, Corrosive liquid, acidic, organic, n.o.s. (Contains Mercury and Sulfur trioxide), 8, PGIII	10	DF 55	4277	P	D002	491	
4 X	4. NA3077, Hazardous waste, solid, n.o.s. (Contains Lead and SANDBLAST GRIT), 9, PGIII	3	DM 55	1756	P	D008	181	

14. Special Handling Instructions and Additional Information
1) ~~ERG #: 126; WIP497971~~ 2) WIP529619 RED MARKER-DYE; ERG #: 130 3) ERG #: 153; WIP514323 ACID MERCURY SLUDGE 4) ERG #: 171; WIP520920
JOB# 14-155 OASIS MANIFEST# 2014-016 OASIS CHEMTREC# CCN669922

15. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent.
I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

Generator's/Offeror's Printed/Typed Name: TOBY BARNES — Signature: Toby C Barnes — Month 2 Day 10 Year 14

16. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit: Date leaving U.S.:
Transporter signature (for exports only):

17. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name: Armando J. Perez — Signature: [signature] — Month 2 Day 10 Year 14
Transporter 2 Printed/Typed Name: MILA YAMAMOTO — Signature: Mila Yamamoto — Month 2 Day 13 Year 14

18. Discrepancy
18a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
Manifest Reference Number:

18b. Alternate Facility (or Generator) — U.S. EPA ID Number
Facility's Phone:

18c. Signature of Alternate Facility (or Generator) — Month Day Year

19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)
1. 2. H061 3. H141 4. H141

20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a
Printed/Typed Name: Alondra Arias — Signature: Alondra Arias — Month 2 Day 24 Year 14

GENERATOR / INT'L / TRANSPORTER / DESIGNATED FACILITY

EPA Form 8700-22 (Rev. 8-05) Previous editions are obsolete.

DESIGNATED FACILITY TO DESTINATION STATE (IF REQUIRED)

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST (Continuation Sheet)	21. Generator ID Number HIT160010005	22. Page 2 of 2	23. Manifest Tracking Number 002080341GBF

24. Generator's Name
CHEVRON REFINERY COMPANY
91-480 MALAKOLE STREET
KAPOLEI, HAWAII 96707

25. Transporter 3 Company Name BED ROCK INC DBA TSMITCO — U.S. EPA ID Number MOD095038998

26. Transporter _____ Company Name — U.S. EPA ID Number

27a. HM	27b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	28. Containers No.	28. Containers Type	29. Total Quantity	30. Unit Wt./Vol.	31. Waste Codes		
X	5) NA3077, Hazardous waste, solid, n.o.s. (Contains Mercury and Petroleum Sludge), 9, PGIII	1	DM 55	212	P	D009	491	
X	6) NA3077, Hazardous waste, solid, n.o.s. (Contains Mercury), 9, PGIII	3	DF 5	76	P	D009	181	
X	7) NA3077, Hazardous waste, solid, n.o.s. (Contains Mercury), 9, PGIII	2	DF 55	111	P	D009	181	
X	8) NA3077, Hazardous waste, solid, n.o.s. (Contains Mercury), 9, PGIII	6	DM 55	825	P	D009	181	
X	9) NON RCRA HAZARDOUS WASTE SOLID (Contains PETROLEUM ASPHALT and Surfactants)	1	DM 55	249	P	331		
X	10) UN2809, Waste Mercury, 8, PGIII	1	DF ~~5~~ 1	5	P	D009	725	
X	11) NA3082, Hazardous waste, liquid, n.o.s. (Contains Mercury and SANDBLAST GRIT), 9, PGIII	1	DM 55	83	P	D009	352	
X	12) NA3077, Hazardous waste, solid, n.o.s. (Contains Lead and SANDBLAST GRIT), 9, PGIII	1	DM 85	600	P	D008	181	
X	13) NA3077, Hazardous Waste, Solid N.O.S. (Contains Mercury ~~and Petroleum Sludge~~, 9, PG III) DK	3	CF Triwall	502	P	D009	181	
X	14) NON RCRA Hazardous Waste Solid (contains Petroleum Asphalt and Surfactants)	1	DM 85	277	P	~~D009~~ 331	DK	

32. Special Handling Instructions and Additional Information
5) ERG #: 171; WIP497663 MERCURY SCALE 6) ERG #: 171; WIP446389 MERCURY PPE 7) ERG #: 171; WIP446389 MERCURY PPE 8) ERG #: 171; WIP446389 MERCURY PPE 9) WIP530173 MASTIC 500NF 10) ERG #: 172; Profile WIP448399 11) ERG #: 171; WIP478424 -WATER SLUDGE 12) ERG #: 171; WIP520920 13) WIP 446389 ERG#171 14) WIP 530173 ERG#172

TRANSPORTER

33. Transporter _____ Acknowledgment of Receipt of Materials
Printed/Typed Name J.W. Johnson III (SLC) Signature [signature] Month 12 Day 24 Year 14

34. Transporter _____ Acknowledgment of Receipt of Materials
Printed/Typed Name Signature Month Day Year

DESIGNATED FACILITY

35. Discrepancy

36. Hazardous Waste Report Management Method Code (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

H141	H141	H141	H141	H141
H141	H141	H141	H141	H141

EPA Form 8700-22A (Rev. 3-05) Previous editions are obsolete.

DESIGNATED FACILITY TO DESTINATION STATE (IF REQUIRED)

Veolia ES Technical Solutions, L.L.(3j

WIP No. 514323

VEOLIA

WASTESTREAM INFORMATION

☐ Recertification
VEOLIA LOCATION
☐ Invoice Address
☐ Manifest from - blank if direct

ADDRESS _____ CITY _____ ST _____

VEOLIA TSDF requested ____ Technology requested ____ Generator No. 598065 **Generator EPA ID** HIT160010005

1. Generator Name CHEVRON PRODUCTS COMPANY **Generator State #** _____

Address HAWAII REFINERY 91-480 MALAKOLE STREET **State Wastestream #** _____

City KAPOLEI **State** HI **Country** US **Zip** 96707 1807

SIC Code 2911 **1st NAICS Code** 32411 **2nd NAICS Code** _____ **3rd NAICS Code** _____

Source G14 **Origin** _____ **Form** W603 **System Type** _____

2. Waste Name LIQUID SULFURIC ACID SLUDGE W/ MERCURY **Lab or Waste** _____

3. Process Generating sludge from stainless steel piping

4. Shipping Name CORROSIVE LIQUID, ACIDIC, ORGANIC,n.o.s.

Hazard Class 8 **UN/NA Number** UN3265 **PkgGrp** I, II, II **Sub Hzds** _____ **RQ Amt (lbs.)** 0

RQ Desc:	1.	2.
DOT Desc:	1. SULFURIC ACID, MERCURY	2.

5. Waste Codes D002, 491

Wastewater (Y/N) N **Sub-Category** _____

6. Physical and chemical

pH Lo 0	**Specific Gravity Lo** 0	**Flash Point (F) Lo** 0	**Water Solubility Lo** 0	**BTU/lb Lo** 0
pH Hi 2	**Specific Gravity Hi** 0	**Flash Point (F) Hi** 0	**Water Solubility Hi** 0	**BTU/lb Hi** 0

Solids:

Suspended Lo 0	**Settleable (%) Lo** 0	**Dissolved (%) Lo** 0	**% Ash Lo** 0	**Free Liquid (%) Lo** 0
Suspended Hi 0	**Settleable (%) Hi** 0	**Dissolved (%) Hi** 0	**% Ash Hi** 0	**Free Liquid (%) Hi** 0

Physical State:	**Hazardous**	**Layer** C - Single-Phase
Physical State 1 M - semi-solid	**Haz. Char. 1** _____	**Top** A - high (syrup)
Physical State 2 _____	**Haz. Char. 2** _____	**Middle** _____
Physical State 3 _____	**Haz. Char. 3** _____	**Bottom** _____

Halogens:

Bromine (%) Lo ____	**Chlorine (%) Lo** 0	**Fluorine (%) Lo** ____	**Iodine (%) Lo** ____	**Color 1** VAR
Bromine (%) Hi ____	**Chlorine (%) Hi** 0	**Fluorine (%) Hi** ____	**Iodine (%) Hi** ____	**Color 2** _____
				Intensity _____

Odor Intensity B - mild **Contains Used Oil?** No **HOC < 1000 ppm** ___ **HOC > 1000 ppm** ___

Description _____

WIP NO. 514323

7. Chemical Composition:

Component	Low	High	%/PPM/PPB
CHROMIUM-TOTALS	6.9	9.5	PPM
MERCURY-TOTALS	1900	5300	PPM
SULFURIC ACID, <=51%	5	5	%
IRON SULFATE SLUDGE	10	10	%
PETROLEUM TANK SLUDGE (DIRT,IRON,OIL)	85	85	%

Other	Yes/N		
8. Is the wastestream being imported into the USA?	No		
9. Does the wastestream contain PCBs regulated by 40 CPR?	No	**PCB concentration:**	0.00 **PPM**
10.Is the wastestream subject to the Marine Pollutant Regulations?	No		
11.Is the wastestream subject to Benzene NESHAP?	Yes	**Benzene concentration:**	0.00 **PPM**
If Yes, is the wastestream subject to Notification and Control Reqs?	No		
Does it contain >= 10% water?		**TAB at Facility:**	2.00 **Mg/Yr**
12.Is the wastestream subject to RCRA subpart CC controls?	No	**Vol. Org. Conc., if known:**	0.00 **PPMW**
CC approved analytical method? **General Knowledge?**			
13.Is the wastestream from a CERCLA or state mandated cleanup?	No		

14. Reclaim Composition: There are no reclaim components

15.Container Information (Identify UN container marking if

Packaging: Bulk ____ Type/Size _____ **Bulk Liquid:** ____ Type/Size _____ **Drum:** _____ Type/Size _____

Other: _____

Shipping Frequency: Units _____ Per Month _____ Quarter _____ Year _____ One Time _____ Other _____

16.Additional Information:

_____

_____

_____

Is analytical or an MSDS available that describes the waste? Yes ____ No ____ If Yes, please attach.

GENERATOR CERTIFICATION

I hereby certify that all information submitted in this and all attached documents contains true and accurate descriptions of this waste. Any sample submitted is representative as defined in 40 CFR 261 - Appendix I or by using an equivalent method. All relevant information regarding known or suspected hazards in the possession of the generator has been disclosed. I authorize sampling of any waste shipment for purposes of recertification.

NAME (Print or Type) _____ PHONE _____ DATE _____

SIGNATURE _____ TITLE _____

FACILITY

If approved for management, Veolia has all the necessary permits and licenses for the waste that has been characterized and identified by this profile.

TSDF PROCESSING USE ONLY: PPE REQUIRED? _____ **DESCRIBE:** _____

WIP NO. 514323

Land Disposal Restriction Notification Form

Generator Name CHEVRON PRODUCTS COMPANY

EPA ID Number HIT160010005 Manifest 000652812VES

This notice is being provided in accordance with 40 CFR 268.7 to inform you that this shipment contains waste restricted from land disposal by the USEPA under the land disposal restriction program. Identified below for each container is the designation of the waste as a wastewater or non-wastewater, the Clean Water Act (CWA) permit status associated with the treatment/disposal facility, applicable waste codes and any corresponding subcategories, list of any F001-F005 solvent constituents that are present in the waste, and any underlying hazardous constituents (UHC) that are present.

Container Number XN-2142252000-001 (1/ 1)

WIP / Approval Code:	794754 / SLM-DEBRIS(NS)
Form Designation / CWA Status:	Non-Wastewater / Non-CWA
Waste Codes (Subcategories):	D009 (LOW MERCURY, TOTAL MERCURY <260 MG/KG THAT ARE RESIDUES FROM RMERC)
Constituents (F001 - F005):	None
UHCs Present:	None
Treatment Requirements:	Restricted waste requires treatment to applicable standards.
Additional Notices:	

I hearby certify that all information in this and associated land disposal restriction documents is complete and accurate to the best of my knowledge and information.

Signature

Title ENVIRONMENTAL SPECIALIST Date 1/26/2015

Manifest & LDR Tracking Sheet

NEIC Outstanding Questions - Question # 6

April 8, 2016

Year	#	Manifest #	Ship Date	WIP / Profile #	Comments
2013	2013-01	001777168GBF	4/12/2013	440433	LDRs provided to EPA
				440432	
				440428	
				443313	
				440838	
				440422	
				440769	
	2013-02	001777186GBF	4/25/2013	446389	LDRs provided to EPA
	2013-03	001777198GBF	5/8/2013	440422	LDRs provided to EPA
				446389	
				448399	
	2013-04	001777213GBF	5/24/2013	451863	LDRs provided to EPA
				446389	
	2013-05	001777219GBF	6/15/2013	449611	LDRs provided to EPA
				446389	
	2013-06	001777220GBF	6/15/2013	**440422**	Unable to locate LDRs WIP No. 451864 Non-RCRA, therefore no LDR necessary
				446389	
				448399	
				449589	
				452565	
				452569	
				451864	
	2013-07	001777249GBF	7/25/2013	452894	LDRs provided to EPA
				440838	
				452562	
				452896	
				451864	
				446389	
				452566	
	2013-08	001777253GBF	8/8/2013	476654	LDRs provided to EPA
				476994	
				477010	
				478178	
				478302	
				478304	
				478313	
				482500	
	2013-09	001777254GBF	8/8/2013	446389	Unable to locate 1 LDR (WIP # 477872)
				448399	
				452562	
				477872	
				478424	
	2013-10	001777279GBF	9/6/2013	484868	LDRs provided to EPA
				446389	
				449589	
				451864	
				452562	
				478424	
				478604	
				484901	
	2013-11	001777281GBF	9/6/2013	478424	LDR provided to EPA
	2013-12	002080491GBF	10/9/2013	477766	LDRs provided to EPA
				478304	
				440436	
				497971	
				478178	
				721712	
				452896	
				476994	

Updated: 4/8/2016

2013	2013-13	002080492GBF	10/9/2013	446389	Unable to locate 1 LDR (WIP # 514323)
				451863	
				452562	
				477872	
				495831	
				495910	
				514323	
	2013-14	002080501GBF	10/16/2013	499455	LDRs provided to EPA
				499914	
				446389	
				452562	
	2013-15	002080502GBF	10/17/2013	452562	LDR provided to EPA
	2013-16	002080302GBF	11/26/2013	**440490**	Unable to locate 2 LDRs (WIP #'s 440490 & 507545)
				443333	
				451864	
				452894	
				476994	
				497316	
				507543	
				507544	
				507545	
				507687	
				507954	
	2013-17	002080303GBF	11/30/2013	440422	LDRs provided to EPA
				499455	
				503248	
				509957	
				452896	
				446389	
	2013-18	000084617DAT	2013	PSC	LDRs provided to EPA
	2013-19	001777116GBF	2013	PSC	LDRs provided to EPA
2014	2014-01	002080326GBF	1/17/2014	442633	LDRs provided to EPA
				446389	
				452562	
				497663	
				507956	
				520920	
	2014-02	002080354GBF	3/4/2014	507956	LDR's provided to EPA
				446389	
	2014-03	002080341GBF	4/14/2014	446389	Unable to locate 1 LDR (WIP # 514323)
				448399	
				478424	
				497663	
				514323	
				520920	
				529619	
				530173	
	2014-4	000654644VES	4/29/2014	NA	This manifest was never used to ship waste and therefore signatures not completed. The waste noted on this document was consolidated onto Manifest No. 000652642VES.
2015	2015-01	000652812VES	1/26/2015	794754	LDRs provided to EPA
	2015-02	000652813VES	1/26/2015	718514	LDRs provided to EPA
				745910	
	2015-03	000652854VES	2/18/2015	796733	LDRs provided to EPA
	2015-04	000652873VES	4/13/2015	797192	LDR provided to EPA
	2015-05	000652874VES	4/13/2015	797192	LDR provided to EPA
	2015-06	000976105VES	12/29/2015	798973	LDRs provided to EPA
				867230	
				718514	
				867228	
				865483	

Updated: 4/8/2016

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator ID Number: H I T 1 6 0 0 1 0 0 0 5

2. Page 1 of: 2

3. Emergency Response Phone: (877) 818-0087

4. Manifest Tracking Number: 000976146 VES

5. Generator's Name and Mailing Address
CHEVRON PRODUCTS COMPANY
HAWAII REFINERY
91-480 MALAKOLE STREET
KAPOLEI, HI 96707-1807
Generator's Phone: 808 682-2347

Generator's Site Address (if different than mailing address): SAME

6. Transporter 1 Company Name: OASIS ENVIRONMENTAL GROUP LLC
U.S. EPA ID Number: H I T 0 0 0 1 4 0 7 5 6

7. Transporter 2 Company Name: PINERIDGE FARMS
U.S. EPA ID Number: H I R 0 0 0 0 0 1 0 9 9

8. Designated Facility Name and Site Address
VEOLIA ES TECHNICAL SOLUTIONS, L.L.C.
1704 W. FIRST STREET
AZUSA, CA 91702
Facility's Phone: 626 334-5117
U.S. EPA ID Number: C A D 0 0 8 3 0 2 9 0 3

9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes
X	1. NA3077, HAZARDOUS WASTE, SOLID, n.o.s., (BENZENE), 9, III	06	D M	2,100	P	D018 352
	2.					
	3.					
	4.					

14. Special Handling Instructions and Additional Information
CCCQF09344001 (_____X 55 DM)
ER Service Contracted by VESTS // OASIS JOB #: 16-148 -|- 1) ERG:171 W:867228 A:

15. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent.
I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

Generator's/Offeror's Printed/Typed Name: TOBY A. BARNES
Signature: [signature]
Month 2 Day 11 Year 16

GENERATOR

INT'L

16. International Shipments ☐ Import to U.S. ☐ Export from U.S.
Port of entry/exit:
Transporter signature (for exports only):
Date leaving U.S.:

TRANSPORTER

17. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name: Shayne Peiter
Signature: [signature]
Month 02 Day 12 Year 16
Transporter 2 Printed/Typed Name:
Signature:
Month Day Year

DESIGNATED FACILITY

18. Discrepancy
18a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
Manifest Reference Number:
18b. Alternate Facility (or Generator)
U.S. EPA ID Number
Facility's Phone:
18c. Signature of Alternate Facility (or Generator)
Month Day Year
19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)
1. 2. 3. 4.
20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a
Printed/Typed Name
Signature
Month Day Year

EPA Form 8700-22 (Rev. 3-05) Previous editions are obsolete.

DESIGNATED FACILITY TO DESTINATION STATE (IF REQUIRED)

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST (Continuation Sheet)	21. Generator ID Number	22. Page	23. Manifest Tracking Number
	H I T 1 6 0 0 1 0 0 0 5	2 of 2	000976146VES

24. Generator's Name CHEVRON PRODUCTS COMPANY

25. Transporter 3 Company Name MATSON NAVIGATION — U.S. EPA ID Number C A D 0 0 6 9 1 2 6 2 0

26. Transporter 4 Company Name TRISTATE MOTOR TRANSIT CO. — U.S. EPA ID Number M O D 0 9 5 0 3 8 9 9 8

27a. HM	27b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	28. Containers No.	28. Containers Type	29. Total Quantity	30. Unit Wt./Vol.	31. Waste Codes		

32. Special Handling Instructions and Additional Information FOR ADDITIONAL TRANSPORTATION INFORMATION ONLY

GENERATOR

TRANSPORTER

33. Transporter 3 Acknowledgment of Receipt of Materials

Printed/Typed Name | Signature | Month | Day | Year

34. Transporter 4 Acknowledgment of Receipt of Materials

Printed/Typed Name | Signature | Month | Day | Year

DESIGNATED FACILITY

35. Discrepancy

36. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

EPA Form 8700-22A (Rev. 3-05) Previous editions are obsolete.

DESIGNATED FACILITY TO DESTINATION STATE (IF REQUIRED)

Land Disposal Restriction Notification Form

Generator Name CHEVRON PRODUCTS COMPANY

EPA ID Number HIT160010005 Manifest 000976146VES

This notice is being provided in accordance with 40 CFR 268.7 to inform you that this shipment contains waste restricted from land disposal by the USEPA under the land disposal restriction program. Identified below for each container is the designation of the waste as a wastewater or non-wastewater, the Clean Water Act (CWA) permit status associated with the treatment/disposal facility, applicable waste codes and any corresponding subcategories, list of any F001-F005 solvent constituents that are present in the waste, and any underlying hazardous constituents (UHC) that are present.

Container Number:XN-2454640998-001 (1/ 1)

WIP / Approval Code:	867228 / CCCQF09344001
Form Designation / CWA Status:	Non-Wastewater / Non-CWA
Waste Codes (Subcategories):	D018
Constituents (F001 - F005):	None
UHCs Present:	None
Treatment Requirements:	Restricted waste requires treatment to applicable standards.
Additional Notices:	

I hearby certify that all information in this and associated land disposal restriction documents is complete and accurate to the best of my knowledge and information.

Signature [signature]

Title ENVIRO. SPLST. Date 2/11/16

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator ID Number: HIT160010005
2. Page 1 of: 2
3. Emergency Response Phone: (877) 818-0087
4. Manifest Tracking Number: 00976145 VES

5. Generator's Name and Mailing Address
CHEVRON PRODUCTS COMPANY
HAWAII REFINERY
91-480 MALAKOLE STREET
KAPOLEI, HI 96707-1807
Generator's Phone: 808 682-2347

Generator's Site Address (if different than mailing address): SAME

6. Transporter 1 Company Name: OASIS ENVIRONMENTAL GROUP LLC
U.S. EPA ID Number: HIT000140756

7. Transporter 2 Company Name: PINERIDGE FARMS
U.S. EPA ID Number: HIR000001099

8. Designated Facility Name and Site Address
VEOLIA ES TECHNICAL SOLUTIONS, L.L.C.
1704 W. FIRST STREET
AZUSA, CA 91702
Facility's Phone: 626 334-5117
U.S. EPA ID Number: CAD008302903

9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes
X	1. NA3077, HAZARDOUS WASTE, SOLID, n.o.s., (BENZENE), 9, III	23	DM	8,060	P	D018 352
	2.					
	3.					
	4.					

14. Special Handling Instructions and Additional Information
CCCQF09344001 (___X 55 DM)
ER Service Contracted by VESTS // OASIS JOB #: 16-148 -|- 1) ERG:171 W:867228 A:

15. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent.
I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

Generator's/Offeror's Printed/Typed Name: Alice Armstrong
Signature:
Month 2 Day 11 Year 16

INT'L

16. International Shipments ☐ Import to U.S. ☐ Export from U.S.
Port of entry/exit:
Transporter signature (for exports only):
Date leaving U.S.:

TRANSPORTER

17. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name: Shayne Peiler
Signature:
Month 02 Day 11 Year 16
Transporter 2 Printed/Typed Name:
Signature:
Month Day Year

DESIGNATED FACILITY

18. Discrepancy
18a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
Manifest Reference Number:

18b. Alternate Facility (or Generator)
U.S. EPA ID Number
Facility's Phone:

18c. Signature of Alternate Facility (or Generator)
Month Day Year

19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)
1. 2. 3. 4.

20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a
Printed/Typed Name
Signature
Month Day Year

EPA Form 8700-22 (Rev. 3-05) Previous editions are obsolete.

DESIGNATED FACILITY TO DESTINATION STATE (IF REQUIRED)

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST (Continuation Sheet)	21. Generator ID Number	22. Page	23. Manifest Tracking Number
	HIT160010005	2 of 2	000976145VES

24. Generator's Name: CHEVRON PRODUCTS COMPANY

25. Transporter 3 Company Name: MATSON NAVIGATION — U.S. EPA ID Number: CAD006912620

26. Transporter 4 Company Name: TRISTATE MOTOR TRANSIT CO. — U.S. EPA ID Number: MOD095038998

27a. HM	27b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	28. Containers No.	28. Containers Type	29. Total Quantity	30. Unit Wt./Vol.	31. Waste Codes		

32. Special Handling Instructions and Additional Information: FOR ADDITIONAL TRANSPORTATION INFORMATION ONLY

GENERATOR

TRANSPORTER

33. Transporter 3 Acknowledgment of Receipt of Materials

Printed/Typed Name | Signature | Month | Day | Year

34. Transporter 4 Acknowledgment of Receipt of Materials

Printed/Typed Name | Signature | Month | Day | Year

DESIGNATED FACILITY

35. Discrepancy

36. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

EPA Form 8700-22A (Rev. 3-05) Previous editions are obsolete.

DESIGNATED FACILITY TO DESTINATION STATE (IF REQUIRED)

Land Disposal Restriction Notification Form

Generator Name CHEVRON PRODUCTS COMPANY

EPA ID Number HIT160010005 Manifest 000976145VES

This notice is being provided in accordance with 40 CFR 268.7 to inform you that this shipment contains waste restricted from land disposal by the USEPA under the land disposal restriction program. Identified below for each container is the designation of the waste as a wastewater or non-wastewater, the Clean Water Act (CWA) permit status associated with the treatment/disposal facility, applicable waste codes and any corresponding subcategories, list of any F001-F005 solvent constituents that are present in the waste, and any underlying hazardous constituents (UHC) that are present.

Container Number:XN-2454640999-001 (1/ 1)

WIP / Approval Code:	867228 / CCCQF09344001
Form Designation / CWA Status:	Non-Wastewater / Non-CWA
Waste Codes (Subcategories):	D018
Constituents (F001 - F005):	None
UHCs Present:	None
Treatment Requirements:	Restricted waste requires treatment to applicable standards.
Additional Notices:	

I hearby certify that all information in this and associated land disposal restriction documents is complete and accurate to the best of my knowledge and information.

Signature

Title Environmental Team Lead Date 2/11/16

Attachment 12.IV.A

Siemens Water Technologies

Arizona Facility: 2523 Mutahar Street • P.O. Box 3308 • Parker, AZ 85344
(928) 669-5758 • FAX (928) 669-5775 EPA ID: AZD 982 441 263
California Facility: 11711 Reading Road • Red Bluff, CA 96080
(530) 527-2664 • FAX (530) 527-0544 EPA ID: CAR 000 058 784

PROFILE ADDENDUM FOR SLUDGE EXEMPTION

Generator: Chevron Hawaii Refinery
Site Address: 91-480 Malakole St. **City/State:** Kapolei, HI 96707

The following information must be provided before approval of the profile if the generator requests that the spent carbon be classified as a non-hazardous sludge for reclamation in accordance with 40 CFR 261.2.

1. Is the subject spent carbon a sludge, as defined at 40 CFR 260.10?
   ☒Yes ☐No
2. Was the subject spent carbon generated from a municipal, commercial, or industrial wastewater treatment plant or water supply treatment plant or air pollution control facility?
   ☒Yes ☐No
3. Is the subject spent carbon a RCRA listed waste?
   ☐Yes ☒No
4. Was the subject spent carbon ever placed in contact with, or used to treat, a RCRA **listed** waste?
   ☐Yes ☒No
5. Was the subject spent carbon generated by a RCRA regulated treatment, storage or disposal facility?
   ☐Yes ☒No
6. If question 5 is checked YES, does it "contain" or is it "derived from" a RCRA listed waste?
   ☐Yes ☐No
7. Is the subject spent carbon exempt from hazardous waste regulation in the state of generation?
   ☒Yes ☐No

I certify that the information on this form is true and accurately describes the subject spent carbon on the attached spent carbon profile form. I further certify that the subject spent carbon is exempt from regulation as a hazardous waste.

John Q. Andrews
Printed Name

[signature]
Signature

Environmental Specialist
Title

6/20/07
Date

To: Huetteman, Tom[Huetteman.Tom@epa.gov]
Cc: Wilson, Patrick[Wilson.Patrick@epa.gov]
From: ZIFF, SARA
Sent: Wed 5/18/2016 8:21:19 PM
Subject: Riverside Ag Park -- DTSC letter to Bruce Bailey
RiversideAgPark_ResponseToEmailInquiries_BruceBailey_05 03 16.pdf

Hi Tom,

Please find attached the letter from Peter Garcia at DTSC to Bruce Bailey that you had requested. This document had been part of the email chain between DTSC and Bruce Bailey about Riverside Ag Park.

Thanks,

Sara

^^^^^^^^^^^^^^^^^^^

Sara Ziff, P.E.
Project Manager
Corrective Action Section
U.S. EPA, Region 9
75 Hawthorne Street (LND-4-1)
San Francisco, CA 94105
(415) 972-3536
ziff.sara@epa.gov

From: Tasnif-abbasi, Maryam@DTSC [mailto:Maryam.Tasnif-abbasi@dtsc.ca.gov]
Sent: Wednesday, May 18, 2016 1:11 PM
To: ZIFF, SARA <ZIFF.SARA@EPA.GOV>
Subject: Letter

Matthew Rodriquez
Secretary for
Environmental Protection

Department of Toxic Substances Control

Barbara A. Lee, Director
5796 Corporate Avenue
Cypress, California 90630

Edmund G. Brown Jr.
Governor

May 3, 2016

Mr. Bruce Bailey
Member/Advisor
Center for Community Action and Environmental Justice
P.O. Box 33124
Riverside, CA 92519

RESPONSE TO EMAIL INQUIRIES REGARDING RIVERSIDE AGRICULTURAL PARK SITE, 7020 CREST AVENUE, RIVERSIDE, RIVERSIDE COUNTY

Dear Mr. Bailey:

The Department of Toxic Substances Control (DTSC) received several emails, and a complaint transmitted via EnviroStor, sent by you on behalf of the Center for Community Action and Environmental Justice (CCAEJ), which contained questions and comments regarding the Riverside Agricultural Park (Site). A response to your questions and comments is provided herein:

Environmental Justice/Public Participation Related Inquiries

DTSC is committed to working with the community to provide everyone involved with transparency on our cleanup and public participation processes, using the best available science and data to identify recommended actions and remedies, and working with other government agency partners to provide the information and resources needed to be protective of human health and the environment for the Site residents and surrounding community. According to the CalEnviroScreen tool, the Site neighborhood scores in the top 10% of impacted communities in California. CalEnviroScreen is a screening methodology developed by CalEPA that can be used to help identify California communities that are disproportionately burdened by multiple sources of pollution. DTSC is in the process of developing formal guidelines and policies on reviewing Environmental Justice communities that will include the use of screening tools like CalEnviroScreen, but those formal processes and guidelines have not been established yet.

Printed on Recycled Paper

In addition to Public Participation activities described below, throughout the confirmation sampling activities of 2015 and 2016, DTSC has been responsive to meeting with community residents and CCAEJ regarding the process. DTSC will be establishing an Off-Site Community Work Group, with the first meeting scheduled for early June, in order to improve dialogue and communication with the surrounding community on its evaluation of potential off-site impacts. On a programmatic level, DTSC has contracted with the UC Davis Extension Collaboration Center to produce a set of recommendations to enhance and modernize our public outreach and engagement strategies with interested and impacted communities. The UC Davis Extension Collaboration Center has been interviewing community members and stakeholders, convening small groups, and hosting public forums to gather ideas and input from the public in support of this effort. The preliminary recommendations gathered so far have been compiled into a report which is available for public review at the following link: https://www.dtsc.ca.gov/GetInvolved/PublicParticipation/upload/EnhancingPP_SummRept.pdf.

DTSC has conducted, and continues to conduct public participation activities to maintain communication with the public and interested parties. DTSC activities have been routinely posted on its Envirostor website to create a transparent process, and for immediate public access to project related information. Public participation activities, conducted in accordance with H&S Code 25395.96, include but have not been limited to the following:

a) Fact Sheet regarding the cleanup proposal, dates for a comment period, and notice of a public meeting was published in local newspapers and mailed out to residents in December 2005;
b) Public comment period for the Draft Response Plan started on December 22, 2005 and ended on January 31, 2005;
c) Draft Response Plan made available at the La Sierra Library, the City of Riverside Planning Department and the DTSC File Room in Cypress;
d) A public meeting and open house was held on January 25, 2006 at the Arlanza Elementary School;
e) Responses to comments were published on August 4, 2006;
f) Work notice mailed to residents around April 2009 notifying of the first phase of cleanup;
g) Work notice mailed to residents in May 2013 notifying of the second phase of cleanup;
h) Letter to resident who expressed concerns regarding dust in September 2013;
i) Approximately seventy (70) dust monitoring reports posted to EnviroStor on a routine basis to keep the community informed during Phase 2 cleanup implementation in 2013;
j) Approximately twenty (20) DTSC site visit/oversight reports posted to EnviroStor during Phase 2 cleanup implementation in 2013;

k) Letter to resident responding to a request for details on zoning information, information on how to report illnesses to the Riverside County Disease Control Branch, and detailed instructions on how to use EnviroStor in September 2014;
l) Community Update regarding completion of cleanup mailed to residents in November 2014;
m) Community Update regarding additional sampling mailed to residents in September 2015;
n) Community Update regarding results of additional sampling mailed to residents in November 2015;
o) Letter to approximately one hundred (100) residents living in the immediate vicinity of the Riverside Ag Park requesting feedback on their preferred method of communication mailed in January 2016;
p) Community Update regarding additional sampling and cleanup mailed to residents in March 2016;
q) Cleanup plan was made available for public review from March 7, 2016 through March 21, 2016 at the Arlanza Public Library and on EnviroStor; and,
r) DTSC field oversight reports posted routinely to EnviroStor since March 22, 2016.

Signage Question

With respect to your question regarding the requirement for posting signs pursuant to Health and Safety Code (H&SC) Section 25359.5, DTSC does not believe that this section is applicable to the Site. H&SC Section 25359.5(a)(2) indicates that DTSC shall fence and post a site if, among other things, "The site poses a public health risk if human contact is made with the hazardous waste or the surrounding contaminated area." In the case of Riverside Agricultural Park, we have determined that the Site does not pose a significant risk to public health if human contact is made based on its current condition (vacant property). An evaluation of the potential cancer risk associated with the Site based on the current conditions indicates that the risk to potential on-Site and off-Site receptors is below the threshold of significance (1E-6 excess cancer risk). In addition, the non-cancer hazard is also below the threshold of significance (Hazard Index of 1.0).

The scenarios evaluated included an on-Site construction/maintenance worker, on-Site trespasser, Santa Ana River recreational trail user, and a resident living around the Site.

The Site is fenced and gated to control access, and a security guard is stationed at the Site to deter trespassing. Personnel working at the Site are health and safety trained, and when conducting intrusive subsurface activities would wear personal protective equipment as appropriate.

PCB Congener Questions

Several questions were raised in emails dated April 18 and 19, 2016. DTSC has grouped its responses according to the following topics:

a) The need for a health risk assessment for the dioxin and dioxin-like compounds;
b) The toxicity of dioxin-like PCB congeners;
c) The presence of 1,4-dioxane at the Rohr property; and
d) Clarification regarding Site groundwater information.

Health risk assessment for dioxin and dioxin-like compounds
Regarding the need for a health risk assessment for dioxin and dioxin-like compounds, 115 soil samples were analyzed for dioxins/furans throughout the various project phases to guide the cleanup and to support the risk evaluations. The following is a summary table listing dioxins/furans data collected from the Site and its purpose/use:

Time Period	No. Samples	TEQ Range (pg/g or ppt)	Purpose/Use
Pre-Phase1 (Frey, 2006)	25	0.462 – 5,270	Data used for statistical analysis to correlate PCBs and dioxin occurrence.
Phase 1 (TRC, 2010)	31	0.332 – 8,373	Data used to guide Phase1 cleanup; several areas > screening level (4.5 ppt) to be addressed in Phase 2 cleanup.
Phase 2 (TRC, 2014)	50	0.277 – 465.2	Data used to guide Phase 2 cleanup (all areas > 4.5 ppt were removed); remaining data used in the post-cleanup risk assessment (TRC, 2014).
Post-Phase 2 (DTSC, 2015)	9	0 – 1.04	Data used to verify Phase 2 cleanup and in the health risk evaluation (DTSC, 2015).

Sources:

Frey, 2006: Revised Response Plan, Excavation of Soils Containing PCBs (http://www.envirostor.dtsc.ca.gov/public/final_documents2.asp?global_id=33490087&doc_id=6009866)
TRC, 2010: Phase 1 Response Plan Implementation Report (http://www.envirostor.dtsc.ca.gov/public/final_documents2.asp?global_id=33490087&doc_id=60194161)
TRC, 2014: Phase 2 Response Plan Implementation Report (http://www.envirostor.dtsc.ca.gov/public/final_documents2.asp?global_id=33490087&doc_id=60194163)
DTSC, 2015: Limited Soil Confirmation Evaluation (http://www.envirostor.dtsc.ca.gov/regulators/deliverable_documents/5470245182/Riverside%20Ag%20Sampling%20Report%20Final%20Nov%202%202015.pdf)

In summary, a statistical study using co-located PCB and dioxin data (Frey 2006) showed a strong correlation between the presence of PCBs and dioxins/furans within PCB-impacted areas. This study along with the sampling data collected during the Phase 1 and Phase 2 cleanup (TRC, 2010; TRC, 2014) was relied upon to confirm that all known dioxin concentrations above the screening level of 4.5 pg/g (or ppt) were removed from the property. In addition, the dioxins/furans data from the Phase 2 final

confirmation sampling and the 2015 re-sampling by DTSC were evaluated in two human health risk assessments (TRC, 2014; DTSC, 2015) in accordance with the USEPA and Cal/EPA guidance. The risk assessments indicated that PCBs were the primary risk driver, and the total cancer risk and non-cancer hazards associated with other Site-related chemicals of concern including dioxins/furans were not significant.

Toxicity of dioxin-like PCB congeners
A total of 11 soil samples were collected and analyzed for the 209 PCB congeners by EPA Method 1668 during the November 2015 resampling event. These samples were collected from areas with known PCB impacts, to verify the presence of Aroclors using EPA Method 8082 for sample analysis. EPA Method 8082 is a standard method for analyzing environmental samples to determine PCB concentrations, and the resulting data is regularly used for health risk assessment. USEPA and DTSC have reviewed the data sets and found the distribution of detected congeners and Aroclors in the samples to be consistent with each other. In addition, all congener concentrations were converted to the total dioxin TEQ concentrations (ranging from 5.5 to 17.5 pg/g), and they fall within the acceptable risk range used by both agencies. Please note that the removal of soil containing dioxins/furans above the screening level of 4.5 pg/g for the Phase 1 and Phase 2 cleanup was highly conservative. For comparison, dioxin background concentrations in California urban soils range from 7 to 20 pg/g, and DTSC recommends a residential remedial goal of 50 pg/g for dioxins and dioxin-like compounds in its Human Health Risk Assessment (HHRA) Note 2 (http://www.dtsc.ca.gov/AssessingRisk/upload/HHRA_Note2_dioxin-2.pdf). Based on its evaluation of the data, and in consultation with USEPA, DTSC considers the use of PCB Aroclor data for cleanup purposes to be adequate, and additional PCB congener analysis is not necessary.

1,4 Dioxane
The analytical program conducted as part of the groundwater investigation in 2005 included groundwater analyses for volatile organic compounds (VOCs) as well as semi-volatile organic compounds (SVOCs). The results of the groundwater analysis indicated that VOCs and SVOCs were not detected. The compound 1,4-dioxane was historically used primarily as a stabilizer for chlorinated solvents and has been associated with 1,1,1-trichloroethane (1,1,1-TCA). Although 1,4-dioxane was not specifically included in the analytical program it would not be expected to be present in the absence of other VOCs.

Clarification Regarding Site Groundwater Information
The flow of groundwater in decomposed granitic bedrock is defined by the relative density of the in place rock material. The Site specific bedrock conditions at the Riverside Agricultural Park Site are such that all groundwater passing beneath the Site continues north only at the northwest corner of the Site due to a bedrock high which

extends from the east beyond the Site boundary to an area at the northwest corner of the Site where a natural drainage exists. The locations chosen for the onsite groundwater wells coincide with the highest concentrations (historically) of PCB impacted soil, and represent areas where groundwater would most likely be impacted by contamination, if present. Based upon the available documentation from the Regional Water Quality Control Board (RWQCB), a single saturated groundwater zone exists below the Rohr facility. However, due to Site-specific investigation needs, two zones are monitored (approximately 10-55 feet below ground surface [bgs], and deeper than 55 feet bgs). Apparently, two distinct water bearing zones are not present below the Rohr facility.

Air Monitoring Questions

DTSC has requested that the South Coast Air Quality Management District (SCAQMD) review the 2006 Air Monitoring Plan to provide its opinion as to the adequacy of the plan, and to provide suggestions, as necessary. The objectives of the 2006 Air Monitoring Plan are to set safety thresholds for dust control, so as not to impact the surrounding community during remedial activities that will disturb PCB impacted soils on the Site. SCAQMD is continuing with its review, and DTSC will provide responses to questions raised in your emails regarding air monitoring upon final completion of the SCAQMD review and resolution of their comments.

If you have any further questions, or would like to meet to discuss DTSC's response, please contact me at (714) 484-5459 or peter.garcia@dtsc.ca.gov.

Sincerely,

Peter Garcia
Branch Chief
Brownfields and Environmental Restoration Program – Cypress

cc: See next page.

cc: Penny Newman
Center for Community Action and Environmental Justice
P.O. Box 33124
Riverside, CA 92519

The Honorable Richard D. Roth
California State Senate
State Capitol, Room 4034
Sacramento, California 95814

The Honorable Eric Linder
California State Assembly
State Capitol, Room 5135
Sacramento, California 95814

Mr. John A. Russo, City Manager
City of Riverside
3900 Main Street
Riverside, California 92522

Mr. Al Zelinka, Assistant City Manager
City of Riverside
3900 Main Street
Riverside, California 92522

Mayor Rusty Baily
Riverside City Hall
3900 Main Street
Riverside, California 92522

Riverside City Council
Riverside City Hall
3900 Main Street
Riverside, California 92522

Mr. Matt Rodriguez, Secretary
California Environmental Protection Agency
1001 I Street, 25th Floor
Sacramento, California 95814

cc: Mr. Arsenio Mataka
Assistant Secretary
California Environmental Protection Agency
1001 I Street, 25th Floor
Sacramento, California 95814

Dot Lofstrom, Division Chief
Department of Toxic Substances Control
California Environmental Protection Agency
1001 I Street, 25th Floor
Sacramento, California 95814

Ms. Barbara A. Lee, Director
Department of Toxic Substances Control
California Environmental Protection Agency
1001 I Street, 25th Floor
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Mr. Gideon Kracov
Independent Review Panel Member
Department of Toxic Substances Control
California Environmental Protection Agency
1001 I Street
Sacramento, California 95812

To: elise.rothschild@dtsc.ca.gov[elise.rothschild@dtsc.ca.gov]; keith.kihara@dtsc.ca.gov[keith.kihara@dtsc.ca.gov]; Rizgar.Ghazi_dtsc.ca.gov[Rizgar.Ghazi@dtsc.ca.gov]; steve.lavinger@dtsc.ca.gov[steve.lavinger@dtsc.ca.gov]; lori.koch@dtsc.ca.gov[lori.koch@dtsc.ca.gov]; rick.brausch@dtsc.ca.gov[rick.brausch@dtsc.ca.gov]; pauline.batarseh@dtsc.ca.gov[pauline.batarseh@dtsc.ca.gov]; Lang, Valetti@DTSC[Valetti.Lang@dtsc.ca.gov]; donn.diebert@dtsc.ca.gov[donn.diebert@dtsc.ca.gov]; natalie.marcanio@dtsc.ca.gov[natalie.marcanio@dtsc.ca.gov]; schumin.wong@dtsc.ca.gov[schumin.wong@dtsc.ca.gov]; meredith.williams@dtsc.ca.gov[meredith.williams@dtsc.ca.gov]; eileen.sheehan@dtsc.ca.gov[eileen.sheehan@dtsc.ca.gov]; ray.Leclerc@dtsc.ca.gov[ray.Leclerc@dtsc.ca.gov]; dot.lofstrom@dtsc.ca.gov[dot.lofstrom@dtsc.ca.gov]; dan.ward@dtsc.ca.gov[dan.ward@dtsc.ca.gov]; ajit.vaidya@dtsc.ca.gov[ajit.vaidya@dtsc.ca.gov]; Scott, Jeff[Scott.Jeff@epa.gov]; Huetteman, Tom[Huetteman.Tom@epa.gov]; Nelson, Cheryl[Nelson.Cheryl@epa.gov]; Armann, Steve[Armann.Steve@epa.gov]; Gross, Barbara[Gross.Barbara@epa.gov]; McDaniel, Doug[McDaniel.Doug@epa.gov]; Morimoto, Kaoru[Morimoto.Kaoru@epa.gov]; Heller, Zoe[Heller.Zoe@epa.gov]; Jones, Joel E.[Jones.Joel@epa.gov]
Cc: Salazar, Matt[Salazar.Matt@epa.gov]
From: Gorini, Kelly
Sent: Fri 9/25/2015 12:45:15 AM
Subject: DTSC - EPA QUARTERLY MANAGERS MEETING - Agenda Attached
Sept 2015 Quarterly Managers Meeting - FINAL.docx

Hello All!

Attached is the agenda for our quarterly manager's meeting this coming Wednesday, September 30th. Please contact me if you have any questions in regards to this meeting, or any additional agenda items. Room and Dial-In information is located at the top of the agenda as well.

Thanks!

Kelly

Kelly Gorini (Wedell)

Project Officer
Planning and State Development Office
US EPA Region 9

Phone:415-972-3735
Email: gorini.kelly@epa.gov
Mailing Address:
75 Hawthorne St., LND-1-1
San Francisco, CA 94105

-----Original Appointment-----
From: Gorini, Kelly
Sent: Thursday, June 04, 2015 6:11 PM
To: Gorini, Kelly; elise.rothschild@dtsc.ca.gov; keith.kihara@dtsc.ca.gov; Rizgar.Ghazi_dtsc.ca.gov; steve.lavinger@dtsc.ca.gov; lori.koch@dtsc.ca.gov; rick.brausch@dtsc.ca.gov; pauline.batarseh@dtsc.ca.gov; Lang, Valetti@DTSC; donn.diebert@dtsc.ca.gov; natalie.marcanio@dtsc.ca.gov; schumin.wong@dtsc.ca.gov; meredith.williams@dtsc.ca.gov; eileen.sheehan@dtsc.ca.gov; ray.Leclerc@dtsc.ca.gov; dot.lofstrom@dtsc.ca.gov; dan.ward@dtsc.ca.gov; ajit.vaidya@dtsc.ca.gov; Scott, Jeff; Huetteman, Tom; Nelson, Cheryl; Armann, Steve; Gross, Barbara; McDaniel, Doug; Morimoto, Kaoru; Heller, Zoe; Jones, Joel E.
Cc: Salazar, Matt
Subject: SAVE THE DATE: DTSC - EPA QUARTERLY MANAGERS MEETING
When: Wednesday, September 30, 2015 9:30 AM-12:30 PM (UTC-08:00) Pacific Time (US & Canada).
Where: DTSC Berkeley Office; Room 315 (3rd floor)- 700 Heinz, Ave. Berkeley, CA 94710

Due to scheduling conflicts, we have had to bump our quarterly meeting back a few weeks. Materials will be coming shortly. Thanks!

.....
Meeting materials will be sent closer to the day of the meeting. Thanks!

Kelly Gorini (Wedell)

Project Officer
Planning and State Development Office
US EPA Region 9

Phone:415-972-3735
Email: gorini.kelly@epa.gov
Mailing Address:
75 Hawthorne St., LND-1-1
San Francisco, CA 94105

DTSC-EPA Quarterly Managers Meeting
Wednesday September 30th; 9:30 am – 12:30 pm
DTSC Berkeley Office; Room 315 (3rd floor)
700 Heinz, Ave. Berkeley, CA 94710
Dial- In: 888-787-0191; Passcode: 431-5037

9:30 – 9: 45 AM: **Welcome**

9:45 – 10:15 AM: **Program Area Reports from DTSC**
(Please summarize if FY15 goals were met and expectations for FY16 goals; 5 minutes each)

- Program Updates From:
  - Data Management/ Notifications
  - Permits
  - Corrective Action
  - Enforcement/ Border
  - Authorization
  - Safer Consumer Products

10:15 – 11:00 AM: **FY16 Funding**

- Additional STAG Funding estimate for DTSC (EPA)
- Discussion of proposed projects
  - Region 9 Priorities (Jeff Scott Lead)
  - Permitting (DTSC)
  - Corrective Action (DTSC)
  - Data Management (DTSC)
  - Enforcement (DTSC)
  - Other
- Updated work plan and application needs (EPA)

11:00 – 11:30 AM: **Initiatives Update (5 minutes each)**

- Legislature/oversight committee update and hiring update (DTSC)
- Biennial Report Progress (DTSC)
- Authorization Priorities (EPA)
- E-Manifest Progress (EPA)
- RCRA Webinar Series (EPA)

11:30 AM – 12:15 PM: **Major Site Updates and Discussion**

- Riverside Agricultural Park
- Exide
- Buttonwillow
- Kettleman
- Valero and Refinery Initiative

12:15 – 12:30 PM: **Wrap Up and Next Meeting Date (EOY Meeting)**

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

Via U.S. Postal Service and Email

October 10, 2014 ----- Draft Version 22

Ms. Sandra Lyon, Superintendent
Santa Monica Malibu Unified School District
1651 Sixteenth Street
Santa Monica, California 90404
slyon@smmusd.org

Dear Superintendent Lyon:

Thank you for submitting the plans to address polychlorinated biphenyls (PCBs) at the Malibu High School and other schools within the Santa Monica-Malibu Unified School District (District).

The U.S. Environmental Protection Agency Region 9 (EPA) is approving the "Site-Specific PCB-Related Building Materials Management, Characterization and Remediation Plan for the Library and Building E Rooms 1, 5, and 8 at Malibu High School" dated July 2014 (PCB Plan) and subsequently amended by (1) the email message from Jan Maez to Tom Huetteman on August 14, 2014 and (2) the "Supplemental Removal Information for the Library, Building E – Rooms 1, 5, and 8 and Building G – Room 506 at Malibu High School" dated September 26, 2014 (Supplement). Hereafter, we refer to the PCB Plan together with the two amendments as "the Application."

EPA is approving the Application consistent with the Toxic Substances Control Act (TSCA) PCB regulations in 40 CFR 761.61(c).[1] In reference to PCB-containing caulk (i.e., caulk containing total PCB levels at or above 50 parts-per-million [ppm]), EPA agrees with the District's schedule in the Supplement to (1) remove PCB-containing caulk currently known and verified at Malibu High School within 10 months (or no later than June 30, 2015) and (2) to remove any newly discovered and verified PCB containing caulk within one year after discovery and verification throughout District schools. This schedule to remove PCB-containing caulk supersedes any previous schedule proposed by the District. Once the District removes the PCB-containing caulk, the caulk must be disposed of consistent with 40 CFR 761.62(a).

In issuing this approval, EPA has considered among other information, the wipe and air testing results for samples collected after implementation of best management practices (BMPs) from June until September 2014 at the Malibu High School (MHS) and Juan Cabrillo Elementary School (JCES). Based on this data, the actions proposed in the Application (including BMPs), and this approval, EPA believes that PCBs at the MHS and Juan Cabrillo Elementary School will not pose an

[1] Risk-based disposal approval application for PCB remediation waste.

unreasonable risk of injury to health or the environment. Air testing results for all rooms tested at the MHS and JCES show that EPA's risk-based guidelines for air (< 200 ug/m^3 or <100 ug/m^3, as applicable) have been met at both schools.

Results for wipe samples show the < 1 ug/100 cm^2 goal for surface wipes have been met in all rooms tested at the MHS and JCES. Exceptions to this are room 506 at MHS Building G (wipes collected from caulk surface) and room 6 at JCES Building C (wipe collected from wallpaper). The results of wipe samples collected from caulk surfaces in room 506 exceeded the goal for wipes and will be removed. Room 6 at JCES is an office used for counseling children and children spend limited time in that room. An exposure evaluation is currently underway to determine appropriate next steps for room 6. The results of air samples in rooms 506 and 6 did not exceed EPA's risk-based guidelines.

In general, the Application describes procedures for (1) best management practices (BMPs), (2) wipe and air sampling and testing, (3) removal of PCB-containing caulk, (4) cleaning, removing, or encapsulating substrates that may be contaminated with PCBs, and (5) removal of PCB ballasts and PCB stained light fixtures.

Finally, this approval does not cover asbestos surveys and repair and removal of asbestos containing materials described in Section C.1.2.5.2(a) of the PCB Plan. This approval also does not cover air monitoring for remediation workers under Cal/OSHA addressed in Section F.1.3.1 (Air Monitoring for Remediation Workers) of the PCB Plan.

This Approval does not relieve the Santa Monica-Malibu Unified School District and its consultants from complying with other applicable TSCA PCB and Federal regulations, and state and local regulations and permits. Departure from the Application and this Approval without prior written permission from EPA may result in revocation of this Approval, and/or an enforcement action. Nothing in this Approval bars EPA from imposing penalties for violations of this Approval or for violations of other applicable TSCA PCB requirements or for activities not covered in this Approval.

Please call Steve Armann at 415.972.3352 if you have questions regarding this TSCA PCB approval. We appreciate the Santa Monica-Malibu Unified School District's efforts in addressing PCBs at schools within the District. Thank you.

Sincerely,

Jeff Scott, Director
Land Division

cc: DTSC

ENVIRON

September 26, 2014

Via email

Mr. Steve Armann
Manager, RCRA Corrective Action Office
Waste Management Division
U.S. Environmental Protection Agency, Region IX
75 Hawthorne Street
San Francisco, California 94105-3901

Re: Supplemental Removal Information for the Library, Building E - Rooms 1, 5, and 8 and Building G - Room 506 at Malibu High School

Dear Mr. Armann:

On behalf of the Santa Monica – Malibu Unified School District (SMMUSD or the District), ENVIRON International Corporation (ENVIRON) has prepared this Supplemental Removal Information ("Supplement") for Malibu High School (MHS), located at 30215 Morning View Drive, Malibu, California pursuant to U.S. Environmental Protection Agency (USEPA) Region IX's jurisdiction under the Toxic Substances Control Act (TSCA), 40 CFR 761. This document is intended to further supplement and modify as appropriate the MHS-Specific PCB-Related Building Materials Management, Characterization and Remediation Plan (the "MHS-Specific Plan", see Attachment A) that the District submitted to USEPA Region IX, dated July 3, 2014. This Supplement provides information on the removal of building materials in which polychlorinated biphenyls (PCBs) have been identified and verified at concentrations above 50 parts per million (ppm) in accordance with guidance from USEPA Region IX and TSCA.

The MHS-Specific Plan described the identification of ≥ 50 ppm of PCBs in caulking of window units tested in the MHS Library and Building E - Rooms 1, 5, and 8 in exceedance of USEPA standards. The MHS-Specific Plan called for building materials identified with ≥ 50 ppm PCBs to during planned and funded building renovations within 15 years.[1] However, on August 15, 2014, the SMMUSD agreed to "*remedy the TSCA violations identified at four window areas at Malibu High School within the next 10 months, no later than June 30, 2015*".[2,3] The four window areas correspond to tested window units located in the MHS Library and Building E (also called the Blue Building)- Rooms 1, 5, and 8. In addition, based on recent sampling and analytical results in which > 10 micrograms per 100 square centimeters (µg/100cm^2) total PCBs were reported for surface wipe samples taken on caulking around interior doorframes in Building G Room 506 (woodshop)[4] at MHS

where is this email?

[1] Provided management in place Best Management Practices (BMPs) are implemented.

[2] Email from Janece Maez, Associate Superintendent Business and Fiscal Services, SMMUSD, to Tom Huetteman, USEPA, dated August 14, 2014.

[3] In addition to the four window areas discussed in this document, the District shall also change the light fixtures at Malibu High School and Juan Cabrillo Elementary School in the next 12 months in accordance with the July 3rd MHS Specific Plan, as indicated in Janece Maez's August 14, 2014 email to USEPA.

[4] 2014. ENVIRON. Fourth Update on Recent Building Inspections Activities Related to Polychlorinated Biphenyls (PCBs). September 5. See Attachment B.

ENVIRON International Corp. 201 California Street, Suite 1200, San Francisco, CA 94111
V +1 415.796.1950 F +1 415.398.5812

environcorp.com

even after repairs and additional cleaning , the SMMUSD shall implement a similar remedy for interior door caulking in this room.

A summary of prior sampling and analytical results of window caulking tested from the four window areas identified above were provided in Appendix B to the MHS-Specific Plan and a summary of the woodshop interior door caulking surface wipe results were provided in ENVIRON's September 5th update memo included here as **Attachment B**. Although window caulk samples in the MHS Library and Building E - Rooms 1, 5, and 8 were > 50 ppm PCBs, all air samples and surface wipe samples collected from these rooms this summer during BMP implementation have been below USEPA health-based thresholds of 200 ng/m^3 and 1 µg/100cm^2, respectively, (see **Attachment B** for summary information on the Library and Building E); accordingly this removal is for compliance with TSCA since these materials do not present a risk to occupants given the air and wipe testing results are below USEPA's heath-based levels.

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Objective

The objective of the work proposed in this Supplement is to physically remove the identified and verified caulking with ≥ 50 ppm PCBs in previously sampled window units located in the MHS Library (see **Figure 1**) and Building E (also called the Blue Building) - Rooms 1, 5, and 8 (see **Figure 2**);[5] as well as interior door caulking in Building G - Room 506 (woodshop – see **Figure 3**) where surface wipe samples were > 10 µg/100 cm^2 PCBs even after repairs and additional cleaning. If non-porous substrate is adjacent to the caulking to be removed in these areas, it will be decontaminated using the decontamination steps described in the MHS-Specific Plan (Appendix F.1.5 and F.1.9). Porous substrate in contact with caulking that has been identified with ≥ 50 p PCBs will have its surface prepared and encapsulated per the encapsulation steps described in the MHS Specific Plan (Appendix F.1.6).

The information below further supplements and modifies the MHS-Specific Plan as appropriate. References to applicable sections of the MHS-Specific Plan are also provided and should be referenced for additional information.

Pre-Remedial Activities

A remedial contractor for conducting the work described herein will be selected according to the District's procurement procedures and a "Means and Methods Plan" will be developed by the contractor. ENVIRON will provide oversight of the remedial contractor during remedy implementation.

Remedy Implementation

Refer to Section 1.4 and Appendix F.1.4 of the MHS-Specific Plan for an overview of remedy implementation procedures. The following provides supplemental and modification information related to the District's ≥ 50 ppm PCB caulking removal action described in USEPA's August 14th letter.[6]

Removal Goals

The caulking identified with ≥ 50 ppm PCBs in the tested window units located in the MHS Library and Building E (also called the Blue Building) - Rooms 1, 5, and 8; as well as from interior door caulking in Building G - Room 506 (woodshop), where surface wipe

[5] Representative photos of the windows subject to caulk removal are included as Figure 4.

[6] Letter from Jared Blumenfeld, USEPA Region IX Regional Administrator to Sandra Lyon Superintendent Santa Monica-Malibu Unified School District dated August 14, 2014.

samples results were > 10 µg/100 cm^2 even after repairs and additional cleaning, will be physically removed.

Decontamination of non-porous surface materials adjacent to ≥ 50-impacted PCB caulking will be performed and then post-decontamination confirmation wipe sampling will be performed with a cleanup goal of <1 µg/100 cm^2.

Porous substrate in contact with ≥ 50 ppm-impacted PCB caulking will have its surface prepared and encapsulated up to 1 foot away from the caulking/substrate contact.

Threshold levels for post-removal confirmatory air and wipe samples will be 200 ng/m^3 and 1 µg/100 cm^2, respectively, as per Appendix F.1.11 of the MHS-Specific Plan.

Caulking Removal and Replacement

Refer to Appendix F.1.4.1 of the MHS-Specific Plan. The caulking in which > 50 ppm PCBs was identified and verified in window units in the Library and Building E - Rooms 1, 5, and 8 will be physically removed without removing the window units where possible. If necessary to achieve remedial goals defined herein, the window units will be removed. A similar procedure will be completed for the interior door caulking of Building G - Room 506 (woodshop). Following remedial activities, the existing windows and/or door will be re-installed (if they were removed). In all cases, the removed caulking will be replaced with new, non-PCB containing caulking.

Decontamination of Non-Porous Surfaces

Refer to Appendices F.1.5 and F.1.9 of the MHS-Specific Plan for the decontamination steps for non-porous surfaces adjacent to ≥ 50 ppm-impacted PCB caulking.

Encapsulation of Adjacent Porous Substrate

If porous substrate adjacent to ≥ 50-impacted PCB caulking is identified, that substrate will have its surface prepared and encapsulated up to 1 foot away from the caulking/substrate contact using the general encapsulation procedures described in the MHS Specific Plan (Appendix F.1.6). Per discussions with USEPA Region IX, a non-VOC epoxy-based encapsulant will be used.[7] The District will employ a clear encapsulant if available, and/or paint over the encapsulant to match existing paint.

Sampling being conducted as part of the on-going pilot study described in the MHS-Specific Plan will be used to assess the effectiveness of the encapsulant and any future monitoring needs of any encapsulated areas. During future renovations or demolition of encapsulated porous substrates, further characterization testing of the porous substrate would be done to determine the extent of substrate to be removed and appropriate waste handling requirements for this material per Appendix F.4 of the MHS-Specific Plan.

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Other remedial activities, including engineering controls and air monitoring during removal, contingency planning, data validation, waste management and disposal, reporting, and recordkeeping and documentation are described in the MHS-Specific Plan. The written certification for the work proposed herein was previously signed by the District, as required under 40 CFR 761.61(a)(3)(i)(E), and was included in Appendix A of the MHS-Specific Plan.

---

[7] 2012. USEPA. *Laboratory Study of Polychlorinated Biphenyl (PCB) Contamination and Mitigation in Buildings. Part 3, Evaluation of the Encapsulation Method.* April. EPA/600/R-11/156B

Managing Potential Future Identifications of ≥ 50 ppm PCBs in Building Materials

The process and procedures described in this Supplement are also intended to be used for other buildings in the District if ≥ 50 ppm PCBs are identified and verified in building materials within other District buildings. The schedule for implementing this Supplement at additional locations would be developed in consultation with USEPA, and would not exceed one year following identification and verification.[8] Thus, with submittal of this Supplement, the SMMUSD is seeking approval by USEPA to implement the procedures contained in this Supplement as needed at additional locations.

so there will be more communication with EPA if new PCB caulk is found?

Schedule

The removal described in this Supplement, following USEPA approval, is anticipated to be completed no later than June 30, 2015. Prior to commencement of removal activities, the District will notify USEPA on the dates these activities will take place.

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We would be pleased to answer any questions that you may have about this letter. If you have any questions or would like to discuss this further, please contact either one of us.

Sincerely,

Douglas Daugherty, PhD, PE, CIH
Managing Principal

Eric S. Wood, PG, PHg, LSP
Principal Consultant

Attachments:

A: MHS-Specific PCB-Related Building Materials Management, Characterization and Remediation Plan submitted to USEPA Region IX, dated July 3, 2014

B: Fourth Update on Recent Building Inspections Activities Related to Polychlorinated Biphenyls (PCBs)

[8] In the event that the procedures described in this Supplement cannot be implemented within one year following identification and verification, SMMUSD will submit a request for an extension of time to USEPA.

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Figures

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Window (facing Morning View Drive) sampled by Phylmar Group with PCBs in caulking > 50 ppm

Note:
1. Floor plan reference: FBA (Frederick Brown Associates). 1993. Malibu High School. Building and Site Renovation.

Morning View Drive

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ENVIRON

DRAFTED BY: MMG | DATE: 9/11/14

Location of Window Caulking in the Library Sampled by Phylmar Group with PCB Concentrations above 50 ppm

Building A (800, Great White Shark), Malibu High School
30215 Morning View Drive, Malibu, California

Figure 1

PROJECT: 0433980F

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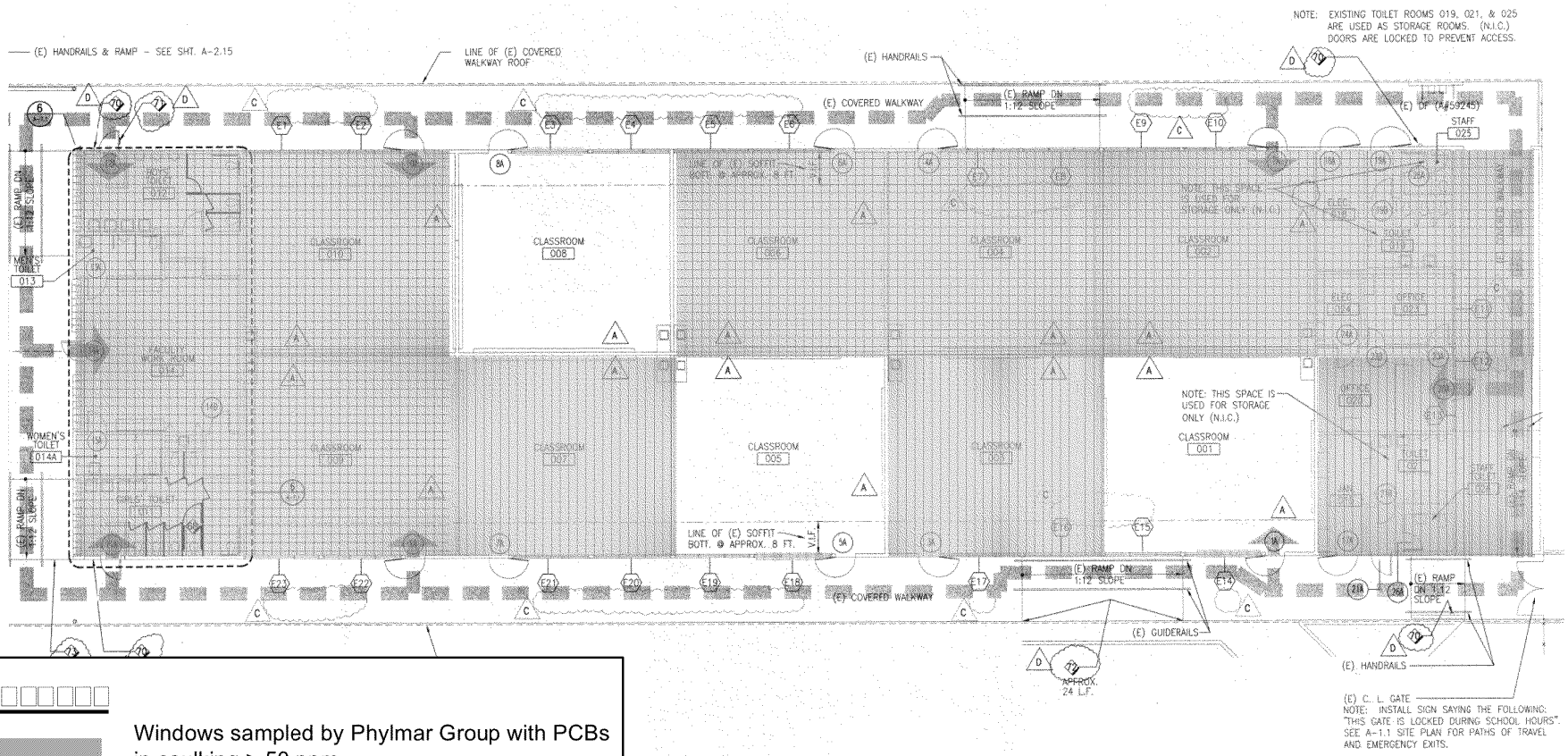


Windows sampled by Phylmar Group with PCBs in caulking > 50 ppm

Note:
1. Floor plan reference: JE Jacobs. 2001. Santa Monica – Malibu Unified School District Modernization Program Juan Cabrillo Elementary School. September 7, 2001.

"Z:\01_Projects\Malibu High School\03_GIS\Bldg_Investigation_Sampling\Figures_DoorsandWindows.pptx"

ENVIRON

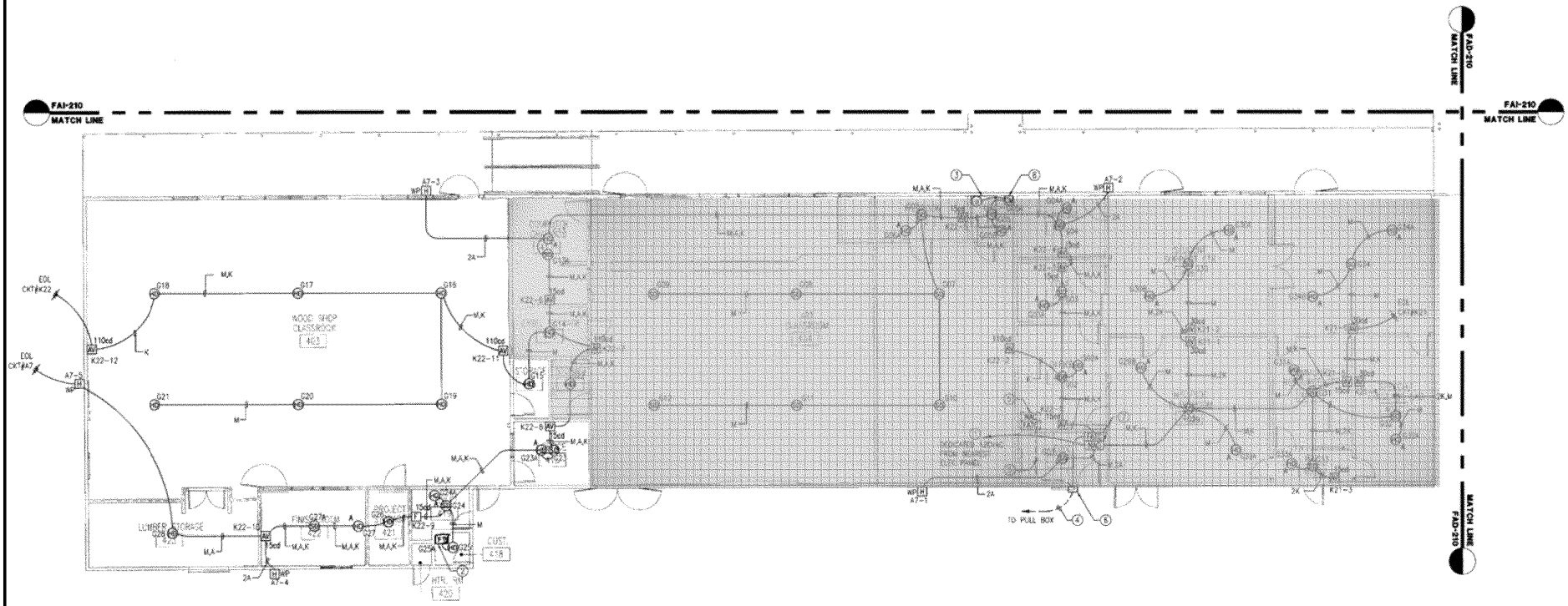
DRAFTED BY: MMG | DATE: 9/11/14

Locations of Window Caulking in Rooms 1, 5, and 8 of Building E
Sampled by Phylmar Group with PCB Concentrations above 50 ppm

Building E (000, Blue Shark), Malibu High School
30215 Morning View Drive, Malibu, California

Figure 2

PROJECT: 0433980F



Total PCB Concentrations in Wipe Samples above 10 µg/100 cm^2 after Repairs and Recleaning

Note:
1. Floor plan reference: HMC Architects. 2010. Malibu Middle & High School. Campus-Wide Fire Alarm Replacement Project. October 6, 2010.

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ENVIRON

DRAFTED BY: MMG | DATE: 9/19/14

Locations of Internal Door Caulking in Wood Shop with Total PCB Concentrations in Wipe Samples above 10 g/100 cm^2 after Repairs and Recleaning

Building G (500, Angel Shark), Malibu High School
30215 Morning View Drive, Malibu, California

Figure 3

PROJECT: 0433980F

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Photo 1. Building E (000, Blue Shark), Room 1

Photo 2. Building E (000, Blue Shark), Room 5

Photo 3. Building E (000, Blue Shark), Room 8

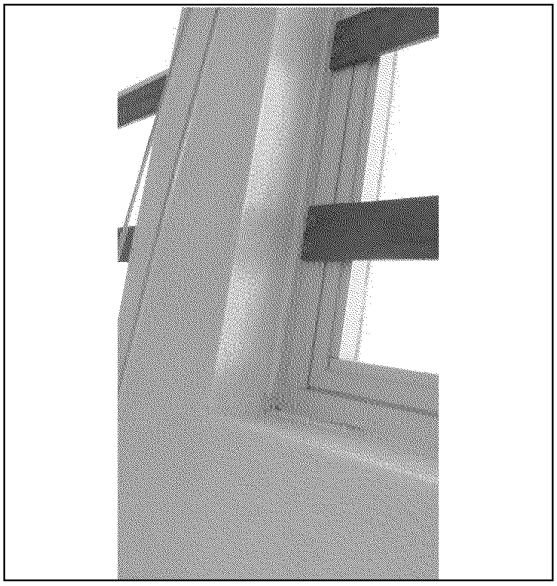

Photo 4. Building A (800, Great White Shark), Library – windows facing Morning View Drive

ENVIRON	Representative Photos of the Windows Subject to Caulk Removal Malibu High School 30215 Morning View Drive, Malibu, California	Figure **4** PROJECT: 0433980F

Attachment A

July 3, 2014 MHS-Specific PCB-Related Building Materials Management, Characterization and Remediation Plan submitted to USEPA Region IX

Site-Specific PCB-Related Building Materials Management, Characterization and Remediation Plan

for the Library and Building E Rooms 1, 5, and 8 at Malibu High School

Prepared for:
Santa Monica-Malibu Unified School District
Santa Monica, California

Prepared by:
ENVIRON International Corporation
Westford, Massachusetts,
San Francisco and Irvine, California

Date:
July 2014

Project Number:
0433980B

ENVIRON

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Acronyms and Abbreviations

BMP	Best Management Practice
Cal/OSHA	California Division of Occupational Safety and Health
CFR	Code of Federal Regulation
cm^2	square centimeter(s)
DOT	Department of Transportation
DTSC	California Department of Toxic Substances Control
ENVIRON	ENVIRON International Corporation
HEPA	high-efficiency particulate air
HVAC	heating, ventilation, air conditioning
mg/m^3	milligram(s) per cubic meter
MHS	Malibu High School
MERV	minimum efficiency reporting value
MS/MSD	matrix spike and matrix spike duplicate
ng/m^3	nanogram(s) per cubic meter
PCB	polychlorinated biphenyl
PEA	preliminary environmental assessment
PEL	permissible exposure limits
Phylmar	Phylmar Group, Inc.
PPE	personal protective equipment
ppm	parts per million
QA/QC	quality assurance/quality control
SMMUSD	Santa Monica-Malibu Unified School District
SOP	Standard Operating Procedure
TWA	time-weighted average
TSCA	Toxic Substances Control Act
USEPA	United States Environmental Protection Agency

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1 Malibu High School Specific PCB Plan

1.1 Introduction

On behalf of the Santa Monica – Malibu Unified School District (SMMUSD or the District), ENVIRON International Corporation (ENVIRON) has prepared this Site-Specific polychlorinated biphenyl (PCB)-Related Building Materials Management, Characterization and Remediation Plan (Site-Specific Plan) for the Library and Building E (also called the Blue Building) Rooms 1, 5, and 8 at Malibu High School (MHS), located at 30215 Morning View Drive, Malibu, California as requested by United States Environmental Protection Agency (USEPA) Region IX.[1] An aerial photo and site plan of MHS indicating the location of these rooms are provided as Figures 1 and 2, respectively.

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ENVIRON prepared this Site-Specific Plan to address the results of testing at MHS which identified PCBs in air, wipe and building material samples as summarized in Appendix B of this plan. Specifically, this Site-Specific Plan addresses the building materials which contain ≥50 parts per million (ppm) PCBs in exceedance of USEPA standards, which have been identified in the Library and Building E Rooms 1, 5, and 8. This Site-Specific Plan describes procedures for management, characterization and remediation of building materials in which PCBs have been identified above 50 ppm in accordance with guidance from USEPA Region IX, and the Toxic Substances Control Act (TSCA) 40 Code of Federal Regulations (CFR) 761.

Building materials containing PCBs at concentrations ≥50 ppm in the Library and Building E Rooms 1, 5, and 8 will be remediated in accordance with the procedures in this plan when building renovations are planned and funded. Currently, the timing for beginning removal of ≥50 ppm PCB-impacted building materials identified at MHS is anticipated to begin within 9–12 months after a Coastal Commission Permit for the demolition and renovation is issued to the District. However, it is not clear how long it will take for that permit to be issued. It is likely that the intended remediation of ≥50 ppm PCB-impacted building materials would not be completed within the June 4, 2015 timeframe specified in USEPA's June 4, 2014 letter to the District. Therefore, the District proposes to manage this material in place (in the Library and Building E Rooms 1, 5, and 8) for up to 15 years or until removal/remediation of ≥50 ppm PCB-impacted materials occur, whichever is sooner. The District will maintain management in place BMPs as described in this plan during this time period. The District also may propose an option to extend this period, if needed, with concurrence with USEPA. This approach is consistent with USEPA Region I's agreement with the University of Massachusetts.[2]

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The general approach presented in this Site-Specific Plan is as follows:

1. **Management In Place – Implementation of BMPs Prior to Remediation/Renovation Activities:** Until renovation work is scheduled for completion, all confirmed areas with

[1] June 4, 2014 letter from Steven Armann, Manager Corrective Action Section, Land Division US EPA Region IX to Sandra Lyon, Superintendent SMMUSD.

[2] 2012. Consent Agreement and Final Order from USEPA Region I to University of Massachusetts System. TSCA-01-2012-036.

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≥50 ppm PCB-impacted building materials (the Library and Building E Rooms 1, 5, and 8) will be handled in accordance with BMPs.[3] In addition, pilot studies consisting of air and wipe sampling (pre-BMP and post-BMP) within MHS will be completed to evaluate the effectiveness/frequency of BMPs and make adjustments in the implementation of the BMPs if appropriate. BMPs will continue to be implemented on a regularly occurring basis prior to remediation of confirmed ≥50 ppm PCB-impacted building materials.

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2. **Site Characterization:** Prior to proposed demolition or renovation activities in the Library and Building E Rooms 1, 5, and 8, a comprehensive assessment, including sampling and laboratory analysis for PCBs, will be completed of potentially PCB-impacted building materials.[4]
3. **Proposed ≥50 ppm PCB Removal/Remediation Procedures:** Immediately prior to proposed demolition or renovation activities, remediation of all confirmed ≥50 ppm PCB-impacted building materials will be performed.

As further described below, the District intends to conduct this remediation in accordance with 40 CFR 761.62 and 40 CFR 761.61(a) and (c). The written certification signed by the District, as required under 40 CFR 761.61(a)(3)(i)(E), is included in Appendix A.

It should be noted that regulatory oversight of investigation and potential remediation of PCB-impacted soils at MHS is to be managed separately through the Preliminary Environmental Assessment (PEA) process under the California Department of Toxic Substances Control (DTSC). Therefore, discussion related specifically to soil at MHS is not included herein.

This Site-Specific Plan will be implemented by the District as the owner and operator of the buildings. The District will contract with a qualified remediation contractor to conduct the work detailed in this Plan prior to the planned renovations/demolition. All PCB testing will be conducted by a qualified environmental consultant under contract to the District. The District's contact information is below:

Ms. Sandra Lyon, Superintendent
Santa Monica Malibu Unified School District
1651 Sixteenth Street
Santa Monica, CA 90404
310-450-8338 ext. 70229

1.1.1 Flow Charts and Schedule

In order to summarize the proposed activities associated with addressing PCBs at MHS, a flow chart illustrating the overall approach is provided as Figure 3. Detailed flow charts associated

[3] Although not covered by this Specific Plan, the BMPs outlined in this plan will also be generally followed in all pre-1981 buildings at MHS until renovation or demolition of those structures, as noted in specific parts of the BMP Appendix of this plan.

[4] Although not covered by this Specific Plan, this step will also be generally followed in pre-1981 buildings at MHS during future renovation or demolition of those structures.

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1.2 Management In Place – Implementation of BMPs Prior to Remediation/Renovation Activities

Until removal/remediation of ≥50 ppm PCB-impacted materials in the Library and Building E Rooms 1, 5, and 8, the District will maintain management in place BMPs as described in this plan during this time period as discussed in the introduction. A schedule for implementation of BMPs to minimize the potential for exposures to PCBs, which will be commencing in the summer of 2014, is provided in Figure 7. The schedule also includes the sampling and analysis of air and wipe samples in the four rooms known to have PCB-impacted caulk ≥50 ppm during 2014 and 2015 to evaluate what, if any, monitoring may be needed after June 2015.

A flow chart detailing the procedures associated with management in place, which includes both Building Inspections and BMPs, are provided as Figures 4 and 5, respectively. A detailed description of the Building Inspections and BMPs are provided in Appendix C. A summary of key aspects of the BMPs for MHS requested by USEPA-Region IX are provided below.

1.2.1 Education and Communication to Reduce Exposure Potential

The District will distribute PCB awareness materials to MHS teachers, staff, and the school community by maintaining copies in the front office or in another suitable location in the campus. The materials shall be available in languages other than English, based on the school's need. The awareness material will include elements to minimize potential exposures to PCB's including encouragement to avoid contact with the caulk in the Library and Building E Rooms 1, 5, and 8, to wash hands with soap often and before eating and drinking, and to improve ventilation by opening windows. Hand wash instruction posters will be placed near the sinks to remind the students to wash hands thoroughly and use soap.

1.2.2 Cleaning and Inspection Procedures

To reduce the amount of dust that can become airborne in the school buildings, the Manager of Facilities or designee will monitor the cleaning procedures of the custodial workers in areas identified as potentially impacted PCB building materials as described in the subsections below. This initial practice will be further evaluated using data from the BMP pilot study described in Section 1.2.3.

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1.2.2.1 Routine Cleaning [5]

- Once a week:
  - Clean carpeting or rugs using a vacuum equipped with High-Efficiency Particulate Air (HEPA) filters;
  - Clean hard flooring (i.e. vinyl tiles, painted/sealed concrete, wood) using mops treated with water (or water-based, non-toxic additives); and

[5] Note that BMP cleaning practices prohibit the use of dry cleaning techniques like dry dusting, mopping, and sweeping within the rooms.

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  - Wash mirrors, powder shelves, and enameled surfaces in lavatories, as well as sinks, commodes, and urinals.
- Once a month, in addition to the weekly cleaning:
  - Clean the air distribution devices (registers, grilles & diffusers):
  - Wipe all accessible surfaces with a dampened cloth, including, but not limited to, walls, shelves, baseboards, door frames, door knobs, furniture, fixtures, window sills, and any other accessible portions; and
  - Clean the interior of waste receptacles with dampened wipe clothes, and wash as necessary. Visually check the areas after cleaning.

1.2.2.2 Annual Cleaning

In conjunction with the District's "summer cleaning", additional cleaning BMPs will be implemented. All surfaces in all rooms (vertical and horizontal) will be cleaned as follows:

- Areas covered in weekly and monthly routine cleaning; and
- Areas that are not normally accessed (e.g., areas behind bookshelves).

In addition, a thorough cleaning of the heaters and heating ventilation air conditioning (HVAC) systems with ductwork is currently anticipated to be completed when MHS is not occupied for a relatively long time, i.e. spring, summer, or winter break. The District has contracted with AirTek to perform the HVAC cleaning during June through August 2014. Upon completion of the HVAC cleaning, all surface areas, where dust accumulation could occur, will be cleaned. Wet methods will be used. Non-toxic disinfectant can be applied, if necessary. The evaluation of the initially proposed annual frequency for the thorough cleaning of the HVAC system will be evaluated as part of the BMP pilot study described in Section 1.2.3.

The following components of the HVAC system units will be thoroughly cleaned by appropriately trained personnel:

- Clean blowers, fan housings, plenums (except ceiling supply and return plenums), scrolls, blades or vanes, shafts, baffles, dampers, and drive assemblies, where applicable. All visible surface deposits shall be removed without introducing dust to the air by using wet methods. A suitable operative drainage system will be in place prior to beginning wash down procedures.
- Clean all coils and related components, including evaporator fins.
- Negative air pressure that will draw dust to a HEPA vacuum collection system will be maintained at all times in the duct cleaning area to minimize migration of dust into occupied areas.
  - Clean air distribution devices (fresh air intakes, registers, grilles, & diffusers).

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1.2.3 Air and Wipe Sampling MHS Pilot Study on BMPs

As described in Appendix B, sampling data taken after the cleaning conducted in January 2014 showed that the cleaning did reduce both airborne and wipe concentrations. A two-part pilot study to further evaluate the effectiveness and frequency of BMPs at MHS will be conducted from June to August, 2014.

The first part of the pilot study is to evaluate changes in air and wipe sample results since the December 2013 cleaning. Therefore, air and wipe sampling will be conducted from June to August 2014 in rooms cleaned in December 2013 but prior to implementation of the District's annual BMP cleaning (pre-BMP) to evaluate any changes in sample results since the cleaning conducted approximately 6 months ago. Some of these rooms have been unoccupied since this cleaning and had limited cleaning conducted since last sampled in January 2014. This data will assist in evaluating whether air or wipe concentrations change significantly between thorough cleanings, which can aid in evaluating cleaning frequency and practices moving forward.

The second part of the pilot study will be to conduct air and wipe sampling both before (pre-BMP) and after the annual BMP cleaning (post-BMP), scheduled for June through August 2014. This data will assist in evaluating the effectiveness of the cleaning procedures.

A memorandum titled "Additional Information on the Selection of Representative Rooms for Air/Wipe Testing – Revision 2" was provided by ENVIRON to USEPA on June 18, 2014 describing proposed pre-BMP and post-BMP air and wipe sampling procedures. This memorandum, which also outlines the rationale for selecting rooms in MHS to be included in the Air and Wipe Sampling Pilot Study, is provided as Appendix D, and achieved USEPA concurrence on June 13, 2014.[6]

Upon receipt of analytical data, air and wipe sampling results will be compared to the levels described below. The pre-BMP results will also be directly compared to the post-BMP results to determine the percent reduction. At the end of the summer effort, ENVIRON will prepare a full report that contains a summary of all of the inspection and sampling results, ENVIRON's conclusions from the data, and any recommendations, including additional testing or follow up work to evaluate BMP cleaning or changes in cleaning frequencies, if warranted based on the data. ENVIRON will also provide intermediate summary results to USEPA for each MHS building in the pilot study within 15 days of the receipt of final quality assured/quality controlled post-BMP results for that building. These intermediate building summary reports would become appendices to the final report. These intermediate building reports would include summary of the inspections and sampling results as well as the laboratory reports.

The Library and Building E Rooms 1, 5, and 8, will be sampled (air and wipe) in summer of 2014, approximately around the school's winter break in the 2014/2015 school year, and in June 2015 prior to the next annual summer cleaning. These sampling events will provide data to further evaluate the frequency of BMPs. This data will be used to evaluate the needed frequency of future monitoring in these rooms past June 4, 2015, if planned demolition/renovation of the Library and Building E Rooms 1, 5, and 8, respectively, does not

[6] June 13, 2014 email from T. Huetteman of EPA to D. Daugherty of ENVIRON.

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occur by then. ENVIRON will submit a report with the data and monitoring recommendations 45-days after the receipt of the final sample results from the laboratory.

1.2.3.1 Air Samples

For most locations, total PCBs in air samples will be conservatively compared to a health-based threshold of 200 nanogram per cubic meter (ng/m^3). This threshold is lower than the health-protective USEPA Public Health Levels of PCBs in School Indoor Air[7] for teachers and elementary schools students and above[8], but consistent with the threshold for MHS cited by USEPA Region IX.[9]

1.2.3.2 Wipe Samples

Total PCBs in wipe samples collected at the school were previously compared to the USEPA regulatory threshold of 10 microgram (µg)/100 centimeters squared (cm^2).[10] Although the development of health-based wipe thresholds contains numerous uncertainties, preliminary calculations conducted by ENVIRON suggest that the 10 µg/100 cm^2 may be appropriate for surfaces with low skin exposure potential (e.g., window sills, floors, walls) but a lower threshold, closer to 2-3 µg/100 cm^2, may be more applicable for areas of high skin exposure potential (e.g., desks and tables).

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However, for schools containing PCBs, it is our understanding that 1 µg/100 cm^2 is now being conservatively used by USEPA Region I as a surface wipe threshold. Therefore, based on our discussions with USEPA Region IX, a comparison threshold of 1 µg/100 cm^2 should be used moving forward for wipe samples taken at MHS. If wipe results are >1 µg/100 cm^2, we would contact USEPA to discuss the potential development of more site-specific risk exposure values.

1.2.4 Procedures for Removal of Light Fixtures/Light Ballasts

Light ballasts with the potential to contain PCBs and light fixtures with visible residues from potential past leakage of ballast will be removed within 360 days, or sooner, of identification to allow for planning, contracting, and development of a schedule to work around school schedules. Light ballasts that do not have a label confirming the absence of PCBs will be assumed to contain PCBs. When removing light fixtures and ballasts, a licensed contractor will be hired and follow USEPA recommended removal recommendations.

1.2.5 Procedures for Deteriorated PCB-Impacted Building Materials

The Managers of Facilities will perform inspections of PCB-impacted materials inventoried at MHS once a year. The custodial workers or maintenance employees will also report to their managers for any damaged/deteriorated PCB-impacted materials noticed during the routine or annual cleaning. Procedures for addressing deteriorated PCB will use the following hierarchy of options:

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[7] http://www.epa.gov/pcbsincaulk/maxconcentrations.htm.
[8] 300, 450, 600, and 450 ng/m^3 for elementary school, middle school, high school, and faculty, respectively[8]
[9] Letter from Steve Armann/USEPA to Sandra Lyon/SMMUSD dated January 27, 2014.
[10] Letter from Steve Armann/USEPA to Sandra Lyon/SMMUSD dated January 27, 2014.

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1.2.5.1 Patch or Repair

Patching using new caulk will be done if possible; repairs would be done in situations where patching of damage caulk would not be suitable (e.g., too much loose caulk is present). Details on the procedures for patching or repair are described in Section C.1.2.5.2(a).

1.2.5.2 Encapsulation of PCB Building Materials

Encapsulation is a commonly used abatement technique intended to reduce PCB exposure in buildings. Encapsulation is accomplished by covering the surface(s) of PCB building materials with a coating material that serves as a barrier to minimize the release of a contaminant from a source. On-site encapsulation would generally be an interim solution, and appropriate disposal of any remaining PCB wastes would be required upon removal of the material or at the time of structure demolition. Further details are provided in Section C.1.2.5.2(b).

1.2.5.3 Removal of PCB-Im pacted Building Materials

If it is decided not to patch, repair, or encapsulate deteriorated PCB building materials, they would be removed following the procedures described in Section C.1.2.5.2(c).

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1.2.6 PCB Waste Disposal

Any PCB wastes generated during implementation of BMPs will be handled as described in Section C.1.2.7.

A pilot study will be conducted during the BMP cleaning at MHS during June through August 2014 to identify the applicable waste disposal requirements under TSCA 40 CFR 761 and California hazardous waste regulations set forth in Title 22, Division 4.5 of the California Code of Regulations, which will be followed to handle the waste. Wastes in solid form containing ≥50 ppm PCBs and liquid wastes containing ≥5 ppm PCBs will be transported for off-site disposal at a hazardous waste disposal facility approved by USEPA. If the waste is hazardous, it will be managed as further described in Section F.4 of this plan. If the waste contains <50 ppm PCBs (solids) or <5 ppm PCBs (liquids), it will be further evaluated for hazardous waste characteristics unrelated to PCB concentration, as applicable (e.g., toxicity due to other constituents associated with normal dust deposition) and will be transported off-site to an appropriate hazardous or nonhazardous waste disposal facility permitted to receive the waste.

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1.3 Site Characterization

Once renovation/demolition at MHS is scheduled within the areas previously confirmed to contain ≥50 ppm PCBs (Library, Building E (Blue Building) Rooms 1, 5 and 8), additional characterization of building materials will be conducted prior to the start of any renovation or demolition activities, as described below. Given that PCB-impacted materials may remain in place for up to 15 years and the technologies available for site characterization and the regulations that will be in effect at the time of site characterization cannot be predicted at this time, a site-specific characterization plan providing details regarding the general approach described below will be provided to USEPA for approval at least 180 days prior to the planned

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renovation/demolition.[11] The plan is anticipated to include a description of the sampling procedures, media to be sampled, sampling locations within each medium, sampling of adjacent substrates, and waste management and disposal procedures.

Generally, a building inspection, including a visual survey, will be conducted first. Representative samples of building materials will be collected for laboratory analysis prior to commencement of renovation/demolition work. During PCB characterization activities, representative samples may be collected, as necessary, from the following media: caulk, paint, mastics, sealants, wood, brick, concrete, nonporous building materials and any other building material suspected to contain PCBs based on the Building Inspection results to be completed by August 2014.

PCB characterization sampling will be conducted to evaluate the nature and extent of PCBs present in buildings materials. Based on the results of characterization sampling, specific areas will then be targeted for PCB remediation, as appropriate based on the concentrations of PCBs identified.

A flow chart detailing the procedures associated with Characterization is included within Figure 6. Descriptions of the sampling procedures, location identification, and evaluation of adjacent substrates are found in Appendix E.

1.4 Proposed ≥50 ppm PCB Removal/Remediation Procedures

Given that PCB-impacted materials may remain in place for up to 15 years and the technologies available for remediation and the regulations that will be in effect at the time of remediation cannot be predicted at this time, a revised site-specific remediation work plan, if needed (based upon the characterization results), providing details regarding the general approach described below will be submitted to USEPA for approval at least 60 days prior to the planned renovation/demolition.[12] The plan is anticipated to include a description of cleanup goals as well as the following remedial activities: 1) engineering controls, 2) air monitoring for workers, 3) remediation procedures for each medium, 4) encapsulation, 5) verification (confirmatory) sampling, 6) contingency planning, 7) waste management and disposal, and 8) recordkeeping and documentation.

Appendix F provides further details anticipated to be implemented for removing, cleaning up, and disposing of PCB-impacted media in the Library and Building E Rooms 1, 5, and 8 at MHS based on current USEPA regulations and guidance. A flow chart detailing the procedures associated with remediation is included within Figure 6.

[11] The 180-day period is intended to allow sufficient time: 1) for sampling to occur following USEPA approval, 2) for the District to develop a revised site-specific remedial work plan, if needed, for USEPA review and approval based on the sampling results, and 3) for the District to commence remedial activities within that 180-day period.

[12] The 60-day time period is intended to allow sufficient time: 1) for USEPA approval of the any revised site-specific remedial work plan based on the sampling results and 2) for the District to commence remedial activities within that 60-day period.

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2 References

Armann, Steven 2013. "Request for Cleanup Plan." Letter to Sandra Lyon. RCRA Corrective Action Office, USEPA, San Francisco, California. November 21.

Armann, Steven. 2014. "Preliminary Review of Post-Cleaning PCB Verification Samples." Letter to Sandra Lyon. RCRA Corrective Action Office, USEPA, San Francisco, California. January 27.

Armann, Steven. 2014. "Review of Limited Polychlorinated Biphenyl Remediation and Verification Sampling Report." Letter to Sandra Lyon. RCRA Corrective Action Office, USEPA, San Francisco, California. March 21.

The City of New York et al. 2002-2007. Collective Bargaining Agreement between the City of New York and the Board of Education of the City School District of the City of New York and International Union of Operating Engineers. AFL-CIO (LOCAL 891).

EMSL Analytical, Inc. 2014. "Laboratory Analytical Results, Order Number 011400030." January 10.

Enviro-Chem, Inc. 2013. "Laboratory Analytical Results, Job Number 79563." December 31.

ENVIRON. 2014. "Additional Information on the Selection of Representative Rooms for Air/Wipe Testing – Revision 2." June 18.

Environmental Health and Engineering, Inc. 2011. Operations and Maintenance Plan for Polychlorinated Biphenyls Estabrook Elementary School Lexington, Massachusetts. October.

Fiberlock Technologies, Inc. 2013. "Ready-to-Use Disinfectant & Fungicide Concentrate." [Material Safety Data Sheet]. November 27.

New York City School Construction Authority (NYCSCA). 2012. *Draft Best Management Practice (BMP) for PCB Caulk in New York City School Buildings.* EPA Consent Agreement and Final Order. Docket Number TSCA-02-2010-9201. April. Available online: http://www.nycsca.org/Community/Programs/EPA-NYC-PCB/PCBDocs/EPAApprBestMgtPractices.pdf.

NYCSCA. 2012. Draft Best Management Practices (BMP) for PCB Caulk in New York City School Buildings. EPA Docket Number: TSCA-02-2010-9201. April.

NRC Environmental Services (NRC). 2013. "Injury/Illness Prevention Documentation Packages for Classroom 1-3, 301, Room 14, 16, Faculty Office near Classroom 723, and Library."

NRC. 2013. "Operational Work Plan – Addendum (Ventilation Unit)." December 26.

The Phylmar Group, Inc. (Phylmar). 2013. "Limited PCB Remediation, Verification Sampling Work Plan for Malibu High School/Middle School," December.

Phylmar. 2014. "Initial Environmental Sampling Report. Malibu High School-Middle School. Juan Cabrillo Elementary School," January.

ED_001593_00007558

Phylmar. 2014. "Limited Polychlorinated Biphenyl Remediation and Verification Sampling Report," February.

Phylmar. 2014. "Pre- and Post-Best Management Practices Cleaning Polychlorinated Biphenyl Air Sampling Report," February.

Sentinel Products Inc. 2010. "Sentinel 805 EnviroWash." [Material Safety Data Sheet]. March 12.

United States Environmental Protection Agency (USEPA). 1976. February. *PCBs in the United States Industrial Use and Environmental Distribution*. Contract 68-01-3259 Task 1 Final Report. USEPA Office of Toxic Substances, Washington D.C. EPA/560/6-76-005.

USEPA. 2004. *PCB Inspection Manual*. August. Available online: http://www.epa.gov/oecaerth/resources/publications/monitoring/tsca/manuals/pcbinspect/pcbinspectmanual.pdf.

USEPA. 2005. November. *Polychlorinated Biphenyl (PCB) Site Revitalization Guidance Under the Toxic Substances Control Act (TSCA).*

USEPA. 2009. October. *Current Best Practice for PCBs in Caulk Fact Sheet – Interim Measures for Assessing Risk and Taking Action to Reduce Exposures*. Available online: http://www.epa.gov/pcbsincaulk/pdf/caulkinterim.pdf.

USEPA. 2010. April. *Steps to Safe Renovation and Abatement of Buildings That Have PCB-Containing Caulk – Abatement Step 1: Prepare an Abatement Strategy.* Available online: http://www.epa.gov/pcbsincaulk/guide/guide-sect4a.htm.

USEPA. 2012a. January. *Literature Review of Remediation Methods of PCBs in Buildings.* Available online: http://www.clu-in.org/download/contaminantfocus/pcb/PCBs-in-bldgs-lit-review.pdf.

USEPA. 2012b. June. *PCBs Questions & Answers.* Available online: http://www.epa.gov/region9/pcbs/faq.html.

USEPA. 2012c. September. *Polychlorinated Biphenyls (PCBs) in School Buildings: Sources, Environmental Levels, and Exposures.* Available online: http://www.epa.gov/pcbsincaulk/pdf/pcb_EPA600R12051_final.pdf.

USEPA. 2013a. October. *PCB-Containing Fluorescent Light Ballasts (FLBs) in School Buildings.* Available online: http://www.epa.gov/epawaste/hazard/tsd/pcbs/pubs/ballasts.htm

USEPA. 2013b. December. *PCBs: Lighting Fixture Ballasts.* Available online: http://www.mowastecoalition.org/Resources/Documents/EPA%20Region%207%20PCB%20Ballasts%20Clean%2012052013.pdf.

USEPA. 2014a. February. *PCBs in Caulk in Older Buildings.* Available online: http://www.epa.gov/pcbsincaulk/.

USEPA. 2014b. March. *PCBs in Schools.* Presented at Southern California Clean, Green & Healthy Schools Partnership Meeting, March 25, 2014.

ED_001593_00007558

University of New Hampshire. 2010. Caulking Management Plan. October.

Wilson, Patrick. 2013. “Malibu High School Interim Cleanup Plan.” Message to Sandra Lyon. E-mail. December 12.

W. M. Barr. 2009. “Klean-Strip Acetone.” [Material Safety Data Sheet]. April 14.

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Tables

Table 1. Summary of PCB Results - Air Samples
Malibu Middle/High School
30215 Morning View Drive
Malibu, California

	Initial Air Sampling[1]		Additional Air Sampling [2]		Post-Remediation[3]		Post-BMP Cleaning[2]		
	11/2/2013	Windows	12/21-22/2013	Windows	1/2-3/2014	Windows	1/4-6/2014	Windows	% Reduction
EPA's Threshold:				**200**					
Library	49.12	Closed			29.24	Closed			40.5%
Room 1	57.47	Closed			27.85	Closed			51.5%
Room 2	16.04	Closed					8.61	Closed	46.3%
Room 5	23.92	Closed			11.41	Closed			52.3%
Room 8	15.66	Closed			7.37	Closed			52.9%
Room 9	26.86	Closed					12.09	Closed	55.0%
Room 103	20.36								
Room 104	20.64								
Room 105	13.15								
Room 301	37.99	Closed			11.93	Closed			68.6%
Room 3			10.22	Open			9.19	Open	10%
Room 4			3.91	Open			3.74	Open	4%
Room 6			5.52	Closed			4.73	Closed	14%
Room 7			8.94	Open			8.09	Open	10%
Room 10			2.92	Open			3.07	Open	-5%
Room 14			10.16	Closed			8.75	Closed	14%
Room 16			14.12	Open			13.3	Open	6%
Room 17			7.43	Closed			6.53	Closed	12%
Room 302			39.96	Closed			37.19	Closed	7%
Room 303			18.2	Closed			16.93	Closed	7%
Gym Faculty Office			96.65	Closed			89.02	Closed	8%
Outdoor			1.23		1.11				
		Min	2.92				3.07		
		Max	96.65				89.02		

Q:\S\SMMUSD\0433980B Best Management Practices\Malibu Specific Plan\[MHS Summary of PCB results Tables 1 - 3.xlsx]air samples

Notes:
All results are reported in nanograms per cubic meter (ng/m^3)
No airborne sample exceeded EPA's airborne health-based criteria of 200 ng/m^3
Not tested.
Other sampling in these rooms either exceeded 50 ppm for bulk sample or 10 ug/100cm2 for wipe sample.

References:
[1] Phylmar Group. Initial Environmental Sampling Report. January 2014.
[2] Phylmar Group. Pre- and Post-Best Management Practices Cleaning Polychlorinated Biphenyl Air Sampling Report. February 2014.
[3] Phylmar Group. Limited Polychlorinated Biphenyl Remediation and Verification Sampling Report. February 2014.

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Table 2. Summary of PCB Results - Wipe Samples
Malibu Middle/High School
30215 Morning View Drive
Malibu, California

	11/2/2013[1]			1/3/2014[2]					
TSCA Cleanup Threshold:	**10**						**% Reduction**		
	Interior Sill Plaster/Metal	**Exterior Sill Metal**	**Interior Floor**	**Interior Sill Plaster/Metal/tile**	**Exterior Sill Metal**	**Interior Floor**	**Interior Sill**	**Exterior Sill**	**Interior Floor**
Library	7.92	47.6	0.01	0.28	0.05		96.5%	99.9%	
Room 1	11.4	0.47	0.69	0.1		0.03	99.1%		95.7%
Room 2	0.97	0.07	0.18						
Room 5	14.7	1	0.71	0.05			99.7%		
Room 8	3.34	0.27	0.53	0.03			99.1%		
Room 9	0.84	0.23	0.49						
Room 103	0.77	0.02	0.73						
Room 104	0.83	0.18	0.16						
Room 105	0.96	0.55	0.15						
Room 301	24.6	0.02	0.93	1.83			92.6%		
Office next to boy's room				0.07					

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Notes:
All results are reported in micrograms per 100 square centimeters (ug/100cm^2)
Not sampled
Exceeding EPA's 10 ug/100cm^2

References:
[1] Phylmar Group. Initial Environmental Sampling Report. January 2014.
[2] Phylmar Group. Limited Polychlorinated Biphenyl Remediation and Verification Sampling Report. February 2014.

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Table 3. Summary of PCB Results - Bulk Samples
Malibu Middle/High School
30215 Morning View Drive
Malibu, California

	11/6/2013 [1]	
TSCA Threshold:	**50**	
	Window Caulk	**Interior Wall Paint**
Library	1,870	15.2
Room 1	164	32.3
Room 2	6.33	7.27
Room 5	98.7	16
Room 8	52.8	14.7
Room 9	19.9	16.7
Room 103	6.69	2.57
Room 104	7.15	8.83
Room 106	1.19	5.08
Room 301	9.16	40.1

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Notes:
All results are reported in parts per million (ppm)
Exceeding 50 ppm

References:
[1] Phylmar Group. Initial Environmental Sampling Report. January 2014.

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Figures

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DRAFTED BY: JPH

DATE: June 2014

Aerial Photograph
Malibu High School
30215 Morning View Drive
Malibu, California

FIGURE
1

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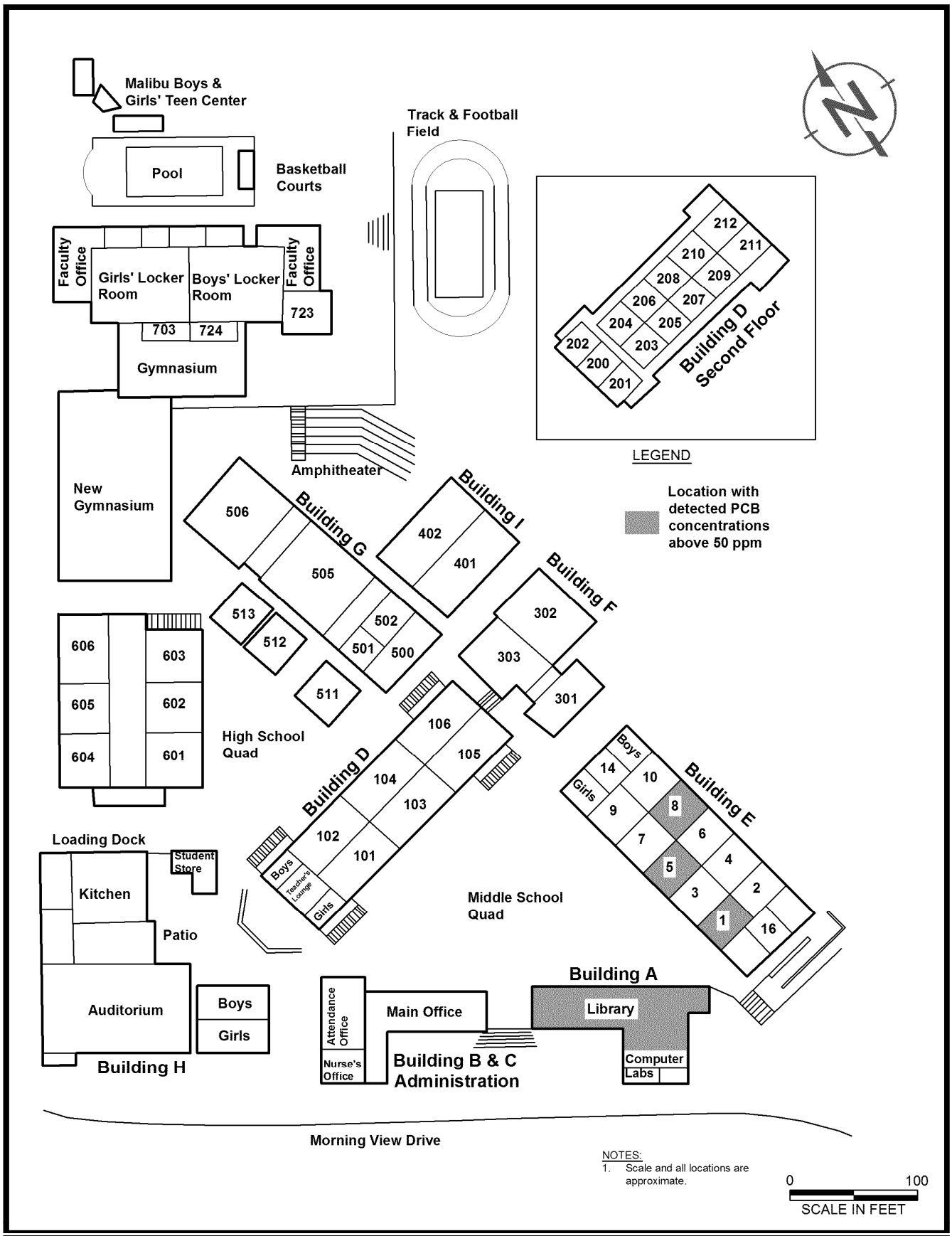
JHNATKO 6/26/14 [AERIAL] N:\ACTIVE PROJECTS\CAD\SMMUSD



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DRAFTED BY: JPH

DATE: June 2014

Site Plan
Malibu High School
30215 Morning View Drive
Malibu, California

FIGURE
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04-33980B

JHNATKO 6/26/14 [SITEPLAN] N:\ACTIVE PROJECTS\CAD\SMMUSD

Figure 3: Overall Approach to PCB Management

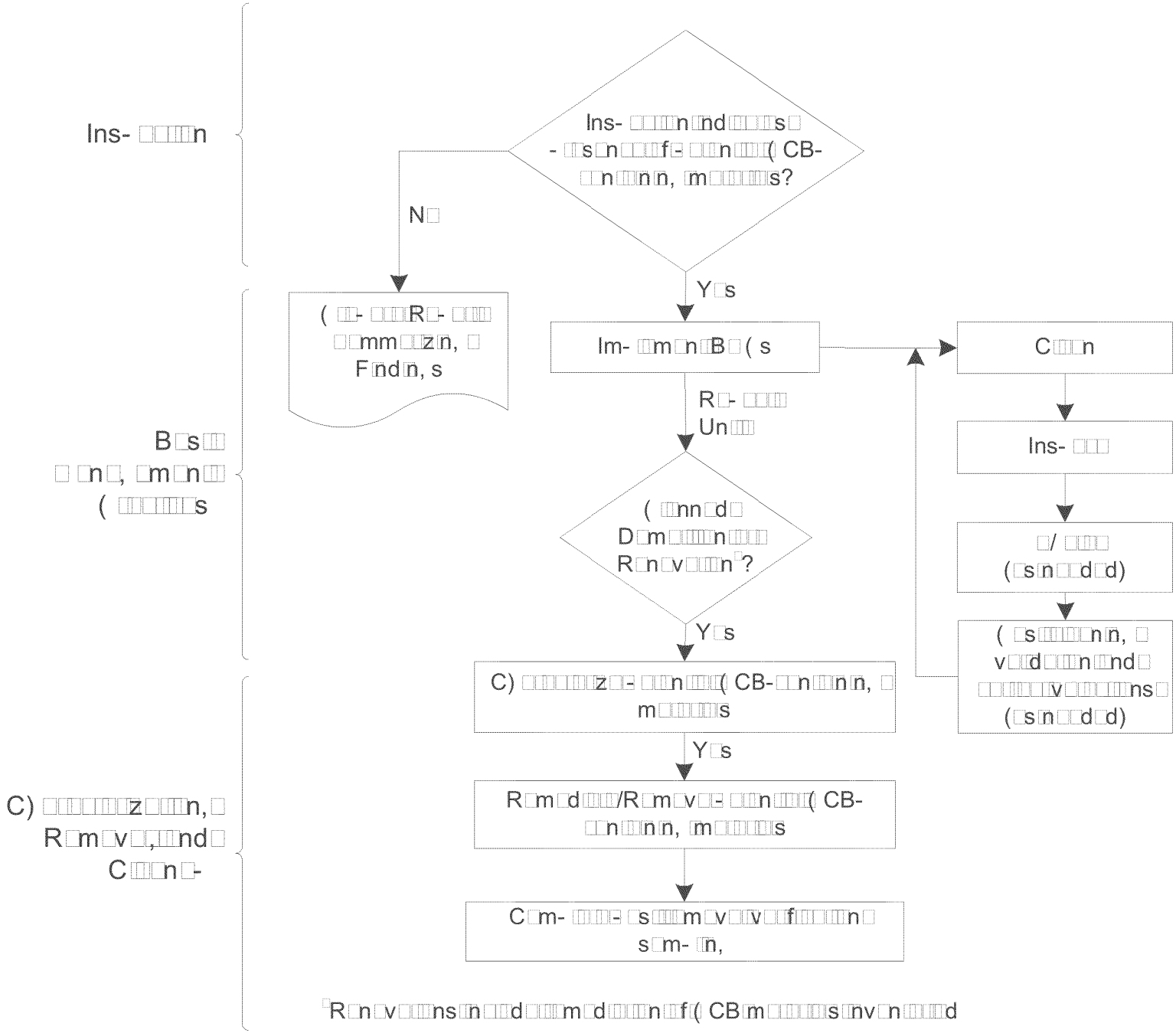

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Figure 4: Building Materials Inspections

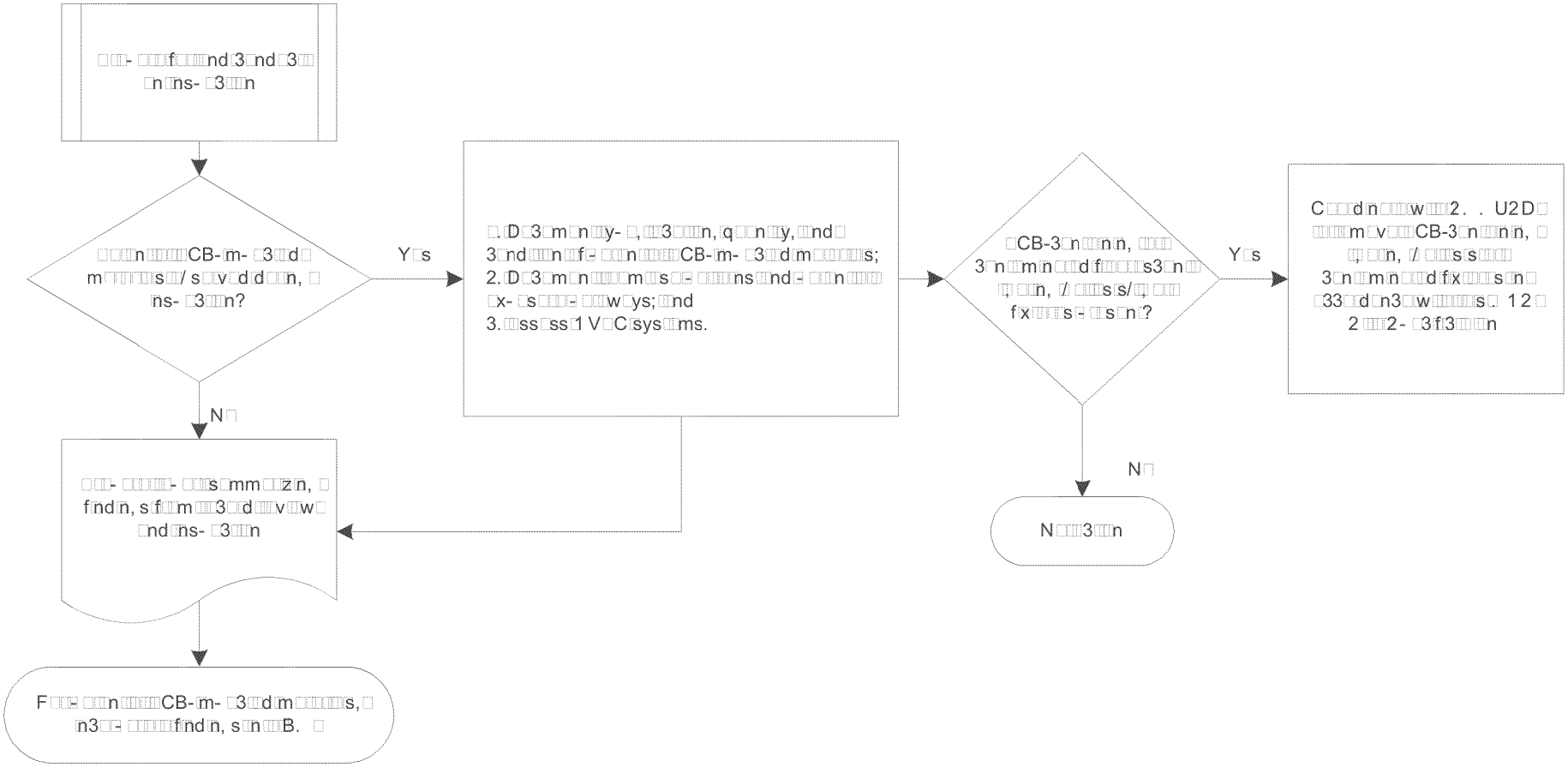

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Figure 5: Best Management Practices Implementation

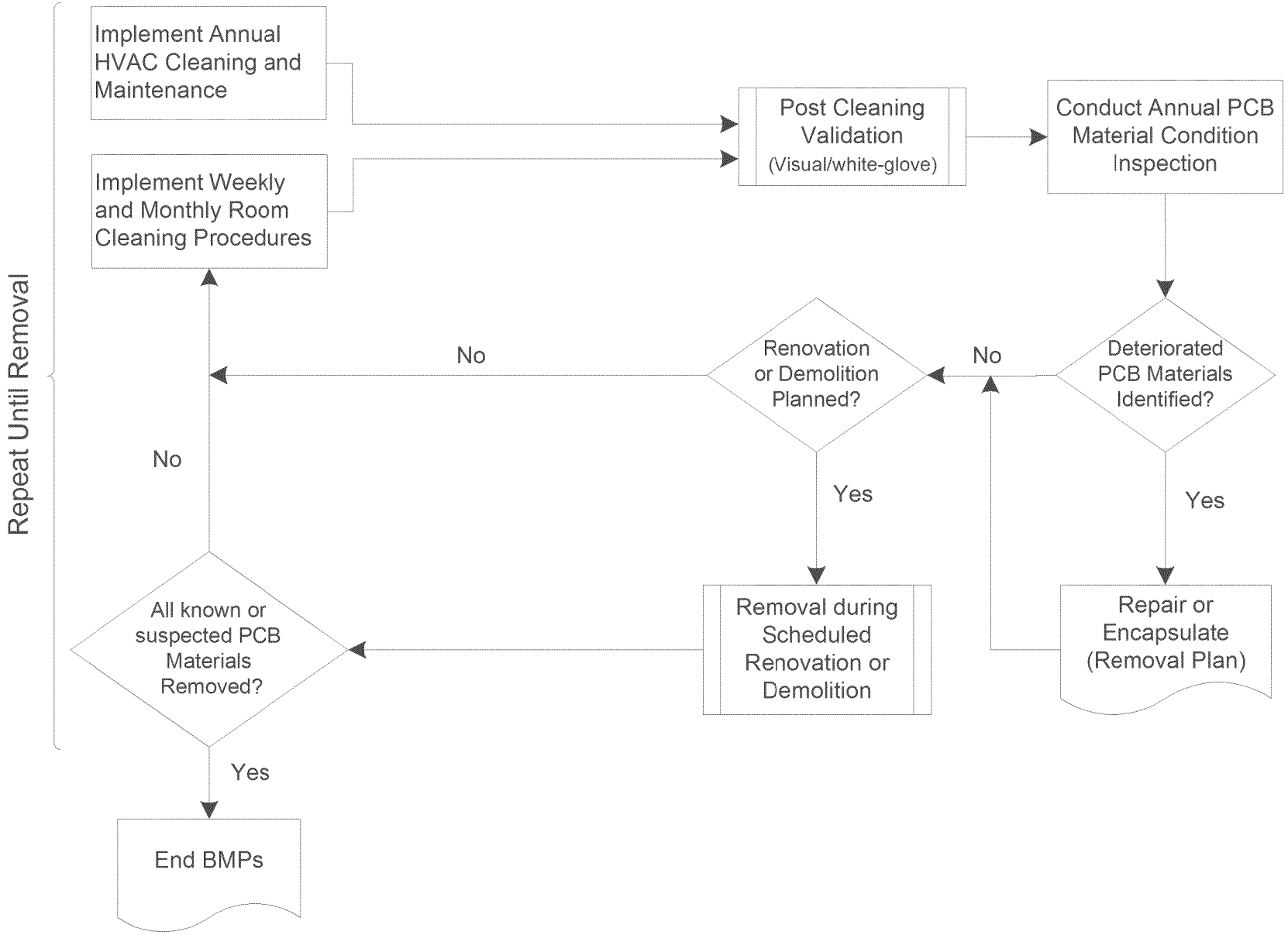

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Figure 6: Characterization, Removal, and Cleanup Plan Prior to Demolition or Renovation

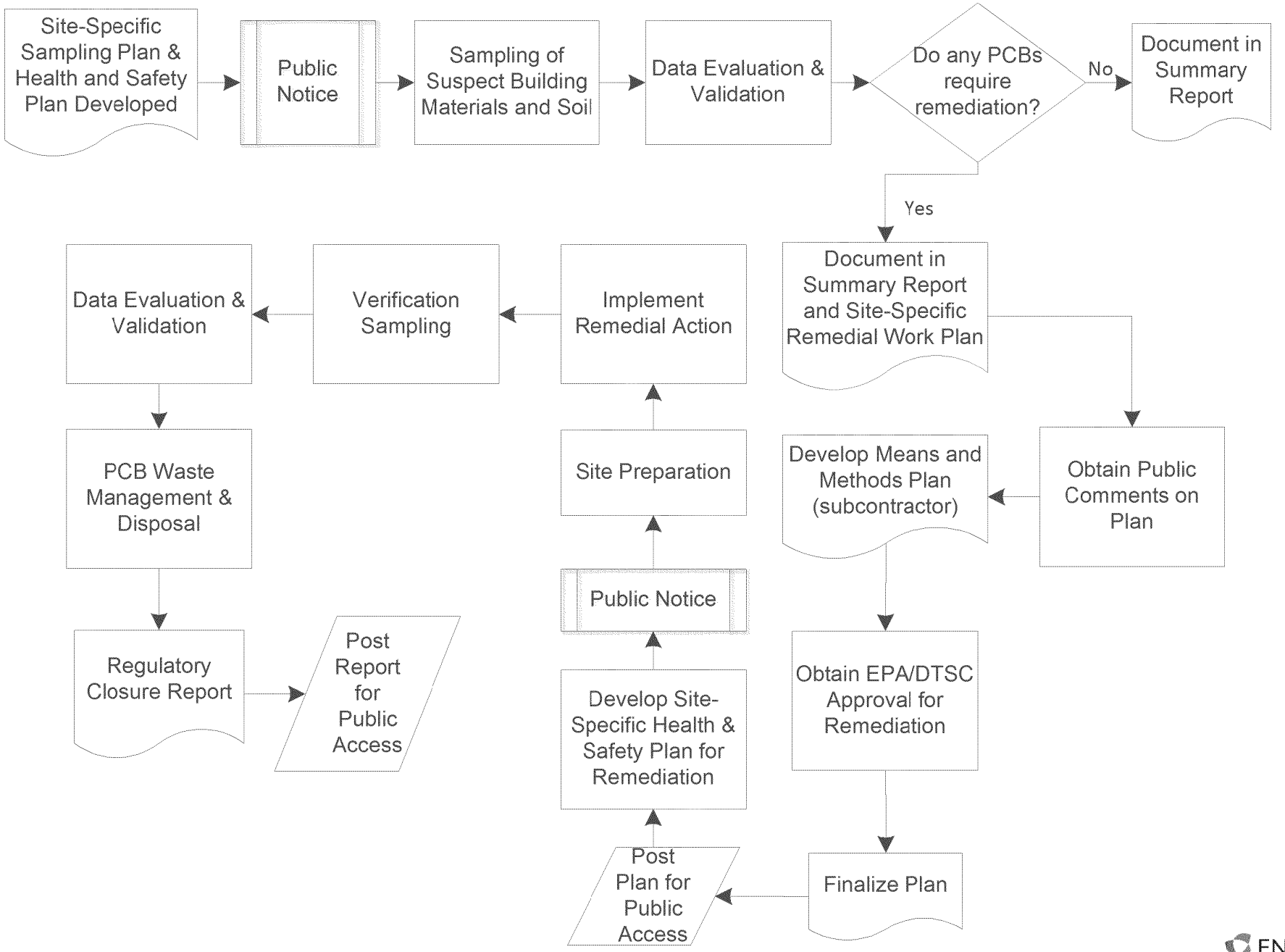

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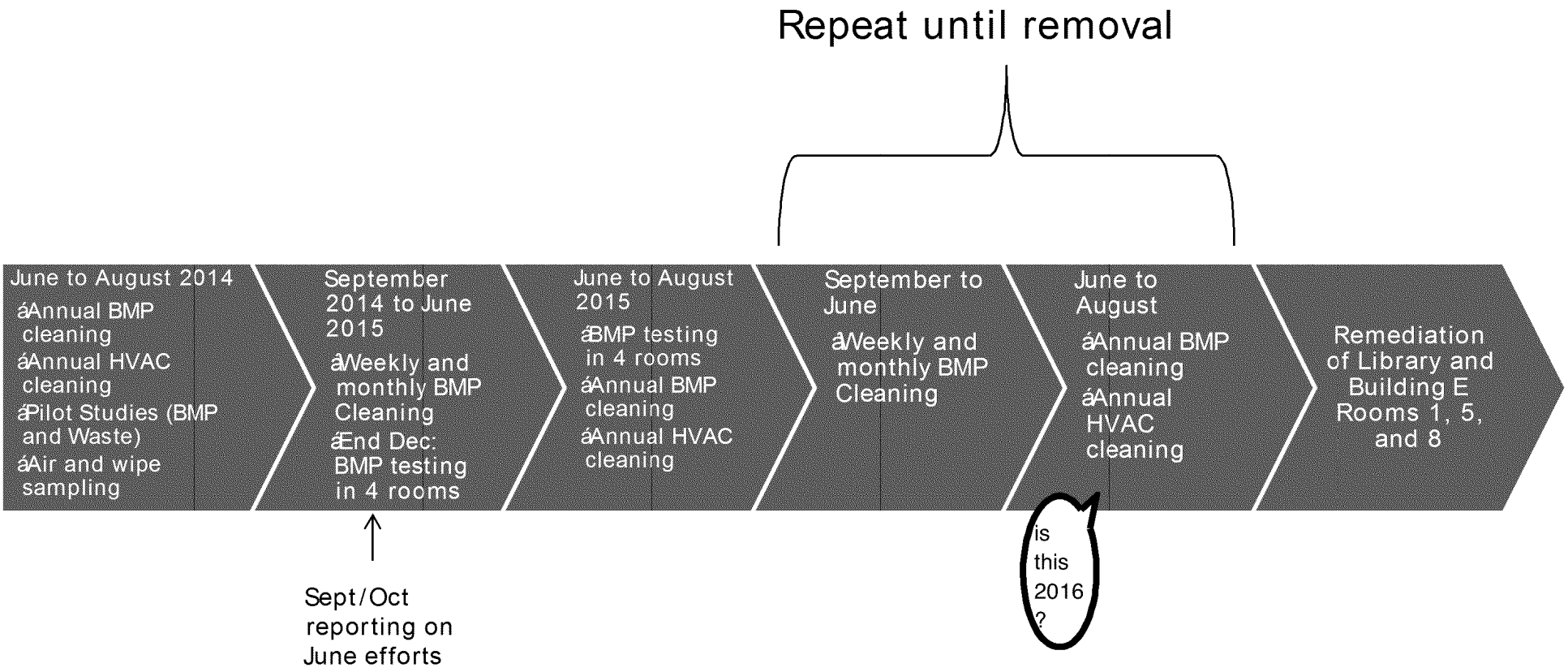
Figure 7: Timeline for MHS Library and Building E Rooms 1, 5, and 8



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Appendix A

Notification and Certification

Certification
Site-Specific PCB-Related Building Materials Management, Characterization and Remediation Plan for the Library and Building E Rooms 1, 5, and 8 at Malibu High School
Santa Monica-Malibu Unified School District
Malibu High School, 30215 Morning View Drive, Malibu, California

Cleanup activities are planned for the Malibu High School located at 30215 Morning View Drive, Malibu, California ("Site") as described in the above Site-Specific PCB-Related Building Materials Management, Characterization and Remediation Plan for the Library and Building E Rooms 1, 5, and 8 at Malibu High School ("Site-Specific Plan"). In accordance with 40 CFR 761.61(a)(3)(i)(E) and 761.61(c), the undersigned parties hereby certify that all sampling plans, sample collection procedures, sample preparation procedures, extraction procedures, and instrumental/chemical analysis procedures used to assess or characterize the PCB contamination at the Site are on file and available for USEPA inspection at the offices of SMMUSD, 1651 Sixteenth Street, Santa Monica, CA 90404.

Each person signing this document represents that he or she is authorized to do so on behalf of the party for whom such execution is made.

Santa Monica-Malibu Unified School District

Signature: Janece L Maez

Name: Janece L. Maez

Title: Associate Superintendent, Business and Fiscal Services

Date: July 3, 2014

Appendix B

Summary of Previous PCB Investigation Results

B.1 Summary of Previous PCB Investigation Results

B.1.1 Description of all Air, Wipe and Bulk Samples

The Phylmar Group, Inc. ("Phylmar") conducted initial air, wipe, and bulk sampling for PCBs in the library, and in Buildings D, E, and F at the MHS campus in early November 2013.[13] A site plan is presented as Figure 2. PCB sampling results are summarized in Tables 1 through 3 and a brief discussion of this initial sampling event is provided below:

- On November 2, 2013, air samples were collected over 24 hours with the doors and windows closed and the ventilation system turned off. These conditions were selected to provide a worst case indoor air scenario by isolating the potential airborne sources of PCBs and by avoiding dilution of airborne PCB concentrations with either outdoor air or the indoor ventilation system. Air sampling PCB results ranged from 13.2 to 57.5 ng/m^3, which were all below 200 ng/m^3, which is USEPA's health-based standard. Air sampling data are summarized in Table 1;
- On November 6, 2013, PCB wipe sampling of exterior and interior window sills and interior floor tile was conducted in general accordance with 40 CFR 761.123. Wipe sampling PCB results ranged up to 47.6 µg/100cm^2, with 4 samples out of 30 (13%) exceeding USEPA's previously stated regulatory level[14] of 10 µg/100cm^2. Wipe sampling data are summarized in Table 2; and
- On November 6, 2013, bulk samples of window caulk and paint were collected at locations listed in Table 3. Bulk sampling PCB results in both media ranged from 1.19 to 1,870 ppm. Four out of 20 (20%) samples exceeded USEPA's regulatory level of 50 ppm. The four samples that exceeded where of caulk materials. Specifically, caulk samples that contained ≥50 ppm PCBs included those from the Library, and Building E (Blue Building) Rooms 1, 5 and 8. Bulk sampling data are summarized in Table 3.

In order to gather PCB data for a larger portion of MHS, additional air samples were collected by Phylmar on December 21-22, 2013.[15] These data are also summarized in Table 1. No air samples exceeded 200 ng/m^3 for PCBs. It should be noted that some of the windows were open and some were closed during this round of testing.

On December 26 to 30, 2013, NRC performed BMP cleaning (using a solvent) in the Library, Room 1, 5, and 8 of Building E, as well as Room 301 of Building F. All of these rooms were identified through the sampling data above as containing wipe or bulk samples in exceedance of 10 µg/100cm^2 or 50 ppm, respectively.

Phylmar conducted post-cleaning air and wipe sampling on January 2 and 3, 2014 in the Library, Room 1, 5, and 8 of Building E, as well as Room 301 of Building F.[16] Results are

[13] 2014. Phylmar Group. Initial Environmental Sampling Report. January.
[14] Letter from Steve Armann/USEPA to Sandra Lyon/SMMUSD dated January 27, 2014.
[15] 2014. Phylmar Group. Pre- and Post-Best Management Practices Cleaning Polychlorinated Biphenyl Air Sampling Report. February.
[16] 2014. Phylmar Group. Limited Polychlorinated Biphenyl Remediation and Verification Sampling Report. February.

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summarized in Tables 1 and 2. No air or wipe samples exceeded 200 ng/m^3 or 10 µg/100cm^2 for PCBs, respectively.

On December 26 to 30, 2013, NRC also performed BMP cleaning in 12 rooms throughout Buildings E and F as well as the Gym Faculty office in Building J. On January 4-6, 2014, Phylmar collected post-cleaning air samples in those rooms, and the results are shown in Table 1. No air samples exceeded 200 ng/m^3 for PCBs.

B.1.2 Summary of Sampling Results

In summary, between November 2013 and January 2014, air, wipe and bulk samples were collected at MHS for PCB analysis. No air samples were found to exceed 200 ng/m^3, which is USEPA's health-based standard they specified for MHS.[17] Four wipe samples were found to exceed USEPA's previously stated regulatory level of 10 µg/100cm^2. However, all four locations were cleaned on December 26 to 30, 2013, and the post-cleaning wipe samples were all less than 10 µg/100cm^2. Four bulk samples of window caulk with ≥50 ppm PCBs still remains at MHS in the Library and Building E Rooms 1, 5, and 8. As defined in 40 CFR 761.3, the caulk is PCB Bulk Product Waste as it contains ≥50 ppm PCBs. Therefore, the District intends to implement BMPs prior to additional characterization and remediation of these rooms during the next planned and funded renovation or demolition of these four rooms.

[17] Letter from Steve Armann/USEPA to Lyon/SMMUSD dated January 27, 2014

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Appendix C

Management In Place
Implementation of BMPs Prior to Remediation/Renovation Activities

C.1 Management in Place – Implementation of BMPs Prior to Remediation/Renovation Activities

Currently, the timing for beginning removal of ≥50 ppm PCB-impacted building materials identified at MHS is anticipated to begin within 9–12 months after a Coastal Commission Permit is issued to the District. However, it is not clear how long it will take for that permit to be issued. It is likely that the intended remediation of ≥50 ppm PCB-impacted building materials would not be completed within the June 4, 2015 timeframe specified in USEPA's June 4, 2014 letter to the District. Therefore, the District proposes to manage this material in place (in the Library and Building E Rooms 1, 5, and 8) for up to 15 years or until removal/remediation of ≥50 ppm PCB-impacted materials occur, whichever is sooner. The District will maintain management in place BMPs as described in this plan during this time period. We also propose an option to extend this period, if needed, with concurrence with USEPA. This approach is consistent with USEPA Region I's agreement with the University of Massachusetts.[1]

Therefore, if renovations and remediation of the four rooms where PCBs were identified above 50 ppm are not completed by June 4, 2015, a schedule for further implementation of BMPs, which will be commencing in the summer of 2014, is provided in Figure 7. This schedule also includes the sampling and analysis of air and wipe samples in the four rooms known to have PCB-impacted caulk above 50 ppm.

A flow chart detailing the procedures associated with management in place, which includes both Building Inspections and BMPs, are provided as Figures 4 and 5, respectively.[2]

C.1.1 Building Inspection

A PCB-Related Building Materials Inspection Plan ("Inspection Plan") was included as Section 2 of the *Comprehensive PCB-Related Building Materials Inspection, Management, and Removal Plan*, prepared by ENVIRON in April 2014. The Inspection Plan provided information on its objectives and the procedures that will be followed to conduct an inspection for materials suspected of being impacted by PCBs at schools located within the SMMUSD. The Inspection Plan covered the objectives and responsibilities under this plan and was organized into three main inspection sections: pre-inspection activities, inspection procedures, and post-inspection activities. Information gathered during the inspection on the types, locations, quantities/sizes, and conditions of building materials that could potential contain or have been potentially impacted by PCBs will be used to select appropriate BMPs for those materials. A flow chart detailing the procedures associated with Building Inspections is provided as Figure 4.

In addition to the information provided in the *Comprehensive PCB-Related Building Materials Inspection, Management, and Removal Plan*, the following activities will be conducted at MHS:

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[1] 2012. Consent Agreement and Final Order from USEPA Region I to University of Massachusetts System. TSCA-01-2012-036.

[2] Although not covered by this Specific Plan, the BMPs outlined in this plan will also be generally followed in all pre-1981 buildings at MHS until renovation or demolition of those structures, as noted in specific parts of the BMP section of this plan.

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- Despite any availability of construction records, buildings at MHS or rooms constructed before 1981 will be inspected.
- Fluorescent light fixtures and non-fluorescent light fixtures (if present) will be inspected, including, where appropriate, both the ballasts and the fixtures.
- Dust collected by the contractor cleaning the HVAC system at MHS during June/July 2014 will be sampled and tested as part of the waste characterization pilot study described below.

Building inspections of MHS, including the Library and Building E Rooms 1, 5, and 8, implemented according to the procedures referenced and cited herein, began on June 16, 2014. Results of the Building Inspections will be documented in an inventory of potential PCB primary sources and "assumed" potential PCB-impacted building materials (secondary sources).

C.1.2 Best Management Practices

BMPs will be conducted at MHS to manage PCB-impacting building materials potentially present and to minimize exposures potentially encountered by students, school teachers and staff prior to any confirmed ≥50ppm PCB-impacted building materials being removed. A BMP Plan was included as Section 3 of the *Comprehensive PCB-Related Building Materials Inspection, Management, and Removal Plan*, prepared by ENVIRON in April 2014. The April BMP Plan is generally applicable for the school buildings at MHS that were built or renovated prior to 1981. With the exception of light ballast and light fixture removal, all BMPs described below were contained in the April BMP Plan.

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A flow chart detailing the procedures associated with BMPs is provided as Figure 5.

C.1.2.1 Cleaning and Inspection Procedures

The Managers of Facilities or designee will monitor the cleaning procedures of the custodial workers in areas identified as potentially impacted PCB building materials as described in Section 1.2.2 of the plan's main text. Key topics discussed in Section 1.2 are not repeated in this appendix.

Routine Cleaning

See Section 1.2.2.1 of main text of this plan for description.

Annual Cleaning

See Section 1.2.2.2 of main text of this plan for description.

Cleaning of Tools and Equipment

Tools and equipment will be cleaned so that cross contamination and dirt buildup is minimized. The following procedures will be followed:

- Cloths, sponges, and mops will be cleaned before being used for a different location;
- Water buckets will be cleaned periodically to avoid dirt buildup;
- The HEPA vacuum cleaner will be inspected periodically for signs of dirt buildup in the interior and exterior surfaces. If present, dirt will be completely cleaned with wipes.

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- HEPA filters will be replaced periodically per the recommendations of the manufacturers of the filters and used filters will be disposed of properly as determined during the pilot study described below.

As described in Section 1.2.6 of the main plan text, a pilot study will be conducted during the BMP cleaning at MHS during June through August 2014 to identify the applicable waste disposal requirements under TSCA 40 CFR 761, which will be followed to handle the waste following consultation with USEPA.

C.1.2.2 Heating, Ventilation, and Air Conditioning Systems

Adequate ventilation in the rooms helps reduce the potential for accumulation of PCBs in the indoor air. Ventilation provided for the rooms at MHS includes one or more of the following:

- Open windows
- Unit ventilators
- Central exhaust system

Unit ventilators and central exhaust systems are collectively referred to as part of the "HVAC system" in this plan. Windows should be opened, if weather allows, and ventilation systems should be turned on prior to the start of the school in the morning to dilute any potential accumulation of PCBs in the air overnight and the rooms should continue to be ventilated when they are occupied.

To help appropriate operation of the ventilation system and minimize potential PCB concentrations in air, maintenance employees will:

- Conduct routine and annual cleaning for the HVAC system as described in Section 1.2.2.1 and 1.2.2.2, respectively, of the main text of this plan
- Monitor that the airflow is not obstructed;
- Use filters with a minimum efficiency reporting value (MERV) of 14, or highest for which the HVAC system is designed if it cannot accommodate MERV 14 filters, and inspect and change them at the frequency recommended by the manufacturer or every 6 months, whichever comes sooner;
- Conduct or assist in an annual maintenance overhaul for the HVAC system, including the ducts;
- Lubricate fan motors as necessary and keep them clean; and
- Adjust fresh air inlet dampers on supply fans or heating stacks when necessary.

C.1.2.3 PCB Material Condition Inspection and Reporting

The Managers of Facilities will perform detailed inspections of potentially PCB-impacted materials inventoried at MHS once a year. The primary goal of these inspections is to visually check and document the conditions of suspected or known PCB materials the inventory generated as described above. The observed conditions will be documented and updates will

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be made to inventory, when necessary. When damaged or deteriorated materials with known PCB concentrations ≥ 50 ppm are observed, the manager or designee will take immediate action to secure the area and consult ENVIRON for further steps.

The custodial workers or maintenance employees will also report to their managers for any damaged/deteriorated inventoried materials noticed during the routine or annual cleaning.

C.1.2.4 Procedures for Removal of Light Fixtures/Light Ballasts

Light ballasts with the potential to contain PCBs and light fixtures with visible residues from potential past leakage of ballast will be removed within 360 days, or sooner, of identification to allow for planning, contracting, and development of a schedule to work around school schedules. Light ballasts that do not have a label confirming the absence of PCBs will be assumed to contain PCBs. When removing light fixtures and ballasts, a licensed contractor wi be hired and follow USEPA recommended removal recommendations.

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When removing light fixtures and ballasts, a licensed contractor will follow the general procedure below:

- Prior to beginning the removal work, the work area will be marked with barricades and warning signs to guard against unauthorized entry into the work area.
- The work area will not be left unattended after removal has begun and until ballasts and PCB-impacted wastes have been sealed in appropriate containers.
- The floor below the light fixtures will be covered with polyethylene sheeting to protect the floor from PCB-impacted materials.
- Light bulbs or tubes will be removed and fixtures will be taken down and placed on polyethylene sheeting on the floor.
- Light fixtures may be partially dismantled to allow the fixture to fit in the specified container.
- All PCB-impacted materials, including light ballasts, fixtures, spent solvents, rags, gloves, and protective clothing will be stored in sealed and labeled steel drums for off-site disposal.
- In order to expedite removal, the drums of PCB-impacted waste will be disposed of in accordance with 40 CFR 761.61 at a facility permitted to accept PCB Bulk Product Waste; shipping and disposal will be documented using hazardous waste manifests as further described in Section F.4 of this plan.

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C.1.2.5 Procedures for Deteriorated PCB-Impacted Building Materials

C.1.2.5.1 Identification Actions

- If deteriorated (i.e., damaged) potential PCB-impacted building materials[3] are observed, the Managers of Facilities will be notified as part of the inspection reporting.
- Within 5 days of notification of the Manager of Facilities, maintenance employees (under the supervision of the Manager of Facilities) will install a temporary barrier (e.g. metallic tape) to cover deteriorated potential PCB building materials prior to its repair, encapsulation, or

[3] As identified in the inventories devel oped during the Building Inspection phase.

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C.1.2.5.2 Options to Rectify Deteriorated Building Materials

C.1.2.5.2(a) Patch or Repair

Patching using new caulk will be done if possible; repairs would be done in situations where patching of damage caulk would not be suitable (e.g., too much loose caulk is present). Before starting patch or repair, the work area will be set up with 6-mil poly protection to minimize dust accumulating on the nearby surfaces and collect debris. Movable furniture will be placed in a different area. If deemed necessary, containment with negative pressure will be erected. The HVAC system will be isolated by blocking the air distribution openings with plastic sheeting or other appropriate means. Dust generation will be minimized by using wet methods and/or HEPA filter vacuuming during patch or repair. The workers will wear appropriate personal protection equipment (PPE), including, gloves, Tyvek suit, and shoe cover.

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After patch or repair, the immediate surfaces will be vacuumed with a HEPA-filtered vacuum cleaner and then wiped with a wet cloth. The work area will then be visually inspected to monitor that no dust or debris is present and the area will be re-cleaned thoroughly if dust or debris is identified. All the waste and contaminated items will be placed in a sealed container in a secured area for appropriate off-site disposal.

Asbestos surveys have been conducted for MHS and asbestos-containing building materials (ACBM) are being managed in place following the procedures in the Asbestos Operations and Maintenance Plan (O&M Plan). When damaged building material is an ACBM, repair or patch will only be conducted by asbestos certified workers. When damaged building material is not identified in the O&M Plan but is suspected to contain asbestos, the material will be sampled and will be analyzed by a qualified laboratory for asbestos. If confirmed by laboratory analyses, the repair or patch will only be conducted by asbestos certified workers.

C.1.2.5.2(b) Encapsulation of PCB Building Materials

Encapsulation is a commonly used abatement technique that is intended to reduce PCB exposure in buildings. Encapsulation is accomplished by covering the surface(s) of PCB building materials with a coating material that serves as a barrier to minimize the release of a contaminant from a source.

Effective encapsulants can reduce PCB concentrations at the exposed surfaces and eventually in indoor air.[4] Generally, coating materials that are better at resisting the migration of PCBs from the source tend to perform better at reducing the concentrations of PCBs on the surfaces and in indoor air. Resistance to PCB migration is the key in selecting the most effective encapsulants for PCB sources. Prior to the use of encapsulants, the District will confer with USEPA on this matter. If encapsulants are proposed, the District will follow procedures outlined in Appendix F of this plan and will develop a continued schedule for collection of air and wipe samples, in consultation with USEPA, to verify encapsulant effectiveness.

On-site encapsulation would generally be an interim solution, and appropriate disposal of any remaining PCB wastes would be required upon removal of the material or at the time of structure renovation or demolition.

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C.1.2.5.2(c) Protocols Applicable to Removal of PCB-Impacted Building Materials

If it is decided not to repair deteriorated PCB building materials, they will be encapsulated or removed following the procedures described in Appendix F.

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C.1.2.6 Post-Cleaning Validation and Corrective Action

C.1.2.6.1 Validation

Post-cleaning validation, which can be performed by the Manager of Facilities or designees, will be conducted to evaluate the effectiveness of the BMP Plan. After each monthly cleaning, the post-cleaning validation will include the following activities in representative locations:

- Observe if there is any visible dust accumulation in the rooms. If dust is observed, the surface(s) will be re-cleaned.
- Upon passing the visual inspection, assess the cleanness of the surface by swiping the surfaces with a hand wearing a white glove to assist in visual assessment. If dust or discoloration is observed on the glove, the surface(s) will be re-cleaned.
- White-glove inspections will be conducted after each monthly cleaning.

Validation of this approach is being conducted as part of the proposed BMP pilot study described in Section 1.2.3.

C.1.2.6.2 Corrective Actions

Surfaces that do not pass the white-glove test will be re-cleaned.

C.1.2.7 PCB Waste Disposal

PCB wastes generated during implementation will primarily consist of cleaning dust, cleaning materials (i.e. rags, etc.) and cleaning water. The used HEPA filters for the vacuum cleaners and collected dusts will be stored in designated containers. Other PCB waste, such as debris, could be also generated when repairing or encapsulating damaged PCB materials.

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[4] Laboratory Study of Polychlorinated Biphenyl (PCB) Contamination and Mitigation in Buildings, Part 3. Evaluation of the Encapsulation Method. EPA/600/R-11/156B, April 2012.

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NRC did test the dust collected during their cleaning conducted at MHS in January for PCBs. The results showed a total PCB (all was Aroclor-1254) amount of 1.1 ppm (see Attachment C-1).

A pilot study will be conducted during the BMP cleaning at MHS during June through August 2014 to identify the applicable waste disposal requirements under TSCA 40 CFR 761 and California hazardous waste regulations set forth in Title 22, Division 4.5 of the California Code of Regulations, which will be followed to handle the waste.

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C.1.2.8 Communication and Education, Training, and Recordkeeping

Refer to the BMP Plan in ENVIRON's April 2014 Comprehensive PCB-Related Building Materials Inspection, Management, and Removal Plan for a detailed discussion on Communication and Education, Training, and Recordkeeping procedures to be followed at MHS associated with PCBs. Communication and education related to reducing exposure potential is described in Section 1.2.1.

C.1.3 Air and Wipe Sampling MHS Pilot Study on BMPs

See Section 1.2.3 for description.

C.1.4 Proposed Cleanup Levels for Air and Wipe Samples

See Sections 1.2.3.a and 1.2.3.2 for further description.

C.1.5 Reporting Requirements

For any building investigations or sampling done in the Library or Building E Rooms 1, 5, and 8, a report that contains a summary of all of the inspection and sampling results, conclusions from the data, and any recommendations would be provided to USEPA within 45 days of completion of the field efforts and receipt of the laboratory data.

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Enviro – Chem, Inc.
1214 E. Lexington Avenue, Pomona, CA 91766 Tel (909) 590-5905 Fax (909) 590-5907

Date: December 31, 2013

Mr. Frank Garrett
NRC Environmental Services
3777 Long Beach Blvd., Suite 100
Long Beach, CA 90807
Tel(310)629-0859 Email:fgarrett@nrcc.com

Project: **SMMUSD Job #79563**
Lab I.D.: **131230-2**

Dear Mr. Garrett:

The **analytical results** for the solid sample, received by our laboratory on December 30, 2013, are attached. The sample was received intact, accompanying chain of custody.

Enviro-Chem appreciates the opportunity to provide you and your company this and other services. Please do not hesitate to call us if you have any questions.

Sincerely,

Curtis Desilets
Vice President/Program Manger

Andy Wang
Laboratory Manager

Enviro – Chem, Inc.
1214 E. Lexington Avenue, Pomona, CA 91766 Tel (909) 590-5905 Fax (909) 590-5907

LABORATORY REPORT

CUSTOMER: **NRC Environmental Services**
3777 Long Beach Blvd., Suite 100
Long Beach, CA 90802
Tel(310)629-0859 Email:fgarrett@nrcc.com

PROJECT: **SMMUSD Job #79563**
MATRIX: SOLID
DATE SAMPLED: 12/29/13
REPORT TO: MR. FRANK GARRETT

DATE RECEIVED: 12/30/13
DATE EXTRACTED: 12/30/13
DATE ANALYZED: 12/30/13
DATE REPORTED: 12/31/13

PCBs ANALYSIS
METHOD: EPA 8082
UNIT: mg/Kg = MILLIGRAM PER KILOGRAM = PPM

SAMPLE I.D.	LAB I.D.	PCB-1016	PCB-1221	PCB-1232	PCB-1242	PCB-1248	PCB-1254	PCB-1260	TOTAL PCBs*	DF
#79563	131230-2	ND	ND	ND	ND	ND	1.10	ND	1.10	20
Method Blank		ND	ND	ND	ND	ND	ND	ND	ND	1
	PQL	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	

COMMENTS
DF = Dilution Factor
PQL = Practical Quantitation Limit
Actual Detection Limit = DF X PQL
ND = Non-Detected Or Below the Actual Detection Limit
* = Sum of the PCB 1016, 1221, 1232, 1242, 1248, 1254 and 1260
*** = The concentration exceeds the TTLC Limit of 50, and the sample is defined as hazardous waste as per CCR-TITLE 22 (if marked)

Data Reviewed and Approved by: _____
CAL-DHS ELAP CERTIFICATE No.: 1555

Enviro-Chem, Inc.
1214 E. Lexington Avenue, Pomona, CA 91766 Tel (909)590-5905 Fax (909)590-5907

QA/QC Report

Analysis: EPA 8082 (PCB)

Matrix: **Soil/Solid/Liquid/Sludge** Date Analyzed: **12/30/2013**

Unit: mg/Kg (PPM)

Matrix Spike (MS)/Matrix Spike Duplicate (MSD)

Spiked Sample Lab I.D.: **131230-LCS1/2**

Analyte	S.R.	spk conc	MS	%REC	MSD	%REC	%RPD	ACP % RPD	ACP %REC
PCB (1016+1260)	0.00	0.100	0.096	**96%**	0.098	**98%**	**2%**	**0-20%**	**70-130**

LCS STD RECOVERY:

Analyte	spk conc	LCS	% REC	ACP %REC
PCB (1016+1260)	0.100	0.120	**120%**	**75-125**

S.R. = Sample Result
spk conc = Spike Concentration
%REC = Percent Recovery
ACP %RPD = Acceptable Percent RPD Range
ACP %REC = Acceptable Percent Recovery Range

Analyzed and Reviewed By: _____

Final Reviewer: _____

Enviro-Chem, Inc. Laboratories
1214 E. Lexington Avenue,
Pomona, CA 91766
Tel: (909) 590-5905 Fax: (909) 590-5907
CA-DHS ELAP CERTIFICATE #1555

Turnaround Time
0 Same Day
0 24 Hours
~~0 48 Hours~~
0 72 Hours
0 1 Week (Standard)
Other: By 1/2/13

RUSH

Misc. PO# 13531

SAMPLE ID	LAB ID	SAMPLING DATE	SAMPLING TIME	MATRIX	No. OF CONTAINERS	TEMPERATURE	PRESERVATION	PCB	COMMENTS
# 79563	131230-2	12/29/13	1500	S	1	N	N	X	
					6oz				

Company Name: NRC ENVIRONMENTAL SERVICES
Address: 3777 LONG BEACH BLVD. SUITE 100
City/State/Zip: LONG BEACH, CA.

Project Contact: FRANK GARRETT
Tel: 310-629-0859
email. fgarrett@NRCC.com
~~**Fax:**~~

Sampler's Signature:
Project Name/ID: SMMUSD
JOB# 79563
PO# 13531

Relinquished by:	Received by:	Date & Time: 12/30/13 0810
Relinquished by:	Received by:	Date & Time:
Relinquished by:	Received by:	Date & Time:

Instructions for Sample Storage After Analysis:
~~O~~ Dispose of O Return to Client O Store (30 Days)
O Other:

CHAIN OF CUSTODY RECORD

Date: _____

WHITE WITH SAMPLE • YELLOW TO CLIENT

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Appendix D

Air and Wipe Sampling MHS Pilot Study Sampling Plan

ENVIRON

June 18, 2014

MEMORANDUM

To: Tom Huetteman, Assistant Director, RCRA Branch, Land Division, EPA Region IX

From: Doug Daugherty, Eric Wood, Yi Tian, ENVIRON

Cc: Steve Armann and Carmen Santos, EPA Region IX
Sandra Lyon and Jan Maez, SMMUSD

Re: Additional Information on the Selection of Representative Rooms for Air/Wipe Testing – Revision 2

The following was prepared by ENVIRON and is intended to provide additional information on the collection of air and wipe samples at Malibu High School (MHS)[1]during the summer of 2014 (June 16 through August 8) as requested by EPA in its June 4, 2014 letter to SMMUSD (specifically, the request related to the sampling plan for MHS and comments A.2 and A.3).

The goal is to obtain samples from a sufficient number of locations and site-specific conditions to:

1) Serve as representative of the variety of potentially PCB-containing materials[2], conditions, and possible exposure pathways (inhalation, dermal, and incidental ingestion);
2) Address specific concerns of the community and staff at MHS;
3) Evaluate previous sampling efforts;
4) Assess effectiveness of Best Management Practices cleaning; and
5) Draw scientific conclusions on the potential presence of PCB-containing building materials and the potential for exposures to PCBs at MHS.

I. Overall Process for MHS

a. Schedule needs to be based on a Building (or Room Group) by Building basis in a rolling parallel process to accommodate the scale of the work to be conducted during the summer (from June 16 to August 8) – see accompanying schedule.

b. General Sequence for a Building/Room Group

   i. Building Inspection by Building or Room Groups

   ii. Determine representative rooms in that Building or Room Groups for pre-cleaning air and wipe sampling

   iii. Conduct pre-cleaning air and wipe sampling in representative rooms in that Building or Room Groups

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[1] Although not part of the EPA's June 4th request involving MHS, the process outline in this document also covers the work to be conducted at Juan Cabrillo Elementary School (JCES) that will be conducted during the same time period as the MHS efforts.

[2] For purposes of this document, PCB-containing shall mean materials that contain any measurable concentration of PCBs detectable using common analytical procedures for air and wipe samples.

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iv. HVAC/Duct cleaning

v. Room BMP cleaning

vi. Conduct post-cleaning air and wipe sampling in representative rooms in that Building or Room Groups. Post-cleaning sampling will be conducted in the same rooms as the pre-cleaning sampling, but post-cleaning sampling may also include additional rooms or locations without pre-cleaning sampling, as recommended by EPA[3], since those results are expected to be more representative of exposure levels that will remain following building re-occupancy.

vii. Schedule also includes accommodations for some re-cleaning and additional testing as needed, including rooms not sampled if the data suggests the need to expand the sampling.

c. Current assumption is that up to 1/3 of all rooms (inclusive of both MHS and JCES) will be sampled (subject to change based on information/experience during the summer inspections)

i. Up to approximately 45 pre-BMP air samples and up to approximately 65 post-BMP air samples. Outdoor/background, field blanks, and duplicates are included in the counts. Additional samples will be collected if the initial samples exceed relevant health-based benchmarks.

ii. Up to approximately 60 pre-BMP wipe samples and up to approximately 230 post-BMP wipe samples, assuming two to five wipe samples per room selected. Field blanks and duplicates are included in the counts. Additional samples will be collected if the initial samples exceed relevant health-based benchmarks

iii. Per EPA's recommendation[4], pre-cleaning sampling will be conducted in a smaller subset of representative rooms than post-cleaning sampling, as described in b.vi above.

iv. All pre-1981 buildings will be sampled.

v. All air sampling will be conducted with the windows closed and HVAC off.

d. Methods to be used

i. Air samples will be collected using the general methods previously approved by EPA for testing done in January. The air samples will be collected without a pre-filter and will be analyzed for Aroclors using EPA Method TO-10A[5], which is approved by EPA in its January 27, 2014 letter to the SMMUSD. The laboratory method reporting limit for each of the aroclors is 500 ng/PUF, which translates into approximately 0.07 $\mu g/m^3$ assuming a sample flow rate of 5 liters per minute (L/min) collected over 24 hours. Per EPA's recommendation[6], the laboratory will follow QA/QC procedures similar to those outlined in EPA Method 8082A.

ii. Wipe samples will be collected on gauze pads using the Standard Wipe Test described in 40 CFR 761.123 and will be analyzed using EPA Method 8082 for Aroclors. This method was used by EPA when its staff collected wipe samples from MHS, as indicated in EPA's letter to the SMMUSD, dated March 21, 2014. The laboratory method reporting limit for

[3] June 11, 2014 email from T. Huetteman of EPA to D. Daugherty of ENVIRON.
[4] Ibid.
[5] June 12, 2014 email from T. Huetteman of EPA to D. Daugherty of ENVIRON.
[6] June 12, 2014 phone conversation between T. Huetteman of EPA and Y. Tian of ENVIRON.

each of the aroclors is 0.1 µg/sample (except for Aroclor 1221, which is 0.2 µg/sample), which translates into approximately 0.1 ug/100cm^2 (or 0.2 ug/100cm^2 for Aroclor 1221).

1. As many samples require next day service, wipe samples will be sonicated in the extraction solvent rather than using the soxhlet extraction procedure. Based on information from ALS Laboratory in Salt Lake City, Utah, the spike recoveries are essentially identical for either method. The laboratory will aim to achieve a surrogate recovery of at least 65% and a matrix spike recovery on the same wipe type of at least 75%. If the results are below these targets (i.e., low biased), the validity and acceptability of the data will be evaluated,

2. Representative materials and types of surfaces for wipe samples

   – Caulk and glazing on windows and doors (deteriorating and in good co
   – Vertical surfaces (e.g., walls) with lower exposure potential
   – Horizontal surfaces with higher exposure potential

   The intent of these samples is to measure dust for assessing exposures due to direct contact with the material/surface. Note that the use of hexane rather than other solvents (e.g., HPLC grade 2-propanol) may cause PCBs to be more readily extracted from certain materials such as caulk and glazing. At the recommendation of EPA[7], gauze pads used to collect surface wipe samples from caulk and glazing will be wetted with HPLC grade 2-propanol, and all other wipe samples will be collected with gauze pads wetted with hexane.

II. Factors to be considered in selecting representative rooms for air and wipe testing

a. Information obtained through meetings with MHS[8] Staff conducted on May 21, 2014.
   i. Information ranged from cleanliness of rooms to heath concerns in various rooms.

b. Results of prior sampling.
   i. Sampling (air and wipe) will include Library, Rooms 1, 5, 8, where previous caulk sample results indicated PCB concentrations greater than 50 ppm.
   ii. Rooms that were sampled previously by The Phylmar Group will be included during the selection process.

c. Room usage
   i. Frequency of occupation
   ii. Age of occupants
   iii. Exposure potential to surfaces in room

d. Building materials that may potentially contain PCBs identified during the Building Inspections
   i. Results of the inventory effort on the types and locations of potential PCB-containing materials

[7] June 11, 2014 email from T. Huetteman of EPA to D. Daugherty of ENVIRON.
[8] And JCES staff.

ii. Similarities in construction (e.g., bathrooms, classrooms, lab classrooms, administrative rooms, etc.)

iii. Number, location, and type of windows in room

iv. Type of fixtures in room (e.g., presence of sinks)

v. Layout of room in regards to exposure potential

vi. Condition of building materials (e.g., flaking caulk, oily stains in light fixtures, other indications of potential PCB contamination)

vii. Characteristics of HVAC system

viii. Construction year

ix. Renovation records, if available

III. Documentation of information and rationale for selection of sampling locations

a. Information described in Section II will be documented in a matrix during the pre-inspection and building inspection phase of the work. ENVIRON will collect photographic and/or video documentation during the inspection and sampling activities.

b. Selection of representative rooms will be based on this information and both the conclusions and rationale for selection will be documented between the end of the inspection and prior to the collection of any pre-cleaning samples in each Building or Room Groups

i. Note that higher selection ranking consideration will be given to factors that could indicate higher exposure potential (e.g., types of PCB-containing materials, conditions of the material, exposure potential or concerns, etc).

IV. Documentation of sampling results

a. Sampling results will be summarized in tabular format over the course of the summer.

b. Results will be compared to relevant health-based criteria.

c. If any of the post-cleaning sample results exceed relevant health-based criteria, the schedule allows for some second round of cleaning and then re-testing. All of these results will be presented in the final report.

d. At the end of the summer effort, ENVIRON will prepare a report that contains a summary of all of the inspection and sampling results, ENVIRON's conclusions from the data, and any recommendations, including additional testing or follow up work if warranted based on the data.

Appendix E

Site Characterization

E.1. Site Characterization

Once renovation/demolition at MHS is scheduled within the areas previously confirmed to contain ≥50 ppm PCBs (Library, Building E (Blue Building) Rooms 1, 5 and 8), additional characterization of building materials will be conducted, as described below.

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Given that PCB-impacted materials may remain in place for up to 15 years and the techn available for site characterization and the regulations that will be in effect at the time of characterization cannot be predicted at this time, a site-specific characterization plan pr details regarding the general approach described below will be provided to USEPA for a at least 180 days prior to the planned renovation/demolition.[22] The plan is anticipated to a description of the sampling procedures, media to be sampled, sampling locations withi medium, sampling of adjacent substrates, and waste management.

A building inspection, including a visual survey, will be conducted first. Representative samp of building materials will be collected for laboratory analysis prior to commencement of renovation/demolition work. In accordance with USEPA regulations and guidance documents, this section provides a description of the materials to be analyzed, sample collection methods, and laboratory analytical methods to be implemented.

During PCB characterization activities, representative samples may be collected, as necessary, from the following media: caulk, paint, mastics, sealants, wood, brick, concrete, nonporous building materials and any other building material suspected to contain PCBs based on the Building Inspection results to be completed by August 2014.

PCB characterization sampling will be conducted to evaluate the nature and extent of PCBs present in buildings materials. Based on the results of characterization sampling, specific areas will then be targeted for PCB remediation, as appropriate based on the concentrations of PCBs identified.

A flow chart detailing the procedures associated with Characterization is included within Figure 6.

The following sections describe the general sampling procedures, sampling locations and sampling of adjacent substrates that are anticipated to be implemented based upon current regulatory requirements and USEPA guidance. Actual procedures for site characterization will be developed based upon the applicable regulations and USEPA guidance in effect at the time the site-specific characterization plan is developed. The site-specific characterization plan will be submitted to USEPA for approval prior to implementation.

E.1.1 Sampling Procedures

All sampling locations will be kept wet and polyethylene drop cloths will be used to minimize accidental contamination of surrounding building materials during the sampling process.

[22] The 180-day period is intended to allow sufficient time: 1) for sampling to occur following USEPA approval, 2) for the District to develop a site-specific remedial work plan for USEPA approval based on the sampling results, and 3) for the District to commence remedial activities within that 180-day period.

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Durable field sampling equipment will be decontaminated prior to each sample location to mitigate the potential for cross-contamination of samples. Each component of the sampling device will be decontaminated or replaced with a new, dedicated or disposable component prior to collecting samples for laboratory analysis. All non-disposable sampling equipment will be subject to decontamination procedures prior to sampling, consistent with 40 CFR 761.79. If gloves come into contact with sample media, a new pair of clean, nitrile gloves will be used at each location.

Porous surfaces, including soft porous surfaces (e.g. caulk, mastic and sealants), and hard porous surfaces (e.g. wood, concrete, brick), will be sampled in accordance with the USEPA Region I Standard Operating Procedure (SOP) for Sampling Porous Surfaces for Polychlorinated Biphenyls (May 2011), included as Appendix C of this document. In accordance with this SOP, at least three samples will be collected from each porous surface from each location identified.

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Soft porous surfaces will be collected at 0.5-inch depth intervals using a metal chisel or sharp knife. The chisel or knife will be decontaminated between samples. If adjacent media is inadvertently removed in the process of sample collection, this media will be physically removed from the soft porous material prior to placement in the sample container.

Hard porous surfaces will be ground into powder using an impact hammer drill with a carbide drill bit. Powdered sample will be collected and placed in a sample container. Samples will be collected in 0.5-inch depth intervals and powder from adjacent holes may be composited to ensure sufficient sample volume. The drill bit will be decontaminated between samples.

All samples will be logged on standard chain-of-custody forms and stored on ice for delivery to an approved laboratory. All samples will be extracted using USEPA Method 3540C (Soxhlet Extraction) and analyzed for PCBs using USEPA Method 8082. In addition to the primary samples, a field duplicate, a matrix spike and matrix spike duplicate (MS/MSD), and an equipment blank will be collected at a frequency of 1 per 20 primary samples, which is consistent with USEPA protocol for quality assurance/quality control (QA/QC) purposes.

E.1.2 Sampling Locations

Sampling locations will be selected based on the removal or renovation/demolition work proposed. When an area has been selected for removal or renovation/demolition, all building materials in the work area will be inspected and inventoried. Representative samples of each building material type will be collected with a minimum frequency of one sample per material per room.

Where the age or type of material varies within a single room (i.e. different color paints or caulking), a sample of each type of material will be collected and submitted for analysis.

E.1.3 Sampling of Adjacent Substrate

If porous materials are adjacent to confirmed ≥50 ppm PCB-impacted materials (i.e. concrete adjacent to window caulking), a sample of the adjacent substrate will be collected and submitted for analysis. Samples of the adjacent porous substrate will be collected in accordance with the

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USEPA Region I Standard Operating Procedure (SOP) for Sampling Porous Surfaces for Polychlorinated Biphenyls (May 2011), included as Appendix C of this document. At least one sample per room will be collected where similar porous materials are adjacent to similar ≥50 ppm PCB-impacted materials.

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Appendix F

Proposed ≥50 ppm PCB Removal/Remediation Procedures

F.1. Proposed ≥50 ppm PCB Removal/Remediation Procedures

Given that PCB-impacted materials may remain in place for up to 15 years and the technologies available for remediation and the regulations that will be in effect at the time of remediation cannot be predicted at this time, a site-specific remediation work plan providing details regarding the general approach described below will be provided to USEPA for approval at least 60 days prior to the planned renovation/demolition.[1] The plan is anticipated to include a description of cleanup goals as well as the following remedial activities: 1) engineering controls, 2) air monitoring for workers, 3) remediation procedures for each medium, 4) encapsulation, 5) verification (confirmatory) sampling, 6) contingency planning, 7) waste management and disposal, and 8) recordkeeping and documentation.

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This plan has been developed to establish procedures for removing, cleaning up, and disposing of PCB-impacted media in the Library and Building E Rooms 1, 5, and 8 at MHS. Throughout implementation and upon its completion, each step of the remediation will be evaluated to determine whether any plan modifications should be made prior to continuing with the remedy implementation in other areas. This section describes the proposed remedial activities anticipated to be implemented for each of the potentially affected media.

Building materials containing PCBs at concentrations ≥50 ppm in the Library and Building E Rooms 1, 5, and 8 will be remediated in accordance with the procedures in this plan when building renovations are planned and funded. Currently, the timing for beginning removal of ≥50 ppm PCB-impacted building materials identified at MHS is anticipated to begin within 9-12 months after a Coastal Commission Permit for the demolition and renovation is issued to the District. However, it is not clear how long it will take for that permit to be issued. It is likely that the intended remediation of ≥50 ppm PCB-impacted building materials would not be completed within the June 4, 2015 timeframe specified in USEPA's June 4, 2014 letter to the District. Therefore, the District proposes to manage this material in place (in the Library and Building E Rooms 1, 5, and 8) for up to 15 years or until removal/remediation of ≥50 ppm PCB-impacted materials occur, whichever is sooner. The District will maintain management in place BMPs as described in this plan during this time period. The District also proposes an option to extend this period, if needed, with concurrence with USEPA. This approach is consistent with USEPA Region I's agreement with the University of Massachusetts.[2]

This appendix describes the general remedial activities that are anticipated to be implemented based upon current regulatory requirements and USEPA guidance. These procedures for site remediation will be revised, as needed, to address applicable regulations and USEPA guidance in effect at the time the site-specific remedial work is to be conducted. Thus, the following sections are provided to describe the general approach and should be used for reference only.

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[1] The 60-day time period is intended to allow sufficient time: 1) for USEPA approval of the site-specific remedial work plan based on the sampling results and 2) for the Distric t to commence remedial activities within that 60-day period.

[2] 2012. Consent Agreement and Final Order from USEPA Region I to University of Massachusetts System. TSCA-01-2012-036.

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A site-specific remedial work plan updated with then current USEPA regulations and guidance will be submitted to USEPA for approval prior to implementation.

Based on the results of the characterization of building materials and adjacent substrates, and in consultation with USEPA-Region IX, PCB-impacted materials will be sorted and classified into the following four categories, as defined in 40 CFR 761.3:

- PCB Bulk Product Waste - caulk, paint, mastic and sealants containing ┘50 ppm;
- Excluded PCB Product - caulk, paint, mastic and sealants containing <50 ppm PCBs;
- ┘50 ppm PCB Remediation Waste - building materials (e.g. concrete, brick, etc.) containing ┘50 ppm PCBs; and
- <50 ppm PCB Remediation Waste – building materials (e.g. concrete, brick, etc.) conta >1 ppm and <50 ppm PCBs.

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Nonporous building materials formerly in direct contact with PCB Bulk Product Waste may be decontaminated consistent with 40 CFR 761.79.

Residual concentrations of PCBs on surfaces made of porous building materials may remain in place if remediation goals are not achieved and would be encapsulated by a protective coating (following PCB Bulk Product Waste removal) to minimize direct contact with PCBs and/or potential migration effects to other media. Use of encapsulants implemented as a long-term remedial action would only be anticipated for situations where removal of building materials might impair the structural integrity of a building or its components or if remediation goals cannot reasonably be achieved. Prior to such use of encapsulants as a long-term remedial action, the District will confer with USEPA on this matter. If encapsulants are proposed, the District will follow procedures outlined in Appendix F of this plan and will develop a continued schedule for collection of air and wipe samples, in consultation with USEPA, to verify encapsulant effectiveness.

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A flow chart detailing the procedures associated with remediation is included within Figure 6.

F.1.1 Cleanup Goals

The remediation plan proposed herein is a combination of a removal and off-site disposal of PCB Bulk Product Waste under 40 CFR 761.62 with a self-implementing cleanup and disposal of PCB Remediation Waste under 40 CFR 761.61(a) and (c). Proposed cleanup levels for bulk PCB remediation waste, air and wipe samples are presented below.

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F.1.2 Bulk PCB Remediation Waste Clean-up Levels

The cleanup level for total PCBs in bulk PCB remediation waste will be 1 ppm.

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F.1.2.1 Air Sampling

The cleanup level for air sampling will be 200 ng/m^3, which is lower than the health-protective USEPA Public Health Levels of PCBs in School Indoor Air[3] for teachers and elementary schools students and above[4], but consistent with the threshold for MHS cited by USEPA Region IX.

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F.1.2.2 Wipe Sampling

Based on our discussions with USEPA Region IX, we understand that a comparison threshold of 1 µg/100 cm^2 consistent with USEPA Region I should be used for wipe samples taken at MHS. If results are above this threshold, we would contact USEPA to discuss the potential development of more site-specific risk exposure values.

F.1.3 Engineering Controls

Prior to implementing removal or remediation procedures, engineering controls will be put in place to prevent the migration of PCBs and PCB-impacted materials from work areas. Engineering controls will include polyethylene sheeting to control and catch debris, wetting material prior to handling, and work practices to minimize dust generation.

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An integral step in implementing protective measures is to assign a containment area for each distinct abatement area. The containment area size and construction will be proportionate to the activities that will be conducted (i.e., amount of dust generation expected). Containment structures will be constructed within the containment area at each location where abatement is performed and in a manner that minimizes airborne dust from spreading outside the abatement area. For example, a containment structure can be constructed of poly sheeting draped over existing building features and/or support frames built specifically for the containment area. The containment area will be maintained under negative air pressure by installing an induced draft fan equipped with HEPA filters to minimize dust particles from being carried out of the containment area. The filtered exhaust from the fan will be routed outside the containment area and vented outside of the building.

When significant dust is produced by the abatement activities, dust monitoring outside the containment structures will be conducted. All powered tools will also be equipped with appropriate tool guards and dust/debris co llection systems with HEPA filters.

Specific engineering controls for each type of removal activity are described in more detail in Section F.1.4.

F.1.3.1 Air Monitoring for Remediation Workers

In order to verify the effectiveness of dust minimization engineering controls, air monitoring for respirable airborne particulates will be conducted using data-logging, real time monitors. The following the California Division of Occupational Safety and Health (Cal/OSHA) permissible exposure limits (PELs), based on an 8-hour, time-weighted average (8-hour TWA) will be considered applicable to this work:

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[3] http://www.epa.gov/pcbsincaulk/maxconcentrations.htm.
[4] 300, 450, 600, and 450 ng/m^3 for elementary school, middle school, high school, and faculty, respectively[4]

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- Total Dust: 10 milligrams per cubic meter (mg/m^3)
- Respirable Fraction: 5 mg/m^3
- PCBs (42% Chlorine): 1 mg/m^3
- PCBs (54% Chlorine): 0.5 mg/m^3

A total airborne particulate action limit has been established for the PCB remediation work to be conducted at the site with consideration of the specific receptors, PCB concentrations, work activities, and Cal/OSHA permissible exposure limits. The action limit applies only to air monitoring at the perimeter of the work zone; an action limit has not been set for the active work zones (exclusion zones) as engineering controls will be used within these zones.

An action limit of 0.1 mg/m^3 above background will be maintained during site work. Air monitoring at a location representative of background air conditions (i.e. a location upwind of the work area) will be conducted at the same frequency as the monitoring to obtain data representative of real-time background conditions. The action limit will be used to determine if and when additional engineered controls and/or work stoppages would be necessary.

Should the action level be exceeded during remediation, ENVIRON will evaluate work procedures and recommend additional engineering controls or modified work practices to control dust generation. Any recommended changes to work practices will be documented. It is noted that the Cal/OSHA standards are based on an 8-hour TWA. Therefore, instantaneous exceedances of the action level and/or the standards listed above will not necessarily indicate an exceedance of the PEL.

Air monitoring stations will be established at the perimeter of, and within, the designated work area. Air monitoring will be conducted at all times during PCB remediation activities. ENVIRON will review monitoring data a minimum of once per hour during the work. The logged data will be downloaded and reviewed daily, so that changes to the work practices can be recommended based on observable trends in airborne dust concentration.

If monitoring indicates that particulate matter concentrations are not maintained below the action level, remediation activities shall cease until work practices can be evaluated and adjusted.

Air monitoring equipment will be calibrated according to manufacturer's specifications.

F.1.4. Summary of Remediation Procedures by Media

This section describes the specific remediation procedures that have been established for each type of PCB impacted material.[5]

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[5] As discussed in Section 1, regulatory oversight of investigation and potential remediation of PCB-impacted soils at MHS is to be managed separately through the Preliminary Environmental Assessment (PEA) process under the California Department of Toxic Substances Control (DTSC). Therefore, discussion related specifically to soil at MHS is not included in this section.

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F.1.4.1 Caulking and Glazing

The caulking and glazing removal task described below includes the removal and off-site disposal of source materials identified during characterization activities at MHS.

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- Surface preparation for caulking and glazing removal will include surficial wetting of visibly dry and/or deteriorating material to minimize dust generation.
- At locations where caulking or glazing will be removed from vertical joints (e.g., between a retaining wall and a building), polyethylene sheeting will be placed on the ground surface and removal will be conducted using hand tools to achieve removal to the maximum extent practicable while minimizing dust or other airborne particulates generated from caulking, glazing, or adjacent materials. This will not include mechanical grinding or saw cutting any concrete or brick in direct contact with the caulking or glazing.
- Upon the completion of the initial removal activities, the joints will be visually inspected for the presence of any residual caulking or glazing. If residual caulking or glazing is observed, it will be removed from the adjacent material to the maximum extent practicable. This may include scraping or chemical means to remove the visible remnants from the concrete or brick.
- Wet wiping and/or vacuuming of all tools and equipment in the work area will be performed at the completion of the work activity.
- During the project, equipment and tools used in the process will be decontaminated through spraying and wet wiping. At the completion of the project, any non-disposable equipment and tools that handled PCB material will be decontaminated following the procedures described in 40 CFR 761.79.
- Any debris collected on the polyethylene sheeting will be gathered and placed in PCB Bulk Product Waste containers at the end of each work day. After use, disposable PPE and poly sheeting used to collect debris will be placed in the appropriate containers for disposal as PCB Remediation Waste.
- All removed caulking, glazing, and associated debris will be transported for off-site disposal as PCB Bulk Product Waste.

F.1.4.2 Paint and Other Surface Coatings

The paint removal task described below includes the removal and off-site disposal of source materials identified during characterization activities at MHS. Note that any other surface coatings (i.e. varnishes, lacquers, etc.) will be handled using the same protocols for paint removal outlined below.

- Surface preparation for paint or another surface coating removal will include surficial wetting of visibly dry and/or deteriorating material to minimize dust generation.
- At locations where paint or another surface coating will be removed from vertical surface, polyethylene sheeting will be placed on the ground surface and removal will be conducted using hand tools to achieve removal to the maximum extent practicable while minimizing dust or other airborne particulates generated from the coating or adjacent materials.

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Mechanical grinding or saw cutting of surfaces coated with PCB-impacted materials may be needed.

- Upon the completion of the initial removal activities, the surfaces will be visually inspected for the presence of any residual paint or other surface coating. If residual coating is observed, it will be removed from the adjacent material to the maximum extent practicable. This may include scraping or chemical means to remove the visible remnants from the surface.
- Wet wiping and/or vacuuming of all tools and equipment in the work area will be performed at the completion of the work activity.
- During the project, equipment and tools used in the process will be decontaminated through spraying and wet wiping. At the completion of the project, any non-disposable equipment and tools that handled PCB material will be decontaminated following the procedures described in 40 CFR 761.79.
- Any debris collected on the polyethylene sheeting will be gathered and placed in PCB Bulk Product Waste containers at the end of each work day. After use, disposable PPE and poly sheeting used to collect debris will be placed in the appropriate containers for disposal as PCB Remediation Waste.
- All removed paint or other surface coating and associated debris will be transported for off-site disposal as PCB Bulk Product Waste.

F.1.4.3 Concrete and Brick

The concrete and brick removal task described below includes the removal and off-site disposal of PCB-impacted materials identified during characterization activities at MHS.

- Surface preparation for concrete and brick removal will include surficial wetting of visibly dry and/or deteriorating material to minimize dust generation.
- Concrete and brick on either side of a joint containing PCB-impacted caulk or glaze will be removed to a distance determined by characterization sampling described in Appendix E. Removed material will be managed as PCB Bulk Product Waste.
- Wet wiping and/or vacuuming of all tools and equipment in the work area will be performed at the completion of the work activity.
- At the completion of the project, any non-disposable equipment and tools that handled PCB material will be decontaminated following the procedures described in 40 CFR 761.79.
- All removed materials will be stored on site in lined, marked, and covered roll-off containers or Department of Transportation (DOT) 55-gallon drums prior to off-site disposal.

F.1.5. Proposed Procedures for Decontamination of Substrate in Contact with ≥50 ppm Materials

The task described below includes decontamination of nonporous materials adjacent to ≥50 ppm PCB-impacted materials identified during characterization activities at MHS.

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- When possible, all nonporous materials to be decontaminated will be disassembled and transported to a secure decontamination area and staged on polyethylene sheeting. If the material cannot be easily removed, the decontamination area will be lined with polyethylene sheeting in a manner designed to contain all liquids generated from the decontamination process.
- Material will be decontaminated via chemical washing with a chemical extraction solvent following the manufacturer's recommended procedures for hand applications: the product will be applied and scrubbed using hand brushes; during the agitation, the surface of the material will be kept wet with the chemical extraction solvent at all times. Following the five-minute dwell time, all free liquid will be vacuumed from the surface; a layer of rinse water will be applied to the material and then vacuumed; this procedure will be repeated three times followed by a triple water rinse after the final application.
- Surface wipe samples will then be collected in accordance with the standard wipe test as defined in 40 CFR 761.123.

F.1.6. Proposed Procedures for Encapsu lation of Porous Building Materials

Given the limitations of certain structures, extensive building material removal may not be a feasible remedial alternative. In this case, upon approval by USEPA, porous building materials may be encapsulated and left in place in accordance with the procedure below. Encapsulation would be a short-term alternative to minimize exposure to PCBs. Such alternative would be subject to approval by USEPA and contingent upon a schedule for ultimate removal of the PCB-impacted caulk. The use of encapsulation will require continued implementation of BMPs, collection of surface wipe samples, and air samples to verify encapsulate effectiveness. Proposed encapsulation procedures are further described below.

Where ≥50 ppm PCB-impacted joint materials are identified, the plan is to remove those materials by physical means and to containerize them for off-site disposal as PCB Bulk Product Waste. Following removal, the joint will be visually inspected to ensure that all caulking is removed to the maximum extent practicable.

The second component of the plan involves preparing the surfaces for repainting. Surfaces will be prepared by applying a leveling base, washing, and cleaning with a wire brush (or equivalent). If this preparation method does not provide a suitable base for an epoxy coating, surfaces may be sandblasted. Sandblasting will be accomplished by:

- providing PCB awareness training for the sandblasting workers (workers must use respirators and already be entered into a respirator program),
- totally encapsulating the area with polyethylene sheeting, and
- collecting all sand blast media and paint residuals with the polyethylene sheeting and managing this material as PCB Bulk Product Waste.

The porous materials in former direct contact with ≥50 ppm PCB-impacted caulking or glazing will be encapsulated with two coats of an epoxy coating, followed by new caulking. The extent of impacted porous materials located on both sides of the joint will be covered with two coats of

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contrasting color of an encapsulant to eliminate the direct exposure pathway and leaching transport pathway from residual PCBs.

The elimination of this exposure pathway mitigates both the potential for PCB transfer via direct contact and the material's potential as a source to other media/materials. Selection of the encapsulant and development of a periodic monitoring plan, including surface wipe samples, will be implemented in consultation with USEPA to assess potential PCB concentrations on the exposed outer surfaces.

The following describes the proposed remedial activities for the porous surfaces that will not be removed:

- Prior to application of the protective coating, all surfaces will be prepared so that they are dry, clean, and sound (as described above).
- Two coats of the epoxy will be applied to interior joints, and two coats in contrasting colors of an encapsulant will be directly applied to the appropriate distance on either side of the joint.

All generated waste material (PPE, application tools, etc.) will be containerized in an appropriate waste container for subsequent off-site disposal. PPE will be wet wiped and containerized for off-site disposal.

F.1.7. Post-Remediation Confirmatory Sampling Program

Upon removal of PCB-impacted media, verification sampling of the underlying building materials beyond the extent of removal will be conducted.

Analytical results from the verification samples will be evaluated to determine whether or not this task is complete as follows:

F.1.8. Porous Building Materials (e .g. wood, concrete, brick, etc.)

- Analytical results ≤ 1 ppm – task complete; no additional cleanup required and/or no disposal restrictions will apply to the underlying or adjacent materials.
- Analytical results > 1 ppm – additional removal and off-site disposal as <50 ppm PCB Remediation Waste (assuming the data indicate the materials are <50 ppm) will be conducted and the sampling process will be repeated until the cleanup level of 1 ppm is met.

F.1.9. Nonporous Building Materials

For nonporous surfaces that are decontaminated, surface wipe samples will be collected in accordance with the standard wipe test (40 CFR 761.123) from locations on the material formerly in contact with the PCB impacted waste. If results indicate that the PCB concentration is less than the cleanup level, then no additional cleanup is required. If a verification sample is reported with PCB concentrations above, this surface will be cleaned again. All samples will be extracted using USEPA Method 3540C (Soxhlet Extraction) and analyzed for PCBs using USEPA Method 8082.

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F.1.10. Encapsulated Porous Surfaces

For porous surfaces that are encapsulated, baseline verification wipe samples of the encapsulated surface will be collected from random locations. If analytical results indicate PCB concentration less than 1 µg/100 cm^2, this area will transition into a maintenance and monitoring program as discussed in the main text of this plan. If analytical results indicate PCB concentrations greater than 1 µg/100 cm^2, an additional coating may be applied and additional testing conducted, after consultation with USEPA.

F.1.11. Post-Remediation Confirmatory Air and Wipe Samples

After PCB impacted building materials have been removed or encapsulated, additional air and wipe samples will be collected from the renovated rooms.

F.1.11.1 Air Sampling

Air samples will be collected using the same procedures previously approved by USEPA for MHS. The air samples will be collected without a pre-filter and will be analyzed for Aroclors using USEPA Method TO-10A, which is approved by USEPA in its January 27, 2014 letter to the SMMUSD.

The cleanup level for air sampling will be 200 ng/m^3, which is lower than the health-protective USEPA Public Health Levels of PCBs in School Indoor Air[6] for teachers and elementary schools students and above[7], but consistent with the threshold for MHS cited by USEPA Region IX.

F.1.11.2 Wipe Sampling

Wipe samples will be collected on gauze pads using the Standard Wipe Test described in 40 CFR 761.123 and will be analyzed using USEPA Method 8082 for Aroclors.

In each room, an air sample will be collected over 24 hours with the doors and windows closed and the HVAC system turned off. Also in each room, at least two PCB wipe samples will be collected, one from a window sill and one from an interior floor tile.

Based on our discussions with USEPA Region IX, a comparison threshold of 1 µg/100 cm^2 consistent with USEPA Region I should be used for wipe samples taken at MHS. If results are above this threshold, we would contact USEPA to discuss the potential development of more site-specific risk exposure values.

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F.2. Contingency Plan

If unanticipated higher PCB concentrations or wider distributions of PCB remediation waste are found, or other obstacles force changes in the cleanup approach, remediation contingencies will be developed in consultation with USEPA Region IX and included in the remediation plan submitted to USEPA for approval prior to implementation.

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[6] http://www.epa.gov/pcbsincaulk/maxconcentrations.htm.

[7] 300, 450, 600, and 450 ng/m^3 for elementary school, middle school, high school, and faculty, respectively[7]

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F.3. Data Validation

A data quality and data usability assessment of all samples will be completed. The data review will be conducted by ENVIRON in accordance with USEPA protocols. This review will include a completeness check of field documentation including sample collection and preservation methods, a completeness check of the laboratory data and documentation, a review of the internal laboratory QA/QC procedures and results including surrogate recoveries, MS/MSD results, blank results, and laboratory control standard results, and an evaluation of sample holding times, and field duplicate results. Upon receiving the data validation summaries, any qualifiers applied to the data will be added to the data summary tables presented in the final report.

F.4. Waste Management and Disposal

Waste management and disposal includes onsite handling, accumulation, containerizing, and labeling, and offsite transporting (including providing and preparing manifests, bills of lading, etc.) and disposing of PCB waste streams. The PCB waste streams will be transported via a licensed waste hauler to a permitted hazardous waste disposal facility as outlined below.

Secure, lined, and covered waste containers (roll-off containers or equivalent) or 55-gallon DOT-approved steel containers will be staged for the collection of PCB wastes generated during the work activities in accordance with applicable requirements in 40 CFR 761.65 and 40 CFR 761, Subpart K. All containers will be properly labeled and marked in accordance with 40 CFR 761.40 and 22 CCR 66262.34.

Upon completion of waste profiling and acceptance at the respective facilities, PCB wastes will be loaded into transportation vehicles for shipment to the disposal facility.

- PCB Bulk Product Waste will be segregated for disposal and transported under a manifest to a disposal facility in accordance with 40 CFR 761.62 and 22 CCR 66262.23.
- ≥50 ppm PCB Remediation Waste will be segregated for disposal and transported under a hazardous waste manifest to a hazardous waste landfill in accordance with 40 CFR 761.61 and 22 CCR 66262.23.
- <50 ppm PCB Remediation Waste (e.g. concrete, brick, etc.) <50 ppm PCBs will be segregated, further evaluated for other potential hazardous waste characteristics unrelated to PCB concentration, as applicable, and transported offsite under manifest or bill of lading to an appropriate hazardous or nonhazardous waste disposal facility. .
- Excluded PCB Product (e.g. caulk, paint, mastic and sealants) containing <50 ppm PCBs will be segregated, further evaluated for other potential hazardous waste characteristics unrelated to PCB concentration, as applicable, and transported offsite under manifest or bill of lading to an appropriate hazardous or nonhazardous waste disposal facility..

Water generated during decontamination (or as part of dust suppression) that is collected on polyethylene sheeting will be containerized onsite, sampled for PCBs other potential constituents, and designated for offsite disposal in accordance with 40 CFR 761.79 and/or

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California hazardous waste regulations, as applicable. Polyethylene sheeting, PPE, and non-liquid cleaning materials will be managed and disposed of offsite in accordance with 40 CFR 761.61(a)(5)(v).

Waste determinations will be made in consultation with USEPA Region IX.

F.4.1 Recordkeeping and Documentation

Following completion of the work activities, applicable records and documents per 40 CFR 761 will be generated and maintained at one location. A post-remediation report will be prepared which will contain a detailed description of remediation activities, post cleanup samples, appropriate figures and drawings, and analytical data tables presenting results of post-cleanup samples. In addition, the report will include volumes of disposed materials, and all waste disposal records. The post-remediation report will be prepared to provide a full accounting of all activities performed and documentation necessary to support the conclusion that the remedial activities met the objectives of the project. The report will be submitted to USEPA-Region IX for review and ultimate approval.

The final post-remediation report will also be available to the public upon request.

F.4.2 Certification

As required by 40 CFR 761.61(a)(3)(i)(E), a written certification is provided in Appendix A. This certification is signed by both the owner of the property where the cleanup site is located, and the party conducting the cleanup, and states that all sampling plans, sample collection procedures, sample preparation procedures, extraction procedures, and instrumental/chemical analysis procedures used to assess or characterize the PCB contamination at the cleanup site, are on file at the location designated in the certificate, and are available for USEPA inspection.

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Attachment B

Fourth Update on Recent Building Inspections Activities Related to Polychlorinated Biphenyls (PCBs)

ENVIRON

September 5, 2014

MEMORANDUM

To: Sandra Lyon, SMMUSD Superintendent

From: ENVIRON International Corporation

Re: Fourth Update on Recent Building Inspection Activities Related to Polychlorinated Biphenyls (PCBs)

This fourth and final summer progress report is submitted to the Santa Monica-Malibu Unified School District (SMMUSD or District) to summarize ENVIRON's activities related to building inspections and implementation of Best Management Practices (BMPs), conducted in accordance with the General Plan[1] and the July 3rd MHS Specific Plan[2], at Malibu High School (MHS) and Juan Cabrillo Elementary School (JCES), since June 16, 2014. In addition, we discuss major activities planned for the coming weeks.

Significant progress was made in the weeks leading up to the first day of school. The coming weeks will involve developing a report to conclude the assessments performed this summer. We look forward to continuing to work with you, your staff, the community, and the U.S. Environmental Protection Agency (USEPA) to ensure that the schools satisfy health-based criteria for PCBs established by USEPA.

It is important to note when reviewing the results of the testing conducted at MHS and JCES that the thresholds requested by USEPA for MHS, for both air and surface wipe samples, are more conservative (health protective) than those used by New York City (NYC) Schools in their studies.[3,4,5]

- The air health benchmark for MHS and JCES is 33% to 67% lower, depending on age group for elementary or high school students and faculty. The benchmark for MHS and JCES is 200 ng/m^3 for these populations versus 300 to 600 ng/m^3 for NYC Schools (depending on population age).[6]
- The surface wipe threshold for MHS and JCES is 90% lower than that used by NYC schools. The threshold for MHS and JCES is 1 µg/100 cm^2 versus 10 µg/100 cm^2 for NYC Schools.

ENVIRON's risk assessors and toxicologists have reviewed these benchmarks and thresholds and concur, based on the current science, that they are health protective.

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1 2014. Draft *Comprehensive PCB-Related Building Materials Inspection, Management, and Removal Plan*. Prepared for SMMUSD by ENVIRON. April 25. Accessed here.

2 2014. *Site-Specific PCB-Related Building Materials Management, Characterization and Remediation Plan for the Library and Building E Rooms 1, 5, and 8 at Malibu High School*. Prepared for SMMUSD by ENVIRON. July 3. Accessed here.

3 2013. *Summary Report for the New York City School Construction Authority Pilot Study to Address PCB Caulk in New York City School Buildings.* Prepared for New York City School Construction Authority by TRC Engineers, Inc. May 24. Accessed here.

4 2012. *Final Remedial Investigation Report for the New York City School Construction Authority Pilot Study to Address PCB Caulk in New York City School Buildings.* Prepared for New York City School Construction Authority by TRC Engineers, Inc. August 21. Accessed here.

5 2011. *Interim Remedial Investigation Report for the New York City School Construction Authority Pilot Study to Address PCB Caulk in New York City School Buildings.* Prepared for New York City School Construction Authority by TRC Engineers, Inc. June 15. Accessed here.

6 Note that a threshold of 100 ng/m^3 is recommended by USEPA for children 3 to less than 6 years old. This threshold was used for the sampled JCES classrooms that are regularly occupied by children less than 6 years old.

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Executive Summary

Key milestones and findings based on the work conducted to date include[7]:

- All nine pre-1981 buildings at MHS—Building J (Building 700, Old Gymnasium), Building A (Building 800, Great White Shark), Building B/C (Building 900, Whale Shark), Building H (Cafeteria/Auditorium), Building E (Blue Shark), Building F (Building 300, Thresher Shark), Building D (Building 100 & 200, Mako Shark), Building G (Building 500, Angel Shark), and Building I (Building 400, Leopard Shark)—have been reopened by the District based on investigation results and findings to date.
  - Currently, the District has conservatively kept Room 506 (woodshop) in Building G closed to teachers and students because this room is undergoing further evaluation. Pre- and post-cleaning air samples in this room were below USEPA's recommended health benchmark of 200 ng/m^3. A total of 16 surface wipe samples were collected from this room (including before and after cleaning) and all but five samples were either non-detect for PCBs or less than USEPA's recommended threshold of 1 µg/100 cm^2. The five surface wipe samples with PCB detections greater than 1 µg/100 cm^2 were all collected from interior door caulking surfaces and these results are being evaluated further with USEPA.
- All six pre-1981 buildings at JCES—Building A (Administration), Building B, Building C, Building D, Building E, and Building F—have been reopened by the District based on investigation results and findings to date.
  - Currently, the District has conservatively kept Room 6 (office) in Building C closed to teachers and students because this room is undergoing further evaluation. Pre- and post-cleaning air samples in this room were below USEPA's recommended health benchmark of 200 ng/m^3. A total of 15 surface wipe samples were collected from this room (including before and after cleaning) and all but four samples were non-detect for PCBs and therefore less than USEPA's recommended threshold of 1 µg/100 cm^2. PCBs reported in one surface wipe sample above 1 µg/100 cm^2 was collected from caulking adjacent to the sink, but the area was subsequently re-cleaned and sample results after the re-cleaning indicate that surface had a PCB concentration less than 1 µg/100 cm^2. The other three surface wipe samples were collected from a wall surface near a window and a sink and were above 1 µg/100 cm^2 but less than 10 µg/100 cm^2. As per Section 1.2.3.2 of the July 3rd MHS Specific Plan, ENVIRON is currently in discussions with USEPA on whether further actions are needed given the results and the likely low contact frequency of this surface.
- Many of the pre-1981 buildings tested to date have airborne levels of total PCBs below USEPA's recommended health benchmark of 200 ng/m^3 and surface concentrations of total PCBs below 1 µg/100 cm^2 **<u>before implementation of BMP cleaning</u>**.
  - This includes all of the buildings at JCES[8], as well as Building E (Blue Shark, which was part of the December 2013 cleaning activities), Building H (Auditorium/Cafeteria), Building D (Mako Shark, 100 and 200 Rooms), and Building I (Building 400, Leopard Shark Building) at MHS.
  - Since pre-cleaning sampling results were below USEPA thresholds, the results would indicate that BMP cleaning was not needed to address any residual PCB concentrations. Despite these

[7] Data are currently undergoing Level III/IV third party data validation, as described in the USEPA Contract Laboratory Program National Functional Guidelines (USEPA 2008).

[8] Note that a threshold of 100 ng/m^3 is recommended by USEPA for children 3 to less than 6 years old. This threshold was used for the sampled JCES classrooms known to be regularly occupied by children older than 3 and less than 6 years old. This applies to certain classrooms in Buildings B (Rooms 1, 2, and 5), C (Room 8), and F (Room 21) that contain either kindergarten or special education classes. Based on known planned use of JCES, classrooms routinely occupied with children older than 3 and less than 6 years old tested to date did not exceed this threshold of 100 ng/m^3 recommended by USEPA.

results, the District proceeded with BMP cleaning of these buildings. ENVIRON also continued with its post-cleaning sampling investigation in these buildings.

- Airborne levels of PCBs in all sampled rooms (62 pre-cleaning samples and 101 post-cleaning sample results to date) are either not detected or less than USEPA's recommended health benchmark of 200 ng/m^3 (or 100 ng/m^3 benchmark for regularly occupied classrooms with children aged 3 to less than 6 years old)[8], except one pre-cleaning sample in Room 303 in Building F (Building 300, Thresher Shark).[9] The post BMP-cleaning air sample in Room 303 was non-detect for PCBs.
- Pre-cleaning (pre-BMP) surface wipe sample results (136 pre-cleaning samples and 368 post-cleaning sample results to date) indicate that nearly 78 percent (%) of the pre-cleaning samples are below the detection limit and another 16% of pre-cleaning samples have total PCB concentrations that are below USEPA's recommended threshold of 1 µg/100 cm^2. Nearly 90% of the initial (before any re-cleaning) post-cleaning samples are below the detection limit and another 7% of initial post-cleaning samples have total PCB concentrations that are below USEPA's recommended threshold of 1 µg/100 cm^2.
- ENVIRON has completed the inspections of all pre-1981 buildings at MHS and JCES.
- The District has made significant progress implementing the BMPs described in the General Plan in pre-1981 school buildings at MHS and JCES. HVAC cleaning has been completed in all pre-1981 school buildings and the annual BMP cleaning has been completed in all regularly occupied rooms, and is ongoing for the remaining low-occupancy rooms in most pre-1981 buildings.

Additional Information on Key Work Conducted Since June 16

While USEPA reviews the July 3rd plan for MHS Library, and BlueShark Building Rooms 1, 5, and 8 (MHS Specific Plan), important work on both MHS and JCES campuses has been proceeding. In addition to preparation of the General Plan and MHS Specific Plan for USEPA, our work since we commenced onsite activities on June 16, 2014, has included the following:

Building Inspections

- ENVIRON has conducted building inspections in all pre-1981 buildings at MHS and JCES per Section 2 of our General Plan to inventory building materials that may potentially have been impacted by PCBs.
- During the inspections, ENVIRON documented the types, locations, and conditions of materials that could potentially have been impacted by PCBs.
- Following careful and rigorous inspections of all of the rooms at the two campuses, ENVIRON noted evidence of past ballast leaks that the SMMUSD is currently taking action on as previously described in our July 11, 2014 update, click here.

BMPs – Annual Cleaning

- The District has been implementing the BMPs described in the General Plan in pre-1981 school buildings.

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[9] The one result above USEPA's threshold is in a room where built-in orchestra risers (building materials) were removed with damage to surrounding building materials just prior to the start of investigation even though District Facility's staff had requested that the school and parents not remove these building materials until after the planned summer investigation. It is likely that this activity impacted the results seen in this room. Thus, this finding is not typical of conditions in any other rooms at MHS or JCES.

- Annual HVAC cleaning has been completed in all pre-1981 school buildings.
- Annual BMP cleaning has been completed in all pre-1981 school buildings except for some low occupancy rooms (e.g., electrical rooms) in most pre-1981 buildings, in which cleaning is ongoing.

BMPs – Air and Wipe Sampling MHS Pilot Study on BMPs

- ENVIRON is conducting a sampling pilot study on BMPs as described in our July 3rd MHS Specific Plan, and with USEPA concurrance.
- ENVIRON has collected pre-cleaning (pre-BMP) and post-cleaning (post-BMP) air and surface wipe samples in all pre-1981 buildings at MHS and JCES. Preliminary results for all buildings are currently available.
- Overall across all pre-1981 buildings, approximately 40% of regularly occupied rooms (e.g., classrooms and offices) have been sampled before cleaning. Post-cleaning sampling was completed on approximately 60% of regularly occupied rooms.
- Preliminary review and analysis of air sample results[10] collected before and after BMP cleaning indicates that airborne levels of PCBs in the sampled rooms are either not detected or below USEPA's recommended health benchmark of 200 ng/m^3 (or 100 ng/m^3 benchmark for regularly occupied classrooms with children aged 3 to less than 6 years old)[8] in all samples, except a pre-BMP cleaning sample in Room 303 in Building F (Building 300, Thresher Shark Building).[9] The post BMP-cleaning air sample in Room 303 was non-detect for PCBs.

Preliminary (Un-Validated[10]) Air Sampling Results To Date

School	Building	BMP Cleaning	Number of Indoor Samples	Below Detection Limit (DL)[11]	Above DL and Below 200 ng/m^3	Above 200 ng/m^3
MHS	Building J (Old Gym)	Pre-BMP	6	2	4 (max:110 ng/m^3)	None
		Post-BMP	7	2	5 (max: 180 ng/m^3)	None
MHS	Building A (Great White Shark)	Pre-BMP	4	4	None	None
		Post-BMP	4	1	3 (max: 92 ng/m^3)	None
MHS	Building B/C (Whale Shark)	Pre-BMP	3	2	1 (84 ng/m^3)	None
		Post-BMP	7	1	6 (max: 83 ng/m^3)	None

[10] Data are currently undergoing Level III/IV third party data validation, as described in the USEPA Contract Laboratory Program National Functional Guidelines (USEPA 2008).
[11] The laboratory reporting limit for the samples in this table ranges from 64 ng/m^3 to 75 ng/m^3.

Preliminary (Un-Validated[10]) Air Sampling Results To Date						
School	**Building**	**BMP Cleaning**	**Number of Indoor Samples**	**Below Detection Limit (DL)[11]**	**Above DL and Below 200 ng/m^3**	**Above 200 ng/m^3**
MHS	Building H (Cafeteria/ Auditorium)	Pre-BMP	3	3	None	None
		Post-BMP	5	5	None	None
MHS	Building F (Thresher Shark)	Pre-BMP	6	2	3 (max: 85 ng/m^3)	1 (480 ng/m^3)[9]
		Post-BMP	9	5	4 (max: 150 ng/m^3)	None
MHS	Building E (Blue Shark)	Pre-BMP	12	11	1 (82 ng/m^3)	None
		Post-BMP	14	12	2 (max: 84 ng/m^3)	None
MHS	Building D (Mako Shark – 100 Rooms)	Pre-BMP	7	6	1 (110 ng/m^3)	None
		Post-BMP	10	9	1 (110 ng/m^3)	None
MHS	Building D (Mako Shark – 200 Rooms)	Pre-BMP	4	4	None	None
		Post-BMP	8	8	None	None
MHS	Building I (Leopard Shark)	Pre-BMP	1	1	None	None
		Post-BMP	4	4	None	None
MHS	Building G (Angel Shark)	Pre-BMP	5	3	2 (max: 170 ng/m^3)	None
		Post-BMP	4	2	2 (max: 150 ng/m^3)	None
JCES	Building A	Pre-BMP	1	1	None	None
		Post-BMP	3	3	None	None
JCES	Building B[8]	Pre-BMP	3	3	None	None
		Post-BMP	7	7	None	None
JCES	Building C[8]	Pre-BMP	2	1	1 (Office: 120 ng/m^3)[12]	None
		Post-BMP	5	4	1 (Office: 110 ng/m^3)[12]	None
JCES	Building D	Pre-BMP	1	1	None	None
		Post-BMP	2	2	None	None

[12] PCBs were detected in the pre-cleaning and post-cleaning air samples in Room 6 with concentrations of 120 ng/m^3 and 110 ng/m^3, respectively. Room 6 is not regularly occupied by children ages 3 to less than 6 years old.

Preliminary (Un-Validated[10]) Air Sampling Results To Date						
School	**Building**	**BMP Cleaning**	**Number of Indoor Samples**	**Below Detection Limit (DL)[11]**	**Above DL and Below 200 ng/m^3**	**Above 200 ng/m^3**
JCES	Building E	Pre-BMP	1	1	None	None
		Post-BMP	3	3	None	None
JCES	Building F[8]	Pre-BMP	3	1	2 (max: 120 ng/m^3)[13]	None
		Post-BMP	9	6	3 (max: 160 ng/m^3)[14]	None

- Preliminary review and analysis of all pre-BMP surface wipe sample results indicates that nearly 78% of the pre-cleaning samples are below the detection limit and another16% of pre-cleaning samples have total PCB concentrations that are below USEPA's recommended threshold of 1 µg/100 cm^2. Nearly 90% of the initial (before any re-cleaning) post-cleaning samples are below the detection limit and another 7% of post-cleaning samples have total PCB concentrations that are below USEPA's recommended threshold of 1 µg/100 cm^2.

Preliminary (Un-Validated[10]) Surface Wipe Sampling Results To Date						
School	**Building**	**BMP Cleaning**	**Number of Samples**	**Below Detection Limit (DL)[15]**	**Above DL and Below 1 µg/100 cm^2**	**Above 1 µg/100 cm^2**
MHS	Building J (Old Gym)	Pre-BMP	14	13	None	1 (40 µg/100 cm^2)[16]
		Post-BMP	27	23	3 (max: 0.27 µg/100 cm^2)	1 (6.5 µg/100 cm^2)[17]
		Post-BMP[18]	1	1	None	None
MHS	Building A (Great White Shark)	Pre-BMP	6	5	None	1 (1.8 µg/100 cm^2)
		Post-BMP	16	16	None	None

[13] The two air samples with detections of PCBs had reported concentrations of 120 ng/m^3. These air samples—which were collected from Room 19 and Room 23—were collected from rooms that are not regularly occupied by children ages 3 to less than 6 years old.

[14] The three air samples with detections of PCBs had reported concentrations of 88 ng/m^3 (Room 19), 110 ng/m^3 (Room 23), and 160 ng/m^3 (Room 22). These rooms are not regularly occupied by children ages 3 to less than 6 years old.

[15] The laboratory reporting limit for all but two surface wipe samples in Building G ranges from 0.1 µg/100 cm^2 to 0.2 µg/100 cm^2. The other two surface wipe samples, which were collected on door caulking in Room 506, had method reporting limits of 1.0 µg/100 cm^2 and 10 µg/100 cm^2 due to sample dilutions.

[16] Pre-cleaning and post-cleaning wipe sampleswere taken on window caulk that was damaged (both samples were taken at the same location). This area was re-cleaned and repaired by SMMUSD in accordance with the July 3rd MHS Specific Plan.

[17] After additional cleaning per the protocol, the wipe result was below the detection limit.

[18] Results for sampling after re-cleaning and repairs to window caulking.

Preliminary (Un-Validated[10]) Surface Wipe Sampling Results To Date						
School	**Building**	**BMP Cleaning**	**Number of Samples**	**Below Detection Limit (DL)[15]**	**Above DL and Below 1 µg/100 cm^2**	**Above 1 µg/100 cm^2**
MHS	Building B/C (Whale Shark)	Pre-BMP	8	6	1 (0.85 µg/100 cm^2)	1 (1.1 µg/100 cm^2)
		Post-BMP	26	20	2 (max: 0.28 µg/100 cm^2)	4 (max: 2.2 µg/100 cm^2)[19]
		Post-BMP[20]	11	6	5 (max: 0.62 µg/100 cm^2)	None
MHS	Building H (Cafeteria/ Auditorium)	Pre-BMP	6	6	None	None
		Post-BMP	19	16	3 (max: 0.56 µg/100 cm^2)	None
MHS	Building F (Thresher Shark)	Pre-BMP	11	2	5 (max: 0.99 µg/100 cm^2)	4 (max: 2.7 µg/100 cm^2)
		Post-BMP	33	26	6 (max: 0.60 µg/100 cm^2)	1 (1.1 µg/100 cm^2)[21]
		Post-BMP[22]	5	4	1 (0.30 µg/100 cm^2)	None
MHS	Building E (Blue Shark)	Pre-BMP	31	31	None	None
		Post-BMP	56	53	3 (max: 0.74 µg/100 cm^2)	None
MHS	Building D (Mako Shark – 100 Rooms)	Pre-BMP	17	8	9 (max: 0.42 µg/100 cm^2)	None
		Post-BMP	26	25	1 (max: 0.15 µg/100 cm^2)	None
MHS	Building D (Mako Shark – 200 Rooms)	Pre-BMP	6	6	None	None
		Post-BMP	21	21	None	None
MHS	Building I (Leopard Shark)	Pre-BMP	2	1	1 (0.31 µg/100 cm^2)	None
		Post-BMP	12	9	3 (max: 0.28 µg/100 cm^2)	None

[19] After additional cleaning per the protocol, the wipe results were below 1 µg/100 cm^2.
[20] Results for sampling after re-cleaning.
[21] After additional cleaning per the protocol, the wipe results were below 1 µg/100 cm^2.
[22] Results for sampling after re-cleaning.

Preliminary (Un-Validated[10]) Surface Wipe Sampling Results To Date						
School	**Building**	**BMP Cleaning**	**Number of Samples**	**Below Detection Limit (DL)[15]**	**Above DL and Below 1 µg/100 cm^2**	**Above 1 µg/100 cm^2**
MHS	Building G (Angel Shark)	Pre-BMP	13	6	6 (max: 0.67 µg/100 cm^2)	1 (71 µg/100 cm^2)
		Post-BMP	13	10	2 (max: 0.84 µg/100 cm^2)	1 (62 µg/100 cm^2)
		Post-BMP[23]	7	2	2 (max: 0.20 µg/100 cm^2)	3 (max: 94 µg/100 cm^2)
JCES	Building A	Pre-BMP	2	2	None	None
		Post-BMP	8	8	None	None
JCES	Building B	Pre-BMP	5	5	None	None
		Post-BMP	21	20	1 (0.13 µg/100 cm^2)	None
JCES	Building C	Pre-BMP	4	4	None	None
		Post-BMP	18	17	None	1 (1.8 µg/100 cm^2)[24]
		Post-BMP[25]	3	2	None	1 (5.6 µg/100 cm^2)
		Post-BMP[26]	8	6	None	2 (max: 2.6 µg/100 cm^2)
JCES	Building D	Pre-BMP	2	2	None	None
		Post-BMP	6	6	None	None
JCES	Building E	Pre-BMP	3	3	None	None
		Post-BMP	8	8	None	None
JCES	Building F	Pre-BMP	6	6	None	None
		Post-BMP	23	23	None	None

- The following buildings did not require further actions based on initial post-cleaning results: MHS Buildings A, D, E, H, and I and JCES Buildings A, B, D, E, and F
- Post-cleaning results that required further actions in accordance with Appendix D of the July 3rd MHS Specific Plan include the following:
  - One pre-cleaning surface wipe sample collected on window caulking at MHS in Building J (Room 722) had a total PCB concentration that was above USEPA's recommended threshold

[23] Results for sampling after re-cleaning and repairs to door caulking. The three surface wipe samples with PCB concentrations above 1 µg/100 cm^2 were all collected from interior door caulking in Room 506.
[24] The one surface wipe sample with a PCB concentration above 1 µg/100 cm^2 was collected from caulking near a sink. The caulking was subsequently cleaned and re-tested, with re-testing results non-detect for PCBs.
[25] Results for sampling after re-cleaning. The one surface wipe sample with a PCB concentration above 1 µg/100 cm^2 was collected from textured wallpaper in Room 6.
[26] Results for sampling after second round of re-cleaning. The two surface wipe samples with a PCB concentration above 1 µg/100 cm^2 were collected from textured wallpaper in Room 6.

of 1 µg/100 cm^2, but this area was repaired, re-cleaned then re-tested, with re-testing results indicating a total PCB concentration below USEPA's recommended threshold.

- One pre-cleaning surface wipe sample and four post-cleaning wipe samples in Building B/C (Building 900, Whale Shark) had total PCB concentrations above USEPA's recommended threshold of 1 µg/100 cm^2. The post-cleaning sample results were in less accessed areas (window sills and top of a bookshelf) in the Attendance and Principal offices. The number of post-cleaning samples (26) was larger than the pre-cleaning samples (8). The sampled areas that have total PCB concentrations above the threshold were re-cleaned and re-tested with results below the USEPA threshold.
- Four pre-cleaning surface wipe samples (window sills in Rooms 301 and 303 and wood surfaces in Rooms 301C and 303) collected in Building F were above the USEPA threshold. Those areas were re-cleaned and tested with re-testing results indicating that those areas have total PCB concentrations below USEPA's recommended threshold.
- A total of 16 surface wipe samples were collected from Room 506 (woodshop) in Building G (Building 500, Angel Shark) (including before and after cleaning) and all but five samples were either non -detect for PCBs or less than USEPA's recommended threshold of 1 µg/100 cm^2. The five surface wipe samples with PCB detections greater than 1 µg/100 cm^2 were all collected from interior door caulking surfaces and the results are being evaluated further with USEPA. Currently, the District has conservatively kept Room 506 (woodshop) in Building G closed to teachers and students because this room is undergoing further evaluation.
- A total of 15 surface wipe samples were collected from Room 6 in Building C at JCES (including before and after cleaning) and all but four samples were non-detect for PCBs and therefore less than USEPA's recommended threshold of 1 µg/100 cm^2. PCBs reported in one surface wipe sample above 1 µg/100 cm^2 was collected from caulking adjacent to the sink, but the area was subsequently re-cleaned and sample results after the re-cleaning indicate that surface had a PCB concentration less than 1 µg/100 cm^2. The other three surface wipe samples were collected from a wall surface near a window and a sink and were above 1 µg/100 cm^2 but less than 10 µg/100 cm^2. As per section 1.2.3.2 of the July 3rd MHS Specific Plan, ENVIRON is currently in discussions with USEPA on whether further actions are needed given the results and the low contact frequency of this surface. Currently, the District has conservatively kept Room 6 (office) in Building C closed to teachers and students because this room is undergoing further evaluation.

BMPs – PEER's Reported Sampled Rooms

- ENVIRON's testing has included rooms reported by PEER and Malibu Unites as having unverified[27] elevated PCB concentrations in caulk and air vent "dirt". ENVIRON's sampling results from the rooms with the four interior samples described by PEER in their July 17th memorandum[28] are summarized below:

[27] In a July 23, 2014 email from ENVIRON to Kurt Fehling, Jennifer DeNicola of Malibu Unites, and Paula Dinerstein of PEER, ENVIRON requested additional information and clarification on the sampling conducted by Malibu Unites/PEER that was missing, not readily discernible, or apparent from the materials provided by them to date. This included missing sample location information, any photos of sampled areas, a complete chain of custody, and missing but cited third party validation report. ENVIRON has not received a response to date.

[28] Public Employees for Environmental Responsibility (PEER), *Malibu Unites and Public Employees for Environmental Responsibility's Comments on ENVIRON's "Site-Specific PCB-Related Building Materials Management, Characterization and Remediation Plan"* July 17, 2014. Accessed here.

- MHS Building E Room 1 was identified by PEER and Malibu Unites as a room with elevated concentrations of PCBs in dirt. The pre- and post-cleaning air sample results for this room (maximum: 84 ng/m^3) are below USEPA's benchmark and the eight wipe samples in this room are non-detect for PCBs.
- MHS Building E Room 2 was identified by PEER and Malibu Unites as a room with elevated concentrations of PCBs in dirt. The pre- and post-cleaning air sample results for this room as well as the eight wipe samples in this room are non-detect for PCBs.
- MHS Building G Room 506 was identified by PEER and Malibu Unites as a room with elevated concentrations of PCBs in caulk. The pre- and post-cleaning air sample results for this room as well as most of the wipe samples in this room are below the USEPA threshold; three wipe samples near interior doors remain above the USEPA threshold after re-cleaning. This room is currently undergoing further evaluation, as discussed above.
- JCES Building F Room 19 was identified by PEER and Malibu Unites as a room with high concentrations of PCBs in caulk. The pre- and post- cleaning air sample results for this room are below USEPA's benchmark and the five wipe samples in this room are non-detect for PCBs.

Summary of Key Work Planned Over the Coming Weeks

Our key planned activities over the coming weeks include the following:

- The District will continue to implement BMP annual cleaning for the remaining low-occupancy rooms in pre-1981 buildings across both campuses. The District will continue with weekly and monthly BMP cleaning as per the July 3rd MHS Specific Plan.
- ENVIRON and the District will further evaluate, in conjunction with USEPA, MHS Building G Room 506 (woodshop) and JCES Building C Room 6 (office), which have a few post-cleaning wipe sample results above USEPA's recommended threshold of 1 µg/100 cm^2 as discussed above.
- ENVIRON will provide data validation reports to the District in building groups (all pre- and post-cleaning results together) when available .
- As data validation efforts are completed, ENVIRON will start preparing a report summarizing inspection observations, sampling locations and results, and conclusions as per our July 3rd MHS Specific Plan. The report will be posted on the District's website once it is complete. Schedule depends on receipt of the final data validation reports.

Thank you for your attention to these matters.

To: Rizgar.Ghazi_dtsc.ca.gov[Rizgar.Ghazi@dtsc.ca.gov]; Nelline Kowbel (Nelline.Kowbel@dtsc.ca.gov)[Nelline.Kowbel@dtsc.ca.gov]
Cc: Huetteman, Tom[Huetteman.Tom@epa.gov]
From: Gross, Barbara
Sent: Wed 3/1/2017 8:24:25 PM
Subject: Permitting Draft Work Plan - Information for tomorrow's discussion
ATTACHMENT PERMIT - 1 MULTI-YEAR STRATEGY.DOCX
2018_2020Multi Year Strategy_Graph_Feb 2017.xlsx
2018_2020 PERMITTING GRANT WORK PLAN INPUT 2-22-2017.docx

Hello Rizgar and Nelline –

Thank you for DTSC's effort in submitting the 2018-2020 Work Plan. Tom and I reviewed the permitting section and have some questions which we hope to discuss with you during the DTSC/EPA grant permits call on Thursday. I want to share our questions with you with the hope of improving the discussions.

Overall, there are 2 overarching tasks which are addressed in the grant: Permit Decisions and paper work/data clean ups. During the discussion on Thursday we will focus primarily on, and hope to agree on a target universe of permits which are or will become expired through 2018 and a percent goal of that universe of permits to complete permit decisions during the 3 year grant cycle.

1. The Work Plan references the information in Attachment 1, (Word documents attached) a multi-year strategy with permitting projects identified as renewals, closures and modifications. We used the information in this strategy and sorted it by Permit Expiration Date. (Please see Excel file above (2018_2020Multi-Year Strategy_Graph_Feb2017). The third tab contains graphs and tables of numbers of permits by year.) We want to check in with you about the numbers of permits as the information from your Attachment 1 is different from the narrative:

Narrative p 2: existing number of pending permit applications (33), (Attachment 1 indicates 23)

Narrative p 2: anticipated spike in permit renewal applications in the near term (39 over the next 3 years). (Attachment 1 indicates 33)

2. Of the agreed upon numbers in question 1, how many of those will be completed during SFY17? When these permits are subtracted from the permits determined in number 1 above, the result is the Target Universe for the 2018-2020 grant cycle.

3. We'd like to agree upon the Target Universe and a percent renewal goal for the 3-year grant cycle. Then we can convert to an overall goal for the number of permit renewals to be completed over the 3 year grant cycle. DTSC's proposal for 8 permit renewals a year (24 total) would appear to represent a goal of only approximately 50%, which is not aggressive enough. We note on page 2 of the Work Plan that DTSC has already established a goal of 90% by SFY2021.

4. In addition to actual permit decisions, EPA would like remaining data clean up completed by the end of the grant (SFY2020) or sooner.

BARBARA GROSS ..... Manager, Permits Section ..... USEPA Region 9, Land Division .....
415.972.3972

2) Permitting

A. Program Implementation and Strategy

Permit decisions for the authorization of hazardous waste facilities are fundamental regulatory activities performed by delegated state agencies. DTSC understands the critical importance of drafting permits using consistent standards and transparent processes, and finalizing permit decisions that are protective, timely, and enforceable.

To this end, DTSC has the following key goals and initiatives for the Permitting program.

1. Issue 8 RCRA permit decisions each year
2. Improve the timeliness of permit decisions and reduce the number of continued permits.
3. Issue protective closure plan approvals, provide oversight of the closure of facilities in accordance with approved closure plans and finalize protective post closure permit determinations at land disposal facilities.
4. Provide draft RCRA permits to USEPA for review prior to issuing draft permits for public comment
5. Improve data systems including EnviroStor to meet the needs of the permitting process, provide more consistent data, and improve transparency
6. Continue providing transparency of DTSC's permitting process through timely posting of project-specific information on the EnviroStor public website.
7. Integrate and implement applicable enhanced public participation processes that are developed through regulation and policy.
8. Support the implementation of emerging Environmental Justice program requirements that address Environmental Justice concerns in the permitting process
9. Implement training in required minimum technical standards, regulations, and permitting processes
10. Complete development of tools and guidance for improving efficiency and consistency of permitting actions (e.g., model and guidance documents, internal permitting process guidance, and user-friendly intranet-based guidance tool).

Based on an assessment of new, expiring, and expired RCRA permits, the DTSC Multi-Year Strategy is provided in Attachment Permit-1. This table details DTSC permitting commitments for the next three State Fiscal Years (SFYs). In summary, DTSC plans to:

1) Meet the projected GPRA commitments for each year in this grant cycle. GPRA commitments address:
   a) New permits
   b) Permit renewals
2) Make timely permit decisions on all new and renewal applications.
3) Reduce the number of continued permits.
4) Approve closure plans and provide oversight for the closure of facilities Make closure verification determinations.
5) Complete ongoing work from previous fiscal years, when needed.

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Renewals

USEPA national goals for permit renewal decisions require improved timeliness of permit renewal decisions. DTSC is implementing permitting reforms to improve timeliness and protectiveness of permit decisions. However, due to the existing number of pending permit applications (33), coupled with an anticipated spike in permit renewal applications in the near term (39 over the next 3 years), several years will be required to reduce the number of continued permits and achieve DTSC's goals for improving permit application processing times. Based on newly increased staff levels approved for SFY 2016-17, DTSC estimates that it will be able to achieve the following goals by SFY 2020-2021:

a. Complete permit decisions within 2 years for 90% of projects
b. Reduce the number of permits that have been continued for more than 5 years to zero.

During this Grant period, DTSC commits to make at total of 24 RCRA permit renewal decisions as shown in the table below. The specific permit renewal decisions are provided in the multi-year strategy.

Operating/Post Closure Permit Renewal		
SFY 2017-18	**SFY 2018-19**	**SFY 2019-20**
8	8	8

In addition to completing permit decisions, DTSC plans to address issues with the status designation for permit renewals identified in the USEPA 2018 GPRA Renewal Baseline. Please see Attachment Permit-2 for the SFY2017-18 GPRA Permit Renewal Baseline list. DTSC plans to address these permit renewal issues at the rate shown in the table below.

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Permit Renewal Issues Addressed (Resolution of Facility Status)		
SFY 2017-18	**SFY 2018-19**	**SFY 2019-20**
10	10	10

Initial Controls

Per the USEPA 2018 GPRA Permit Baseline, DTSC has 14 facilities that need initial permit controls in place. Initial permit controls apply to facilities that have never had a permit. Because DTSC has no remaining facilities seeking a permit (i.e., no interim status facilities), these 14 facilities reflect a need to resolve facility status in the RCRAInfo database. DTSC plans to resolve site status to achieve a total of 14 initial controls in place by end of SFY 2019-20. Please see Attachment Permit-3 for the list of facilities identified as needing initial permit controls in place, referred to as the 2018 GPRA Permits Baseline list.

Initial Controls Completed (Resolution of Facility Status)		
SFY 2017-18	**SFY 2018-19**	**SFY 2019-20**
4	5	5

California considers climate change impacts for all permits. The California Environmental Quality Act (CEQA) process, applicable to all permit decisions, includes an assessment of greenhouse gas emissions. CEQA requires state and local government agencies to inform decision makers and the public about the potential environmental impacts of proposed projects, and to reduce those environmental impacts. The CEQA documents contain an analysis of the project's greenhouse gas emissions in the context of California statewide greenhouse gas reduction goal (Assembly Bill 32) and the national commitment to reduce greenhouse gas emissions.

B. Goals

USEPA Strategic Plan 2014-2018 establishes Strategic Plan Goal 3, Cleaning Up Communities and Advancing Sustainable Development. DTSC permitting activities support Goal 3, specifically addressing Objective 3 "Preserve Land: Conserve resources and prevent land contamination by reducing waste generation and toxicity, promoting proper management of waste and petroleum products, and increasing sustainable materials management."

C. Work Commitments

The DTSC Program Implementation and work commitments are described in earlier subsections. In addition to permit-related work commitments (i.e., permits, closures, permit mods, permit maintenance), DTSC plans to achieve the additional work commitments presented in the subsections below.

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1. Program Implementation

Permitting Objective 1.1 - Progress Reporting

DTSC will continue to report to USEPA on a semi-annual basis via Mid-Year and End of Year reports. The End of Year report will follow the format specified by USEPA in the February 1, 2017 RCRA/C 3011Grant and Program Guidance for the State of California document. The report will provide details of program implementation including performance compared with the Multi-Year Strategy and GPRA goals, as well as achievements on significant non-GPRA activities, training, other major permitting projects, special projects funded by the Grant, data management, and Environmental Justice initiatives. Each report will include information for the period of performance concerning Permitting commitments, deliverables, authorized activities, and completion schedules. In addition each report will convey significant changes that occurred during the SFY.

Permitting Objective 1.2 - Training

During SFY 2017-2018 through SFY 2019-20, the DTSC Permitting Division will implement a structured training program designed to:

1) increase staff knowledge on procedures, processes, and standards to improve efficiency and effectiveness;
2) enhance training quality and frequency for the permitting division to improve permit

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processing speed and quality control;

3) establish a consistent and systematic training program to improve training coordination and cross-training opportunities throughout DTSC program offices.

DTSC will continue to encourage certification of Green and Black Belts through the Lean Six Sigma (LSS) program. During the next three years DTSC staff will collaborate with USEPA to train staff through US EPA's Lean Six Sigma (LSS) program.

During this Grant cycle, DTSC commits to provide training on the following subjects.

- Hazardous Waste Laws and Regulations
- Hazardous Waste Permit Modifications
- Facility Closure/ Post -Closure Plans and Cost Estimates
- California Environmental Quality Act (CEQA) Process
- Environmental Justice
- Public Participation
- Containers, Tank, and Storage Units
- Waste Analysis/Waste Classification

Permitting Objective 1.3 – Other Major Permitting Projects

In addition to the commitments made as a part of this Grant, DTSC will be transitioning to a "Fee for Service" system where applicants are required to pay DTSC's processing costs in lieu of a flat fee, for all applications received on or after April 1, 2016. Effort is being devoted to developing the tools, processes, and training necessary for implementation.

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DTSC's Permitting Division is completing development of tools and guidance for improving efficiency and consistency of permitting actions. This effort is, in part, a continuation of the Permitting Enhancement efforts. A web-based tool is being developed for use by DTSC Project Managers; this tool will provide user-friendly access to the tools, processes, guidance, training, and relevant statutes and regulations, essential for an efficient permitting program. Numerous guidance documents and tools are in development to increase consistency, efficiency, and protectiveness of permits. Progress on these activities will be reported in the periodic progress reports.

Other major permitting projects may arise as a result of new laws or regulations. Those projects will be identified in progress reports and the status of these projects will subsequently be reported.

Permitting Objective 1.4 – Grant Program Contact

DTSC's grant program contact for DTSC Permitting Division will be Nicholas Pettigrew. He will serve as the contact person related to grant work planning and grant reporting.

2. Multi-Year Strategy

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DTSC has developed a Multi-Year Strategy table, identifying the facilities and projected time frames for accomplishment of permit related work including new permits, permit renewals, permit modifications, and closures.

Permitting Objective 2.1 – Multi-Year Strategy

The Multi-Year Strategy is presented in Attachment Permit-1. The comments section of the Multi-Year strategy table identifies issues or external factors that may adversely impact the permit schedules. DTSC will provide revisions to the Multi-Year Strategy table in each progress report to reflect changes in project status or schedule.

3. GPRA

DTSC's RCRA workload includes the following types of activities:

- Initial Permits
- Permit Renewals
- Permit Modifications
    - Class 1 & 1*
    - Class 2
    - Class 3
- Closure Verifications
- Post Closure Permits
- Emergency Permits

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Based on the projections developed in the Multi-Year Strategy table, DTSC plans to achieve the following GPRA commitments for the Grant period of SFY 2017-18 through SFY 2019-2020. The GPRA commitment will be achieved via combination of permits issued and resolution of facility status. As requested by USEPA, the number of actual permit decisions is separately listed from the number of permit renewals to be completed through resolution of the facility status in the RCRAInfo database.

	GPRA GOAL		
Commitment Type	**SFY 2017-2018**	**SFY 2018-2019**	**SFY 2019-2020**
Permit Renewals (actual permit decisions)	8	8	8
Permit Renewals (resolution of facility status)	10	10	10
Initial Controls in Place (resolution of facility status)	2	2	2
Totals	20	20	20

Accomplishments for all of the RCRA activities will be presented in the periodic progress reports.

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Permitting Objective 3.1 – Permit Accomplishments by Fiscal Year

DTSC plans to complete the GPRA commitments as specified above and report the results in the progress reports. If a GPRA goal is not achieved, the EOY report will discuss the factors contributing to the missed accomplishment, identify adjustments to spending if necessary, and provide updated schedules for the GPRA goals.

4. Non-GPRA

USEPA would like the opportunity, as part of their oversight responsibilities, to review draft permits, including the Part B application, before the draft permits are issued. As DTSC started in the previous Grant work plan, and as required by the Memorandum of Agreement between USEPA and DTSC signed on December 22, 2009, DTSC will continue to provide draft permits, Part B applications, and supplementary materials to USEPA for review. DTSC will provide sufficient time for USEPA review and comment.

The permit package will be submitted to Barbara Gross, the USEPA Region 9 Permits Office Supervisor and will include the following information:

- Facility name
- Location
- EPA ID number
- Permitting project manager contact information and permitting action to be proposed.

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In addition to reporting on progress for RCRA permits, DTSC will provide information on the non-RCRA universe of work that DTSC conducts annually. The reporting items for non-RCRA universe work will be those established by USEPA for DTSC, as described below.

Permitting Objective 4.1 – Report List of Draft Permits Submitted to USEPA per SFY

DTSC will report annually, the list of draft permits submitted to USEPA for review, including the facility name, location, and date submitted. Note that DTSC will submit only RCRA permits to USEPA for review.

Permitting Objective 4.2 – Report Number of Initial Permits Completed

DTSC will report annually, the number of initial permits completed.

Permitting Objective 4.3 – Report Number of Permit Renewals Completed

DTSC will report annually, the number of permit renewals completed.

Permitting Objective 4.4 – Report Number of Permit Modifications Completed

DTSC will report annually, the number of permit modifications completed.

Permitting Objective 4.5 – Report Number of Closure Plan Approvals

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DTSC will report annually, the number of closure plans approved.

Permitting Objective 4.6 – Report Number of Closure Verifications

DTSC will report annually, the number of closure verifications completed.

Permitting Objective 4.7 – Report Number of Post-Closure Permits or Other Mechanisms Completed

DTSC will report annually, the number of post-closure permits or other mechanisms completed.

Permitting Objective 4.8 – Report Number of Emergency Permits

DTSC will report annually, the number of emergency permits completed.

5. Data Management

DTSC tracks all permitting activities through a centralized database system called EnviroStor. This enhanced database system provides the tool for DTSC staff to process and record Permitting information and detailed permit data to the public including all the major documents pertaining to hazardous waste facility permits.

DTSC will continue to update, maintain, and improve the permitting data system to provide USEPA with high quality data that is timely and accurate. To this end, DTSC will continue to provide monthly data uploads into USEPA's RCRAInfo database system.

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DTSC will be implementing the following data related initiatives to improve data quality for the period SFY 2017-18 through SFY 2019-2020.

- Improvement of Financial Assurance/Closure Cost estimate data via improvement of EnviroStor Financial Assurance/Closure Cost module.
- Increased transparency via Public EnviroStor upgrades and consistent and timely uploads of all major permitting documents.
- Creation of Cost Reimbursement module in EnviroStor to manage and track Permit Project cost.
- Training of EnviroStor data system to permitting staff to improve system usage and data quality improvements.

In addition, DTSC will accomplish the following objectives identified by USEPA as objectives for Information Management.

Information Management Objective 2.1 – Report GPRA Progress

DTSC will continue to provide monthly data uploads into RCRAInfo, providing information on GPRA progress.

Information Management Objective 2.2 – Track and Report Accomplishments

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DTSC will continue to track GPRA goals by utilizing the "Permitting Accomplishments Report" and will meet quarterly with U.S. EPA Region IX staff for GPRA meetings. In addition, DTSC will continue to utilize the "RCRA Baseline Report" in EnviroStor to track goals in real-time.

6. Environmental Justice

In SFY 2016-2017, DTSC developed a more robust and meaningful strategy for addressing the needs and concerns of environmental justice and tribal communities. DTSC developed an environmental justice community assessment and engagement process that allows for input from impacted communities. This process identifies environmental health concerns, potential mitigation measures, and the boards, departments and offices that DTSC intends to partner with to help address those concerns. The process will be implemented by Permitting upon finalization by the DTSC Office of Environmental Justice and Tribal Affairs (OEJTA).

OEJTA, with input from the Permitting Office as well as other programs, is currently developing two policies to promote justice and equity in all DTSC programs: the Civil Rights and Language Access policies. OEJTA is also assisting with grant applications for Public Health Assessments in Kettleman City. OEJTA is developing a training program on environmental justice and tribal affairs for permitting staff. The policies will be implemented by the Permitting Division upon finalization.

Permitting Objective 6.1 – Report Environmental Justice Activities

DTSC will report on the Environmental Justice activities related to the Permitting Division, in each SFY report.

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D. Special Project Funding

DTSC seeks special project funding to continue outside consulting support to perform Technical Reviews of RCRA permit applications. DTSC expects the consultant will be able to complete a technical review of 5 to 6 permit applications each fiscal year, with the requested funding.

With a substantial increase in workload and extensive intra-Department coordination requirements, DTSC project managers and management require an integrated project management tool that allows a dashboard view of integrated resource loading, schedules, and key milestone events, among other information. Special project funding is requested to purchase, install, and implement MicroSoft Project Enterprise system, to allow resource-loaded, integrated scheduling with a dashboard view of all permitting projects.

The DTSC EnviroStor system houses data that is uploaded to the EPA RCRAInfo database. The system lacks functionality to transfer Financial Assurance (FA)-related data. FA information applies to permitted facilities and to closed facilities that are subject to ongoing Corrective Action. With the requested funding, the DTSC Office of Environmental Information Management (OEIM) will implement a project to build an automated process for the XML transfer of FA Mechanisms and Cost Estimates to RCRAInfo. This will involve a redesign of the EnviroStor Financial Assurance functionality to match the data requirements for RCRAInfo.

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OEIM will also develop a Quality Assurance/ Quality Control (QA/QC) process to ensure data transfers are successful, and FA data between EnviroStor and RCRAInfo match.

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ATTACHMENT PERMIT – 1

Commitment is to complete 24 permit renewal decisions during Grant period

DIVISION: Hazardous Waste Management Program
PROGRAM: Permitting Division
PERIOD: 7/01/2017 - 6/30/2020

DEPUTY DIRECTOR: Antonette Cordero
PROGRAM MANAGER: Rizgar Ghazi

OUTPUT DESCRIPTION	EPA ID	FACILITY_NAME	PERMIT EXPIRATION DATE	PLANNED DECISION DATE (Quarter Ending)	ACTUAL DATE (Column to Be Used for Reporting Purposes)	COMMENTS/ KNOWN RISKS TO SCHEDULE
OPERATING PERMIT	CAD008488025	PHIBRO-TECH INC	7/29/1996	Jun-17		
OPERATING PERMIT	CA2890090002	LAWRENCE LIVERMORE NATIONAL LABORATORY - SITE 300	5/23/2006	Jun-17		Two prior operating permits are going to be issued as one. Expiration date for the other permit is 11/6/2007
OPERATING PERMIT	CAD097030993	US ECOLOGY VERNON INC	10/7/2006	Jun-17		
OPERATING PERMIT	CA2170023152	NAVAL AIR WEAPONS STATION CHINA LAKE	8/7/2011	Jun-17		
OPERATING PERMIT	CAD982435026	KW PLASTICS OF CALIFORNIA	7/28/2014	Jun-17		
OPERATING PERMIT	CAT080011653	DYNEGY MOSS LANDING, LLC	4/6/2016	Jun-17		
POST CLOSURE PERMIT	CAD009114919	CHEVRON USA INC RICHMOND REFINERY	3/7/2013	Jun-17		
POST CLOSURE PERMIT	CA2890090002	LAWRENCE LIVERMORE NATIONAL LABORATORY - SITE 300	4/3/2013	Jun-17		
POST CLOSURE PERMIT	CAD990665432	JOHN SMITH ROAD LANDFILL	12/8/2013	Jun-17		
POST CLOSURE PERMIT	CAD981429715	KEARNEY-KPF	7/22/2014	Jun-17		
POST CLOSURE PERMIT	CAT080010283	EPC WESTSIDE DISPOSAL FACILITY	6/28/2016	Jun-17		
OPERATING PERMIT	CAD001705235	UNITED TECHNOLOGIES CORP PRATT AND WHITNEY ROCKETDYNE SAN JOSE	10/14/2017	Dec-17		

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ATTACHMENT PERMIT – 1

Commitment is to complete 24 permit renewal decisions during Grant period

DIVISION: Hazardous Waste Management Program
PROGRAM: Permitting Division
PERIOD: 7/01/2017 - 6/30/2020

DEPUTY DIRECTOR: Antonette Cordero
PROGRAM MANAGER: Rizgar Ghazi

OPERATING PERMIT	CAD981168107	SAN DIEGO GAS & ELECTRIC MIRAMAR	8/5/2017	Dec-17		
POST CLOSURE PERMIT	CAD001705235	UNITED TECHNOLOGIES CORP PRATT AND WHITNEY ROCKETDYNE SAN JOSE	12/4/2016	Dec-17		
OPERATING PERMIT	CAD000633164	CLEAN HARBORS WESTMORLAND LLC	5/2/2004	Mar-18		Extensive public interest anticipated.
OPERATING PERMIT	CAD980675276	CLEAN HARBORS BUTTONWILLOW LLC	4/6/2006	Mar-18		Extensive public interest anticipated.
OPERATING PERMIT	CAD980887418	SAFETY-KLEEN OF CALIFORNIA INC	1/5/2015	Mar-18		
OPERATING PERMIT	CA0000084517	SAFETY-KLEEN SYSTEMS INC	6/28/2016	Mar-18		
OPERATING PERMIT	CAD980884183	GEM OF RANCHO CORDOVA LLC DBA PSC ENVIRONMENTAL SVS OF RANCHO CORDOVA	4/25/2017	Mar-18		
OPERATING PERMIT	CAT000613927	SAFETY-KLEEN SYSTEMS INC HIGHLAND SERVICE CENTER	6/23/2017	Mar-18		
OPERATING PERMIT	CA2890012923	SANDIA NATIONAL LABORATORIES	3/30/2014	Jun-18		Decision delay likely due to new EIR.
OPERATING PERMIT	CAR000128793	HGST INC	5/15/2015	Jun-18		
OPERATING PERMIT	CA1570024504	EDWARDS AIR FORCE BASE	11/7/2015	Jun-18		
OPERATING PERMIT	CAD009114919	CHEVRON USA INC RICHMOND REFINERY	10/11/2016	Jun-18		
OPERATING PERMIT	CAD981422017	SOUTHERN CALIFORNIA GAS CO	5/4/2017	Jun-18		
POST CLOSURE PERMIT	CAT080010606	BIG BLUE HILLS PESTICIDE CONT DISPOSAL	9/7/2017	Jun-18		
POST CLOSURE PERMIT	CAD059277137	CENTRAL WIRE INC	3/1/2018	Jun-18		
OPERATING PERMIT	CAT000646117	CHEMICAL WASTE MANAGEMENT INC KETTLEMAN	6/13/2013	Sep-18		

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ATTACHMENT PERMIT – 1

Commitment is to complete 24 permit renewal decisions during Grant period

DIVISION: Hazardous Waste Management Program
PROGRAM: Permitting Division
PERIOD: 7/01/2017 - 6/30/2020

DEPUTY DIRECTOR: Antonette Cordero
PROGRAM MANAGER: Rizgar Ghazi

OPERATING PERMIT	CAD077966349	PACIFIC GAS & ELECTRIC/ DIABLO CANYON	7/30/2016	Sep-18		
OPERATING PERMIT	CAD076528678	THE DOW CHEMICAL CO	7/30/2016	Sep-18		
OPERATING PERMIT	CAT000625137	SOUTHERN CALIFORNIA GAS CO	7/30/2017	Sep-18		At risk of delay. Facility has requested substantial extension for reponse to 1st NOD.
OPERATING PERMIT	CAD000633230	RAYTHEON SPACE AND AIRBORNE SYSTEMS	10/8/2017	Sep-18		
OPERATING PERMIT	CAD059494310	CLEAN HARBORS SAN JOSE LLC	2/9/2013	Dec-18		
OPERATING PERMIT	CAD009220898	PACIFIC SCIENTIFIC ENERGETIC MATERIALS CO	5/11/2016	Dec-18		
OPERATING PERMIT	CA4890008986	LAWRENCE BERKELEY NATIONAL LABORATORY	12/21/2016	Dec-18		
OPERATING PERMIT	CAT000613976	SAFETY-KLEEN SYSTEMS INC	5/23/2017	Dec-18		At risk of delay. Facility has submitted intent to close.
OPERATING PERMIT	CAD066113465	SAFETY-KLEEN	7/23/2017	Mar-19		
OPERATING PERMIT	CAD066233966	QUEMETCO INC	9/15/2015	Mar-19		Extensive public interest anticipated.
OPERATING PERMIT	CA6170024289	NAVAL STATION SAN DIEGO	7/26/2016	Mar-19		
OPERATING PERMIT	CAD076528678	THE DOW CHEMICAL CO	4/27/2013	Mar-19		
POST CLOSURE PERMIT	CAD076528678	THE DOW CHEMICAL CO	12/12/2017	Mar-19		Application is overdue and facility has mentioned possible closure
OPERATING PERMIT	CA5570024575	TRAVIS AIR FORCE BASE	1/19/2018	Jun-19		
OPERATING PERMIT	CAD008336901	CHEVRON EL SEGUNDO REFINERY	5/17/2017	Dec-19		

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ATTACHMENT PERMIT – 1

Commitment is to complete 24 permit renewal decisions during Grant period

DIVISION: Hazardous Waste Management Program
PROGRAM: Permitting Division
PERIOD: 7/01/2017 - 6/30/2020

DEPUTY DIRECTOR: Antonette Cordero
PROGRAM MANAGER: Rizgar Ghazi

OPERATING PERMIT	CAD099452708	INDUSTRIAL SERVICE OIL CO INC	6/24/2018	Mar-20		
OPERATING PERMIT	CAD008364432	RHO-CHEM LLC	8/27/2018	Mar-20		
POST CLOSURE PERMIT	CAD980881676	PHILLIPS 66 CO LOS ANGELES REFINERY CARSON PLANT	11/26/2017	Mar-20		
POST CLOSURE PERMIT	CA4170024414	CALIFORNIA RESOURCES ELK HILLS LLC	7/14/2018	Mar-20		
POST CLOSURE PERMIT	CAD009150194	USS-POSCO INDUSTRIES	4/21/2024	Mar-20		
OPERATING PERMIT	CAD000030494	AEROJET ROCKETDYNE INC	3/28/2019	After Jun-20		
OPERATING PERMIT	CAD000030494	AEROJET ROCKETDYNE INC	4/13/2019	After Jun-20		
OPERATING PERMIT	CAD043237486	CHEVRON CHEMICAL CO	7/23/2020	After Jun-20		
OPERATING PERMIT	CA7170090016	NAVAL AIR STATION NORTH ISLAND	7/24/2020	After Jun-20		
OPERATING PERMIT	CAT000613935	SAFETY-KLEEN SYSTEMS INC	3/17/2019	After Jun-20		
POST CLOSURE PERMIT	CAD000633289	BENSON RIDGE FACILITY	6/9/2018	After Jun-20		
POST CLOSURE PERMIT	CAD093245645	DUCOMMUN AEROSTRUCTURES	4/13/2020	After Jun-20		
POST CLOSURE PERMIT	CAD000072751	GOLDEN EAGLE REFINERY	9/29/2019	After Jun-20		
POST CLOSURE PERMIT	CAD074644659	HONEYWELL INTERNATIONAL INC FORMER BARON-BLAKESLEE	3/17/2020	After Jun-20		
POST CLOSURE PERMIT	CAD079089512	MONTEZUMA HILLS FACILITY	10/20/2018	After Jun-20		
POST CLOSURE PERMIT	CAD008237679	PHILLIPS 66 CO LOS ANGELES REFINERY - WILMINGTON PLANT	7/23/2018	After Jun-20		
POST CLOSURE PERMIT	CAD050746775	SQUARE D COMPANY	5/31/2019	After Jun-20		

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ATTACHMENT PERMIT – 1

Commitment is to complete 24 permit renewal decisions during Grant period

DIVISION: Hazardous Waste Management Program
PROGRAM: Permitting Division
PERIOD: 7/01/2017 - 6/30/2020

DEPUTY DIRECTOR: Antonette Cordero
PROGRAM MANAGER: Rizgar Ghazi

POST CLOSURE PERMIT	CAD097465132	TP INDUSTRIAL INC	11/10/2020	After Jun-20		
POST CLOSURE PERMIT	CAD041844002	WEST COUNTY LANDFILL INC	5/31/2019	After Jun-20		
OPERATING PERMIT	CA9570025149	DEPT OF AIR FORCE VANDENBERG AFB	5/5/2018	No date set		Permittee has submitted intent to close, but wishes to continue using for training without first performing closure.
CLOSURES						
Closure Final	CAD009142290	CHEMTRADE WEST US LLC		Mar-17		Closure verification approval letter pending.
Closure	CAR000128793	HGST INC		Mar-17		
Closure Administrative	CAD097854541	EXIDE TECHNOLOGIES INC		Jun-17		
Closure	CAT000613893	SAFETY-KLEEN SYSTEMS INC EL MONTE ACCUMULATION CENTER		Sep-17		
Closure	CAL000113451	CLEAN HARBORS ENVIRONMENTAL SERVICES INC IRWINDALE		Sep-17		
PERMIT MODIFICATIONS						
Mod Class Determination - Agency Initiated	CAD008364432	RHO-CHEM LLC		Dec-16		
Mod Class 2 - 1 or Less Units	CAL000330453	AGRITEC INT DBA CLEANTECH ENVIRONMENTAL INC		Mar-17		
Mod Class 1 - No Prior Approval Required	CAT080013352	DEMENNO/KERDOON		Mar-17		
Mod Class 2 - 2 or More Units	CAL000827844	ASBURY ENVIRONMENTAL SERVICES		Mar-17		

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ATTACHMENT PERMIT – 1

Commitment is to complete 24 permit renewal decisions during Grant period

DIVISION: Hazardous Waste Management Program
PROGRAM: Permitting Division
PERIOD: 7/01/2017 - 6/30/2020

DEPUTY DIRECTOR: Antonette Cordero
PROGRAM MANAGER: Rizgar Ghazi

Mod Class 1 - No Prior Approval Required	CAD050806850	CLEAN HARBORS LOS ANGELES LLC		Mar-17		
Mod Class 3 - 2 or More Units	CAL000102751	WORLD OIL - SAN JOAQUIN LLC		Mar-17		
Mod Class 1*-Prior Approval Required	CAD000633230	RAYTHEON SPACE AND AIRBORNE SYSTEMS		Mar-17		
Mod Class 1*-Prior Approval Required	CAD000633230	RAYTHEON SPACE AND AIRBORNE SYSTEMS		Mar-17		
Mod Class 1* - Prior Approval Required	CAD008383127	TFX AVIATION INC		Mar-17		

To: Choe, Michael@DTSC[Michael.Choe@dtsc.ca.gov]
Cc: Kowbel, Nelline@DTSC[Nelline.Kowbel@dtsc.ca.gov]; Edward.Nieto_dtsc.ca.gov[Edward.Nieto@dtsc.ca.gov]; Huetteman, Tom[Huetteman.Tom@epa.gov]; Gross, Barbara[Gross.Barbara@epa.gov]; Pettigrew, Nicholas@DTSC[Nicholas.Pettigrew@dtsc.ca.gov]; Phil.Blum_dtsc.ca.gov[Phil.Blum@dtsc.ca.gov]
From: Zabaneh, Mahfouz
Sent: Fri 2/10/2017 8:21:11 PM
Subject: RE: GPRA Lists
CA GPRA Facilities Not Meeting the Goal PERMITS 8Feb2017.pdf
CA GPRA Facilities Not Meeting the Goal RENEWALS 8Feb2017.pdf
GPRA Facilities NOT Meeting the Goal RENEWALS -Static.xlsx

Hi Mike,

The attached three reports give you the lists that you are asking for.

1. The first report titled CA GPRA Facilities NOT Meeting the Goal – lists that facilities that need "Initial Controls" (ex. Unit Cleanup, Transfer to Corrective Action, …etc).

a. This report lists 14 facilities in Interim Status or needing cleanup (RCRA Closure).

b. Most are showing a Legal and Operating Status Codes of ISIN (Interim Status - Inactive/Closing but not yet RCRA Closed). In order to meet the goal these units need to be either clean-closed or transferred to Corrective Action or Superfund for cleanup. Some might need a post closure permit or a deed restriction if waste is left in place.

2. The second report CA GPRA Facilities NOT Meeting the Goal – Lists the facilities that need a Renewal.

a. This report lists 80 facilities that need a permit renewal

b. Some of the facilities (about a dozen or so) will drop off the report by adding an "Accomplishment Dates" directly in RCRAInfo. Nick Pettigrew knows how to do the update, since it can't be done by the Envirostor monthly uploads.

c. Some of the facilities need a correction to the Legal and Operating Status Codes.

d. Most are legitimate backlog. That will give you the 66 facilities that you need for the Grant WorkPlan.

3. The third report is the second report migrated into Excel Spreadsheet. This shows the name of the Supervisor and Project Manager for the facility. The Supervisors and the Project Managers should work directly with Nick on updating/fixing the legal and operating status codes.

Hope this helps.

Best regards,

Mike Zabaneh, P.E.

Environmental Engineer/Project Manager

RCRA Permits Office

Lands Division

US EPA Region 9

Mail Code LND-4-2

75 Hawthorne Street

San Francisco, CA 94105

Email address: zabaneh.mahfouz@epa.gov

415-972-3348

415-947-3530 (fax)

From: Gross, Barbara
Sent: Thursday, February 09, 2017 3:52 PM
To: Choe, Michael@DTSC <Michael.Choe@dtsc.ca.gov>; Zabaneh, Mahfouz <Zabaneh.Mahfouz@epa.gov>
Cc: Kowbel, Nelline@DTSC <Nelline.Kowbel@dtsc.ca.gov>; Edward.Nieto_dtsc.ca.gov <Edward.Nieto@dtsc.ca.gov>; Huetteman, Tom <Huetteman.Tom@epa.gov>
Subject: RE: GPRA Lists

Mike –

Mike Z is out today – he should return tomorrow and I'm happy to continue this conversation with the 3 of us if it is helpful. I want to assure you that we will work with DTSC to negotiate the workload that can be accomplished by DTSC during the grant cycle. We feel the need to increase the percentage of facilities with updated controls in California – a goal that I understand is also in DTSC's internal permitting plans.

First, I want to acknowledge the data cleanup efforts which have recently been accomplished by DTSC. In order to have accurate numbers, the accuracy of the data is imperative and DTSC has done a lot of work in this area.

Here is how we got to the number of 22 permit actions:

- The national annual goal is 130. Of that, the renewals portion is 118, and the initial controls portion is 12. We aim to increase the % of initial controls met to 49% by the end of the fiscal year.

RENEWALS:
- The goal of 118 renewals is 56% of the national workload that has expirations before FY16. (In this calculation, we are not counting the recent expirations, ones in FY17 and FY18 since they are less likely to be addressed.)

- California's portion of that workload is estimated to be 39 by BOY FY18. If DTSC did the same % of workload it would equal **21** permit renewals (or clean-closures at permitted facilities)

- By the start of FY18 about 85% of the permits will be updated nationally (or at least within 2 fiscal years of permit expiration), in comparison, DTSC will be at just 64% (assuming 10 more are done this FY). As you can see we expect DTSC to pick up the pace, but understand that it will take several years to become comparable to the national average.

INITIAL CONTROLS:
DTSC has done extensive data cleanup efforts in this area that show a large percentage of the baseline was actually already accomplished. CA is performing better than the national percent accomplishments. Nationally, the goal is for 12 initial controls. The CA portion of that, would be about **1** facility.

Mike and I will be in on Friday. If you want to talk further, let's set up a call.

Barbara

BARBARA GROSS ..... Manager, Permits Section ..... USEPA Region 9, Land Division .....
415.972.3972

From: Choe, Michael@DTSC [mailto:Michael.Choe@dtsc.ca.gov]
Sent: Thursday, February 09, 2017 8:57 AM
To: Zabaneh, Mahfouz <Zabaneh.Mahfouz@epa.gov>
Cc: Gross, Barbara <Gross.Barbara@epa.gov>; Kowbel, Nelline@DTSC <Nelline.Kowbel@dtsc.ca.gov>; Edward.Nieto_dtsc.ca.gov <Edward.Nieto@dtsc.ca.gov>
Subject: RE: GPRA Lists

Thanks Mike,

We have additional question on the GPRA list. On the Grant guidance 2018-2020 grant guidance USEPA states that California target for GPRA is 22 permits accomplishment for each of the three year for 66 total permits. This seems to be overly large as we think we don't have that many projects in the hopper to accomplish.

Can you provide a list of 66 facilities that USEPA found to include this in the grant guidance?

Barbara, if you know, maybe you can chime in here as well.

Would appreciate a quick response as we are trying to get the Grant workplan completed soon.

Michael Choe, P.E.

Senior Hazardous Substances Engineer

Permitting Division

Department of Toxic Substances Control

916-255-3635

From: Zabaneh, Mahfouz [mailto:Zabaneh.Mahfouz@epa.gov]
Sent: Wednesday, February 08, 2017 3:42 PM
To: Choe, Michael@DTSC
Cc: Gross, Barbara; Kowbel, Nelline@DTSC; Nieto, Edward@DTSC
Subject: RE: GPRA Lists

Hi Mike,

Attached are four reports:

1. Permits "Initial Controls" on the 2014-2018 Baseline

2. Renewals "Updated Controls" on the 2014-2018 Baseline

3. Permits "Initial Controls" that are NOT Meeting the goal.

4. Renewals "Updated Controls" that are NOT Meeting the Goal.

The first two reports show what is on the baseline.

The second two reports show what is not meeting the goal.

Please let me know if you need anything else.

Best regards,

Mike Zabaneh, P.E.

Environmental Engineer/Project Manager

RCRA Permits Office

Lands Division

US EPA Region 9

Mail Code LND-4-2

75 Hawthorne Street

San Francisco, CA 94105

Email address: zabaneh.mahfouz@epa.gov

415-972-3348

415-947-3530 (fax)

From: Choe, Michael@DTSC [mailto:Michael.Choe@dtsc.ca.gov]
Sent: Tuesday, February 07, 2017 12:52 PM
To: Zabaneh, Mahfouz <Zabaneh.Mahfouz@epa.gov>
Cc: Gross, Barbara <Gross.Barbara@epa.gov>; Kowbel, Nelline@DTSC <Nelline.Kowbel@dtsc.ca.gov>; Edward.Nieto_dtsc.ca.gov <Edward.Nieto@dtsc.ca.gov>
Subject: GPRA Lists

Hi Mike,

We at DTSC Permitting is starting our work on the next grant and we wanted to get a full list of facilities in GPRA universe which are in the "Renewal" category and also full list of facilities that are in "Initial control" categories so that we can make sure appropriate facilities are covered under the grant.

Would appreciate if you could send me both of the list.

Thanks.

Michael Choe, P.E.

Senior Hazardous Substances Engineer

Permitting Division

Department of Toxic Substances Control

916-255-3635

GPRA Facilities Not Meeting the Goal

For the 2018 GPRA Renewal Baseline

Report run on: February 8, 2017 - 6:33 PM

Version: 5.0

User Selection Criteria

Location:	CALIFORNIA	Group of IDs:	None Chosen
Baseline:	2018 Renewals	Units:	All
Handler Name:			
Handler ID:			
Legal Status:	All		
Operating Status:	All		

Results

Data meeting the criteria you selected follows.

Total Pages: 38 Total Facilities: 80

Report Description

This report lists only those facilities which do not have approved controls in place within the specified GPRA baselines. These facilities may have units that do meet the GPRA goal, but for a facility to count as an accomplishment, all units in that baseline must also meet the goal. If the Legal/Operating Status, Date Range, or Units criteria are selected, then only units that match that criteria will be tested to see if they don't meet the goal. The effective date will show the actual date of the OP205 or PC205 event. If there is no OP205 or PC205 event, then it will show the actual date of the OP200 or PC200 event. Finally, if there is no OP200 or PC200 event, then it will show the effective date of the legal/operating status (Unit). Whichever date is shown will be indicated in parentheses.

The units that do not have an Accomplishment Date have not yet met the goal. A date is placed in the column when the unit has certain legal and operating status codes or if the region stated that the unit has met the goal criteria through an outside verification process. If the verification process is used for a unit, the Accomplishment Date will probably be different than the Effective Date of the legal/operating status codes.

Report Information

Name:	pg_facility_notmeet.rdf
Developed by:	EPA Headquarters, Office of Resource Conservation and Recovery
Deployed:	September 2005
Last Updated:	December 2013
Contact:	rcrainfo.help@epa.gov
Tables Used:	gpra_pmt_renewal_2018, hreport_univ5, pevent4, pln_event_unit_detail4, punit4, punit_detail4, lu_process_code4, lu_legal_operating_status, lu_state, hid_groups
Libraries:	none

ED_001593_00007651

GPRA Facilities Not Meeting the Goal

For the 2018 GPRA Renewal Baseline

Report run on: February 8, 2017 - 6:33 PM

*** WARNING *** Sensitive information may be displayed on this report. *** WARNING ***

AEROJET ROCKETDYNE, INC. — CAD000030494

RANCHO CORDOVA, SACRAMENTO COUNTY — CALIFORNIA — 09

Accomp. Date	Seq. #	Unit Name	Process	Legal / Operating Status	Effective Date	GPRA Baseline
	5	RCRACTRT2 - LDR TREATMENT (GPR	T04: OTHER TREATMENT	PICA: PERMITTED - REFERRED TO CORRECTIVE ACTION FOR CLOSURE	06/10/1997 (OP205)	Renewal
	11	RCRAJTNKST (GPRA UNIT)	T01: TANK TREATMENT	PIIN: PERMITTED - INACTIVE/CLOSING, BUT NOT YET RCRA CLOSED	03/28/2009 (OP205)	Renewal
	12	RCRAJTNKTR (GPRA UNIT)	T01: TANK TREATMENT	PIIN: PERMITTED - INACTIVE/CLOSING, BUT NOT YET RCRA CLOSED	03/28/2009 (OP205)	Renewal
	28	RCRACDRMST3 - STORAGE (GPRA U	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	03/27/2009 (Unit)	Renewal
	33	RCRACDRUMST6 - DECONTAMINATI	S02: TANK STORAGE	PICA: PERMITTED - REFERRED TO CORRECTIVE ACTION FOR CLOSURE	06/10/1997 (OP205)	Renewal
	34	RCRACDRUMST7 - STORE EXPLOSIV	S99: OTHER STORAGE	PICA: PERMITTED - REFERRED TO CORRECTIVE ACTION FOR CLOSURE	04/04/1985 (OP205)	Renewal
	35	RCRACDRUMST8 - STORE EXPLOSIV	S99: OTHER STORAGE	PICA: PERMITTED - REFERRED TO CORRECTIVE ACTION FOR CLOSURE	04/04/1985 (OP205)	Renewal
	36	RCRACDRUMST9 - C BLDG 48008	S99: OTHER STORAGE	PICA: PERMITTED - REFERRED TO CORRECTIVE ACTION FOR CLOSURE	06/10/1997 (OP205)	Renewal
	37	DEEP INJECTION WELLS	D79: UNDERGROUND INJECTION WELL DISPOSAL	PCCP: POST-CLOSURE PERMITTED - CLOSED WITH WASTE IN PLACE	04/13/2009 (PC205)	Renewal

BAY ROAD HOLDINGS — CAD009452657

EAST PALO ALTO, SAN MATEO COUNTY — CALIFORNIA — 09

Accomp. Date	Seq. #	Unit Name	Process	Legal / Operating Status	Effective Date	GPRA Baseline
	2	CONTAIN1 (GPRA UNIT)	S01: CONTAINER	PICA: PERMITTED - REFERRED TO CORRECTIVE ACTION FOR CLOSURE	07/27/1990 (OP205)	Renewal
	4	TANKSTR1 (GPRA UNIT)	S02: TANK STORAGE	PICA: PERMITTED - REFERRED TO CORRECTIVE ACTION FOR CLOSURE	07/27/1990 (OP205)	Renewal
	6	TANKTRT1 (GPRA UNIT)	T01: TANK TREATMENT	PICA: PERMITTED - REFERRED TO CORRECTIVE ACTION FOR CLOSURE	07/27/1990 (OP205)	Renewal

BIG BLUE HILLS DSPL SITE — CAT080010606

COALINGA, FRESNO COUNTY — CALIFORNIA — 09

Accomp. Date	Seq. #	Unit Name	Process	Legal / Operating Status	Effective Date	GPRA Baseline
	1	LANDFIL1 (GPRA UNIT)	D80: LANDFILL	PCCP: POST-CLOSURE PERMITTED - CLOSED WITH WASTE IN PLACE	09/07/2007 (PC205)	Renewal

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GPRA Facilities Not Meeting the Goal

For the 2018 GPRA Renewal Baseline

Report run on: February 8, 2017 - 6:33 PM

*** WARNING *** Sensitive information may be displayed on this report. *** WARNING ***

BKK LANDFILL — CAD067786749

WEST COVINA, LOS ANGELES COUNTY — CALIFORNIA — 09

Accomp. Date	Seq. #	Unit Name	Process	Legal / Operating Status	Effective Date	GPRA Baseline
	1	CLASS1FIL1 (GPRA UNIT)	D80: LANDFILL	PICP: PERMITTED - CLOSED WITH WASTE IN PLACE	06/12/1991 (Unit)	Renewal
	2	LTP1 (GPRA UNIT)	D80: LANDFILL	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	06/24/1987 (OP205)	Renewal
	3	ROLLOFF1 (GPRA UNIT)	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	06/24/1987 (OP205)	Renewal
	4	TANKTRT5-TSU10	T01: TANK TREATMENT	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	06/24/1987 (OP205)	Renewal

BOEING CO SSFL ETEC AREA I V — CAD000629972

SIMI VALLEY, LOS ANGELES COUNTY — CALIFORNIA — 09

Accomp. Date	Seq. #	Unit Name	Process	Legal / Operating Status	Effective Date	GPRA Baseline
	1	CONTAIN1-HWMF BLDG T029 (GPRA	S01: CONTAINER	PIIN: PERMITTED - INACTIVE/CLOSING, BUT NOT YET RCRA CLOSED	11/30/1993 (OP205)	Renewal
	2	OTHRTRT1-HWMF BLDG T133 (GPRA	T04: OTHER TREATMENT	PIIN: PERMITTED - INACTIVE/CLOSING, BUT NOT YET RCRA CLOSED	11/30/1993 (OP205)	Renewal
	4	TANKSTR1-HWMF BLDG T133 (GPRA	S02: TANK STORAGE	PIIN: PERMITTED - INACTIVE/CLOSING, BUT NOT YET RCRA CLOSED	11/30/1993 (OP205)	Renewal
	5	TANKTRT1-HWMF BLDG T133 (GPRA	T01: TANK TREATMENT	PIIN: PERMITTED - INACTIVE/CLOSING, BUT NOT YET RCRA CLOSED	11/30/1993 (OP205)	Renewal

CALIFORNIA RESOURCES ELK HILLS LLC — CA4170024414

TUPMAN, KERN COUNTY — CALIFORNIA — 09

Accomp. Date	Seq. #	Unit Name	Process	Legal / Operating Status	Effective Date	GPRA Baseline
	1	27R - WASTE DISPOSAL TRENCH	D80: LANDFILL	PCCP: POST-CLOSURE PERMITTED - CLOSED WITH WASTE IN PLACE	07/15/2008 (PC205)	Renewal

CENTRAL WIRE — CAD059277137

PERRIS, RIVERSIDE COUNTY — CALIFORNIA — 09

Accomp. Date	Seq. #	Unit Name	Process	Legal / Operating Status	Effective Date	GPRA Baseline
	2	SURFIMP1 (GPRA UNIT)	D83: SURFACE IMPOUNDMENT DISPOSAL	PCCP: POST-CLOSURE PERMITTED - CLOSED WITH WASTE IN PLACE	02/29/2008 (PC205)	Renewal
	3	SURFSTR1 (GPRA UNIT)	S04: SURFACE IMPOUNDMENT STORAGE	PCCP: POST-CLOSURE PERMITTED - CLOSED WITH WASTE IN PLACE	02/29/2008 (PC205)	Renewal
	4	SURFTRT1 (GPRA UNIT)	T02: SURFACE IMPOUNDEMENT TREATMENT	PCCP: POST-CLOSURE PERMITTED - CLOSED WITH WASTE IN PLACE	02/29/2008 (PC205)	Renewal

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GPRA Facilities Not Meeting the Goal

For the 2018 GPRA Renewal Baseline

Report run on: February 8, 2017 - 6:33 PM

*** WARNING *** Sensitive information may be displayed on this report. *** WARNING ***

CHEMICAL WASTE MANAGEMENT, INC. — CAT000646117

KETTLEMAN CITY, KINGS COUNTY — CALIFORNIA — 09

Accomp. Date	Seq. #	Unit Name	Process	Legal / Operating Status	Effective Date	GPRA Baseline
	3	B-18 (GPRA UNIT)	D80: LANDFILL	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	06/16/2003 (OP205)	Renewal
	4	B-19 (GPRA UNIT)	D80: LANDFILL	PIIN: PERMITTED - INACTIVE/CLOSING, BUT NOT YET RCRA CLOSED	06/16/2003 (OP205)	Renewal
	8	DDU (GPRA UNIT)	T04: OTHER TREATMENT	PIIN: PERMITTED - INACTIVE/CLOSING, BUT NOT YET RCRA CLOSED	06/16/2003 (OP205)	Renewal
	10	DRUMSTR1 (GPRA UNIT)	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	06/16/2003 (OP205)	Renewal
	18	P-14 (GPRA UNIT)	D83: SURFACE IMPOUNDMENT DISPOSAL	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	06/16/2003 (OP205)	Renewal
	19	P-15 (GPRA UNIT)	D83: SURFACE IMPOUNDMENT DISPOSAL	PIIN: PERMITTED - INACTIVE/CLOSING, BUT NOT YET RCRA CLOSED	06/16/2003 (OP205)	Renewal
	20	P-16 (GPRA UNIT)	D83: SURFACE IMPOUNDMENT DISPOSAL	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	06/16/2003 (OP205)	Renewal
	29	PCBUNIT (GPRA UNIT)	T04: OTHER TREATMENT	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	06/16/2003 (OP205)	Renewal
	31	STABILUNIT (GPRA UNIT)	T04: OTHER TREATMENT	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	06/16/2003 (OP205)	Renewal
	34	BULKSTR1 (GPRA UNIT)	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	06/16/2003 (OP205)	Renewal
	35	BULKSTR2 (GPRA UNIT)	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	06/16/2003 (OP205)	Renewal
	38	CCU2 - OLD TRUCK WASH	S05: DRIP PAD	PICP: PERMITTED - CLOSED WITH WASTE IN PLACE	09/14/1988 (OP205)	Renewal

CHEMOURS OAKLEY — CAD009151671

OAKLEY, CONTRA COSTA COUNTY — CALIFORNIA — 09

Accomp. Date	Seq. #	Unit Name	Process	Legal / Operating Status	Effective Date	GPRA Baseline
	8	SURFIMP1	T02: SURFACE IMPOUNDEMENT TREATMENT	PCCP: POST-CLOSURE PERMITTED - CLOSED WITH WASTE IN PLACE	01/09/2012 (PC205)	Renewal
	9	SURFIMP2	T02: SURFACE IMPOUNDEMENT TREATMENT	PCCP: POST-CLOSURE PERMITTED - CLOSED WITH WASTE IN PLACE	01/09/2012 (PC205)	Renewal
	10	SURFIMP3	T02: SURFACE IMPOUNDEMENT TREATMENT	PCCP: POST-CLOSURE PERMITTED - CLOSED WITH WASTE IN PLACE	01/09/2012 (PC205)	Renewal
	11	SURFIMP4	T02: SURFACE IMPOUNDEMENT TREATMENT	PCCP: POST-CLOSURE PERMITTED - CLOSED WITH WASTE IN PLACE	01/09/2012 (PC205)	Renewal
	12	SURFIMP5	T02: SURFACE IMPOUNDEMENT TREATMENT	PCCP: POST-CLOSURE PERMITTED - CLOSED WITH WASTE IN PLACE	01/09/2012 (PC205)	Renewal

GPRA Facilities Not Meeting the Goal

For the 2018 GPRA Renewal Baseline

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CHEMOURS OAKLEY - continued

Accomp. Date	Seq. #	Unit Name	Process	Legal / Operating Status	Effective Date	GPRA Baseline
	13	SURFIMP6	T02: SURFACE IMPOUNDEMENT TREATMENT	PCCP: POST-CLOSURE PERMITTED - CLOSED WITH WASTE IN PLACE	01/09/2012 (PC205)	Renewal

CHEMTRADE WEST US LLC — CAD009142290

BAY POINT, CONTRA COSTA COUNTY — CALIFORNIA — 09

Accomp. Date	Seq. #	Unit Name	Process	Legal / Operating Status	Effective Date	GPRA Baseline
	1	TANKSTR1 - ACID WA (GPRA UNIT)	S02: TANK STORAGE	PIIN: PERMITTED - INACTIVE/CLOSING, BUT NOT YET RCRA CLOSED	06/30/2006 (OP205)	Renewal

CHEVRON U.S.A. INC. RICHMOND REFINERY — CAD009114919

RICHMOND, CONTRA COSTA COUNTY — CALIFORNIA — 09

Accomp. Date	Seq. #	Unit Name	Process	Legal / Operating Status	Effective Date	GPRA Baseline
	2	CONTAIN1 (GPRA UNIT)	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	09/10/1992 (OP205)	Renewal
	3	LANDAPP1 (GPRA UNIT)	D81: LAND APPLICATION	PCCP: POST-CLOSURE PERMITTED - CLOSED WITH WASTE IN PLACE	03/07/2003 (PC205)	Renewal
	4	LANDAPP2 (GPRA UNIT)	D81: LAND APPLICATION	PCCP: POST-CLOSURE PERMITTED - CLOSED WITH WASTE IN PLACE	03/07/2003 (PC205)	Renewal
	5	LANDAPP3 (GPRA UNIT)	D81: LAND APPLICATION	PCCP: POST-CLOSURE PERMITTED - CLOSED WITH WASTE IN PLACE	03/07/2003 (PC205)	Renewal
	6	LANDAPP4 (GPRA UNIT)	D81: LAND APPLICATION	PCCP: POST-CLOSURE PERMITTED - CLOSED WITH WASTE IN PLACE	03/07/2003 (PC205)	Renewal
	7	LANDAPP5 (GPRA UNIT)	D81: LAND APPLICATION	PCCP: POST-CLOSURE PERMITTED - CLOSED WITH WASTE IN PLACE	03/07/2003 (PC205)	Renewal
	8	NEUTRAL1 (GPRA UNIT)	T01: TANK TREATMENT	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	09/10/1992 (OP205)	Renewal
	9	NEUTRAL2 (GPRA UNIT)	T04: OTHER TREATMENT	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	09/10/1992 (OP205)	Renewal
	10	OXIDATN1 (GPRA UNIT)	T01: TANK TREATMENT	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	09/10/1992 (OP205)	Renewal
	11	OXIDATN2 (GPRA UNIT)	T04: OTHER TREATMENT	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	09/10/1992 (OP205)	Renewal
	12	PRECIP1 (GPRA UNIT)	T01: TANK TREATMENT	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	09/10/1992 (OP205)	Renewal

GPRA Facilities Not Meeting the Goal

For the 2018 GPRA Renewal Baseline

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CHEVRON U.S.A. INC. RICHMOND REFINERY - continued

Accomp. Date	Seq. #	Unit Name	Process	Legal / Operating Status	Effective Date	GPRA Baseline
	13	SEPARATE1 (GPRA UNIT)	T04: OTHER TREATMENT	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	09/10/1992 (OP205)	Renewal
	14	STABLZATN1 (GPRA UNIT)	T04: OTHER TREATMENT	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	09/10/1992 (OP205)	Renewal
	15	TANKSTR1 (GPRA UNIT)	S02: TANK STORAGE	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	09/10/1992 (OP205)	Renewal

CHEVRON U.S.A.(FORMER CHEVRON CHEMICAL CO) — CAD043237486

RICHMOND, CONTRA COSTA COUNTY — CALIFORNIA — 09

Accomp. Date	Seq. #	Unit Name	Process	Legal / Operating Status	Effective Date	GPRA Baseline
	3	SURFSTR1 (GPRA UNIT)	S04: SURFACE IMPOUNDMENT STORAGE	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	09/16/1999 (PC205)	Renewal

CHEVRON, EL SEGUNDO REFINERY — CAD008336901

EL SEGUNDO, LOS ANGELES COUNTY — CALIFORNIA — 09

Accomp. Date	Seq. #	Unit Name	Process	Legal / Operating Status	Effective Date	GPRA Baseline
	1	CONTAIN1 (GPRA UNIT)	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	05/17/2007 (OP205)	Renewal
	2	DEWATER1 (GPRA UNIT)	T04: OTHER TREATMENT	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	05/17/2007 (OP205)	Renewal
	3	DEWATER2 (GPRA UNIT)	T04: OTHER TREATMENT	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	05/17/2007 (OP205)	Renewal
	4	DRUMCRUSH1 (GPRA UNIT)	T04: OTHER TREATMENT	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	05/17/2007 (OP205)	Renewal
	5	LANDFARM1 (GPRA UNIT)	D81: LAND APPLICATION	PCCP: POST-CLOSURE PERMITTED - CLOSED WITH WASTE IN PLACE	05/17/2007 (PC205)	Renewal
	6	LNDFARMTK1 (GPRA UNIT)	S02: TANK STORAGE	PCCP: POST-CLOSURE PERMITTED - CLOSED WITH WASTE IN PLACE	05/17/2007 (PC205)	Renewal
	8	PHADJ1 (GPRA UNIT)	T04: OTHER TREATMENT	PCCP: POST-CLOSURE PERMITTED - CLOSED WITH WASTE IN PLACE	05/17/2007 (PC205)	Renewal
	9	TANKSTR1 (GPRA UNIT)	S02: TANK STORAGE	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	05/17/2007 (OP205)	Renewal

GPRA Facilities Not Meeting the Goal

For the 2018 GPRA Renewal Baseline

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CLEAN HARBORS LOS ANGLES LLC — CAD050806850

LOS ANGELES, LOS ANGELES COUNTY — CALIFORNIA — 09

Accomp. Date	Seq. #	Unit Name	Process	Legal / Operating Status	Effective Date	GPRA Baseline
	2	OTHRTRT1-BLENDING (GPRA UNIT)	T04: OTHER TREATMENT	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	01/27/2011 (OP205)	Renewal
	3	TANKSTR1-WASTEWATER (WMU-5) (	S02: TANK STORAGE	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	01/27/2011 (OP205)	Renewal
	4	TANKTRT1-WASTEWATER (WMU-5) (	T01: TANK TREATMENT	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	01/27/2011 (OP205)	Renewal
	5	CONTAIN2-STORAGE WAREHOUSE (V	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	01/27/2011 (OP205)	Renewal
	6	CONTAIN3-PROCESSING BUILDING (V	S02: TANK STORAGE	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	01/27/2011 (OP205)	Renewal
	7	CONTAIN4-STORAGE AREA B (MWU-3	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	01/27/2011 (OP205)	Renewal
	8	CONTAIN5-ROLLOFF STORAGE (WMU	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	01/27/2011 (OP205)	Renewal
	9	CONTAIN6-NEW STORAGE PAD (WMU	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	01/27/2011 (OP205)	Renewal
	10	RAIL TRANSFER STATION (WMU-7)	S01: CONTAINER	PIBC: PERMITTED - BEFORE CONSTRUCTION	01/27/2011 (OP205)	Renewal

CLEAN HARBORS OF WESTMORELAND LLC — CAD000633164

WESTMORLAND, IMPERIAL COUNTY — CALIFORNIA — 09

Accomp. Date	Seq. #	Unit Name	Process	Legal / Operating Status	Effective Date	GPRA Baseline
	1	CONTAIN1 (GPRA UNIT)	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	02/26/1992 (OP205)	Renewal
	2	LANDFIL1 (GPRA UNIT)	D80: LANDFILL	PIIN: PERMITTED - INACTIVE/CLOSING, BUT NOT YET RCRA CLOSED	04/05/1989 (OP205)	Renewal
	3	LANDFIL2 (GPRA UNIT)	D80: LANDFILL	PIIN: PERMITTED - INACTIVE/CLOSING, BUT NOT YET RCRA CLOSED	04/05/1989 (OP205)	Renewal
	6	LANDFIL5 (GPRA UNIT)	D80: LANDFILL	PIBC: PERMITTED - BEFORE CONSTRUCTION	02/26/1992 (OP205)	Renewal
	13	TANKSTR1 (GPRA UNIT)	S02: TANK STORAGE	PIIN: PERMITTED - INACTIVE/CLOSING, BUT NOT YET RCRA CLOSED	02/26/1992 (OP205)	Renewal
	14	TANKTRT1 (GPRA UNIT)	T04: OTHER TREATMENT	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	02/26/1992 (OP205)	Renewal
	15	LANDFIL4	D80: LANDFILL	PIBC: PERMITTED - BEFORE CONSTRUCTION	11/21/2008 (Unit)	Renewal

GPRA Facilities Not Meeting the Goal

For the 2018 GPRA Renewal Baseline

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CLEAN HARBORS OF WILMINGTON LLC — CAD044429835

WILMINGTON, LOS ANGELES COUNTY — CALIFORNIA — 09

Accomp. Date	Seq. #	Unit Name	Process	Legal / Operating Status	Effective Date	GPRA Baseline
	1	CONTAIN1 (UNIT 1) (GPRA UNIT)	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	09/15/2011 (OP205)	Renewal
	2	OTHRTRT1 (UNIT 3) (GPRA UNIT)	T04: OTHER TREATMENT	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	09/15/2011 (OP205)	Renewal
	3	TANKSTR1-UNIT 4 (GPRA UNIT)	S02: TANK STORAGE	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	09/15/2011 (OP205)	Renewal
	4	ROLL OFF BIN (UNIT 2)	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	09/15/2011 (OP205)	Renewal
	5	TANKTRT1 -T-111 (AKA V-111) UNIT 5	T01: TANK TREATMENT	PIIN: PERMITTED - INACTIVE/CLOSING, BUT NOT YET RCRA CLOSED	09/15/2011 (OP205)	Renewal
	6	TANKTRT2 (UNIT 6) TRUCK UNLOAD	T01: TANK TREATMENT	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	09/15/2011 (OP205)	Renewal

CLEAN HARBORS SAN JOSE — CAD059494310

SAN JOSE, SANTA CLARA COUNTY — CALIFORNIA — 09

Accomp. Date	Seq. #	Unit Name	Process	Legal / Operating Status	Effective Date	GPRA Baseline
	1	UNIT #1 CONTAINER STORAGE AREA	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	02/10/2003 (OP205)	Renewal
	3	UNIT #3 - ORGANIC/WATER MIXTURE	S02: TANK STORAGE	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	02/10/2003 (OP205)	Renewal
	4	UNIT #9 - INORGANIC WASTE WATER	T01: TANK TREATMENT	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	02/10/2003 (OP205)	Renewal
	14	UNIT #2 - PROCESS WATER STORAG	S02: TANK STORAGE	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	02/10/2003 (OP205)	Renewal
	15	UNIT #4 - ORGANIC/WATER MIXTURE	S02: TANK STORAGE	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	02/10/2003 (OP205)	Renewal
	21	UNIT #12 - ORGANIC GRAVIMETRIC S	T01: TANK TREATMENT	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	02/10/2003 (OP205)	Renewal
	22	UNIT #13 - ORGANICS GRAVIMETRIC	T01: TANK TREATMENT	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	02/10/2003 (OP205)	Renewal
	23	UNIT # 14 - ORGANICS GRAVIMETRIC	T01: TANK TREATMENT	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	02/10/2003 (OP205)	Renewal

GPRA Facilities Not Meeting the Goal

For the 2018 GPRA Renewal Baseline

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CLEAN HARBORS SAN JOSE - continued

Accomp. Date	Seq. #	Unit Name	Process	Legal / Operating Status	Effective Date	GPRA Baseline
	24	UNIT # 15 - ORGANICS SEPARATION	T01: TANK TREATMENT	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	02/10/2003 (OP205)	Renewal
	25	UNIT # 16 - COOLING TOWER	X99: OTHER SUBPART X	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	02/10/2003 (OP205)	Renewal
	26	UNIT 18 - DRUM CRUSHER #35	X99: OTHER SUBPART X	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	02/10/2003 (OP205)	Renewal
	28	UNIT # 20 - WASTEWATER STORAGE	S02: TANK STORAGE	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	02/10/2003 (OP205)	Renewal
	29	UNIT # 22 - WASTEWATER STORAGE	S02: TANK STORAGE	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	02/10/2003 (OP205)	Renewal
	30	UNIT # 23 - WASTEWATER STORAGE	S02: TANK STORAGE	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	02/10/2003 (OP205)	Renewal
	31	UNIT # 24 - WASTEWATER STORAGE	S02: TANK STORAGE	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	02/10/2003 (OP205)	Renewal
	32	UNIT # 25 - WASTEWATER STORAGE	S02: TANK STORAGE	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	02/10/2003 (OP205)	Renewal
	33	UNIT #21 - WASTEWATER STORAGE	S02: TANK STORAGE	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	02/10/2003 (OP205)	Renewal

CLEANHARBORS OF BUTTONWILLOW

CAD980675276

BUTTONWILLOW, KERN COUNTY CALIFORNIA 09

Accomp. Date	Seq. #	Unit Name	Process	Legal / Operating Status	Effective Date	GPRA Baseline
	1	CSA (GPRA UNIT)	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	04/06/1996 (OP205)	Renewal
	2	DRUMSTR1 (GPRA UNIT)	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	04/06/1996 (OP205)	Renewal
	25	STU-ST.TREATMENT UNIT (GPRA UN	T01: TANK TREATMENT	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	04/06/1996 (OP205)	Renewal
	29	WMU28 (GPRA UNIT)	D80: LANDFILL	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	06/22/1989 (OP205)	Renewal
	30	WMU33 (GPRA UNIT)	D80: LANDFILL	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	06/22/1989 (OP205)	Renewal
	31	WMU34 (GPRA UNIT)	D80: LANDFILL	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	04/06/1996 (OP205)	Renewal

GPRA Facilities Not Meeting the Goal

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CLEANHARBORS OF BUTTONWILLOW - continued

Accomp. Date	Seq. #	Unit Name	Process	Legal / Operating Status	Effective Date	GPRA Baseline
	32	WMU35 (GPRA UNIT)	D80: LANDFILL	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	04/06/1996 (OP205)	Renewal

D/K ENVIRONMENTAL — CAT080033681

VERNON, LOS ANGELES COUNTY — CALIFORNIA — 09

Accomp. Date	Seq. #	Unit Name	Process	Legal / Operating Status	Effective Date	GPRA Baseline
	5	RAILCAR LOADING AND UNLOADING	S99: OTHER STORAGE	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	10/01/2012 (OP205)	Renewal
	6	CONTAINER STORAGE AREA	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	10/01/2012 (OP205)	Renewal

DEPARTMENT OF THE AIR FORCE VANDENBERG AFB — CA9570025149

VANDENBERG AFB, SANTA BARBARA COUNTY — CALIFORNIA — 09

Accomp. Date	Seq. #	Unit Name	Process	Legal / Operating Status	Effective Date	GPRA Baseline
	3	OBOD1 (GPRA UNIT)	X01: OPEN BURNING/OPEN DETONATION	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	05/06/2008 (OP205)	Renewal

DIABLO CANYON POWER PLANT (DCPP) — CAD077966349

AVILA BEACH, SAN LUIS OBISPO COUNTY — CALIFORNIA — 09

Accomp. Date	Seq. #	Unit Name	Process	Legal / Operating Status	Effective Date	GPRA Baseline
	1	ABSORP TREAT SYS (GPRA UNIT)	T04: OTHER TREATMENT	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	07/30/2006 (OP205)	Renewal
	3	CONTAIN1 (GPRA UNIT)	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	07/30/2006 (OP205)	Renewal
	8	ENHANCED AIR DRY (GPRA UNIT)	T04: OTHER TREATMENT	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	07/30/2006 (OP205)	Renewal
	10	ION EXCHANGE UNIT (GPRA UNIT)	T04: OTHER TREATMENT	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	07/30/2006 (OP205)	Renewal
	12	MIXED WASTE-BAY 5 (GPRA UNIT)	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	07/30/2006 (OP205)	Renewal
	17	SORTING/CONSOLID (GPRA UNIT)	T04: OTHER TREATMENT	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	07/30/2006 (OP205)	Renewal

GPRA Facilities Not Meeting the Goal

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DIABLO CANYON POWER PLANT (DCPP) - continued

Accomp. Date	Seq. #	Unit Name	Process	Legal / Operating Status	Effective Date	GPRA Baseline
	19	TANKSTR1-CHWMA (GPRA UNIT)	S02: TANK STORAGE	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	07/30/2006 (OP205)	Renewal
	25	TRIPLE RINSE SYS (GPRA UNIT)	T04: OTHER TREATMENT	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	07/30/2006 (OP205)	Renewal
	26	VOL RED DRUM CMPCT (GPRA UNIT)	T04: OTHER TREATMENT	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	07/30/2006 (OP205)	Renewal
	27	WASTE BLEND SYS (GPRA UNIT)	T04: OTHER TREATMENT	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	07/30/2006 (OP205)	Renewal

DUCOMMUN AEROSTRUCTURES, INC. — CAD093245645

EL MIRAGE, SAN BERNARDINO COUNTY — CALIFORNIA — 09

Accomp. Date	Seq. #	Unit Name	Process	Legal / Operating Status	Effective Date	GPRA Baseline
	1	SURFIMP1 - CLOSED SURFACE IMPO	D83: SURFACE IMPOUNDMENT DISPOSAL	PCCP: POST-CLOSURE PERMITTED - CLOSED WITH WASTE IN PLACE	04/13/2010 (PC205)	Renewal

DYNEGY MOSS LANDING, LLC — CAT080011653

MOSS LANDING, MONTEREY COUNTY — CALIFORNIA — 09

Accomp. Date	Seq. #	Unit Name	Process	Legal / Operating Status	Effective Date	GPRA Baseline
	1	MCWPOND1 - SURFACE (GPRA UNIT	T02: SURFACE IMPOUNDEMENT TREATMENT	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	04/06/2006 (OP205)	Renewal
	2	MCWPOND2 - SURFACE (GPRA UNIT	T02: SURFACE IMPOUNDEMENT TREATMENT	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	04/06/2006 (OP205)	Renewal
	3	MCWPOND3 - SURFACE (GPRA UNIT	T02: SURFACE IMPOUNDEMENT TREATMENT	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	04/06/2006 (OP205)	Renewal
	5	OTHRTRT1-FILTER PRESS SYSTEM (	T04: OTHER TREATMENT	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	04/06/2006 (OP205)	Renewal

EDWARDS AIR FORCE BASE — CA1570024504

EDWARD, KERN COUNTY — CALIFORNIA — 09

Accomp. Date	Seq. #	Unit Name	Process	Legal / Operating Status	Effective Date	GPRA Baseline
	1	CONTAIN1 - CONFORMING STORAGE	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	11/07/2005 (OP205)	Renewal

GPRA Facilities Not Meeting the Goal

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GEM RANCHO CORDOVA LLC — CAD980884183

RANCHO CORDOVA, SACRAMENTO COUNTY — CALIFORNIA — 09

Accomp. Date	Seq. #	Unit Name	Process	Legal / Operating Status	Effective Date	GPRA Baseline
	2	AREA B - CONTAIN1 (GPRA UNIT)	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	04/25/2007 (OP205)	Renewal
	3	AREA C - TANKSTR1 (GPRA UNIT)	S02: TANK STORAGE	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	04/25/2007 (OP205)	Renewal
	4	AREA D - ROLL-OFF BINS	S99: OTHER STORAGE	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	04/25/2007 (OP205)	Renewal
	5	DRUM CRUSHER	T04: OTHER TREATMENT	PIIN: PERMITTED - INACTIVE/CLOSING, BUT NOT YET RCRA CLOSED	04/25/2007 (OP205)	Renewal

HGST, INC. — CAR000128793

SAN JOSE, SANTA CLARA COUNTY — CALIFORNIA — 09

Accomp. Date	Seq. #	Unit Name	Process	Legal / Operating Status	Effective Date	GPRA Baseline
	1	ACID STORAGE 1	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	05/16/2005 (OP205)	Renewal
	2	ACID STORAGE 2	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	05/16/2005 (OP205)	Renewal
	3	ACID STORAGE 3	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	05/16/2005 (OP205)	Renewal
	4	BASE STORAGE 1	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	05/16/2005 (OP205)	Renewal
	5	BASE STORAGE 2	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	05/16/2005 (OP205)	Renewal
	6	FLAMMABLE STORAGE 1	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	05/16/2005 (OP205)	Renewal
	7	FLAMMABLE STORAGE 2	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	05/16/2005 (OP205)	Renewal
	8	FLAMMABLE STORAGE 3	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	05/16/2005 (OP205)	Renewal
	9	GENERAL STORAGE 1	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	05/16/2005 (OP205)	Renewal
	10	GENERAL STORAGE 2	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	05/16/2005 (OP205)	Renewal

GPRA Facilities Not Meeting the Goal

For the 2018 GPRA Renewal Baseline

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HGST, INC. - continued

Accomp. Date	Seq. #	Unit Name	Process	Legal / Operating Status	Effective Date	GPRA Baseline
	11	OXIDIZER STORAGE	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	05/16/2005 (OP205)	Renewal
	12	SPECIAL STORAGE	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	05/16/2005 (OP205)	Renewal
	13	COLD STORAGE	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	05/16/2005 (OP205)	Renewal
	20	WASTE VAULT 03	S02: TANK STORAGE	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	05/16/2005 (OP205)	Renewal
	21	WASTE VAULT 08	S02: TANK STORAGE	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	05/16/2005 (OP205)	Renewal
	22	WASTE VAULT 12	S02: TANK STORAGE	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	05/16/2005 (OP205)	Renewal
	23	WASTE VAULT 19	S02: TANK STORAGE	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	05/16/2005 (OP205)	Renewal
	24	WASTE VAULT 25	S02: TANK STORAGE	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	05/16/2005 (OP205)	Renewal
	25	WASTE VAULT 26	S02: TANK STORAGE	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	05/16/2005 (OP205)	Renewal
	26	WASTE VAULT 27	S02: TANK STORAGE	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	05/16/2005 (OP205)	Renewal
	27	WASTE VAULT 28	S02: TANK STORAGE	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	05/16/2005 (OP205)	Renewal
	28	WASTE VAULT 29	S02: TANK STORAGE	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	05/16/2005 (OP205)	Renewal
	29	WASTE VAULT 45	S02: TANK STORAGE	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	05/16/2005 (OP205)	Renewal
	30	WASTE VAULT 67	S02: TANK STORAGE	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	05/16/2005 (OP205)	Renewal
	31	TANK FARM B	S02: TANK STORAGE	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	05/16/2005 (OP205)	Renewal
	32	BLDG 110 A PLANT	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	05/16/2005 (OP205)	Renewal
	33	BLDG 110 D PLANT	T01: TANK TREATMENT	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	05/16/2005 (OP205)	Renewal

GPRA Facilities Not Meeting the Goal

For the 2018 GPRA Renewal Baseline

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HGST, INC. - continued

Accomp. Date	Seq. #	Unit Name	Process	Legal / Operating Status	Effective Date	GPRA Baseline
	35	BOTTLE WASHER #1	T04: OTHER TREATMENT	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	05/16/2005 (OP205)	Renewal
	36	BOTTLE WASHER #2	T04: OTHER TREATMENT	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	05/16/2005 (OP205)	Renewal
	37	FILTER PRESS	T04: OTHER TREATMENT	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	05/16/2005 (OP205)	Renewal

HONEYWELL INTERNATIONAL INC. (NEWARK) CAD074644659

NEWARK, ALAMEDA COUNTY CALIFORNIA 09

Accomp. Date	Seq. #	Unit Name	Process	Legal / Operating Status	Effective Date	GPRA Baseline
	1	CONTAIN1 (GPRA UNIT)	S01: CONTAINER	PCCP: POST-CLOSURE PERMITTED - CLOSED WITH WASTE IN PLACE	03/18/2010 (PC205)	Renewal
	2	TANKTRT1 (GPRA UNIT)	T01: TANK TREATMENT	PCCP: POST-CLOSURE PERMITTED - CLOSED WITH WASTE IN PLACE	03/18/2010 (PC205)	Renewal

INDUSTRIAL SERVICE OIL COMPANY, INC. CAD099452708

LOS ANGELES, LOS ANGELES COUNTY CALIFORNIA 09

Accomp. Date	Seq. #	Unit Name	Process	Legal / Operating Status	Effective Date	GPRA Baseline
	1	CONTAIN1 - CMA1 (GPRA UNIT)	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	06/25/2008 (OP205)	Renewal
	2	TANKSTR1 - CMA7	S02: TANK STORAGE	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	06/25/2008 (OP205)	Renewal
	3	TANKTRT1 - FUEL BLENDING (GPRA	T01: TANK TREATMENT	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	06/25/2008 (OP205)	Renewal
	4	TANKTRT2 - WST (GPRA UNIT)	T01: TANK TREATMENT	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	06/25/2008 (OP205)	Renewal
	5	TANKTRT3 - WWTS (GPRA UNIT)	T01: TANK TREATMENT	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	06/25/2008 (OP205)	Renewal
	6	TANKTRT4 - OTS (GPRA UNIT)	T01: TANK TREATMENT	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	06/25/2008 (OP205)	Renewal
	7	TANKTRT5 - GLYCOL REC (GPRA UN	T01: TANK TREATMENT	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	06/25/2008 (OP205)	Renewal

GPRA Facilities Not Meeting the Goal

For the 2018 GPRA Renewal Baseline

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IT CORP BENSEN RIDGE FAC — CAD000633289

KELSEYVILLE, LAKE COUNTY — CALIFORNIA — 09

Accomp. Date	Seq. #	Unit Name	Process	Legal / Operating Status	Effective Date	GPRA Baseline
	1	SURFIMP (GPRA UNIT)	D83: SURFACE IMPOUNDMENT DISPOSAL	PCCP: POST-CLOSURE PERMITTED - CLOSED WITH WASTE IN PLACE	06/10/2008 (PC205)	Renewal
	2	GROUNDWATER EVAPORATION BASI	S04: SURFACE IMPOUNDMENT STORAGE	PCCP: POST-CLOSURE PERMITTED - CLOSED WITH WASTE IN PLACE	06/10/2008 (PC205)	Renewal
	3	WASTE CONSOLIDATION AREA (WCA	T02: SURFACE IMPOUNDEMENT TREATMENT	PCCP: POST-CLOSURE PERMITTED - CLOSED WITH WASTE IN PLACE	06/10/2008 (PC205)	Renewal

IT CORP MONTEZUMA FAC — CAD079089512

FAIRFIELD, SOLANO COUNTY — CALIFORNIA — 09

Accomp. Date	Seq. #	Unit Name	Process	Legal / Operating Status	Effective Date	GPRA Baseline
	1	CONTAIN1 (GPRA UNIT)	S01: CONTAINER	PCCP: POST-CLOSURE PERMITTED - CLOSED WITH WASTE IN PLACE	10/20/2008 (PC205)	Renewal
	2	LANDAPP1 (GPRA UNIT)	D81: LAND APPLICATION	PCCP: POST-CLOSURE PERMITTED - CLOSED WITH WASTE IN PLACE	10/20/2008 (PC205)	Renewal
	3	SURFIMP1 (GPRA UNIT)	D83: SURFACE IMPOUNDMENT DISPOSAL	PCCP: POST-CLOSURE PERMITTED - CLOSED WITH WASTE IN PLACE	10/20/2008 (PC205)	Renewal
	4	SURFSTR1 (GPRA UNIT)	S04: SURFACE IMPOUNDMENT STORAGE	PCCP: POST-CLOSURE PERMITTED - CLOSED WITH WASTE IN PLACE	10/20/2008 (PC205)	Renewal
	5	SURFTRT1 (GPRA UNIT)	T02: SURFACE IMPOUNDEMENT TREATMENT	PCCP: POST-CLOSURE PERMITTED - CLOSED WITH WASTE IN PLACE	10/20/2008 (PC205)	Renewal
	6	TANKSTR1 (GPRA UNIT)	S02: TANK STORAGE	PCCP: POST-CLOSURE PERMITTED - CLOSED WITH WASTE IN PLACE	10/20/2008 (PC205)	Renewal
	7	TANKTRT1 (GPRA UNIT)	T01: TANK TREATMENT	PCCP: POST-CLOSURE PERMITTED - CLOSED WITH WASTE IN PLACE	10/20/2008 (PC205)	Renewal

IT CORPORATION - VINE HILL COMPLEX — CAD982521460

MARTINEZ, CONTRA COSTA COUNTY — CALIFORNIA — 09

Accomp. Date	Seq. #	Unit Name	Process	Legal / Operating Status	Effective Date	GPRA Baseline
	8	SURFIMP1 (GPRA UNIT)	S01: CONTAINER	PCCP: POST-CLOSURE PERMITTED - CLOSED WITH WASTE IN PLACE	06/11/2003 (PC205)	Renewal
	10	LANDFIL1 (GPRA UNIT)	S01: CONTAINER	PCCP: POST-CLOSURE PERMITTED - CLOSED WITH WASTE IN PLACE	06/11/2003 (PC205)	Renewal

JOHN SMITH SOLID WASTE SITE — CAD990665432

HOLLISTER, SAN BENITO COUNTY — CALIFORNIA — 09

Accomp. Date	Seq. #	Unit Name	Process	Legal / Operating Status	Effective Date	GPRA Baseline
	1	SURFIMP1 (GPRA UNIT)	D83: SURFACE IMPOUNDMENT DISPOSAL	PCCP: POST-CLOSURE PERMITTED - CLOSED WITH WASTE IN PLACE	12/08/2003 (PC205)	Renewal

GPRA Facilities Not Meeting the Goal

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KEARNEY-KPF — CAD981429715

STOCKTON, SAN JOAQUIN COUNTY — CALIFORNIA — 09

Accomp. Date	Seq. #	Unit Name	Process	Legal / Operating Status	Effective Date	GPRA Baseline
	2	SURFIMP1 (GPRA UNIT)	D83: SURFACE IMPOUNDMENT DISPOSAL	PCCP: POST-CLOSURE PERMITTED - CLOSED WITH WASTE IN PLACE	07/22/2004 (PC205)	Renewal

KINSBURSKY BROTHERS INC. — CAD088504881

ANAHEIM, ORANGE COUNTY — CALIFORNIA — 09

Accomp. Date	Seq. #	Unit Name	Process	Legal / Operating Status	Effective Date	GPRA Baseline
	1	CONTAIN1-LEAD ACID BATTERY (GPF	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	06/15/2011 (OP205)	Renewal
	3	TANKSTR1-LEAD ACID BATTERY (GP	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	06/15/2011 (OP205)	Renewal
	4	TANKTRT1-FILTER PRESS (GPRA UN	T01: TANK TREATMENT	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	06/15/2011 (OP205)	Renewal
	5	OTHRTRT2-LEAD ACID BATTERY (GP	T04: OTHER TREATMENT	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	06/15/2011 (OP205)	Renewal
	6	TANKSTR2-LEAD ACID BATTERY (GP	S02: TANK STORAGE	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	06/15/2011 (OP205)	Renewal
	7	CONTAIN2-NONLEAD ACID BAT (GPR	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	06/15/2011 (OP205)	Renewal
	8	OTHRTRT3-NON LEAD ACID (GPRA U	T04: OTHER TREATMENT	PIBC: PERMITTED - BEFORE CONSTRUCTION	06/15/2011 (OP205)	Renewal
	12	CONTAIN4-HWTBS UNIT (GPRA UNIT	S99: OTHER STORAGE	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	06/15/2011 (OP205)	Renewal
	13	TANKTRT2-WASTEWATERNEUTRA (G	T01: TANK TREATMENT	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	06/15/2011 (OP205)	Renewal
	14	CONTAIN5-FILTER CAKE (GPRA UNIT	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	06/15/2011 (OP205)	Renewal
	15	CONTAIN6-PREC METAL CON STR (G	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	06/15/2011 (OP205)	Renewal

GPRA Facilities Not Meeting the Goal

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LAWRENCE BERKELEY NATIONAL LAB — CA4890008986

BERKELEY, ALAMEDA COUNTY — CALIFORNIA — 09

Accomp. Date	Seq. #	Unit Name	Process	Legal / Operating Status	Effective Date	GPRA Baseline
01/03/2014	1	CONTAIN1 - HAZARDO (GPRA UNIT)	S01: CONTAINER	PICC: PERMITTED - CLEAN CLOSED	05/04/1993 (OP205)	Renewal
01/03/2014	2	CONTAIN2 - MIXED W (GPRA UNIT)	S01: CONTAINER	PICC: PERMITTED - CLEAN CLOSED	05/04/1993 (OP205)	Renewal
01/03/2014	3	TANKTRT1 - HAZARDO (GPRA UNIT)	T01: TANK TREATMENT	PICC: PERMITTED - CLEAN CLOSED	05/04/1993 (OP205)	Renewal
01/03/2014	4	TANKTRT2 - MIXED W (GPRA UNIT)	T01: TANK TREATMENT	PICC: PERMITTED - CLEAN CLOSED	05/04/1993 (OP205)	Renewal
	5	HAZARDOUS WASTE UNIT HW1	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	07/31/2007 (OP205)	Renewal
	6	HAZARDOUS WASTE UNIT HW2	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	07/31/2007 (OP205)	Renewal
	7	HAZARDOUS WASTE UNIT HW3	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	07/31/2007 (OP205)	Renewal
	8	HAZARDOUS WASTE UNIT HW4	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	07/31/2007 (OP205)	Renewal
	9	HAZARDOUS WASTE UNIT HW5	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	07/31/2007 (OP205)	Renewal
	10	HAZARDOUS WASTE UNIT HW6	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	07/31/2007 (OP205)	Renewal
	11	HAZARDOUS WASTE UNIT HW7	X99: OTHER SUBPART X	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	07/31/2007 (OP205)	Renewal
	12	HAZARDOUS WASTE UNIT HW9	X99: OTHER SUBPART X	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	07/31/2007 (OP205)	Renewal
	13	HAZARDOUS WASTE UNIT HW10	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	07/31/2007 (OP205)	Renewal
	14	HAZARDOUS WASTE UNIT HW11	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	07/31/2007 (OP205)	Renewal
	15	HAZARDOUS WASTE UNIT HW12	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	07/31/2007 (OP205)	Renewal
	16	HAZARDOUS WASTE UNIT HW13	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	07/31/2007 (OP205)	Renewal
	17	HAZARDOUS WASTE UNIT HW14	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	07/31/2007 (OP205)	Renewal
	18	MIXED WASTE UNIT MW1	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	07/31/2007 (OP205)	Renewal
	19	MIXED WASTE UNIT MW2	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	07/31/2007 (OP205)	Renewal

GPRA Facilities Not Meeting the Goal

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LAWRENCE BERKELEY NATIONAL LAB - continued

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	20	MIXED WASTE UNIT MW3	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	07/31/2007 (OP205)	Renewal
	21	MIXED WASTE UNIT MW4	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	07/31/2007 (OP205)	Renewal
	22	MIXED WASTE UNIT MW5	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	07/31/2007 (OP205)	Renewal
	23	MIXED WASTE UNIT MW6	X99: OTHER SUBPART X	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	07/31/2007 (OP205)	Renewal
	24	MIXED WASTE UNIT MW7	X99: OTHER SUBPART X	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	07/31/2007 (OP205)	Renewal
	25	MIXED WASTE UNIT MW8	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	07/31/2007 (OP205)	Renewal

LAWRENCE LIVERMORE LAB SITE 300 — CA2890090002

TRACY, SAN JOAQUIN COUNTY — CALIFORNIA — 09

Accomp. Date	Seq. #	Unit Name	Process	Legal / Operating Status	Effective Date	GPRA Baseline
11/04/2015	1	CONTAIN1-M1 - SITE 300 (GPRA UNIT	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	11/08/1997 (OP205)	Renewal
	2	CONTAIN2-M2 - SITE 300 (GPRA UNIT	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	11/08/1997 (OP205)	Renewal
	3	BUILDING 829 HIGH EXPLOSIVE OPEN	T04: OTHER TREATMENT	PCCP: POST-CLOSURE PERMITTED - CLOSED WITH WASTE IN PLACE	04/03/2003 (PC205)	Renewal
	4	OTHRTRT2 - SITE 300 (GPRA UNIT)	T04: OTHER TREATMENT	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	11/08/1997 (OP205)	Renewal

MAIN STREET CENTER — CAD000633305

LOS ANGELES, LOS ANGELES COUNTY — CALIFORNIA — 09

Accomp. Date	Seq. #	Unit Name	Process	Legal / Operating Status	Effective Date	GPRA Baseline
	1	CONTAIN1 (GPRA UNIT)	S01: CONTAINER	PIIN: PERMITTED - INACTIVE/CLOSING, BUT NOT YET RCRA CLOSED	08/19/1983 (OP205)	Renewal

GPRA Facilities Not Meeting the Goal

For the 2018 GPRA Renewal Baseline

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MARTIN MARIETTA TECHNOLOGIES, INC. — CAD030398622

TORRANCE, LOS ANGELES COUNTY — CALIFORNIA — 09

Accomp. Date	Seq. #	Unit Name	Process	Legal / Operating Status	Effective Date	GPRA Baseline
	1	CONTAIN1-STORAGE YARD	S01: CONTAINER	PCCP: POST-CLOSURE PERMITTED - CLOSED WITH WASTE IN PLACE	04/08/2013 (PC205)	Renewal
	5	TANKSTR3-4200 GAL UST	S02: TANK STORAGE	PCCP: POST-CLOSURE PERMITTED - CLOSED WITH WASTE IN PLACE	04/08/2013 (PC205)	Renewal
	6	TANKSTR4-4000 GAL UST	S02: TANK STORAGE	PCCP: POST-CLOSURE PERMITTED - CLOSED WITH WASTE IN PLACE	04/08/2013 (PC205)	Renewal
	7	TANKSTR5-500 GAL ABOVE GROUND	S02: TANK STORAGE	PCCP: POST-CLOSURE PERMITTED - CLOSED WITH WASTE IN PLACE	04/08/2013 (PC205)	Renewal

NAVAL AIR STATION NORTH ISLAND (NASNI) HAZARDOUS WASTE FACILITY — CA7170090016

SAN DIEGO, SAN DIEGO COUNTY — CALIFORNIA — 09

Accomp. Date	Seq. #	Unit Name	Process	Legal / Operating Status	Effective Date	GPRA Baseline
	1	CONTAIN1-CST1 (GPRA UNIT)	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	07/25/2010 (OP205)	Renewal
	2	CONTAIN2-CST2 (GPRA UNIT)	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	07/25/2010 (OP205)	Renewal
	8	TANKTRT2-IWTP (GPRA UNIT)	T01: TANK TREATMENT	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	07/25/2010 (OP205)	Renewal
	11	TANKTRT3-ORP (GPRA UNIT)	T01: TANK TREATMENT	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	07/25/2010 (OP205)	Renewal
	13	CONTAINER4 -IW/OW	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	07/25/2010 (OP205)	Renewal
	14	CONTAINER5 -IW FILTER PRESS	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	07/25/2010 (OP205)	Renewal
	15	CONTAINER6 - OW FILTER PRESS	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	07/25/2010 (OP205)	Renewal
	16	IWTP/ORP LOADING AND UNLOADING	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	07/25/2010 (OP205)	Renewal
	17	ORP LOADING AND UNLOADING PAD	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	07/25/2010 (OP205)	Renewal

GPRA Facilities Not Meeting the Goal

For the 2018 GPRA Renewal Baseline

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NAVAL STATION (NAVSTA) 32ND ST HAZARDOUS WASTE FACILITY — CA6170024289

SAN DIEGO, SAN DIEGO COUNTY — CALIFORNIA — 09

Accomp. Date	Seq. #	Unit Name	Process	Legal / Operating Status	Effective Date	GPRA Baseline
	2	CONTAIN2 (GPRA UNIT)	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	07/27/2006 (OP205)	Renewal

NAWS, CHINA LAKE — CA2170023152

CHINA LAKE, KERN COUNTY — CALIFORNIA — 09

Accomp. Date	Seq. #	Unit Name	Process	Legal / Operating Status	Effective Date	GPRA Baseline
	1	CONTAIN1 (GPRA UNIT)	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	08/08/2001 (OP205)	Renewal
	4	STCONTAIN4 (GPRA UNIT)	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	08/08/2001 (OP205)	Renewal
	8	OBOD2 (GPRA UNIT)	X01: OPEN BURNING/OPEN DETONATION	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	08/08/2001 (OP205)	Renewal
	16	TANKSTR2 (GPRA UNIT)	S02: TANK STORAGE	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	08/08/2001 (OP205)	Renewal
	17	TANKSTR3 (GPRA UNIT)	S02: TANK STORAGE	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	08/08/2001 (OP205)	Renewal
	18	STTANKSTR4 (GPRA UNIT)	S02: TANK STORAGE	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	08/08/2001 (OP205)	Renewal
	19	STTANKSTR5 (GPRA UNIT)	S02: TANK STORAGE	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	08/08/2001 (OP205)	Renewal
	22	OBOD3	X01: OPEN BURNING/OPEN DETONATION	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	08/08/2001 (OP205)	Renewal

NORAC PHARMA — CAD008352957

AZUSA, LOS ANGELES COUNTY — CALIFORNIA — 09

Accomp. Date	Seq. #	Unit Name	Process	Legal / Operating Status	Effective Date	GPRA Baseline
	1	CONTAIN1	S01: CONTAINER	PTCA: PERMIT TERMINATED/PERMIT EXPIRED, NOT CONTINUED - REFERRED TO CORRECTIVE ACTION FOR CLOSURE	12/30/1983 (OP205)	Renewal
	2	TANKSTR1	S02: TANK STORAGE	PTCA: PERMIT TERMINATED/PERMIT EXPIRED, NOT CONTINUED - REFERRED TO CORRECTIVE ACTION FOR CLOSURE	12/30/1983 (OP205)	Renewal

GPRA Facilities Not Meeting the Goal

For the 2018 GPRA Renewal Baseline

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NORAC PHARMA - continued

Accomp. Date	Seq. #	Unit Name	Process	Legal / Operating Status	Effective Date	GPRA Baseline
	3	TANKSTR2	S02: TANK STORAGE	PTCA: PERMIT TERMINATED/PERMIT EXPIRED, NOT CONTINUED - REFERRED TO CORRECTIVE ACTION FOR CLOSURE	12/30/1983 (OP205)	Renewal

PACIFIC RESOURCE RECOVERY — CAD008252405

LOS ANGELES, LOS ANGELES COUNTY — CALIFORNIA — 09

Accomp. Date	Seq. #	Unit Name	Process	Legal / Operating Status	Effective Date	GPRA Baseline
	1	CONTAIN1-STORAGE AREA MAIN WA	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	06/27/2012 (OP205)	Renewal
	2	OTHRTRT1 - TFE-1 (SOLVENT RECLA	T04: OTHER TREATMENT	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	06/27/2012 (OP205)	Renewal
	3	TANKSTR1- TANK STORAGE AREA (#	S02: TANK STORAGE	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	06/27/2012 (OP205)	Renewal
	4	TANKTRT1-FUEL BLENDING TANK SY	T01: TANK TREATMENT	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	06/27/2012 (OP205)	Renewal
	5	PROCESSING AREA CONTAINER STO	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	05/23/2012 (Unit)	Renewal
	6	TUBE STILL (DS-1 AKA TFE-2) UNIT #	T04: OTHER TREATMENT	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	05/23/2012 (Unit)	Renewal
	7	CONTAINER CRUSHER (COMPACTOR	T04: OTHER TREATMENT	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	05/23/2012 (Unit)	Renewal
	8	LIQUEFACTION UNIT UNIT #7	T04: OTHER TREATMENT	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	05/23/2012 (Unit)	Renewal

PACIFIC SCIENTIFIC ENERGETIS MATERIALS COMPANY (CALIFORNIA) LLC — CAD009220898

HOLLISTER, SAN BENITO COUNTY — CALIFORNIA — 09

Accomp. Date	Seq. #	Unit Name	Process	Legal / Operating Status	Effective Date	GPRA Baseline
	1	CONTAIN1,TSU-3 (GPRA UNIT)	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	05/12/2006 (OP205)	Renewal
	2	OBOD1-TSU1 (GPRA UNIT)	X01: OPEN BURNING/OPEN DETONATION	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	05/12/2006 (OP205)	Renewal
	3	OBOD2-TSU2 (GPRA UNIT)	X01: OPEN BURNING/OPEN DETONATION	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	05/12/2006 (OP205)	Renewal

GPRA Facilities Not Meeting the Goal

For the 2018 GPRA Renewal Baseline

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PACIFIC SCIENTIFIC ENERGETIS MATERIALS COMPANY (CALIFORNIA) LLC - continued

Accomp. Date	Seq. #	Unit Name	Process	Legal / Operating Status	Effective Date	GPRA Baseline
	7	OTHRTRT6-TSU3 (GPRA UNIT)	T04: OTHER TREATMENT	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	05/12/2006 (OP205)	Renewal
	15	TANKTRT3 - TSU8 (GPRA UNIT)	T01: TANK TREATMENT	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	05/12/2006 (OP205)	Renewal

PANOCHE FACILITY — CAD000060012

BENICIA, SOLANO COUNTY — CALIFORNIA — 09

Accomp. Date	Seq. #	Unit Name	Process	Legal / Operating Status	Effective Date	GPRA Baseline
02/24/2014	1	CONTAIN1 (GPRA UNIT)	S01: CONTAINER	ISCC: INTERIM STATUS - CLEAN CLOSED	02/24/2014 (Unit)	Renewal
	2	LANDFIL1 - CAMU-A (GPRA - UNIT)	D80: LANDFILL	PCCP: POST-CLOSURE PERMITTED - CLOSED WITH WASTE IN PLACE	06/20/2003 (PC205)	Renewal
02/24/2014	3	SURFIMP1 (GPRA UNIT)	D83: SURFACE IMPOUNDMENT DISPOSAL	ISCC: INTERIM STATUS - CLEAN CLOSED	02/24/2014 (Unit)	Renewal
02/24/2014	4	SURFSTR1 (GPRA UNIT)	S04: SURFACE IMPOUNDMENT STORAGE	ISCC: INTERIM STATUS - CLEAN CLOSED	02/24/2014 (Unit)	Renewal
	5	SURFTRT1 - POND O (GPRA UNIT)	T02: SURFACE IMPOUNDEMENT TREATMENT	PCCP: POST-CLOSURE PERMITTED - CLOSED WITH WASTE IN PLACE	06/20/2003 (PC205)	Renewal
	6	TANKSTR1 TANKS 67 AND 68 (GPRA	S02: TANK STORAGE	PCCP: POST-CLOSURE PERMITTED - CLOSED WITH WASTE IN PLACE	06/20/2003 (PC205)	Renewal
	7	TANKTRT1 LEACHATE & GW GAC TR	T01: TANK TREATMENT	PCCP: POST-CLOSURE PERMITTED - CLOSED WITH WASTE IN PLACE	06/20/2003 (PC205)	Renewal
02/24/2014	8	WASTEPILE1 (GPRA UNIT)	S03: WASTE PILE	ISCC: INTERIM STATUS - CLEAN CLOSED	02/24/2014 (Unit)	Renewal

PHIBRO-TECH INC. — CAD008488025

SANTA FE SPRINGS, LOS ANGELES COUNTY — CALIFORNIA — 09

Accomp. Date	Seq. #	Unit Name	Process	Legal / Operating Status	Effective Date	GPRA Baseline
	1	C-1A (GPRA UNIT)	T01: TANK TREATMENT	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	07/29/1991 (OP205)	Renewal
	2	C-1B (GPRA UNIT)	T01: TANK TREATMENT	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	07/29/1991 (OP205)	Renewal
	3	C-1C (GPRA UNIT)	T01: TANK TREATMENT	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	07/29/1991 (OP205)	Renewal
	4	C-1D (GPRA UNIT)	T01: TANK TREATMENT	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	07/29/1991 (OP205)	Renewal
	5	C-5 (GPRA UNIT)	S02: TANK STORAGE	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	07/29/1991 (OP205)	Renewal

GPRA Facilities Not Meeting the Goal

For the 2018 GPRA Renewal Baseline

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PHIBRO-TECH INC. - continued

Accomp. Date	Seq. #	Unit Name	Process	Legal / Operating Status	Effective Date	GPRA Baseline
	6	C-6 (GPRA UNIT)	S02: TANK STORAGE	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	07/29/1991 (OP205)	Renewal
	7	C-7 (GPRA UNIT)	S02: TANK STORAGE	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	07/29/1991 (OP205)	Renewal
	8	C-8 (GPRA UNIT)	S02: TANK STORAGE	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	07/29/1991 (OP205)	Renewal
	9	C-9 (GPRA UNIT)	S02: TANK STORAGE	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	07/29/1991 (OP205)	Renewal
	10	CONTAIN1 (GPRA UNIT)	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	07/29/1991 (OP205)	Renewal
	11	F-1-TANKSTR (GPRA UNIT)	S02: TANK STORAGE	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	07/29/1991 (OP205)	Renewal
	12	F-12 TANKSTR (GPRA UNIT)	S02: TANK STORAGE	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	07/29/1991 (OP205)	Renewal
	13	F-2-TANKTRT (GPRA UNIT)	T01: TANK TREATMENT	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	07/29/1991 (OP205)	Renewal
	14	F-2A-TANTRT (GPRA UNIT)	T01: TANK TREATMENT	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	07/29/1991 (OP205)	Renewal
	15	J-2 (GPRA UNIT)	T01: TANK TREATMENT	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	07/29/1991 (OP205)	Renewal
	16	J-3 (GPRA UNIT)	T01: TANK TREATMENT	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	07/29/1991 (OP205)	Renewal
	17	J-4 (GPRA UNIT)	S02: TANK STORAGE	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	07/29/1991 (OP205)	Renewal
	18	J-5 (GPRA UNIT)	S02: TANK STORAGE	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	07/29/1991 (OP205)	Renewal
	19	J-6 (GPRA UNIT)	S02: TANK STORAGE	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	07/29/1991 (OP205)	Renewal
	20	S-1A (GPRA UNIT)	T01: TANK TREATMENT	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	07/29/1991 (OP205)	Renewal
	21	S-1B (GPRA UNIT)	T01: TANK TREATMENT	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	07/29/1991 (OP205)	Renewal
	22	S-5 (GPRA UNIT)	S02: TANK STORAGE	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	07/29/1991 (OP205)	Renewal

GPRA Facilities Not Meeting the Goal

For the 2018 GPRA Renewal Baseline

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PHIBRO-TECH INC. - continued

Accomp. Date	Seq. #	Unit Name	Process	Legal / Operating Status	Effective Date	GPRA Baseline
	23	S-6 (GPRA UNIT)	S02: TANK STORAGE	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	07/29/1991 (OP205)	Renewal

PHILLIPS 66 - LOS ANGELES REFINERY CARSON PLANT — CAD980881676

CARSON, LOS ANGELES COUNTY — CALIFORNIA — 09

Accomp. Date	Seq. #	Unit Name	Process	Legal / Operating Status	Effective Date	GPRA Baseline
	1	SURFIMP1 (GPRA UNIT)	D83: SURFACE IMPOUNDMENT DISPOSAL	PCCP: POST-CLOSURE PERMITTED - CLOSED WITH WASTE IN PLACE	11/27/2007 (PC205)	Renewal

PHILLIPS 66 - LOS ANGELES REFINERY WILMINGTON PLANT — CAD008237679

WILMINGTON, LOS ANGELES COUNTY — CALIFORNIA — 09

Accomp. Date	Seq. #	Unit Name	Process	Legal / Operating Status	Effective Date	GPRA Baseline
	1	SURFIMP1-SHB2	S04: SURFACE IMPOUNDMENT STORAGE	PCCP: POST-CLOSURE PERMITTED - CLOSED WITH WASTE IN PLACE	07/24/2008 (PC205)	Renewal

QUEMETCO. INC. — CAD066233966

CITY OF INDUSTRY, LOS ANGELES COUNTY — CALIFORNIA — 09

Accomp. Date	Seq. #	Unit Name	Process	Legal / Operating Status	Effective Date	GPRA Baseline
	1	BIF1-REVERBERATORY FURNACE (U	X99: OTHER SUBPART X	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	09/15/2005 (OP205)	Renewal
	2	BATTERY STORAGE (UNIT #1) (GPRA	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	06/25/2015 (Unit)	Renewal
	3	CONTAINMENT BUILDING- BATCH HO	S06: CONTAINMENT BUILDING - STORAGE	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	06/25/2015 (Unit)	Renewal
	4	SURFACE IMPOUNDMENT - POST CL	T02: SURFACE IMPOUNDEMENT TREATMENT	PCCP: POST-CLOSURE PERMITTED - CLOSED WITH WASTE IN PLACE	09/15/2005 (PC205)	Renewal
	6	SLAG REDUCTION FURNACE UNIT #4	X99: OTHER SUBPART X	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	06/25/2015 (Unit)	Renewal
	7	YARD SUMP TANK(UNIT #YS-1)-BW	S02: TANK STORAGE	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	06/25/2015 (Unit)	Renewal
	8	REPULP TANK - RT-1 - BW	T01: TANK TREATMENT	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	06/25/2015 (Unit)	Renewal

GPRA Facilities Not Meeting the Goal

For the 2018 GPRA Renewal Baseline

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QUEMETCO. INC. - continued

Accomp. Date	Seq. #	Unit Name	Process	Legal / Operating Status	Effective Date	GPRA Baseline
	9	LOW PH TRANSFER TANK TT-1- BW	S02: TANK STORAGE	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	06/25/2015 (Unit)	Renewal
	10	HIGH PH TRANSFER TANK TT-2-BW	T01: TANK TREATMENT	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	06/25/2015 (Unit)	Renewal
	11	SINK FLOAT TANKS PSF-1, PSF-2, WS	T01: TANK TREATMENT	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	06/25/2015 (Unit)	Renewal
	12	REACTOR TANKS DR-2, DR-3 - BW	T01: TANK TREATMENT	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	06/25/2015 (Unit)	Renewal
	13	OXIDATION TANKS-TK-100,TK-101,TK	T01: TANK TREATMENT	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	06/25/2015 (Unit)	Renewal
	14	EQUALIZATION TANK 103 WTP	T01: TANK TREATMENT	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	06/25/2015 (Unit)	Renewal
	15	STORM WATER TANK 104 WTP	S02: TANK STORAGE	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	06/25/2015 (Unit)	Renewal
	16	STORM WATER TANK 105 WTP	S02: TANK STORAGE	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	06/25/2015 (Unit)	Renewal
	17	TRANSFER TANK 17 WTP	S02: TANK STORAGE	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	06/25/2015 (Unit)	Renewal
	18	TRANSFER TANK 12 WTP	S02: TANK STORAGE	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	06/25/2015 (Unit)	Renewal
	19	TRANSFER TANK 13 - WTP	S02: TANK STORAGE	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	06/25/2015 (Unit)	Renewal
	20	SEPARATION/NEUTRALIZATION TANK	T01: TANK TREATMENT	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	06/25/2015 (Unit)	Renewal
	21	YARD SUMP TANK2 - RS - A, WTP	S02: TANK STORAGE	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	06/25/2015 (Unit)	Renewal
	22	REACTOR TANKS TK-1 - TK-5 WTP	T01: TANK TREATMENT	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	06/25/2015 (Unit)	Renewal
	23	EAST PRODUCTION SOLUTION TANK	S02: TANK STORAGE	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	06/25/2015 (Unit)	Renewal
	24	WEST PRODUCTION SOLUTION TANK	S02: TANK STORAGE	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	06/25/2015 (Unit)	Renewal
	25	SAND FILTERS S-A - S - D - WTP	T01: TANK TREATMENT	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	06/25/2015 (Unit)	Renewal

GPRA Facilities Not Meeting the Goal

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QUEMETCO. INC. - continued

Accomp. Date	Seq. #	Unit Name	Process	Legal / Operating Status	Effective Date	GPRA Baseline
	26	SAND FILTER FEED TANK - TK-4-IT -	S02: TANK STORAGE	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	06/25/2015 (Unit)	Renewal
	27	EAST WATER RECYCLING TANK- TK-	T01: TANK TREATMENT	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	06/25/2015 (Unit)	Renewal
	28	WEST WATER RECYCLING TANK-TK-	T01: TANK TREATMENT	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	06/25/2015 (Unit)	Renewal
	29	CLARIFIERS - C-1A, C-1B, C-2A - WTP	T01: TANK TREATMENT	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	06/25/2015 (Unit)	Renewal
	30	CLARIFIER 2B - C-2B - WTP	T01: TANK TREATMENT	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	06/25/2015 (Unit)	Renewal
	31	WASTE PILES (FRMSA)	S03: WASTE PILE	PCCP: POST-CLOSURE PERMITTED - CLOSED WITH WASTE IN PLACE	09/15/2005 (PC205)	Renewal
	32	ROTARY DRYER/KILN (UNIT 3A)	T04: OTHER TREATMENT	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	06/25/2015 (Unit)	Renewal

RAYTHEON COMPANY — CAD000633230

EL SEGUNDO, LOS ANGELES COUNTY — CALIFORNIA — 09

Accomp. Date	Seq. #	Unit Name	Process	Legal / Operating Status	Effective Date	GPRA Baseline
	1	CONTAIN1 (GPRA UNIT)	S01: CONTAINER	PROP: PROPOSED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	10/09/2007 (OP205)	Renewal

RAYTHEON COMPANY — CAT080010853

EL SEGUNDO, LOS ANGELES COUNTY — CALIFORNIA — 09

Accomp. Date	Seq. #	Unit Name	Process	Legal / Operating Status	Effective Date	GPRA Baseline
	2	TANKSTR	S02: TANK STORAGE	ISIN: INTERIM STATUS - INACTIVE/CLOSING, BUT NOT YET RCRA CLOSED	06/28/1985 (OP205)	Renewal

RAYTHEON EWS OPERATIONS — CAD001425206

GOLETA, SANTA BARBARA COUNTY — CALIFORNIA — 09

Accomp. Date	Seq. #	Unit Name	Process	Legal / Operating Status	Effective Date	GPRA Baseline
	1	CONTAIN1	S01: CONTAINER	PIIN: PERMITTED - INACTIVE/CLOSING, BUT NOT YET RCRA CLOSED	06/30/1987 (OP205)	Renewal
	3	TANKTRT1	T01: TANK TREATMENT	PIIN: PERMITTED - INACTIVE/CLOSING, BUT NOT YET RCRA CLOSED	06/30/1987 (OP205)	Renewal

GPRA Facilities Not Meeting the Goal

For the 2018 GPRA Renewal Baseline

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RHO-CHEM LLC — CAD008364432

INGLEWOOD, LOS ANGELES COUNTY — CALIFORNIA — 09

Accomp. Date	Seq. #	Unit Name	Process	Legal / Operating Status	Effective Date	GPRA Baseline
	1	CENTRFUGE1-DISPERSION (GPRA U	T04: OTHER TREATMENT	PIIN: PERMITTED - INACTIVE/CLOSING, BUT NOT YET RCRA CLOSED	08/28/2008 (OP205)	Renewal
	2	CONTAIN1 -AREA A1 DRUM YARD (GF	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	08/28/2008 (OP205)	Renewal
	3	DRUMCRUSH1 -AREA A-4 (GPRA UNI	T04: OTHER TREATMENT	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	08/28/2008 (OP205)	Renewal
	4	FILTR1 (GPRA UNIT)	T01: TANK TREATMENT	PIIN: PERMITTED - INACTIVE/CLOSING, BUT NOT YET RCRA CLOSED	08/28/2008 (OP205)	Renewal
	5	FRACOLUMN1-DISTILLATION - AREA	T01: TANK TREATMENT	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	08/28/2008 (OP205)	Renewal
	6	MACSZREDC1-SIZE REDUCTION -AR	T04: OTHER TREATMENT	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	08/28/2008 (OP205)	Renewal
	7	SLDGCONSL1-WASTE CONSOLIDATIC	T04: OTHER TREATMENT	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	08/28/2008 (OP205)	Renewal
	8	SOLIDIFY1-WASTE CONSOLIDATION	T04: OTHER TREATMENT	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	08/28/2008 (OP205)	Renewal
	9	TANKSTR1	S02: TANK STORAGE	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	08/28/2008 (OP205)	Renewal
	10	TANKTRT1 (GPRA UNIT)	T01: TANK TREATMENT	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	08/28/2008 (OP205)	Renewal
	11	TFE1-THIN FILM EVAPORATOR AREA	T01: TANK TREATMENT	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	08/28/2008 (OP205)	Renewal
	12	FRACOLUMN2-BATCH DISTILLATION	T01: TANK TREATMENT	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	08/28/2008 (OP205)	Renewal
	13	TANKSTR2 - AREA B TANK FARM (GP	S02: TANK STORAGE	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	08/28/2008 (OP205)	Renewal
	14	AREA F- CONTAINER STORAGE	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	08/28/2008 (OP205)	Renewal
	15	AREA G - CONTAINER STORAGE	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	08/28/2008 (OP205)	Renewal
	16	AREA J - CONTAINER STORAGE	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	08/28/2008 (OP205)	Renewal
	17	AREA H - CONTAINER STORAGE	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	08/28/2008 (OP205)	Renewal

GPRA Facilities Not Meeting the Goal

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SAFETY-KLEEN OF CALIFORNIA — CAD980887418

NEWARK, ALAMEDA COUNTY — CALIFORNIA — 09

Accomp. Date	Seq. #	Unit Name	Process	Legal / Operating Status	Effective Date	GPRA Baseline
	1	WASTEWATER TREAT SYS-WTS-DAF	T01: TANK TREATMENT	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	01/05/2005 (OP205)	Renewal
	2	WASTEWATER TREATMENT, WWTP,	T01: TANK TREATMENT	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	01/05/2005 (OP205)	Renewal
	3	RCRA FUEL BLEND TANK T-800, #5 (G	S02: TANK STORAGE	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	01/05/2005 (OP205)	Renewal
	4	RCRA FUEL BLEND TANK T-513, #6 (G	S02: TANK STORAGE	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	01/05/2005 (OP205)	Renewal
	5	DRUM STORAGE-PAD 1, # 13 (GPRA L	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	01/05/2005 (OP205)	Renewal
	6	DRUM STORAGE AREA-PAD 3, # 15 (G	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	01/05/2005 (OP205)	Renewal
	7	DRUM STORAGE AREA-PAD 2, #14 (G	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	01/05/2005 (OP205)	Renewal
	8	DRUM CON PAD & ROLLOFF BIN STR	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	01/05/2005 (OP205)	Renewal
	9	ROLL-OFF BIN FOR WWTP-#21 (GPRA	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	01/05/2005 (OP205)	Renewal
	10	RAILCAR LOADING/UNLOADING ST1,	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	01/05/2005 (OP205)	Renewal
	11	RAILCAR LOADING/UNLOADING ST.2,	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	01/05/2005 (OP205)	Renewal
	12	RAILCAR LOADING/UNLOADING ST.1	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	01/05/2005 (OP205)	Renewal
	13	RAILCAR LOADING/UNLOADING ST1,	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	01/05/2005 (OP205)	Renewal
	14	USED OIL REC& STR TNKS,TANKFAR	S02: TANK STORAGE	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	01/05/2005 (OP205)	Renewal
	15	USED OIL FUEL BLEND TANKS, #3 (G	S02: TANK STORAGE	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	01/05/2005 (OP205)	Renewal
	16	USED OIL REC& STR TNKS,TANK FAR	S02: TANK STORAGE	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	01/05/2005 (OP205)	Renewal

GPRA Facilities Not Meeting the Goal

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SAFETY-KLEEN OF CALIFORNIA - continued

Accomp. Date	Seq. #	Unit Name	Process	Legal / Operating Status	Effective Date	GPRA Baseline
	17	PROCESS UNIT DESCRIPTION, UNIT	S02: TANK STORAGE	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	01/05/2005 (OP205)	Renewal
	18	WASTE ANTI-FREEZE STORAGE TAN	S02: TANK STORAGE	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	01/05/2005 (OP205)	Renewal
	19	WASTE WATER MANAGEMENT TANK	S02: TANK STORAGE	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	01/05/2005 (OP205)	Renewal
	20	EAST LOADING/UNLOADING AREA, U	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	01/05/2005 (OP205)	Renewal
	21	WEST LOADING/UNLOADING AREA, U	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	01/05/2005 (OP205)	Renewal
	22	LOADING/UNLOADING WWTP, UNIT 1	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	01/05/2005 (OP205)	Renewal
	23	DRUM CRUSHER, UNIT 23 (GPRA UN	X99: OTHER SUBPART X	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	01/05/2005 (OP205)	Renewal
	24	STORM AND OILY WASTE COL SYS, U	S99: OTHER STORAGE	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	01/05/2005 (OP205)	Renewal
	25	SUMP TANK 510, UNIT 25 (GPRA UNIT	S99: OTHER STORAGE	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	01/05/2005 (OP205)	Renewal

SAFETY-KLEEN SYSTEMS INC — CAT000613976

SANTA ANA, ORANGE COUNTY — CALIFORNIA — 09

Accomp. Date	Seq. #	Unit Name	Process	Legal / Operating Status	Effective Date	GPRA Baseline
	1	CONTAIN1 (GPRA UNIT)	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	05/23/2007 (OP205)	Renewal
	2	TANKSTR1 (GPRA UNIT)	S02: TANK STORAGE	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	05/23/2007 (OP205)	Renewal
	3	TANKTRT1 (GPRA UNIT)	T01: TANK TREATMENT	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	05/23/2007 (OP205)	Renewal

SAFETY-KLEEN SYSTEMS, INC. — CA0000084517

SACRAMENTO, SACRAMENTO COUNTY — CALIFORNIA — 09

Accomp. Date	Seq. #	Unit Name	Process	Legal / Operating Status	Effective Date	GPRA Baseline
	1	CONTAIN1 (GPRA UNIT)	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	06/28/2006 (OP205)	Renewal

GPRA Facilities Not Meeting the Goal

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SAFETY-KLEEN SYSTEMS, INC. - continued

Accomp. Date	Seq. #	Unit Name	Process	Legal / Operating Status	Effective Date	GPRA Baseline
	2	TANKSTR1 - UNIT 1 (GPRA UNIT)	S02: TANK STORAGE	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	06/28/2006 (OP205)	Renewal
	3	RETURN AND FILL UNIT - UNIT 4 (GP	X02: MECHANICAL PROCESSING	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	06/28/2006 (OP205)	Renewal
	4	TANKSTR2-TRUCK TO TRUCK - UNIT	S02: TANK STORAGE	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	06/28/2006 (OP205)	Renewal
	5	TANKSTR3-DUMPSTER (GPRA UNIT)	S02: TANK STORAGE	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	06/28/2006 (OP205)	Renewal
	6	TANKSTR2 - UNIT 2	S02: TANK STORAGE	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	06/28/2006 (OP205)	Renewal
	7	TANKSTR3 - UNIT 3	S02: TANK STORAGE	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	06/28/2006 (OP205)	Renewal
	8	TANKSTR4	S02: TANK STORAGE	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	06/28/2006 (OP205)	Renewal

SAFETY-KLEEN SYSTEMS, INC. — CAD066113465

FRESNO, FRESNO COUNTY — CALIFORNIA — 09

Accomp. Date	Seq. #	Unit Name	Process	Legal / Operating Status	Effective Date	GPRA Baseline
	1	CONTAIN1 (GPRA UNIT)	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	07/23/2007 (OP205)	Renewal
	2	TANKSTR1 (GPRA UNIT)	S02: TANK STORAGE	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	07/23/2007 (OP205)	Renewal
	3	TANKTRT1 (GPRA UNIT)	T01: TANK TREATMENT	PRBC: PROPOSED - BEFORE CONSTRUCTION	10/10/1996 (OP205)	Renewal

SAFETY-KLEEN SYSTEMS, INC. — CAD980817159

SAN JOSE, SANTA CLARA COUNTY — CALIFORNIA — 09

Accomp. Date	Seq. #	Unit Name	Process	Legal / Operating Status	Effective Date	GPRA Baseline
	1	CONTAIN1 (GPRA UNIT)	S01: CONTAINER	PICA: PERMITTED - REFERRED TO CORRECTIVE ACTION FOR CLOSURE	03/05/2013 (Unit)	Renewal
	2	TANKSTR1 (GPRA UNIT)	S02: TANK STORAGE	PICA: PERMITTED - REFERRED TO CORRECTIVE ACTION FOR CLOSURE	03/05/2013 (Unit)	Renewal
	3	TANKTRT1 (GPRA UNIT)	T01: TANK TREATMENT	PICA: PERMITTED - REFERRED TO CORRECTIVE ACTION FOR CLOSURE	10/10/1996 (OP205)	Renewal

GPRA Facilities Not Meeting the Goal

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SAFETY-KLEEN SYSTEMS, INC. — CAT000613893

EL MONTE, LOS ANGELES COUNTY — CALIFORNIA — 09

Accomp. Date	Seq. #	Unit Name	Process	Legal / Operating Status	Effective Date	GPRA Baseline
	1	CONTAIN1 - AREA A (GPRA UNIT)	S01: CONTAINER	PIIN: PERMITTED - INACTIVE/CLOSING, BUT NOT YET RCRA CLOSED	05/04/2008 (OP205)	Renewal
	2	TANKSTR1 - UNDERGROUND TANK	S02: TANK STORAGE	PIIN: PERMITTED - INACTIVE/CLOSING, BUT NOT YET RCRA CLOSED	05/04/2008 (OP205)	Renewal
	4	CONTAIN2 - AREA C1 (GPRA UNIT)	S01: CONTAINER	PIIN: PERMITTED - INACTIVE/CLOSING, BUT NOT YET RCRA CLOSED	05/04/2008 (OP205)	Renewal
	5	CONTAIN3 -AREA C2 (GPRA UNIT)	S01: CONTAINER	PIIN: PERMITTED - INACTIVE/CLOSING, BUT NOT YET RCRA CLOSED	05/04/2008 (OP205)	Renewal
	6	CONTAIN4 - AREA D (GPRA UNIT)	S01: CONTAINER	PIIN: PERMITTED - INACTIVE/CLOSING, BUT NOT YET RCRA CLOSED	05/04/2008 (OP205)	Renewal

SAFETY-KLEEN SYSTEMS, INC. — CAT000613927

HIGHLAND, SAN BERNARDINO COUNTY — CALIFORNIA — 09

Accomp. Date	Seq. #	Unit Name	Process	Legal / Operating Status	Effective Date	GPRA Baseline
	1	CONTAIN1 (GPRA UNIT)	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	06/23/2007 (OP205)	Renewal
	2	TANKSTR1 (GPRA UNIT)	S02: TANK STORAGE	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	06/23/2007 (OP205)	Renewal
01/20/2016	4	TANKTRT1 (GPRA UNIT)	T01: TANK TREATMENT	PICC: PERMITTED - CLEAN CLOSED	09/17/1994 (OP205)	Renewal

SAFETY-KLEEN SYSTEMS, INC. — CAT000613935

LOS ANGELES, LOS ANGELES COUNTY — CALIFORNIA — 09

Accomp. Date	Seq. #	Unit Name	Process	Legal / Operating Status	Effective Date	GPRA Baseline
	1	CONTAIN1	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	03/17/2009 (Unit)	Renewal
	2	CONTAIN2	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	03/17/2009 (Unit)	Renewal
	3	TANKSTR1 (GPRA UNIT)	S02: TANK STORAGE	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	03/17/2009 (OP205)	Renewal
	6	CONTAIN3 (GPRA UNIT)	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	06/10/1997 (OP205)	Renewal
	7	TANKTRT3 (GPRA UNIT)	T01: TANK TREATMENT	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	06/10/1997 (OP205)	Renewal

GPRA Facilities Not Meeting the Goal

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SAN DIEGO GAS AND ELECTRIC — CAD981168107

SAN DIEGO, SAN DIEGO COUNTY — CALIFORNIA — 09

Accomp. Date	Seq. #	Unit Name	Process	Legal / Operating Status	Effective Date	GPRA Baseline
	1	CONTAIN1 (GPRA UNIT)	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	08/06/2007 (OP205)	Renewal

SHELL OIL PRODUCTS US - MARTINEZ REFINERY — CAD009164021

MARTINEZ, CONTRA COSTA COUNTY — CALIFORNIA — 09

Accomp. Date	Seq. #	Unit Name	Process	Legal / Operating Status	Effective Date	GPRA Baseline
01/12/2016	1	CARBON MONOXIDE BOILERS (CO BC	T80: BOILER	PICC: PERMITTED - CLEAN CLOSED	05/21/2008 (OP205)	Renewal
	3	ETP-1 BIOTREATER	T02: SURFACE IMPOUNDEMENT TREATMENT	PIDC: PERMITTED - DELAY OF CLOSURE	05/21/2008 (OP205)	Renewal
	4	TANK 12038 (GPRA UNIT)	S02: TANK STORAGE	PIIN: PERMITTED - INACTIVE/CLOSING, BUT NOT YET RCRA CLOSED	05/21/2008 (OP205)	Renewal

SOUTHERN CALIFORNIA GAS COMPANY — CAD981422017

LOS ANGELES, LOS ANGELES COUNTY — CALIFORNIA — 09

Accomp. Date	Seq. #	Unit Name	Process	Legal / Operating Status	Effective Date	GPRA Baseline
	1	CONTAIN1 (GPRA UNIT)	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	05/04/2007 (OP205)	Renewal
	2	CONTAIN2 (GPRA UNIT)	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	05/04/2007 (OP205)	Renewal
	3	CONTAIN3 (GPRA UNIT)	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	05/04/2007 (OP205)	Renewal

SOUTHERN CALIFORNIA GAS COMPANY — CAT000625137

PICO RIVERA, LOS ANGELES COUNTY — CALIFORNIA — 09

Accomp. Date	Seq. #	Unit Name	Process	Legal / Operating Status	Effective Date	GPRA Baseline
	1	CONTAIN1 (GPRA UNIT)	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	07/31/2007 (OP205)	Renewal

SQUARE D COMPANY — CAD050746775

BEAUMONT, SAN BERNARDINO COUNTY — CALIFORNIA — 09

Accomp. Date	Seq. #	Unit Name	Process	Legal / Operating Status	Effective Date	GPRA Baseline
	1	SURFSTR1 (PROCESS POND 1) (GPR	S04: SURFACE IMPOUNDMENT STORAGE	PCCP: POST-CLOSURE PERMITTED - CLOSED WITH WASTE IN PLACE	06/01/2009 (PC205)	Renewal

GPRA Facilities Not Meeting the Goal

For the 2018 GPRA Renewal Baseline

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SQUARE D COMPANY - continued

Accomp. Date	Seq. #	Unit Name	Process	Legal / Operating Status	Effective Date	GPRA Baseline
	2	SURFSTR1 (PROCESS POND 2)	S04: SURFACE IMPOUNDMENT STORAGE	PCCP: POST-CLOSURE PERMITTED - CLOSED WITH WASTE IN PLACE	04/28/2009 (Unit)	Renewal
	3	SURFSTR1 (PROCESS POND 3)	S04: SURFACE IMPOUNDMENT STORAGE	PCCP: POST-CLOSURE PERMITTED - CLOSED WITH WASTE IN PLACE	04/28/2009 (Unit)	Renewal
	4	SURFSTR1 (BARIUM POND - UNIT #4	S04: SURFACE IMPOUNDMENT STORAGE	PCCP: POST-CLOSURE PERMITTED - CLOSED WITH WASTE IN PLACE	04/28/2009 (Unit)	Renewal
	5	SURFSTR1 (CARBON POND #5)	S04: SURFACE IMPOUNDMENT STORAGE	PCCP: POST-CLOSURE PERMITTED - CLOSED WITH WASTE IN PLACE	04/28/2009 (Unit)	Renewal
	6	SOUTH SETTING PONDS(UNIT #6)	S04: SURFACE IMPOUNDMENT STORAGE	PCCP: POST-CLOSURE PERMITTED - CLOSED WITH WASTE IN PLACE	06/01/2009 (PC205)	Renewal
	7	NORTH SETTLING POND	S04: SURFACE IMPOUNDMENT STORAGE	PCCP: POST-CLOSURE PERMITTED - CLOSED WITH WASTE IN PLACE	06/01/2009 (PC205)	Renewal

TESORO REFINING & MARKETING COMPANY LLC -- LA REFINERY

CAD041520644

WILMINGTON, LOS ANGELES COUNTY — CALIFORNIA — 09

Accomp. Date	Seq. #	Unit Name	Process	Legal / Operating Status	Effective Date	GPRA Baseline
	2	SURFSTR1- PONDS 8 & 9	S04: SURFACE IMPOUNDMENT STORAGE	PCCP: POST-CLOSURE PERMITTED - CLOSED WITH WASTE IN PLACE	03/17/2011 (PC205)	Renewal

THE BOEING COMPANY - SSFL 1 & 3

CAD093365435

SIMI VALLEY, VENTURA COUNTY — CALIFORNIA — 09

Accomp. Date	Seq. #	Unit Name	Process	Legal / Operating Status	Effective Date	GPRA Baseline
	1	ALFA AST GW TREATMENT SYSTEM	T01: TANK TREATMENT	PTCC: PERMIT TERMINATED/PERMIT EXPIRED, NOT CONTINUED - CLEAN CLOSED	05/11/1995 (PC205)	Renewal
	5	APTF-1 SURFACE IMPOUNDMENT (G	S04: SURFACE IMPOUNDMENT STORAGE	PCCP: POST-CLOSURE PERMITTED - CLOSED WITH WASTE IN PLACE	05/11/1995 (PC205)	Renewal
	6	APTF-2 SURFACE IMPOUNDMENT (G	S04: SURFACE IMPOUNDMENT STORAGE	PCCP: POST-CLOSURE PERMITTED - CLOSED WITH WASTE IN PLACE	05/11/1995 (PC205)	Renewal
	7	ECL SURFACE IMPOUNDMENT (GPRA	S04: SURFACE IMPOUNDMENT STORAGE	PCCP: POST-CLOSURE PERMITTED - CLOSED WITH WASTE IN PLACE	05/11/1995 (PC205)	Renewal
	9	STL-IV-2 SURFACE IMPOUNDMENT (G	S04: SURFACE IMPOUNDMENT STORAGE	PCCP: POST-CLOSURE PERMITTED - CLOSED WITH WASTE IN PLACE	05/11/1995 (PC205)	Renewal
	11	WS-5 UV/P GW TREATMENT SYSTEM	T01: TANK TREATMENT	PTCC: PERMIT TERMINATED/PERMIT EXPIRED, NOT CONTINUED - CLEAN CLOSED	05/11/1995 (PC205)	Renewal
	13	AREA I ROAD AST GW TREATMENT S	T01: TANK TREATMENT	PTCC: PERMIT TERMINATED/PERMIT EXPIRED, NOT CONTINUED - CLEAN CLOSED	05/11/1995 (PC205)	Renewal
	14	CANYON AST GW TREATMENT SYST	T01: TANK TREATMENT	PTCC: PERMIT TERMINATED/PERMIT EXPIRED, NOT CONTINUED - CLEAN CLOSED	05/11/1995 (PC205)	Renewal
	15	STL-IV AST GW TREATMENT SYSTEM	T01: TANK TREATMENT	PTCC: PERMIT TERMINATED/PERMIT EXPIRED, NOT CONTINUED - CLEAN CLOSED	05/11/1995 (PC205)	Renewal

GPRA Facilities Not Meeting the Goal

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THE DOW CHEMICAL COMPANY — CAD009547050

TORRANCE, LOS ANGELES COUNTY — CALIFORNIA — 09

Accomp. Date	Seq. #	Unit Name	Process	Legal / Operating Status	Effective Date	GPRA Baseline
	1	BIFBOIL1 (GPRA UNIT)	T80: BOILER	PICN: PERMITTED - CONSTRUCTED, NOT YET MANAGING HAZARDOUS WASTE	08/02/1999 (OP205)	Renewal
	2	CONTAIN1 (GPRA UNIT)	T80: BOILER	PIIN: PERMITTED - INACTIVE/CLOSING, BUT NOT YET RCRA CLOSED	08/02/1999 (OP205)	Renewal
	3	TANKSTR1 (GPRA UNIT)	T80: BOILER	PIIN: PERMITTED - INACTIVE/CLOSING, BUT NOT YET RCRA CLOSED	08/02/1999 (OP205)	Renewal

THE DOW CHEMICAL COMPANY — CAD076528678

PITTSBURG, CONTRA COSTA COUNTY — CALIFORNIA — 09

Accomp. Date	Seq. #	Unit Name	Process	Legal / Operating Status	Effective Date	GPRA Baseline
	1	ST-HAF (GPRA)	T92: HALOGEN ACID FURNACES	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	04/28/2003 (OP205)	Renewal
	2	MS-HAF	T92: HALOGEN ACID FURNACES	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	04/28/2003 (OP205)	Renewal
	3	BLOCK 560 DRUM STORAGE AREA	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	07/31/2006 (OP205)	Renewal
	8	SURFIMP1 (GPRA UNIT)	D83: SURFACE IMPOUNDMENT DISPOSAL	PCCP: POST-CLOSURE PERMITTED - CLOSED WITH WASTE IN PLACE	12/13/2007 (PC205)	Renewal
	24	TANK-T12	S02: TANK STORAGE	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	04/28/2003 (OP205)	Renewal
	25	TANK-T501B	S02: TANK STORAGE	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	04/28/2003 (OP205)	Renewal
	26	TANK-502A	S02: TANK STORAGE	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	04/28/2003 (OP205)	Renewal

TOSCO CORP AVON REF — CAD000072751

MARTINEZ (E OF), CONTRA COSTA COUNTY — CALIFORNIA — 09

Accomp. Date	Seq. #	Unit Name	Process	Legal / Operating Status	Effective Date	GPRA Baseline
	2	SURFSTR1 (GPRA UNIT)	S04: SURFACE IMPOUNDMENT STORAGE	PCCP: POST-CLOSURE PERMITTED - CLOSED WITH WASTE IN PLACE	09/29/2009 (PC205)	Renewal
01/02/2014	3	SURFTRT1 (GPRA UNIT)	T02: SURFACE IMPOUNDEMENT TREATMENT	PICC: PERMITTED - CLEAN CLOSED	07/30/1998 (PC205)	Renewal

GPRA Facilities Not Meeting the Goal

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TRAVIS AIR FORCE BASE — CA5570024575

TRAVIS AFB, SOLANO COUNTY — CALIFORNIA — 09

Accomp. Date	Seq. #	Unit Name	Process	Legal / Operating Status	Effective Date	GPRA Baseline
	1	CONTAIN1 (GPRA UNIT)	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	01/19/2008 (OP205)	Renewal
	3	TANKSTR1 (GPRA UNIT)	S02: TANK STORAGE	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	01/19/2008 (OP205)	Renewal
	4	TANKSTR2	S02: TANK STORAGE	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	01/19/2008 (OP205)	Renewal
	5	TANKSTR3	S02: TANK STORAGE	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	01/19/2008 (OP205)	Renewal
	6	TANKSTR4	S02: TANK STORAGE	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	01/19/2008 (OP205)	Renewal
	7	TANKSTR5	S02: TANK STORAGE	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	01/19/2008 (OP205)	Renewal
	8	TANKSTR6	S02: TANK STORAGE	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	01/19/2008 (OP205)	Renewal

UNITED TECHNOLOGIES CORPORATION — CAD001705235

SAN JOSE, SANTA CLARA COUNTY — CALIFORNIA — 09

Accomp. Date	Seq. #	Unit Name	Process	Legal / Operating Status	Effective Date	GPRA Baseline
	1	CONTAIN1 (GPRA UNIT)	S01: CONTAINER	PIIN: PERMITTED - INACTIVE/CLOSING, BUT NOT YET RCRA CLOSED	10/15/2007 (OP205)	Renewal
	3	SURFSTR1 (GPRA UNIT)	T04: OTHER TREATMENT	PCCP: POST-CLOSURE PERMITTED - CLOSED WITH WASTE IN PLACE	12/04/2006 (PC205)	Renewal
	4	SURFSTR2 (GPRA UNIT)	T04: OTHER TREATMENT	PCCP: POST-CLOSURE PERMITTED - CLOSED WITH WASTE IN PLACE	12/04/2006 (PC205)	Renewal
	6	CONTAIN2-MAGAZINES (GPRA UNIT)	T04: OTHER TREATMENT	PIIN: PERMITTED - INACTIVE/CLOSING, BUT NOT YET RCRA CLOSED	10/15/2007 (OP205)	Renewal
	10	SURFSTR3	T04: OTHER TREATMENT	PCCP: POST-CLOSURE PERMITTED - CLOSED WITH WASTE IN PLACE	12/04/2006 (PC205)	Renewal

US ECOLOGY VERNON, INC. — CAD097030993

VERNON, LOS ANGELES COUNTY — CALIFORNIA — 09

Accomp. Date	Seq. #	Unit Name	Process	Legal / Operating Status	Effective Date	GPRA Baseline
	1	CONTAIN1-UNIT 1 (GPRA UNIT)	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	10/07/1996 (OP205)	Renewal
	2	OTHRTRT1-NEUTRALIZATION (GPRA	T04: OTHER TREATMENT	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	10/07/1996 (OP205)	Renewal

GPRA Facilities Not Meeting the Goal

For the 2018 GPRA Renewal Baseline

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US ECOLOGY VERNON, INC. - continued

Accomp. Date	Seq. #	Unit Name	Process	Legal / Operating Status	Effective Date	GPRA Baseline
	3	TANKSTR1-HOLD TANK (GPRA UNIT)	S02: TANK STORAGE	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	10/07/1996 (OP205)	Renewal
	4	TANKSTR2-OIL HOLDING (GPRA UNIT	S02: TANK STORAGE	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	10/07/1996 (OP205)	Renewal
	5	TANKTRT1-PRETREATMENT (GPRA U	T01: TANK TREATMENT	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	10/07/1996 (OP205)	Renewal
	6	TANKTRT2-AA WASTE PROCESSING	T01: TANK TREATMENT	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	10/07/1996 (OP205)	Renewal
	7	CHROME WASTE PROCESSING (GPR	T01: TANK TREATMENT	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	10/07/1996 (OP205)	Renewal
	8	TRACE ORGANICS PROCESSING (GP	T01: TANK TREATMENT	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	10/07/1996 (OP205)	Renewal

US NAVY BRAC PMO-W (MI) — CA7170024775

VALLEJO, SOLANO COUNTY — CALIFORNIA — 09

Accomp. Date	Seq. #	Unit Name	Process	Legal / Operating Status	Effective Date	GPRA Baseline
	4	LANDFIL1	D80: LANDFILL	PICA: PERMITTED - REFERRED TO CORRECTIVE ACTION FOR CLOSURE	04/15/1995 (OP205)	Renewal
	6	SURFTRT2	T02: SURFACE IMPOUNDEMENT TREATMENT	PICA: PERMITTED - REFERRED TO CORRECTIVE ACTION FOR CLOSURE	04/15/1995 (OP205)	Renewal
	7	SURFTRT3	T02: SURFACE IMPOUNDEMENT TREATMENT	PICA: PERMITTED - REFERRED TO CORRECTIVE ACTION FOR CLOSURE	04/15/1995 (OP205)	Renewal
	8	SURFTRT4	T02: SURFACE IMPOUNDEMENT TREATMENT	PICA: PERMITTED - REFERRED TO CORRECTIVE ACTION FOR CLOSURE	04/15/1995 (OP205)	Renewal

USDOE SANDIA NATIONAL LABORATORIES — CA2890012923

LIVERMORE, ALAMEDA COUNTY — CALIFORNIA — 09

Accomp. Date	Seq. #	Unit Name	Process	Legal / Operating Status	Effective Date	GPRA Baseline
07/01/2015	1	BLDG961-DRUM COMPACTOR (GPRA	T04: OTHER TREATMENT	PICC: PERMITTED - CLEAN CLOSED	03/30/2004 (OP205)	Renewal
	2	CONTAIN1-BLDG 9611 (GPRA UNIT)	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	03/30/2004 (OP205)	Renewal
	3	CONTAIN2- BLDG 961 (GPRA UNIT)	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	03/30/2004 (OP205)	Renewal
06/29/2015	4	CONTAIN3- CONEX (GPRA UNIT)	S01: CONTAINER	PICC: PERMITTED - CLEAN CLOSED	03/30/2004 (OP205)	Renewal
07/01/2015	9	BLDG961-SOLID WASTE COMPACTOF	T04: OTHER TREATMENT	PICC: PERMITTED - CLEAN CLOSED	03/30/2004 (OP205)	Renewal
	10	CONTAIN4-ROLL-OFF BINS	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	03/30/2004 (OP205)	Renewal

GPRA Facilities Not Meeting the Goal

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USDOE SANDIA NATIONAL LABORATORIES - continued

Accomp. Date	Seq. #	Unit Name	Process	Legal / Operating Status	Effective Date	GPRA Baseline
	12	BLDG9611-DRUM/SOLID WASTE COM	T04: OTHER TREATMENT	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	03/30/2004 (OP205)	Renewal

VEOLIA ES TECHNICAL SOLUTIONS LLC — CAD008302903

IRWINDALE, LOS ANGELES COUNTY — CALIFORNIA — 09

Accomp. Date	Seq. #	Unit Name	Process	Legal / Operating Status	Effective Date	GPRA Baseline
	1	CONTAIN1 (GPRA UNIT)	S01: CONTAINER	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	03/31/2011 (OP205)	Renewal
	2	TANKSTR1 (GPRA UNIT)	S02: TANK STORAGE	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	03/31/2011 (OP205)	Renewal
	3	TANKTRT1 (GPRA UNIT)	T01: TANK TREATMENT	PIOP: PERMITTED - OPERATING, ACTIVELY MANAGING RCRA-REGULATED WASTE	03/31/2011 (OP205)	Renewal

WEST COUNTY LANDFILL, INC. — CAD041844002

RICHMOND, CONTRA COSTA COUNTY — CALIFORNIA — 09

Accomp. Date	Seq. #	Unit Name	Process	Legal / Operating Status	Effective Date	GPRA Baseline
	1	LANDFIL1 (GPRA UNIT)	D80: LANDFILL	PCCP: POST-CLOSURE PERMITTED - CLOSED WITH WASTE IN PLACE	06/01/2009 (PC205)	Renewal
	2	SURFIMP1 (GPRA UNIT)	D83: SURFACE IMPOUNDMENT DISPOSAL	PCCP: POST-CLOSURE PERMITTED - CLOSED WITH WASTE IN PLACE	06/01/2009 (PC205)	Renewal

WESTSIDE DISPOSAL FACILITY — CAT080010283

FELLOWS, KERN COUNTY — CALIFORNIA — 09

Accomp. Date	Seq. #	Unit Name	Process	Legal / Operating Status	Effective Date	GPRA Baseline
	1	LANDAPP1 (GPRA UNIT)	D81: LAND APPLICATION	PCCP: POST-CLOSURE PERMITTED - CLOSED WITH WASTE IN PLACE	06/28/2006 (PC205)	Renewal
	2	SURFIMP1 (GPRA UNIT)	D83: SURFACE IMPOUNDMENT DISPOSAL	PCCP: POST-CLOSURE PERMITTED - CLOSED WITH WASTE IN PLACE	06/28/2006 (PC205)	Renewal
	3	SURFSTR1 (GPRA UNIT)	S04: SURFACE IMPOUNDMENT STORAGE	PCCP: POST-CLOSURE PERMITTED - CLOSED WITH WASTE IN PLACE	06/28/2006 (PC205)	Renewal
	4	SURFTRT1 (GPRA UNIT)	T02: SURFACE IMPOUNDEMENT TREATMENT	PCCP: POST-CLOSURE PERMITTED - CLOSED WITH WASTE IN PLACE	06/28/2006 (PC205)	Renewal

GPRA Facilities Not Meeting the Goal

For the 2018 GPRA Renewal Baseline

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WILLOWS GLENN COUNTY AIRPORT — CAT000625525

WILLOWS, GLENN COUNTY — CALIFORNIA — 09

Accomp. Date	Seq. #	Unit Name	Process	Legal / Operating Status	Effective Date	GPRA Baseline
	1	SURFIMP1 (GPRA UNIT)	D83: SURFACE IMPOUNDMENT DISPOSAL	PCIN: POST-CLOSURE PERMITTED - INACTIVE/CLOSING, BUT NOT YET RCRA CLOSED	09/01/1997 (Unit)	Renewal

* End of Report *

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To: Rizgar.Ghazi_dtsc.ca.gov[Rizgar.Ghazi@dtsc.ca.gov]; Nelline Kowbel (Nelline.Kowbel@dtsc.ca.gov)[Nelline.Kowbel@dtsc.ca.gov]; Wayne Lorentzen (Wayne.Lorentzen@dtsc.ca.gov)[Wayne.Lorentzen@dtsc.ca.gov]
Cc: Huetteman, Tom[Huetteman.Tom@epa.gov]
From: Gross, Barbara
Sent: Mon 11/14/2016 6:08:22 PM
Subject: Follow up from today's call - Permits with expiration dates more than 2 years
DTSC_PermittedFacilities_ExpDates082616_.xlsx

A few months ago EPA HQ developed a list of permits which have expiration dates more than 2 years (see attached). Several of these facilities are in DTSC's pipeline for FY17. Do you have a more accurate list of facilities with >2 year backlog? Can you please let us know how the upcoming permitting pipeline will address these facilities?

BARBARA GROSS ..... Manager, Permits Section ..... USEPA Region 9, Land Division .....
415.972.3972

To: Regional RCRA Directors & Deputies[Regional_RCRA_Directors__Deputies@epa.gov]; Regional RCRA Program Branch Chiefs[Regional_RCRA_Program_Branch_Chiefs@epa.gov]
Cc: ORCR IO[ORCR_IO@epa.gov]; Sasseville, Sonya[Sasseville.Sonya@epa.gov]; Guernica, Mimi[Guernica.Mimi@epa.gov]; Kohler, Amanda[Kohler.Amanda@epa.gov]; Sommer, Tab[Sommer.Tab@epa.gov]; Gaines, Jeff[Gaines.Jeff@epa.gov]
From: Johnson, Barnes
Sent: Tue 1/12/2016 3:37:42 PM
Subject: RCRA Permit Modifications Report
Permit_Mod_Report_FINAL_01072016.pdf

.....
,,,,,,
Dear Colleagues,

I am pleased to share with you the attached RCRA "*Permit Modifications Report: Safeguarding the Environment in the Face of Changing Business Needs,*" which depicts, for the first time, the significant resources - and benefits- states and EPA can attribute to RCRA permit modification work. On average, states approve over 800 RCRA permit modifications annually.

The report's purpose is to describe the changing nature of RCRA hazardous waste permitting work and demonstrate how an adequate and effective permit program is vital, not only for initial permits, but throughout the permit term to enable necessary permit maintenance activities.

Permittees request changes to permit conditions to keep pace with evolving business practices, technology, cleanup decisions, and regulations. Timely permit modifications ensure that these changes maintain protection of human health and the environment while allowing companies to keep pace with changes in the market place and bolster their competitiveness. Many modifications facilitate cleanup of contaminated soil or groundwater, increase the recycling or reuse of materials, reduce corresponding waste streams, minimize fossil fuel use and greenhouse gas emissions, and support sustainable materials management.

Because most of the facilities that treat, store, and dispose of hazardous waste have already obtained their initial permits, the majority of RCRA hazardous waste permitting activity has shifted from issuing initial permits to permit maintenance. By enhancing its understanding of permit modification work, EPA believes it can better argue for the importance of sustaining healthy, well-funded RCRA permitting programs to enable improved operational efficiency, economic development, and environmental protection at hazardous waste facilities.

This report has been developed over many months of working with permit writers from the states and EPA regions. I want to specially acknowledge and thank the following contributors to this report: Paula Bansch (Indiana), Bob Bullock (Idaho), Jamie Burroughs (Tennessee), Tricia Buzzell (EPA HQ), Lilybeth Colón (EPA HQ), Gail Hansen (EPA HQ), Becky Holmes (Montana), Denise Housley (EPA Region 4), Julia King-Collins (Virginia), Matthew Loesel (EPA Region 6), Bud McCarty (North Carolina), Richard Nussbaum (Missouri), Christine Roob (North Dakota), Tab Sommer (EPA HQ),

Will Steele (Louisiana), and Farshad Vakili (California).

This report can also be found on our website at http://www.epa.gov/hwpermitting/permit-modifications-report-safeguarding-environment-face-changing-business-needs

Sincerely,

Barnes Johnson

USEPA | Resource Conservation and Recovery | Tel 703-308-8895 | johnson.barnes@epa.gov

RCRA

HAZARDOUS WASTE PERMITTING PROGRAM

Permit Modifications Report:

Safeguarding the Environment in the Face of Changing Business Needs

January 2016

United States Environmental Protection Agency

EPA530-R-15-001

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ACKNOWLEDGMENT
This report was developed by hazardous waste permitting experts in state environmental programs and in the Environmental Protection Agency (EPA)'s Office of Resource Conservation and Recovery and regional offices.

EPA wishes to acknowledge and thank the following contributors of this report: Paula Bansch (Indiana, IDEM), Bob Bullock (Idaho, DEQ), Jamie Burroughs (Tennessee, TDEC), Tricia Buzzell (EPA), Lilybeth Colón (EPA), Gail Hansen (EPA), Becky Holmes (Montana, DEQ), Denise Housley (EPA), Julia King-Collins (Virginia, DEQ), Matthew Loesel (EPA), Bud McCarty (North Carolina, DENR), Richard Nussbaum (Missouri, MDNR), Christine Roob (North Dakota, Dept. of Health), Tab Sommer (EPA), Will Steele (Louisiana, DEQ), and Farshad Vakili (California, DTSC).

For questions about the report, please contact Tab Sommer, 703-605-0636, sommer.tab@epa.gov.

ED_001593_00007677

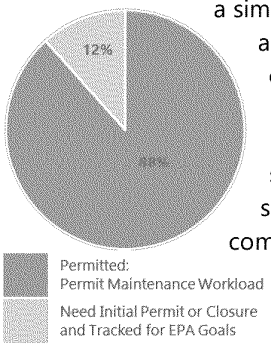
EXECUTIVE SUMMARY

The majority of facilities that are treating, storing, or disposing of hazardous waste have been issued permits under the Resource Conservation and Recovery Act (RCRA). The bulk of permitting activity has now shifted to responding to business needs and changes in facility operations while ensuring that the permitted conditions continue to be protective and prevent release. This report demonstrates the value of maintaining healthy RCRA permitting programs in order to efficiently respond to changes needed at facilities.

WHY HAZARDOUS WASTE PERMIT MODIFICATIONS ARE NECESSARY

Under RCRA, facilities managing hazardous waste must obtain a permit from their regulatory authority (i.e., the state or EPA). The purpose of the permit is to detail how a facility must comply with the RCRA regulations to ensure that hazardous waste management activities are conducted so as to prevent and address releases that could threaten public health and the environment and lead to potential cleanup obligations. These permits are site-specific and establish the technical and administrative standards to which a facility must adhere to legally and protectively manage hazardous waste. Thus, it is critical that modifications to the permit are made as necessary to enable the facility to effectively continue to operate treatment, storage, and disposal units.

Changes to permit conditions are often required to keep pace with evolving business practices, technology, cleanup decisions, and regulations. For example, permit modifications allow facilities to update technological systems, comply with new environmental standards, respond to changing waste streams, address financial assurance requirements, or simply improve their hazardous waste management practices. These changes in turn can support enhanced operational efficiency, economic development, conservation of resources, improved prevention of environmental releases, and cleanup progress.



See Section II.A for details

Most facilities may need to modify their permit more often than the permit needs to be renewed to accommodate time-critical business decisions, such as construction of a new waste management unit. Timely permit modifications enable facilities to efficiently expand and update their operations, adopt advanced greener technologies, remediate contamination, and address other vital business needs, while remaining protective of human health and the environment.

MOST PERMIT-RELATED WORK OCCURS AFTER INITIAL PERMIT ISSUANCE

The issuance of an initial permit reflects just the beginning of the permit-related work conducted by the regulatory authority. Over the life of a typical permitted hazardous waste management facility, significantly more time is devoted to permit maintenance than to permit issuance.

To better understand the workload associated with permit modifications, a group of state and EPA representatives reviewed data on permit modifications approved in 2011 through 2013. On average, 826 permit modifications were approved each year over the three-year period.

Permit modifications vary greatly in terms of complexity – a simple modification (Class 1 or Minor changes, such as a change in contact information) can be completed in as little as two or three hours. Class 1 modifications represent 83% of permit modifications reviewed during the period. More substantial modifications (Class 2, 3, and Major, such as adding a new waste management unit) combined represent 17% of permit modifications. The more substantial modifications can take up to 1,850 staff hours to address. Modifications that are technically complicated or have a high degree of public interest can take over a year to finalize (in addition to the 105 days of public review for Class 3's). See Section III for the process and timeframes for different classes of modifications.

Facilities that need permit maintenance are a large percentage (88%) of the RCRA permitting program's priority workload. However, the work has not been fully communicated or understood since modifications are not currently recognized under EPA performance goals and are not addressed in most state-EPA planning and budget negotiations. In that regard, this report presents a first look at the story of permit modifications, including the workload expended by states and EPA and the outcomes achieved for the environment and regulated community.

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INTRODUCTION

A. Purpose of this Report

The purpose of this report is to describe the changing nature of RCRA hazardous waste permitting work and demonstrate how an adequate and effective permit program is vital, not only for initial permits, but also throughout the permit term to enable necessary permit maintenance activities. Permit conditions that are developed when permits are initially issued frequently need to be revised during the permit term to address evolving facility conditions, for example, in response to business changes, as well as changes in applicable regulatory requirements. Permit maintenance, including permit modification, assures that permits remain effective, and allows owners and operators to adjust facility operations to meet changing conditions and demands.

This report highlights the workload associated with maintaining permits and describes why permit modifications are critical in order to enable improved business operations while maintaining protection of human health and the environment.

B. Background

The EPA established comprehensive protective national standards for managing solid and hazardous waste. These regulations for treatment, storage, and disposal facilities ensure that facilities that manage these wastes have the necessary controls to safeguard communities and the environment, while facilitating commerce by supporting an effective waste management structure. These controls are imposed primarily through permits and these permits are predominantly issued by authorized states.[1]

Permits are essential to making the RCRA Subtitle C regulatory program work, since it is through the permitting process that the EPA or the states apply standards to hazardous waste treatment, storage, and disposal facilities (TSDFs). With permits and other enforceable waste management controls, RCRA actively protects the health of communities near hazardous waste management facilities, including the estimated 20 million people living within a mile of these facilities.[2] For example, RCRA requirements for landfills to install liners and leachate collection systems prevent hazardous contaminants from migrating into soil and potentially into surface water and groundwater, which are sources of drinking water. Furthermore, by containing leaks and spills, RCRA permit controls safeguard families and their homes from possible exposure. Permits also protect the public from hazardous air emissions by regulating hazardous waste combustors, including incinerators as well as boilers and commercial and industrial furnaces that combust hazardous waste, and by ensuring that volatile waste is properly contained and managed.

The public plays an important role in the permitting process for hazardous waste facilities. They and other interested parties can contribute valuable information and ideas that improve the quality of both agency decisions and permit applications. EPA has written regulations that create opportunities for the public to

[1] EPA Regions implement the RCRA program in Alaska, Iowa, and some territories. EPA regions also implement certain parts of the program for which some states have not yet been authorized (e.g., corrective action and some HSWA combustion regulations).
[2] Estimate drawn from an analysis that merged facility size and location information from RCRAInfo with population data, at the block and block group levels, from the U.S. Census Bureau's 2000 Census. The demographics were captured around the total number of facilities that have approved controls in place (e.g., permits and other approved controls) that result in the protection of this population (20 million people).

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learn about RCRA activities and give input during the process for permit issuance and for modifications. There are meetings, comment periods, and hearings specifically for the public to engage companies and regulators in a dialogue. Furthermore, EPA encourages permitting agencies, permit holders or applicants, and other interested parties to provide additional public participation activities where it will be helpful.

Since the program has been implemented, permits and other enforceable controls have been put in place to prevent dangerous releases at over 20,000 units.[3] Almost half of those units continue to require some level of oversight.[4] The states (and EPA) regularly issue, modify, and update RCRA permits for hazardous waste units (such as incinerators and landfills) at facilities that treat, store, or dispose of hazardous waste. These RCRA permits establish the waste management activities a facility can conduct as well as the conditions under which it can conduct them.

Over the life of a typical permitted hazardous waste management facility, significantly more time is devoted to permit maintenance than to permit issuance. Permit maintenance involves a number of activities among which permit modifications are the most significant. The work involved after permit issuance/reissuance and the results of those efforts have been largely unrecognized mainly because RCRA permit modifications have not been included under EPA performance goals. This paper tells the story of permit modifications and the important role they play in keeping permits current. It also describes common challenges and complexities inherent in the permit modification process and highlights case studies that offer a glimpse of the content, process, and workload.

With facilities constantly changing, it is critical that states and EPA maintain sufficient expertise and resources to process permits in a timely manner and allow businesses, especially those in the manufacturing sector, the opportunity to adjust to variable markets. Although the vast majority of hazardous waste management facilities have permits in place, there is a continuing challenge to keep pace with technology in a way that encourages safe and innovative waste management.

C. Organization of this Report

This report is divided into two primary components:

- **Part 1** provides information on the permit modification process. It describes what happens to a facility after it has received a permit, discusses why permit modifications have been largely an "untold story" in light of the focus on issuing and renewing permits, and provides facts and figures to set context for the workload associated with responding to modification requests.

- **Part 2** presents a series of case studies that show permit modifications "in action." The case studies describe real-world situations where the state permitting programs and businesses have worked together at facility improvements – where changes to permits continue to ensure proper safeguards remain in place and allow companies to respond to changing business needs or pursue innovative approaches to responsible hazardous waste management.

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[3] These units have met the criteria for "approved controls in place to prevent release," per the unit information entered into RCRAInfo. This includes historical records. See the GPRA "approved controls" description in Appendix 2.

[4] The oversight total (9,000 units) is from RCRAInfo in the "Full Oversight Workload for Permitting (Operating and Post-closure) and Closure Report" as of 3-12-14.

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PART 1

I. WHAT HAPPENS TO A FACILITY AFTER IT IS PERMITTED?

Permit Issued/ Reissued

Under RCRA, facilities must have a hazardous waste permit for units that treat, store, or dispose of hazardous waste. RCRA permits provide facility owners and operators with the legal authority to treat, store, or dispose of hazardous waste and detail how the facility must operate in order to comply with the regulations. The final permit also takes public input into consideration.

Permits are issued for a maximum of ten years (although permits can be administratively continued). This permit term limit ensures that facilities are periodically reviewed and requirements are updated as necessary.

Examples of Changes over the Life of a Permit

- Operating -

1. Change waste streams managed
2. Add capacity in existing units
3. Incorporate new units in the permit
4. Comply with new regulations (e.g., for incinerator units)
5. Improve waste management in order to save costs and conserve natural resources
6. Upgrade to more efficient/green technologies
7. New ownership triggering financial assurance reviews

- Closure, Post-Closure, Facility-Wide Cleanup -

1. Close storage tanks/remove conditions for unit
2. Improve cleanup process for historic contamination
3. Institute and assess new monthly groundwater monitoring
4. Select final remedy for facility-wide cleanup
5. Extend post-closure care period for landfills

- Recurring Changes -

1. Change in the general permit provisions (e.g., schedule of compliance, corrections, adjustment of unit conditions)
2. Change in the general facility standards (e.g., emergency response/coordinator, sampling, and analysis)

EPA views permits as living documents that can be modified to address changing circumstances. Neither the permitting agency nor the facility owner or operator can anticipate all of the administrative, technical, or operational changes required over the permit term for a facility; therefore, permit modifications are inevitable.

Permitted facilities must request and receive approval for proposed procedural, mechanical, physical, and process changes that deviate from their approved permits. Such permit modifications can involve a significant level of effort on the part of the regulating authority including: discussions with the facility representatives to understand the change, class determination, technical review, regulatory analysis, comment, discussion, data entry, public notice, comment response, site visit to visually inspect the area being modified and document updates. Refer to Exhibit 5 for the main regulatory process steps and see Section I.C for a more comprehensive list of permit maintenance activities.

Permit Modifications Issued for each Change

Permit modifications and maintenance are critical for continued safe waste management. The prevention of dangerous releases also circumvents the need for new costly cleanups.

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A. Continual Work for Protection of Human Health and the Environment

Permit writers continually work with facilities to ensure that sound operating procedures and proper waste management practices are being conducted in a way that is protective of human health and the environment. When changes to facility design and operations are proposed, permit writers assess the impacts, including the potential for releases of hazardous waste or hazardous constituents. Permit writers also make sure that permits reflect decisions that enable facility cleanup to effectively move forward. (See the case studies in Part 2 for specific examples.)

The permit establishes the administrative and technical conditions under which a facility must operate. The permitting authority's ongoing oversight of facility operations and interactions with the facility contacts are essential to ensuring the continual protectiveness of permit conditions. These activities are an important element of permit maintenance and can help both parties identify potential modifications that might be needed to support evolving waste management methods or other changing needs at the facility.

Permit maintenance prevents hazardous waste releases as operations change:

Initial permit conditions are established in order to ensure hazardous waste is safely managed and to prevent releases to the environment. As facility operations or other factors change through time, permitting authorities need to work with the facility to ensure that conditions outlined in the permit continue to prevent releases and require best waste management practices.

There are valid environmental reasons for formal approval of the facility changes in order to prevent release. For example, secondary containment not adjusted to allow for increases in quantity of hazardous waste managed could pose an increased risk of release, which in turn may result in human exposure and a lengthy and costly cleanup. The regulator must assess changes in order to ensure that they are appropriate and protective.

The RCRA Hazardous Waste Permitting Program

The Resource Conservation and Recovery Act (RCRA) provides the general requirements for EPA's waste management program. The RCRA hazardous waste permitting program, established under RCRA Subtitle C, ensures the safe treatment, storage, and disposal of hazardous waste by establishing administrative and technical requirements under which a hazardous waste management facility must operate.

Permits typically include conditions governing facility design and operation; safety standards; emergency plans; corrective action programs designed to respond to releases; financial assurance for unit closure and post-closure maintenance; and other required activities, such as employee training, monitoring, and reporting. The permitting process includes the issuance of initial permits, modifications, renewals, and termination.

Facilities that are required to obtain RCRA permits must request and receive approval for procedural, mechanical, physical, and process changes that deviate from their approved permits.

For more information about hazardous waste permitting, see http://www2.epa.gov/hwpermitting

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B. Permit Modification Requests: Objectives and Outcomes

Permit modifications respond to various business needs by revising the permit to ensure that the changes are protective of human health and the environment. Changes to the facility operations and related permit modifications can have the effect of improving a facility's operational efficiency, economic development, as well as allowing for creative problem solving and other aspects such as facility management. Some modifications are initiated due to changing environmental requirements. (See the case studies in Part 2 for specific examples.)

Reasons for Permit Modification Requests

- **Operational efficiency:** Permit modifications allow for development and implementation of new technologies and systems while ensuring protective standards. These changes can improve the efficiency of facility operations, which lead to ancillary effects such as operational cost savings or environmental improvement. For example, by expanding its waste management capacity, a facility can reduce transportation costs and corresponding environmental impacts associated with off-site treatment or disposal. Other changes, such as the addition of new treatment technologies or redesign of storage areas, may lead to operational efficiencies at the facility.

- **Economic development:** Companies may request permit modifications in order to incorporate changes needed to grow and expand their business and waste management infrastructure. For example, permit modifications allow companies to install new units for treating or disposing of hazardous waste or to incorporate new waste management processes that allow companies to treat new waste streams. Timely permit modifications ensure that these changes maintain protection of human health and the environment while allowing companies to keep pace with changes in the marketplace and assure their competitiveness.

- **Environmental improvement:** Permit modifications can lead to environmental improvements in multiple ways. Many modifications facilitate cleanup of contaminated soil or groundwater, which reduces risks to human health and the environment. Other modifications allow facilities to increase the recycling or reuse of materials, thus reducing corresponding waste streams. Some changes are undertaken to improve technological or operational efficiency; these can have ancillary environmental benefits, such as reductions in fossil fuel use and greenhouse gas emissions. Permit modifications may also be triggered by changes to environmental regulations (e.g., new air quality standards may require removal of hazardous pollutants from stack emissions, creating a new waste stream that must be managed).

- **Other:** Permit modifications can also be made in response to general improvements in waste management. Common modifications that can improve waste management practices are updates to waste analysis plans or contingency plans for emergency response actions. Administrative changes, such as revisions to facility contact information, or changes to facility ownership are addressed through modifications.

The issues addressed by permit modifications range from minor administrative changes to significant physical changes at a facility.

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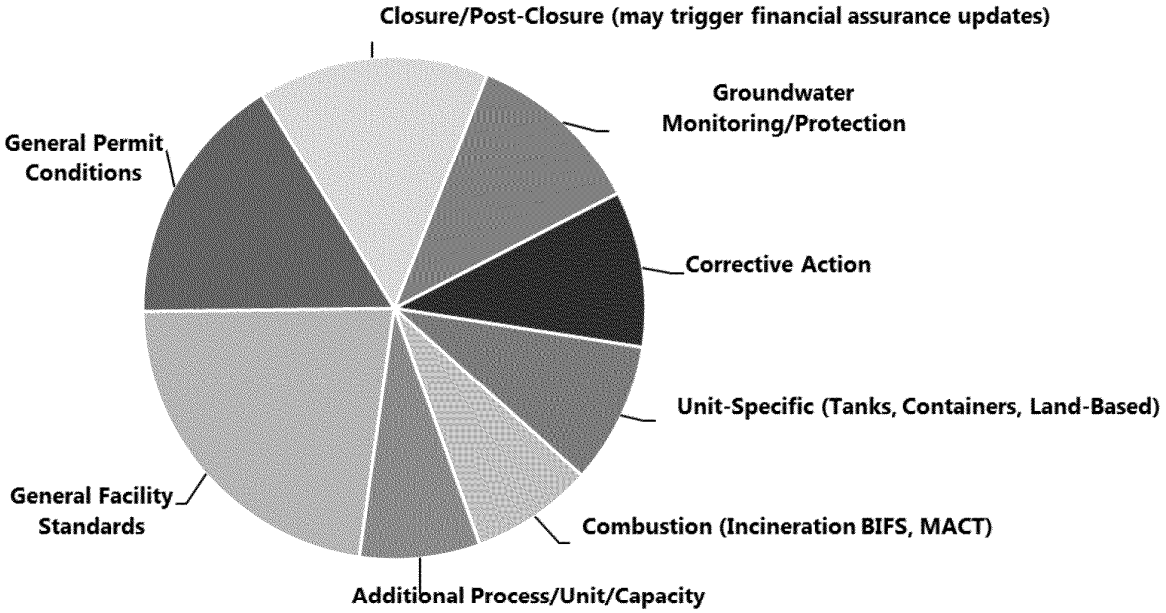
Exhibit 1 summarizes the distribution of permit modification approvals for 2011 through 2013. As shown in the graphic, changes to general facility standards, general permit conditions, closure/post-closure (which may trigger financial assurance updates[5]), groundwater monitoring/protection, and corrective action represented a large percentage of all permit modification approvals.[6] The modifications cover operating and post-closure permits. A growing number of modifications are for permits that have been continued in order to address facility-wide corrective action after the TSD units are clean closed. The case studies presented in Part 2 of this report describe the kinds of permit modifications in more detail.

Exhibit 1. General Distribution of Permit Modification Approvals by Type (2011-2013)



Note: EPA calculated this distribution using data from the RCRAInfo database where the modification type was identified in the code or the notes for "other modifications." This does not reflect data from all states. Modifications were not required to be tracked in RCRAInfo in this timeframe. (Sample size: 788 permit modifications out of 2479). See details about RCRAInfo Data in Appendix 2.

C. Permit Maintenance Activities

With the vast majority of the hazardous waste management facilities already permitted, permit maintenance, including modifications, account for most of the permitting workload. The maintenance of permits involves processing and approval of modifications, as well as other oversight activities, such as compliance inspections, responding to the public's calls and questions, and review of routine facility reports. Below are examples of permit maintenance activities that occur throughout the life of the permit.

[5] Although changes to the closure and post-closure plan typically require updates to a facility's financial assurance, regular maintenance of a facility's financial assurance alone does not generally trigger a permit modification. Maintenance of financial assurance includes annual verification of the financial documents submitted by facilities to ensure the amount is adjusted for inflation and the mechanism is still valid and, when necessary, additional steps to ensure coverage remains in place (e.g., response to instrument provider cancellation requests).

[6] This pie chart is intended to show the general ratio of activities involved in the various permit modification approvals, not specific amounts or percentages. The state data that could be relied on for this assessment is only 32% of the national total. It does not include data for all states, nor does it include approvals entered where the activity was not specified in the code type or in the notes. See Appendix 2 for additional details. State ratios vary considerably, for example, Texas has a larger percentage of combustion modifications.

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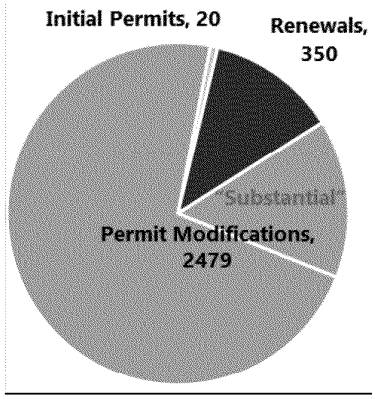
Examples of Permit Maintenance:

- **Modification Activities**
  - Initial discussion with facility representative regarding details of planned facility changes and determination of modification class
  - Review/approval of modification requests and associated deliverables required under the regulations or schedules of compliance in the permit and conduct site visits
  - Conduct public participation activities, such as solicitation of public comment and public meetings or hearings (may be adjudicated)
  - Conduct environmental assessments
  - Compile environmental impact statements
  - Perform other required procedural activities, see the process outlined in Exhibit 5

- **Other Permit Oversight and Maintenance Activities**
  - Review/approval of documents and routine reports required under the regulations or schedules of compliance in the permit (e.g., semi-annual/annual groundwater monitoring reports)
  - Conduct compliance inspections
  - Review of facility demonstrations of financial assurance
  - Respond to citizen/media calls
  - Facility management planning
  - Data management
  - Respond to internal inquiries and file review requests
  - Permit billing (cost recovery) activities
  - Participate in meetings, phone calls, and site visits

Permit Modifications as compared to Initial Permits and Renewals 2011-2013



As the majority of facilities on the permitting track now have permits in place, the permitting workload is now shifting to modifications.

Relative Workload in 2011 thru 2013:

- There are about seven times more permit modifications than renewals.
- Permit modifications and renewals outnumber new issuances at a rate of 141 - 1.
- 1,429 facilities are permitted and appear to be in the workload for modifications and renewals.
- Generally, 17% of the modifications require "substantial" changes to the permit and these can be comparable to initial permit issuance or renewal with regard to complexity, workload, and public participation requirements.

See Section III.B for details on the data.

The modifications can trigger a great deal of unanticipated work. For example, the transfer of facility ownership is a Class 1 modification, usually the simplest modification to process, but it also involves changes in the financial assurance mechanisms (e.g., trust fund, insurance policy, or letter of credit), granting a release for previous owner, and other responsibilities in addition to the actual modifications to the permit. Other activities can require special technical expertise. Activities, such as environmental assessments and impact statements, could be done in concert with efforts to "green" the permit (see Part 2 Section B). In summary, permit maintenance work is more than just making specific edits to permit criteria; the permit review must assess the overall waste management practices of the facility in order to make sure the change in the permitted activity is in compliance with the regulations.

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II. THE UNTOLD STORY

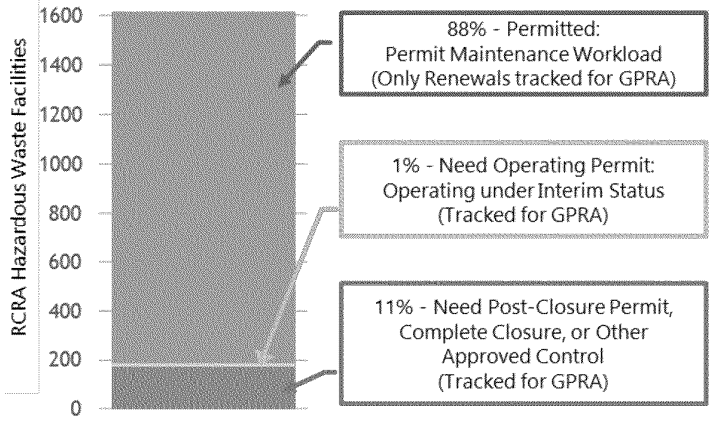
A. Why Modifications are an Untold Story

The first RCRA permit deadlines came with the 1984 Hazardous and Solid Waste Amendment (to RCRA) and issuing permits became a major goal for RCRA programs. For many years, EPA and authorized state agencies have continued to focus on the issuance of new and updated regulatory controls (primarily initial permits and permit renewals) as a core program performance measure. This national performance measure was largely an outgrowth of the Government Performance and Results Act (GPRA) of 1993, which mandated that federal agencies establish performance measures to gauge the success of their programs.

Today, RCRA permits have been issued to the vast majority of facilities in the GPRA workload, and many of those permits have been reissued. Exhibit 2 shows the current related permitting program workloads. EPA's RCRA program continues to establish national goals for initial controls (permit issuance, clean closure, or other controls in place) and renewals.

A primary purpose of RCRA permitting requirements is to ensure that ongoing hazardous waste management activities are protective and do not result in cleanup obligations; however, the preventive nature of the permitting program is difficult to track as a performance measure. Permitting and permit maintenance are nonetheless ongoing and effective tools in ensuring that hazardous wastes are not mismanaged. Whereas the Agency has been able to successfully track permit issuance and renewal since they are "predictable" tasks, permit modifications have not been included in core program performance measures or national goals for very practical reasons. The frequency, timing, and complexity of permit

Exhibit 2. RCRA Permitting Workloads in 2015



Permitting Workloads in 2015

Permitted (88%)

1429 - The "Permit Maintenance Workload" contains the facilities that are permitted and are expected to need permit modifications and other maintenance. The facilities that would also eventually need permit renewals are included in this set. At the current rate of renewals, about 300 facilities (~21%) are administratively continued past their permit expiration date and need renewals. Renewals are tracked for GPRA.

Never Permitted; Tracked for GPRA and Need Initial Controls (12%)

16 – Need Operating Permit: Facilities have at least one unit that is "operating, actively managing RCRA hazardous waste" and is under interim status standards.

172 – Not Operating: Need post-closure permit, completion of closure obligations, or other approved controls in place. The majority of these facilities are on track for clean closure (and/or a corrective action order), but some will be issued post-closure permits.

Note: There are additional facilities that are not shown in the graph totals above and are less of a priority (not tracked for GPRA), but are still under the oversight of the permitting programs.

See Section III.C for the permit maintenance workload criteria and a comparison to other regulated facilities. See Appendix 2 for additional details on this information.

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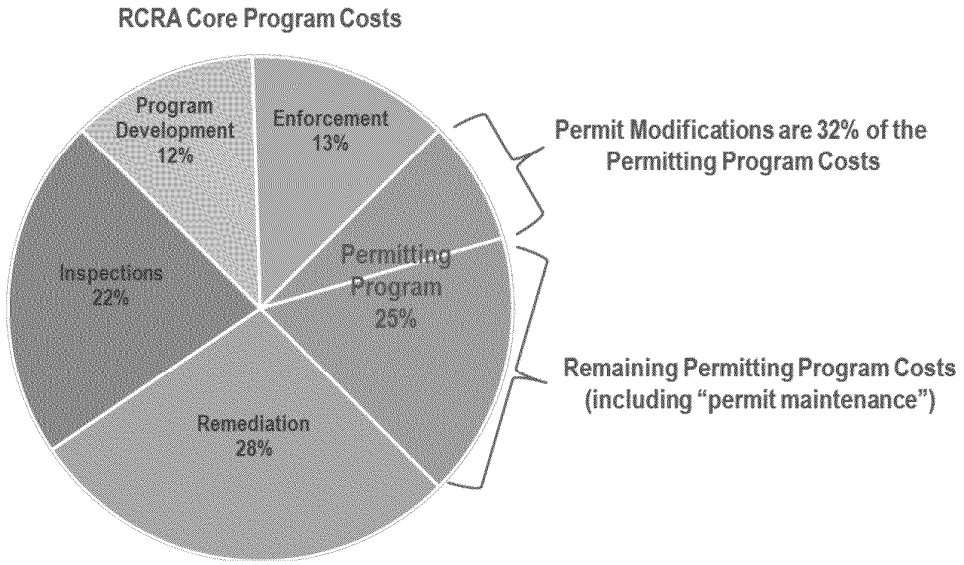
modification requests in any given year is unpredictable, primarily because the majority of these requests are initiated by facilities.

The workload uncertainty keeps the program from projecting the number of modification approvals to be accomplished, but resources nonetheless have to be prioritized and in place in order to address them. Modifications represent a substantial workload for EPA and the authorized states and they should be considered along with the accomplishments tracked in the RCRA core programs. The Association of State and Territorial Solid Waste Management Official's (ASTSWMO's) State RCRA Subtitle C Core Hazardous Waste Program Implementation Costs Final Report, published in January 2007, discussed this in detail, emphasizing that an estimated 32 percent of costs to the state authorized hazardous waste permitting program can be attributed to permit modifications (see Exhibit 3). This does not include all permit maintenance activities. The ASTSWMO's report also states: "In terms of overall State RCRA Core C program costs, permit modifications represent the single most costly activity that States perform."[7]

Exhibit 3. Relative RCRA Program Costs to States in 2007



Since the 2007 report, more facilities have been issued an initial permit and the permit renewal backlog is diminishing, thus shifting more of the work towards maintenance (including modifications).

The proportion of State Core RCRA Subtitle C program workloads and associated costs devoted to permit modifications are now understood but, to date, there has been little discussion of the economic, environmental, and regulatory benefits of permit modifications and these are often not fully considered during annual planning and funding negotiations.

[7] ASTSWMO's full report is available at: http://www.astswmo.org/Files/Policies_and_Publications/Hazardous_Waste/Final%20Report%20 - %20RCRA%20Subtitle%20C%20Core%20Project.pdf

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B. Why an Efficient Permit Modification Process is Necessary

Speed of business has accelerated. The hazardous waste landscape has evolved considerably since the regulations were established in the early 1980s. Since then, personal computer use and electronic communications are ubiquitous, innovations in information technology have exploded, and the pace of globalization and trade has quickened. As business needs accelerate, EPA and the states have sought more efficient ways to review permit modifications in order to ensure permits remain protective of human health and the environment without encumbering business needs. Tools such as model permits, templates, regulatory guidance, and training allow regulatory authorities to issue hazardous waste modifications that are protective of the environment and responsive to business.

Urgent Changes. To stay competitive, owners and operators must respond faster to changes in their marketplace. They must be at the ready to implement changes that will reduce costs, expand infrastructure, and develop new markets. Timely permit modifications are critical for responding to these needs in a manner that is protective of human health and the environment while avoiding delays in time-critical decisions.

Permit modifications that enable businesses to implement changes to improve protectiveness, such as changes to increase recycling, minimize waste, and improve cleanup of sites are paramount to meeting the intent of RCRA. For example, the RCRA corrective action program has focused on increasing progress toward constructing cleanup remedies. Timely modification of a permit to incorporate a cleanup remedy decision contributes to more prompt reduction of current and future risks from contamination. It is vital that permit modifications are processed efficiently and effectively to avoid costs to the environment as well as to industry.

Federal and state regulators must carefully review permit modifications to ensure the action is in compliance with regulatory requirements and is protective of human health and the environment. Regulators must also provide adequate opportunity for the public to have a voice regarding decisions that potentially affect their community (i.e., a change in treatment may trigger a need for storage that the facility did not anticipate). When the regulatory agency is able to quickly shift priorities and resources, these activities can be implemented expeditiously, and thus better align with the facility's business-related schedules and deadlines, as well as bring environmental protections into place in a timely manner.

Permitting Resources Needed to Respond to the Shift: In the past, RCRA permitting programs have primarily focused on issuing permits, but with the majority of the hazardous waste management facilities already permitted, permit maintenance and modifications account for most of the permitting workload. In addition, businesses have come to expect timely attention and service to their permit-related applications, especially in light of the permitting fees they pay in many states, yet at the same time federal and state hazardous waste resources devoted to providing such service have diminished.

The first step in addressing these issues is bringing attention to the issue. This issue was first highlighted in ASTSWMO's 2007 RCRA Core Report. This 2007 Report provided an accounting of workloads in broad programmatic areas within the hazardous waste realm and clearly identified the resources devoted to new permit issuance/reissuance versus other permit related activities including permit modifications. One conclusion of this analysis was that there was (and continues to be) a major shift in program emphasis since the early 1980s to permit modifications/maintenance in permit-related areas. As a result of the shift, significant federal and state program resources have been diverted to work in these areas, which is supported by the statistics contained in the ASTSWMO report and this paper.

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III. Permit Modifications: Status and Statistics

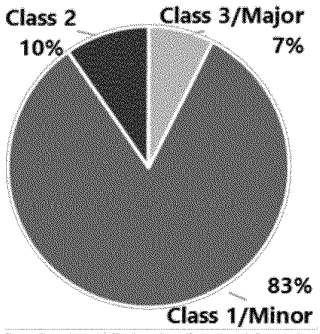
A. Permit Modification Process and Timeframes

The procedures for making changes to a permit will vary depending on whether the permitting authority or the permittee is initiating the change.

There are three basic situations that involve changes to a permit after issuance/reissuance:

- Permit modification at the request of the permittee (see 40 CFR 270.42, the most common)
  - Class 1, Class 2, and Class 3 described below
- Permit modification at the request of the State/EPA (see 40 CFR 270.41, this is very rare)
  - Modification of the permit
  - Revocation and reissuance of the permit
- Termination of the permit (see 40 CFR 270.43, not a "modification")

RCRA permit modifications are organized into three classes.[8, 9]



See Section III.B for details about the data.

Class 1 modifications apply to minor changes that keep the permit current with routine changes to the facility or its operations. These changes do not substantially alter the conditions in the initial permit or reduce the facility's ability to protect human health and the environment. Some Class 1 modifications (such as a change in the emergency contacts) do not require prior approval by EPA or the authorized state-permitting agency. However, most changes require prior approval. Class 1's are typically the easiest to process. Most are simple changes to the permit, although some can be rather difficult to address, such as a change in ownership, which triggers financial assurance changes.

- **Expected Staff Time to Address: 2-25 hours** (100 hours or more for ownership changes especially with complex facilities that have multiple owners under one permit.)

Class 2 modifications address changes needed to maintain safety or regulatory compliance at the facility. In particular, Class 2 modifications apply when facility owners and operators need to respond to common variations in the types and quantities of waste managed by the facility, technological advancements, and new regulatory requirements, where those changes can be made without substantially changing the design specifications or management practices in the permit.

- **Expected Staff Time to Address: 41-119 hours** (up to 340 hours in rare cases)

Class 3 modifications are major changes that substantially alter the facility or its operations. For example, changes to waste management practices to accommodate new types of waste, substantial increases in storage capacity, or changes to the facility's groundwater monitoring program would require a Class 3 modification. Modifications in this classification have a wide range of complexity and typically include the more complicated permit changes.

- **Expected Staff Time to Address: 59-640 hours** (up to 1850 hours in rare cases)

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[8] Several states (AL, FL, ME, MN, NY, OH, and SC) use the original "major or minor" permit modification categories in lieu of the three class system introduced in a 1988 rule (53 FR 37912).

[9] The "Expected Staff Time" ranges come from the 2007 ASTSWMO Core report. See also background in Appendix 2.

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Exhibit 4 provides examples of the types of changes covered by each modification classification.

Exhibit 4. Examples of Permit Modification Classifications

Class 1	Class 2	Class 3
Administrative and informational changes	Changes in frequency or content of inspection schedules	Creation of a new landfill as part of closure
Correction of typographical errors	Minor changes to corrective action	Addition of corrective action remedy
Changes in names, addresses, and phone numbers of emergency coordinators	Changes to facility training plan that affect the type or amount of employee training	Addition of compliance monitoring to groundwater monitoring program
Changes to comply with new regulations for analytical quality control plans, or waste sampling and analysis methods	Changes in number, location, depth, or design of groundwater monitoring wells	Addition of temporary incinerator for closure activities
Note: Permit modifications are classified in more detail in 40 CFR 270.42, Appendix I, which is described in "Modification Types Based on Regulatory Descriptions" in Appendix 1 of this report.		

The process for modifying a permit differs depending on the classification of the modification. For Class 2 and Class 3 modifications, the modification process follows a series of defined steps similar to the initial permit application process. In contrast, the administrative requirements for Class 1 modifications are comparatively minor. Class 2 and Class 3 modifications require the facility to follow several steps to encourage public participation. These steps include publishing a notice of the request for permit modification in a public newspaper; holding a public meeting; and allowing a 60-day public comment period on the requested modification. Exhibit 4 illustrates the modification process for all three Classes.

Typical timeframes for completion of modifications are based on the time needed for public comment, complexity of the modification request, class type, and availability of agency staff resources. The permitting agency may need additional information from the facility in order to make a decision and these interactions can be lengthy. Denials are relatively rare since provisions allow for revisions and extensions. The permitting agency may also determine that the class should be higher or lower (or deciding if a Class 1 needs prior approval) based on the change being made.

Agency-initiated modifications generally require a similar process to issuing a full permit (these are not as common as facility initiated modifications).

Temporary authorizations, as described in 40 CFR 270.42(e), can be requested for the following objectives:

- Facilitate timely implementation of closure or corrective action
- Prevent disruption of ongoing waste management activities
- Respond to sudden changes in the types or quantities of waste managed
- Allow specific treatment or storage in order to comply with land disposal restrictions
- Facilitate other changes to protect human health and the environment

Temporary authorizations allow the changes to a permitted activity to take affect sooner than the regular modification process allows. If the changed activity must continue after expiration of the temporary authorization, a regular modification process would still be required. Temporary authorizations are allowed for modifications that would normally be included in a Class 2 or 3 modification request. A creation of a temporary storage unit to store hazardous waste prior to treatment or disposal would be an example of a situation where the use of a temporary authorization would be appropriate.

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Public input can also help permittees or prospective applicants make better decisions during the process. Public interest tends to be high for facilities receiving their initial permit and may decline over the lifespan of a permit, particularly at facilities that have modified their permit many times (sometimes over 100 changes). Effective and meaningful public participation remains critical for informing decisions made by the facility managers as well as the regulating agency.

See Exhibit 5 for the regulatory public participation requirements based on the permit modification class. The main required components of public participation for permit modifications are:

- Notification of the facility's modification request sent to mailing list;
- Publication in local paper and modification request made available to public (Class 2 and 3);
- 60-day public comment period for the facility's modification request (Class 2 and Class 3);
- Public meeting hosted by the facility (Class 2 and Class 3);
- Notification of the decision;
- 45-day public comment on the draft permit conditions (Class 3); and
- Public hearing (if requested for Class 3).

In many cases, expanded public participation efforts (such as use of modern technology) are recommended.[10] For example, greater outreach may be needed for modifications that involve potential off-site impacts, such as air emissions or cleanup of releases that have migrated off-site. Additionally, greater outreach may be warranted to more effectively support communities when the facility is located near disadvantaged areas or when facilities are clustered and thus may add to cumulative potential impacts at adjacent communities.

Staff time needed to address permit modifications can vary greatly. A simple modification can take as little as several hours to administer and approve, while more complex modifications may take up to 1,850 staff hours to assess and approve.[11] Exhibit 5 demonstrates the steps involved in reviewing and approving each class of modification request.

EPA regulations specify that Class 2 modifications generally are to be concluded within 3-4 months. By contrast, EPA regulations do not specify a deadline for completion of Class 3 modifications. Class 3's tend to take more time due to the complexity of the issues in addition to the 105 days total of public review.

Case-Specific Issues

In addition to the process steps involved in reviewing permit modifications, other factors can greatly add to the processing time:

- Unanticipated communication between the state and the facility due to incomplete applications.
- Additional activities needed in order to follow the prescribed regulatory steps such as a monthly follow-up with required monitoring reports.
- Complexities, such as those resulting from change of ownership and parceling of property.
- Assessment as to which class of permit modification is appropriate.
- Multiple modifications in different phases of the process for the same facility.

Please see the case studies in Part 2, which help illustrate these issues.

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[10] EPA is currently updating the 1996 RCRA Public Participation Manual, which will provide further guidance regarding expanded public participation. See the website (http://www2.epa.gov/hwpermitting) for the current manual and the one to be revised.

[11] The high end of the staff time it can take to address permit modifications (1,850 hours) is from Appendix I of the 2007 ASTSWMO Core report (under "Estimation of Work Hours" page 39).

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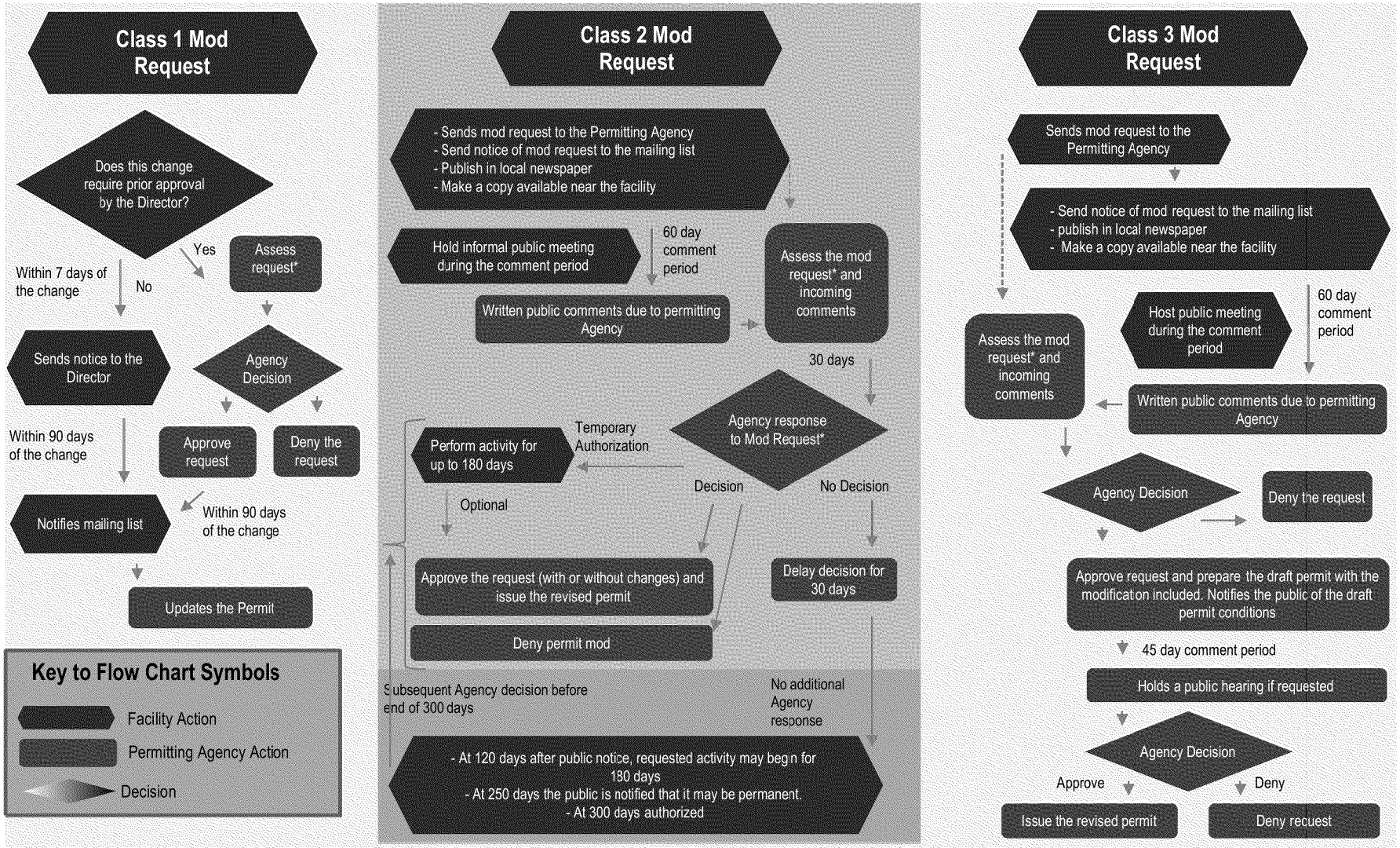
Part 1

Exhibit 5. Permit Modification (Mod) Process for each Class



See 40 CFR 270.42 for the full federal regulations for permittee mod requests. State regulations may vary. Several states have not adopted the regulations for the three class structure, and use the preexisting Major and Minor Mod structure.
* The permitting Agency may need additional information from the facility in order to make a decision and these interactions can be lengthy. The Permitting Agency may also determine that the class should be higher or lower (or decide if a Class 1 needs prior approval) based on the change being made. The separate temporary authorization process can be used for Class 2 or 3 as appropriate (although not referenced in the Class 3 process above).

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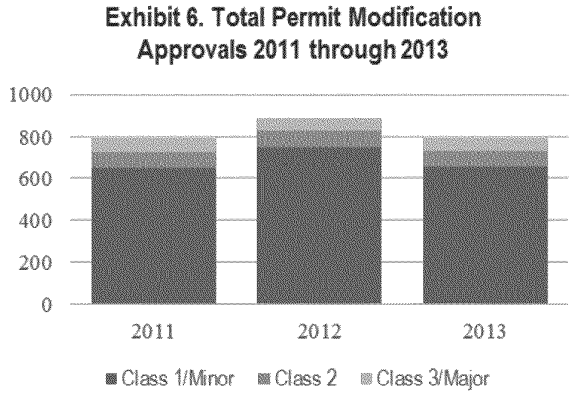
B. Permit Modification Statistics

This section describes the quantity of permit modification approvals granted during 2011 through 2013 and relates it to additional permitting information.



From 2011 through 2013, regulatory officials approved 2,479 permit modifications. On average, 826 permit modifications were approved each year over the three-year period. Annual breakdown: 794 permit modifications were approved in 2011; 888 in 2012; and 797 in 2013. This data set does not count permit modifications that were still being assessed at the end of the year and does not count those that were denied or withdrawn. Exhibit 6 shows the relative number by type of these approvals by class and year.

According to a review of a smaller subset of the states that regularly track approvals in EPA's national database, the 2011 through 2013 tallies appear to be a little lower than the average rate. The decrease in number of modification approvals during the 2011-2013 period may coincide with nationwide economic factors, which influenced the need for changes and permit reissuances at permitted facilities.

Data used in the analysis. The permitting programs for each state record the permit modifications that are approved annually.[12] EPA collected these permit modification data for years 2011 through 2013 from state and regional sources for 39 states, the District of Columbia, and three U.S. territories. EPA obtained data for an additional eight states[13] and Puerto Rico from the Agency's national database when it was identified as the best and most accurate resource. Data for the remaining states (Maryland, New Jersey, and Pennsylvania) were statistically extrapolated based on permitting data.[14] Although there may be gaps in the data due to differences in tracking practices, and underreporting of Class 1 permit modifications, EPA considers these data to be the best available nationally.

Class 1 (or Minor) permit modifications were the most common, representing 83 percent of all approved permit modifications. Class 1 modifications are generally the least substantial type of modification. However, as previously described, in some cases they can be complex and lengthy to process.

Class 2 modifications accounted for approximately 10 percent of total permit modification approvals.

Class 3 modifications impose the greatest burden on regulators and permittees, but account for a significantly smaller percentage (7 percent) of total permit modification approvals. See Exhibit 7 for the

[12] Per 40 CFR 270.42(i), each environmental program Director must maintain a list of all approved modifications and must publish a notice once a year in a state-wide newspaper that the updated list is available for review.

[13] EPA used RCRAInfo data for the following states: Alabama, Colorado, Georgia, Illinois, Indiana, Nebraska, New York, and South Carolina. Additional states use RCRAInfo to track modifications, but they provided tallies.

[14] Estimates of permit modifications in Maryland, New Jersey, and Pennsylvania were extrapolated based on the national average of permit modifications per permitted facilities. See Appendix 2 for additional details.

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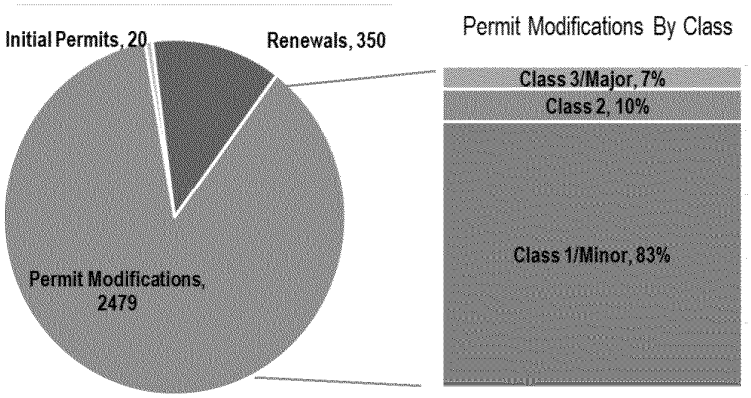
distribution of permit modifications by class and for the relationship to permit issuance.[15] Note that this does not include all permit maintenance activities.

Several states (Alabama, Florida, Maine, Minnesota, New York, Ohio, and South Carolina) use the original "major or minor" permit modification categories in lieu of the three class system introduced in a 1988 rule (53 FR 37912). Minor modifications were counted as Class 1's and major modification were counted as Class 3's for the national tally.

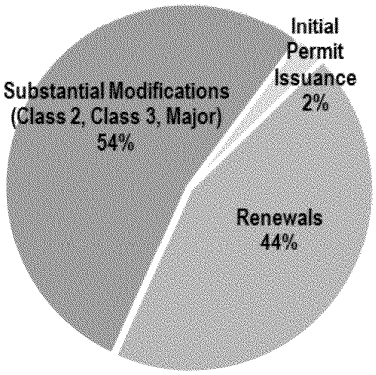
Exhibit 7. Permitting Actions 2011 Through 2013



Permits have different conditions for facilities that are operating or are in post-closure. Permit modifications can make changes for operating or post-closure standards, but there are typically fewer changes needed for facilities that are in post-closure.

The data also show that the number of permit modifications varies by state. On average, 17 permit modifications were approved per state/territory per year between 2011 and 2013.[16] However, the distribution around this average is wide.

Exhibit 8. Substantial Permit Actions



Permit modifications impose a substantial burden on regulators and permittees relative to permit issuance. The initial permits and reissuances/renewals in 2011 through 2013 were calculated from RCRAInfo data. The data shows that there are far more modifications than permit issuances during this timeframe.

Class 3 modifications (7%) are comparable to initial permit issuance or renewal with regard to public participation requirements. Similarly, some of the substantial (Class 2, 3, Major) permit modifications (17%) can be comparable to permit issuance with regard to the complexity and workload. See Exhibit 8 for the percent of substantial modification approvals (Class 2, 3, Major), initial permits issuance, and permit renewals.

See Appendix 2 for additional details and background information about RCRAInfo and the data.

[15] EPA identified initial permits from RCRAInfo data for the permit determinations that occurred during 2011 through 2013 at a facility with no prior permit determination. The renewals are calculated from the permit issuances 2011 through 2013 that followed an initial permit issuance (prior to 2011).

[16] The calculation of this number does not include data from the District of Columbia, U.S. territories, or any state with no modifications recorded during that timeframe.

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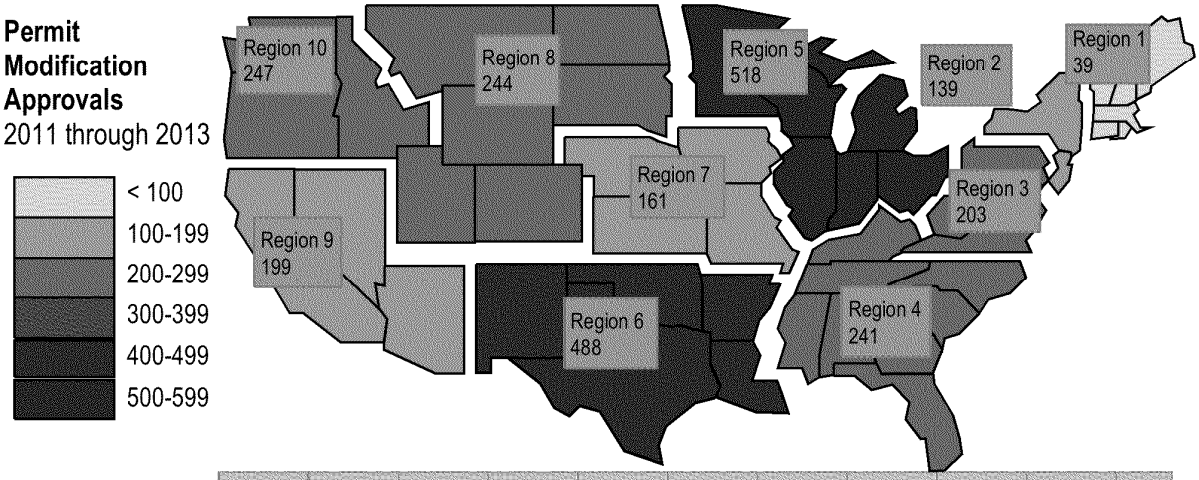
Many factors contribute to the differences in modification numbers among states. For example, some states have five-year permit terms versus ten-year permit terms. There is a greater likelihood that the major changes will be incorporated in the permit reissuance if a permit is reissued at shorter intervals (as compared to ten-year intervals). Permit fees on modifications can also sway business decisions regarding permit modifications (for example, the facility operators may delay changes that trigger permit modifications until the permit is renewed). States with more permitted facilities would be expected to have more modifications, but not all permitted facilities modify their permits at the same rate (for example, permitted facilities in post-closure care typically have fewer modifications on average). Exhibit 9 shows the number of permit modifications by EPA region.[17]

Exhibit 9. Permit Modification Approvals by Region (2011-2013)



	Region 1	Region 2	Region 3	Region 4	Region 5	Region 6	Region 7	Region 8	Region 9	Region 10	Total
Number of Modifications 2011-2013	39	139	203	241	518	488	161	244	199	247	2479
Permitted Facilities	54	97	134	365	195	262	86	58	134	44	1429
Modifications per Permitted Facilities 2011-2013	0.7	1.4	1.5	0.7	2.7	1.9	1.9	4.2	1.5	5.6	1.7
Annual Modifications Per Permitted Facilities	0.2	0.5	0.5	0.2	0.9	0.6	0.6	1.4	0.5	1.9	0.6

1,429 facilities were permitted as of February 6, 2014. Either the included facilities had an operating permit or post-closure permit (or units with both) based on their specified legal status codes. Facilities were omitted if their operating status codes indicated they would not be eligible for a permit modification. See the criteria in Section III.C.

There is a large range of annual permit modifications at individual facilities. Many states had average numbers of modifications per facility well above or below the national averages. In some cases, a facility may require multiple modifications in a single year; conversely some facilities may tend to save their changes and integrate when the permit is renewed.

[17] States with fewer permitted facilities may experience more variation in the number of permit modification approvals per year. This represents an additional limitation of the three-year sample of data collected from RCRAInfo.

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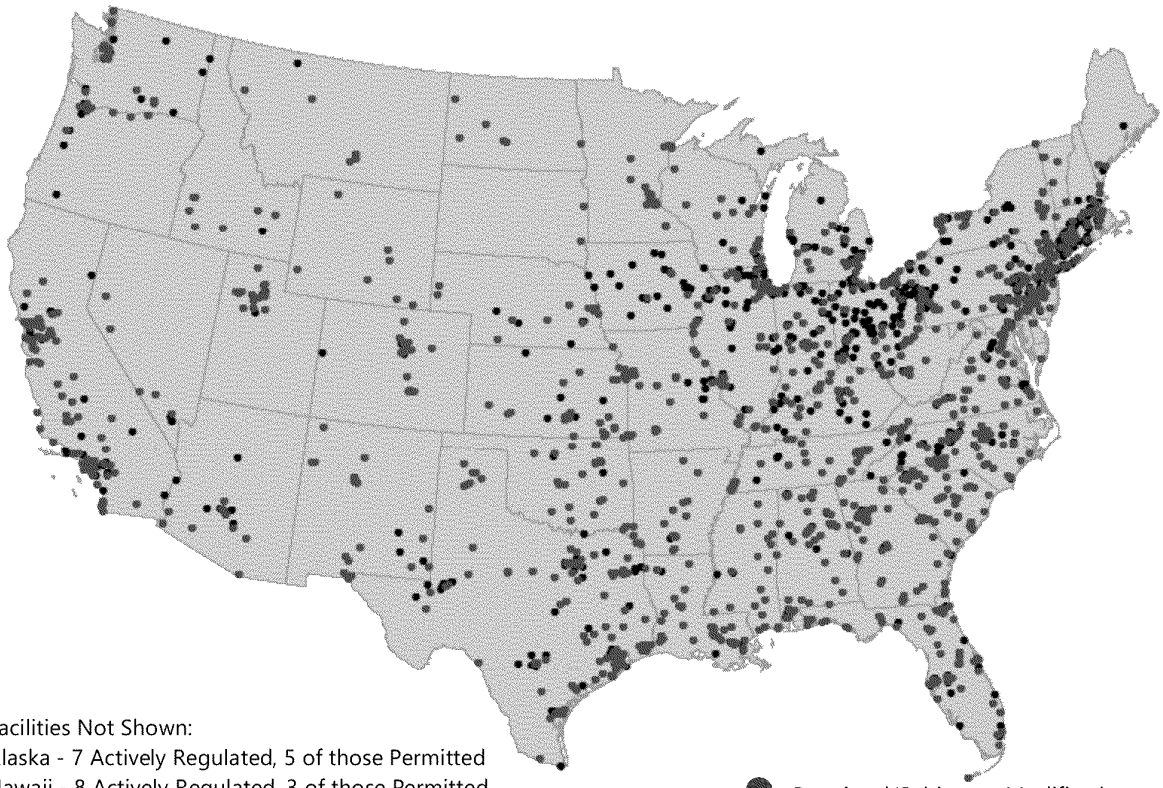
C. Location of Permitted Facilities with Potential for Modifications

The majority of the "actively regulated" hazardous waste treatment, storage and disposal (TSD) facilities have been permitted.

Exhibit 10 maps the universe of actively regulated TSD facilities. All of the facilities identified below (red and black dots) are subject to the regulations for standards for owners and operators of hazardous waste treatment storage, and disposal facilities and are described in more detail in Appendix 2. The red dots identify facilities that are permitted. Thus, the map shows 1,429 permitted facilities that are expected to eventually need permit maintenance/modifications (this number is calculated for the purposes of this report).[18] The black dots identify actively regulated facilities that are not permitted, such as facilities that are going through closure, but are not yet clean closed.

Exhibit 10. Facilities Permitted and Subject to Modifications, Versus Other Regulated Facilities



Facilities Not Shown:
Alaska - 7 Actively Regulated, 5 of those Permitted
Hawaii - 8 Actively Regulated, 3 of those Permitted
Guam - 5 Actively Regulated, 3 of those Permitted
Puerto Rico - 19 Actively Regulated, 11 of those Permitted

- Permitted/Subject to Modifications
- Actively Regulated, Subject to TSD Standards, but Not Permitted

[18] According to RCRAInfo, 1,429 facilities (6,245 units) have at least one unit that is permitted (according to the legal status code and not terminated) and does not include facilities where all units are also coded as clean-closed, referred to CERCLA, completed post-closure care, or are coded as conducting activities that do not require a permit (according to operating status codes). If the facilities with those operating statuses were not removed from the count, this would add 400 additional permitted facilities (although generally not active, these permits may require some permit maintenance). Legal and operating status code data as of 10-30-14.

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IV. Concluding Points

As the majority of facilities that are treating, storing, or disposing of hazardous waste have been issued initial permits under RCRA, the bulk of permitting activity has now shifted towards maintenance of those permits. Permitting activity is now geared towards responding to business needs and changes in facility operations while ensuring that the permitted conditions continue to be protective and prevent release. It is critical to keep up with the permit modification workload in order to enable improved business operations, technological upgrades, and expansions while maintaining protection of the environment.

Because RCRA permit modifications are not tracked as part of the Agency's Strategic Plan, this substantial and vital work has gone largely unrecognized. This report thus depicts for the first time the national perspective of permit modification work conducted throughout the country. The unpredictable nature of permit modification complexity, frequency, and timing makes workload balancing and resource allocation difficult to manage. While the workload for the number of modification requests cannot be projected accurately for set goals, the workload is now being recognized in other ways. EPA believes that improved characterization and quantification of permit modifications will enable greater understanding of the importance of effective RCRA programs for EPA, the state agencies, the regulated community, and the public.

In addition, better data and understanding of the permit modification work may uncover barriers, issues, and opportunities for improvement in the permit modification process. EPA remains open to learning how the RCRA permit modification process could be made more efficient and protective.

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PART 2
PERMIT MODIFICATION CASE STUDIES

While ensuring protection of human health and the environment is the underlying objective for the permitting standards, there are often business reasons – as well as environmental reasons – that compel companies to request changes to their permits. The following case studies describe real-world examples for the types of changes at facilities that require permit modifications across the country. They also offer a glimpse of the content and process for different permit modifications, while illustrating how changes to permits continue to ensure that proper safeguards remain in place and allow companies to respond to changing business needs or pursue innovative approaches to responsible hazardous waste management.

Permit modifications vary greatly in terms of purpose and complexity. The permit modification case studies are sorted into four broad categories of changes based on their primary outcome: A. Responding to Changing Business Practices or Operations Responding to Business Needs; B. Improving Hazardous Waste Management; C. Ensuring Long-Term Protection; and D. Keeping Permits Up to Date. The table below shows an index for the case studies and their main outcomes. The following sections describe each case study category in more detail.

The examples show a broad range of permit modifications, from very significant actions to reoccurring administrative updates.

Overview of the Permit Modification Case Studies in these Sections

INDEX: Case Study Categories
A. Responding to Changing Business Practices or Operations
1. Improvements in Technological Efficiency
2. Economic Development and New Waste Handling Capacity
3. Ownership Changes
B. Improving Hazardous Waste Management
1. Resource Conservation
2. Reduced Risk of Release and Improved Safety
3. Replacement of Damaged or Aging Equipment
C. Ensuring Long-Term Protection
Closure, Post-Closure Care and Corrective Action
D. Keeping Permits Up to Date
1. Emergency Response
2. Updates to Permit Standards and Conditions
3. Administrative Updates
E. Modifications over the "Life of a Permit"

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A. Responding to Changing Business Practices or Operations

INDEX A. Responding to Changing Business Practices or Operations
Case Study Categories
1. Improvements in Technological Efficiency
2. Economic Development and New Waste Handling Capacity
3. Ownership Changes

One common impetus for permit modifications is in response to facilities that want to make changes in their operations due to shifts in the market or other business-related factors. They may plan to adopt more efficient or less costly waste handling procedures, install new technologies, construct new units, change the manufacturing process that results in different wastes managed, use alternate fuel sources, or sell the facility.

As with any permit modifications, it is the role of the permitting authority to assure that such changes will be protective of human health and the environment.

Facilities often request these modifications to increase operational efficiency and compliance with permit requirements by adapting to changing conditions and needs. For instance, a permitted remedial system may become less effective over time necessitating a modification of the permit to allow for an improved remedial system. In some cases, remedial systems may be implemented in the midst of a busy production facility and have to allow for compatibility with production operations while maintaining remedial effectiveness.

Replacement of a Monitoring and Withdrawal System with a Barrier Wall

The Axiall Corporation in Lake Charles, Louisiana requested a Class 2 permit modification for the construction of a barrier wall to control horizontal migration of constituents of concern in groundwater into Bayou Verdine, Barge Slip, and the Coon Island Reach to below levels that would cause sediment or surface water to pose an unacceptable risk. This replaces a monitoring and shallow withdrawal system while Axiall continues to operate a Lower Aquitard Containment System. The system will control laterally migrating groundwater until the flow reaches a depth at which it is fully captured by the wells of the Lower Aquitard Containment System. Many technical concerns were raised by the public and were addressed during the modification process. The Louisiana Department of Environmental Quality concluded that the barrier would more effectively control the groundwater flow from the facility to the adjoining water body than the groundwater withdrawal system that was dropping in efficiency.

Outcomes: After the replacement, the overall systems will more efficiently contain the constituents and remove contaminated groundwater at the Lake Charles Chemical Complex in Louisiana. The barrier wall will require less maintenance and operational effort resulting in increased reliability. Fewer resources will be needed to implement this remedy and it will provide greater environmental protection of the surrounding waterbody for long-term care. The public comment process resulted in resolution of certain technical concerns with the approach prior to implementation.

Associated Workload:

- Review/approval of the change request, design plans, construction report, operating and maintenance plan, and annual corrective action reports
- Official public review and comment, and response to comments

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A.1. Improvements in Technological Efficiency

After facilities are permitted, they often need to make changes to their waste handling practices in order to stay competitive and to adjust to market demands. In order to make these changes, facilities often need to modify their permits.

Most permitted facilities originally identified their types of equipment and units used to manage hazardous waste in their permit applications in the 1980s. Some of the equipment and processes may now be outdated. Multitudes of technological advances have occurred since the 1980s that can produce environmental benefits (as well as cost savings to the facility).

A number of advances have also been made in the methods to address contamination. See the highlighted Axiall Corp case study for an example of the use of a new barrier wall to control lateral migration. This case study, like many others, also applies to other categories. The changes at Axiall Corp also ensure long-term environmental protection after operations cease (covered in Section C).

New equipment for more efficient waste management

A Clean Harbors facility in North Carolina received temporary authorization (while pursuing a Class 3 permit modification) from the North Carolina Department of Environment and Natural Resources for the installation of a shredder to help separate containers and liquid waste more efficiently, which would in turn offer improved environmental protections. Initially, Clean Harbors requested guidance on installing a new shredder for processing small containers to speed up separation of the liquids and containers in order to improve their waste management practices. The permit writer looked for guidance, consulted counterparts, and found previous EPA determinations that using a shredder was considered treatment in a "miscellaneous unit." The permit writer discussed this with the facility and advised them to submit a permit modification request and to consider the temporary authorization (TA) option for Class 3 modifications. Under 40 CFR 270.42(e)(3)(ii)(E), an allowable objective for issuing a TA is to facilitate changes to protect human health and the environment. The TA request was received, reviewed, and approved. The facility also submitted a permit modification request to add the shredder unit to its hazardous waste management permit.

The shredder unit was installed under the TA. The permit writer and Resident Inspector coordinated a site visit to view the process area and testing of the shredder unit with non-hazardous materials. The permit writer reviewed the requested changes in the permit modification application and requested some clarifications and corrections. Final revisions were submitted by the facility and the permit writer drafted revisions to the permit. The draft permit modification was issued for public comment and a public hearing was held during the 45-day comment period. No comments were received and the final permit modification was issued.

Although the TA process was streamlined relative to the typical Class 3 permit modification process, TA's still require substantial time and effort on the part of the facility and the regulatory agency responsible for review and approval.

Outcomes:

- The facility reduced operating costs with a more efficient process of separating waste from the containers.
- The TA process allowed for quicker implementation of the proposed modification.
- Coordination and technical expertise from the state permitting authority helped the facility

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understand how the TA and modification processes could support the facility's desire to improve its waste management practices in a timely manner while ensuring that the new technique would continue to be protective of human health and the environment.

Associated Workload:
- Review/approval of the TA and the modification request. (No comments received).
- Repeated discussions with the facility about the appropriate calculations and appropriate type of modification.
- Public notice and preparation for/participation in public hearing.

Alternative fuel for a cement kiln calciner

Lone Star Industries, Inc. in Cape Girardeau, Missouri, manufactures Portland cement, the active ingredient in concrete. The facility requested a Class 3 permit modification from the Missouri Department of Natural Resources for a new technological solution that would allow it to replace a fossil fuel (coal) with an alternate (hazardous waste) fuel in the facility's calciner, aka indirect kiln. As part of the permit modification process, Lone Star first had to demonstrate the ability of the hazardous waste fuel to meet air emissions standards. The modification request also included updates to the facility's waste codes and a proposal to add two additional railcars and associated storage tanks. This modification enhances Lone Star's ability to meet changing market demands.

The changes at Lone Star also result in resource conservation, which is covered in Section "B. Improving Hazardous Waste Management."

Outcomes:
The use of alternate (hazardous waste) fuel in the calciner:
- Reduced long-term facility operating costs with better technological solutions.
- Reduced the amount of hazardous waste that might otherwise be disposed of in favor of beneficial reuse for energy recovery.
- Conserved and reduced the use of fossil fuels (coal).
- Reduced air emissions as the hazardous waste fuels burn "cleaner" than fossil fuels.

Associated Workload:
- Planning and oversight of demonstration test(s) to prove ability to meet emission standards.
- Review/approval of the modification request.
- Assess any comments from the 60 day public comment period on the request, and the 45-day comment on the draft revised permit and public hearing.

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A.2. Economic Development and New Waste Handling Capacity

Modification requests by facilities are often in reaction to market changes (i.e., increase/decrease in generation of hazardous wastes or new state/federal hazardous waste). For example, facilities may need additional waste handling capacity, need to treat additional wastes types, need additional units to treat, store, or dispose of wastes, or have other needs in order to meet changing market demands.

Addition of Three New Hazardous Waste

The Buick Resource Recycling facility requested a permit modification from the Missouri Department of Natural Resources (DNR) to allow for the construction, operation, closure, and post-closure of a new onsite Subtitle C landfill and two additional hazardous waste containment buildings. This modification was amongst 22 permit modifications that were processed from 2007-2013 as listed on the DNR website: http://dnr.mo.gov/env/hwp/permits

The Buick Resource Recycling Facility receives lead-acid batteries and other lead-bearing wastes. The wastes are recycled to recover lead and other trace metals. In addition, the facility recycles sulfuric acid from the batteries and the plastic from the battery cases. Prior to the modification, the facility was comprised of two container storage areas, six miscellaneous treatment units, and five containment buildings. Slag generated from the secondary smelting process was previously treated at the facility to meet land disposal restrictions treatment standards and then hauled off-site to a RCRA Subtitle D (solid waste) landfill for disposal. The contiguous facility property is subject to corrective action. The facility's rotary smelter and blast furnace are currently certified for Missouri resource recovery.

Following approval of the Class 3 Permit modification, the new on-site landfill cells were constructed to RCRA Subtitle C (hazardous waste) standards and put into operation to manage secondary smelting slag and gypsum wastes generated at the facility. These standards included a double liner system, leachate detection/collection systems, a groundwater detection monitoring program, and financial assurance for closure and post-closure care of the landfill.

Outcomes:

- Improved long-term economics and reduced operating costs from the new on-site waste storage/disposal capacity (metals recycling process contained on-site; possible future slag reclamation; cost saving for on-site disposal).
- Reduced potential for off-site contamination by eliminating about 98% of waste leaving the site thus reducing spill risk associated with off-site transportation.
- Improved traffic safety and reduced fossil fuel use/air emissions (about 130,000 gallon reduction in diesel fuel use annually) by having 2,500 fewer trucks leaving the facility on an annual basis.
- On-site management of wastes in compliance with RCRA Subtitle C (hazardous waste) requirements as opposed to previous on-site treatment and transportation on public roads to off-site disposal at RCRA Subtitle D (solid waste) landfill resulting in enhanced environmental protection and future liability protection for the Permittee.

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Expansion of facility operations without using new green space

The CHS Inc. Laurel Refinery in Laurel, Montana, submitted a request for a Class 2 permit modification to the Montana Department of Environmental Quality (DEQ) to allow closure of a land treatment unit using risk-based closure standards for soil and groundwater. The facility was able to close the unit and reuse the eight-acre area for structures associated with new Coker and Coker Flare units. Restrictions preventing residential use of the area were placed on the property deed.

The facility worked closely with DEQ to expedite the assessment and construction of the new units. Communication between DEQ and CHS was essential to ensure refinery planning needs and all regulatory requirements were met. Timely reviews of documents submitted in support of the modification request, issuance of an environmental assessment, and DEQ's final decision on the request were critical for planning and final implementation of the refinery expansion.

Outcomes:

- CHS expanded its refinery operations using the footprint of the land treatment unit by demonstrating concentrations of hazardous constituents in soil and groundwater met risk-based standards.
- Use of conservative risk-based closure standards and restrictive land use controls can allow for appropriate reuse that is protective of human health and the environment.

Associated Workload:

- Technical review and approval of documents supporting the modification request, closure plan, and closure report and certification for the land treatment unit.
- Development and issuance of environmental assessment for public comment.
- Issuance of final modification determination after consideration of all public comment.

New refinery process unit

Phillips 66 Company had a need for a new refinery process unit. They submitted a Class 3 permit modification request to the Montana Department of Environmental Quality (DEQ) for removal of an asphalt cap on a closed surface impoundment at the Phillips 66 Billings Refinery in Billings, Montana, in order to install a new refinery process unit at that location. Removal of the cap was necessary for remediation and removal of contaminated soil and hazardous waste. All wastes and contaminated vadose zone soils were removed, allowing use of the space for a new refinery process unit. Removal of the contaminated soil and waste reduced the risk of future contaminant exposure to industrial workers and potential leaching of hazardous constituents to groundwater.

Outcomes:

- The subject area was remediated and was able to be reused.
- Environmental protection was enhanced.

Expansion of treatment capacity for mixed waste

The Perma-Fix Northwest facility in Richland, Washington, requested a Class 3 permit modification from the Washington State Department of Ecology to expand treatment capacity for mixed waste (a waste that contains a hazardous waste component and a radioactive material component) and to install a new evaporation system. The permit modification was to allow for the following: the installation of two new evaporator units, increased tank storage capacity, and storage of mixed waste in tanker trucks. It also clarified language to align the permit with current practices. Further processes would stabilize residue. An older gasification/vitrification system was also to be replaced via the permit modification.

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Outcomes:

- The installation of new units and changes in waste handling procedures would have allowed the facility, which provides industrial and nuclear-waste management services, to expand its ability to treat and manage mixed wastes, but this specific upgrade was no longer pursued after the facility was informed of additional assessments needed. The upgrades need to be able to show that they continue to be protective (i.e., demonstrate the effectiveness for treating the wastewater streams).

Associated Workload:

- A great deal of assessment goes into modifications that are not eventually approved. Technical review of documents supporting the modification request led to a determination that the request was incomplete and a notice of incompleteness was issued to Perma-Fix Northwest. The modification was missing a thermal risk assessment work plan, demonstration test, and information on the proposed wastewater streams proposed to be treated in the evaporation systems.
- Perma-Fix requested that the permit modification be rescinded after the letter of incompleteness was issued.

A.3. Ownership Changes

Permitted facilities are often purchased by or merged with other companies. This tends to lead to requests for "urgent" permit modifications for changes of ownership and/or operational control of the facility. In order to ensure that the environment continues to be protected after an ownership or operational control transfer, the permitting agency must ensure that the new owner or operator provides financial assurance in a timely manner and that the amount of financial assurance is sufficient to cover future closure or post-closure at the facility. This is essential for long-term environmental protection.

As mentioned in the accompanying case study below, many facilities have difficulty in following the regulatory requirements and time frames to notify the permitting authorities regarding the planned ownership transfers and to have financial assurance. This makes it difficult for permitting authorities to process the information and ensure that the new facility owner or operator is compliant with the applicable regulatory requirements including those related to financial assurance. Permit modifications for changes of ownership or operational control can be relatively straightforward; however, this type of modification can become complicated and lengthy, particularly as compared to other Class 1 type of modifications. Substantial agency resources are often needed to review and approve these types of modifications since, in large part, they typically require submission of information that facilities did not anticipate. Agency enforcement actions may be initiated due to a facility's failure to follow the regulations and/or permit requirements related to changes of ownership or operational control. This further extends the timeline.

In some situations, only parcels of land are sold, not the whole facility. For example, facilities may request permit modifications in order to transfer ownership of portions of property that are part of a RCRA regulated facility but have been fully remediated (or were never contaminated). When land is removed from the jurisdiction of a permit (parceled) via a permit modification, close coordination of permit writers and corrective action (remedial) project managers is needed to ensure that it is appropriate to remove any land from the permit jurisdiction. The preparation to assess the parcel also involves coordination with the facility regarding any additional analyses or actions (e.g., property legal surveys) that need to be conducted relative to the property proposed for parceling.

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One state has found in their experience that Class 1 modifications that involve changes in ownership and/or operational control usually take much longer than 100 hours (the high end of ASTSWMO's calculated range previously mentioned), especially with complex facilities that only transfer/sell the active portions but retain portions that require corrective action and post-closure care (all under one permit).[19]

This situation at times requires a new permit for owners/operators that do not already have a permit.

The need for prior financial assurance approval is frequently overlooked in new ownership cases and results in application processing complications and increased timeframes. The workload includes technical review of the financial assurance mechanism and determination that the new operator has provided documentation to show sufficient financial resources to operate and to eventually close the facility in compliance with the permit.

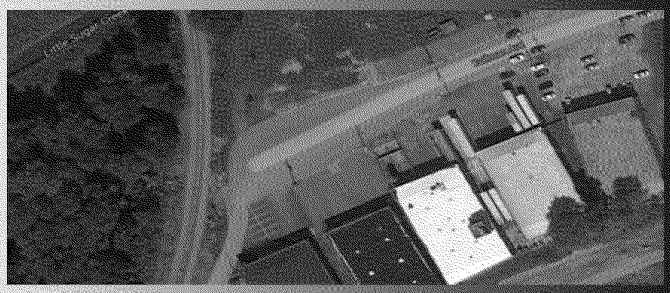
Modifications are further complicated if they involve more than one company that own different parts of the property the property is under one permit.

Complexities in Ownership Chan[illegible] Financial Assurance

The Detrex Corporation in Charlotte North Carolina transferred facility ownership and environmental liabilities to Trex Properties, LLC. This case study shows how a seemingly simple Class 1 can be complex and require substantial agency resources to review and approve.

When the Detrex Corporation announced its intent to transfer facility ownership and environmental liabilities to Trex Properties LLC, the North Carolina Department of Environment and Natural Resources (NCDENR) reminded Detrex of the requirement to submit a Class 1 permit modification request at least 90 days prior to the transfer. Regardless, the modification request was not received by NCDENR until nearly a month after the property transfer. When the modification request was submitted, it was substantially incomplete; most notably the facility had yet to submit financial assurance for Corrective Action. NCDENR issued a Notice of Deficiency for the modification request, requiring the companies to submit all information required for the transfer and to meet all outstanding compliance obligations before the agency would process the modification.

The modification process in this case spanned five months, in part due to disagreement about the amount of financial assurance required. Because Detrex had not supplied an estimate of corrective action costs as required by NCDENR, the state agency set the financial assurance amount at $1.2 million. Trex requested to supply an engineering affidavit in place of the required corrective action strategic remedy, but NCDENR and the state Attorney General's Office determined that an affidavit would not be sufficient. Ultimately, Trex funded the required $1.2 million, and the permit modification was approved. This Class 1 modification encountered additional complexity, but is too detailed to include.



Outcomes: Although the permit modification process in this case was lengthy and required substantial agency resources, critical compliance issues were addressed before the modification was approved. Ultimately, the permit modification supported long-term environmental protection (by ensuring funding for closure and any needed cleanup of contamination) while also facilitating administrative updates.

Associated Workload:

- Assessment of the liability coverage, legal boundaries, basic facility information, compliance information.
- Development of a full remedial strategy,
- Cost estimation for remediation, and related financial assurance.

[19] Communication with the Waste Permits Division of the Texas Commission on Environmental Quality 10-23-15.

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B. Improving Hazardous Waste Management

As hazardous waste management evolves, facilities often need to make changes to better protect the environment while treating, storing, and disposing of hazardous waste. The changes addressed in these permit modifications included the adoption of new methods of environmental protection, waste reduction, resource conservation, construction of onsite units to avoid offsite impacts, reducing risk of release, compliance with environmental standards, and other benefits for environmental protection that reduce risks to human health and the environment. In general, "green" permit modifications not only improve the environment, they may also improve operational efficiencies and economic development in the long run.

INDEX B. Improving Hazardous Waste Management
Case Study Categories
1. Resource Conservation
2. Reduced Risk of Release and Improved Safety
3. Replacement of Damaged or Aging Equipment

B.1. Resource Conservation

One of RCRA's primary objectives is to conserve valuable material and energy resources. There have been many improvements to waste management activities over time that improve efficiency of processes and thus contribute to this goal. In addition, facilities also often find cost savings when employing these types of improvements to their operations.

Operational change to treat hazardous waste-contaminated metal

A hazardous waste burning cement kiln located at a facility in Missouri has a scrap metal waste stream from crushed and shredded drums. Prior to its permit being modified, this was the only waste stream that continued to be sent off-site for disposal as a hazardous waste since there was simply too much hazardous waste residue on the metal for it to be recycled as scrap. The facility initially explored several methods for cleaning the metal to remove enough of the hazardous waste residue so that it could be recycled.

After initial exploration of various metal cleaning methods, the facility requested (and the Missouri Department of Natural Resources approved) a Class 3 Modification to build a gasifier unit in order to clean the metal (gasify the residuals on the metal). This would create gas that the facility could use as supplemental fuel to fire their hazardous waste burning cement kiln and render the metal, after post-gasification rinsing, clean enough that it could be recycled as a non-hazardous material as opposed to being disposed of off-site as a hazardous waste.

The facility adapted the gasifier technology from another industry for this modification and set about constructing and pilot testing the operation. Several technical issues had to be assessed and overcome during the pilot-testing phase. Ultimately, while the process was successful in cleaning the metal to the degree necessary for recycling, the gas production rates and volume of metals that could be processed were not consistent with the original design projections. As a result, this process has not yet been put into full operation and it is unknown if the limitations identified during pilot testing can be overcome to the

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extent necessary to support full operation. Nevertheless, this permit modification allowed for research, development, and demonstration of a novel approach to metal decontamination that resulted in an end product that could be recycled and that created supplemental fuel to fire the cement kiln.

Outcomes:

- Encouraged innovation and research, development and demonstrations of a novel approach to cleaning metal so that it could be recycled as metal scrap instead of being sent for off-site disposal as a hazardous waste.
- If technical issues can be overcome, the hazardous waste generation at this facility can be eliminated and large volumes of clean scrap metal can be recycled/put back into productive use.

Associated Workload:

- Technical review and approval of documents supporting the modification request, closure plan.
- Assess any comments from the 60 day public comment period on the request, and the 45 day comment on the draft revised permit and public hearing.

B.2. Reduced Risk of Release and Improved Safety

Hazardous waste management standards are designed to prevent the release of hazardous wastes. Changes are often made via permit modifications to improve waste handling practices and further reduce the risk of releases to the environment. Other changes are made to specifically address safety concerns.

Improvements to hazardous waste handling can also be triggered by other environmental requirements. In particular, recent air pollution control regulations have driven environmental improvements to the management of certain hazardous wastes. See the highlighted case study.

Material and waste management requirements not governed by RCRA can sometimes trigger RCRA permit modifications. A case study in another section (Section D.2.) shows how the addition of non-RCRA tanks triggered the need for a RCRA permit modification (since it could influence the secondary containment needed for RCRA waste).

Fire detection and prevention

A fire occurred at the Stericycle Tacoma facility in Washington that caused the re-examination of current permitted procedures. The permit was modified by the Washington State Department of Ecology to include new requirements to reduce the likelihood of a future fire at Stericycle Tacoma during flammable liquid pump-up operations, including the installation of new lower explosive limit monitors. In addition, new pump-up procedures were instituted at this facility.

Outcome:

- Reduced risk of fires and better detection of potentially dangerous conditions.

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Supported Compliance with Ambient Air Quality Standards for Lead

The Quemetco facility in Industry, California recycles batteries. The Battery Wrecker Process Area at this facility includes several permitted units, including the facility's battery wrecker, multiple tanks, and a clarifier. In March 2010, Quemetco submitted a request for a Class 1 permit modification to construct an enclosure around the Battery Wrecker Process Area to California's Department of Toxic Substance Control (DTSC).

The enclosure was necessary for Quemetco to comply with a new EPA standard for lead in ambient air and with local air quality regulations for Large Lead-Acid Battery Recyclers. Construction of the enclosure would capture fugitive lead dust emissions from the battery wrecker process. The permit modification would not affect the type or quantity of lead-acid batteries recycled at the facility.

As part of the permit modification process, Quemetco was required to submit a copy of its financial assurance for closure of the Battery Wrecker Process Area Enclosure within 60 days of the modification approval. The process also required Quemetco to send a notice of the modification to all contacts on the facility's mailing list and the appropriate state and local government contacts. The modification was approved in November 2010.

Outcome: Reduction in the amount of lead in the ambient air and compliance with new air regulations.

Relocation of hazardous waste handling from dense urban area to an industrial area

A commercial waste treatment facility commenced operation in 1980 in what was, at that time, a rural area in the state of Washington. Over time, residential and other commercial land uses in the immediate vicinity of the facility have greatly increased. A permit modification by the Washington State Department of Ecology at the Stericycle Kent facility transferred a significant portion of the waste handling (free liquid pump-up operations and shredding of RCRA wastes) to another facility located in an industrial area away from more populated areas.

Outcomes:

- Reduced risk to the populated urban area.
- Responded to local community concerns and urban encroachment issues.

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Enclosed lead smelting structures due to changes in the air regulations

Recent air regulations were applied to the secondary lead smelters that required that the storage of lead containing materials/wastes be totally enclosed. The air regulations required that materials/wastes being stored prior to re-smelting be managed in enclosed containment structures under negative air pressure. Containment structures/buildings necessary to meet the air requirements had to be constructed in accordance with the RCRA containment building regulations. This necessitated issuance of temporary authorizations and permit modifications by the Missouri Department of Natural Resources to facilitate construction completion by deadlines associated with the air regulations. The new structures better prevent releases to the environment and, in many cases, replaced outdoor storage of lead-bearing materials.

Outcomes:

- Improved environmental conditions for ambient air quality by reducing the amount of lead in the ambient air.
- Diminished the potential for airborne lead to be deposited and accumulated on the land and in nearby water bodies, which in turn, protected nearby populations and diminished the potential need for corrective action investigation and remediation.

B.3. Replacement of Damaged or Aging Equipment

As equipment to manage hazardous waste ages, it needs to be periodically replaced. The equipment can eventually show signs of corrosion from the natural elements and from "wear and tear." This equipment must be routinely inspected, maintained, and replaced as necessary to minimize the potential for releases of hazardous waste to the environment.

Replacement of New Equipment

A Class 2 permit modification was requested for the replacement of old sink/float tanks with new washers at the Quemetco facility in Industry, California. This was approved by California's Department of Toxic Substance Control (DTSC). The replacement of aging sink/float tanks normally requires a permit modification and is necessary to minimize the potential for ensuring the appropriate washing separation of hazardous waste from the other materials to protect the quality of the finished recyclable products. The plastic from the battery casings crushing operation are later recycled into paint cans.

Outcomes:

- Prevention of leaks or other releases by replacing old tanks with new tanks.
- Improvement of air quality by ensuring that less lead is attached to the plastic components of batteries prior to smelting
- Increase of the quality of finished recyclable products by reducing the lead components of the recyclable products.

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C. Ensuring Long-Term Protection

Hazardous waste permits (and other regulatory instruments) have requirements for facilities to: (1) update closure or post-closure plans and financial assurance instruments/amounts to address future long-term environmental obligations; (2) conduct corrective action to address historical releases to the environment; and (3) provide notification of and address, as appropriate, any new releases and/or discovery of previously unidentified releases. This section discusses the different modifications used to address those issues.

INDEX C. Ensuring Long-Term Protection
Case Study Categories
Closure, Post-Closure Care and Corrective Action

Closure, Post-Closure Care, and Corrective Action

This category includes updates to closure and post-closure plans and selection of final remedies for corrective action.

Compliance with the closure and post-closure plans ensure that the environment will be protected long after the facility closes its permitted hazardous waste management units. If facilities do not clean close their unit(s), they will need to comply with standards for units closed with waste in place, including providing post-closure care. Additionally, RCRA permits must include requirements for facility-wide corrective action to address releases of hazardous waste and constituents. Certain key stages of the corrective action process (e.g., final remedy selection and implementation) often require modification of the permit to incorporate requirements into the permit, because they are frequently not identified at the time of permit issuance. The modification procedures involve public review and comment on proposed final remedy actions.

Cleanup and final remedy selection

The U.S. Army Redstone Arsenal (the Arsenal) located in Huntsville, Alabama, requested a permit modification for numerous changes that included: (1) the addition of a new permittee; (2) removal of seven solid waste management units (SWMUs) from a list of units needing investigation; (3) addition of two SWMUs that require investigation; and, (4) the removal of three SWMUs from a table specifying that corrective measures are needed. The new operator of the permitted open burn/open detonation areas of the Arsenal needed to be included as an additional permittee in order to better define the responsibilities of the onsite entities. This permit modification by the Alabama Department of Environmental Management also included the incorporation of the selected remedies to reduce contamination at six SWMUs within the Arsenal.

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The permit modification requests with the completed investigation reports were included in the corrective measures implementation (CMI) plans for the respective SWMUs. The associated investigations were completed in about a year and area specific conditions of these units, from the CMI work plans, were added to the permit. These area specific conditions included summaries of the remedy, any land use restrictions for the site, and any long-term monitoring and maintenance activities required.

This addition to the permit of two new SWMUs that require investigation required the submittal of a SWMU assessment report. These modifications were needed for the areas to be properly investigated.

Outcomes:

- By adding a new permittee, the responsibilities were better defined, including a requirement to comply with submittal dates and schedules of compliance.
- Final remedy selection for 6 units was approved that resulted in the excavation and removal of contaminated soil and reduction/elimination of groundwater contamination sources.
- The selected remedies included the excavation and offsite disposal of about 2,870 cubic yards of perchlorate-contaminated soil, 45 cubic yards of TCE-contaminated soil and about 42 cubic yards of soil contaminated with benzo(a)pyrene and dibenz(a,h)anthracene.

Final Remedy Selection for Corrective Action\EPA Joint Permit

A final remedy selection for corrective action was approved as a Class 3 permit modification for Lafarge in Fredonia, Kansas. EPA Region 7 processed the modification in 2013 under the EPA portion of the permit (because Kansas was not authorized for corrective action in 2013).

Three solid waste management units were used for on-site cement kiln dust repositories and they contain elevated levels of heavy metals and volatile organic compounds. The investigation of the units identified a threat to the following if left unaddressed: direct contact, groundwater, and ecological receptors.

The selected remedy for each unit is capping with soil and vegetative cover, perpetual cap maintenance, groundwater monitoring, and institutional controls restricting cap disturbance and residential land use in the future.

Outcomes: Improved long-term environmental and human health protection. Reduced risk of release of the heavy metals and volatile organic compounds.

Associated Workload:

- To complete this modification, several documents had to be reviewed: correspondence letters, RCRA Facility Investigation Reports, CMI work plans and SWMU assessment reports.
- Comment letters and notice of deficiencies were prepared to highlight missing information and to request clarity regarding the Army's submissions. Revised documents were submitted to the Alabama

Department of Environmental Management for review.
- After the Department concurred with the Army's various documents, the permit was opened for modification. While incorporating the information and modifications described above, all references to those particular sections throughout the permit were checked for accuracy and modified where necessary to ensure proper reference.
- The draft permit was placed on public notice and no comments were received.

Addition of a risk management plan

The Occidental Chemical Company requested a Class 3 permit modification for its Geismar, Louisiana, facility to incorporate a Risk Management Plan as part of the final remedy being implemented under their post-closure permit. Financial assurance was put in place as part of this permit modification to ensure that there is funding to address contamination through corrective action.

The RMP includes beneficial reuse provisions for on-site soils that meet Risk Evaluation/Corrective Action Program (RECAP) soil standards. This is a common beneficial reuse practice that allows the facility to save money by not having to purchase additional soil for on-site use, or having to pay for disposal of certain soils as long as they meet the RECAP standards. The Louisiana Department of Environmental Quality approved this request.

Outcomes:
- The Risk Management Plan specified the corrective action final remedy and ensured the continuation of standards for protection of environmental quality after unit closure.
- Financial assurance was put in place for future corrective action activities to ensure funds will be available to conduct those activities even if the facility should experience financial difficulty or insolvency.
- The Risk Management Plan provides for beneficial reuse of soils on-site and cost savings for the facility.

Associated Workload:
- Public participation for this Class 3 modification included review and response to comments from the following: the required a pre-application public meeting with the, 60-day public comment period for the application, then a 45-day public comment period for the actual draft permit modification decision to be made.
- This modification required technical review by both a permit writer and geologist in order to make the final permit revisions.

Comprehensive risk reassessment, NPL-listing avoidance, and further investigation in support of an updated final remedy and facility property reuse/redevelopment

The National Nuclear Security Administration at the Bannister Federal Complex in Kansas City, Missouri, requested a Class 3 permit modification to add adjacent, previously unpermitted U.S. General Services Administration (GSA) property to their existing Hazardous Waste Management Facility Part I and EPA Hazardous and Solid Waste Amendments Part II Permits. This was intended to facilitate performance of a holistic environmental reassessment of the combined property in light of the pending move of the National Nuclear Security Administration and GSA personnel to new work locations. The modification was also needed to implement further remediation and potential near-term transfer of a portion of the permitted property to a private entity for subsequent reuse/redevelopment. This modification also served to keep the facility from being proposed for listing on the Superfund National Priorities List (NPL).

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This modification to the permit by Missouri Department of Natural Resources was inherently complex since there were/are multiple owners/operators (including a new owner/operator being added), many prior uses of the land by many past owners that led to contaminant releases (primarily chlorinated solvents, polychlorinated biphenyls and petroleum hydrocarbons). A "Formerly Used Defense Site" located on the "annexed" GSA property is being handled by the U.S. Army Corps of Engineers and there is a great deal of public and political interest in the cleanup, disposition, and redevelopment of this aging (over 70 year old) federal complex.

Outcomes:

- Permit modification elements related to groundwater and the updated plan have been implemented. The other elements are in various stages of the review and approval process.
- There are weekly coordination calls on this project between the Department and EPA and monthly coordination meetings among all project stakeholders including the preferred private developer.
- In addition to the activities required of the current permittees by the permit modification, the preferred developer is in the process of:
    - Performing confirmatory due diligence investigations to independently assess environmental conditions.
    - Assessing updated final remedies in light of anticipated future reuse/redevelopment of the property.
    - Assessing the associated future costs as the basis for financial assurance needed to facilitate the early dirty (negative equity) transfer of this federal property to the private developer and thereafter ensure adequate financial assurance is provided for post-closure care and corrective action after the permit is transferred.

Associated Workload:

The primary permit modification elements included the following:

- Implementation of a groundwater remedy optimization plan and revised groundwater sampling and analysis plan to incorporate new wells on the "annexed" property,
- Implementation of updated groundwater analysis and reporting requirements,
- Revision and implementation of an updated Community Involvement Plan (CIP),
- Update the conceptual site model and identify any data gaps that required further investigation given the land area added to the permitted facility (Missouri DNR submitted a facility-wide report: "Description of Current Conditions Report and Screening Level Risk Assessment"), and
- Assessed a facility-wide polychlorinated biphenyl (PCB) fate and transport study in order to inform the permit modification decision.

Soil and groundwater sampling requirements in closure plan

The Aerojet facility, in Rancho Cordova California, requested a Class 2 permit modification in order to update the soil and groundwater sampling requirements in the closure plan. The closure plan revisions included additional sampling and analysis in order to further investigate the underlying soils. The closure plan also included changes in the closure cost estimate. California's Department of Toxic Substance Control assessed the permit modification request.

Outcomes:

- The vertical and lateral extent of perchlorate contamination in soils and the impact of perchlorate to the water table were identified.
- The results were used to determine if the unit could be clean closed or would need to be addressed through post-closure requirements.

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Associated Workload:

- Public notice and preparation for/participation in public meetings.
- Assess groundwater reports and follow up on them.
- Financial assurance assessment.

Remediated Area for the Construction of a Warehouse

Loveland Products, Inc. (LPI), in Billings, Montana, requested a permit modification to change post-closure care and corrective action requirements for a closed surface impoundment. The existing permit requirements limited use of the space occupied by the surface impoundment and presented geotechnical problems for construction of a new warehouse. A permit modification was necessary to allow removal of the asphalt cap and excavation and shipment of the enclosed waste to an off-site permitted hazardous waste landfill. LPI requested a temporary authorization to allow excavation work to begin while permit modification procedures were being conducted. DEQ granted the authorization following public notice to all persons on the facility mailing list and to appropriate units of state and local governments. The temporary authorization allowed excavation and shipment of the waste to be accomplished during Montana's short construction season, avoiding environmental and human health exposure issues associated with excavations left open through the winter months.

Approximately 12,000 tons of hazardous waste and contaminated vadose zone soil was removed from the surface impoundment and disposed in a permitted hazardous waste landfill. The hardcover cap, originally installed to protect indoor workers and groundwater, is no longer required. LPI was able to construct a warehouse in the area, reusing space within the footprint of its facility.

Outcome: The modification demonstrates that regulated hazardous waste units can be remediated and the area reused. All wastes and contaminated vadose zone soil were removed from the surface impoundment area to make the area safe for construction and reuse.

Coordination, timing, and complexity: This permit modification was multi-faceted, requiring coordination between the Montana Department of Environmental Quality, the facility, EPA, and the state environmental contact for the facility receiving the excavated waste. Meetings to discuss the project were held several years prior to implementation. Timely review and approval of the modification request was necessary and important to accommodate the planned construction schedule.

The permit modification was complex; it involved a shortening of the post-closure care period, a change in the approved remedy, a determination of Corrective Action Management Unit eligibility, temporary authorization, and final modification approval. The modified remedy required extensive understanding of the requirements needed to address waste disposal.

D. Keeping Permits Up to Date

Permit modifications are often required for straightforward updates to align the permit with current conditions and operations at facilities. It is important for the permit to reflect the current facility information, provisions, and standards in the event that emergency situations arise. This also facilitates appropriate facility inspections by state and federal regulators.

One common type of permit modification relates to changes to the "General Permit Provisions" and "General Facility Standards" as outlined in 40 CFR 270.42 Appendix I. These updates are generally Class 1 modifications (some of these Class 1 modifications need prior Director's approval).

Many of these changes are administrative updates. Some of these are needed for emergency response (including changes to facility contacts), waste sampling changes, and other changes needed to keep the permit current and compliant.

INDEX D. Keeping Permits Up to Date
1. Emergency Response
2. Updates to Permit Standards and Conditions
3. Administrative Updates

D.1. Emergency Response

It is important to have current safety and emergency response information available and related equipment ready in the event there is a fire, spill, or other emergency at a permitted facility. There are permit modifications that owners and operators of permitted facilities must propose when certain changes are made at the facility. These changes include things such as updated emergency/contingency plans, emergency contacts, and emergency equipment. In addition, EPA has continued to emphasize the "Preparedness and Prevention Requirements for RCRA TSDFs" including ongoing communication and coordination with State Emergency Response Commissions, Local Emergency Planning Committees, local fire departments, and other state and local emergency response authorities, as appropriate.[20]

Coordination of emergency services, emergency contacts, and other updates

Rho-Chem LLC implemented a Class 1 permit modification to update facility information in the contingency plan. This included the following updates: the coordination of emergency services, spill control equipment, artificial night lighting, compliance history, and emergency coordinator (including alternates). This facility in Inglewood, California worked with California's Department of Toxic Substance Control on the permit modification. Public notices were sent as required by the regulations to state and local agencies and the mailing list within seven days of implementing the changes.

[20] A March 5, 2010 EPA memo was sent from Matt Hale to the EPA RCRA Directors on "Preparedness and Prevention Requirements for RCRA TSDFs (Response to Chemical Safety Board Recommendation 2007-01-I-NC)." The memo states that "this guidance recommends that the TSDF permit explicitly require that the owners and operators provide up-to-date written information about the facility and hazardous waste located there to State Emergency Response Commissions (SERCs), Local Emergency Planning Committees (LEPCs), local fire departments, and other state and local emergency response authorities, as appropriate." This guidance was also communicated to state programs through ASTSWMO.

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Outcomes:

- Changes were made to update important safety/emergency response information at the facility.
- The regulators and public were notified of those changes to help facilitate timely coordination of emergency services and deployment of emergency equipment in the event of an emergency response.

D.2. Updates to Permit Standards and Conditions

The conditions governing management of hazardous waste in treatment, storage, and disposal units are specified in facility permits. Minor changes at any unit (or general facility standards) may trigger permit modifications. Seemingly simple Class 1 modifications can, after review by regulators, require substantial time and effort on the part of both regulators and permittees to complete. Sometimes proposed permit modifications are initially misclassified (i.e., a Class 1 modification request comes in from the facility but is determined by the regulatory agency to actually be a Class 2 or 3 modification). A great deal of the coordination with facilities often takes place before a complete permit modification request is even submitted. In addition, some permit modifications are actually precipitated by changes to requirements of other non-RCRA regulatory programs. A case study is described below how a non-hazardous unit addition could trigger a RCRA permit modification for secondary containment.

Addition of a Non-RCRA regulated tank to the secondary containment area for a RCRA regulated tank

A facility submitted a modification on October 30, 2013, to increase the capacity of their secondary containment for their tank farm. The increase was requested because they were replacing one non-RCRA regulated tank with two non-RCRA regulated tanks and the RCRA secondary containment volume requirements could be affected. The facility proposed raising the secondary containment wall with four-inch angle iron.

In order for North Carolina Department of Environment and Natural Resources (NCDENR) to assess the proposed modification, the facility needed to submit the following additional information: new permit-related drawings; inspection procedures; updates to the secondary containment volume calculations; angle iron installation specifications; and information regarding use of secondary containment sealants and inspection details for the altered secondary containment.

NCDENR and the facility had multiple discussions on the proposed changes to resolve issues so that the agency could begin processing the request. These discussions included helping the facility with the secondary containment calculations and requests for additional information. Because of the technical assistance provided by NCDENR, the facility ultimately determined that the angle iron extension was not needed as the secondary containment calculations contained an incorrect assumption regarding the shape of the bottoms of the new tanks. The existing secondary containment volume was sufficient since the new tanks had spherical bottoms and NCDENR agreed that a Class 2 modification was not needed to increase the secondary containment capacity, though a Class 1 modification was still needed for the changes. A revised permit modification request was submitted in December 2013 and the Class 1 modification was approved by NCDENR in May 2014.

Outcomes:

- NCDENR provided significant technical assistance to the facility to address issues associated with their proposed Class 2 permit modification to add new tanks.

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- NCDENR determined that the facility's secondary containment calculations showed that the existing secondary containment volume was sufficient and thus the proposed changes would require a Class 1 permit modification with prior Director's approval in lieu of the proposed Class 2 modification.

Keeping the facility information updated in the permit

The HGST, Inc., facility in San Jose, California, requested several Class 1 permit modifications over a short period of time and all necessitated individual notices to the mailing list. The modifications included the following: (1) revised closure plan for three tanks including clarification of decontamination procedures and connecting piping system; (2) revised closure plan for seven tanks including clarification of the decontamination procedures for new equipment used to manage waste; (3) installation of tie in valves to improve the support and transfer function of a heavy metal waste pipeline; (4) owner's, operator's and facility name change from Hitachi Global Storage Technologies Inc. to HGST Inc.; and (5) administrative changes to update the inspection checklist for units and update training plan job titles. The permitting agency, California's Department of Toxic Substance Control, processed the permit modifications.

Outcomes:

- Closure decontamination procedures were clarified and improvements were implemented to the support and transfer of a portion of the waste handled.
- The permit and related documents was updated to reflect current information, including current facility owner/operator information.

Replace hazardous waste storage unit containers with ones of a different type and size

This Class 2 permit modification request from Rho-Chem LLC resulted in replacement of certain hazardous waste storage unit containers with others of a different type and size but did not increase the storage capacity at the facility. California's Department of Toxic Substance Control modified the permit.

Outcome:

- Replacement of hazardous waste storage container units with different types that were better suited for the ongoing operations at the facility.

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D.3. Administrative Updates

Permit modifications are often requested for administrative or informational purposes that are not related to physical improvements that need to occur at the facility. Although informational changes are typically simple and straightforward, they can require a surprising level of administrative effort from permittees and regulatory officials. For example, facility name changes are common and often trigger substantial additional review effort on the part of regulatory officials to confirm that the name change does not stem from a change in facility ownership or operational control, which would require updates to financial assurance or other compliance mechanisms.

Facility Name Change

In 2014, Evoqua Water Technologies LLC requested a Class 1 permit modification for its hazardous waste management facility in Vernon, California, to change the name of the owner and operator from "Siemens Water Technologies LLC" to "Evoqua Water Technologies, LLC." This is a common modification and seemingly easy, but as part of the modification process, Evoqua was required to notify all contacts on the facility's mailing list and the appropriate state and local agencies of the name change. California's Department of Toxic Substance Control permitting staff also had to review the request to ensure that it was not an ownership change and that the current financial assurance was adequate.

Outcomes:

- The permit and related documents were updated to reflect the new owner.
- Financial assurance was reviewed and confirmed as still viable/applicable.

Extend closure period due to funding delays

The National Aeronautics and Space Administration (NASA) in New Orleans, Louisiana, requested a Class 1 permit modification to extend the closure period for three tanks by 180 days. This modification was necessary to accommodate funding delays resulting from the Federal government sequestration.

Outcome:

- Delays in the enforceable closure schedule were approved by the Louisiana Department of Environmental Quality.

ED_001593_00007677

E. Modifications over the "Life of a Permit"

A case study of permit modifications over the life of a permit shows the volume of permit modification work as compared to the individual case studies listed above.

ENVIROSAFE SERVICES OF OHIO INC, (OHD045243706)

This facility is located in Oregon, Ohio and has been permitted since 1988. It has more modifications per year than most facilities, but they are largely Class 1's. Although the table below shows the permit modifications that were entered in the national database, it does not show all the permit maintenance involved (for example, compiling environmental impact statements).

This facility has eleven hazardous waste management units that are permitted. It also has expansive facility-wide corrective action that is being addressed under the authority of the permit. This facility has permitted storage and treatment units in addition to a landfill that will continue to need post-closure care under the permit when closure obligations have been satisfied.

Note that the permits below were issued by both EPA Region 5 and Ohio EPA. As states have become authorized for all of the RCRA programs, joint permits between the State and EPA have become less common. The information about the individual permit modification approvals often references a specific section of the permit and the unit or well referenced in the change to the permit. The vast majority of these modifications are requested by the permittee, but the permit modification workload has included Agency-initiated modifications as well. Ohio EPA has historically used Director-initiated modifications for selection of corrective measures for RCRA Corrective Action. For this facility, a Director-initiated modification selecting a containment strategy for historic waste management units on a portion of the facility was approved September 12, 2006. These rare Director-initiated modifications generally require a similar process to issuing a full permit and are typically as complex as Class 3 modifications.

Dates	Type of Permit Modification (Mod)
11/8/88	**Federal portion of the permit issued by EPA Region 5**
5/8/91	**State portion of the permit issued by Ohio EPA**
Mods under the First set of Permit Issuances by EPA and the State	
	1 Mod Approval for Additional Capacity.
	2 Class 3 mod approval for vertical expansion.
	6 Mod Approvals for Groundwater Monitoring.
	58 Mod approvals for unspecified ("Other") mods.
	Note: No mods were documented for the first 10 years; there may have been some mods, but not captured in the early ears of tracking RCRA data.
12/29/05	**Joint Permit issued by the state program, Ohio EPA (Renewal)**
	Joint Permit Issued by the EPA, Region 5. (Renewal)
2/21/06	(Federal portion of joint RCRA permit covering 40 CFR Subparts BB, CC, and DD)
Mods under the Second set of Permit Issuances by EPA and the State	
2006 Mods	
2/3/06	Update facility annual closure/post closure cost estimate.
2/21/06	Mod Approval (Other Mod)
3/16/06	Class 1A Mod approval to install a portable high capacity vacuum system.
4/3/06	Class 1A approval for (PQL's), addition of statistical comparison standards, revised well construction logs for monitoring, and addition of method 420.1
5/3/06	Mod regarding analytical methods.

5/18/06	Approval to remove ground water monitoring wells SW-3D and MR-4S and add ground water monitoring well F-2D to affected well list for Total Phenols.
6/9/06	Approval to add previously approved and/or acknowledged mod to ESOI's December 29, 2005 permit.
8/17/06	Class 1A mod approval to replace outdated HDPE liner specifications on Table 1 of Appendix D.7.4 of permit application with standard HDPE specifications.
9/12/06	This permit mod was initiated by Ohio EPA to incorporate permit specific corrective action measures that collectively represent a containment strategy for old waste management units in the northern portion of the facility.
10/20/06	Class 1 mod approval to update City of Toledo Raw Waterline Security Agreement Weekly Inspection form.
10/20/06	Class 1 mod approval to remove the form of precipitation from permit condition J.7(b)(iii).
11/10/06	Class 1 mod to allow facility to utilize analysis of wells which are sampled in accordance with the permit and in the calendar month preceding an April and/or October semi-annual sampling event.
11/10/06	Class 1A mod approval to add and remove monitoring wells, remove benzene and selenium & fluoride
2007 Mods	
2/6/07	Class 1 mod approval to make changes to the inspection forms MF-02b (Containment Building) & MF-13 (Groundwater Monitoring Wells).
3/13/07	Class 1 mod approval for complete clean copy of the permit application.
3/16/07	Class 1A mod approval to add leachate collection and removal system performance objectives for WMSs 5, 6, & 7.
3/21/07	Class 1A mod for change in the methodology for determining hydraulic gradients and travel distances used in the ACL model.
3/29/07	Class 1A mod approval to replace the June 30, 2006 permit application with the former permit application dated August 15, 1983.
4/13/07	Class 1A mod approval to update affected and adjacent well listing at Appendix E.9 to add R-23, G-1DA, and G-1S as wells nested or adjacent to affected wells.
4/20/07	Class 1 mod approval for information on two newly installed monitoring wells.
5/8/07	Class 1A mod approval for data validation definitions in Appendix E.12 of Part B.
5/17/07	Class 1 mod approval for the Contingency Plan emergency contact information.
5/17/07	Class 1 mod approval for changes to Table of Contents to update reference to inspection forms MF-02b & MF-13.
5/17/07	Class 1 mod approval for changes to the closure/post closure cost estimate.
6/6/07	Class 1 mod approval to replace Part A RCRA Subtitle C Site I.D. form with EPA Form 8700-23.
6/20/07	Class 1 mod approval to correct revision numbers for detail drawings.
8/10/07	Class 1A mod approval to establish a target leachate head level for the west area of SWMU 5.
10/5/07	Class 1A mod approval to update dioxin/furan analysis.
11/9/07	Class 1A mod approval for update to add procedures to prevent inadvertent introduction of petroleum constituents to groundwater samples when using fueled field equipment.
11/9/07	Class 1A mod approval to include total metal prediction limits.
11/9/07	Class 1A mod approval to clarify that the ACL for areas subject to corrective action will not need to be reevaluated unless conditions change
12/5/07	Class 1 mod for informational changes (revise Permit Condition F.5 on page 91 of 165).
12/5/07	Class 1A mod approval for correction of conflicting information in the permit application regarding how earthen dikes will be constructed and managed on Hazardous Waste Landfill Cell M.
12/11/07	Class 1 mod to revise cover page for Appendix F.8 "Rail Line Inspection Forms" and revise forms MF-16(a).
2008 Mods	
1/7/08	Class 1A mod approval to update the statistical prediction limit at monitoring well
1/31/08	Class 1A mod to change the timing requirements for 3rd party data validation of semi-annual groundwater monitoring reports.
2/1/08	Class 1 mod approval to update Section G, Contingency Plan.
2/5/08	Class 1 mod approval to revise cyanide & sulfide testing methods and concentration limits.
2/8/08	Class 1A mod approval to include a Master Boring Log & Well Summary Table, Master Boring & Well log Location Drawings and well construction logs.
3/6/08	Class 1 mod approval for historical log submittal to ensure facility permit contains all boring, well construction, and well abandonment information.
3/6/08	Class 1A mod approval for Sampling and Analysis Plan updates.
4/10/08	Class 1 mod approval to add 1,4 dioxane to the affected constituent list for Monitoring Well SW-3D and to add Monitoring Well SW-3S to the affected well list for 1,4 dioxane.
5/8/08	Class 1A mod approval to add geologic cross section drawings 1 thru 10 covering the Integrated Ground Water Monitoring Program.
5/8/08	Class 1A mod approval.
5/28/08	Class 1 mod to update emergency coordinator info & revise fire brigade response personnel.
5/29/08	Class 1 mod to update closure/cost-closure cost estimates.
6/26/08	Class 1A mod approval total metals prediction limits for monitoring well R24 added to Integrated Ground Water Monitoring Program.

6/26/08	Class 1 mod to update list of boring and monitoring well information on page E.13-24.
8/20/08	Class 2 mod approval to discontinue the semi-annual analysis of the naturally occurring constituents: sodium, chloride, and fluoride as early warning indicators of a potential release from regulated units.
9/22/08	Class 1A mod approval to add 1,4-Dioxanne , add MR-3S, add nickel to the affected constituent list, and remove MR-4D and SW-2D.
9/22/08	Class 1A mod approval to update the dissolved barium comparison standards for all IGWMP wells excluding M-18S, R-23, and R-24.
9/25/08	Class 1A mod approval to update the Master Boring and Well log, update the cover page, and add well abandonment logs.
10/17/08	Class 1 mod approval for revisions to Section E for typo corrections.
2009 Mods	
3/6/09	Class1A mod approval to remove existing cover page for appendix D.2, add pages D.2-1 and D.2-2, and replace Section D cover page and Table of Contents pages D-viii thru D-xi.
4/16/09	Class 1A mod approval benzene, chloroethane, and vinyl chloride from the COSs from affected well F-2S.
4/23/09	Class 1A mod approval to add total metals predictions limits for monitoring wells G-1DA, M-18S, and M-17D.
5/21/09	Class 1 mod to update the closure & post-closure cost estimate.
6/1/09	Class 1 mod for replacement and relocation of CSF safety showers with equivalent units.
6/2/09	Class 1A mod for implementation of schedule and final design plans for SWMI I (Cell F).
6/8/09	Class 1 mod for recalculating of secondary containment for Caustic Building and Tanks 70, 73 and 74.
7/17/09	Class 1 mod to clarify notification requirements of the Response Action Plan for Containment building.
7/17/09	Class 1 mod to replace existing appendix F.10, F.10-1, and F-1(p) pages in the permit application.
7/21/09	Class 1A mod to require security at gates only when open or unlocked, and typo corrections.
8/20/09	Class 1 mod to replace Section D Table of Contents, replace existing Appendix D.5, and add pages D.5.1.
8/20/09	Class 1 mod to include the "Cell M Transducer Certification Report - May 2009."
9/8/09	Class 1A mod to Appendix D.15 Submersible Pumps and Transducer Specifications of Part B application.
9/15/09	Class 1 mod to replace existing pages D-12 through D-15, 17, 23, and 58.
10/7/09	Class 1A mod to revise and relocate the Stone Drain Column Specifications from Appendix D.31.
10/21/09	Class 1A mod for changes to Appendix E.13, Boring and Monitoring Well Information.
10/21/09	Class 1 mod to Appendix E.9 from affected well list, removal of benzene from affected constituent list and removal of trichlorofluoromethane.
11/6/09	Class 1A mod approval to allow for management of mixed RCRA & TSCA remediation waste with total PCBs concentrations.
11/27/09	Class 1 mod approval for changes to the Table "Maximum PQLs" located in Attachment C to Appendix E.9.
12/9/09	Class 1 mod approval for changes to ground water monitoring well reference point elevations.
12/17/09	Class 1A mod approval for changes in total metals prediction limits for monitoring wells and total cyanide prediction limit.
2010 Mods	
2/1/10	Class 1A mod to Module G (waterline trench monitoring program) to clarify the inspection, record keeping, and reporting requirements.
2/10/10	Class 2 mod approval to reduce height of Cell M landfill from 714 feet MSL to 700 feet MSL.
2/26/10	Class 1 mod for administrative and correctional updates i.e. revise pages G-1 and G-33. Update emergency coordinator information and update the Fire Brigade response personnel.
3/3/10	Class IA mod to replace Module K permit pages 140 to 156 with revised pages having the same page number.
3/12/10	Class 1 mod for page replacement in the Part A Application.
4/14/10	Class 1A mod for removal of dissolved barium from the affected constituents of concern list for affected well SW-2S.
4/21/10	Class 1A mod for revisions to Module J of the Permit regarding pumping inspection, reporting & maintenance requirement for Cell M's leachate collection system, ...
5/18/10	Class 1 mod for administrative and informational changes.
6/22/10	Class 1A mod approval to add prediction limits for total metals for Monitoring Wells I-5SA and MR-3S.
6/22/10	Class 1A mod approval to clarify miscellaneous groundwater items in the Permit and Part B Permit Application.
7/6/10	Received request from facility on 7/6/10 to WITHDRAW previous mod to provide updated performance monitoring for leachate extraction at SWMU's 5, 6 & 7.
8/23/10	Class 1A mod approval to upgrade the leachate extraction systems.
8/23/10	Class 1 mod approval to update the closure and post-closure cost estimates.
10/14/10	Class 1A mod to update Appendix E.9, Groundwater Monitoring Program Sampling and Analysis Plan
10/27/10	Class 1 mod to replace existing pages D.49-8 and D.49.9 and replace the existing Appendix D.49 Cover Page.
11/15/10	Class 1 mod replace module conditions J.1dv and J.1dva on page 119 of 165 and J.4ei and J.4eii on page 127 of 165. Also, replace existing permit application page G.1-3 with revised page dated September 27, 2010.
11/24/10	Class 1 mod to remove outdated info from the Container Storage Area Inspection form MF-07 of the Part B Permit Application.

2011 Mods	
1/11/11	Class 1 mod to permit conditions B.5 and B.5(b) & B.5(b)(iv) to specify inspection frequencies.
2/11/11	Class 1 mod to allow for container storage in any of the designated storage areas within the Stabilization/Containment Building up to the aggregate total storage capacity of 1185 cubic yards.
3/21/11	Class 1A mod approval to clarify language for Table B-1 and allows the processing of certain soil and debris wastes.
5/12/11	CLASS 1A Mod to update Attachment D, Affected and Adjacent Well Listing. Chloroethane has been added to monitoring Well F-2S.
6/20/11	CLASS 1A Mod to update the OMPM Plan for leachate extraction at SWMU 5, 6, and 7.
7/29/11	CLASS 2 Mod to treat hazardous waste containing free liquids and to add chemical oxidation, chemical reduction, and activated carbon treatments in the Stabilization/Containment BLDG.
7/29/11	CLASS 2 Mod to treat hazardous waste using encapsulation technology within 4 open-top metal tanks in Cell M.
2012 Mods	
1/25/12	CLASS 1 Permit Mod - Groundwater monitoring program sampling and analysis plan - Changes to plan as it related to sampling wells with high turbidity water.
1/25/12	CLASS 1A Permit Mod - Groundwater monitoring program sampling and analysis plan - changes to plan - affected and adjacent Well listing, 1,4 - Dioxane was removed from the affected constituent list at Well MR-1SA.
2/7/12	CLASS 1A PERMIT MOD - Revision of permit condition B.3(J)(I) to correct the citation reference to the mixture and derived-from rule in OAC 3745-51-03.
3/21/12	CLASS 1 Permit Mod - Updating the facility closure and post-closure cost estimates for inflation.
3/21/12	CLASS 1 Mod - Updating several inspection checklists used by the facility to reduce duplication and remove irrelevant questions.
8/2/12	CLASS 1A Mod to update prediction limits for barium (dissolved) at Well G-2DA and cyanide at Well R-6.
2013 Mods	
3/19/13	CLASS 1A Mod to change prediction limits for each qualifying monitoring well and a detailed description of the methods used to calculate the statistical comparison standards for the monitoring wells.
4/10/13	CLASS 1A Mods to Update: 1) Addition of tetrahydrofuran to the Affected Constituent List for Well SW-025 2) Removal of tetrahydrofuran from the Affected Constituent List for Well SW-03D 3) Removal of nickel from the Affected Constituent List for Well SW-035
4/10/13	Class 1A Mod to remove nickel from the affected constituent list for Well MR-045.
10/1/13	Class 1A mod approval to change attachment D, affected and adjacent well listing.
11/25/13	Class 1 mod approval to change EL and EH definitions and update well logs due to maintenance of well DUG-1.
11/26/13	Class 1A mod approval to reduce waste minimization requirements and reduce the required submittal of waste minimization reports to OEPA from every two years to every five years.
12/24/13	Class 1 mod approval to update permit conditions b.25 and k.7 to correct rules citations and update to current language for biennial reporting and to update section E.9 and section J of the permit application to correct rules citations and update for biennial reporting.
12/24/13	Mod approved to 1)Update dates of closure for cell M, Storage areas H and K and storage tanks s100, s200 and s400 in section 1 of permit app. 2) Correct typographical errors and remove outdated language from section 1 of permit app and 3) Update closure and post closure cost estimates and financial requirements for inflation in appendix 1.5 of the permit app.
This information came from RCRAInfo event codes on permit determinations and mod approvals. The detail about the mods was taken verbatim (in most cases) from the notes section for the permit mod approval event codes.	

APPENDIX

1. Modification Types Based on Regulatory Descriptions

This document includes: (1) the regulatory classifications for types of permit modifications and a crosswalk to applicable regulations, and (2) a table with the classification of permit modifications (Appendix I to §270.42).

2. Permit Modification Data: Background and Details

This document provides additional information and background on how the data for this report was collected, including the specific method for how information was retrieved and analyzed from EPA's national hazardous waste database (RCRAInfo).

~~~~ The materials in the appendix are contained in separate documents ~~~~
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To: Linder, Steven[Linder.Steven@epa.gov]; TU, LYNDSEY[Tu.Lyndsey@epa.gov]; Huetteman, Tom[Huetteman.Tom@epa.gov]
From: Pallarino, Bob
Sent: Wed 6/14/2017 8:20:02 PM
Subject: Q&A sheet from the Navy
RH PM June17 Navy PAO input and BP edits for drinking water questions.docx

I provided some answers to the questions we might get at the public meeting regarding drinking water. I will only share this with EPA for now.

Bob Pallarino

U.S. EPA Region 9

Underground Storage Tank Program Office

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Room Stations, Station Staffing and Potential Questions and Answers

Station 1 - General / Project Management (Jeff Scott, Keith Kawaoka, Capt. Hayes)
1 Poster - Project Timeline U Chart

Q: Why is taking so long to implement AOC?
A: The Administrative Order on Consent process is working and on track. The AOC ensures the Hawaii Department of Health and EPA provide the Navy regulatory oversight and expert resources in order to make step-by-step evidence-based decisions and not rush to potential failure. In addition to existing Navy plans, the AOC serves as both a legally enforceable roadmap for continually modernizing Red Hill and a directed timetable toward completion.

Q: If Red Hill damages water quality in the future, who will pay for alternative water?
A: Under safe drinking water provisions of both state and federal law, the person (or entity) who causes violation of drinking water standards is liable for appropriate treatment or provision of alternate water supplies. The Groundwater Protection plan approved by DOH is intended to ensure appropriate treatment or alternative sources can be provided by the Navy in a timely manner in the unlikely event that monitoring wells indicate that contamination of a drinking water source is likely to occur.

Q: Why aren't the Red Hill Tanks being required to comply with State and Federal regulations? EPA/DOH?

Q: A number of states have required retirement of single walled tanks. Why isn't this being done in Hawaii? DOH?

Q: Isn't Red Hill a ticking bomb? Why don't you just shut it down?
A: Red Hill is a modernized facility and essential to the Fleet and other DoD services. The Navy and the Department of Defense work to continually upgrade and modernize this critical facility. Since 2006, the Navy and DoD have spent more than $200 million in upgrades. The facility enables the military to support its vital security missions in the Pacific Theater, including protecting sea lanes and commercial shipping. More than 90 percent of Hawaii's trade to and from the islands depends on that shipping. Red Hill is central to continued security, stability and prosperity for both the Indo-Asia-Pacific Theater and the United States. And the military, as one of the top economic engines for the state, provides jobs, income and opportunity – on base and off – for the people of Hawaii.

Q: It took less than 5 years to build the tanks. Why can't they be upgraded in less than 5 years?
A: Building a facility in the 1940s and upgrading in this day and age are two distinctly different efforts. The AOC ensures the Hawaii Department of Health and EPA provide the Navy regulatory oversight and expert resources in order to make step-by-step evidence-based decisions and not rush to potential failure.

Q: The Navy is hiding the truth about the condition of Red Hill. Why doesn't the Navy allow the press and environmental leaders into the facility to see the problems first hand? What is the Navy hiding?
A: Since 2014. The Navy has provided tours of Red Hill to more than 100 elected officials and other civic leaders. A wide range of informational products are available online, both on Navy and EPA websites dedicated to Red Hill and the AOC. Red Hill is an active operational facility, and although working media do not have access, the Navy has responded to requests for photo and video, as well as providing answers to questions asked by media.

Station 2 - Drinking Water and Risk (Mark Manfredi, Bob Pallarino, Joanna Seto)
1 Poster - Drinking Water Sources

Q: What health issues should I expect from the Red Hill contamination in the water? DOH?
It is important to understand that for there to be a health effect, a person must come into contact with a contaminant either by ingestion, skin contact or breathing. The contamination that exists from the Red Hill tanks is localized in the groundwater beneath the Facility. Contaminated groundwater has not been detected in most of the wells surrounding the facility. This means that the contaminated groundwater under the facility has not migrated to the wells that supply drinking water to the public, the nearest of which is about a half mile from the Facility. Therefore, at this time, ingesting contaminants is not likely.

The groundwater that is affected by Red Hill fuel is deep below the ground surface, making skin contact with contaminants highly unlikely. Lastly, breathing fuel vapors from contamination is also unlikely because the contaminants are buried deep below the surface.

At this time, there is no danger to the public from exposure to contaminated water. The purpose of the AOC is to make sure the public is not exposed to any contamination as a result of fuel releases from the Facility.

Q: When will the contamination from the 2014 release reach the drinking water wells?
A: Not sure who takes this one? Groundwater Protection Plan, installation of new monitoring wells?
Whether contamination will ever reach drinking water wells is a function of groundwater flow direction, flow rate, the amount of contamination in the environment, the condition of any contamination in the environment (as fuel ages it can become more viscous and less likely to migrate) and the rate of natural attenuation (bacteria that occur naturally in the soil will degrade petroleum constituents). In order to answer this question we need to determine all of these factors. One of the key tasks of the AOC is to determine all of these variables and to predict which types of fuel release scenarios pose a risk to the drinking water supply.

Q: Have leaks from Red Hill ever impacted the drinking water sources?
A: Drinking water from Navy and BWS wells have continued to test well within federal standards, before and after the 2014 release from Tank 5.

To our knowledge, no drinking water source in the vicinity of Red Hill has ever been adversely affected by fuel releases from the facility.

Q: What are these contaminants found in the groundwater going to do to me if they do get in my water? DOH?

The effects of contamination on human health depends on how much of a contaminant a person is exposed to and for how long that exposure continues. The most toxic substance in petroleum products is benzene, because it has the highest cancer risk. However, different kinds of fuel have different amounts of benzene in them. The fuels currently stored at Red Hill, marine diesel and jet fuels, have very little benzene in them. The gasoline used in motor vehicles has much more benzene and can be a much greater health risk compared to the Red Hill fuels.

The Agency for Toxic Substances and Disease Registry has published a fact sheet on Jet Fuels (which is what leaked from Tank 5 in January 2014). While there are no studies that look at the health effects from this specific type of fuel, health effects observed from some people who work with jet fuel indicated that exposure to jet fuel can affect the nervous system or, if swallowed, the gastrointestinal system. However these types of exposures occur primarily in the workplace, homeowners who would only be exposed if the contaminant is in drinking water are not likely to see these types of effects.

Q: No risk is acceptable to the groundwater. What is going to be done to guarantee zero risk? EPA/DOH?

The only way to have zero risk to the groundwater would be for all human beings to leave the island of Oahu. There are many sources of pollution that could and have affected the groundwater of Oahu, but zero risk of contaminants reaching the groundwater is a goal that can be very difficult to achieve. Aside from contamination associated with petroleum storage facilities, pesticides from farming and nitrates from septic systems are two of the more common contaminants that could be present in the groundwater. But it is important to note that groundwater and drinking water throughout the island is tested regularly to find contaminants before they pose a risk to human health. If contaminants are found in drinking water supply wells the water can be treated to remove the contaminants. The cost of the removal would be borne by the entity that caused the pollution.

Station 3 - Groundwater Investigation and Remediation (NAVFAC EV, Lyndsey Tu, Bob Whittier, Rich Takaba)

3 - Posters

Q: Where did the 27,000 gallons of fuel go?

Q: What are you going to do to clean up the leak?

Q: Is the contamination in groundwater moving? What direction and how fast?

Q: Isn't the 27,000-gallon release considered a large release?

Station 4 - Tank Inspection, Repair, and Maintenance and Schedule (John Floyd, Tom Huetteman, Roxanne Kwan)
1 Poster - Tank and Logistics

Q: Why did the 2014 release happen?
A: The release was due to poor welding during repair, inadequate oversight by the Navy, and initially disregarding alarms during the refill process.

Q: What procedures have been improved? FLC?

Q: How much does is currently cost to inspect and repair a tank? FLC/NAVFAC?

Q: I have heard that the tanks are corroding. Why do you think the tanks are not going to have an increasing rate of failure due to corrosion holes?

Q: Why don't you fill the tank up with water to check for leaks before you reintroduce fuel to a tank?

Q: Why did your leak detection not catch the problem in 2014?

Q: If a tank starts leaking again, how much fuel will be lost before you are able to stop the leak?

Station 5 - Tank Upgrade Alternatives (John Montgomery, Steve Linder, Steve Chang)
1 Poster - TUAs

Q: Isn't the answer obvious? Aren't two walls better than one?

Q: But why can single walled tanks even be considered at Red Hill since the tanks are over a drinking water supply?

Q: What is the largest release that can possibly occur at Red Hill? I have heard that an earthquake can cause millions of gallons to leak? What would happen if millions of gallons leaked? Wouldn't double walled tanks prevent a huge failure?

A: A 2015 geologic study commissioned by the EPA concluded "The Red Hill tanks have very low potential for a catastrophic release. The tanks are embedded in bedrock 100 to 200 feet deep that makes them well protected from geologic and natural hazards. There are no credible mechanisms that could rapidly cause a large breach in a tank wall and allow a damaging release of stored liquids."

Station 6 - Alternative Fuel Storage (Capt. Epps)
1 Poster - Alt Locations

Q: Why can't you store the fuel by the refinery in above ground tanks?

Q: Why do you need to store so much fuel in Hawaii?

Q: How can you continue to operate tanks that were never designed to last decades?

Q: Are there other tanks that have lasted as long as the Red Hill tanks?

To: Gross, Barbara[Gross.Barbara@epa.gov]; Rizgar.Ghazi_dtsc.ca.gov[Rizgar.Ghazi@dtsc.ca.gov]; Kowbel, Nelline@DTSC[Nelline.Kowbel@dtsc.ca.gov]; Wayne Lorentzen (Wayne.Lorentzen@dtsc.ca.gov)[Wayne.Lorentzen@dtsc.ca.gov]
From: Huetteman, Tom
Sent: Mon 11/14/2016 5:28:40 PM
Subject: Permit Targets as of July 2016
CA Permitting targets.doc

Tom Huetteman, Assistant Director
Land Division, USEPA Region 9
415-972-3751

California FY16 Permitting Goals

Updated July 29, 2016 based on the discussions in the July 28 Meeting

1	**TESORO (BP) CARSON REFINERY**	**CAD077227049**	**Effective Date 11/16/2015**	**Issued on 10/15/2015**
2	**SAN ONOFRE (SONGS) SOUTHERN CA EDISON**	**CAD000630921**	**4/20/2016**	**OP Permit Renewal**
3	**KW PLASTICS**	**CAD982435026**	**4/7/2016**	**Unit Closure**
4	**LAWRENCE LIVERMORE NATIONAL LABORATORY (Main Site)**	**CA2890012584**	**4/18/2016**	**OP Permit Renewal**
5	**TFX AVIATION INC.**	**CAD008383127**	**6/23/2016**	**Post Closure Permit**
6	**GE INTERNATIONAL**	**CAD030584502**	**6/22/2016**	**OP Permit Renewal**
7	**Solar Turbine – NOT IN RCRAINFO YET**	**CAD008314908**	**5/6/2016**	**Post Closure**
8	**FORWARD LANDFILL– NOT IN RCRAINFO YET**	**CAD990794133**	**7/18/2016**	**Post Closure Permit**
9	**KAISER VENTURES– NOT IN RCRAINFO YET**	**CAD008274938**	**6/2016**	**Post Closure Permit**
10	LAWRENCE LIVERMORE NATIONAL LABORATORY - SITE 300 (Tracy)	CA2890090002	9/2016	Renewal
11	KW PLASTICS	CAD982435026	9/2016	Operating Permit
12	RIVERBANK ARMY AMMO	CA7210020759	9/2016	Closure
13	(IT) VINE HILL COMPLEX	CAD982521460	10/2016	Transfer to CA
14	Montezuma	CAD079089512	10/2016	Transfer to CA
15	Benson Ridge	CAD000633289	10/2016	Transfer to CA
16	DEMENNO KERDOON	CAT080013352	3/2017	OP Permit Renewal.
17	JOHN SMITH ROAD LANDFILL	CAD990665432	11/2016	Post Closure Permit.
18	CHEVRON, RICHMOND REFINERY	CAD009114919	12/2016	Post closure permit
19	EVOQUA WATER TECHNOLOGIES CORP	CAD097030993	1/2017	Renewal
20	LAWRENCE LIVERMORE NATIONAL LABORATORY - SITE 300 (Tracy)	CA2890090002	1/2017	Post Closure Permit
21	CHEMTRADE	CAD009142290	10/2016	Closure

BOLD – Met the goal

22	SAFETY KLEEN OF CALIFORNIA, NEWORK	CAD980887418	7/2017	OP Permit Renewal
23	DOW CHEMICAL	CAD076528678	3/2017	OP Permit Renewal
24	KEARNEY KPF	CAD981429715	2/2017	Post Closure Permit
25	PANOCHE-Transferring to Superfund or CA	CAD000060012	10/2016	-Transfer to CA
26	BOING CO. – CANOGA PARK	CAD093365435	6/2017	Post Closure Permit
27	PHIBRO TECH INC	CAD008488025	5/2017	OP Permit Renewal
28	US NAVY CHINA LAKE	CA2170023152	1/2017	OP Permit Renewal
29	CLEAN HARBORS WESTMORLAND	CAD000633164	1/2017	OP Permit Renewal
30	SAFETY KLEEN, EL MONTE	CAT000613893	3/2017	CLEAN CLOSURE
31	Phillips 66, SF Refinery	CAD009108705	11/2016	PC Renewal

To: Johnson, Kathleen[Johnson.Kathleen@epa.gov]; Fogarty, Johnpc[Fogarty.Johnpc@epa.gov]
Cc: Salazar, Matt[Salazar.Matt@epa.gov]; Jones, Joel E.[Jones.Joel@epa.gov]; Chew, Andrew[Chew.Andrew@epa.gov]
From: Brooks, Phillip
Sent: Thur 10/27/2016 8:29:49 PM
Subject: RE: Power input to refineries?

I am checking. We may have someone, but I want to be sure I send the right same.

-----Original Message-----
From: Johnson, Kathleen
Sent: Thursday, October 27, 2016 4:11 PM
To: Brooks, Phillip <Brooks.Phillip@epa.gov>; Fogarty, Johnpc <Fogarty.Johnpc@epa.gov>
Cc: Salazar, Matt <Salazar.Matt@epa.gov>; Jones, Joel E. <Jones.Joel@epa.gov>; Chew, Andrew <Chew.Andrew@epa.gov>
Subject: Power input to refineries?

Hey team,
South Coast air quality management district recently issued an order against a Torrance refinery to ensure that they had sufficient (and redundant) power sources. Recently there were some power outages which caused massive flaring events. South coast has determined the refinery was woefully "under powered." Wayne Nastri (south coast exec) asked me if we had expertise in these issues. Do you guys know someone who may have expertise whose name I could pass along to Wayne?

Sent from my iPhone

To: Johnson, Kathleen[Johnson.Kathleen@epa.gov]
Cc: Rushin, Carol[Rushin.Carol@epa.gov]
From: Parker, David
Sent: Wed 6/3/2015 10:48:34 PM
Subject: RE: Really appreciate all of your assistance!!

Kathleen:

Thank you so much for these kind words. This type of feedback is quite meaningful for all of us here. We at NEIC are happy to be of service to Region 9 and look forward to working with you in FY16 as well.

Sincerely,

David

From: Johnson, Kathleen
Sent: Wednesday, June 03, 2015 3:36 PM
To: Rushin, Carol; Parker, David
Cc: Giles-AA, Cynthia; Starfield, Lawrence; Wilson, Shari
Subject: Really appreciate all of your assistance!!

Dear Carol and David:

As we prepare to launch another round of NEIC project solicitations, I wanted to take a moment to express Region 9's appreciation for the valuable assistance NEIC has provided in support of regional enforcement programs. NEIC's technical expertise and industrial process knowledge has been of critical importance in filling regional skill gaps on complex projects we would otherwise find difficult to complete on our own.

In FY2015, we are collaborating with NEIC on six projects, most of which have already been initiated and/or completed.

In February, 2015, the GMAP vehicle was brought to Southern California to conduct real-time fenceline emissions monitoring in geographic areas containing sources suspected of emitting elevated levels of volatile organic compounds. This was a valuable learning experience for our enforcement and targeting staff, and EPA received very positive press coverage during the event.

Also in February, NEIC conducted a process-based inspection of the Hudson Ranch Geothermal Power Plant in Imperial County, California. Region 9 inspectors joined the NEIC team, as did inspectors from the CA regulatory agency. Following the multi-day inspection, we received a message of support from the CA Department of Toxic Substances Control expressing appreciation for NEIC's professionalism in leading the inspection team through a thorough, controlled process review. "As a result, the DTSC Imperial CUPA has identified at least two areas previously unknown for potential hazardous waste treatment processes that we will develop further." "We will duplicate this effort in other venues throughout manufacturing processes in Imperial County and elsewhere." This joint inspection is a perfect example of how NEIC's expertise and mentorship can build capacity of both our regional and state inspectors to address complex issues.

During the week of March 16, 2015 NEIC conducted Pretreatment Compliance Inspections (PCIs) of the City of Reno's and City of Sparks' pretreatment programs. It had been 10 years since EPA has conducted PCIs in northern Nevada, so these inspections where long overdue. Both Reno's and Sparks' pretreatment programs were well run. NEIC submitted draft inspection reports in early April 2015 that identified some specific issues for the cities to correct or update.

NEIC conducted inspections of Honolulu industrial users (IUs) from April 14, 2015 to April 24, 2015. The inspections were focused on finding categorical industrial users and inspecting waste haulers. Waste haulers were identified during a City of Honolulu Pretreatment Compliance Audit (PCA) conducted by PG Environmental in June 2014 as being a potential source of high strength wastewater entering treatment plant's headworks without proper pretreatment. The NEIC IU inspections were crucial to gather more information to assist with a potential case against the City of Honolulu's inadequate pretreatment program. NEIC provided a briefing of the inspection finding in early May 2015. The inspection reports will follow once analytical results from inspection sampling have been obtained and assessed.

During the week of May 10-18, NEIC inspected two City and County of Honolulu (CCH) wastewater treatment plants at Sand Island and Kailua. These were in-depth diagnostic inspections including extensive sampling, on-site observations and record review. In addition, NEIC developed a computer model of each plant which they will use to evaluate optimization of plant operations. Draft inspection reports are due on August 20, 2015. Based on initial findings, both facilities have room for improvement in operational efficiency. We anticipate that NEIC's reports will support development of a case against CCH to require treatment plant improvements and ultimately result in cleaner effluent being discharged from these facilities. We do not have the technical skillset in Region 9 to perform diagnostic or sampling inspections at this level, so NEIC's support was invaluable.

We have one more collaborative project scheduled for September, 2015, an EPCRA review of the Tesoro Los Angeles (Wilmington) Refinery. We look forward to initiating planning for this project later this summer.

Thank you again for supporting Region 9's enforcement programs! Maintaining NEIC's expertise to assist the Regions is critical to our continuing success, and much appreciated.

Kathleen H. Johnson

Director, Enforcement Division

U.S. EPA - Region 9

75 Hawthorne Street ENF-1

San Francisco, CA 94015

415/972-3873

johnson.kathleen@epa.gov

To: Johnson, Kathleen[Johnson.Kathleen@epa.gov]
Cc: Parker, David[Parker.David@epa.gov]
From: Rushin, Carol
Sent: Wed 6/3/2015 10:44:57 PM
Subject: RE: Really appreciate all of your assistance!!

Wow, thank you Kathleen!

I appreciate the time you took to send such a fantastic note. It is the best e-mail I have had all year! I forwarded it on to staff here, who never get thanked enough for their hard work. We look forward to working with you on your next set of projects.

Take care,

Carol

From: Johnson, Kathleen
Sent: Wednesday, June 03, 2015 3:36 PM
To: Rushin, Carol; Parker, David
Cc: Giles-AA, Cynthia; Starfield, Lawrence; Wilson, Shari
Subject: Really appreciate all of your assistance!!

Dear Carol and David:

As we prepare to launch another round of NEIC project solicitations, I wanted to take a moment to express Region 9's appreciation for the valuable assistance NEIC has provided in support of regional enforcement programs. NEIC's technical expertise and industrial process knowledge has been of critical importance in filling regional skill gaps on complex projects we would otherwise find difficult to complete on our own.

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Kathleen H. Johnson

Director, Enforcement Division

U.S. EPA - Region 9

75 Hawthorne Street ENF-1

San Francisco, CA 94015

415/972-3873

johnson.kathleen@epa.gov

To: McDaniel, Doug[McDaniel.Doug@epa.gov]
Cc: Kihara, Keith@DTSC[Keith.Kihara@dtsc.ca.gov]; Soria, Maria@DTSC[Maria.Soria@dtsc.ca.gov]; Johnson, Kathleen[Johnson.Kathleen@epa.gov]; Scott, Jeff[Scott.Jeff@epa.gov]; Jones, Joel E.[Jones.Joel@epa.gov]
From: Rothschild, Elise@DTSC
Sent: Thur 7/30/2015 8:41:15 PM
Subject: [SPAM] RE: Valero Benicia Show Cause Letter

Thanks Doug – appreciate you keeping up in the loop!

Elise Rothschild, REHS

Deputy Director

Department of Toxic Substances Control

Hazardous Waste Management Program

From: McDaniel, Doug [mailto:McDaniel.Doug@epa.gov]
Sent: Thursday, July 30, 2015 10:40 AM
To: Rothschild, Elise@DTSC
Cc: Kihara, Keith@DTSC; Soria, Maria@DTSC; Johnson, Kathleen; Scott, Jeff; Jones, Joel E.
Subject: Valero Benicia Show Cause Letter

Ms. Rothschild:

Attached is a copy of our letter going out today, notifying the Valero Benicia Refinery of our intent to file an enforcement action resulting from our joint inspection with DTSC in May 2014. We will forward the final inspection report after resolving related CBI issues. Note that the case includes both RCRA and EPCRA (TRI) violations. Please contact me with any questions.

Thanks,

Doug

Douglas K. McDaniel

Chief, Waste and Chemical Section

Enforcement Division

U.S. EPA Region 9

(415) 947-4106

To: Rothschild, Elise@DTSC[elise.rothschild@dtsc.ca.gov]
Cc: Kihara, Keith@DTSC[Keith.Kihara@dtsc.ca.gov]; Soria, Maria@DTSC[Maria.Soria@dtsc.ca.gov]; Johnson, Kathleen[Johnson.Kathleen@epa.gov]; Scott, Jeff[Scott.Jeff@epa.gov]; Jones, Joel E.[Jones.Joel@epa.gov]
From: McDaniel, Doug
Sent: Thur 7/30/2015 5:40:04 PM
Subject: Valero Benicia Show Cause Letter
ShowCauseLetterJuly302015.pdf

Ms. Rothschild:

Attached is a copy of our letter going out today, notifying the Valero Benicia Refinery of our intent to file an enforcement action resulting from our joint inspection with DTSC in May 2014. We will forward the final inspection report after resolving related CBI issues. Note that the case includes both RCRA and EPCRA (TRI) violations. Please contact me with any questions.

Thanks,

Doug

Douglas K. McDaniel

Chief, Waste and Chemical Section

Enforcement Division

U.S. EPA Region 9

(415) 947-4106

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

JUL 30 2015

UPS PRIORITY OVERNIGHT/EXPRESS MAIL
SIGNATURE REQUIRED

Christopher W. Howe
Director, Health, Safety, Environment & Government Affairs
Valero Benicia Refinery
3400 East Second Street
Benicia, California 94510-1005
Chris.howe@valero.com

RE: **Notice of Intent to File a Complaint Pursuant to Section 3008(a) of the Resource Conservation and Recovery Act and Section 325(c) of the Emergency Planning and Community Right-to Know Act**

Dear Mr. Howe:

This letter is to notify you that the U.S. Environmental Protection Agency ("the EPA" or "the Agency") is preparing to issue a civil administrative complaint against Valero Benicia Refinery pursuant to Section 3008(a) of the Resource Conservation and Recovery Act ("RCRA"), as amended, 42 U.S.C. §§ 6921-6939e; and Section 325(c) of the Emergency Planning and Community Right-to-Know Act ("EPCRA"), 42 U.S.C. §§ 11001 – 11050, for violations discovered during routine compliance evaluation inspections performed in May 2014 at 3400 East Second Street, Benicia, California.

The allegations against Valero Benicia include violations of the RCRA Hazardous Waste Management requirements, 42 U.S.C. § 6921 *et seq.*, the California Health and Safety Code, Division 20, and the California Code of Regulations (CCR), Title 22, Division 4.5, as specified below; and EPCRA Section 313, 42 U.S.C. § 11023. Under Section 3006 of RCRA, 42 U.S.C. § 6926, the violations of the State of California authorized RCRA hazardous waste management program identified below are federally enforceable.

The allegations against Valero Benicia Refining Company include:

1. Treatment and Storage of Hazardous Waste Without a Permit (operating an unlined stormwater surface impoundment as a hazardous waste management unit without obtaining a RCRA permit; storing and treating hazardous waste on the heat exchanger bundle cleaning pad without a RCRA permit), 22 CCR § 66270.1(c) [see also 40 CFR § 270.1(c)];

2. Failure to make a hazardous waste determination, 22 CCR § 66262.11 [see also 40 CFR § 262.11];

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3. Failure to minimize the possibility of unplanned release of hazardous waste or hazardous waste constituents to air, soil or surface water, 22 CCR§ 66265.31 as referenced by § 66262.34(a)(4) [see also 40 CFR § 265.31, as referenced by § 262.34(a)(4)]; and

4. Failure to submit timely, complete and correct Toxic Chemical Release Inventory Forms ("Form R reports") pursuant to EPCRA Section 313 for:

    - Benzene in reporting years ("RY") 2010, 2011 and 2012;
    - Ethylbenzene in RY2012;
    - Ethylene in RY2010 and RY2011;
    - Toluene in RY2010, RY2011 and RY2012; and
    - Xylene (mixed isomers) in RY2010, RY2011 and RY2012.

A copy of the RCRA/EPCRA inspection report is enclosed for your information and response. The report identifies potential violations of RCRA and EPCRA observed during EPA's investigation. EPA regulations governing the confidentiality of business information are set forth in 40 CFR Part 2, Subpart B. EPA routinely provides copies of investigation reports to state agencies, and upon request, to the public. Such releases are handled according to the Freedom of Information Act regulations (40 CFR Part 2). If Valero Benicia Refinery believes the enclosed RCRA/EPCRA report contains information entitled to treatment as confidential business information, please assert a confidentiality claim in accordance with 40 C.F.R. § 2.203(b) **within fourteen (14) calendar days from the date of receipt of this letter.** Business confidentiality includes the concept of trade secrecy and other related concepts. Your claim must specifically identify the information covered by the claim and should be sent to EPA by certified mail. EPA will construe the failure to furnish a confidentiality claim within **fourteen (14) calendar days** from the date of Valero Benicia Refinery's receipt of this letter as a waiver of that claim and information may be made available to the public by the EPA without further notice. See 40 CFR § 2.203(a)(2).

EPA anticipates filing a Complaint, Compliance Order and Notice of Right to Request a Hearing (Complaint) against Valero Benicia Refinery **within the next twenty-eight (28) calendar days** unless Valero Benicia Refinery advises EPA of substantial reasons not to proceed. EPA is extending to Valero Benicia Refinery the opportunity to submit any information that EPA should consider before issuing the Complaint. Relevant information may include any evidence of reliance on compliance assistance, additional compliance tasks performed after the inspection, or financial factors bearing on Valero Benicia Refinery's ability to pay a civil penalty.

Even if you are unaware of any mitigating or exculpatory factors, we are extending to you the opportunity to commence settlement discussions concerning the above-described violations.

The violations alleged are subject to penalties of up to $37,500 per day per violation pursuant to section 3008(g) of RCRA, 42 U.S.C. § 6928(g), and section 325(c) of EPCRA, 42 U.S.C. § 11045(c), as adjusted by the Debt Collection Improvement Act of 1996 (61 Fed. Reg. 69360 (Dec. 31, 1996)) and the Civil Monetary Penalty Inflation Adjustment Rule (73 Fed. Reg. 75340 (Dec. 11, 2008)).

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Any penalty discussed in settlement negotiations for violations of RCRA and its implementing regulations will be calculated pursuant to EPA's RCRA Civil Penalty Policy, available online at http://www2.epa.gov/enforcement/resource-conservation-and-recovery-act-rcra-civil-penalty-policy. Penalties for EPCRA violations will be calculated pursuant to EPA's Enforcement Response Policy for Section 313 of the Emergency Planning and Community Right-to-know Act (1986) and Section 6607 of the Pollution Prevention Act (1990) [Amended], available online at http://www2.epa.gov/sites/production/files/documents/epcra-sec311-mem.pdf.

EPA's Civil Monetary Penalty Inflation Adjustment Rule and Supplemental Environmental Projects Policy (SEP Policy) are available at the links below. EPA's SEP Policy describes the terms under which a commitment to perform an environmental project may mitigate, in part, an EPA civil penalty.

- EPA's "Civil Monetary Penalty Inflation Adjustment Rule," which adjusts for inflation the statutory civil monetary penalties that may be assessed for violations of EPA-administered statutes and their implementing regulations, available online at: http://www2.epa.gov/enforcement/memorandum-amendments-epas-civil-penalty-policies-implement-2008-civil-monetary-penalty

- EPA's Supplemental Environmental Project (SEP) policy, available online at: http://www2.epa.gov/sites/production/files/2015-04/documents/sepupdatedpolicy15.pdf

In addition, please review the attached Small Business Regulatory Enforcement and Fairness Act ("SBREFA") Information Sheet that is designed to provide information on compliance assistance, as well as to inform small businesses of their rights to comment to the SBREFA Ombudsman concerning EPA enforcement activities. Be aware that SBREFA does not eliminate your responsibility to respond to a complaint, information request, or other enforcement activity within the allowed time nor does it create any new rights or defenses under the law.

Enclosed for your information are requirements of the Securities and Exchange Commission (SEC) for "registrants" to provide information on environmental legal proceedings to the public. To determine the applicability of these requirements to your company you should seek competent legal counsel as described in the enclosed SEC Notice.

Thank you for your prompt attention to this matter. If you wish to discuss this matter or commence settlement negotiations, please contact Sharon Lin at (415) 972-3446 (for RCRA) or Russ Frazer at (415) 947-4220 (for EPCRA) or have your attorney contact Rebecca Sugerman of the Office of Regional Counsel at (415) 972-3893.

Sincerely,

Joel Jones
Assistant Director
Enforcement Division

ED_001593_00008971

cc: Donald W. Cuffel, Manager Environmental Engineering, Valero Benicia Refinery
Donald.cuffel@valero.com

Enclosures

SBREFA Information Sheet
Notice of SEC Registrants' Duty to Report
Inspection Report (CD)

ED_001593_00008971

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

NOTICE OF SECURITIES AND EXCHANGE COMMISSION REGISTRANTS' DUTY TO DISCLOSE ENVIRONMENTAL LEGAL PROCEEDINGS

Securities and Exchange Commission regulations require companies registered with the SEC (e.g., publicly traded companies) to disclose, on at least a quarterly basis, the existence of certain administrative or judicial proceedings taken against them arising under Federal, State or local provisions that have the primary purpose of protecting the environment. Instruction 5 to Item 103 of the SEC's Regulation S-K (17 CFR 229.103) requires disclosure of these environmental legal proceedings. For those SEC registrants that use the SEC's "small business issuer" reporting system, Instructions 1-4 to Item 103 of the SEC's Regulation S-B (17 CFR 228.103) requires disclosure of these environmental legal proceedings.

If you are an SEC registrant, you have a duty to disclose the existence of pending or known to be contemplated environmental legal proceedings that meet any of the following criteria (17 CFR 229.103(5)(A)-(C)): Such proceeding is material to the business or financial condition of the registrant;

> A.Such proceeding involves primarily a claim for damages, or involves potential monetary sanctions, capital expenditures, deferred charges or charges to income and the amount involved, exclusive of interest and costs, exceeds 10 percent of the current assets of the registrant and its subsidiaries on a consolidated basis; or
> B.A governmental authority is a party to such proceeding and such proceeding involves potential monetary sanctions, unless the registrant reasonably believes that such proceeding will result in no monetary sanctions, or in monetary sanctions, exclusive of interest and costs, of less than $100,000; provided, however, that such proceedings which are similar in nature may be grouped and described generically.

Specific information regarding the environmental legal proceedings that must be disclosed is set forth in Item 103 of Regulation S-K or, for registrants using the "small business issuer" reporting system, Item 103(a)-(b) of Regulation S-B. If disclosure is required, it must briefly describe the proceeding, "including the name of the court or agency in which the proceedings are pending, the date instituted the principal parties thereto, a description of the factual basis alleged to underlie the proceedings and the relief sought."

You have been identified as a party to an environmental legal proceeding to which the United States government is, or was, a party. If you are an SEC registrant, this environmental legal proceeding may trigger, or may already have triggered, the disclosure obligation under the SEC regulations described above.

This notice is being provided to inform you of SEC registrants' duty to disclose any relevant environmental legal proceedings to the SEC. This notice does not create, modify or interpret any existing legal obligations, it is not intended to be an exhaustive description of the legally applicable requirements and it is not a substitute for regulations published in the Code of Federal Regulations. This notice has been issued to you for information purposes only. No determination of the applicability of this reporting requirement to your company has been made by any governmental entity. You should seek competent counsel in determining the applicability of these and other SEC requirements to the environmental legal proceeding at issue, as well as any other proceedings known to be contemplated by governmental authorities.

If you have any questions about the SEC's environmental disclosure requirements, please contact the SEC Office of the Special Senior Counsel for Disclosure Operations at (202) 942-1888.

TITLE 17 - COMMODITY AND SECURITIES EXCHANGES

Title 17, Volume 2, Parts 200 to 239

(Division: Securities and Exchange Commission)

Part 229 - Standard Instructions for Filing Forms Under Securities Act of 1933, Securities Exchange Act of 1934 and Energy Policy and Conservation Act of 1975-Regulation S-K

Subpart 229-100 - Business

§229.103 (Item 103) Legal proceedings

Describe briefly any material pending legal proceedings, other than ordinary routine litigation incidental to the business, to which the registrant or any of its subsidiaries is a party or of which any of their property is the subject. Include the name of the court or agency in which the proceedings are pending, the date instituted, the principal parties thereto, a description of the factual basis alleged to underlie the proceeding and the relief sought. Include similar information as to any such proceedings known to be contemplated by governmental authorities.

Instructions to Item 103: 1. If the business ordinarily results in actions for negligence or other claims, no such action or claim need be described unless it departs from the normal kind of such actions.

2. No information need be given with respect to any proceeding that involves primarily a claim for damages if the amount involved, exclusive of interest and costs, does not exceed 10 percent of the current assets of the registrant and its subsidiaries on a consolidated basis. However, if any proceeding presents in large degree the same legal and factual issues as other proceedings pending or known to be contemplated, the amount involved in such other proceedings shall be included in computing such percentage.

3. Notwithstanding Instructions 1 and 2, any material bankruptcy, receivership, or similar proceeding with respect to the registrant or any of its significant subsidiaries shall be described.

4. Any material proceedings to which any director, officer or affiliate of the registrant, any owner of record or beneficially of more than five percent of any class of voting securities of the registrant, or any associate of any such director, officer, affiliate of the registrant, or security holder is a party adverse to the registrant or any of its subsidiaries or has a material interest adverse to the registrant or any of its subsidiaries also shall be described.

5. Notwithstanding the foregoing, an administrative or judicial proceeding (including, for purposes of A and B of this Instruction, proceedings which present in large degree the same issues) arising under any Federal, State or local provisions that have been enacted or adopted regulating the discharge of materials into the environment or primary for the purpose of protecting the environment shall not be deemed "ordinary routine litigation incidental to the business" and shall be described if:

A. Such proceeding is material to the business or financial condition of the registrant;

B. Such proceeding involves primarily a claim for damages, or involves potential monetary sanctions, capital expenditures, deferred charges or charges to income and the amount involved, exclusive of interest and costs, exceeds 10 percent of the current assets of the registrant and its subsidiaries on a consolidated basis; or

C. A governmental authority is a party to such proceeding and such proceeding involves potential monetary sanctions, unless the registrant reasonably believes that such proceeding will result in no monetary sanctions, or in monetary sanctions, exclusive of interest and costs, of less than $100,000; provided, however, that such proceedings which are similar in nature may be grouped and described generically.

Office of Enforcement and Compliance Assurance (2201A)
EPA-300-B-15-001 May 2015

U.S. EPA Small Business Resources Information Sheet

The United States Environmental Protection Agency provides an array of resources to help small businesses understand and comply with federal and state environmental laws. In addition to helping small businesses understand their environmental obligations and improve compliance, these resources will also help such businesses find cost-effective ways to comply through pollution prevention techniques and innovative technologies.

Small Business Programs
www.epa.gov/smallbusiness
EPA's Office of Small Business Programs (OSBP) advocates and fosters opportunities for direct and indirect partnerships, contracts, and sub-agreements for small businesses and socio-economically disadvantaged businesses.

EPA's Asbestos Small Business Ombudsman
www.epa.gov/sbo or 1-800-368-5888
The EPA Asbestos and Small Business Ombudsman (ASBO) serves as a conduit for small businesses to access EPA and facilitates communications between the small business community and the Agency.

EPA's Compliance Assistance Homepage
www2.epa.gov/compliance
This page is a gateway industry and statute-specific environmental resources, from extensive web-based information to hotlines and compliance assistance specialists.

EPA's Compliance Assistance Centers
www.assistancecenters.net
EPA's Compliance Assistance Centers provide information targeted to industries with many small businesses. They were developed in partnership with industry, universities and other federal and state agencies.

Agriculture
www.epa.gov/agriculture/

Automotive Recycling
www.ecarcenter.org

Automotive Service and Repair
ccar-greenlink.org/ or 1-888-GRN-LINK

Chemical Manufacturing
www.chemalliance.org

Construction
www.cicacenter.org or 1-734-995-4911

Education
www.campuserc.org

Food Processing
www.fpeac.org

Healthcare
www.hercenter.org

Local Government
www.lgean.org

Metal Finishing
www.nmfrc.org

Paints and Coatings
www.paintcenter.org

Printing
www.pneac.org

Ports
www.portcompliance.org

Transportation
www.tercenter.org

U.S. Border Compliance and Import/Export Issues
www.bordercenter.org

EPA Hotlines, Helplines and Clearinghouses
www2.epa.gov/home/epa-hotlines
EPA sponsors many free hotlines and clearinghouses that provide convenient assistance regarding environmental requirements. Some examples are:

Clean Air Technology Center (CATC) Info-line
www.epa.gov/ttn/catc or 1-919-541-0800

Superfund, TRI, EPCRA, RMP and Oil Information Center
www.epa.gov/superfund/contacts/infocenter/index.htm or 1-800-424-9346

EPA Imported Vehicles and Engines Public Helpline
www.epa.gov/otaq/imports or 734-214-4100

National Pesticide Information Center
www.npic.orst.edu/ or 1-800-858-7378

National Response Center Hotline to report oil and hazardous substance spills - www.nrc.uscg.mil or 1-800-424-8802

Pollution Prevention Information Clearinghouse (PPIC) - www.epa.gov/opptintr/ppic or 1-202-566-0799

Safe Drinking Water Hotline - www.epa.gov/drink/hotline/index.cfm or 1-800-426-4791

ED_001593_00008971

Stratospheric Ozone Protection Hotline
www.epa.gov/ozone/comments.htm or 1-800-296-1996

Toxic Substances Control Act (TSCA) Hotline
tsca-hotline@epa.gov or 1-202-554-1404

Small Entity Compliance Guides
http://www.epa.gov/sbrefa/compliance-guides.html
EPA publishes a Small Entity Compliance Guide (SECG) for every rule for which the Agency has prepared a final regulatory flexibility analysis, in accordance with Section 604 of the Regulatory Flexibility Act (RFA).

Regional Small Business Liaisons
http://www.epa.gov/sbo/rsbl.htm
The U.S. Environmental Protection Agency (EPA) Regional Small Business Liaison (RSBL) is the primary regional contact and often the expert on small business assistance, advocacy, and outreach. The RSBL is the regional voice for the EPA Asbestos and Small Business Ombudsman (ASBO).

State Resource Locators
www.envcap.org/statetools
The Locators provide state-specific contacts, regulations and resources covering the major environmental laws.

State Small Business Environmental Assistance Programs (SBEAPs)
www.epa.gov/sbo/507program.htm
State SBEAPs help small businesses and assistance providers understand environmental requirements and sustainable business practices through workshops, trainings and site visits.

EPA's Tribal Portal
www.epa.gov/tribalportal/
The Portal provides access to information on environmental issues, laws, and resources related to federally recognized tribes.

EPA Compliance Incentives
EPA provides incentives for environmental compliance. By participating in compliance assistance programs or voluntarily disclosing and promptly correcting violations before an enforcement action has been initiated, businesses may be eligible for penalty waivers or reductions. EPA has two such policies that may apply to small businesses:

EPA's Small Business Compliance Policy
www2.epa.gov/enforcement/small-businesses-and-enforcement
This Policy offers small businesses special incentives to come into compliance voluntarily.

EPA's Audit Policy
www2.epa.gov/compliance/epas-audit-policy
The Policy provides incentives to all businesses that voluntarily discover, promptly disclose and expeditiously correct their noncompliance.

Commenting on Federal Enforcement Actions and Compliance Activities
The Small Business Regulatory Enforcement Fairness Act (SBREFA) established a SBREFA Ombudsman and 10 Regional Fairness Boards to receive comments from small businesses about federal agency enforcement actions. If you believe that you fall within the Small Business Administration's definition of a small business (based on your North American Industry Classification System designation, number of employees or annual receipts, as defined at 13 C.F.R. 121.201; in most cases, this means a business with 500 or fewer employees), and wish to comment on federal enforcement and compliance activities, call the SBREFA Ombudsman's toll-free number at 1-888-REG-FAIR (1-888-734-3247).

Every small business that is the subject of an enforcement or compliance action is entitled to comment on the Agency's actions without fear of retaliation. EPA employees are prohibited from using enforcement or any other means of retaliation against any member of the regulated community in response to comments made under SBREFA.

Your Duty to Comply
If you receive compliance assistance or submit a comment to the SBREFA Ombudsman or Regional Fairness Boards, you still have the duty to comply with the law, including providing timely responses to EPA information requests, administrative or civil complaints, other enforcement actions or communications. The assistance information and comment processes do not give you any new rights or defenses in any enforcement action. These processes also do not affect EPA's obligation to protect public health or the environment under any of the environmental statutes it enforces, including the right to take emergency remedial or emergency response actions when appropriate. Those decisions will be based on the facts in each situation. The SBREFA Ombudsman and Fairness Boards do not participate in resolving EPA's enforcement actions. Also, remember that to preserve your rights, you need to comply with all rules governing the enforcement process.

EPA is disseminating this information to you without making a determination that your business or organization is a small business as defined by Section 222 of the Small Business Regulatory Enforcement Fairness Act or related provisions.

ED_001593_00008971

To: Johnson, Kathleen[Johnson.Kathleen@epa.gov]
Cc: Cuffel, Donald[Don.Cuffel@valero.com]; Salazar, Matt[Salazar.Matt@epa.gov]; Jones, Joel E.[Jones.Joel@epa.gov]
From: Suhami, Iren
Sent: Mon 5/4/2015 8:32:10 PM
Subject: RE: Valero Benicia Refinery (B2626) AMP 01-- pending EPA approval

Outstanding, thanks a million, Iren Suhami

From: Johnson, Kathleen [mailto:Johnson.Kathleen@epa.gov]
Sent: Monday, May 04, 2015 1:31 PM
To: Suhami, Iren
Cc: Cuffel, Donald; Salazar, Matt; Jones, Joel E.
Subject: RE: Valero Benicia Refinery (B2626) AMP 01-- pending EPA approval

Thank you Iren,

I have passed along your messages to two of my division managers: Joel Jones, Associate Director for Air and Waste and Matt Salazar, manager of the air and TRI section. Both of them are copied here so you will have their emails. Someone from my division will get back with you on this shortly. Thanks for forwarding all of this.

Kathleen H. Johnson

Director, Enforcement Division

U.S. EPA - Region 9

75 Hawthorne Street ENF-1

San Francisco, CA 94015

415/972-3873

johnson.kathleen@epa.gov

From: Suhami, Iren [mailto:Iren.Suhami@valero.com]

Sent: Monday, May 04, 2015 1:25 PM
To: 'johnson.kathleen@epa.gov'
Cc: Cuffel, Donald
Subject: Valero Benicia Refinery (B2626) AMP 01-- pending EPA approval

Dear Ms. Kathleen Johnson,

Here is a copy of AMP 01.

Thanks,

Iren Suhami

Staff Environmental Engineer

Valero Benicia Refinery

707-745-7635

From: Suhami, Iren
Sent: Monday, May 04, 2015 1:22 PM
To: 'johnson.kathleen@epa.gov'
Cc: Cuffel, Donald
Subject: Valero Benicia Refinery (B2626) AMPs-- pending EPA approval

Dear Ms. Kathleen Johnson,

Following on our phone conversation today, I am attaching a list of the 4 outstanding AMPs for which Valero Benicia Refinery (B2626) is awaiting EPA approval. As I mentioned during our phone conversation, we are getting ready to submit our 5-year Title V Renewal application and we would like to include the attached monitoring plans as approved AMPs, particularly in consideration that one of the AMPs has been pending EPA approval for over 4 years. I will be sending you 4 other separate emails, each with a copy of one of the AMP submissions so that you can assign them accordingly.

Here is a brief description:

1. AMP_01-- Opacity CPMS for Flue Gas Scrubber, sent to EPA on October 27, 2010.

2. AMP_02-- NSPS Ja Acid Gas Flare H2S CEMS, sent to EPA on August 6, 2013.

3. AMP_03-- NSPS Ja NOx CEMS Span, sent to EPA on June 25, 2014.

4. AMP_04-- NSPS Ja Flare RATA for H2S CEMS, sent to EPA on March 26, 2015.

We would be grateful if you can facilitate an EPA response to these AMPs. Top priority would be appreciated to the number 1 above. Thank you in advance.

Iren Suhami

Staff Environmental Engineer

Valero Benicia Refinery

707-745-7635

To: Johnson, Kathleen[Johnson.Kathleen@epa.gov]
Cc: Cuffel, Donald[Don.Cuffel@valero.com]
From: Suhami, Iren
Sent: Mon 5/4/2015 8:29:49 PM
Subject: Valero Benicia Refinery (B2626) AMP 04-- pending EPA approval
AMP 04--AMP NSPS Ja Flare RATAs for H2S CEMS.pdf

Dear Ms. Kathleen Johnson,

Here is a copy of AMP 04.

Thanks,

Iren Suhami

Staff Environmental Engineer

Valero Benicia Refinery

707-745-7635

From: Suhami, Iren
Sent: Monday, May 04, 2015 1:22 PM
To: 'johnson.kathleen@epa.gov'
Cc: Cuffel, Donald
Subject: Valero Benicia Refinery (B2626) AMPs-- pending EPA approval

Dear Ms. Kathleen Johnson,

Following on our phone conversation today, I am attaching a list of the 4 outstanding AMPs for which Valero Benicia Refinery (B2626) is awaiting EPA approval. As I mentioned during our phone conversation, we are getting ready to submit our 5-year Title V Renewal application and we would like to include the attached monitoring plans as approved AMPs, particularly in consideration that one of the AMPs has been pending EPA approval for over 4 years. I will be sending you 4 other separate emails, each with a copy of one of the AMP submissions so that you can assign them accordingly.

Here is a brief description:

1. AMP_01-- Opacity CPMS for Flue Gas Scrubber, sent to EPA on October 27, 2010.

2. AMP_02-- NSPS Ja Acid Gas Flare H2S CEMS, sent to EPA on August 6, 2013.

3. AMP_03-- NSPS Ja NOx CEMS Span, sent to EPA on June 25, 2014.

4. AMP_04-- NSPS Ja Flare RATA for H2S CEMS, sent to EPA on March 26, 2015.

We would be grateful if you can facilitate an EPA response to these AMPs. Top priority would be appreciated to the number 1 above. Thank you in advance.

Iren Suhami

Staff Environmental Engineer

Valero Benicia Refinery

707-745-7635

VALERO
Benicia Refinery • Valero Refining Company - California
3400 East Second Street • Benicia, California 94510-1097 • Telephone (707) 745-7011 • Facsimile (707) 745-7339

Certified Receipt # 7011 1150 0001 6525 7161

March 26, 2015

40 CFR 60, Subpart Ja
[40CFR60.107a(a)(2)(ii)]
Request for Approval of Alternative Monitoring Plan (AMP) for Flare Hydrogen Sulfide (H2S) CEMS Relative Accuracy Tests

Ms. Kathleen Johnson
Director, Enforcement Office
Air Division
USEPA Region IX, Air-5
75 Hawthorne Street
San Francisco, CA 94105

Dear Ms. Johnson:

This letter is Valero's request for USEPA review and approval of an Alternative Monitoring Plan (AMP) for the Valero Refining Company – CA, Benicia Refinery. This AMP proposes an alternative for conducting the relative accuracy evaluations specified for performance evaluations and quality assurance procedures for the hydrogen sulfide (H2S) continuous emission monitoring systems (CEMS) as required by 40CFR60.107a(a)(2)(ii) and (iii). As allowed by 40CFR60.13(i)(2) and suggested by 40CFR60.107a(e)2(ii), Valero's proposed alternative is to conduct cylinder gas audits (CGAs) for flares that do not receive routine flow. The proposed AMP specifically addresses the need to use the Appendix B to Part 60, Performance Specification 2, Section 16.0 alternative for relative accuracy procedures.

The Benicia refinery operates flare gas recovery compressors so that its flares do not receive routine flow. In order for the performance evaluation and quality assurance procedures to be conducted as written in 40CFR60.107a(a)(2)(ii) and (iii), flare gas must purposely be routed to the flare which is contrary to the best management practices for flare operation established in NSPS Ja, BAAQMD Regulation 12, Rule 12, and the site Flare Management Plan (FMP). 40CFR60.107a(**e**)(2)(ii) *(Sulfur monitoring for assessing root cause analysis threshold for affected flares – H2S monitoring requirements)* allows flares that do not receive routine flow to use CGAs as an alternative relative accuracy procedure as described in Appendix B to Part 60, Performance Specification 2, Section 16.0 with the exception that it is not necessary to include as much of the sampling probe or sampling line as practical. This allowance was not included in 40CFR60.107a(**a**)(2)(ii) *(Flares subject to H2S concentration requirements - performance evaluation requirements).* Furthermore, 40CFR60.107a(**e**)(2)(ii) is not applicable to the Benicia refinery because the refinery complies with the alternative monitoring provisions of 40CFR60.107a(h).

Document # 24669

Therefore, Valero believes the proposed AMP for the alternative to use CGAs to demonstrate that the H2S CEMS meet the allowable relative accuracy requirements is appropriate, reasonable, and necessary. Valero requests USEPA review and approval of this AMP as provided in 40CFR60.13(i)(2). Please do not hesitate to contact me directly at (707) 745-7545 should you have any questions concerning this matter.

Sincerely,

Donald W. Cuffel
Manager – Environmental Engineering

DWC/KSB/tac

Enclosures

cc: Deborah Jordan, Director – Air Division, USEPA, Region IX
Joseph Lapka, Acting Chief of Enforcement – Air Division, USEPA, Region IX

Document # 24669

e-bcc:

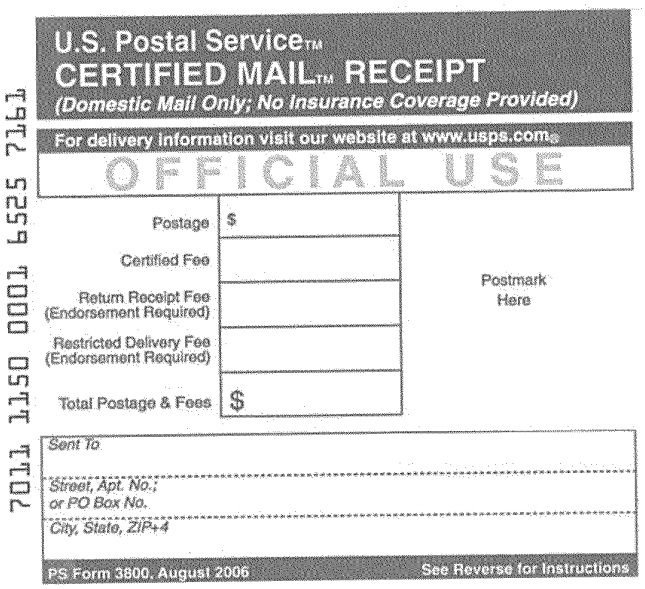
Sky Bellanca
Pat Covert
Marisol Mendez

RIMS File Category/Code: AI-24-04

RIMS File Name: FED-60Ja AMP Approval Request

E-File Location: V:\Environmental\FED_60Ja\AI-24-16 AMPs\Flare H2S Performance Eval AMP\Flare H2S AMP Request_Final.docx

Certified Mail Return Receipt # 7011 1150 0001 6525 7161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See Reverse for Instructions
7011 1150 0001 6525 7161

Document # 24669

Alternative Monitoring Plan for
NSPS Ja North and South Flare H2S CEMS
Performance Evaluation and Annual Data Accuracy Assessment

This AMP proposes an alternative for conducting the relative accuracy evaluations specified for performance evaluations and quality assurance procedures for the hydrogen sulfide (H2S) continuous emission monitoring systems (CEMS) as required by 40CFR60.107a(a)(2)(ii) and (iii). As allowed by 40CFR60.13(i)(2) and suggested by 40CFR60.107a(e)2(ii), Valero's proposed alternative is to conduct cylinder gas audits (CGAs) for flares that do not receive routine flow, with the exception that is not necessary to include as much of the sampling probe or sampling line as practical. The proposed AMP specifically addresses the need to use the Appendix B to Part 60, Performance Specification 2, Section 16.0 alternative for relative accuracy procedures

The Benicia refinery operates flare gas recovery compressors so that its flares do not receive routine flow. In order for the performance evaluations and quality assurance procedures to be conducted as written in 40CFR60.107a(a)(2)(ii) and (iii), flare gas must purposely be routed to the flare which is contrary to the best management practices for flare operation established in NSPS Ja, BAAQMD Regulation 12, Rule 12, and the site Flare Management Plan (FMP). 40CFR60.107a(**e**)(2)(ii) *(Sulfur monitoring for assessing root cause analysis threshold for affected flares – H2S monitoring requirements)* allows flares that do not receive routine flow to use CGAs as an alternative relative accuracy procedure as described in Appendix B to Part 60, Performance Specification 2, Section 16.0 with the exception that it is not necessary to include as much of the sampling probe or sampling line as practical. This allowance was not included in 40CFR60.107a(**a**)(2)(ii) *(Flares subject to H2S concentration requirements - performance evaluation requirements).* Furthermore, 40CFR60.107a(**e**)(2)(ii) is not applicable to the Benicia refinery because the refinery complies with the alternative monitoring provisions of 40CFR60.107a(h).

1. Applicability
   a. Identify Source name, location and source numbers

      Valero Refining Company – CA, Benicia Refinery
      3400 East Second Street
      Benicia, CA 94510

      BAAQMD Source numbers:

      Flares : South, ST-2101 (S-18), North, ST-2103 (S-19)

   b. Identify the type of industry

      NAICS Code: 324110 (Petroleum Refining)

   c. Identify the process of interest

      Flare gas routed intermittently to the North and South Flares

   d. Identify the regulations that apply

      This AMP will authorize the use of 40CFR60.107a(e)(2)(ii) language to allow alternative relative accuracy procedures of a CGA, except that it is not necessary to include as much of the sampling probe or sampling line as practical.

Applicable Regulation	Description
40CFR60.103a(h)	Flare gas H2S emission limit
40CFR60.107a(a)(2)(ii) and (iii)	Flare gas H2S CEM performance evaluation and quality assurance specifications
40CFR60.107a(e)(2)(ii) (as authorized by this AMP)	Flare gas H2S CEM performance evaluation specifications
40CFR60.107a(h)	Comply with BAAQMD Reg. 12-11 and 12-12 as an alternative to 60.107a(e) and (f)
40CFR60.13(c)	Conduct a performance evaluation within 30 days after the performance test [performance test conducted within 60 days per 40CFR60.8 except that performance test not required per 40CFR60.104a(a)and 40CFR60.102a.
40CFR60.13(i)(2)	Alternative monitoring requirements for infrequent operation
40CFR Appendix B, PS2, Section 16.0	Alternative test procedures for SO2 CEMS
40CFR Appendix F, Procedure 1, Section 5	QA Requirements for Gas CEMS - data accuracy assessment

e. Identify the pollutant(s) subject to monitoring for which an AMP is being submitted
   H2S

2. Source Description
   a. Provide a simplified process flow diagram
      Please see Figure 1 of this document
   b. Provide a discussion of process or equipment operations that are known to significantly affect emissions or monitoring procedures
      Process unit start-up, shutdown, malfunction, upset, or relief valve leakage

3. Control Equipment Description
   a. Provide a simplified block flow diagram with emission monitoring points identified
      Please see Figure 1 of this document
   b. List monitored emission limits
      162 ppmv H2S, 3-hour rolling average except for combustion of process upset gases, relief valve leakage, or other emergency malfunction [40CFR60.103a(h)]
   c. Provide a discussion of operating procedures that are known to significantly affect emissions.
      Process unit start-up, shutdown, malfunction, upset, or relief valve leakage

4. Monitoring System Description
   a. Identify the continuous emission monitoring systems that will be used for the AMP

      South Flare, ST-2101 H2S CEMS and North Flare, ST-2103 H2S CEMS

   b. List all measurement or sampling locations

      At the inlets to the North and South Flares (see Figure 1)

   c. Provide a description of the data acquisition and handling system operations including sample calculations

      Process data from the H2S CEMS will be transmitted to the Refinery Distributed Control System (DCS) in real-time so that operations can be monitored for compliance, and corrective measures can be taken when necessary. The data are historized in the Process Historian (IP21) and the Data Acquisition and Handling System (DAHS) for reporting and compliance verification and demonstration. No calculation changes are proposed.

   d. Provide checklists, data sheets, and report format as necessary for compliance determination.

      The IP21 Process Historian retains minute data for at least 5 years. These data can be retrieved on-demand into an Excel file for analysis and reporting. The North and South Flare H2S CEMS data are included on the daily Refinery Environmental Trends report so that timely analysis and problem detection occurs. These CEMS are subject to BAAQMD reporting regulations as defined in BAAQMD Regulation 1-522 and the Title V Permit, as well as the Part 60, Subpart Ja reporting obligations.

5. Initial Verification Test Procedures

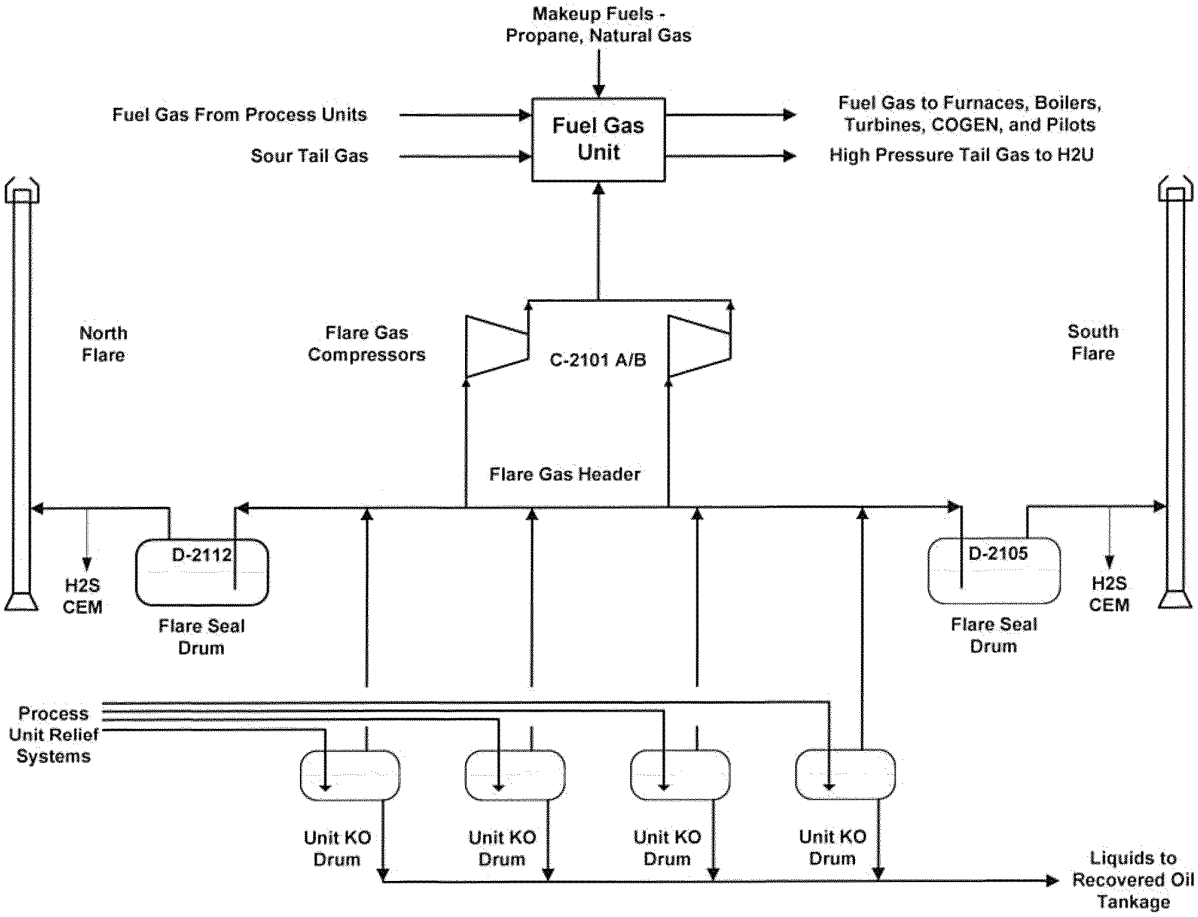
   A CGA will be conducted within 60 to 90 days of the implementation date of November 11, 2015 as required by 40CFR60.13(c) (conduct a performance evaluation within 30 days after the performance test) and 40CFR60.18 (conduct a performance test within 60 days, except that a performance test is not required per 40CFR60.104a(a) and 40CFR60.102a).

   A CGA will be conducted annually thereafter in lieu of Relative Accuracy Tests (RATAs) as required by 40CFR60, Appendix F, Section 5.1.1.

   a. Maintain a log or sampling report for each required CGA listing the results of each relative accuracy evaluation in accordance with 40CFR60 Appendix F, Section 5.2.3.2 (+/- 15% of the average audit value or +/- 5 ppm, whichever is greater).

      The written report of the relative accuracy evaluation results [as required by 40CFR60.13(c)(2) and Appendix F, Section 7.4] will be submitted to USEPA and BAAQMD and retained onsite for at least 5 years. Compliance with the Part 60, Subpart Ja H2S emission standard will be documented in the semiannual NSPS Excess Emissions reports submitted to BAAQMD and USEPA beginning January 2016.

Figure 1. Simplified Block Flow Diagram – Valero Benicia Refinery Flare System



Document # 24669

To: Johnson, Kathleen[Johnson.Kathleen@epa.gov]
Cc: Cuffel, Donald[Don.Cuffel@valero.com]
From: Suhami, Iren
Sent: Mon 5/4/2015 8:30:39 PM
Subject: RE: Valero Benicia Refinery (B2626) AMP 03-- pending EPA approval
AMP 03--AMP NSPS Ja NOx CEMS Span FGCD.pdf

Here it is with the attachment. Iren

From: Suhami, Iren
Sent: Monday, May 04, 2015 1:29 PM
To: 'johnson.kathleen@epa.gov'
Cc: Cuffel, Donald
Subject: Valero Benicia Refinery (B2626) AMP 03-- pending EPA approval

Dear Ms. Kathleen Johnson,

Here is a copy of AMP 03.

Thanks,

Iren Suhami

Staff Environmental Engineer

Valero Benicia Refinery

707-745-7635

From: Suhami, Iren
Sent: Monday, May 04, 2015 1:22 PM
To: 'johnson.kathleen@epa.gov'
Cc: Cuffel, Donald
Subject: Valero Benicia Refinery (B2626) AMPs-- pending EPA approval

Dear Ms. Kathleen Johnson,

Following on our phone conversation today, I am attaching a list of the 4 outstanding AMPs for

which Valero Benicia Refinery (B2626) is awaiting EPA approval. As I mentioned during our phone conversation, we are getting ready to submit our 5-year Title V Renewal application and we would like to include the attached monitoring plans as approved AMPs, particularly in consideration that one of the AMPs has been pending EPA approval for over 4 years. I will be sending you 4 other separate emails, each with a copy of one of the AMP submissions so that you can assign them accordingly.

Here is a brief description:

1. AMP_01-- Opacity CPMS for Flue Gas Scrubber, sent to EPA on October 27, 2010.

2. AMP_02-- NSPS Ja Acid Gas Flare H2S CEMS, sent to EPA on August 6, 2013.

3. AMP_03-- NSPS Ja NOx CEMS Span, sent to EPA on June 25, 2014.

4. AMP_04-- NSPS Ja Flare RATA for H2S CEMS, sent to EPA on March 26, 2015.

We would be grateful if you can facilitate an EPA response to these AMPs. Top priority would be appreciated to the number 1 above. Thank you in advance.

Iren Suhami

Staff Environmental Engineer

Valero Benicia Refinery

707-745-7635

VALERO

Benicia Refinery • Valero Refining Company - California
3400 East Second Street • Benicia, California 94510-1097 • Telephone (707) 745-7011 • Facsimile (707) 745-7432

Certified Receipt # 7013 1710 0000 2083 1042

June 25, 2014

40 CFR 60, Subpart Ja [40CFR60.107a(c)]
Request for Approval of Alternative Monitoring Protocol (AMP) for Nitrogen Oxide (NO_x) from Fuel Gas Combustion Devices

Mr. Douglas K. McDaniel
Chief, Enforcement Office
Air Division
USEPA Region IX, Air-5
75 Hawthorne Street
San Francisco, CA 94105

Dear Mr. McDaniel:

This letter is Valero's request for USEPA review and approval of an Alternate Monitoring Protocol (AMP) for the Valero Refining Company – CA, Benicia Refinery. This AMP proposes an alternative for demonstrating compliance with the standard set forth in Part 60, Subpart Ja for nitrogen oxide (NO_x) emissions from Fuel Gas Combustion Devices (FGCDs) [see 40CFR60.102a(g)(2)(ii)(A)]. The AMP specifically addresses the need for an alternative span on the NO_x continuous emission monitoring system (CEMS) used for demonstration of compliance with the Part 60, Subpart Ja NO_x emission standard. Due to conflicting continuous monitoring requirements imposed by the Bay Area Air Quality Management District (BAAQMD) for NOx emission limits that are lower than the applicable Part 60, Subpart Ja NO_x emission standard, the specified span requirement of Subpart Ja for the NO_x CEMS cannot be implemented as promulgated.

On November 8, 2012, the Valero Benicia Refinery submitted notification to the USEPA for applicability of the F-105 (S-1059) and F-106 (S-1060) Carbon Monoxide (CO) Furnaces to the Part 60, Subpart Ja emission standards for NO_x emissions from FGCD, effective November 13, 2012. The Subpart Ja monitoring requirements for NO_x require the installation of a continuous emission monitoring system (CEMS) for NO_x with an oxygen (O_2) CEMS for correction as necessary to demonstrate compliance with the 60 ppmv NO_x emission standard, reported on a dry, O_2-free basis [see 40CFR60.107a(c)(1) and (c)(3) for NO_x and O_2, respectively].

The energy-rich vent gas from the Benicia Refinery Fluid Catalytic Cracking Unit (FCCU) which is combined with the effluent from a fluid coking unit (CKR) is distributed and combusted in the two CO Furnaces, F-105 and F-106. Exhaust gas from F-105 and F-106 is recombined and processed through a series of dual SCRs, a Belco Pre-Scrubber followed by a Cansolv regenerative amine wet gas scrubber for abatement of NOx, particulate matter, and sulfur

dioxide. The combined effluent is emitted through the FCCU/CKR Scrubber Stack, ST-5601. In addition to CEMS for other pollutants, the NOx CEMS required for demonstration of compliance with the Part 60, Subpart Ja and BAAQMD NOx emission limits is located on ST-5601.

BAAQMD Permit Condition 20820, Parts 63 and 66 impose limits on NOx emissions from ST-5601 for three different averaging periods. In order to demonstrate compliance with the full range of these BAAQMD limits, the ST-5601 NOx CEMS necessarily has a span of 200 ppm which does not meet the Subpart Ja span requirement of 120 to 180 ppm (two to three times the applicable emission limit of 60 ppm) [see 40CFR60.107a(c)(1)].

Valero proposed alternative monitoring procedures to accommodate the unique configuration of the comingled FCCU and CKR effluent in a previous AMP that was approved by USEPA in January 2007 (see Attachment A). That approved AMP addressed monitoring alternatives to demonstrate compliance with Part 60, Subpart J standards for CO and PM from FCCU regenerator vents.

Because of the overlapping federal and BAAQMD NOx emission limits, the facility's unique design and operating conditions, and the USEPA's previous approval of alternative monitoring procedures to accommodate these conditions, Valero believes that the AMP for the alternative span for the NO_x CEMS for demonstrating compliance with the applicable Part 60, Subpart Ja standard is appropriate, reasonable, and necessary. Valero requests USEPA review and approval of this AMP as provided in 40CFR60.13(i). Please do not hesitate to contact me directly at (707) 745-7545 should you have any questions concerning this matter.

Sincerely,

Donald W. Cuffel
Manager – Environmental Engineering

DWC/CJP/tac

Enclosures

cc: Joe Westersund, USEPA, Region IX

Document # 23945

Alternative Monitoring Protocol for
NSPS Ja F-105/F-106 FGCD NOx CEMS Span

This AMP proposes an alternative for demonstrating compliance with the standard set forth in Part 60, Subpart Ja for nitrogen oxide (NO_x) emissions from Fuel Gas Combustion Devices (FGCDs) [see 40CFR60.102a(g)(2)(ii)(A)]. The Benicia refinery operates such a device; however, due to overlapping federal and Bay Area Air Quality Management District (BAAQMD) emission limits, the compliance demonstration method provided in the rule cannot be implemented as promulgated.

On November 8, 2012, the Valero Benicia Refinery submitted notification to the USEPA for applicability of the F-105 (S-1059) and F-106 (S-1060) CO Furnaces to the Part 60, Subpart Ja emission standards for NO_x emissions from FGCD, effective November 13, 2012. The Subpart Ja monitoring requirements for NO_x require the installation of a continuous emission monitoring system (CEMS) for NO_x with an oxygen (O_2) CEMS for correction as necessary to demonstrate compliance with the 60 ppmv NO_x emission standard, reported on a dry, O_2-free basis [see 40CFR60.107a(c)(1) and (c)(3) for NO_x and O_2, respectively].

The energy-rich vent gas from the Benicia Refinery Fluid Catalytic Cracking Unit (FCCU) which is combined with the effluent from a fluid coking unit (CKR) is distributed and combusted in the two CO Furnaces, F-105 and F-106. Exhaust gas from F-105 and F-106 is recombined and processed through a series of dual SCRs, a Belco Pre-Scrubber followed by a Cansolv regenerative amine wet gas scrubber for abatement of NOx, particulate matter, and sulfur dioxide. The combined effluent is emitted through the FCCU/CKR Scrubber Stack, ST-5601. In addition to CEMS for other pollutants, the NOx CEMS required for demonstration of compliance with the Part 60, Subpart Ja and BAAQMD NOx emission limits is located on ST-5601.

BAAQMD Permit Condition 20820, Parts 63 and 66 impose limits on NOx emissions from ST-5601 for three different averaging periods. In order to demonstrate compliance with the full range of these BAAQMD limits, the ST-5601 NOx CEMS necessarily has a span of 200 ppm which does not meet the Subpart Ja span requirement of 120 to 180 ppm (two to three times the applicable emission limit of 60 ppm) [see 40CFR60.107a(c)(1)].

1. Applicability
   a. Identify Source name, location and source numbers

      Valero Refining Company – CA, Benicia Refinery
      3400 East Second Street
      Benicia, CA 94510

      BAAQMD Source numbers:

      CO Furnaces: F-105 (S-1059), F-106 (S-1060)

      Belco Prescrubber T-5601 (A-1047)
      Cansolv Scrubber Stack ST-5601 (FCCU/CKR Scrubber Stack) (P-1059)

   b. Identify the type of industry

      NAICS Code: 324110 (Petroleum Refining)

   c. Identify the process of interest

      The Fluid Catalytic Cracking Unit (FCCU) and Fluid Coking Unit (CKR) CO gas is combined and combusted in the CO Furnaces. The effluent is abated by dual

SCRs (NO_x), the Belco Prescrubber (PM), and the Cansolv regenerative amine scrubber (SO_2) before being released at FCCU/CKR Scrubber Stack ST-5601.

d. Identify the regulations that apply

Part 60, Subpart Ja:
- **Standard for Nitrogen Oxide (NOx) Emissions – 40CFR60.102a(g)(2)(ii)(A)**
- **Continuous NOx Concentration Monitoring – 40CFR60.107a(c)(1)**

This AMP will replace the span specification of 120 to 180 ppm (two to three times the applicable standard) for the NOx CEMS with an alternative span of 200 ppm.

e. Identify the pollutant(s) subject to monitoring for which an AMP is being submitted

NO_x, with correction for 0% O_2

2. Source Description

a. Provide a simplified process flow diagram

Please see Figure 1 of this document

b. Provide a discussion of process or equipment operations that are known to significantly affect emissions or monitoring procedures

Process unit start-up, shutdown, malfunction or upset, and emergency bypass of SCR

3. Control Equipment Description

a. Provide a simplified block flow diagram with emission monitoring points identified

Please see Figure 1 of this document

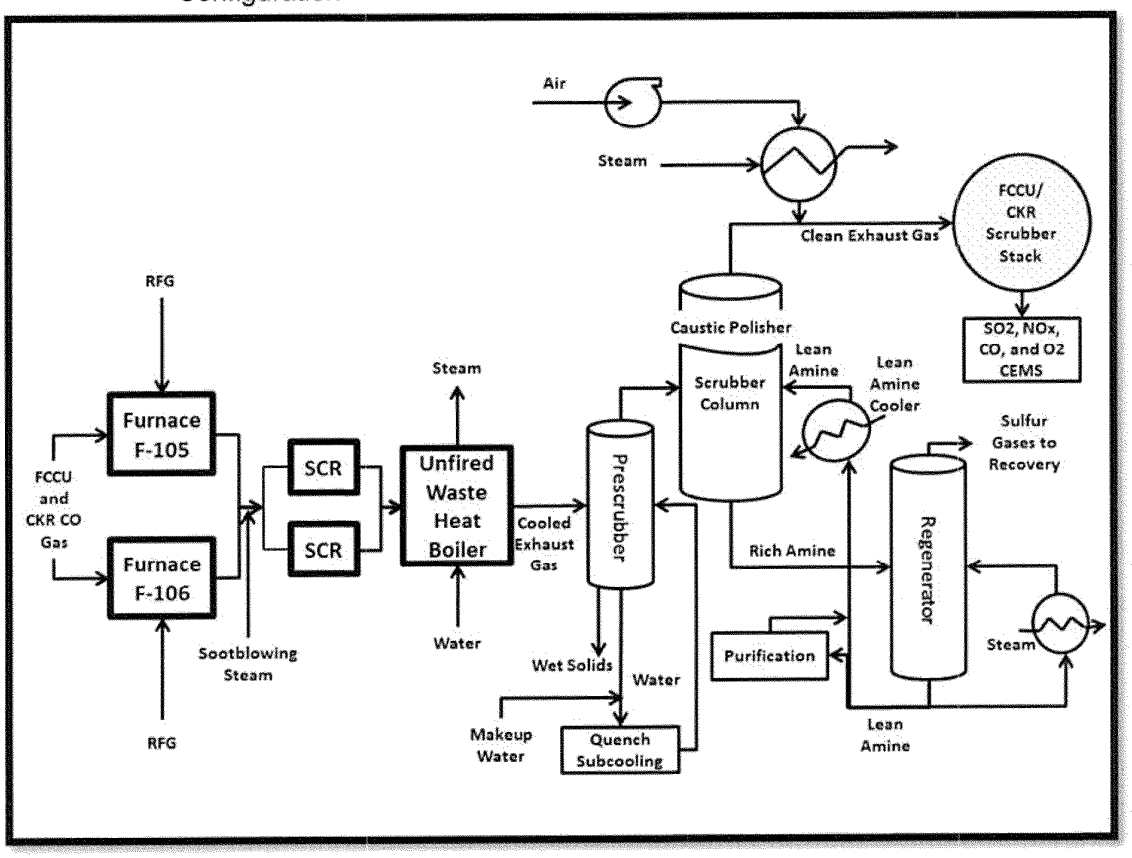
b. List monitored emission limits

i. **60 ppmv NOx, dry at 0% O_2, 30-day rolling average (Part 60, Subpart Ja).**
ii. **42.8 ppmv NOx, dry at 3% O_2, 365-day average (BAAQMD Permit Condition 20820, Parts 63 and 66)**
iii. **85.6 ppmvd NOx, dry at 3% O_2, 7-day average (BAAQMD Permit Condition 20820, Parts 63 and 66)**
iv. **150 ppmvd NOx, dry at 3% O_2, 1-calendar day average (BAAQMD Permit Condition 20820, Parts 63 and 66)**

c. Provide a discussion of operating procedures that are known to significantly affect emissions.

i. **During routine operations, the NOx content of the comingled FCCU/CKR effluent is typically 30 – 40 ppm @ 3% O_2.**
ii. **During FCCU shutdown periods when exempt from the Part 60, NSPS Ja emission standards but still subject to BAAQMD emission limits, the NOx content of the comingled FCCU/CKR effluent is typically 25 – 60 ppm @ 3% O2.**

Figure 1. Simplified Block Flow Diagram – Valero Benicia Refinery FCCU/CKR Configuration



4. Monitoring System Description
   a. Identify the continuous emission monitoring systems that will be used for the AMP
      i. **NO_x CEMS, span of 200 ppm in lieu of 120 – 180 ppm as required by 40CFR60.107a(c)(1) (two to three times the applicable emission limit). BAAQMD specifies that a CEMS span must be two to four times the anticipated stack concentration. To accommodate variability in levels of NOx emissions during FCCU shutdown periods, the NOx CEMS span must be necessarily set at 200 ppm.[1]**
      ii. **O_2 CEMS, span of 25% O_2 as required by 40CFR60.107a(c)(3)**
   b. List all measurement or sampling locations
      At the outlet of ST-5601 (see Figure 1)
   c. Provide a description of the data acquisition and handling system operations including sample calculations

[1] Bay Area Air Quality Management District (BAAQMD) Manual of Procedures, Volume V, Section 3.1.

Process data for the NO_x and O2 CEMS will be transmitted to the Process Control Computers (Experion) in real-time so that operations can be monitored for compliance, and corrective measures can be taken when necessary. Outlet concentrations of NO_x from the control device for compliance with the 60 ppmv standard, reported on a dry, O_2-free basis are calculated using the procedures for adjusting pollutant concentration to 0% O_2. The data are historized in the Process Historian (IP21) for reporting and compliance verification and demonstration.

d. Provide checklists, data sheets, and report format as necessary for compliance determination.

The Process Historian (IP21) retains minute data for at least 5 years. These data can be retrieved on-demand into an Excel file for analysis and reporting. The NO_x/O_2 CEMS is included on the daily Refinery Environmental Trends report so that timely analysis and problem detection occurs. These CEMS are subject to BAAQMD reporting regulations as defined in BAAQMD Regulation 1-522 and the Title V Permit, as well as the Part 60, Subpart Ja reporting obligations.

5. Initial Verification Test Procedures

As required by Title V Permit Condition 20820, Parts 63, 66, and 67, an initial District-approved source test was conducted on April 12-13, 2011 to demonstrate initial compliance with the NO_x emission limit in Parts 63 and 66. Compliance with the Part 60, Subpart Ja NO_x emission limit of 40CFR60.102a(g)(2)(ii)(A)was demonstrated by an independent source test conducted January 4, 2013 with subsequent retesting November 25-26, 2013.

a. Maintain a log or sampling report for each required stack test listing the emissions rate in accordance with the applicable emission limitations.

Source test data were submitted to BAAQMD in accordance with the Title V Permit Condition 20820, Part 73 and retained for at least 5 years. Compliance with the Part 60, Subpart Ja NO_x emission standard documented in the semiannual NSPS Excess Emissions report submitted to BAAQMD and USEPA in January 2013, July 2013, and January 2014.

To: Strauss, Alexis[Strauss.Alexis@epa.gov]; Jordan, Deborah[Jordan.Deborah@epa.gov]; Manzanilla, Enrique[Manzanilla.Enrique@epa.gov]; Johnson, Kathleen[Johnson.Kathleen@epa.gov]
Cc: Dill, Jeffrey[Jeffrey.Dill@pbfenergy.com]; Chelpaty, Heather A[Heather.Chelpaty@pbfenergy.com]; Gerald D. Secundy (jerrys@cceeb.org)[jerrys@cceeb.org]; Janet Whittick (janetw@cceeb.org)[janetw@cceeb.org]
From: Brien, Betsy
Sent: Fri 11/4/2016 11:34:36 PM
Subject: PBF Energy - Thank you/Follow-Up

Alexis, Deborah, Enrique and Kathleen:

It was nice to meet you. Thank you for your time and suggestions regarding community outreach.

I am writing to follow-up on our discussion regarding the two schools in the L.A. Unified School District. Both 186th Street Elementary School and Thomas Riley High School have been contacted. We are awaiting a return call from the principals (Marcia Reed and Linda Roussel). I look forward to speaking with them both and appreciate you bringing their request for communication to our attention.

If you receive additional community inquiries regarding the refinery, you are welcome to provide my contact information (below) to the community member. Or if it's convenient, forward the inquiry and community contact to me and I will contact them directly.

Kind regards,

Betsy

Betsy A. Brien

Community Relations Manager

Torrance Refining Company

PBF Energy Western Region LLC

Office: (310) 212-4618

Cell: (562) 277-0012

Betsy.Brien@pbfenergy.com

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To: Strauss, Alexis[Strauss.Alexis@epa.gov]; Jordan, Deborah[Jordan.Deborah@epa.gov]; Manzanilla, Enrique[Manzanilla.Enrique@epa.gov]; Johnson, Kathleen[Johnson.Kathleen@epa.gov]
Cc: Chelpaty, Heather A[Heather.Chelpaty@pbfenergy.com]; Brien, Betsy[Betsy.Brien@pbfenergy.com]; Gerald D. Secundy (jerrys@cceeb.org)[jerrys@cceeb.org]; Janet Whittick (janetw@cceeb.org)[janetw@cceeb.org]
From: Dill, Jeffrey
Sent: Wed 11/2/2016 7:54:51 PM
Subject: PBF Torrance Materials
1 PBF Review-Torance Alkylation 1Q2016_FINAL.pdf

Dear All,

Thank you again for your time today and giving us the opportunity to share with you our perspectives on the Torrance Refinery and related businesses. Attached is the second slide deck I referred to focused exclusively on MHF. It has not yet been updated to reflect the Norton Study.

Please let me know if we can provide any additional information or if you have any other questions or concerns regarding PBF's operations.

Best regards.

Jeffrey Dill

President, Western Region

PBF Energy

111 W. Ocean Blvd, Suite 1500

Long Beach, CA 90802

PH 562-349-1640

jeffrey.dill@pbfenergy.com

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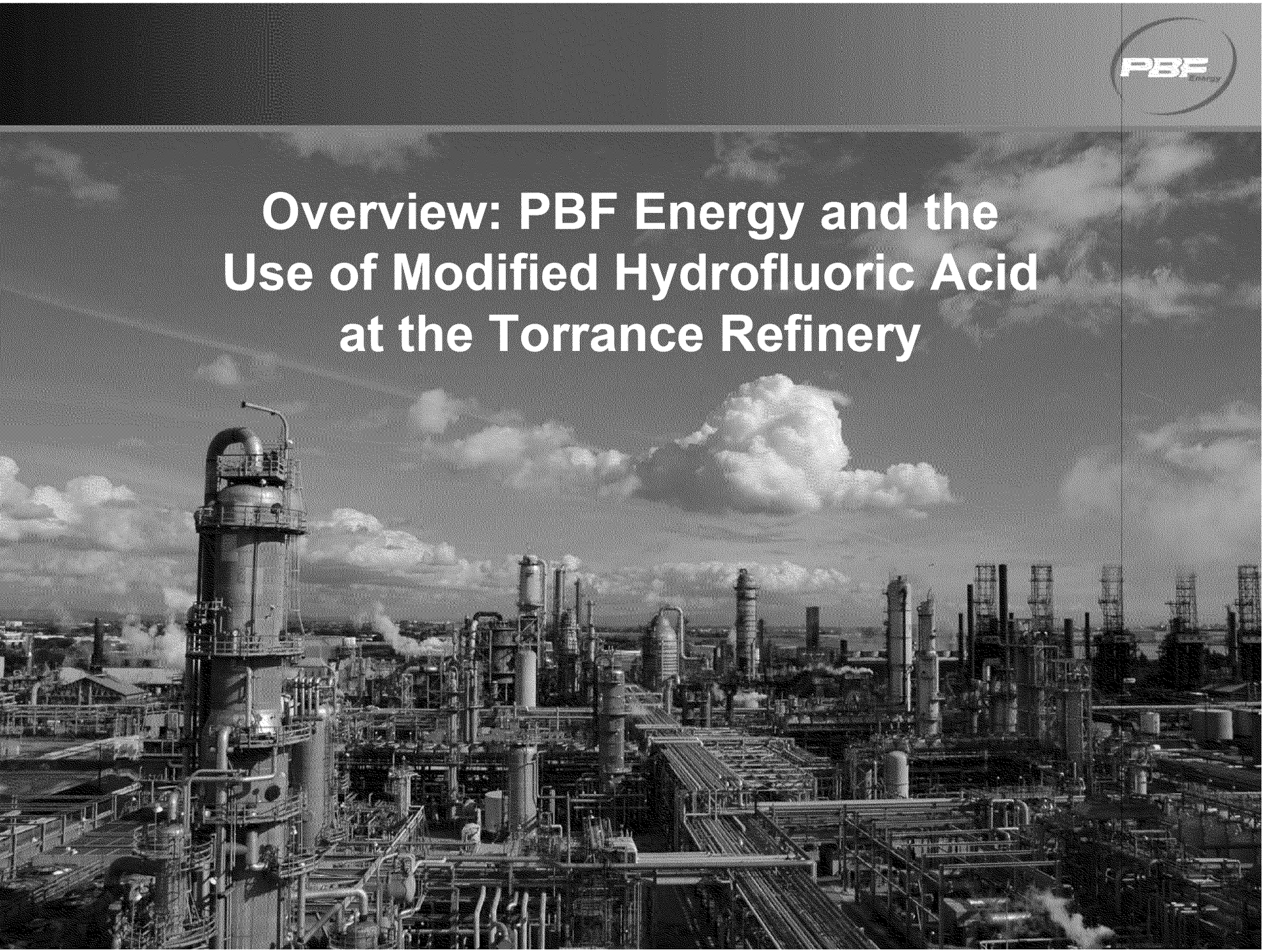
Overview: PBF Energy and the Use of Modified Hydrofluoric Acid at the Torrance Refinery



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INTRODUCTION

- **PBF Energy is committed to safe, reliable and environmentally responsible operation of the Torrance Refinery once the acquisition is complete**
- **PBF Energy recognizes we have to earn the right to operate in the communities that host us**
  - We maintain an open dialogue with the communities in which we operate
- **PBF understands community members are concerned about the use of modified hydrofluoric (MHF) acid at Torrance**
  - Reviewed current and alternative alkylation technologies with third-party experts
  - Conclusion - only two viable technology options are currently available
    - MHF and Sulfuric Acid
- **PBF considers MHF technology to be the best fit for the Torrance Refinery**
  - We are confident the Torrance unit will operate safely with highly skilled and trained operators, use of a proprietary additive to suppress vapors, strong procedures, and redundant safety systems and safety mitigation equipment
- **Torrance manufactures ~10% of California's cleaner-burning CARB gasoline**
  - Eliminating MHF alkylation would significantly reduce CARB gasoline production

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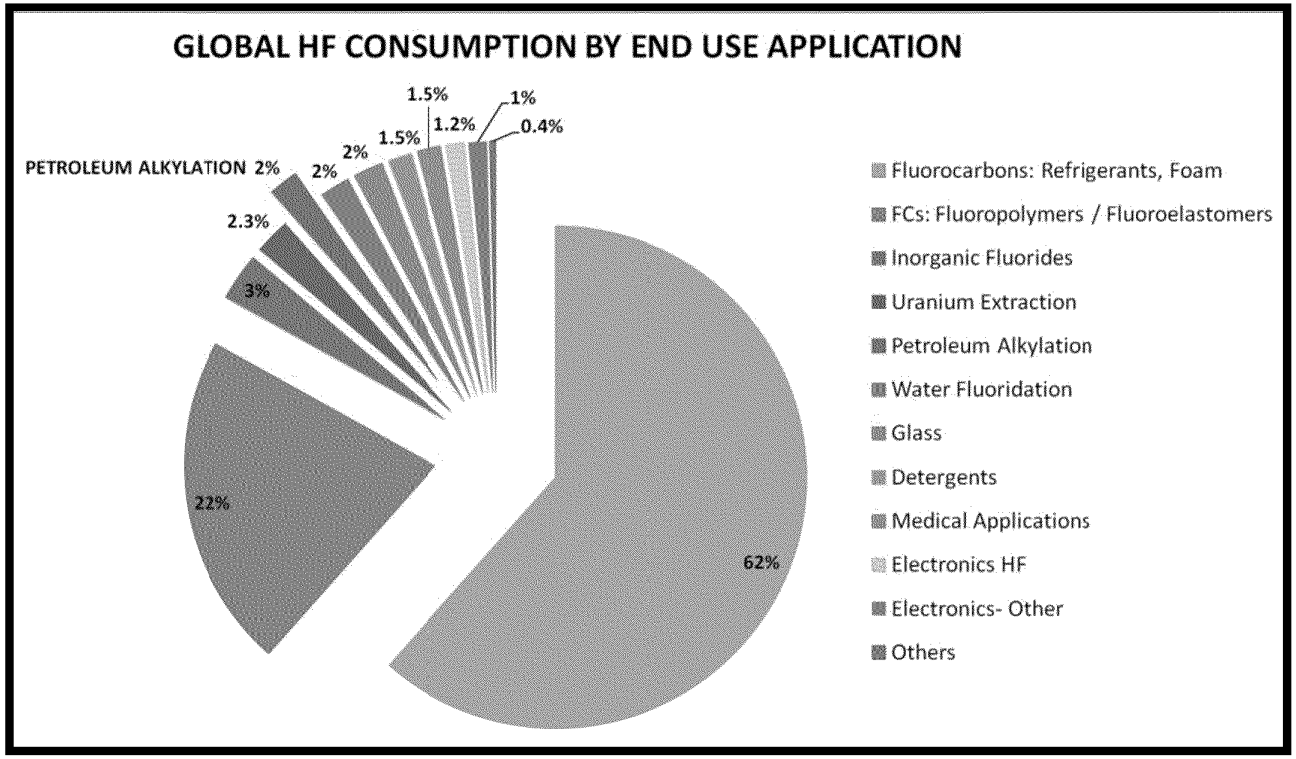
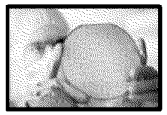
HYDROGEN FLUORIDE USES



Source: *Fluorspar Global Industry Markets and Outlook* , 11th Edition 2013, Roskill Information Services

- **HF is critical to many industrial applications**
- **Multiple California industries rely upon HF**
- **Thousands of CA residents work at sites using HF**
- **Refining alkylation represents ~2% of HF end use**

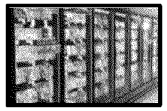
Uses in California



Semiconductors

Agricultural Products

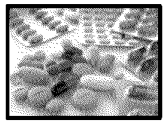
Gasoline



Refrigerants
Buildings, car, food

Water Fluoridation

Quartz
Glass, solar



Pharmaceuticals

Brewing Beer

Household Products

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WHAT IS HYDROFLUORIC ACID?

CHEMICAL PROPERTIES

- Discovered in 1771 by a pharmaceutical chemist
- Clear, colorless, corrosive, pungent liquid that requires specialized safety precautions
- Forms dense, white vapor when exposed to atmosphere
- Precursor to most fluorine compounds used in many industrial applications
- Non-flammable liquid boils at 67.2 □F

EXPOSURE RISKS

- Can cause burns - potentially toxic - inhalation hazard
  - □ TLV: 2 ppm (ceiling) - 0.5 ppm (TWA)
  - □ PEL: 3 ppm
  - □ STEL: 6 ppm (15 min)
  - □ IDLH: 30 ppm (30 min)
- Can reduce calcium levels in body
- Delayed onset of symptoms possible

MEDICAL TREATMENT

- Water wash
- Iced 0.13% benzalkonium chloride soaks
- Skin burns: 2.5% calcium gluconate gel
- Eyes: 1.0 % calcium gluconate in saline
- Inhalation: 2.5% calcium gluconate and oxygen

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Active California RMP Participants
> 50% HF and > 1,000 pounds HF on site

Facility Name	City
Alloys Cleaning, Inc.	Los Angeles
Brenntag Pacific, Inc. Santa Fe Springs Facility	Los Angeles
Dow Agrosciences / Douglas Products	Pittsburg
ExxonMobil Torrance Refinery	Torrance
Gallade Chemical, Inc. - Santa Ana (Fed Filing)	Santa Ana
Matheson Tri-Gas - Newark, CA Branch	Newark
Precision Specialty Metals, Inc.	Los Angeles
Univar USA Inc.	Commerce
Univar USA Inc.	San Jose
Valero Wilmington Refinery	Wilmington
VWR International - Visalia Distribution Center	Visalia

Source: The Right-To-Know Network, http://www.rtknet.org

Note: This list omits all California HF users that store less than 1,000 pounds on-site, as well as facilities in the state that use HF in a concentration of 49% or less

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HOW IS HF USED IN PETROLEUM REFINING?

- **Oil refineries use HF as a catalyst, a substance that increases the rate of chemical reaction without undergoing any permanent chemical change itself**
  - Refineries use Anhydrous Hydrogen Fluoride or Modified Hydrogen Fluoride
- **Refineries use HF / MHF technology in the alkylation process to modify petroleum feedstocks to produce high octane "alkylate"**
- **Refineries blend alkylate with other refined hydrocarbons to make gasoline**
  - Alkylate: "blending component" required to meet strict CARB gasoline standards
    - Alkylate provides high octane ratings and possesses cleaner-burning properties, particularly important in refining gasoline sold in California
    - Each barrel of alkylate produces approximately five barrels of CARB gasoline

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WHAT IS MODIFIED HYDROFLUORIC (MHF) ACID?

- **Modified Hydrofluoric Acid (MHF) is HF that contains an additive that lowers the volatility of the original compound**
  - Reduces risk of exposure in the event of an MHF leak or spill
- **The MHF used at the Torrance refinery is designed to reduce the volatility, or vapor potential, of hydrofluoric acid and features an additive that can reduce the volatility by 60 to 90 percent**
  - The MHF delivered to the refinery contains 10 to 15 percent concentration of this additive, which is within or above the industry standard.
  - The unit at the Torrance refinery has numerous additional safety mitigation mechanisms
- **MHF users must obtain a proprietary license from the manufacturer, which considers the additive formulation and specific concentration to be trade secrets**
- **Changing the alkylation process from HF to MHF requires an investment in and installation of additional equipment**
- **Four domestic HF units have been adapted to use MHF catalyst technology**
  - Torrance and Wilmington refineries both use MHF as an alkylation catalyst

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POTENTAL ALTERNATIVE AKYLATION TECHNOLOGIES

Alternative alkylation technologies with different properties are in various stages of development:

1. **Indirect Alkylation**
   - Uses a solid catalyst
   - Alkylate yield is 50% lower than MHF Alkylation
   - Only nine operating units; most overseas
   - Not a viable choice for California Clean Gasoline production because the lower yield reduces total gasoline production by an equal percentage

2. **Solid Catalyst Alkylation**
   - Commercially unproven
   - Rapid catalyst deactivation
   - Research focus has shifted to Ionic Liquid Alkylation

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POTENTAL ALTERNATIVE AKYLATION TECHNOLOGIES

3. Ionic Liquid Alkylation

- 2012: continuous pilot plant constructed
- 2015: regeneration pilot plant commissioned
- Engineering started for demonstration unit
- First commercial trial expected to be at least 5 to 10+ years away

- **Before PBF adopts any new alkylation catalyst, the technology must be proven to be safe, reliable, environmentally responsible, and commercially viable in a full scale application**
  - None of the new, alternative alkylation technologies has reached a mature state of technical, commercial, and economic viability

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TWO VIABLE ALKYLATION TECHNOLOGIES

- **Petroleum refineries use two distinct processes to manufacture alkylate, a critical blending component in CARB gasoline**
  - Both processes use a liquid acid catalyst to promote the desired chemical reaction
    - Hydrofluoric (HF) acid alkylation
    - Sulfuric acid alkylation
- **HF acid and sulfuric acid alkylation have similar basic chemical reactions**
  - However, process equipment and design requirements differ significantly
  - There are also differences in product quality and catalyst consumption
- **Alkylation processes and catalysts are not interchangeable - product quality differences are also an important factor**
- **Refinery configuration can also dictate which process will be more effective**
- **No U.S. refinery has ever switched alkylation units from HF to sulfuric acid**

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CONSIDERATIONS ASSOCIATED WITH EACH TECHNOLOGY

- **Example: 10,000 barrel per day (BPD) sulfuric acid alkylation unit processing propylene-butylene feedstocks**
  - Requires ~225 trucks per month of "fresh" sulfuric acid supply
    - Equivalent to ~200x more fresh acid than "same size" MHF unit
  - Typically, "spent" sulfuric acid must be transported offsite to be "regenerated"
    - Shipping "spent acid" adds ~225 truckloads per month
    - 200x more volume than HF acid, which doesn't require regeneration
  - Result: Actual amount of fresh and regenerated spent sulfuric acid shipped to / from sulfuric acid units is ~400x greater than similar-sized HF alkylation unit
- **Torrance MHF alkylation unit processes ~28,000 barrels per day (BPD)**
  - Sulfuric acid unit requires ~1,540 truck shipments/month @ ~51 trucks/day
  - The Torrance unit receives three to six shipments of MHF per month
- **Existing U.S. sulfuric acid regeneration facilities are near maximum capacity**
  - Constraint could require refiners considering sulfuric acid alkylation units to identify new sources or construct on-site regeneration facilities
  - A new regeneration facility would add greenhouse gases, NOx, and SOx emissions sources, plus other environmental considerations, as explained in more detail below

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PLOT SPACE CONSIDERATION FOR NEW UNITS

- **Sulfuric acid alkylation units often require several reactors and settlers**
  - Predominant licensor's reactor system produces < 3,000 BPD of alkylate
  - Requires larger sulfuric acid alkylation units to operate multiple reactor-settler systems in parallel to produce sufficient quantities of alkylate
- **Example: 200,000 BPD refinery producing 20,000 BPD of alkylate**
  - HF alkylation unit reaction system requires five vessels
  - Typical sulfuric acid alkylation reaction system requires 18 - 21 vessels

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ENVIRONMENTAL CONSIDERATIONS

- **Environmental impact from the refining process is a primary concern for industry and important consideration in choosing alkylation technology**
- **Primary air emission concerns are sulfur oxides, greenhouse gases (GHG), and fugitive emissions from pumps, fittings, etc.**
  - HF alkylation units consume less energy than sulfuric acid plants
    - Results in smaller GHG footprint for HF unit
    - Corresponding increase in GHG emissions for sulfuric acid plants
  - Sulfuric acid regeneration on and offsite a source of SO_2 emissions
  - Fugitive emissions from sulfuric acid alkylation could also be higher due to additional equipment required for reactor / refrigeration system

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MANAGING SAFETY RISKS

- **Refiners recognize they have broad responsibility for managing risk, including safety of employees, contractors, and neighboring communities**
  - Both sulfuric acid and HF/MHF alkylation present unique risk profiles
  - The court appointed Safety Advisor for the City of Torrance determined MHF was the safest option
- **HF alkylation units benefit from 70+ years of operations and improvements**
  - Feature well-established design standards and operating and maintenance programs that fundamentally support process safety and reliability
- **Industry programs are supplemented by regulatory initiatives**
  - OSHA Process Safety Management, EPA Risk Management Program
    U.S. Coast Guard Maritime Transportation Security Act
    DHS Chemical Facility Anti-Terrorism Standards
- **Refinery safety records for employees and contractors in the U.S. indicate:**
  - Refining has personnel injury rates substantially below general manufacturing
  - Refineries with alkylation units consistently have better safety performance than facilities without them
  - Employees working at refineries with HF and sulfuric acid alkylation have similar safety performance

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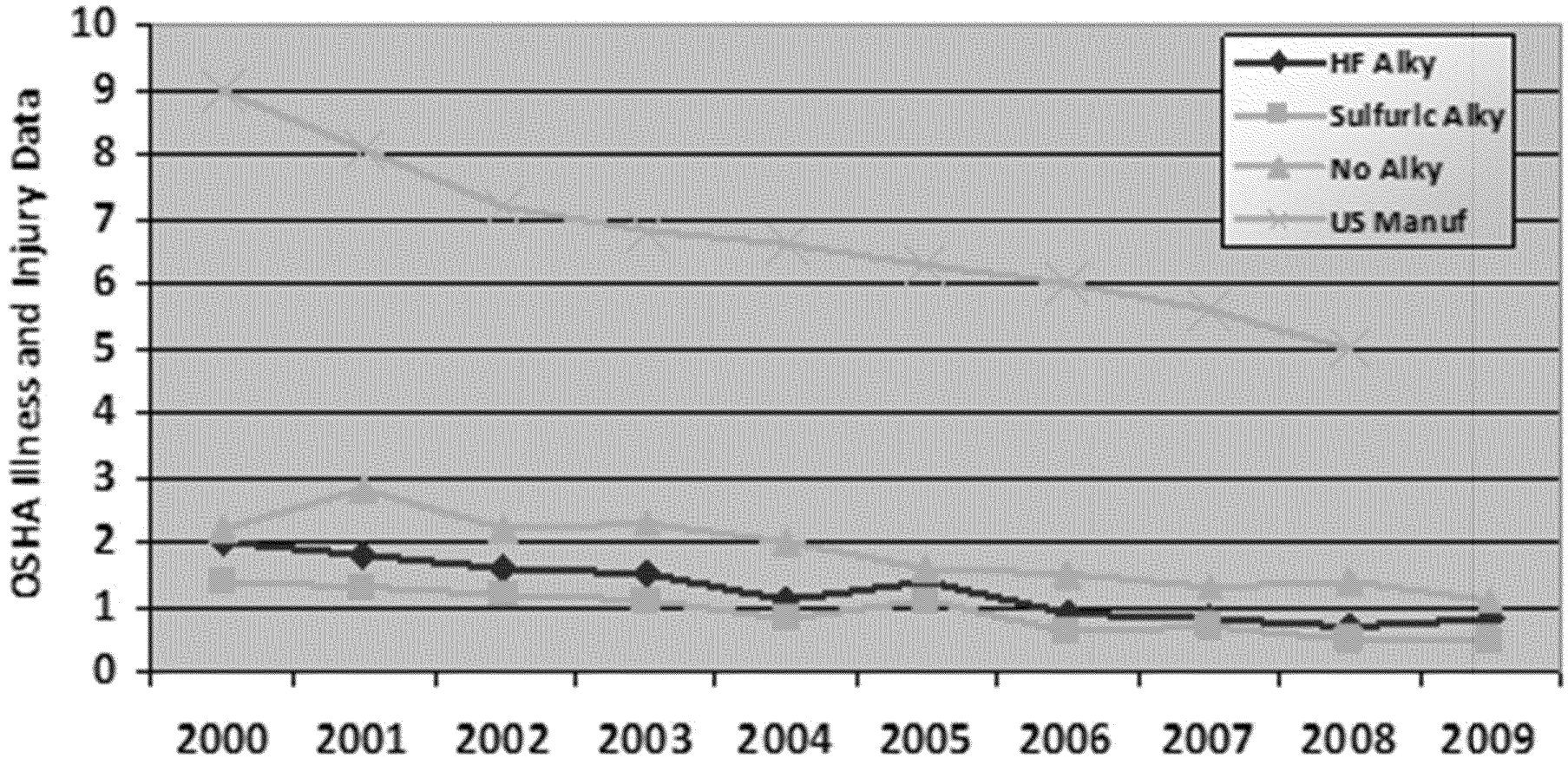
SAFELY MANAGING RISK

- **OSHA data indicates U.S. refineries are safer than domestic manufacturing in general**
- **Chart shows refineries with alkylation units are even safer than those without alkylation**



Source: OSHA Occupational Illness and Injury Reporting

TORRANCE MHF UNIT SAFETY MECHANISIMS

- **Specialized training and emergency response drills**
- **Proprietary additive in "Modified HF" catalyst significantly reduces volatility versus conventional HF**
- **Surveillance via eight video camera systems that can be used with ten remotely-controlled "aim and shoot" water cannons to suppress MHF vapors**
  - Fixed Water Spray System & Fixed Water Monitors also suppress vapors
- **Unit shutdown, equipment isolation, rapid de-inventory system moves MHF to safe location**
  - Deluge System / Spray Curtains deploy with equipment shutdown and isolation
- **Laser Sensor system on perimeter of unit provides 360° coverage**
- **35 MHF leak detectors near high acid concentration equipment, unit perimeter**
- **Flange Shrouds, Settler Pans, Pump Barriers, plus protected storage drum, minimize aeration of a potential release**

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TORRANCE MHF UNIT SAFETY MECHANISIMS

- **Double mechanical or tandem seals for pumps in acid service**
- **Acid sensitive paint helps detect leaks on flanges**
- **Additional MHF unloading safeguards**
- **Supplier pre-mixes the additive into the catalyst before shipping**
- **Safeguarded fresh acid unloading system**
  - Can be shut down & isolated from the truck, control house, or Central Control
- **Comprehensive audits conducted by company experts, third-party consultants, and government officials**
- **Whenever a sensor detects MHF an automatic signal is sent directly to the refinery's Central Control Room and the SCAQMD office**
  - After PBF acquires the refinery we intend to electronically route the same notification signal to the Torrance Fire Department

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INTENT OF EPA's RISK MANAGEMENT PLAN - RMP

- **EPA's Risk Management Plan (RMP) Rule requires facilities that store more than a threshold quantity of a regulated toxic or flammable substance in a process to develop a Risk Management Plan**
  - Plans must be revised and resubmitted to EPA every five years
- **RMP goal: to reduce potential for accidental releases that can harm the public and the environment, and mitigate severity of releases that do occur**
- **Facilities provide RMP information to local fire, police, and other emergency response personnel to help prepare for and respond to related emergencies**
- **"Worst-case analysis" uses very conservative assumptions about weather and release conditions**
  - "Distance to endpoint" estimated under worst-case conditions is intended to provide an estimate of maximum possible area that might be affected in the unlikely event of catastrophic conditions, rather than a zone in which the public might be in danger
- **EPA intends the estimated distances to provide a basis for a discussion among the regulated community, emergency planners and responders, and the public, rather than a basis for any specific predictions or actions**

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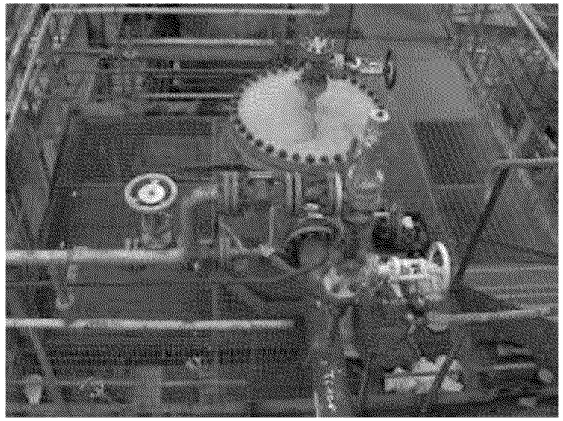
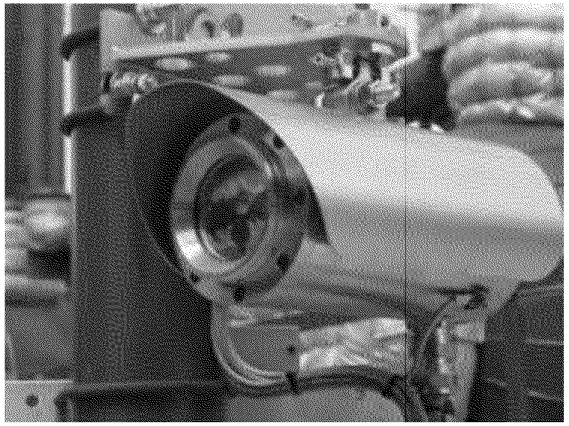
IMPROVING MHF SAFETY AT TORRANCE REFINERY

Although Torrance Refinery's alkylation unit includes many layers of protection, PBF Energy's subsidiary, Torrance Refining Company, plans to further improve process safety by:

1. Providing a direct signal from the refinery's alkylation unit MHF leak sensors to the Torrance Fire Department
   i. SCAQMD already has this feature
2. Evaluate potential changes to the water spray systems
3. Hire a risk evaluation expert such as Baker Risk to update the Torrance Refinery Modified Hydrofluoric Acid Alkylation Risk study
4. Conduct and upgrade MHF training for employees & emergency responders





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PATH FORWARD

PBF continues to look for proven technologies that can improve the health and safety of employees and the community, minimize environmental impacts of refineries, and increase operational reliability. PBF plans to:

- **Continue researching alternatives to MHF**
- **Work cooperatively with employees, labor unions, and emergency responders on education and training for the Torrance MHF unit**
  - Continue to work with employees to promote effective process safety management programs based on rigorous hazard identification and mitigation
- **Reach out to stakeholders and have an open dialogue with them about the Torrance refinery, MHF, and existing emergency response management and mitigation tools, including those available in the community**

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CONCLUSIONS

- **PBF safely operates HF Alkylation units at our Paulsboro, NJ and Chalmette, LA Refineries**
- **No emerging alkylation technology has reached the mature state of technological, economic, or commercial viability achieved by MHF or sulfuric acid alkylation**
- **Modified Hydrofluoric Acid Alkylation with current safety systems is the best and safest alkylation process for Torrance Refinery**
  - The refinery is not economically viable without this unit
- **We are confident the refinery's many layers of protection, mitigation steps, and safety systems will allow us to operate the MHF Alkylation Unit safely and reliably**

Thank You!

ED_001593_00009616

To: Johnson, Kathleen[Johnson.Kathleen@epa.gov]
Cc: Cuffel, Donald[Don.Cuffel@valero.com]
From: Suhami, Iren
Sent: Mon 5/4/2015 8:27:38 PM
Subject: Valero Benicia Refinery (B2626) AMP 02-- pending EPA approval
AMP 02--AMP NSPS Ja Acid Gas Flare H2S CEMS.pdf

Dear Ms. Kathleen Johnson,

Here is a copy of AMP 02.

Thanks,

Iren Suhami

Staff Environmental Engineer

Valero Benicia Refinery

707-745-7635

From: Suhami, Iren
Sent: Monday, May 04, 2015 1:22 PM
To: 'johnson.kathleen@epa.gov'
Cc: Cuffel, Donald
Subject: Valero Benicia Refinery (B2626) AMPs-- pending EPA approval

Dear Ms. Kathleen Johnson,

Following on our phone conversation today, I am attaching a list of the 4 outstanding AMPs for which Valero Benicia Refinery (B2626) is awaiting EPA approval. As I mentioned during our phone conversation, we are getting ready to submit our 5-year Title V Renewal application and we would like to include the attached monitoring plans as approved AMPs, particularly in consideration that one of the AMPs has been pending EPA approval for over 4 years. I will be sending you 4 other separate emails, each with a copy of one of the AMP submissions so that you can assign them accordingly.

Here is a brief description:

1. AMP_01-- Opacity CPMS for Flue Gas Scrubber, sent to EPA on October 27, 2010.

2. AMP_02-- NSPS Ja Acid Gas Flare H2S CEMS, sent to EPA on August 6, 2013.

3. AMP_03-- NSPS Ja NOx CEMS Span, sent to EPA on June 25, 2014.

4. AMP_04-- NSPS Ja Flare RATA for H2S CEMS, sent to EPA on March 26, 2015.

We would be grateful if you can facilitate an EPA response to these AMPs. Top priority would be appreciated to the number 1 above. Thank you in advance.

Iren Suhami

Staff Environmental Engineer

Valero Benicia Refinery

707-745-7635

VALERO

Benicia Refinery • Valero Refining Company - California
3400 East Second Street • Benicia, California 94510-1097 • Telephone (707) 745-7011 • Facsimile (707) 745-7432

Certified Receipt # 7011 1150 0001 6523 9778

August 6, 2013

40 CFR 60, Subpart Ja [40CFR60.107a]
Request for Approval of Alternative Monitoring Protocol (AMP) for Hydrogen Sulfide (H2S) in Fuel Gas to the Acid Gas Flare

Mr. Douglas K. McDaniel
Chief, Enforcement Office
Air Division
USEPA Region IX, Air-5
75 Hawthorne Street
San Francisco, CA 94105

Dear Mr. McDaniel:

This letter is Valero's request for USEPA review and approval of an Alternate Monitoring Protocol (AMP) for the Valero Refining Company – CA, Benicia Refinery. This AMP proposes an alternative for monitoring and determining compliance with the standard set forth in Part 40, Subpart Ja for hydrogen sulfide (H2S) concentration in flare fuel gas [see 40 CFR 60.103a(h) and 60.107a(a)(2)].

Valero owns and operates an Acid Gas Flare (AGF) that will be subject to NSPS Ja requirements beginning November 11, 2015. The AGF was designed to effectively destroy H2S and ammonia sour gas. The AGF is only used during periods of process upset (startup, shutdown, malfunction) or relief valve leakage. Pursuant to 40 CFR 60.103a(h), combustion in a flare of process upset gas or fuel gas that is released as a result of relief valve leakage or other emergency malfunction is exempt from the H2S limit.

Valero is requesting an AMP in lieu of H2S continuous emissions monitoring system (CEMS) installation because:

- process upset/relief valve leakages are exempt from the H2S limit
- the AGF is designed for process upset/relief valve leakage
- the AGF is infrequently used
- if there is a flare event, H2S concentration will likely be in the percent - not ppm – range, due to the process design.

Rather than a H2S CEMS, Valero proposes to use Bay Area Air Quality Management District (BAAQMD) approved AGF Source H2S concentrations (Appendix A). This is a list of sources that could relieve to the Acid Gas Flare, and their worst case H2S concentration. The list was developed by Valero, and approved by BAAQMD, to meet local BAAQMD Regulation 12-11 and 12-12 flare requirements.

Valero requests USEPA review and approval of this AMP as provided in 40 CFR 60.13(i). Please contact Ms. Sky Bellanca at (707) 745-7749 should you have any questions concerning this matter.

Sincerely,

Donald W. Cuffel
Manager – Environmental Engineering

DWC/KSB/tac

Enclosures

cc: Joe Westersund, USEPA, Region IX

Document # 23770

e-bcc: Sky Bellanca

RIMS File Category/Code: FED60Ja / AI-24-04

RIMS File Name: FED-60Ja AMP Approval Request

E-File Location: \\Fsbnrf01\group\Environmental\FED_60Ja\AI-24-16 AMPs\AMP Approval Request 23770.docx

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PS Form 3800, August 2006 See Reverse for Instructions

Document # 23770

Acid Gas Flare H2S CEMS Alternative Monitoring Protocol

1. Applicability
   a. Identify Source name, location and source numbers

      Valero Refining Company – CA, Benicia Refinery
      3400 East Second Street
      Benicia, CA 94510

      BAAQMD Source numbers:

      Acid Gas Flare (S-16)

   b. Identify the type of industry

      NAICS Code: 324110 (Petroleum Refining)

   c. Identify the process of interest

      The Acid Gas Flare System handles acid gas from units that carry high concentrations of hydrogen sulfide and ammonia.

   d. Identify the regulations that apply

      Part 60 Subpart Ja:
      - **Design, Equipment, Work Practice or Operational Standards – 40CFR60.103a(h)**
      - **Performance Tests – 40CFR60.104a(a)**
      - **Monitoring of Emissions and Operations for Flares – 40CFR60.107a(a)(2)**

   e. Identify the pollutant(s) subject to monitoring for which an AMP is being submitted

      H2S

2. Source Description
   a. Provide a simplified process flow diagram

      Please see Figure 1 of this document

   b. Provide a discussion of process or equipment operations that are known to significantly affect emissions or monitoring procedures

      Process unit start-up, shutdown, malfunction, upset or relief valve leakage

3. Control Equipment Description
   a. Provide a simplified block flow diagram with emission monitoring points identified

      Please see Figure 1 of this document

   b. List monitored emission limits

      None – worst case H2S concentrations used during flare event

c. Provide a discussion of operating procedures that are known to significantly affect emissions.

   Process unit start-up, shutdown, malfunction, upset or relief valve leakage

4. Monitoring System Description
   a. Identify the continuous emission monitoring systems that will be used for the AMP

      N/A

   b. List all measurement or sampling locations

      Please see Appendix A of this document

   c. Provide a description of the data acquisition and handling system operations including sample calculations

      N/A

   d. Provide checklists, data sheets, and report format as necessary for compliance determination.

      The matrix in Appendix A lists sources that could relieve to the Acid Gas Flare, and their worst case H2S concentration. The Valero Benicia refinery proposes to use the attached matrix for monitoring and determining compliance with the H2S limits in NSPS Ja.

5. Initial Verification Test Procedures
   a. Maintain a log or sampling report for each required stack test listing the emissions rate in accordance with the applicable emission limitations.

      N/A

Appendix A

Valero Benicia Refinery
Acid Gas Flare Sources
Revised April 4, 2008

Process Gas Stream ID	SOURCE	Equipment Description	Flow Thru	Instrument Type	Instrument ID	FLOW VERIFICATION (6)	H2S%	Basis	Comments	P&ID 117-KE-4B Reference Item	Source Probability
1	D2801	Condensate Drum (10) for T2801	CV (8)	Pressure	SGP053	Vlv position > 50%	35%	Flexorb Design Basis	Normal Flow: T2801 → Condenser → D2801→ D1305 → F1301; Alt. D2801 to AGF	28P053-CV(B) (D2801)	Primary
2	D2831	Condensate Drum (10) for T2831	CV (8)	Pressure	SGP081	Vlv position > 50%	35%	Flexorb Design Basis	Normal Flow: T2831 → Condenser → D2831→ D1305 → F1301 ; Alt. D2831 to AGF	28P081-CV(B) (D-2831)	Primary
3	T2831	NH3 & H2S Sour H2O Stripper	PRV	Pressure	SGP081	P > 70#; Vlv position = 100%	12.2%	Flexorb Design Basis; Promax Process Simulator	Normal Flow: T2831 → Condenser → D2831→ D1305 → F1301; 1st Alt. D2831 to AGF; 2nd Alt. to T2831 → AGF if P>70#	SV-2833 (T-2831)	Secondary
4	D1305	NH3 & H2S Acid Gas Vapor / Liquid Knockout Drum (11)	PRV	Pressure	SGP114	P > 50#	35%	Flexorb Design Basis	Normal Flow: T2801/T2831 → Condenser → D1305 → F1301; Alt. D1305 to AGF for high P; Unlikely source	SV 1216 (D1305)	Unlikely
5	D1201	Condensate Drum (10) for T1203	CV (8)	Pressure	SGP004	Vlv position > 50%	75%	Flexorb Design Basis	Normal Flow: T1203 → Condenser → D1201 → D1301 → F1301; Alt. D-1201 to AGF	12P004-CV(B) (D-1201)	Primary
6	T1203	MEA Regenerator	PRV	Pressure	SGP004	P > 45#; Vlv position 100%	15.6%	Flexorb Design Basis; Promax Process Simulator	Normal Flow: T1203 → Condenser → D1201→ D1301→F1301; 1st alt. D1201 to AGF; 2nd alt. T1203 to AGF if P>45#	SV-1205 (T1203)	Secondary
7	D1301	Liquid Knockout Drum (11) for MEA/Acid Gas vapors from D1201	PRV	Pressure	SGP166	P > 50#	75%	Flexorb Design Basis	Normal Flow: T1203 → Condenser → D1201→ D1301 → F1301; Alt to AGF for high P; Unlikely source	SV 1301 (D1301)	Unlikely
8	D2001B OVHD	Oil Separator & Feed Drum Vapor Balance Line with Tk2801	CV (8)	Pressure	SGP056	Vlv position >0%; manual remote valve	6.7%	Tk2801- 2002 Sample (9)	Normal Flow: D2001B & Tk2801 → T1201; Alt. Tk2801 → D2001B → AGF if high tank pressure, via manually operated remote control valve	D2001-B OVHD	Primary
9	D2004	Sour H2O Flash Drum to D-2001B & LPFG	Double Block Vlv	Local Manual Vlv	--	Ops Procedure; vlv position	6.7%	Tk2801- 2002 Sample (9)	Normal Flow: D2004 → LPFG; Alt to AGF thru manual double-block vlv; Conservative H2S % Estimate; Unlikely source	D-2004	Unlikely
10	Sour Gas from 3"P1721-AW (D-2001B & Tk2801)	Vapor Balance Line between D-2001B & Tk2801 to the AGF	Block Vlv	Local Manual Vlv	--	Ops Procedure; vlv position	6.7%	Tk2801- 2002 Sample (9)	Normal Flow: D2001B & Tk2801 → T1201; Alt. Tk 2801 → D2001B → AGF if high tank Pressure; 2nd Alt. Thru manual vlv. Normally closed. Used when other automatic controls are insufficient to prevent overpressure.	SOUR GAS FROM 3"P1721-AW	Unlikely
11	330# H2 Letdown	330# Hydrogen Letdown to the AGF	CV (8)	Pressure	SGP236	Vlv position > 0%, P > 340#	1.6%	Process 330# Letdown Analysis	Normal Flow: 330# H2 Letdown → HPTG; 1st Alt to T1201, 2nd Alt to AGF if high P	Dwg 36-000-03E-73503; 330 PSIG HPTG	Primary
12	D1304	Fuel Gas Liquid Knockout Drum (11) Liquid Drain Line	Double Block Vlv	Local Manual Vlv	--	Ops Procedure; vlv position	<30 PPM (7)	Refinery fuel gas. normally no H2S	Normal: Liquid flow to Regular Flare through manual valve; Alt: Liquid flow to AGF thru manual double-block vlv; Unlikely source	D-1304 BLOWDOWN	Unlikely
13	D4501	Condensate Drum (10) Overhead Acid Gas Vapors from T4502 Flexorb Regenerator	Block Vlv	Local Manual Vlv	FLP002	Ops Procedure; vlv position	76%	Flexorb Design Basis	Normal Flow: T4502 →Condenser →D4501 → D1301 → F1301; Alt to AGF thru manual vlv @ flare line. Only activated @ SGU upsets; Small & unlikely source; short & small possibly during shutdown operation.	ACID GAS FROM D4501 OVHD	Unlikely
14	SRU - A Train NH3 Clearing	SRU Shutdown clearing lines	Block Vlv; site glass	Manual Vlv; site glass; blinds	--	Ops Procedure; vlv position; site glass	0%	Steam (ops procedure)	This 1.5" line is normally blinded. It is used during SRU shutdown to clear the lines prior to installing blinds. The line is first steamed to the combustor. Material that is routed to the AGFlare is steam. Normally blinded. Used on shutdown for final line clearing	A Train NH3 Clearing Line from 13M028-SDV	Unlikely

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Valero Benicia Refinery
Acid Gas Flare Sources
Revised April 4, 2008

Process Gas Stream ID	SOURCE	Equipment Description	Flow Thru	Instrument Type	Instrument ID	FLOW VERIFICATION (6)	H2S%	Basis	Comments	P&ID 117-KE-4B Reference Item	Source Probability
15	SRU - B Train NH3 Clearing	SRU Shutdown clearing lines	Block Vlv; site glass	Manual Vlv; site glass;blinds	--	Ops Procedure; vlv position; site glass	0%	Steam (ops procedure)	This 1.5" line is normally blinded. It is used during SRU shutdown to clear the lines prior to instaling blinds. The line is first steamed to the combustor. Material that is routed to the AGFlare is steam. Normally blinded. Used on shutdown for final line clearing.	B Train NH3 Clearning Line from 13M-78-SDV	Unlikely
16	SRU - A & B Train Feed MEA Clearing Line	SRU Shutdown clearing lines	Block Vlv; site glass	Manual Vlv; site glass; blinds	--	Ops Procedure; vlv position; site glass	0%	Steam (ops procedure)	This 1.5" line is normally blinded. It is used during SRU shutdown to clear the lines prior to instaling blinds. The line is first steamed to the combustor. Material that is routed to the AGFlare is steam. Normally blinded. Used on shutdown for final line clearing.	A&B Train Feed MEA Clearing Line	Unlikely

Notes:

(1) List prepared to comply with BAAQMD Reg 12, Rule 11, Section 502.3.1a
(2) Due to high H2S concentration, sampling is not recommended.
(3) Flexorb Design Basis - Same as used on Hydrogenator permit basis for Sulfur Plant, which was reviewed with Art Valla, BAAQMD
(4) An on-line H2S analyzer is not available on any of the above sources nor the Acid Gas Flare.
(5) Supplemental fuel gas samples to the acid gas flare are regularly taken. Fuel gas analysis is shown in the monthly flare report.
(6) Flow Verification: Flow verification is used in conjunction with: AGF H20 Seal Pot level instrument, AGF Flowmeter, and AGF Fuel Gas Flowmeter
(7) H2S % will be based on regular fuel gas lab analysis when required.
(8) The Control Valve station includes a manually-operated bypass valve. The bypass valve is normally in the closed position.
(9) To verify the Tk2801 2002 vapor space H2S% sample analysis, two fresh samples were taken. The 9/17/07 sample analyzed 5.8% H2S. The 9/26/07 sample analyzed 4.2% H2S. This verified Tk2801 vapor space H2S < 6.7%; as was analyzed in the 2002 sample.
(10) Condensate Drum: A vessel that collects condensible liquids and separates them from vapors. The Condensate Drum is often located downstream from a condenser.
(11) Knockout Drum: A vessel that separates small quantities of liquid and or solids from a vapor or gas stream.

Abbreviations:

MEA = Monoethanol Amine
H2O = Water
NH3 = Ammonia
H2S = Hydrogen Sulfide
H2 = Hydrogen
SRU = Sulfur Recovery Unit
AGF = Acid Gas Flare
LPFG = Low Pressure Fuel Gas
HPTG = High Pressure Tail Gas
OVHD = Overhead
VLV = Valve
CV = Control Valve
PRV = Pressure Relief Valve
Ops = Operations
Alt = Alternate

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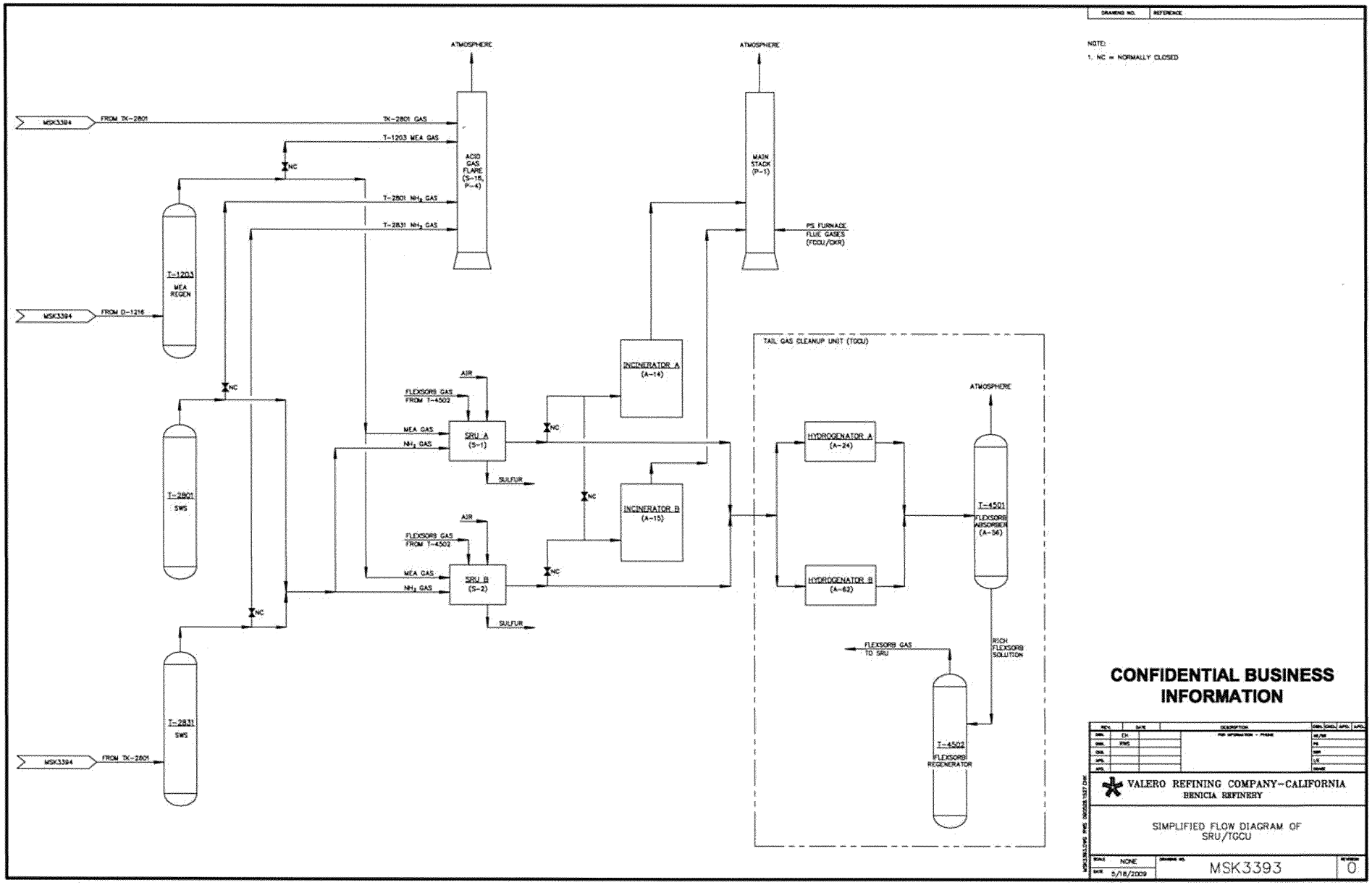
Figure 1

Document # 23770



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To: Johnson, Kathleen[Johnson.Kathleen@epa.gov]
Cc: Cuffel, Donald[Don.Cuffel@valero.com]
From: Suhami, Iren
Sent: Mon 5/4/2015 8:28:48 PM
Subject: Valero Benicia Refinery (B2626) AMP 03-- pending EPA approval

Dear Ms. Kathleen Johnson,

Here is a copy of AMP 03.

Thanks,

Iren Suhami

Staff Environmental Engineer

Valero Benicia Refinery

707-745-7635

From: Suhami, Iren
Sent: Monday, May 04, 2015 1:22 PM
To: 'johnson.kathleen@epa.gov'
Cc: Cuffel, Donald
Subject: Valero Benicia Refinery (B2626) AMPs-- pending EPA approval

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3. AMP_03-- NSPS Ja NOx CEMS Span, sent to EPA on June 25, 2014.

4. AMP_04-- NSPS Ja Flare RATA for H2S CEMS, sent to EPA on March 26, 2015.

We would be grateful if you can facilitate an EPA response to these AMPs. Top priority would be appreciated to the number 1 above. Thank you in advance.

Iren Suhami

Staff Environmental Engineer

Valero Benicia Refinery

707-745-7635

To: 'johnson.kathleen@epa.gov['johnson.kathleen@epa.gov']
Cc: Cuffel, Donald[Don.Cuffel@valero.com]
From: Suhami, Iren
Sent: Mon 5/4/2015 8:25:23 PM
Subject: Valero Benicia Refinery (B2626) AMP 01-- pending EPA approval
AMP 01--AMP FCCU Opacity for ST-5601.pdf

Dear Ms. Kathleen Johnson,

Here is a copy of AMP 01.

Thanks,

Iren Suhami

Staff Environmental Engineer

Valero Benicia Refinery

707-745-7635

From: Suhami, Iren
Sent: Monday, May 04, 2015 1:22 PM
To: 'johnson.kathleen@epa.gov'
Cc: Cuffel, Donald
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4. AMP_04-- NSPS Ja Flare RATA for H2S CEMS, sent to EPA on March 26, 2015.

We would be grateful if you can facilitate an EPA response to these AMPs. Top priority would be appreciated to the number 1 above. Thank you in advance.

Iren Suhami

Staff Environmental Engineer

Valero Benicia Refinery

707-745-7635

VALERO
Benicia Refinery

October 27, 2010

Valero Refining Company - CA Benicia Refinery

• Visible Emissions Alternative Monitoring Protocol (AMP) for Flue Gas Scrubber

Sent by Certified mail: 7010 1670 0000 1572 0807

Ms. Margaret Waldon
Air Enforcement Office, UPEPA Region 9, Air-5
75 Hawthorne Street
San Francisco, CA 94105

Dear Ms Waldon:

Valero Refining Company – CA, Benicia Refinery is pleased to submit the enclosed Visible Emissions Alternative Monitoring Protocol (AMP) for the newly constructed Flue Gas Scrubber. This AMP defines the parametric monitoring proposed to satisfy all applicable regulations and permit conditions for visible emissions from the Fluid Catalytic Cracking Unit (FCCU) and the Fluid Coker (CKR) as defined in the Title V operating permit for this facility. The plan is modeled after the EPA-approved Visible Emissions AMPs for the Delaware City, DE and the Corpus Christi, TX refineries. The particulate scrubber technology is identical at all three facilities.

The Benicia Refinery has scheduled a refinery-wide turnaround to begin late December 2010 and conclude on or about February 3, 2011. The Flue Gas Scrubber (FGS) startup is scheduled to coincide with the conclusion of the Refinery-wide turnaround so that the FCCU and CKR are abated by the FGS equipment train. Therefore, approval of this AMP is critical for the successful and compliant startup of the Refinery and FGS abatement systems.

If you have any questions or need further information, please contact me at 707-745-7545.

Very truly yours,

Donald W. Cuffel
Principal Environmental Engineer

Enclosures
cc - w/attachment: Ms. Thu Bui – BAAQMD

Document 21926 RIMS AI-24-04 FED FGS Opacity AMP

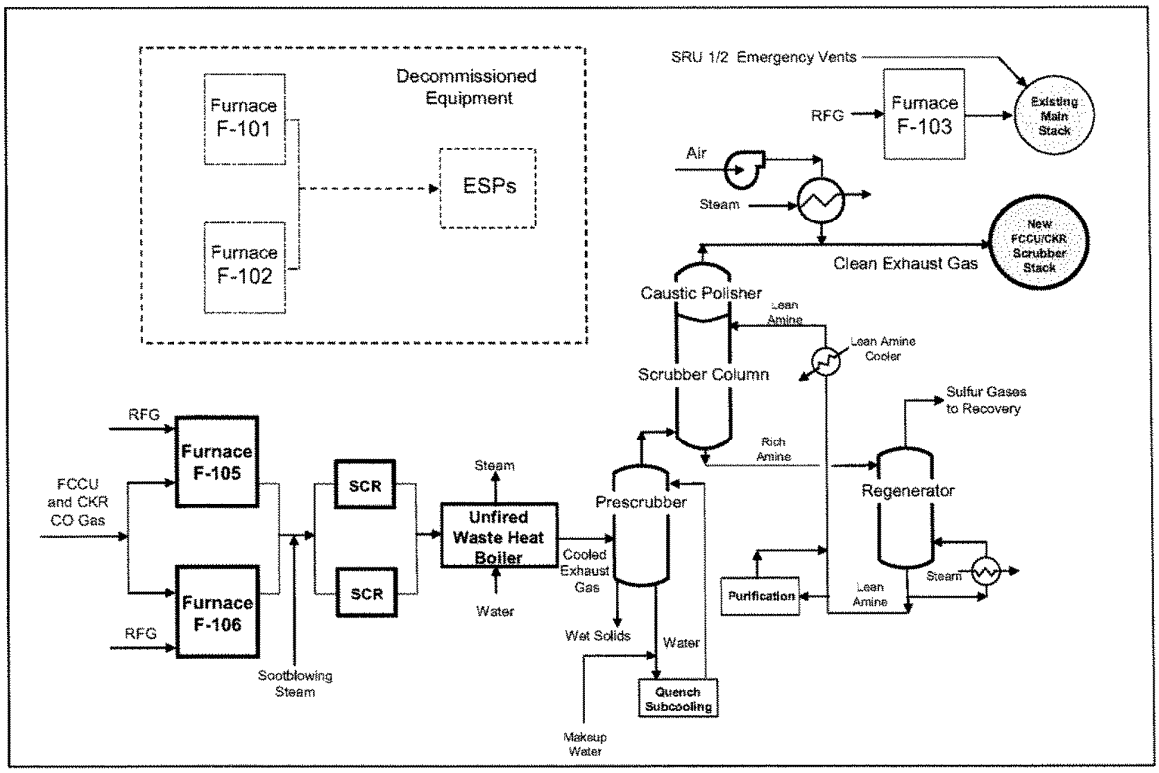
Valero Refining Company-California • 3400 East Second Street • Benicia, California 94510-1097
Telephone 707.745.7011 • Facsimile 707.745.7514

The following is an alternative monitoring protocol (AMP) for the Fluid Catalytic Cracking Unit (FCCU) and Fluid Coker (CKR) including the associated CO Furnaces located at the Benicia Refinery. This AMP is made necessary by the construction and startup of new CO Furnaces replacing the existing ones, and a Flue Gas Scrubber (FGS) equipment train designed to abate NOx, particulate matter (PM) and sulfur dioxide (SO_2). The FCCU and CKR units are unchanged by this project; however, their final emissions point will no longer be the Main Stack effective with the February 2011 startup of the new CO furnaces and FGS following a refinery-wide Turnaround. EPA Region IX previously approved an AMP for the existing COMS in the Main Stack (approved February 18, 2009).

The COMS optical technology will not function correctly in the new FGS stack because of the high moisture content. The presence of liquid water in the exhaust from the scrubbing system is known to interfere with the accurate measurement of visible emissions through the use of COMS. Parametric monitoring of the pressure drop within the Belco Prescrubber and the presence of flow to the filtering modules is a proven means of demonstrating compliance with applicability opacity regulations.

The FCCU and CKR have new CO furnaces which are abated by dual SCRs, a Belco Pre-Scrubber followed by a Cansolv regenerative amine wet gas scrubber. A simplified process flow diagram appears below. The new CO furnaces are designated as F-105 and F-106. These CO furnaces are replacing the existing furnaces F-101 and F-102 and a bank of five Electrostatic Precipitators.

Figure 2.1-1 Existing and Proposed FCCU/CKRCKR Scrubber Flow Diagram



Thus, the PM abatement formerly performed by the ESPs is now performed by the Belco Prescrubber. The parametric monitoring protocol contained in this AMP was developed by the Belco Prescrubber vendor and Valero based on the site-specific design of the Prescrubber. The parametric monitoring

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values specified as minimums for (a) the supply pressure to the filtering modules, and (b) the pressure drop across the modules are for the as-built equipment in the FGS equipment train.

1. Applicability

   a. Identify Source name, location and source numbers
   Valero Refining Company – CA, Benicia Refinery
   3400 East Second Street
   Benicia, CA 94510

   BAAQMD Source numbers:
   FCCU (S-5), CKR (S-6); CO Furnaces: F-105 (S-1059), F-106 (S-1060)
   Belco Prescrubber T-5601 (A-1047)
   Cansolv Scrubber Stack ST-5601 (P-1059)

   b. Identify the type of industry
   NAICS Code: 324110 (Petroleum Refining)

   c. Identify the process of interest
   The FCCU and CKR CO gas is combined and combusted in the CO Furnaces. The flue gas is abated by dual SCRs (NOx), the Belco Prescrubber (PM), and the Cansolv regenerative amine scrubber (SO2) before being released at scrubber stack ST-5601.

   d. Identify the regulation that apply
   From the Title V permit: BAAQMD Regulation 6 applies to both FCCU (S-5) and CKR (S-6); Federal rules apply only to the FCCU (S-5):

BAAQMD Regulation 6 Rule 1	**Particulate Matter; General Requirements(12/05/2007)**
6-1-301	Ringelmann No. 1 Limitation
6-1-302	Opacity Limitation per BAAQMD Regulation 1-520.5
6-1-305	Visible Particles
SIP Regulation 6	**Particulate Matter and Visible Emissions (09/04/1998)**
6-301	Ringelmann No. 1 Limitation
6-302	Opacity Limitation per BAAQMD Regulation 1-520.5
6-305	Visible Particles
40 CFR Part 60 Subpart J	**NSPS Subpart J for Petroleum Refineries (06/24/2008)**
60.102	Standard for Particulate Matter
60.102(a)(1)	Limit on particulate matter from catalyst regenerator (Compliance demonstration through Alternate Monitoring Plan for Site-Specific Test Plan in accordance with 60.13(i) approved by EPA January 10, 2007).
60.102(a)(2)	Limit on opacity of gases from catalyst regenerator
60.105	Monitoring of Emissions and Operations
60.105(a)(1)	Continuous opacity monitoring requirement for catalyst regenerator emissions to atmosphere. (Compliance demonstration through Alternate Monitoring Plan for alternate COMS location on Main Stack approved by EPA February 18, 2009).

ED_001593_00009735

This AMP will replace the 60.105(a)(1) reference to the previously-approved AMP for alternate COMS location on Main Stack.

The visible emissions limits are as follows:

(i) Opacity from the FCCU and CKR, when operating, shall not be greater than 20% opacity for more than 3 minutes in a clock hour when soot blowing is not occurring, or

(ii) 40% opacity for more than 3 minutes in a clock hour when soot blowing is occurring, or

(iii) 30% opacity for more than one six-minute average opacity reading in any one hour period.

e. Identify the pollutant(s) subject to monitoring for which an AMP is being submitted
Pollutant: Visible emissions (opacity). Visible emissions are related to the emissions of particulate matter.

f. Provide expected dates of AMP compliance demonstration testing
Pursuant to Title V permit condition 20820 Parts 70 and 72 (see attachment 6):

Part 70: No later than 90 days from the startup of the S-1059, S-1060, A-1059, A-1060 and A-1047, the Owner/Operator shall conduct a District-approved source test to determine initial compliance with the limits in parts 63, 66, 67, and 68 for NOx, SO2, CO, NMOC, and PM10. The Owner/Operator shall conduct the source tests in accordance with Part 73. The Owner/Operator shall submit the source test results to the Source Test Section and Engineering Division no later than 150 days after the initial startup date. [Basis: Compliance determination via source tests]

Part 72: The Owner/Operator shall conduct a District-approved source test at least once per quarter to demonstrate subsequent compliance with the NMOC and PM10 mass rates specified in part 63. The quarterly source tests shall be conducted at least 2 months apart and not more than 4 months apart. The Owner/Operator shall submit the source test results to the Source Test Section and Engineering Division no later than 60 days after the source test. After acquiring one year of source test data, the Owner/Operator may switch to semi-annual or annual source testing if test variability is low upon District's approval. [Basis: Periodic Monitoring]

Valero has secured source testing services from the Avogadro Group to occur during the months of February and March 2011.

2. Source Description

a. Provide a simplified process flow diagram
Please see Figure 2.1-1 on Page 1 of this document

b. Provide a discussion of process or equipment operations that are known to significantly affect emissions or monitoring procedures
Process unit start-up, shutdown, malfunction or upset, and emergency bypass of SCR

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3. Control Equipment Description

   a. Provide a simplified block flow diagram with parameter monitoring points and emissions sampling points identified
   Please see Attachment 1 in this document: Drawing 156-FD-4 (for Belco Pre-scrubber pressure measurement points) and Drawing 156-FD-6 (for final emissions point, Stack ST-5601 with flow meter and CEMS locations identified).

   b. List monitored operating parameters and operating limits
   Belco has calculated that a minimum pressure loss of 8 inches of water column across the Agglo-Filtering Modules and CYCLOLABS is required to ensure optimum collection efficiency of particulates. Also, a minimum pressure of 96 psig is required at the Agglo-Filtering Module pump discharge to ensure proper liquid flow to the Agglo-Filtering Modules.

   These two parameters constitute the basis for parametric monitoring of opacity. Please see Attachment 2 for details.

   c. Provide a discussion of operating procedures that are known to significantly affect emissions.
      i. **Pressure drop across the Agglo-filtering modules and Cyclolabs droplet separators.**
      ii. **Presence of flow supplied to quench/pre-scrubber and filtering modules.**

   Based upon information provided by Belco, "large particles are removed from the flue gas as they pass through the absorber vessel by impaction on the levels of water sprays in the vessel. This removal is totally unrelated to the pressure drop across the absorber vessel. Finer particles are removed in a device located immediately following the absorber, called the Agglo-Filtering Modules. The Agglo-Filtering Modules use a condensation effect to grow the small particulate into larger particulate that are easily captured. To create the condensation effect, the flue gas is accelerated and then decelerated. This change in velocity and pressure creates a slight cooling of the gas which induces condensation of liquid from the gas. This condensation occurs, since the gas is saturated and any lowering of gas temperature will cause a condensation of some of the liquid in the gas. As the liquid condenses, in a controlled deceleration, the liquid wants to condense on some media. The fine particulate in the gas are an excellent media for the liquid to condense on. When the liquid condenses on the fine particulate the particulate becomes trapped in the liquid droplets. The droplets are relatively large in size and are easily collected in a water spray as the gas is leaving the filtering module. This device only requires a small amount of pressure drop for the condensation effect to be induced."

   "After the gas leaves the Agglo-Filtering Modules, it goes through droplet separators, called Cyclolabs. These devices remove excess water droplets from the gas by inducing a spinning action of the gas. As the gas spins, the excess water droplets are thrown to the wall of the device and flow down the wall. The gas continues down and out the center of the Cyclolabs."

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"Those parameters have successfully been used for Alternate Monitoring Plans on BELCO installations across the nation, in various EPA regions and states like Texas, Louisiana, Oklahoma, Delaware, New Jersey to name a few."[1]

4. Monitoring System Description

   a. Identify the continuous parameter monitoring system that will be used for the AMP
      1. **Pressure drop across the Agglo-Filtering modules and Cyclolabs droplet separators.**
      2. **Pressure of the water supplied to the nozzles in the quench/pre-scrubber and the filtering modules.**

   b. List all elements used in the AMP to be measured
      Pressure drop indication based on the static pressure measurement prior to Agglo-Filtering Modules (56P325-T and 56P327-T), and static pressure measurement after the Cyclolabs outlet (56P326-T and 56P328-T).

      Quench/pre-scrubber recirculation pump discharge pressure: 56P331-T

   c. List all measurement or sampling locations

      The redundant pressure instruments for the pressure drop across the Agglo-Filtering Modules (AFM) appears on drawing 156-FD-4 (please see Attachment 1). The AFM pressure indication also appears on drawing 156-FD-4.

   d. Provide a description of the data acquisition and handling system operations including sample calculations

      Process data for the parametric monitors will be transmitted to the Process Control Computers (TDC) in real-time so that operations can be monitored for compliance, and corrective measure can be taken when necessary. The data will be historized in the Process Historian (IP21) for reporting and compliance verification/demonstration.

      This data path is identical to other Environmental parametric monitors in the Refinery.

   e. Provide checklists, data sheets and report format as necessary for compliance determination

      The Process Historian (IP21) retains minute data for at least 5 years. These data can be retrieved on-demand into an Excel file for analysis and reporting. These parametric monitors will be added to the daily Refinery Environmental Trends report so that timely analysis and problem detection occurs. These parametric monitors will be subject to BAAQMD reporting regulations as defined in BAAQMD Regulation 1-523 and the Title V permit.

[1] See Attachment 2, letter from Dominique Philbert (Belco - Process Manager) to Don Cuffel (Valero – Principal Environmental Engineer) dated June 8, 2010

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5. Initial Verification Test Procedures

As required by Title V Permit Condition 20820, Parts 70, 72 and 73, No later than 90 days from the startup of the S-1059, S-1060, A-1059, A-1060 and A-1047, the Owner/Operator shall conduct a District-approved source test to determine initial compliance with the limits in parts 63, 66, 67, and 68 for NOx, SO2, CO, NMOC, and PM10. The Owner/Operator shall conduct the source tests in accordance with Part 73. The Owner/Operator shall submit the source test results to the Source Test Section and Engineering Division no later than 150 days after the initial startup date.

a. Maintain a log or sampling report for each required stack test listing the emissions rate in accordance with the applicable emission limitations

Source test data will be submitted in accordance with Title V Permit Condition 20820 Part 73 and retained for at least 5 years.

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Attachments

The following attachments are provided for reference to complete this Visible Emissions AMP:

1. Simplified process diagram showing monitoring and sampling points
2. Belco Technologies Corporation Letter dated June 8, 2010 describing Benicia Refinery parametric monitoring limits
3. Delaware City Refinery Visible Emissions AMP dated September 29, 2006
4. EPA Region III Approval letter for Delaware City Refinery AMP dated March 21, 2007
5. Restatement of Benicia Refinery Title V permit condition 20820 emissions limits and demonstration of compliance, parts related to FGS emissions limits and source testing (FGS ISBL Permit Limit Summary)
6. Title V Permit Condition 20820 parts 61-76

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Attachment 1: Simplified process diagram showing monitoring and sampling points

Drawing 156-FD-4 "Prescrubber & Subcooling Process Flow Diagram"

Drawing 156-FD-6 "SO2 Absorber Process Flow Diagram"

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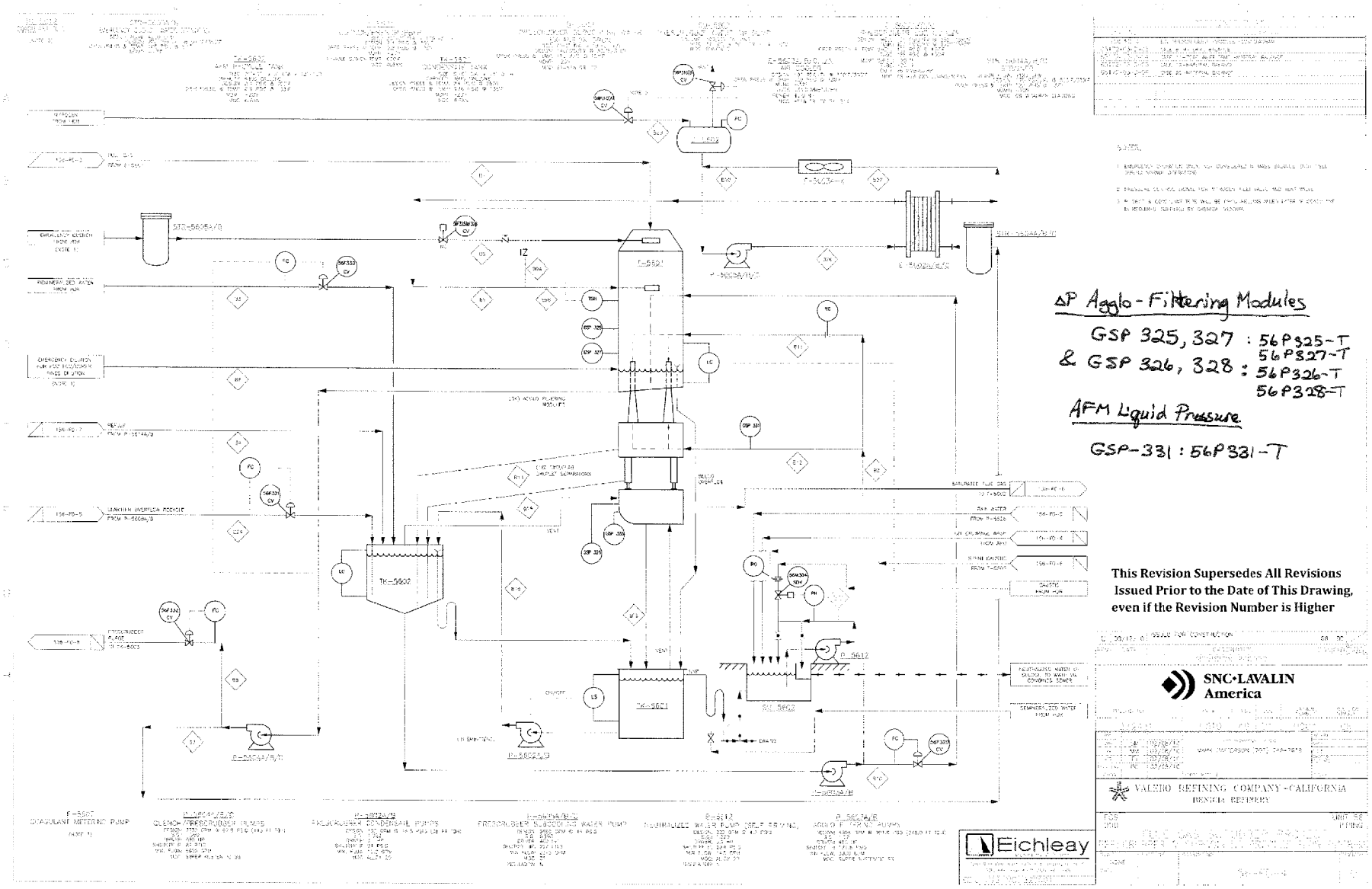

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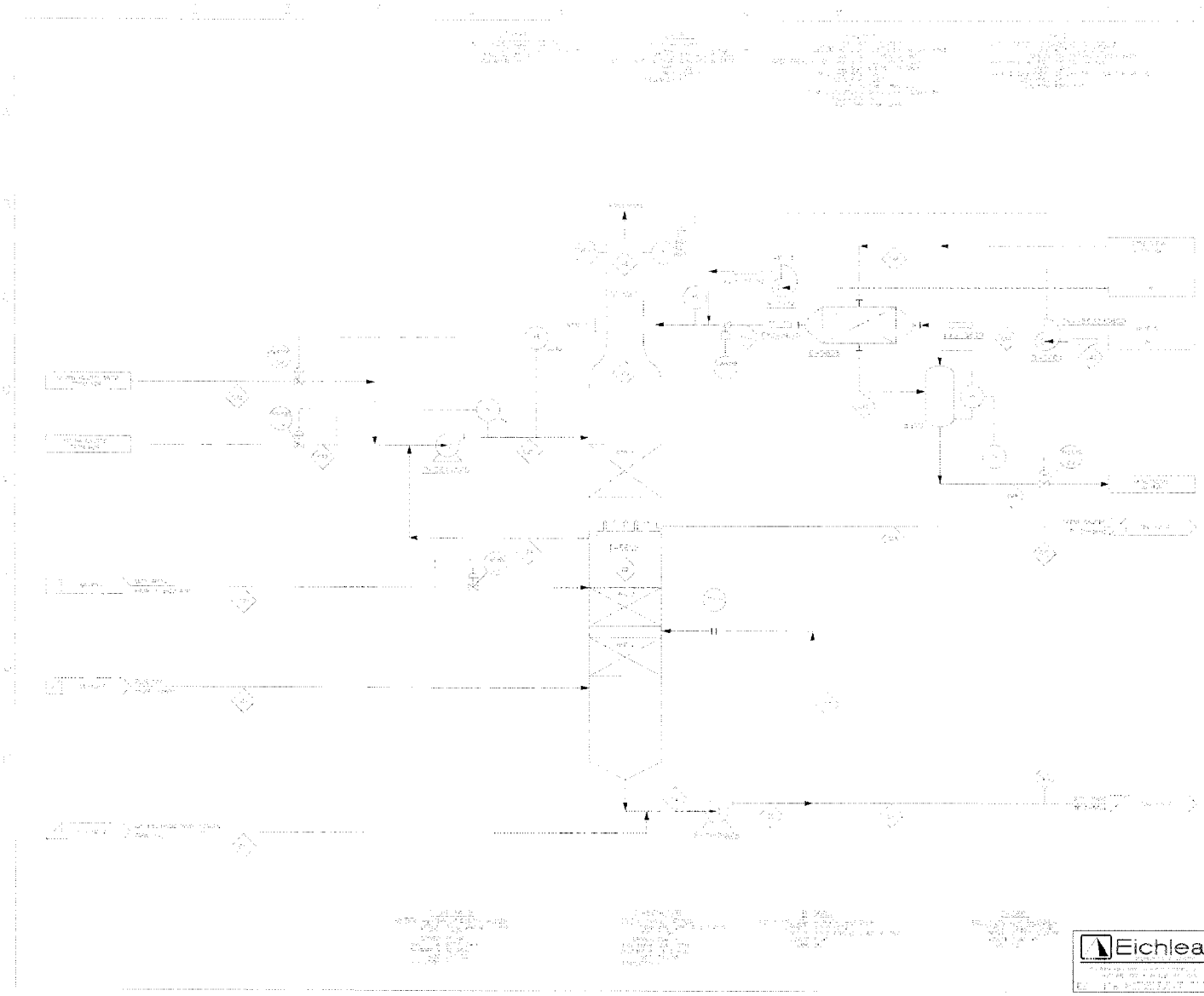

Consolv Scrubber Stack CEMs

SO_2	Flowmeter
CO	56F588
NOx	
O_2	
NH_3	

& source test ports for

PM
NMHC (POC)
SAM
NH_3

This Revision Supersedes All Revisions Issued Prior to the Date of This Drawing, even if the Revision Number is Higher

SNC·LAVALIN America

VALERO REFINING COMPANY–CALIFORNIA
BENICIA REFINERY

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Attachment 2: Belco Technologies Corporation Letter dated June 8, 2010 describing Benicia Refinery parametric monitoring limits

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Belco Technologies Corporation
9 Entin Road
Parsippany, N.J. 07054, U.S.A.
Phone: +1 (973) 884-4700
Fax: +1 (973) 884-4775

June 8, 2010
E-mail : Don.Cuffel@valero.com

Mr. Don Cuffel
c/o Valero Refining Company - CA
3400 East Second Street
Benicia, CA 94510-1005

Subject: BELCO EDV® Wet Scrubbing System – Benicia Refinery
Impact of Pressure Drop on System Performance

Dear Mr. Cuffel,

Pressure drop across the BELCO EDV® wet scrubbing system is not strictly the only factor critical to particulate removal performance, as would be typical for venturi type wet scrubbing systems, which relate increasing pressure drop to improved particulate removal. Instead, the EDV® wet scrubbing system relies on the water sprays in the absorber vessel to remove larger particles and a condensation effect to increase the particle size to a level where they are easily captured in a water spray.

Large particles are removed from the flue gas as they pass through the absorber vessel by impaction on the levels of water sprays in the vessel. This removal is totally unrelated to the pressure drop across the absorber vessel.

Finer particles are removed in a device located immediately following the absorber, called the Agglo-Filtering Modules. The Agglo-Filtering Modules use a condensation effect to grow the small particulate into larger particulate that are easily captured. To create the condensation effect, the flue gas is accelerated and then decelerated. This change in velocity and pressure creates a slight cooling of the gas which induces condensation of liquid from the gas. This condensation occurs, since the gas is saturated and any lowering of gas temperature will cause a condensation of some of the liquid in the gas. As the liquid condenses, in a controlled deceleration, the liquid wants to condense on some media. The fine particulate in the gas are an excellent media for the liquid to condense on. When the liquid condenses on the fine particulate the particulate becomes trapped in the liquid droplets. The droplets, are relatively large in size and are easily collected in a water spray as the gas is leaving the filtering module. This device only requires a small amount of pressure drop for the condensation effect to be induced.

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After the gas leaves the Agglo-Filtering Modules, it goes through droplet separators, called CYCLOLABS®. These devices remove excess water droplets from the gas by inducing a spinning action of the gas. As the gas spins, the excess water droplets are thrown to the wall of the device and flow down the wall. The gas continues down and out the center of the CYCLOLABS®.

With the EDV® wet scrubbing system at your Benicia refinery, our calculations indicate that a minimum pressure loss of approximately 8 inches of water column across the Agglo-Filtering Modules and CYCLOLABS® (Inlet side : 56P325T or 56P327T – Outlet side : 56P326T or 56P328T) is required to ensure optimum collection efficiency for particulate. Of course, to ensure proper performance, it is also critical to ensure that liquid flow is being fed to the nozzles in the absorber vessel and Agglo-Filtering Modules. It is BELCO's opinion that as long as flow is maintained to the nozzles and a minimum of approximately 8 inches of pressure drop exists, proper particulate removal will be obtained.

It is also recommended that a minimum pressure of 96 psig be maintained at the Agglo-Filtering Module pump discharge (56P331T at elevation 23'-0" above grade) in order to obtain proper system performance and ensure proper liquid flow to the Agglo-Filtering Modules.

Those parameters have successfully been used for Alternate Monitoring Plans on BELCO installations across the nation, in various EPA regions and states like Texas, Louisiana, Oklahoma, Delaware, New Jersey to name a few.

If you have any questions, wish additional information, or would like to discuss our systems please do not hesitate to contact me. My direct dial telephone number is (973) 515-8911. I can also be reached by fax at (973) 884-4775, or by e-mail at philibert@belcotech.com.

Sincerely,

Dominique Philibert
Process Manager

Cc: Cosmo Azzinnari, Wayne Patterson, Tom Saley, Natasha Kandybin (BELCO)

Attachment 3: Delaware City Refinery Visible Emissions AMP dated September 29, 2006

ED_001593_00009735

VALERO
DELAWARE CITY REFINERY
4550 Wrangle Hill Road • Delaware City, Delaware 19706-7000

September 29, 2006
CMRRR# 7005 1160 0004 2621 8277

Ms. Judy Katz
Director of Air Protection Division
US EPA Region III
1650 Arch Street
Philadelphia, PA 19103-2029

Re: Permit APC-82/0981-Construction (Amendment 6)
FCCU, FCCU Carbon Monoxide Boiler, and Wet Gas Scrubber system
Visible Emissions Alternate Monitoring Plan (AMP)

Dear Ms. Katz:

Enclosed please find two copies of the Visible Emissions Alternative Monitoring Plan (AMP) for the Premcor Refining Group Inc., Delaware City Refinery Fluid Catalytic Cracking Unit Wet Gas Scrubber. This plan is being submitted pursuant to Condition 5.9 of the above-referenced Permit APC-82/0981-Construction (Amendment 6).

If you have any questions regarding this request, please contact me at 302-834-6333

Sincerely,

Robert S Wojewodzki

Robert S Wojewodzki, P.E.
Staff Environmental Engineer

\enclosure

Cc: Mr. Ravi Rangan, P.E. – DE DNREC
CMRRR# 7005 1160 0004 2621 8234

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The Premcor Refining Group Inc.
Delaware City Refinery

VISIBLE EMISSIONS ALTERNATIVE MONITORING PROTOCOL FOR THE FLUID CATALYTIC CRACKING UNIT CO BOILER

The following is an alternative monitoring protocol to determine visible emissions from the Fluid Catalytic Cracking Unit (FCCU) CO Boiler (COB) located at the Delaware City Refinery. The FCCU COB is controlled by a Belco Pre-Scrubber followed by an amine based Cansolv Regenerative Wet Gas Scrubber and a caustic based polishing scrubber. The presence of liquid water in the exhaust from the scrubbing system may interfere with the accurate measurement of visible emissions through the use of a continuous opacity monitoring system (COMS).

1. Applicability
   a. Identify source name, location, and emission unit number(s)

      The Premcor Refining Group Inc.
      Delaware City Refinery
      Fluid Catalytic Cracking Unit (Unit 23)

   b. Identify the type of industry;

      Petroleum Refining, SIC Code 29

   c. Identify the process of interest;

      The CO Boiler associated with a Fluid Catalytic Cracking Unit that is controlled by a Belco Pre-Scrubber followed by an amine based Cansolv Regenerative Wet Gas Scrubber and a caustic based polishing scrubber.

   d. Identify the regulations that apply;

      NSPS Subpart J, MACT Subpart UUU, and DNREC Regulation No. 14. Permit APC-82/0981-CONSTRUCTION (Amendment 6) NSPS, Condition 2.2 specifies visible emission limitations as follows: opacity from the FCCU WGS stack, when operating, shall not be greater than 20% percent opacity for an aggregate of more than (3) minutes in any one (1) hour or more than fifteen (15) minutes in any twenty-four (24) hour period. Condition 5.9 requires the development of an alternative monitoring plan.

e. Identify the pollutant(s) subject to monitoring for which an alternative monitoring plan is being submitted.

Visible emissions (opacity). Visible emissions are related to the emissions of particulate matter (TSP).

f. Provide expected dates of alternative monitoring plan compliance demonstration testing.

Condition 5.1 of permit APC-82/0981-CONSTRUCTION (Amendment 6) NSPS, requires performance testing within sixty (60) days after achieving maximum production rate at which the facility will be operated, but not later than 180 days after initial start-up of the WGS. The operating limits of the parametric monitoring system that have been identified as the alternative monitoring plan parameters will be demonstrated concurrent with the performance testing for particulate matter.

2. Source Description

a. Provide a simplified process flow diagram;

The attached Block flow diagrams depict major equipment for the Fluid Catalytic Cracking Unit for the Belco Pre-Scrubber, and the Cansolv Regenerative Scrubber and Caustic polishing scrubber.

b. Provide a discussion of process or equipment operations that are known to significantly affect emissions or monitoring procedures (e.g., batch operations, plant schedules, product changes).

Process unit start-ups, shutdowns and malfunctions.

3. Control Equipment Description

a. Provide a simplified block flow diagram with parameter monitoring points and emission sampling points identified (e.g.; sampling ports in the stack);

See the attached process flow diagram (PFD) drawings. 1324-0123-XD-E001 depicts the pre-scrubbing (Belco) section of the scrubber. 1324-0123-XD-E003 depicts the Cansolv Absorber section of the scrubber and exhaust stack.

b. List monitored operating parameters and operating limits;

1. It is Belco's recommendation that a minimum of 6 in. W.C. pressure drop should exist across the Agglo-filtering modules and Cyclolabs droplet separators.
2. The minimum discharge pressure will be based upon the operation of one (1) quench/pre-scrubber recirculation pump.

c. Provide a discussion of operating procedures that are known to significantly affect emissions (e.g., catalytic bed replacement schedules, ESP rapping cycles, fabric filter cleaning cycles).

1. Pressure drop across the Agglo-filtering modules and Cyclolabs droplet separators.
2. Presence of flow supplied to quench/pre-scrubber and filtering modules.

Based upon information provided by Belco, large particles are removed from the flue gas as they pass through the water sprays located at various levels in the quench /pre-scrubber vessel due to the effect of impaction. Finer particles are removed in a device located immediately following the quench pre-scrubber, called the "filtering modules." The filtering modules use a condensation effect to combine smaller particles into larger particles that are more easily captured. The condensation effect is created by accelerating the flue gas followed by a controlled deceleration. The change in velocity and pressure creates a slight cooling of the flue gas which induces condensation of liquid. This condensation occurs since the gas is saturated upon leaving the quench pre-scrubber and any lowering of the flue gas temperature will cause a condensation of some of the liquid vapor contained in the flue gas. The liquid condenses on the fine particulate matter contained in the flue gas, entrapping the particles in a droplet. The droplets which have a relatively large size are easily collected in a water spray as the gas leaves the filtering module. Only a small amount of pressure drop is required to induce the condensation effect.

After the gas leaves the filtering modules, it passes through droplet separators known as "Cyclolabs." These devices remove excess water droplets from the gas by inducing a spinning action of the gas. As the gas spins, excess water droplets are thrown to the wall of the device and flow down the wall. The gas continues down and out through the center of the Cyclolabs. In Belco's opinion, a minimum of 6 inches of pressure drop across the filtering modules and Cyclolabs and ensuring that flow is supplied to the quench pre-scrubber vessel and filtering modules will ensure optimum collection efficiency of particulate matter.

4. Monitoring System Description

a. Identify the continuous parameter monitoring system(s) that will be used for the alternative monitoring plan.

1. **Pressure drop across the Agglo-filtering modules and Cyclolabs droplet separators.**
2. **Pressure of the water supplied to the nozzles in the quench/pre-scrubber and the filtering modules.**

b. List all elements used in the alternative monitoring plan to be measured (e.g., process parameter(s), and/or emission control device parameter(s));

- Pressure drop indication (23PDI2407) which is based upon static pressure measurement prior to 23-S-401 (Agglo-Filtering Modules) and at 23-S-404 (Cyclolabs Outlet Elbow).
- Static pressure indicator prior to 23-S-401 (Agglo-Filtering Modules) (23PI2405).
- Static pressure indicator prior at 23-S-404 (Cyclolabs Outlet Elbow) (23PI12407).
- Quench/pre-scrubber recirculation pump discharge pressure (23PI2426).

c. List all measurement or sampling locations (e.g., vent or stack location, process parameter measurement location, fuel sampling location, work stations);

The instrument measurement locations for 23PDI12407, 23PI2405 and 23PI2407 are noted on the piping and instrumentation diagram (P&ID) drawing number 2004-0123-KD-R106. The instrument measurement locations for 23PI2426, is noted on the piping and instrumentation diagram (P&ID) drawing number 2004-0122-KD-R108. Both drawings are attached.

d. Provide a description of the data acquisition and handling system operation including sample calculations (e.g., parameters to be recorded, frequency of measurement, data averaging time, reporting units, recording process);

Process parameter data for the liquid-to-gas ratio and pre-scrubber pressure drop will be collected and stored on the refinery's Galaxy system. Galaxy is the Delaware City Refinery plant network information system. Galaxy is connected to process control systems and other computers at the refinery through high performance workstations. Galaxy provides access to plant-wide "live" process screens, real-time and historical trends, reports, databases and spreadsheets.

e. Provide checklists, data sheets, and report format as necessary for compliance determination (e.g., forms for record keeping).

Records to be kept include daily average quench/pre-scrubber recirculation pump discharge pressure and the daily average pressure drop across the Agglo-filtering modules and Cyclolabs droplet separators.

A semi-annual report will be submitted as required by condition 7.3 of permit APC-82/0981-CONSTRUCTION (Amendment 6) NSPS that will include a summary of all exceedances of the daily operating rate limits.

6. Initial Verification Test Procedures

a. **In accordance with condition 5.1 of the referenced permit, stack testing will be conducted to ensure compliance with the emission limit (1 lb/1000 lb. of coke burn) for particulate matter (TSP) as provided in condition 2.1.3.2. In accordance with condition 5.4.2, stack testing for TSP will be conducted in accordance with EPA Reference Method 5B in 40 CFR Part 60, Appendix A or other testing methodology approved by the Department. Three (3) test runs, each a minimum of 60 minutes in duration, will be conducted.**

b. Maintain a log or sampling report for each required stack test listing the emission rate in accordance with the applicable emission limitations:

Process parameter data for the following parameters: pressure drop indication (23PDI2407), static pressure indicator prior to 23-S-401 (Agglo-Filtering Modules) (23PI2405), static pressure indicator prior at 23-S-404 (Cyclolabs Outlet Elbow) (23PI2407) and the Quench/pre-scrubber recirculation pump discharge pressure will be collected on a 1-minute average basis during each of the required stack tests for particulate matter. This data will be used to determine the average values for each parameter during each particulate matter test run (minimum of 60 minutes) that is conducted (minimum of three test runs).

Attachment 4: EPA Region III Approval letter for Delaware City Refinery AMP dated March 21, 2007

ED_001593_00009735

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029

2 1 MAR 2007

Mr. John Deemer
Senior Environmental Engineer
Valero Delaware City Refinery
4550 Wrangle Hill Road
Delaware City, DE 19706

Dear Mr. Deemer:

This letter is in response to your February 17, 2006 request for an alternative opacity monitoring plan (AMP) for the Fluid Catalytic Cracking Unit (FCCU) at Valero's petroleum refinery located in Delaware City, DE ("Delaware City Refinery"). The FCCU at the Delaware City Refinery is subject to New Source Performance Standards (NSPS) Subpart J, MACT Subpart UUU, and the Department of Natural Resources and Environmental Control (DNREC) Regulation 14 which require the FCCU to meet an opacity standard through the use of a continuous opacity monitor system (COMS). 40 C.F.R. § 60.13(i)(1) provides a source to petition for an AMP when it believes that a continuous monitor will not provide accurate measurements due to liquid water or other interferences caused by substances in the liquid gas. The U.S. Environmental Protection Agency (EPA) has reviewed Valero's request for an AMP and believes it is sufficient to provide continuous compliance with the applicable provisions of NSPS Subpart J and MACT UUU with the following conditions contained herein.

Valero has installed a Belco Pre-Scrubber, amine based Cansolv Regenerative Wet Gas Scrubber, and a caustic polishing scrubber on the carbon monoxide boiler stack to control the emission of sulfur dioxide and particulate matter emissions from the FCCU catalyst regenerator. These control technologies were installed, in part, to comply with Consent Decree signed between Motiva (owner of the Delaware City Refinery at the time), EPA and DNREC (Civil Action H-01-0978). The installation of these control technologies subjected the FCCU to the requirements of NSPS Subpart J (Refinery NSPS). Specifically, the Refinery NSPS requires any source subject to § 60.102(a)(2) to install a COMS to monitor compliance with opacity limits. The FCCU at the Delaware City Refinery is also subject to the requirements of 40 C.F.R. Part 63, Subpart UUU – Petroleum Refinery MACT II Standards. These regulations also require the installation of a COM to demonstrate compliance with particulate matter and opacity standards.

Valero is requesting the AMP because "presence of liquid water in the exhaust from the scrubbing system may interfere with accurate measurements of visible emissions through the use of a COMS." Section 4.0 of Performance Specification 1 in 40 C.F.R. Part 60, Appendix B addresses interference from water droplets on COMS.

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Customer Service Hotline: 1-800-438-2474

Valero will conduct stack testing for particulate matter within 60 days of achieving maximum unit production rate, but not later than 180 days of initial startup of the Wet Gas Scrubber. The testing will be used to determine initial compliance with the Refinery NSPS and the Petroleum Refinery MACT II Standards. During the emissions testing, Valero will establish operating limits for the parametric monitoring systems that they have identified will demonstrate equivalency with a COMS. Valero has identified two parametric monitors that should demonstrate compliance:

1. Pressure drop across the Agglo-filtering modules and Cyclolabs droplet separators.

2. Pressure of the water supplied to the nozzles in the quench/pre-scrubber and the filtering modules.

EPA is approving Valero's request to monitor pressure drop across the Agglo-filtering modules and Cyclolabs droplet separators and the pressure of the water supplied to the nozzles in the quench/pre-scrubber and the filtering modules in lieu of a COMS to determine compliance with the § 60.102(a). EPA originally envisioned that the particulate matter emission limits of the Refinery NSPS would be achieved through the use of an electrostatic precipitator and not the use of a wet gas scrubber. EPA's approval is contingent upon the results of the stack testing indicating compliance with applicable emission limits and the establishment of the operating parameters identified above. Valero shall also conduct a Method 9 visible emission test pursuant to 40 C.F.R. Part 60, Appendix A during the particulate matter stack testing to establish initial compliance with the opacity limit of § 60.102(a)(2). This approval does not relieve Valero of any other requirements other than the requirement to install a COM under § 60.105(a).

This approval is consistent with previous determinations available from EPA's Applicability Determination Index (i.e., Control No. 0300084). If you have any questions or comments regarding this letter, do not hesitate to contact Bruce Augustine, of my the Air Protection Division, at (215) 814-2131.

Sincerely,

Judith M. Katz, Director
Air Protection Division

cc: Ravi Rangan, DNREC
Maria Malave, OECA

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Attachment 5: Restatement of Benicia Refinery Title V permit condition 20820 emissions limits and demonstration of compliance, parts related to FGS emissions limits and source testing (FGS ISBL Permit Limit Summary)

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FGS ISBL Permit Limits
Don Cuffel
07/29/2010

The FGS ISBL is one element of a multi-element permit known collectively as the VIP Amendments. The Authority to Construct (ATC) and Permit to Operate (PTO) for this project were issued by the Bay Area Air Quality Management District (BAAQMD, or "the District") based on an Addendum to the original VIP EIR entitled "Valero Improvement Project Amendments". A full California Environmental Quality Act, or CEQA, analysis was conducted with the City of Benicia as the lead agency. The City of Benicia approved the Use Permit in July 2008. The BAAQMD issued the first version of the ATC in December 2008, and finalized the ATC with revised emissions limits in May 2009. The entire scope of the VIP Amendments has been incorporated into the facility's Title V permit. Copies of any of these documents are on file in the Environmental Section.

The Flue Gas Scrubber (FGS) equipment train relocates the final emissions point for the FCCU and Coker from the Main Stack to the SO_2 Scrubber stack. New, lower emissions limits become effective for all pollutants: SO_2, NOx, CO, PM10 and POC (Precursor Organic Compounds, or NMOC: Non-methane organic compounds). Pollutants not previously limited such as ammonia slip and sulfuric acid mist (SAM) are now limited by permit. The bases for the new permit limits include the EPA Consent Decree, Best Available Control Technology (BACT) triggered by the new CO furnaces, and actual Main Stack baseline performance for 3 years prior to the BAAQMD Authority to Construct being issued in 2008.

In addition to conventional CEMS (continuous emissions monitors) compliance demonstration for certain permit limits will be demonstrated by parametric monitoring or source testing. A parametric monitor is used when the variable in question cannot be measured directly. For example, a conventional opacity monitor, or COMS, cannot be used in the Scrubber stack due to high moisture content of the flue gas. Consequently, an Alternative Monitoring Plan, or AMP, is required to define what parameters will be monitored as a proxy for opacity. In addition to emissions limits, other permit limits are introduced such as fired duty for F-105/106. This section is intended to summarize the entire suite of permit limits applicable to the FGS equipment train.

Permit limits for all sources are documented in the Title V permit for the Refinery (Facility B2626). If any discrepancy exists between this document and the Title V permit document, the latter shall prevail. Note that the Main Stack retains emissions limits for F-103 and the SRU incinerators. The Main Stack instrumentation will be modified to provide appropriate compliance demonstration. The scope of that work is not included in this MOC.

The FGS ISBL permit limits include emissions (mass and concentration), throughput, duty and other parameters. Please note that multiple limits for a single pollutant may exist with different averaging periods. All limits must be met for compliance purposes.

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BAAQMD Source / Equipment Tag	Parameter	Limit	Compliance Demonstration
S-1059 / F-105 CO Furnace	Fired Duty	529 MMBTU/hr	Parametric monitoring of LPFG HHV and fuel flow rate
S-1060 / F-106 CO Furnace	Fired Duty	259 MMBTU/hr	Parametric monitoring of LPFG HHV and fuel flow rate
A-1047 / T-5601 Prescrubber	Opacity	Ringelmann 1 for no more than 3 minutes in an hour	AMP • Minimum of 8" water column across the Agglo-Filtering Modules ***and*** minimum discharge pressure of 96 psig at Agglo-Filtering Module
A-1047 / T-5601 Prescrubber	Opacity	Ringelmann 1.5 for no more than 6 minutes in an hour	AMP as above
A-1047 / T-5601 Prescrubber	Opacity	Ringelmann 2 for no more than 3 minutes in an hour during sootblowing	AMP as above & steam flow to sootblowers
A-1047 / T-5601 Prescrubber	PM10	• 26.2 lb/hr annual average (equates to 114.8 tpy) • 40 lbs/hr max (during source test)	AMP as above and source testing
A-1047 / T-5601 Prescrubber	Grain Loading	0.15 grain/dscf	AMP as above and / or source testing
A-1047 / ST-5601	Flue gas flow rate	360,000 dscf/min @ 0% O_2 365-day average	ST-5601 flue gas flow measurement systems
A-1047 / T-5602 & T-5603 Regenerative Amine scrubber	SO_2 concentration	• 21.4 ppmv, dry @ 3% O_2, 365-day average • 42.8 ppmv, dry @ 3% O_2, 7-day average • 440 ppmv dry @ 3% O_2, 1-calendar day average	SO_2/O_2 CEM on ST-5601 (emissions point P-1059)
A-1047 / T-5602 & T-5603 Regenerative Amine scrubber	SO_2 mass	• 393.2 tpy, 365-day average • 4,309 lbs/day, 7-day average • 22.1 ton/day	SO_2 CEM and flue gas flow measurement system on ST-5601
A-1059, A-1060 / R-5601A & R-5601B Selective Catalytic Reduction (SCR) System	NOx concentration	• 42.8 ppmv, dry @ 3% O_2, 365-day average • 85.6 ppmv, dry @ 3% O_2, 7-day average;	NOx/O_2 CEM on ST-5601 (emissions point P-1059)

		• 150 ppmv, dry @ 3% O_2, 1-calendar day average	
A-1059, A-1060 / R-5601A & R-5601B Selective Catalytic Reduction (SCR) System	NOx mass	• 610.6 tpy, 365-day average • 6,194 lbs/day, 7-day average • 10,344 lbs/day	NOx/O_2 CEM and flue gas flow measurement system on ST-5601
S-1059, S-1060 / F-105 & F-106	CO concentration	• 32.5 ppmv, dry @ 3% O_2, 365-day average • 100 ppmv, dry @ 3% O_2, 1-calendar day average • 500 ppmv, dry @ 3% O_2, 1-hour average	CO/O_2 CEM on ST-5601 (emissions point P-1059)
S-1059, S-1060 / F-105 & F-106	CO mass	• 209.5 tpy, 365-day average • 4,402 lbs/day	CO/O_2 CEM and flue gas flow measurement system on ST-5601
A-1047 / T-5602 & T-5603 Regenerative Amine scrubber	POC / NMOC	• 10 ppmv, dry @ 0% O_2 1-hr average • 14.47 tpy (up to 15.0 tpy w/offsets)	Source Test at ST-5601
A-1047 / T-5602 & T-5603 Regenerative Amine scrubber	Ammonia slip	• 10 ppmv, dry @ 3% O_2 3-hour average	Source Test at ST-5601
A-1047 / T-5602 & T-5603 Regenerative Amine scrubber	Sulfuric Acid Mist (SAM)	• 7 tpy	Source Test at ST-5601

As stated in the BAAQMD Authority to Construct and Title V permit conditions, some of these limits may be adjusted based on source test results as specified in Permit Condition 20820 parts 66 through 68. Also, emissions during startup, shutdown and emergency bypass are not included for demonstration with certain pollutant limits. For operating scenario definitions and pollutant-specific details, please refer to Permit Condition 20820 and the associated Engineering Evaluation.

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Attachment 6: Title V Permit Condition 20820 parts 61-76

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VI. Permit Conditions

PS FURNACES (S-1059 AND S-1060)

61. The Owner/Operator shall abate emissions from Sources S-5, FCCU, and S-6, Fluid Coker, with PS Furnaces, S-1059 and/or S-1060, which are followed by Pre-scrubber/Regenerative Amine Scrubber, A-1047 during all periods of operation, except during start-up, shutdown, bypass and emergency bypass periods as defined in Part 65. Vapor flow rate from A-1047 shall not exceed 360,000 SCFM, dry, at 0% O2, averaged over any 365 consecutive days. [Basis: Cumulative Increase]

62. The Owner/Operator shall fire only refinery fuel gas, CO gas and/or natural gas in the S-1059 and S-1060 PS Furnaces. [Basis: BACT]

63. Total combustion emissions from S-1059 and S-1060 PS Furnaces, shall not exceed the following emissions limits, except as allowed in Parts 65, 66, 67 and 68: [Basis: Cumulative Increase, BACT, Offsets]

Emissions Limit Table for Parts 63, 66, 67 and 68

Pollutant	Concentrations	Emissions
NOx	42.8 ppmvd @ 3% O2 365-day avg.	610.6 tpy[2]
NOx	85.6 ppmvd @ 3% O2 7-day avg.	6,194 lbs/day, 7-day avg.
NOx	150 ppmvd[1] @ 3% O2 1-calendar day avg.	10,344 lbs/day[1]
SO2	21.4 ppmvd @ 3% O2 365-day avg.	393.2 tpy
SO2	42.8 ppmvd @ 3% O2 7-day avg.	4,309 lbs/day, 7-day avg.
SO2	440 ppmvd[1] @ 3% O2 1-calendar day avg.	22.1 ton/day[1]
CO	35.2 ppmvd @ 3% O2 365-day avg.	209.5 tpy
CO	100 ppmvd[1] @ 3% O2 1-calendar day avg.	4,402 lbs/day[1]
PM10	40 lbs/hr[1] as determined by BAAQMD ST-15 or EPA Method 17 in conjunction with EPA Methods 1, 2,3 and 4	114.8 tpy
POC[3]	10 ppmvd as tested by BAAQMD modified Method ST-7 or a combination of EPA Methods 18 and 25A	14.47 tpy

[1] These values may be adjusted based on source test results as specified in Parts 66, 67 and 68.
[2] Emissions include startup, shutdown, emergency bypass or bypass scenarios.
[3] NMOC: Non-methane organic compounds

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a. The Owner/Operator shall monitor compliance with emissions limits above by using District approved continuous emission monitor (CEM) data for NOx, CO, O2 and SO2, source test data for PM10 and NMOC, and A-1047 flow rates. [Basis Monitoring, BACT]

b. The Owner/Operator shall install, calibrate, maintain, and operate a District-approved continuous opacity monitoring system (COMS) for reasonable assurance of compliance with Regulation 6-310 or submit an alternative monitoring plan (AMP) for opacity at the outlet of the FCCU/CKR stack. The owner/operator shall operate A-1047 Pre-scrubber/Regenerative Amine Scrubber that abate S-1059 and S-1060 PS Furnaces with no more than one 6-minute average in an hour that exceeds 30% opacity. An exceedance of the opacity limit shall be deemed an exceedance of the particulate limit in Regulation 6-1-310. [Basis: Regulation 2-6-503]

c. The Owner/Operator shall submit an annual report to the Compliance and Enforcement Division and the Engineering Division no later than 45 days following the end of each calendar year. The report shall include the actual daily emissions based on CEM data for NOx, CO and SO2, and A-1047 flow rate. In addition, the report shall include the estimated daily emissions of PM10 and NMOC, based on emission factors (lb/MMdscf) determined from source test data and applied to the actual average A-1047 flow rate. Also, the report shall include the annual totals of each pollutant to demonstrate compliance with the above limits. The report shall also include the total daily heat input for S-1059 and S-1060 PS Furnaces. [Basis: Reporting Requirements]

d. Except during periods of startup, shutdown, bypass and emergency bypass as defined in Part 65, the Owner/Operator shall maintain ammonia emissions (ammonia slip) from the SCR units (A-1059 and A-1060) at or below 10 ppmv of ammonia, dry, corrected to 3% oxygen, averaged over any rolling consecutive 3-hour period. [Basis: Toxics, BACT]

e. The Owner/Operator shall perform an initial source test in accordance with the requirements set forth in Part 73 to demonstrate compliance with the ammonia limitation in part 63d. [Basis: Toxics, Source Tests]

64. The Owner/Operator shall equip the S-1059 and S-1060 PS Furnaces with a District approved continuous fuel flow meter and recorder in order to determine refinery fuel gas consumption. (Prior to the Permit to Operate's issuance, the District will determine whether the fuel flow meter is a parametric monitor or not). [Basis: Monitoring]

65. Definitions of Startup, shutdown, emergency bypass and bypass:
   a. Startup of the SCRs is defined as the introduction of CO gas from S-5 FCCU or S-6 CKR to S-1059 and S-1060 PS Furnaces, not the beginning of fuel gas firing. The start up period of A-1059 and A-1060 SCRs may last up to 12 hours. NOx emissions on a concentration and mass basis will not be included in the 1-day, 7-day and 365-

VI. Permit Conditions

day average for this scenario.

b. Shutdown of the SCRs is defined as the cessation of CO fuel into S-1059 and S-1060 PS Furnaces. The shutdown period of A-1059 and A-1060 SCRs may last up to 8 hours. NOx emissions on a concentration and mass basis will not be included in the 1-day, 7-day and 365-day average for this scenario.

c. Emergency bypass of the SCRs is defined as when both SCR units are damaged and the Owner/Operator must replace the catalyst. The emergency bypass of A-1059 and A-1060 SCRs may last up to 7 days (168 hours) to permit catalyst replacement and restoration of abatement efficiency. NOx emissions on a concentration and mass basis will not be included in the 1-day, 7-day and 365-day average for this scenario.

d. Bypass of the SCRs is defined as when loading coke into the CKR before startup or unloading coke following a CKR shutdown, while the FCCU is operating or FCCU is not operating. The bypass of A-1059 and A-1060 SCRs may last up to 96 hours to avoid coke dust entrainment in the PS Furnaces and SCRs. NOx emissions on a concentration and mass basis will be included in the 365-day average, but will be excluded in the 1-day, and 7-day average for this scenario.

[Basis: Definition, Cumulative Increase]

66. Except during periods of startup, shutdown, bypass and emergency bypass as defined in Part 65, the Owner/Operator shall maintain emissions from S-1059 and S-1060 PS Furnaces at or below the following levels: (a) Nitrogen Oxides (NOx) emissions – 42.8 ppmv, dry, corrected to 3% oxygen, any 365 consecutive days average, and (b) Nitrogen Oxides (NOx) emissions – 85.6 ppmv dry, corrected at 3% oxygen, any 7–calendar days average, and (c) Nitrogen Oxides (NOx) emissions – 150 ppmv dry, corrected to 3% oxygen, any 1-calendar day average. The daily limit shall be established based on the results of a District-approved source test or District-certified CEM data. The test report must be submitted to the District within 150 days of initial startup of S-1059 and S-1060. [Basis: BACT]

67. Except during periods of startup and shutdown, bypass and emergency bypass as defined in Part 65, the Owner/Operator shall maintain emissions from S-1059 and S-1060 PS Furnaces at or below the following levels: (a) SO2 emissions – 21.4 ppmv, dry, corrected to 3% oxygen, any 365 consecutive days average, and (b) SO2 emissions – 42.8 ppmv dry, corrected at 3% oxygen, any 7–calendar days average, and (c) SO2 emissions – 440ppmv dry, corrected to 3% oxygen, any 1-calendar day average. The daily limit shall be established based on the results of a District-approved source test or District-certified CEM data. The test report must be submitted to the District within 150 days of initial startup of S-1059 and S-1060. [Basis: BACT]

68. Except during periods of startup and shutdown, bypass and emergency bypass as defined in Part 65, the Owner/Operator shall maintain emissions from S-1059 and S-1060 PS Furnaces at or below the following levels: (a) CO emissions – 100 ppmv, dry, corrected to 3% oxygen, 1-calendar day average, and (b) PM10 emissions - 40 lbs/hr, as tested by BAAQMD Method ST-15 or EPA Method 17 in conjunction with EPA Methods 1, 2, 3

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and 4 and (c) NMOC emissions – 14.47 tons/yr and 10 ppmv, dry, as tested by BAAQMD modified Method ST-7 or a combination of EPA Methods 18 and 25A. The CO limit shall be established based on the results of a District-approved source test or District-certified CEM data. The PM10 may be adjusted based on source test results or more reliable information. The test report must be submitted to the District within 150 days of initial startup of S-1059 and S-1060. [Basis: BACT]

69. For sources S-1059 and S-1060, the Owner/Operator shall install, calibrate, maintain, and operate a District-approved continuous emission monitor and recorder for NOx, SO2, CO, and O2. The Owner/Operator shall install, calibrate, maintain, and operate a District-approved flow meter at the outlet of the A-1047 FCCU/CKR stack. (This is not a parametric monitor as defined in Regulation 1-238). [Basis: CEM Monitoring]

70. No later than 90 days from the startup of the S-1059, S-1060, A-1059, A-1060 and A-1047, the Owner/Operator shall conduct a District-approved source test to determine initial compliance with the limits in parts 63, 66, 67, and 68 for NOx, SO2, CO, NMOC, and PM10. The Owner/Operator shall conduct the source tests in accordance with Part 73. The Owner/Operator shall submit the source test results to the Source Test Section and Engineering Division no later than 150 days after the initial startup date. [Basis: Compliance determination via source tests]

71. The Owner/Operator shall maintain the total heat input for S-1059 at or below 4,634,400 million BTUs (HHV) during any rolling 12-month period, and the total heat input for S-1060 at or below 2,268,840 million BTUs (HHV) during any rolling 12-month period. [Basis: Cumulative Increase]

72. The Owner/Operator shall conduct a District-approved source test at least once per quarter to demonstrate subsequent compliance with the NMOC and PM10 mass rates specified in part 63. The quarterly source tests shall be conducted at least 2 months apart and not more than 4 months apart. The Owner/Operator shall submit the source test results to the Source Test Section and Engineering Division no later than 60 days after the source test. After acquiring one year of source test data, the Owner/Operator may switch to semi-annual or annual source testing if test variability is low upon District's approval. [Basis: Periodic Monitoring]

73. The Owner/Operator shall obtain approval for all source test procedures from the District's Source Test Section prior to conducting any tests. The owner/operator shall comply with all applicable testing requirements for continuous emissions monitors as approved by the District's Source Test Section. The owner/operator shall notify the District's Source Test Section, in writing, of the source test protocols and projected test dates at least 7 days prior to testing. [Basis: Source test compliance verification and accuracy]

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VI. Permit Conditions

SULFURIC ACID MIST (SAM)

74. The Owner/Operator of sources S-1059, S-1060, A-1059, A-1060, A-1047, and S-1061 shall not emit more than 7 tons per year of sulfuric acid mist (SAM). [Basis: PSD]

75. Within 90 days of initial startup, the Owner/Operator shall conduct a District approved source test to demonstrate compliance with the SAM emissions in Part 74. For purposes of SAM, the applicant shall also test for SO2, SO3, SAM and ammonium sulfates. The Owner/Operator shall conduct the source tests in accordance with Part 73. The test results shall be forwarded to the District within 150 days of the initial startup date. The test should verify emission compliance at 80% or more of maximum firing on CO and refinery fuel gas for S-1059, S-1060 PS Furnaces and at 80% or more of maximum firing on refinery fuel gas for S-1061 Hydrogen Reformer Furnace.

    If Sources S-1059, S-1060 and S-1061 cannot achieve 80% or more of maximum firing on CO and/or refinery fuel within 90 days of initial startup, the Owner/Operator shall conduct another District's approved source test no later than 2 months after operating in that mode to demonstrate compliance with the SAM emissions in Part 74. [Basis: compliance demonstration, PSD avoidance]

Contemporaneous Emissions reduction credit

76. The owner/operator of sources S-3, S-4, and A-1 through A-5 shall completely shutdown the equipment no later than 90 days after startup of S-1059 and S-1060 PS Furnaces, A-1059, A-1060 PS Furnace SCRs, A-1047 FCCU/CKR Prescrubber/Regenerative Amine Scrubber. The owner/operator shall enter into the record log the date when the unit was shutdown.

The owner/operator of sources S-21 and S-22 shall completely shutdown one of the units no later than 90 days after startup of S-1061 and S-1062 Hydrogen Reformer Furnace and Hydrogen Unit with PSA. The owner/operator shall enter into the record log thedatewhen the unit was shutdown. (Basis: offsets)

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To: Johnson, Kathleen[Johnson.Kathleen@epa.gov]
Cc: Cuffel, Donald[Don.Cuffel@valero.com]
From: Suhami, Iren
Sent: Mon 5/4/2015 8:21:43 PM
Subject: Valero Benicia Refinery (B2626) AMPs-- pending EPA approval
Valero Benicia Refinery AMPs List-- pending EPA approval sent on 2015_05_04.pdf

Dear Ms. Kathleen Johnson,

Following on our phone conversation today, I am attaching a list of the 4 outstanding AMPs for which Valero Benicia Refinery (B2626) is awaiting EPA approval. As I mentioned during our phone conversation, we are getting ready to submit our 5-year Title V Renewal application and we would like to include the attached monitoring plans as approved AMPs, particularly in consideration that one of the AMPs has been pending EPA approval for over 4 years. I will be sending you 4 other separate emails, each with a copy of one of the AMP submissions so that you can assign them accordingly.

Here is a brief description:

1. AMP_01-- Opacity CPMS for Flue Gas Scrubber, sent to EPA on October 27, 2010.

2. AMP_02-- NSPS Ja Acid Gas Flare H2S CEMS, sent to EPA on August 6, 2013.

3. AMP_03-- NSPS Ja NOx CEMS Span, sent to EPA on June 25, 2014.

4. AMP_04-- NSPS Ja Flare RATA for H2S CEMS, sent to EPA on March 26, 2015.

We would be grateful if you can facilitate an EPA response to these AMPs. Top priority would be appreciated to the number 1 above. Thank you in advance.

Iren Suhami

Staff Environmental Engineer

Valero Benicia Refinery

707-745-7635

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ALTERNATIVE MONITORING PLANS NOT YET APPROVED BY EPA

VALERO BENCIA REFINERY (B2626)

Included in email sent to Kathleen Johnson on May 4, 2015

No	Description	Source(s)	Description	Request Submittal Date	EPA Approval Date	EPA Point of Contact
1	FGS Opacity CPMS for NSPS J	F-105/F-106 CO Furnaces (S-1059/S-1060), FCCU/CKR	Request use of parametric monitoring for opacity compliance demonstration for operation in which COMS optical technology will not function due to high moisture content from wet scrubber exhaust gas.	10/27/2010	None	Submitted to: Margaret Waldon, Air Enforcement OFfice
2	NSPS Ja Acid Gas Flare H2S CEMS	Acid Gas Flare (S-16)	Request for use of BAAQMD approved H2S concentrations for vent gases to the Acid Gas Flare in lieu of H2S CEMS.	8/6/2013	None	Submitted to: Douglas K. McDaniel, Chief, Enforcement Office, Air Division
3	NSPS Ja NOx CEMS Span	F-105/F-106 CO Furnaces (S-1059/S-1060)	Request for alternative span on NOx CEMS due to more restrictive BAAQMD NOx emission limits which require a narrower NOx CEMS span.	6/25/2014	None	Submitted to: Douglas K. McDaniel, Chief, Enforcement Office, Air Division
4	NSPS Ja Flare RATA for H2S CEMS	South and North Flares (S-18/S-19)	Request use of CGAs for relative accuracy evaluations for H2S CEMS as allowed for flares that do not receive routine flare. The rule allows for the use of CGAs at facilities located outside BAAQMD, but not those flares whose compliance is demonstrated through BAAQMD Regulation 12, Rules 11 and 12.	3/26/2015	None	Submitted to: Ms. Kathleen Johnson, Director, Enforcement Office, Air Division

Cc: Salazar, Matt[Salazar.Matt@epa.gov]; Jones, Joel E.[Jones.Joel@epa.gov]; Chew, Andrew[Chew.Andrew@epa.gov]
To: Brooks, Phillip[Brooks.Phillip@epa.gov]; Fogarty, Johnpc[Fogarty.Johnpc@epa.gov]
From: Johnson, Kathleen
Sent: Thur 10/27/2016 8:11:22 PM
Subject: Power input to refineries?

Hey team,
South Coast air quality management district recently issued an order against a Torrance refinery to ensure that they had sufficient (and redundant) power sources. Recently there were some power outages which caused massive flaring events. South coast has determined the refinery was woefully "under powered." Wayne Nastri (south coast exec) asked me if we had expertise in these issues. Do you guys know someone who may have expertise whose name I could pass along to Wayne?

Sent from my iPhone

To: Kihara, Keith@DTSC[Keith.Kihara@dtsc.ca.gov]
Cc: Soria, Maria@DTSC[Maria.Soria@dtsc.ca.gov]; Jones, Joel E.[Jones.Joel@epa.gov]
From: McDaniel, Doug
Sent: Mon 3/27/2017 6:02:33 PM
Subject: FW: Torrance Refinery Notice of Inspection Findings and Request for Information
Torrance Refinery NoF.RFI Letter 3.27.2017.pdf

Hi Keith –

See attached EPA correspondence re Superfund Division's Torrance inspection. Note that Barbara was copied and there is a SCAQMD public meeting on Saturday. Just a heads up that our forthcoming referral to you of the RCRA inspection findings might come up if Alexis Strauss (our acting RA) and Barbara talk between now and then.

Doug

Douglas K. McDaniel

Chief, Waste and Chemical Section

Enforcement Division

U.S. EPA Region 9

(415) 947-4106

From: Manzanilla, Enrique
Sent: Monday, March 27, 2017 10:54 AM
To: Johnson, Kathleen <Johnson.Kathleen@epa.gov>; Quast, Sylvia <Quast.Sylvia@epa.gov>
Cc: McDaniel, Doug <McDaniel.Doug@epa.gov>; Jones, Joel E. <Jones.Joel@epa.gov>; Meer, Daniel <Meer.Daniel@epa.gov>; Maldonado, Lewis <Maldonado.Lewis@epa.gov>; Zito, Kelly <ZITO.KELLY@EPA.GOV>
Subject: FW: Torrance Refinery Notice of Inspection Findings and Request for Information

FYSA

From: Meer, Daniel
Sent: Monday, March 27, 2017 10:48 AM

To: Wayne Nastri (wnastri@aqmd.gov) <wnastri@aqmd.gov>; Bill Jones <Bill.Jones@fire.lacounty.gov>; Clyde Trombettas (ctrombettas@dir.ca.gov) <ctrombettas@dir.ca.gov>; Lee, Barbara@DTSC <Barbara.Lee@dtsc.ca.gov>; Penn, Paul@EPA <Paul.Penn@calepa.ca.gov>
Cc: Manzanilla, Enrique <Manzanilla.Enrique@epa.gov>; Lawrence, Kathryn <Lawrence.Kathryn@epa.gov>; Helmlinger, Andrew <Helmlinger.Andrew@epa.gov>; Jill Whynot <JWhynot@aqmd.gov>
Subject: Torrance Refinery Notice of Inspection Findings and Request for Information

Hi Wayne et al:

Attached is a letter summarizing the EPA's preliminary findings from our Clean Air Act Risk Management Program (RMP) inspection of the Torrance Refinery in November of 2016. The letter also includes a request for information pursuant to the CAA Section 114.

You folks will all receive a hard copy of the letter as a cc, but we wanted you to have an early heads up because this letter could trigger some questions. Steven Steach, the TRC general manager, received the letter this morning.

I will be attending the SCAQMD hearing on 4/1 to speak publically about EPA's preliminary findings.

Best regards, Dan M

Daniel A. Meer, Assistant Director

Superfund Division

Emergency Response, Preparedness and Prevention Branch

415.972.3132 (O)

415.971.6792 (C)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

MAR 27 2017

Mr. Steve Steach
Refinery Manager
Torrance Refining Company
3700 West 190th Street
Torrance, CA 90509-2929

Sent Certified Mail No. 7016 1370 0000 2234 8251
Return Receipt Requested

RE: Notice of Inspection Findings and Request for Information Pursuant to Clean Air Act Section 114 for Torrance Refining Company

Dear Mr. Steach:

On November 1 through November 4, 2016, representatives from the U.S. Environmental Protection Agency ("EPA") Region IX conducted an inspection of the Torrance Refining Company's ("TRC") refinery, located at 3700 West 190th Street, Torrance, California ("Facility"). EPA's inspection was conducted to determine compliance with the Risk Management Program ("RMP") promulgated under Section 112(r)(7) of the Clean Air Act ("CAA"), and the General Duty Clause under Section 112(r)(1) of the CAA.

The inspection primarily focused on three principal elements of the RMP: the Management System used by TRC to implement the RMP; the supporting documentation for Off-site Consequence Analyses ("OCA"); and the operation of the Hydrofluoric Acid ("HF") Alkylation Unit including targeted Piping and Instrumentation Diagram (P&ID) field verifications of process and safety equipment within the unit.

A summary of the inspection findings is provided herein for your information and response. These findings describe conditions observed at the facility at the time of the inspection and subsequently provided in the TRC's document submittals dated November 4 and November 23, 2016 for potential areas of noncompliance with CAA RMP regulations as set forth in 40 C.F.R. Part 68 and the General Duty Clause under Section 112(r)(l) of the CAA. Any omissions in the report shall not be construed as a determination of compliance with those portions of 40 C.F.R. Part 68 or any other applicable regulations.

With this letter and its enclosure ("Findings and Information Request"), EPA seeks additional information and documents concerning TRC's compliance with Section 112(r) of the CAA, 42 U.S.C. § 7412(r) and the regulations thereunder at 40 C.F.R. Part 68. This Information Request is authorized pursuant to Section 114 of the CAA, 42 U.S.C. § 7414. Your responses to this letter

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must be made by a letter signed by a person or persons duly authorized to represent TRC. Please send your responses in an electronic format and via certified mail, return receipt requested, so that they are received by April 27, 2017.

Address your submittal to:

Jeremy Deyoe
U.S. Environmental Protection Agency, Region IX
75 Hawthorne St. (SFD-9-3)
San Francisco, CA 94105

If you have questions about the legal aspects of this Information Request, please contact Mr. Andrew Helmlinger, U.S. EPA Assistant Regional Counsel, at (415) 972-3904 or Helmlinger.Andrew@epa.gov. The Region IX technical contact for this Information Request is Jeremy Deyoe, EPCRA/RMP Compliance Officer. Mr. Deyoe can be reached at (415) 972-3081 or Deyoe.Jeremy@epa.gov. We thank you in advance for your cooperation.

Sincerely,

Enrique Manzanilla, Director
Superfund Division

Enclosures
Information Request (Instructions, Definitions, Requests)

cc: Wayne Nastri, Executive Director, South Coast Air Quality Management District
Martin Serna, Chief, Torrance Fire Department
Bill Jones, Chief, Los Angeles County Fire Department
Clyde Trombettas, PSM Chief, California Occupational Safety and Health Administration
Barbara Lee, Director, California Department of Toxic Substances Control
Paul Penn, California Environmental Protection Agency

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Enclosure

Notice of Inspection Findings

This summary of inspection findings describes conditions observed at the Facility at the time of the inspection combined with reviews of documentation, and identies potential areas of noncompliance with CAA RMP regulations as set forth in 40 C.F.R. Part 68 and the General Duty Clause under Section 112(r)(l) of the CAA. Any omissions below shall not be construed as a determination of compliance with those portions of 40 C.F.R. Part 68 or any other applicable regulations.

Chemical Accident Prevention Provisions, 40 C.F.R. Part 68, Subpart A – General

1. **Management – 40 CFR § 68.15(a):** ***The owner or operator of a stationary source with processes subject to Program 2 or Program 3 shall develop a management system to oversee the implementation of the risk management program elements.***

   Based on interviews and the review of related documents, the TRC RMP management system does not appear to be sufficiently defined or cohesively structured to fulfill adequate oversight and implementation of the Risk Management Program.

   At the time of the inspection, TRC's overall management structure at the Facility was different from that of ExxonMobil, its prior owner. New positions, such as the addition of a Reliability Department Manager, are substantively different than the management system as it appears in the RMP, and therefore does not reflect TRC's implementation of the RMP elements. Furthermore, a Management of Organizational Change or similar analysis was not conducted to ensure that Risk Management and process safety responsibilities for changing positions was not lost during the transition, or are accurately reflected in the RMP.

   According to the Refinery Manager, at the time of the inspection, TRC had several different RMP management system document sources including: pre-existing ExxonMobil RMP and process safety information; RMP related documents purchased from another refiner; and PBF Energy's own specific policies and procedures. TRC offered no schedule or plan for the consolidation, transition, harmonization or implementation of these various components of its RMP. The result is a stated management system that appears superficial, and does not sufficiently describe TRC's actual management system structure.

2. **Management – 40 CFR § 68.15(c):** ***When responsibility for implementing individual requirements of this part is assigned to persons other than the person identified under paragraph (b) of this section, the names or positions of these people shall be documented and the lines of authority defined through an organization chart or similar document.***

   Based on the inspection team's review, TRC did not document each individual responsible for implementing the elements of the RMP. For example, TRC's August 1, 2016 RMP update identified Stephanie Angkadjaja, Safety Engineer, as the person responsible for Part 68 implementation. However, during the inspection, several different facility representatives were identified as having the responsibility for implementing RMP elements. TRC did not offer an organizational chart that

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correctly identified this matrix of responsibilities as required by this subpart.

Chemical Accident Prevention Provisions, 40 C.F.R. Part 68, Subpart B – Hazard Assessment

3. **Worst Case Release Scenario Analysis –40 C.F.R. § 68.25(b)(1):** ***For substances in a vessel, [The worst-case release quantity shall be the…] greatest amount held in a single vessel, taking into account administrative controls that limit the maximum quantity.***

   Based on the inspection team's review of the OCA supporting documentation, TRC did not accurately determine and subsequently use the worst case release quantity of hydrofluoric acid in the toxic Worst Case Scenario analysis ("WCS"). Errors in several independent elements have the potential to impact the actual maximum quantity that should be used in the OCA and subsequently the predicted offsite consequence. For example:

a. In document TORC-EPAIX16 002527, TRC identifies that the WCS toxic determination includes an administrative control on the fill level for each acid settler. TRC represents that an administrative level corresponds to the RMP reported vessel amount. However, at the time of the inspection, Acid Settler #2 was observed to be at a height exceeding the stated administrative control level. Additional review of on-site logs indicate that the Acid Settler level was regularly at a height exceeding the administrative control lever and on at least one occasion significantly higher (October 9, 2016). If the acid settler operates at a higher level than the RMP OCA documentation identified administrative control level, the administrative control is not functioning to limit the maximum quantity in the vessel, and the release quantity used for calculation of the toxic WCS must be correspondingly higher. As such the reported settler quantity used in the modeling appears to be inaccurate.

b. Toxic WCS calculations provided in document TORC-EPAIX16 002523 identify the quantity of HF in each acid settler. The quantity of HF in the acid storage vessel is identified to be more than the quantity in each acid settler. For the purposes of the WCS OCA, TRC selected the volume in a single acid settler as the largest "single vessel" in the calculation. However, the quantity of HF reported in TRC's most recent RMP, and used to determine the WCS, is only 5,200 pounds, and not the higher volume contained in either acid settler. The RMP identifies "release barriers and modified HF catalyst" as passive mitigation considered. TRC subsequently used the described passive mitigation as justification for reducing the amount of HF in the WCS calculations to an HF equivalent. Such an approach is not consistent with the regulatory requirements found in 40 C.F.R. § 68.25(b) as described above.

   Furthermore, the acid storage vessel quantity that TRC used is larger than the quantity in the settler.

c. According to TRC, to keep the modified HF catalyst at the appropriate percentage in the alkylation process, makeup or separated catalyst must be mechanically pumped into the process. TRC subsequently claims that the HF modification process serves as passive mitigation. However, based on inspection team review this does not appear to be the case. The definition of mitigation, from 40 C.F.R. § 68.3, is as follows:

Mitigation or mitigation system means specific activities, technologies, or equipment designed or deployed to capture or control substances upon loss of containment to minimize exposure of the public or the environment. Passive mitigation means equipment, devices, or technologies that function without human, mechanical, or other energy input. Active mitigation means equipment, devices, or technologies that need

human, mechanical, or other energy input to function.

Based on this definition, mechanically pumping and monitoring modified HF catalyst quantities, levels, or percentages is not passive mitigation, as it requires human, mechanical or other energy input to function. EPA has previously addressed the issue of using an acid aerosol reducing additive as passive mitigation, which can be found at:

https://emergencymanagement.zendesk.com/hc/en-us/articles/211413968-Acid-aerosol-reducing-additive-as-passive-mitigation

d. The inspection team observed that TRC used EPA's RMP*Comp model to determine the WCS endpoint. In that determination, TRC appears to have erroneously selected a percentage of hydrofluoric acid as the modeling chemical instead of selecting anhydrous hydrofluoric acid. Such an error reduces the accuracy of the model and is an incorrect application. The issue is further confused by TRC's selection of an endpoint of 3.2 miles for which they offer no clear basis.

4. **Worst Case Release Scenario Analysis –40 C.F.R. § 68.25(a)(2)(iii):** ***Additional worst-case release scenarios for a hazard class if a worst-case release from another covered process at the stationary source potentially affects public receptors different from those potentially affected by the worst-case release scenario developed under paragraphs (a)(2)(i) or (a)(2)(ii) of this section.***

Inspection team members evaluated documents and maps related to all of TRC's RMP regulated processes. Based on those reviews TRC did not report a WCS for the railcars that are filled and staged at the northwest corner of the refinery. The flammable WCS for a staged railcar affects different receptors than the reported flammable WCS. Following EPA's review, it appears that TRC incorrectly determined that no additional offsite receptors are impacted by railcar OCA results.

5. **Worst Case Release Scenario Analysis –40 C.F.R. § 68.30(a):** ***The owner or operator shall estimate in the RMP the population within a circle with its center at the point of the release and a radius determined by the distance to the endpoint defined in §68.22(a).***

Based on a review of documents, it appears that TRC did not correctly identify the center point location of the butane storage sphere, which is identified as the flammable WCS. As a result, the OCA does not accurately identify the off-site receptors and affected population.

Chemical Accident Prevention Provisions, 40 C.F.R. Part 68, Subpart D – Program 3 Prevention Program

6. **Process Safety Information – 40 C.F.R. § 68.65(d)(1)(ii):** ***Piping and instrument diagrams (P&ID's)***

TRC did not adequately identify instrumentation, piping, and valve configurations on P&IDs. During the inspection, it was observed that P&ID 05A0106D01, rev. 19 (TORC-EPAIX16-000191) did not

match the equipment in the field. For example, two pressure indicators and manual valves were not listed on the P&IDs.

7. **Process Safety Information – 40 C.F.R. § 68.65(d)(1)(vi):** ***Design codes and standards employed***

During the field inspection of the HF Alkylation Unit, pressure vessel D5C-31 was inspected to determine if nameplates were present and if the information on the nameplates were accurate. Review of the nameplate information affixed to vessel D5C-31 found no National Board Inspection Code (NBIC) nameplate affixed to the vessel for the replacement of a leaking vessel nozzle in May 2016. Section 5.7.2(c) of the NBIC Part 3, Section 5.7.2 (Stamping Requirements for Repairs) requires the stamping or nameplate be applied adjacent to the original or manufacturers nameplate for repairs to pressure vessels and that the stamping or nameplate include the date of the repair that corresponds with the date on associated Form R-1.

8. **Operating Procedures –40 C.F.R. § 68.69(a):** ***The owner or operator shall develop and implement written operating procedures that provide clear instructions for safely conducting activities involved in each covered process consistent with the process safety information and shall address at least the following elements.***

Based on a review of documents, TRC did not fully implement its operating procedures to safely conduct HF-related activities, including but not limited to the unloading of HF. For example: TRC did not produce completed and signed operating procedures for the four unloadings of HF from July 30, 2016 through September 2, 2016. In other instances, operating procedures were observed to not be completely signed off as required and did not include a justification or explanation for why certain steps were incomplete.

In some instances, safeguards such as fire water monitor systems, safety shower alarms and cameras were identified in handover logs as not working during HF unloading. TRC documentation did not identify any alternate safeguards or changes to the procedures on these occasions.

9. **Operating Procedures –40 C.F.R. § 68.69(a)(1)(iv):** ***Emergency shutdown including the conditions under which emergency shutdown is required, and the assignment of shutdown responsibility to qualified operators to ensure that emergency shutdown is executed in a safe and timely manner.***

At the time of the inspection, the emergency operating procedure OM-05-306, available in the control room, did not clearly indicate who is involved with completing the steps, specifically the assignment of shutdown responsibility to qualified operators to ensure that emergency shutdown is executed in a safe and timely manner.

10. **Operating Procedures –40 C.F.R. § 68.69(a)(2)(i) – (ii):** ***Consequences of deviation; and steps required to correct or avoid deviation.***

TRC did not include operating limits within operating procedure OM-05-005 for the unloading of HF to 5C-31. Several steps in the operating procedure include specific direction (TORC-EPAIX 004196), but there are no operating limits identifying what is otherwise acceptable, nor are there any steps required to correct or avoid deviation.

11. **Mechanical Integrity – 40 CFR § 68.73(d)(3):** ***The frequency of inspections and tests of process equipment shall be consistent with applicable manufacturers' recommendations and good engineering practices, and more frequently if determined to be necessary by prior operating experience.***

In a number of instances, TRC did not test critical safety systems, including pushbutton water deluge systems and critical electrical equipment within the HF Alkylation Unit, at the identified frequency documented on the list of critical safety systems for the Alkylation unit, TORC-EPAIX16 000678 – 000681.

12. **Mechanical Integrity – 40 CFR § 68.73(e):** ***The owner or operator shall correct deficiencies in equipment that are outside acceptable limits (defined by the process safety information in §68.65) before further use or in a safe and timely manner when necessary means are taken to assure safe operation.***

TRC did not correct deficiencies in equipment that were identified as being outside of an acceptable operating range in a safe and timely manner. Safety systems and equipment within the Alkylation unit were identified as being non-operational on a recurring basis. Some were not fixed for multiple weeks, even those identified as safeguards.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

Enclosure

Information Request
Torrance Refining Company

Please provide the information requested in the Information Request section of this Enclosure such that it is *received* by no later than **April 27, 2017**.

INSTRUCTIONS

1. Please provide a separate response to each request, and identify each response by the number of the request to which it corresponds. For each document produced, identify the request to which it is responsive.

2. Knowledge or information that has not been memorialized in any document, but is nonetheless responsive to a request, must be provided in a narrative form.

3. The scope of this Information Request includes all information and documents obtained or independently developed by TRC, its attorneys, consultants or any of their agents, or employees.

4. TRC may not withhold any information from EPA on the grounds that it is confidential business information. EPA has promulgated regulations, under 40 CFR Part 2, Subpart B, to protect confidential business information that it receives. TRC may assert a business confidentiality claim (in the manner specified in 40 CFR § 2.203(b)) for all or part of the information requested by EPA. However, business information is entitled to confidential treatment only if it satisfies the criteria set forth in 40 CFR § 2.208. EPA will disclose business information entitled to confidential treatment only as authorized by 40 CFR Part 2, Subpart B. If no claim of confidentiality accompanies the information at the time EPA receives it, EPA may make it available to the public without further notice.

5. Notice is hereby given, pursuant to 40 CFR § 2.301(h), that EPA may disclose confidential information provided by TRC to EPA's authorized representatives, including its contractors. Confidential information may be disclosed to EPA's authorized representatives for the following reasons: to assist with document handling, inventory and indexing; to assist with document review and analysis for verification of completeness; and to provide expert technical review of the contents of the response. Pursuant to 40 CFR § 2.301(h), TRC may submit, along with its response to this Information Request, any comments regarding EPA's disclosure of confidential information to its authorized representatives.

6. If information or documents not known or available to TRC at the time of its response to this Information Request later become known or available to it, it must supplement its response to EPA. Moreover, should TRC find at any time after the submission of its response that any portion of the submitted information is false or misrepresents the truth, TRC must notify EPA as soon as possible and provide EPA with a corrected response.

7. If information responsive to a request is not in the TRC's possession, custody, or control, identify the persons or entities from whom such information may be obtained. For each individual or entity that

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possesses responsive information, please provide the following: name, last known or current address, telephone number, and affiliation with the TRC or the Facility.

8. If you believe there are grounds for withholding information or documents that are responsive to this request, e.g., attorney-client privilege, you must identify the information or documents and state the basis for withholding.

DEFINITIONS

The following definitions apply to the following terms (words or phrases) as they appear in this Information Request. Defined terms are enclosed in quotation marks:

1. "You" or the "Company" shall mean PBF Energy d/b/a Torrance Refining Company (TRC), or its officers, managers, employees, contractors, trustees, partners, successors, assigns, and agents.

2. "Facility" means all buildings, equipment, structures, installations, pipes, or stationary items owned, leased, or operated by the Company, at the property or properties located at: 3700 W 190th Street Torrance, California or contiguous or adjacent to that address.

3. As used here, "document" and "documents" shall include writings of any kind, formal or informal, whether or not wholly or partially in handwriting (included by the way of illustration and not by way of limitation), any invoice, receipt, endorsement, check, bank draft, canceled check, deposit slip, withdrawal slip, order, correspondence, record book, minutes, memoranda of telephone and other conversations (including meetings, agreements and the like), diary, calendar, desk pad, scrap book, notebook, bulletin, circular, form, pamphlet, statement, journal, postcard, letter, telegram, telex, report, notice, message, analysis, comparison, graph, chart, interoffice or intra office communications, photo-stat or other copy of any documents, microfilm or other film record, any photograph, sound recording on any type of device, any disc or other type of memory generally associated with computers and data processing (together with the programming instructions and other written material necessary to use such disc other type of memory). The terms "document" and "documents" include (a) every copy of each document that is not an exact duplicate of a document which is produced, (b) every copy that has any writing, figure or notation, annotation or the like, (c) drafts, (d) attachments to or enclosures with any documents and (e) every document referred to in any other document.

4. All terms not defined herein shall have their ordinary meaning, unless such terms are defined in the Clean Air Act or its implementing regulations at 40 CFR Part 68, in which case the statutory or regulatory definitions shall apply.

INFORMATION REQUEST QUESTIONS

1. Provide a response to each numbered and lettered Finding in the transmittal letter accompanying this Information Request, indicating if the Company accepts or disputes the Finding.

    a. If the Company agrees with the factual basis for the Finding, indicate if the Company is presently in compliance with the cited requirement.

        i. If the Company is presently in compliance with the cited requirement provide the following information:
            A. The Company's first date of non-compliance;
            B. A description of what activities the Company undertook to come into compliance; and

C. The date on which the Company came into compliance.

ii. If the Company is presently not in compliance with the cited requirement provide the following information:
   A. The Company's first date of non-compliance;
   B. A description of what actions the Company will undertake in order to come into compliance; and
   C. The date by which compliance will be achieved.

b. If the Company disputes the factual basis for the Finding or any portion of the Finding, including the dates asserted for each potential violation, provide the basis and supporting documentation for each such assertion.

2. For each Finding provide cost information relating to work undertaken, planned, or considered to correct identified deficiencies. Cost information may be either actual or estimated and shall be disaggregated by: a) one-time costs (such as for engineering and permitting); b) capital costs (such as for equipment); and c) incremental annual operation and maintenance costs relative to the Company's level of effort as that existed in March 2017. For each cost item provided indicate if actual or estimated.

3. Provide the design specifications, including all calculations, for the mitigation systems identified in the Safety and Environmental Precautions section of *OM-05-005 MHF Unloading to 5C-31 SOP*. Include in the description of which vessels are included in the mitigation system's 10,000 limit and how this limit was established.

4. Provide all complete Management of Change documents for instances when safeguards in the Alkylation and/or Acid Evacuation System were bypassed from July 1, 2016 to present.

5. Provide a description, including a detailed diagram and the control of defeat records, for the critical equipment bypassed starting on August 8, 2016, as referenced in the document TORC-EPAIX16 003208 under the description "All fire systems/equipment included in Plan 1 of VAL-5-11 Replacement. Detailed diagram attached to COD."

6. Explain if the quantities listed in TORC-EPAIX16 002846 are for Modified Hydrofluoric Acid or only for Hydrofluoric Acid.

7. Provide a copy of the control of defeat records for 5SV97 (PSV for 5C54) identified on the November 4, 2016 alkylation console team lead shift handover log (TORC-EPAIX16 002884).

8. Provide the design information for vessel 5C-39, #2 Acid Regenerator.

9. For the iso-stripper overhead pressure controller, PC05102, provide:

   a. The design information; and

   b. All instrument testing and preventative maintenance records.

10. For vessels 5C-37, 5C-38, 5C-31, and 5C-54, provide a description and any supporting documentation for:

a. The level alarm set points and explanation for the established level for each vessel;

b. Administratively controlled level set points; and

c. All incident investigations for near misses for instances outside of the levels established under paragraph (a) and (b).

11. For both 5C-37 and 5C-38, provide tables that compare the height of material in the vessel to volume and equivalent quantity of HF in pounds. Please include the calculations used to determine the equivalent quantity of HF.

12. Provide an explanation of the existing practices for the storage of HF in vessel 5C-54, including a list, from July 1, 2016 to present, of instances when HF, Sulfolane, Acid Soluble Oil, or alkylate, was added or removed from 5C-54. Include a description of the Company's policies for the use of 5C-54 for storage.

13. For PC05101 provide the following information:

    a. The most recent Process and Instrumentation Diagrams which it appears;

    b. Documentation supporting the reason for why operators "raised PC0510 low pressure alarm to 195# and lowered the upper alarm to 230 psig due to limitations in the procedure"; and

    c. Identify the procedure referenced in paragraph (b) and the referenced limitations.

14. Provide a statement discussing the Company's relationship with its parent company, if any.

15. Provide a statement and supporting documentation indicating both the Company's present net worth and gross revenues for calendar and/or fiscal year 2016.

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To: Kou, Roberto@DTSC[Roberto.Kou@dtsc.ca.gov]; Wu, Brian@DTSC[Brian.Wu@dtsc.ca.gov]
Cc: McDaniel, Doug[McDaniel.Doug@epa.gov]; Jones, Joel E.[Jones.Joel@epa.gov]
From: Lin, Sharon
Sent: Fri 3/24/2017 9:08:05 PM
Subject: FW: Transmittal of EPA's RCRA inspection Report
EPA Inspection Report Transmittal Cover Torrance Refinery March 24, 2017.pdf

Hi, Roberto and Brian,

We are transmitting the inspection report to the Torrance Refining Company today. After the facility clears potential CBI issues (they have 14 days to do so), we will share the inspection report with DTSC. Thanks.

Sharon

From: Lin, Sharon
Sent: Friday, March 24, 2017 2:06 PM
To: 'penny.wirsing@pbfenergy.com' <penny.wirsing@pbfenergy.com>; 'Lynch, Diane E' <DIANE.LYNCH@pbfenergy.com>
Cc: Jones, Joel E. <Jones.Joel@epa.gov>; McDaniel, Doug <McDaniel.Doug@epa.gov>
Subject: Transmittal of EPA's RCRA inspection Report

Hi, Penny and Diane,

The inspection report (on a CD) is being transmitted to you via UPS overnight (Saturday delivery). Please feel free to contact me if you have any questions. Thanks!

Sharon

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

Ms. Penny Wirsing
Environmental Group Leader
Torrance Refining Company
3700 West 190th Street
Torrance, California 90504

MAR 24 2017

RE: Transmittal of Inspection Report
PBF Energy Torrance Refining Company
EPA Identification Number: CAD008354052

Dear Ms. Wirsing:

Representatives from the U.S. Environmental Protection Agency (EPA) Region 9 Enforcement Division and California Department of Toxic Substances Control conducted a Compliance Evaluation Inspection (CEI) at the Torrance Refining Company refinery located in Torrance, California on December 5-7, 2016. The purpose of the inspection was to evaluate Torrance Refining Company's compliance with the Resource Conservation and Recovery Act's (RCRA) hazardous waste management requirements, 42 U.S.C. §§ 6921-6939, and the implementing regulations; and the California Code of Regulations (CCR), Title 22, Division 4.5 and the California Health and Safety Code (HSC), Division 20. Under Section 3006 of RCRA, 42 U.S.C. § 6926, violations of the State of California's authorized RCRA hazardous waste management program are federally enforceable.

A copy of the RCRA CEI report is enclosed for your information and response. The CEI report describes conditions at the facility at the time of inspection, and identifies areas of noncompliance with RCRA regulations and the State of California's authorized program under RCRA Subtitle C. In addition, the report identifies other areas of concern at Torrance Refining Company. Please note that omissions in the CEI report shall not be construed as a determination of compliance with any other applicable regulation.

Pursuant to Section 3008 of RCRA, 42 U.S.C. § 6928, and EPA's Civil Monetary Penalty Inflation Adjustment Rule, 81 Fed. Reg. 43091 (July 1, 2016), violations of RCRA hazardous waste management requirements may be punishable by civil penalties of up to $40,799 per day for each day such violation continues. EPA requests that you submit documentation that you have corrected each of the potential violations identified in the enclosed RCRA CEI report within **thirty (30) calendar days** of your receipt of this letter. Documentation of corrective actions taken by Torrance Refining Company to address the potential violations identified in the CEI report may consist of, among other things, photographs, manifests, and revised records.

Confidential Business Information: EPA regulations governing the confidentiality of business information are set forth in 40 CFR Part 2, Subpart B. EPA routinely provides copies of investigation reports to state agencies, and upon request, to the public. Such releases are handled according to the Freedom of Information Act regulations (40 CFR Part 2). If Torrance Refining Company believes this letter contains information entitled to treatment as confidential business information, please assert a confidentiality claim in accordance with 40 CFR § 2.203(b) **within fourteen (14) calendar days from the date of receipt of this letter**. Business confidentiality includes the concept of trade secrecy and other related concepts. Your claim must specifically identify the information covered by the claim and should be sent to EPA by certified mail. EPA will construe the failure to furnish a confidentiality claim within fourteen (14) calendar days from the date of Torrance Refining Company's receipt of this letter as a waiver of that claim and information may be made available to the public by the EPA without further notice. See 40 CFR § 2.203(a)(2).

Additionally, if Torrance Refining Company believes that any information in Torrance Refining Company's response to this letter is entitled to treatment as confidential business information, please identify any such information and assert a confidentiality claim in accordance with 40 CFR § 2.203(b) in Torrance Refining Company's response. EPA will construe the failure to make a confidentiality claim when the response is submitted to EPA as a waiver of that claim and information may be made available to the public by the EPA without further notice.

If EPA determines that any information over which Torrance Refining Company asserts a claim meets the criteria set forth in 40 CFR § 2.208, the information will be disclosed only to the extent, and by means of the procedures specified in 40 CFR Part 2, Subpart B.

If you have any questions regarding this letter and the enclosed inspection report, please contact Sharon Lin of my staff at (415) 972-3446.

Sincerely,

Douglas K. McDaniel
Chief, Waste and Chemical Section
Enforcement Division

Enclosure

cc: Roberto Kou, California Department of Toxic Substances Control (w/o enclosure)
Brian Wu, California Department of Toxic Substances Control (w/o enclosure)

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To: penny.wirsing@pbfenergy.com[penny.wirsing@pbfenergy.com]; Lynch, Diane E[DIANE.LYNCH@pbfenergy.com]
Cc: Jones, Joel E.[Jones.Joel@epa.gov]; McDaniel, Doug[McDaniel.Doug@epa.gov]
From: Lin, Sharon
Sent: Fri 3/24/2017 9:05:45 PM
Subject: Transmittal of EPA's RCRA inspection Report
EPA Inspection Report Transmittal Cover Torrance Refinery March 24, 2017.pdf

Hi, Penny and Diane,

The inspection report (on a CD) is being transmitted to you via UPS overnight (Saturday delivery). Please feel free to contact me if you have any questions. Thanks!

Sharon

To: Soria, Maria@DTSC[Maria.Soria@dtsc.ca.gov]; Kihara, Keith@DTSC[Keith.Kihara@dtsc.ca.gov]
Cc: McDaniel, Doug[McDaniel.Doug@epa.gov]
From: Jones, Joel E.
Sent: Wed 8/23/2017 11:27:47 PM
Subject: PBF Torrance update

Hi Maria and Keith,

A few months ago we sent out the inspection report and findings for our December 2016 joint inspection of the Torrance Refining Co. (TRC). Based on TRC's response we didn't intend to proceed with formal enforcement on the potential RCRA federal-only violations, but I want to confirm with you about any potential state-only hazardous waste enforcement actions you (and/or LA County CUPA) may intend to pursue. Our colleagues in the USEPA Risk Management Program (Clean Air Act 112r) are pursuing a separate formal enforcement case against TRC and they've asked us for an update regarding any RCRA violations.

Please let us know your thoughts re next steps or feel free to call me at your convenience to discuss. Thanks.

-Joel

Joel Jones, Assistant Director

Enforcement Division (ENF -2)

U.S. EPA Region 9

(415)972-3449

Cell (415)314-9649

Jones.Joel@epa.gov

This email, including attachments, may contain information that is confidential and/or protected by the attorney/client or other privileges. If you are not an intended recipient, please delete this email, including attachments, and notify me by email or at (415) 972-3449.

To: Kihara, Keith@DTSC[Keith.Kihara@dtsc.ca.gov]; Soria, Maria@DTSC[Maria.Soria@dtsc.ca.gov]
Cc: McDaniel, Doug[McDaniel.Doug@epa.gov]
From: Jones, Joel E.
Sent: Fri 3/31/2017 11:26:40 PM
Subject: USEPA Fact Sheet - Torrance Refining Co.
Torrance Refining Company Fact Sheet FINAL 3 31 17.pdf

Hi Keith and Maria,

FYI, please see attached fact sheet re USEPA compliance activities at Torrance Refining Co. Dan Meer (Assistant Director, Superfund Division) is representing USEPA Region 9 at tomorrow's public meeting hosted by SCAQMD and he will have copies of this fact sheet for those interested in our most recent involvement with TRC.

Let us know if you have any questions.

-Joel

Joel Jones, Assistant Director

Enforcement Division (ENF -2)

U.S. EPA Region IX

(415)972-3449

Cell (415)314-9649

Jones.Joel@epa.gov

From: McDaniel, Doug
Sent: Monday, March 27, 2017 11:03 AM

To: Kihara, Keith@DTSC <Keith.Kihara@dtsc.ca.gov>
Cc: Soria, Maria@DTSC <Maria.Soria@dtsc.ca.gov>; Jones, Joel E. <Jones.Joel@epa.gov>
Subject: FW: Torrance Refinery Notice of Inspection Findings and Request for Information

Hi Keith –

See attached EPA correspondence re Superfund Division's Torrance inspection. Note that Barbara was copied and there is a SCAQMD public meeting on Saturday. Just a heads up that our forthcoming referral to you of the RCRA inspection findings might come up if Alexis Strauss (our acting RA) and Barbara talk between now and then.

Doug

Douglas K. McDaniel

Chief, Waste and Chemical Section

Enforcement Division

U.S. EPA Region 9

(415) 947-4106

From: Manzanilla, Enrique
Sent: Monday, March 27, 2017 10:54 AM
To: Johnson, Kathleen <Johnson.Kathleen@epa.gov>; Quast, Sylvia <Quast.Sylvia@epa.gov>
Cc: McDaniel, Doug <McDaniel.Doug@epa.gov>; Jones, Joel E. <Jones.Joel@epa.gov>; Meer, Daniel <Meer.Daniel@epa.gov>; Maldonado, Lewis <Maldonado.Lewis@epa.gov>; Zito, Kelly <ZITO.KELLY@EPA.GOV>
Subject: FW: Torrance Refinery Notice of Inspection Findings and Request for Information

FYSA

From: Meer, Daniel
Sent: Monday, March 27, 2017 10:48 AM
To: Wayne Nastri (wnastri@aqmd.gov) <wnastri@aqmd.gov>; Bill Jones

<Bill.Jones@fire.lacounty.gov>; Clyde Trombettas (ctrombettas@dir.ca.gov) <ctrombettas@dir.ca.gov>; Lee, Barbara@DTSC <Barbara.Lee@dtsc.ca.gov>; Penn, Paul@EPA <Paul.Penn@calepa.ca.gov>
Cc: Manzanilla, Enrique <Manzanilla.Enrique@epa.gov>; Lawrence, Kathryn <Lawrence.Kathryn@epa.gov>; Helmlinger, Andrew <Helmlinger.Andrew@epa.gov>; Jill Whynot <JWhynot@aqmd.gov>
Subject: Torrance Refinery Notice of Inspection Findings and Request for Information

Hi Wayne et al:

Attached is a letter summarizing the EPA's preliminary findings from our Clean Air Act Risk Management Program (RMP) inspection of the Torrance Refinery in November of 2016. The letter also includes a request for information pursuant to the CAA Section 114.

You folks will all receive a hard copy of the letter as a cc, but we wanted you to have an early heads up because this letter could trigger some questions. Steven Steach, the TRC general manager, received the letter this morning.

I will be attending the SCAQMD hearing on 4/1 to speak publically about EPA's preliminary findings.

Best regards, Dan M

Daniel A. Meer, Assistant Director

Superfund Division

Emergency Response, Preparedness and Prevention Branch

415.972.3132 (O)

415.971.6792 (C)

Torrance Refining Company

U.S. Environmental Protection Agency • Region 9 • San Francisco, CA • April 2017

U.S. EPA Inspection Update

In late 2016, U.S. EPA completed several inspections at the Torrance Refinery Company (TRC), which were conducted to assist local and state regulatory agencies in determining the facility's compliance with public safety, hazardous materials and emergency response regulations. Other federal, state and local agencies are conducting inquiries, including the U.S. Chemical Safety Board, California Division of Occupational Safety and Health, the California Department of Toxic Substances Control (DTSC) and the South Coast Air Quality Management District (SCAQMD).

Clean Air Act Inspection – Risk Management Program

Conducted in early November with the Torrance Fire Department and the SCAQMD, this inspection focused on the facility's implementation of its Risk Management Program under the Clean Air Act Section 112(r). This program requires that facilities storing or using large amounts of hazardous substances develop plans that include assessments of the potential effects of an accidental release, and a prevention plan that includes safety precautions and mainte nance, monitoring, and employee training measures. When properly implemented, risk management plans help prevent chemical releases and minimize their potential impacts.

Preliminary Findings

1. The facility's worst case scenario analysis underestimates the amount of hazardous chemicals that should be included in their model to accurately predict off-site impacts of accidental releases. Additionally, the facility's off-site consequence analysis incorrectly takes credit for passive mitigation when the systems are active.
2. The facility failed to include safety information on labels of critical equipment. It also failed to follow design codes, standards and good engineering practices in the labeling of hydrofluoric acid containers.
3. Piping and instrument diagrams did not accurately reflect the design of specific parts of the hydrofluoric acid alkylation unit, a component of the petroleum refining process.
4. Critical safety systems in the hydrofluoric acid alkylation unit were not being tested at the frequencies that were prescribed by the TRC's own procedures.

Next Steps

In its March 27, 2017 report and letter, EPA requested additional information from TRC. The company has 30 days to provide the requested information. Once EPA has evaluated that information, the agency will make a final compliance determination.

Resource Conservation and Recovery Act Inspection

Preliminary findings from the the December 2016 inspection, conducted with the DTSC, include:

- More than 300 bins of hazardous wastes stored on site for more than a year.
- Unpermitted storage of of hazardous waste material in two on-site tanks.
- Unpermitted storage of hazardous materials in a concrete pit.
- Unpermitted storage of cleaning sludge stored on a concrete pad.

DTSC is working with the facility to resolve outstanding compliance issues.

National Emissions Standards for Hazardous Air Pollutants Inspection

EPA conducted an inspection with SCAQMD in November 2016. SCAQMD issued a Stipulated Order for Abatement on 2/21/17 and is currently reviewing additional compliance issues.

To: Kihara, Keith@DTSC[Keith.Kihara@dtsc.ca.gov]; maria.soria@dtsc.ca.gov[maria.soria@dtsc.ca.gov]
From: Jones, Joel E.
Sent: Fri 3/17/2017 10:59:23 PM
Subject: Possible EPA case referral to DTSC

Hi Keith and Maria,

Our staff recently conducted a joint inspection of the PBF - Torrance Refinery (with Brian Wu). There were several notable RCRA violations as well as potential CA hazardous waste violations. Due to workload and other priorities we're hoping DTSC could pursue a case against PBF and resolve the violations.

You're probably aware that SCAQMD is scheduled to host a public meeting on 4/1/17 re recent flaring and other air quality issues at the refinery. There's considerable media attention as well as community concerns about the facility.

My staff is completing the inspection report next week and I'll share it with you. Please let me know if you have any questions or would like to set up a call to discuss.

Thanks.

-Joel

Joel Jones, Assistant Director

Enforcement Division

USEPA Region 9

(415)972-3449

To: Cordero, Antonette@DTSC[Antonette.Cordero@dtsc.ca.gov]
From: Jones, Joel E.
Sent: Wed 10/5/2016 8:37:04 PM
Subject: U.S. EPA settles with Valero for hazardous waste violations at Bay Area refinery
Valero_RCRA and EPCRA_Press Release_FINAL_10-5-16.docx

FYI – The press release will go out shortly and we'll compile any press clippings tomorrow morning to circulate and share. I'll let you know if we receive any specific media inquiries about this case or other related issues at oil refineries.

My staff are coordinating with Keith Kihara and others to schedule a few joint inspections at So.Cal oil refineries in Oct.-Dec. timeframe. Please let me know if you have any questions.

-Joel

Joel Jones, Assistant Director

Enforcement Division

USEPA Region IX

San Francisco, CA

(415)972-3449

Cell (415)314-9649

From: Cordero, Antonette@DTSC [mailto:Antonette.Cordero@dtsc.ca.gov]
Sent: Friday, September 30, 2016 6:30 PM
To: Jones, Joel E. <Jones.Joel@epa.gov>
Subject: RE: Valero

Thank you.

From: Jones, Joel E. [mailto:Jones.Joel@epa.gov]
Sent: Friday, September 30, 2016 3:41 PM
To: Cordero, Antonette@DTSC <Antonette.Cordero@dtsc.ca.gov>
Subject: Valero

Hi Antonette,

Please see attached Consent Agreement/Final Order re USEPA settlement of RCRA/EPCRA 313 violations at Valero Refining Co. (Benicia, CA). Let me know if you have any questions.

Our press release will likely be issued next week.

-Joel

Joel Jones, Assistant Director

Enforcement Division

USEPA Region 9

(415)972-3449

EPA Environmental News

For Immediate Release: October 5, 2016
Media Contact: Michele Huitric, huitric.michele@epa.gov, 415-972-3165
En español: Soledad Calvino, calvino.maria@epa.gov, 415-972-3512

U.S. EPA settles with Valero for hazardous waste violations at Bay Area refinery

SAN FRANCISCO – Today, the U.S. Environmental Protection Agency announced a settlement with Valero Refining Company - California over improper management of hazardous waste and toxic chemicals at its crude oil refinery in Benicia. Violations included illegally disposing benzene into an unlined stormwater retention pond and not alerting the public about all of its toxic chemical releases.

Valero will pay a $157,800 penalty and modify its piping operations; submitting a work plan by the end of 2016 and completing the project by June 2017. This action will prevent an estimated 5,000 lbs of benzene, a known human carcinogen, from being released into the environment over the next 10 years. The company will also correct and resubmit its toxic chemical release reports.

"Valero's operations can affect both the communities near the refinery and the wildlife habitat of Suisun Bay," said Alexis Strauss, EPA's Acting Regional Administrator for the Pacific Southwest. "It is critical for Valero to comply with federal laws that protect public health and our natural resources."

Valero Refining Company - California is a subsidiary of Valero Energy Corporation, a global manufacturer and marketer of transportation fuels, petrochemical products and power, based in San Antonio, Texas. EPA conducted an inspection at Valero's Benicia refinery in May 2014 to assess compliance with the federal Resource Conservation and Recovery Act and the Emergency Planning and Community Right-to-Know Act.

Additional violations uncovered by the inspection included the company's failure to determine if solid waste generated at the refinery was hazardous; failure to maintain and operate the facility as needed to minimize the possibility of any unplanned release; and failure to maintain complete and accurate records at the facility.

This investigation was part of EPA's continuing efforts to ensure communities located near complex industrial facilities are informed of the toxic releases from those facilities. This action also reflects EPA's focus on the largest hazardous waste generators, including petroleum refineries.

The federal Resource Conservation and Recovery Act program oversees the safe management and disposal of hazardous waste. Under authority delegated by EPA, the California Department of Toxic Substances Control enforces this hazardous waste management program in the state.

EPA routinely conducts RCRA inspections in its state oversight role, to ensure the state effectively implements its program.

The Emergency Planning and Community Right-to-Know Act was created to help communities plan for chemical emergencies. It also requires industry to report on the storage, use and releases of hazardous substances in a community. To accomplish this, EPA created the Toxics Release Inventory. This publicly available database contains information on toxic chemical releases and other waste management activities reported annually by certain industries and federal facilities.

For more information on RCRA, please visit: https://www.epa.gov/rcra

For more information about the Emergency Planning and Community Right-to-Know Act, please visit: http://www2.epa.gov/epcra

For more information on the Toxic Releases Inventory Program, please visit: https://www.epa.gov/toxics-release-inventory-tri-program

###

To: Antonette.Cordero@dtsc.ca.gov[Antonette.Cordero@dtsc.ca.gov]
From: Jones, Joel E.
Sent: Fri 9/30/2016 10:40:56 PM
Subject: Valero
Valero Refining - Cover Letter.pdf
Valero Refining - Consent Agreement.pdf

Hi Antonette,

Please see attached Consent Agreement/Final Order re USEPA settlement of RCRA/EPCRA 313 violations at Valero Refining Co. (Benicia, CA). Let me know if you have any questions.

Our press release will likely be issued next week.

-Joel

Joel Jones, Assistant Director

Enforcement Division

USEPA Region 9

(415)972-3449

UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY
REGION IX

** FILED **
30SEP2016 - 12:59PM
U.S.EPA - Region 09

In the matter of Valero Refining Company - California RCRA EPA ID No. CAD063001770 TRI ID No. 94510XXNCS3400E Respondent.	)))))))))	U.S. EPA Docket No. RCRA-09-2016- 0008 EPCRA-09-2016- 0003 CONSENT AGREEMENT AND FINAL ORDER PURSUANT TO 40 C.F.R. SECTIONS 22.13 AND 22.18

CONSENT AGREEMENT

A. PRELIMINARY STATEMENT

1. This is a civil administrative enforcement action instituted pursuant to Section 3008(a)(1) of the Resource Conservation and Recovery Act ("RCRA"), as amended, 42 U.S.C. § 6928(a)(1); Section 325(c) of the Emergency Planning and Community Right-To-Know Act ("EPCRA"), 42 U.S.C. § 11045(c); and the Consolidated Rules of Practice Governing the Administrative Assessment of Civil Penalties and the Revocation/Termination or Suspension of Permits, 40 Code of Federal Regulations ("C.F.R.") Part 22.

2. Complainant is the United States Environmental Protection Agency, Region 9 ("EPA"). Respondent is Valero Refining Company - California ("Respondent" or "Valero").

3. Respondent owns and operates a facility located at 3400 East 2nd Street, in Benicia, California, 94510 (the "Facility"). The Facility's RCRA EPA Identification Number is CAD063001770. Its EPCRA TRI Identification Number is 94510XXNCS3400E. Respondent operates the Valero Benicia Refinery, where it produces petroleum hydrocarbon products, by-products, and intermediates.

4. On May 19 through 23, 2014, inspectors from the EPA conducted a multimedia compliance investigation at the Facility. The purpose of the inspection was to determine the Facility's compliance with applicable regulations adopted by the California authorized program under RCRA in the California Code of Regulations ("C.C.R."), Title 22, Division 4.5 and the California Health and Safety Code, Division 20; and EPCRA Section 313 and the regulations at 40 C.F.R. Part 372. Based upon the findings EPA

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made during the inspection, and additional information obtained subsequent to the inspection, EPA determined that Respondent had violated EPCRA Section 313, 42 U.S.C. § 11023 and the California Health & Safety Code § 25100 *et seq.* and the regulations adopted pursuant thereto, as authorized by the United States.

5. This Consent Agreement and Final Order pursuant to 40 C.F.R. §§ 22.13 and 22.18 ("CA/FO"), simultaneously commences and concludes this proceeding, wherein EPA alleges that Respondent failed to: (1) obtain a permit for disposal of hazardous waste, a violation of 22 C.C.R. § 66270.1 [*see also* 40 C.F.R. § 270.1]; (2) determine if solid waste generated was hazardous, a violation of 22 C.C.R. § 66262.11 [*see also* 40 C.F.R. § 262.11]; (3) maintain and operate the facility to minimize the possibility of any unplanned release, a violation of 22 C.C.R. § 66262.34(a)(4) and 22 C.C.R. § 66265.31 [*see also* 40 C.F.R. § 262.34(a)(4) and 40 C.F.R. § 265.31]; (4) maintain records at the facility for calendar years 2010 and 2011, a violation of 40 C.F.R. §372.10(c); and (5) submit accurate Toxic Chemical Release Inventory Reporting Forms, a violation of Section 313(g)(1)(B) of EPCRA, 42 U.S.C. § 11023(g)(1)(B), and 40 C.F.R. § 372.30(a). Respondent thereby violated Section 3001 et seq. of RCRA, 42 U.S.C. § 6921 et seq., and state regulations authorized pursuant thereto,[1] and Section 313 of EPCRA, 42 U.S.C. § 11023, and the implementing regulations set forth at 40 C.F.R. Part 372.

B. JURISDICTION

6. For the RCRA violations, the State of California received authorization to administer the hazardous waste management program in lieu of the federal program pursuant to § 3006 of RCRA, 42 U.S.C. § 6926, and 40 C.F.R. Part 271 on August 1, 1992. The authorized hazardous waste program is established pursuant to the Hazardous Waste Control Law, Chapter 6.5 of Division 20 of the California Health and Safety Code, and the regulations promulgated thereunder at Title 22, Division 4.5 of the California Code of Regulations, 22 C.C.R. §§ 66001 *et seq.* The State of California has been authorized for all the hazardous waste management regulations referenced in this CA/FO.

7. Respondent is a "person" as defined in Section 329(7) of EPCRA, 42 U.S.C. § 11049(7) and 22 C.C.R. § 66260.10 [*see also* 40 C.F.R. § 260.10].

8. Respondent is the "operator" of a facility as defined in 22 C.C.R. § 66260.10 [*see also* 40 C.F.R. § 260.10].

9. Respondent is a "generator" of hazardous waste as defined in 22 C.C.R. § 66260.10 [40 C.F.R. § 260.10].

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[1] All citations to the "C.C.R." refer to Division 4.5 of Title 22 of the current California Code of Regulations. EPA is enforcing California hazardous waste management program requirements as approved and authorized by the United States. Corresponding Federal citations are provided in brackets.

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10. Respondent is or has been engaged in "storage" of hazardous waste as defined in 22 C.C.R. § 66260.10 [*see also* 40 C.F.R. § 260.10].

11. Respondent generates and accumulates, or has generated and accumulated, materials that are "wastes" as defined in 22 C.C.R. §§ 66260.10 and 66261.2 [*see also* 40 C.F.R. § 261.2].

12. At the Facility, Respondent generates and accumulates, or has generated and accumulated, "hazardous waste" as defined in California Health & Safety Code § 25117, and 22 C.C.R. §§ 66260.10 and 66261.3 [*see also* RCRA § 1004(5), and 40 C.F.R. §§ 260.10 and 261.3]. These hazardous wastes include but are not limited to corrosive waste (D002), petroleum refinery primary oil/water/solids separation sludge (F037), petroleum refinery secondary oil/water/solids separation sludge (F038), and spent hydrotreating catalyst from petroleum refining operations (K171).

13. The Facility is a "facility" as defined in Section 329(4) of EPCRA, 42 U.S.C. § 11049(4) and 40 C.F.R. § 372.3.

14. The Facility has 10 or more "full-time employees," as that term is defined at 40 C.F.R. § 372.3.

15. The Facility is in a North American Industry Classification System Code 324, Petroleum and Coal Products Manufacturing, listed in 40 C.F.R. § 372.23.

16. At the Facility, Respondent manufactured, processed, or otherwise used a toxic chemical listed under 40 C.F.R. § 372.65 in excess of the applicable threshold quantity of that chemical set forth in 40 C.F.R. § 372.25, including but not limited to greater than 25,000 pounds of benzene, toluene, ethylbenzene and xylene.

17. Section 3006 of RCRA, 42 U.S.C. § 6926 provides, *inter alia*, that authorized state hazardous waste programs are carried out under Subtitle C of RCRA. Therefore, a violation of any requirement of law under an authorized state hazardous waste program is a violation of a requirement of Subtitle C of RCRA.

18. A violation of California's authorized hazardous waste program, found at H&SC § 25100 *et seq.*, constitutes a violation of Subtitle C of RCRA and, therefore, a person who violates California's authorized hazardous waste program is subject to the powers vested in the EPA Administrator by Section 3008 of RCRA, 42 U.S.C. § 6928.

19. Section 3008 of RCRA, 42 U.S.C. § 6928, authorizes the EPA Administrator to issue orders assessing a civil penalty and/or requiring compliance immediately or within a specified time for violation of any requirement of Subtitle C of RCRA, Section 3001 of RCRA *et seq.*, 42 U.S.C. § 6921 *et seq.*

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20. Section 325(c) of EPCRA, 42 U.S.C. § 11045(c), authorizes the EPA Administrator to assess a penalty for violations of Section 313 of EPCRA, 42 U.S.C. § 11023.

21. The Administrator has delegated the authority under Section 3008 of RCRA and Section 325 of EPCRA to the EPA Regional Administrator for Region 9, who has redelegated this authority to the EPA signatory below.

C. ALLEGED VIOLATIONS

COUNT I
Failure to obtain a permit for disposal of hazardous waste

22. Paragraphs 1 through 21 above are incorporated herein by this reference as if they were set forth here in their entirety.

23. 22 C.C.R. § 66270.1(c) requires that each person owning or operating a facility where hazardous waste is transferred, treated, stored, or disposed must have a permit. At the time of the inspection, Respondent did not have a permit or grant of interim status to dispose of hazardous waste under 22 C.C.R. § 66270.1(c) [*see also* 40 C.F.R. § 270.1(c)].

24. As a result of the inspection, EPA determined that Respondent discharged benzene-contaminated wastewater, RCRA D018 characteristic hazardous waste, into an unlined stormwater surface impoundment during self-diversion of wet weather flows on 14 occasions between 2011 and 2013. These discharges were not eligible for exemption under 22 C.C.R. § 66265.1(e)(11) [see also 40 C.F.R. § 265.1(c)(11)].

25. Therefore EPA alleges that Respondent disposed of hazardous waste without a permit, a violation of 22 C.C.R. § 66270.1 [*see also* 40 C.F.R. § 270.1].

COUNT II
Failure to maintain and operate the facility to minimize the possibility of an unplanned release

26. Paragraphs 1 through 25 above are incorporated herein by this reference as if they were set forth here in their entirety.

27. 22 C.C.R. § 66262.34(a)(4) and 22 C.C.R. § 66265.31 provide that facilities must be maintained and operated to minimize the possibility of a fire, explosion, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil, or surface water which could threaten human health or the environment [*see also* 40 C.F.R. § 262.34(a) and 40 C.F.R. § 265.31].

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28. During the CEI the EPA Inspectors observed several areas where there was staining on the ground, evidencing spillage.

29. Respondent acknowledged that there had been accidental releases of oily sludge, RCRA F037 hazardous waste, that was cleaned up promptly, but some staining was left in place around a Baker Tank, due to access issues.

30. Therefore EPA alleges that Respondent failed to operate its facility to minimize the possibility of a release of hazardous waste, and has violated 22 C.C.R. § 66262.34(a)(4) and 22 C.C.R. § 66265.31 [*see also* 40 C.F.R. § 262.34(a) and 40 C.F.R. § 265.31].

COUNT III

Failure to make a hazardous waste determination

31. Paragraphs 1 through 30 above are incorporated herein by this reference as if they were set forth here in their entirety.

32. 22 C.C.R. § 66262.11 states that a facility which generates waste, as defined by 22 C.C.R. § 66261.2, must determine if the waste is a hazardous waste [*see also* 40 C.F.R. § 262.11].

33. EPA determined that Respondent had pumped stormwater from the surface impoundment where Respondent had discharged RCRA D018 into a stormwater retention pond, used when extra stormwater capacity is needed.

34. Respondent failed to sample the wastewater pumped from the impoundment into the stormwater retention pond, thereby failing to determine if solid waste generated was hazardous.

35. Therefore, EPA alleges that Respondent has violated 22 C.C.R. § 66262.11 [*see also* 40 C.F.R. § 262.11].

COUNT IV

Failure to maintain records at the facility

36. Paragraphs 1 through 35 above are incorporated herein by this reference as if they were set forth here in their entirety.

37. Sections 313(a) and (b) of EPCRA, 42 U.S.C. §§ 11023(a) and (b), and 40 C.F.R. §§ 372.22 and 372.30, provide that the owner or operator of a facility must submit annually to EPA and the State in which the facility is located a chemical release form published under Section 313(g) of EPCRA for each toxic chemical or toxic chemical category listed under Section 313(c) of EPCRA and 40 C.F.R. § 372.65 that it manufactured, processed or otherwise used if: (i) the facility has ten or more full-time

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employees; (ii) the facility is in North American Industry Classification System Code 324110; and (iii) the facility manufactured, processed or otherwise used during the preceding calendar year the listed toxic chemical or toxic chemical category in excess of the threshold quantity established under Section 313(f) of EPCRA and 40 C.F.R. § 372.25.

38. Pursuant to Section 313(g) of EPCRA, 42 U.S.C. § 11023(g), EPA published a uniform Toxic Chemical Release Inventory Form (hereinafter referred to as a "Form R") for facilities that are subject to the reporting requirements of Section 313. Sections 313(a) and (b) of EPCRA, 42 U.S.C. §§ 11023(a) and (b), and 40 C.F.R. § 372.30(d), provide that each Form R for activities involving a toxic chemical or toxic chemical category that occurred during a calendar year must be submitted on or before July 1 of the next year.

39. Pursuant to 40 C.F.R. § 372.10(a) and (b), each person subject to the reporting or notification requirements of 40 C.F.R. Part 372 must retain complete records (as specified in the regulations) for a period of three years from the date of the submission of a report under 40 C.F.R. § 372.30 or of a notification under 40 C.F.R. § 372.45, respectively.

40. These records include data supporting the determination of whether a threshold under 40 C.F.R. § 372.25 applies for each toxic chemical and the calculations of the quantity of each toxic chemical released to the environment or transferred to an off-site location.

41. Pursuant to 40 C.F.R. § 372.10(c), records retained under 40 C.F.R. Part 372 must be maintained at the facility to which the report applies or from which a notification was provided. Such records must be readily available for purposes of inspection by EPA.

42. For reporting years 2010 and 2011, Respondent did not have records relating to threshold determinations for benzene, toluene, ethylbenzene or xylene readily available at the Facility for purposes of inspection by EPA.

43. For reporting year 2010, Respondent did not have records supporting its calculations for fugitive emissions from wastewater readily available at the Facility for purposes of inspection by EPA.

44. By failing to maintain the requisite records at the Facility for reporting years 2010 and 2011, Respondent violated Section 313 of EPCRA, 42 U.S.C. § 11023, and 40 C.F.R. § 372.10(c).

COUNT V
Failure to submit an accurate Form R

45. Paragraphs 1 through 44 above are incorporated herein by this reference as if they were set forth here in their entirety.

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46. 40 C.F.R § 372.30(a) requires that for each toxic chemical known by the owner or operator to be manufactured (including imported), processed, or otherwise used in excess of an applicable threshold quantity in § 372.25, § 372.27, or § 372.28 at its covered facility described in § 372.22 for a calendar year, the owner or operator must submit to EPA and to the State in which the facility is located a completed EPA Form R (EPA Form 9350-1).

47. Section 313(g)(1)(B) of EPCRA, 42 U.S.C. § 11023(g)(1)(B), provides that Form Rs must include a certification regarding the accuracy and completeness of the information provided therein.

48. Based on the inspection, EPA found Respondent failed to accurately report fugitive emissions data for two chemicals, cumene and ethylene, for reporting year 2010.

49. These inaccuracies constitute significant data quality errors and Respondent's failure to submit accurate Form Rs for these two toxic chemicals violated Section 313 of EPCRA, 42 U.S.C. § 11023, and 40 C.F.R. § 372.30(a).

D. CIVIL PENALTY

50. Section 3008(g) of RCRA, 42 U.S.C. § 6928(g), and Section 325(c) of EPCRA, 42 U.S.C. § 11045(c), as adjusted by the Debt Collection Improvement Act of 1996 and the Civil Monetary Penalty Inflation Adjustment Rule, 40 C.F.R. Part 19, authorize a civil penalty of up to thirty-seven thousand, five hundred dollars ($37,500) per day for violations of Subtitle C of RCRA, 42 U.S.C. § 6921 *et seq.*, or Section 313(c) of EPCRA, 42 U.S.C. § 11023(c) occurring after January 12, 2009 and before August 1, 2016. Based upon the facts alleged herein and upon those factors which EPA must consider pursuant to Section 3008(a)(3) of RCRA, 42 U.S.C. § 6928(a)(3), the 2003 RCRA Civil Penalty Policy, and the 1992 Enforcement Response Policy for Section 313 of EPCRA, as amended April 12, 2001, EPA proposes that Respondent be assessed ONE HUNDRED FIFTY-SEVEN THOUSAND EIGHT HUNDRED DOLLARS as the civil penalty for the violations alleged herein.

E. ADMISSIONS AND WAIVERS OF RIGHTS

51. For the purposes of this proceeding, Respondent admits to the jurisdictional allegations set forth in Section B of this CA/FO and agrees not to contest EPA's jurisdiction and authority to enter into and issue this CA/FO and to enforce its terms. Further, Respondent will not contest EPA's jurisdiction and authority to compel compliance with this CA/FO in any enforcement proceedings, either administrative or judicial, or to impose sanctions for violations of this CA/FO.

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52. Respondent neither admits nor denies any allegations of fact or law set forth in Section C of this CA/FO. Respondent hereby waives any rights Respondent may have to contest the allegations set forth in this CA/FO, waives any rights Respondent may have to a hearing on any issue relating to the factual allegations or legal conclusions set forth in this CA/FO, including without limitation a hearing pursuant to Section 3008(b) of RCRA, 42 U.S.C. § 6928(b), and hereby consents to the issuance of this CA/FO without adjudication. In addition, Respondent hereby waives any rights Respondent may have to appeal the Final Order attached to this Consent Agreement and made part of this CA/FO.

F. PARTIES BOUND

53. This CA/FO shall apply to and be binding upon Respondent and its agents, successors and assigns, until such time as the civil penalty required under Sections D and H has been paid in accordance with Section H, and any delays in performance and/or stipulated penalties have been resolved. At such time as those matters are concluded, this CA/FO shall terminate and constitute full settlement of the violations alleged herein.

54. No change in ownership or corporate, partnership or legal status relating to the Facility will in any way alter Respondent's obligations and responsibilities under this CA/FO.

55. The undersigned representative of Respondent hereby certifies that he or she is fully authorized by Respondent to enter into this CA/FO, to execute and to legally bind Respondent to it.

G. COMPLIANCE TASKS

56. By no later than December 30, 2016, Respondent shall submit a work plan for piping modifications at the Facility so that discharges from the Diversion Area lift station can no longer flow (self-divert) to the Wastewater Treatment Plant retention ponds. Respondent has identified this lift station, which receives flows from the Lower Level Tank Farm area, as the most likely source of benzene concentrations that have been detected intermittently in storm-related self-diversions into the retention ponds.

57. By no later than June 30, 2017, Respondent shall complete the project described in Paragraph 56 above. Respondent shall notify EPA in writing within ten (10) working days after completion of the project, and submit documentation showing that the project is complete. Such documentation may include invoices, photos, contracts, or any other relevant materials.

58. From the Effective Date of the CA/FO until one year following completion of the project described in Paragraph 56, during storm events Valero shall sample wastewater discharged at the diversion canal, end of line (EOL) sampling point EOL-10.

59. Respondent shall sample the diversion canal at the beginning of each diversion event. If the diversion is continuous, Respondent shall sample the canal daily for the duration of the diversion.

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60. Respondent shall continue to follow the current National Emissions Standards for Hazardous Air Pollutants ("NESHAP") End of Line ("EOL") monitoring protocol for benzene and utilize the existing Valero Benicia Refinery EOL Sample Check Sheet to record the collection of the samples.

61. Respondent shall continue to follow its existing Quality Assurance/Quality Control requirements, as follows: (1) where applicable, the sample must be collected through a cooler so the temperature is less than 50F degrees; (2) samples must be collected into a Volatile Organic Analysis ("VOA") vial without air bubbles; (3) records must be kept for listing the name, date, time of the person collecting the sample and the temperature of the sample.

62. Respondent's contract laboratory should continue to perform EPA Method 8260 BTEX (Benzene, Toluene, Ethylbenzene, m,p-Xylene, o-Xylene) analysis for these samples.

63. Respondent shall submit the sampling data to EPA within five (5) working days from the receipt from its contractor laboratory. Data shall be transmitted via electronic mail to Sharon Lin at lin.sharon@epa.gov.

H. PAYMENT OF CIVIL PENALTY

64. Respondent consents to the assessment of and agrees to pay a civil penalty of ONE HUNDRED FIFTY-SEVEN THOUSAND AND EIGHT HUNDRED DOLLARS ($157,800.00) in full settlement of the federal civil penalty claims set forth in this CA/FO.

65. Respondent shall submit payment of the ONE HUNDRED FIFTY-SEVEN THOUSAND AND EIGHT HUNDRED DOLLARS ($157,800.00) within thirty (30) calendar days of the Effective Date of this CA/FO in accordance with one of the options set forth below. The Effective Date of this CA/FO is the date the Final Order, signed by the Regional Judicial Officer, is filed with the Regional Hearing Clerk. All payments shall indicate the name of the Facility, EPA identification number of the Facility, the Respondent's name and address, and the EPA docket number of this action.

Regular Mail:
Payment shall be made by certified or cashier's check payable to "Treasurer of the United States" and sent as follows:
US Environmental Protection Agency
Fines and Penalties
Cincinnati Finance Center
PO Box 979077
St. Louis, MO 63197-9000.

Wire Transfers:
Wire transfers must be sent directly to the Federal Reserve Bank in New York

City with the following information:
Federal Reserve Bank of New York
ABA = 021030004
Account = 68010727
SWIFT address = FRNYUS33
33 Liberty Street
New York, NY 10045
Field Tag 4200 of the Fedwire message should read "D 68010727 Environmental Protection Agency"

Overnight Mail:
U.S. Bank
1005 Convention Plaza
Mail Station SL-MO-C2GL
ATTN Box 979077
St. Louis, MO 63101

ACH (also known as REX or remittance express):
Automated Clearinghouse (ACH) for receiving US currency
PNC Bank
808 17th Street, NW
Washington, DC 20074
ABA = 051036706
Transaction Code 22 – checking
Environmental Protection Agency
Account 31006
CTX Format

On Line Payment:
This payment option can be accessed from the information below:
www.pay.gov
Enter "sfo1.1" in the search field
Open form and complete required fields

If clarification regarding a particular method of payment remittance is needed, contact the EPA Cincinnati Finance Center at 513-487-2091.

66. At the time payment is made, a copy of the payment transmittal shall be sent to:

Regional Hearing Clerk (RC-1)
U.S. Environmental Protection Agency - Region 9
75 Hawthorne Street
San Francisco, CA 94105

and

Sharon Lin (ENF 2-2) and Andrew Chew (ENF 2-2)
Enforcement Division
U.S. Environmental Protection Agency - Region 9
75 Hawthorne Street
San Francisco, CA 94105

67. In accordance with the Debt Collection Act of 1982 and U.S. Treasury directive (TFRM 6-8000), each payment must be received by the due date set forth in this CA/FO to avoid additional charges. If payment is not received by the due date, interest will accrue from the Effective Date of this CA/FO at the current rate published by the United States Treasury as described at 40 C.F.R. § 13.11. Respondent further will be liable for stipulated penalties as set forth below for any payment not received by its due date.

68. The penalties specified in this CA/FO shall represent civil penalties assessed by EPA and shall not be deducted by Respondent or any other person or entity for federal, state or local taxation purposes.

I. DELAY IN PERFORMANCE/STIPULATED PENALTIES

69. In the event Respondent fails to (a) submit a payment to EPA by the time required in this CA/FO, or (b) complete tasks required by Section G above, Respondent shall pay stipulated penalties up to: FIVE HUNDRED DOLLARS ($500) per day for first to fifteenth day of delay; ONE THOUSAND DOLLARS ($1,000) per day for sixteenth to thirtieth day of delay; and ONE THOUSAND FIVE HUNDRED DOLLARS ($1,500) per day for each day of delay thereafter.

70. Prior to the date when Valero completes the project described in Paragraph 56, if Respondent discharges stormwater exceeding 0.5 mg/L benzene to any surface impoundment, Respondent shall pay a penalty of up to $5,000 for each day of such discharge.

71. All penalties owed to EPA under this Section shall be due within thirty (30) days of receipt of a notification of noncompliance. Such notification shall describe the noncompliance and shall indicate the amount of penalties due. Interest at the current rate published by the United States Treasury, as described at 40 C.F.R. §13.11, shall begin to accrue on the unpaid balance at the end of the thirty-day period.

72. All penalties shall be made payable by certified or cashier's check to "Treasurer of the United States" and shall be remitted as described in Paragraph 65.

73. The payment of stipulated penalties shall not alter in any way Respondent's obligation to complete the performance required hereunder.

74. Notwithstanding any other provision of this Section, EPA may, in its unreviewable discretion, waive any portion of stipulated penalties that have accrued pursuant to this CA/FO.

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75. The stipulated penalties set forth in this Section do not preclude EPA from pursuing any other remedies or sanctions which may be available to EPA by reason of Respondent's failure to comply with any of the requirements of this CA/FO.

J. CERTIFICATION OF COMPLIANCE

76. In executing this CA/FO, Respondent certifies under penalty of law to EPA that to its actual knowledge that (1) it has now fully completed and submitted to EPA all of the required Toxic Chemical Release Inventory Forms in compliance with Section 313 of EPCRA, 42 U.S.C. § 11023, and the regulations promulgated thereunder; and (2) it is in compliance with all other EPCRA requirements applicable to the Facility.

77. In executing this CA/FO, subject to the provisions of Section G above, Respondent certifies under penalty of law to EPA that it has fully complied with RCRA Hazardous Waste Management requirements, 42 U.S.C. §§ 6921–6939e, and the federally authorized California hazardous waste management program including 22 C.C.R. §§ 66270.1 [*see also* 40 C.F.R. §§ 270.1], 22 C.C.R. § 66265.31 [*see also* 40 C.F.R. § 265.31], and 22 C.C.R. § 66262.11 [*see also* 40 C.F.R. § 262.11], that formed the basis for the violations alleged in this CA/FO.

78. This certification of compliance is based upon true, accurate, and complete information, which the signatory can verify personally or regarding which the signatory has inquired of the person or persons directly responsible for gathering the information.

K. RESERVATION OF RIGHTS

79. EPA hereby reserves all of its statutory and regulatory powers, authorities, rights and remedies, both legal and equitable, including the right to require that Respondent perform tasks in addition to those required by this CA/FO, except as to those civil penalties for the violations and facts alleged herein. EPA further reserves all of its statutory and regulatory powers, authorities, rights and remedies, both legal and equitable, which may pertain to Respondent's failure to comply with any of the requirements of this CA/FO. This CA/FO shall not be construed as a covenant not to sue, release, waiver or limitation of any rights, remedies, powers or authorities, civil or criminal, which EPA has under RCRA or EPCRA (except as to those civil penalties for the violations and facts alleged herein); the Comprehensive Environmental Response, Compensation and Liability Act of 1980, as amended ("CERCLA"); or any other statutory, regulatory or common law enforcement authority of the United States.

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80. Compliance by Respondent with the terms of this CA/FO shall not relieve Respondent of its obligations to comply with RCRA, EPCRA, or any other applicable local, State or federal laws and regulations.

81. The entry of this CA/FO and Respondent's consent to comply shall not limit or otherwise preclude EPA from taking additional enforcement actions should EPA determine that such actions are warranted except as they relate to Respondent=s liability for federal civil penalties for the specific alleged violations and facts as set forth in Section C of this CA/FO.

82. This CA/FO is not intended to be nor shall it be construed as a permit. This CA/FO does not relieve Respondent of any obligation to obtain and comply with any local, State or federal permits.

L. OTHER CLAIMS

83. Nothing in this CA/FO shall constitute or be construed as a release from nor an admission by Respondents of any other claim, cause of action or demand in law or equity by or against any person, firm, partnership, entity or corporation for any liability it may have arising out of or relating in any way to the generation, storage, treatment, handling, transportation, release, or disposal of any hazardous constituents, hazardous substances, hazardous wastes, pollutants, or contaminants found at, taken to, or taken from the Facility.

M. MISCELLANEOUS

84. Each party shall bear its own attorneys' fees, costs, and disbursements incurred in this proceeding.

85. This CA/FO may be amended or modified only by written agreement executed by both EPA and Respondent.

86. The headings in this CA/FO are for convenience of reference only and shall not affect interpretation of this CA/FO.

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87. In accordance with 40 C.F.R. §§ 22.18(b)(3) and 22.31(b), the Effective Date of this CA/FO is the date the Final Order, having been approved by the Regional Judicial Officer, is filed by the Regional Hearing Clerk.

IT IS SO AGREED.

9/27/16
Date

Name, Title: Donald C. Wilson, VP + General Manager
Valero Refining Co. - California

9/29/16
Date

Joel Jones, Assistant Director
Enforcement Division
U.S. Environmental Protection Agency, Region 9

FINAL ORDER

IT IS HEREBY ORDERED that this Consent Agreement and Final Order pursuant to 40 C.F.R. Sections 22.13 and 22.18 (U.S. EPA Docket No. RCRA-9 -2016-0008 and EPCRA-09-2016-0003) be entered and that Valero Refining Company - California pay a civil penalty of one hundred fifty seven thousand and eight hundred dollars ($157,800.00) due within thirty (30) days from the Effective Date of this Consent Agreement and Final Order. Payment must be made pursuant to Section H of the Consent Agreement.

This Final Order shall be effective upon filing by the Regional Hearing Clerk.

09/30/16
Date

Steven Jawgiel
Regional Judicial Officer
United States Environmental Protection Agency,
Region 9

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CERTIFICATE OF SERVICE

I hereby certify that the original and a copy of the foregoing Consent Agreement and Final Order in the matter of Valero Refining Company – California with Docket # RCRA-09-2016-0008 /EPCRA-09-2016-0003 has been filed with the Regional Hearing Clerk, Region 9, and a copy was sent:

By Certified Mail, Return Receipt Requested to Respondent:

Mr. Christopher W. Howe
Director, Health, Safety, Environment & Government Affairs
Valero Benicia Refinery
3400 East Second Street
Benicia, California 94510-1005
Certified Mail No. 7009 0820 0001 3646 6332

Hand Delivered to:

Rebecca Sugerman
Office of Regional Counsel
U.S. EPA, Region 9, ORC-3
75 Hawthorne Street
San Francisco, CA 94105

Sept. 30, 2016
Date

Steven Armsey
Steven Armsey
Acting Regional Hearing ~~Clerk~~
Office of Regional Counsel, Region 9

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

Certified Mail No. 7009 0820 0001 3646 6332

September 30, 2016

Return Receipt Requested

Christopher W. Howe
Director, Health, Safety, Environment & Government Affairs
Valero Benicia Refinery
3400 East Second Street
Benicia, California 94510-1005

SEP 30 2016

RE: Consent Agreement and Final Order
In the Matter of Valero Refining Company – California
RCRA EPA ID No. CAD063001770
TRI ID No. 94510XXNCS3400E

Dear Mr. Howe:

Please find enclosed a copy of the final executed Consent Agreement and Final Order (CA/FO) negotiated between the United States Environmental Protection Agency, Region IX (EPA) and Valero Refining Company – California. (Valero).

This CA/FO sets out the terms for resolution of the Resource Conservation and Recovery Act (RCRA) and Emergency Planning and Community Right-to-Know Act (EPCRA) administrative civil penalty actions against Valero for violations discovered during routine compliance evaluation inspections at your refinery in Benicia, California.

Valero's full compliance with the terms of this CA/FO will close this case. If you have any questions regarding the regulations governing your operations or the rules which govern the proceedings terminated by the enclosed document, please contact Sharon Lin of my staff at (415) 972-3446 or Rebecca Sugerman, in the Office of Regional Counsel, at (415) 972-3893.

Sincerely,

Joel Jones
Assistant Director, Enforcement Division

Enclosure

cc: Keith Kihara, California Department of Toxic Substances Control

Cc: McDaniel, Doug[McDaniel.Doug@epa.gov]; Salazar, Matt[Salazar.Matt@epa.gov]
To: Sullivan, Greg[Sullivan.Greg@epa.gov]; Saenz, Diana[Saenz.Diana@epa.gov]; Clark, Kathy[Clark.Kathy@epa.gov]; Crossland, Andy[Crossland.Andy@epa.gov]; Stephanos, Ann[Stephanos.Ann@epa.gov]
From: Jones, Joel E.
Sent: Thur 10/6/2016 11:41:26 PM
Subject: Fwd: Media Coverage: U.S. EPA settles with Valero for hazardous waste violations at Bay Area refinery

FYI

Sent from my iPhone

Begin forwarded message:

From: "Chew, Andrew" <Chew.Andrew@epa.gov>
Date: October 6, 2016 at 4:27:46 PM PDT
To: "Salazar, Matt" <Salazar.Matt@epa.gov>, "Jones, Joel E." <Jones.Joel@epa.gov>
Subject: FW: Media Coverage: U.S. EPA settles with Valero for hazardous waste violations at Bay Area refinery

From: Huitric, Michele
Sent: Thursday, October 06, 2016 4:13 PM
To: Lin, Sharon <Lin.Sharon@epa.gov>; Sugerman, Rebecca <Sugerman.Rebecca@epa.gov>; Bussey, Carol <Bussey.Carol@epa.gov>; Chew, Andrew <Chew.Andrew@epa.gov>; Karlson, Kristine <Karlson.Kristine@epa.gov>
Cc: Huitric, Michele <Huitric.Michele@epa.gov>
Subject: Media Coverage: U.S. EPA settles with Valero for hazardous waste violations at Bay Area refinery

Hi all –

Here is the media coverage I have found so far for Valero. Plus, Joel Jones did an interview with KQED this afternoon.

•□□□□□□□□ Daily Republic (Fairfield, CA): EPA: Valero to pay $157,800 penalty for illegal chemical disposal, other violations

•□□□□□□□□ East Bay Times: Benicia: Valero to pay $157,800 penalty over toxic chemicals

•□□□□□□□□ Vallejo Times-Herald: Refining company reaches settlement for mishandling chemicals in Benicia

•□□□□□□□□ Mercury News: Benicia: Valero to pay $157,800 penalty over toxic chemicals

•□□□□□□□□ KPIX 5: Morning news clip

•□□□□□□□□ KTVU Morning News

If you see others, please let me know.

Thanks,

Michele

From: Huitric, Michele
Sent: Wednesday, October 05, 2016 1:03 PM
To: R9 OPA <R9_OPA@epa.gov>
Cc: Lin, Sharon <Lin.Sharon@epa.gov>; Sugerman, Rebecca <Sugerman.Rebecca@epa.gov>; Bussey, Carol <Bussey.Carol@epa.gov>; Chew, Andrew <Chew.Andrew@epa.gov>; Karlson, Kristine <Karlson.Kristine@epa.gov>
Subject: Going out shortly: U.S. EPA settles with Valero for hazardous waste violations at Bay Area refinery

EPA Environmental News

For Immediate Release: October 6, 2016
Media Contact: Michele Huitric, huitric.michele@epa.gov, 415-972-3165

En español: Soledad Calvino, calvino.maria@epa.gov, 415-972-3512

U.S. EPA settles with Valero for hazardous waste violations at Bay

Area refinery

SAN FRANCISCO – Today, the U.S. Environmental Protection Agency announced a settlement with Valero Refining Company - California over improper management of hazardous waste and toxic chemicals at its crude oil refinery in Benicia. Violations included illegally disposing benzene into an unlined stormwater retention pond and not alerting the public about all of its toxic chemical releases.

Valero will pay a $157,800 penalty and modify its piping operations; submitting a work plan by the end of 2016 and completing the project by June 2017. This action will prevent an estimated 5,000 lbs of benzene, a known human carcinogen, from being released into the environment over the next 10 years. The company will also correct and resubmit its toxic chemical release reports.

"Valero's operations can affect both the communities near the refinery and the wildlife habitat of Suisun Bay," said Alexis Strauss, EPA's Acting Regional Administrator for the Pacific Southwest. "It is critical for Valero to comply with federal laws that protect public health and our natural resources."

Valero Refining Company - California is a subsidiary of Valero Energy Corporation, a global manufacturer and marketer of transportation fuels, petrochemical products and power, based in San Antonio, Texas. EPA conducted an inspection at Valero's Benicia refinery in May 2014 to assess compliance with the federal Resource Conservation and Recovery Act and the Emergency Planning and Community Right-to-Know Act.

Additional violations uncovered by the inspection included the company's failure to determine if solid waste generated at the refinery was hazardous; failure to maintain and operate the facility as needed to minimize the possibility of any unplanned release; and failure to maintain complete and accurate records at the facility.

This investigation was part of EPA's continuing efforts to ensure communities located near complex industrial facilities are informed of the toxic releases from those facilities. This action also reflects EPA's focus on the largest hazardous waste generators, including petroleum refineries.

The federal Resource Conservation and Recovery Act program oversees the safe management and disposal of hazardous waste. Under authority delegated by EPA, the California Department of Toxic Substances Control enforces this hazardous waste management program in the state. EPA routinely conducts RCRA inspections in its state oversight role, to ensure the state effectively implements its program.

The Emergency Planning and Community Right-to-Know Act was created to help communities plan for chemical emergencies. It also requires industry to report on the storage, use and releases of hazardous substances in a community. To accomplish this, EPA created the Toxics Release Inventory. This publicly available database contains information on toxic chemical releases and other waste management activities reported annually by certain industries and federal facilities.

For more information on RCRA, please visit: https://www.epa.gov/rcra

For more information about the Emergency Planning and Community Right-to-Know Act, please visit: http://www2.epa.gov/epcra

For more information on the Toxic Releases Inventory Program, please visit: https://www.epa.gov/toxics-release-inventory-tri-program

###

To: Lazorik, John[John.Lazorik@valero.com]
From: Lin, Sharon
Sent: Tue 2/7/2017 5:13:38 PM
Subject: RE: Valero Benicia Refinery-EOL data from February 2017

Confirming receipt of the email and attached analytical data. Thanks.

sharon

From: Lazorik, John [mailto:John.Lazorik@valero.com]
Sent: Tuesday, February 07, 2017 9:11 AM
To: Lin, Sharon <Lin.Sharon@epa.gov>
Cc: Suhami, Iren <Iren.Suhami@valero.com>; Cuffel, Donald <Don.Cuffel@valero.com>; Bourbon, Elizabeth <Elizabeth.Bourbon@valero.com>; Bluntzer, Megan <Megan.Bluntzer@valero.com>; Pacheco-Mendez, Marisol <Marisol.Pacheco-Mendez@valero.com>; Crowley, Elizabeth <Lisa.Crowley@valero.com>
Subject: Valero Benicia Refinery-EOL data from February 2017

Hello Sharon,

Pursuant to item 63 of the Consent Agreement and Final Order negotiated between EPA and Valero (RCRA EPA ID No. CAD063001770, TRI ID No. 94510XXNCS3400E), please see attached for end of line (EOL) sampling point EOL-10 data collected on February 3rd and 4th, 2017. This data was received from the contractor laboratory on February 7, 2017.

The self-diversion was a result of a high intensity rain event that began on February 3, 2017.

Please confirm receipt of this email.

Please contact me if you have any questions.

Regards,

John Lazorik

Sr. Staff Environmental Engineer

Valero Benicia Refinery

3400 East Second Street Benicia, CA 94510

Office: 707-745-7660 Fax: 707-745-7339

john.lazorik@valero.com

From: Ward, Scott@DTSC
Location: EPA building, 75 Hawthorne Street, SF
Importance: Normal
Subject: Shell Martinez pending hazardous waste permit renewal application and bio-treatment Pond 7
Start Date/Time: Fri 7/28/2017 4:00:00 PM
End Date/Time: Fri 7/28/2017 6:00:00 PM

;
This meeting is being proposed as an early inter-agency coordination meeting regarding the pending submission of a hazardous waste facility permit renewal application from the Shell Martinez Refinery. I would like to discuss a range of items related to the unit known as Pond 7, A.K.A. the ETP-1 biotreater; as well as post-closure requirements for previously permitted hazardous waste management units that are currently operating as non-hazardous units. I will send out an agenda approximately 2 weeks prior to this meeting and will welcome revisions or additions to that agenda as others see fit.
Sharon, please invite anyone from EPA who is interested or appropriate.
Best regards,
Scott
(510) 540-3914

From: Lin, Sharon
Location: Martinez, CA
Importance: Normal
Subject: Technical review of TP units at Shell Martinez Refinery with USEPA team
Start Date/Time: Mon 8/3/2015 7:00:00 AM
End Date/Time: Fri 8/7/2015 7:00:00 AM

To: Lin, Sharon[Lin.Sharon@epa.gov]
From: Pacheco-Mendez, Marisol
Sent: Thur 11/17/2016 7:35:21 PM
Subject: Valero Benicia Refinery - EOL10 data from October 28, 2016
1-2R1611024.pdf

Hi Sharon,

Pursuant to item 63 of the Consent Agreement and Final Order negotiated between EPA and Valero (RCRA EPA ID No. CAD063001770, TRI ID No. 94510XXNCS3400E), please see attached for end of line (EOL) sampling point EOL-10 data collected on October 28, 2016. This data was received from the contractor laboratory on November 14, 2016.

Please confirm receipt of this email.

Please contact me if you have any questions.

Regards,

Marisol Pacheco-Mendez

Valero Benicia Refinery

Staff Environmental Engineer

707-745-7573

November 14, 2016

Analytical Report

Client:	**Valero** 3400 East Second St Benicia, CA 94510
Attn:	**Kimberly Ronan**

Work Order #:	1611024
Project:	Valero NESHAP
Project#:	[none]
P.O. Number:	4503499083
Project Received:	November 4, 2016 11:00
Project Reported:	November 14, 2016 11:03

Sincerely,

Hossein Khoshkhoo

H. Khoshkhoo, Ph.D.
Laboratory Director / President

WORK ORDER: 1611024

COC Number:

Valero
3400 East Second St
Benicia, CA 94510

Project: Valero NESHAP
PO Number: 4503499083
Project Manager: Kimberly Ronan
Project #: [none]

Samples in this Report

Lab ID	Sample	Matrix	Date Sampled	Date Received
1611024-01	Self Diversion to RP	Aqueous	October 28, 2016 3:30	November 4, 2016 11:00
1611024-02	Self Diversion to RP	Aqueous	October 28, 2016 3:30	November 4, 2016 11:00

The contents of this report apply to the sample(s) analyzed in accordance with the chain of custody document.
No duplication of this report is allowed, except in its entirety.

685 Stone Road #11 & 12 • Benicia, CA 94510 • (707) 747-6081 • (800) 747-6082 • Fax (707) 747-6082

WORK ORDER: 1611024

COC Number:

Valero
3400 East Second St
Benicia, CA 94510

Project: Valero NESHAP
PO Number: 4503499083
Project Manager: Kimberly Ronan
Project #: [none]

Sample Results

Sample: **Self Diversion to RP**
1611024-01 (Aqueous)

Sample Type: Grab

Sample Date: October 28, 2016 3:

Prep Date: November 7, 2016 9:22

Analyte	MDL	Reporting Limit	Qual	Result	Unit	Dilution Factor	Date Analyzed	Method	Batch/ Analyst
Semi-Volatile Organic Compounds by EPA 8270									
Dimethyl Phthalate	0.6	5.0	ND	5.0	ug/L	1	11/7/16	EPA 8270C	16K0078/ZT
Acenaphthene	1.1	5.0	ND	5.0	ug/L	1	11/7/16	EPA 8270C	16K0078/ZT
Acenaphthylene	0.2	5.0	ND	5.0	ug/L	1	11/7/16	EPA 8270C	16K0078/ZT
Anthracene	0.5	5.0	ND	5.0	ug/L	1	11/7/16	EPA 8270C	16K0078/ZT
Benzidine	3.3	20.0	ND	20.0	ug/L	1	11/7/16	EPA 8270C	16K0078/ZT
Benzoic Acid	3.2	20.0	ND	20.0	ug/L	1	11/7/16	EPA 8270C	16K0078/ZT
Benzo (a) anthracene	0.2	5.0	ND	5.0	ug/L	1	11/7/16	EPA 8270C	16K0078/ZT
Benzo (b) fluoranthene	0.5	5.0	ND	5.0	ug/L	1	11/7/16	EPA 8270C	16K0078/ZT
Benzo (k) fluoranthene	0.8	5.0	ND	5.0	ug/L	1	11/7/16	EPA 8270C	16K0078/ZT
Benzo (g,h,i) perylene	1.3	5.0	ND	5.0	ug/L	1	11/7/16	EPA 8270C	16K0078/ZT
Benzo (a) pyrene	0.6	5.0	ND	5.0	ug/L	1	11/7/16	EPA 8270C	16K0078/ZT
Benzyl Alcohol	2.1	5.0	ND	5.0	ug/L	1	11/7/16	EPA 8270C	16K0078/ZT
Bis (2-chloroethoxy) methane	0.7	5.0	ND	5.0	ug/L	1	11/7/16	EPA 8270C	16K0078/ZT
Bis (2-chloroethyl) Ether	0.6	5.0	ND	5.0	ug/L	1	11/7/16	EPA 8270C	16K0078/ZT
Bis (2-chloroisopropyl) Ether	2.6	5.0	ND	5.0	ug/L	1	11/7/16	EPA 8270C	16K0078/ZT
Bis (2-ethylhexy) Phthalate	0.7	5.0	ND	5.0	ug/L	1	11/7/16	EPA 8270C	16K0078/ZT
4-Bromophenyl Phenyl Ether	0.7	5.0	ND	5.0	ug/L	1	11/7/16	EPA 8270C	16K0078/ZT
Butylbenzyl Phthalate	0.8	5.0	ND	5.0	ug/L	1	11/7/16	EPA 8270C	16K0078/ZT
4-Chloroaniline	0.7	5.0	ND	5.0	ug/L	1	11/7/16	EPA 8270C	16K0078/ZT
2-Chloronaphthalene	0.005	5.0	ND	5.0	ug/L	1	11/7/16	EPA 8270C	16K0078/ZT
4-Chlorophenyl Phenyl Ether	0.4	5.0	ND	5.0	ug/L	1	11/7/16	EPA 8270C	16K0078/ZT
Chrysene	0.3	5.0	ND	5.0	ug/L	1	11/7/16	EPA 8270C	16K0078/ZT
Dibenzo (a,h) anthracene	1.1	5.0	ND	5.0	ug/L	1	11/7/16	EPA 8270C	16K0078/ZT
Dibenzofuran	0.3	5.0	ND	5.0	ug/L	1	11/7/16	EPA 8270C	16K0078/ZT
Di-n-butyl Phthalate	0.7	5.0	ND	5.0	ug/L	1	11/7/16	EPA 8270C	16K0078/ZT
1,2-Dichlorobenzene	0.7	5.0	ND	5.0	ug/L	1	11/7/16	EPA 8270C	16K0078/ZT
1,3-Dichlorobenzene	0.6	5.0	ND	5.0	ug/L	1	11/7/16	EPA 8270C	16K0078/ZT
1,4-Dichlorobenzene	0.3	5.0	ND	5.0	ug/L	1	11/7/16	EPA 8270C	16K0078/ZT
3,3'-Dichlorobenzidine	0.6	10.0	ND	10.0	ug/L	1	11/7/16	EPA 8270C	16K0078/ZT

The contents of this report apply to the sample(s) analyzed in accordance with the chain of custody document.
No duplication of this report is allowed, except in its entirety.

685 Stone Road #11 & 12 • Benicia, CA 94510 • (707) 747-6081 • (800) 747-6082 • Fax (707) 747-6082

WORK ORDER: 1611024 **COC Number:**

Valero
3400 East Second St
Benicia, CA 94510

Project: Valero NESHAP
PO Number: 4503499083
Project Manager: Kimberly Ronan
Project #: [none]

Sample Results
(Continued)

Sample: **Self Diversion to RP (Continued)**
1611024-01 (Aqueous)

Sample Type: Grab

Sample Date: October 28, 2016 3:

Prep Date: November 7, 2016 9:22

Analyte	MDL	Reporting Limit	Qual	Result	Unit	Dilution Factor	Date Analyzed	Method	Batch/ Analyst
Semi-Volatile Organic Compounds by EPA 8270 (Continued)									
Diethyl Phthalate	0.9	5.0	ND	5.0	ug/L	1	11/7/16	EPA 8270C	16K0078/ZT
2,4-Dinitrotoluene	1.2	5.0	ND	5.0	ug/L	1	11/7/16	EPA 8270C	16K0078/ZT
2,6-Dinitrotoluene	0.5	5.0	ND	5.0	ug/L	1	11/7/16	EPA 8270C	16K0078/ZT
Di-n-octyl Phthalate	0.7	5.0	ND	5.0	ug/L	1	11/7/16	EPA 8270C	16K0078/ZT
Fluoranthene	1.3	5.0	ND	5.0	ug/L	1	11/7/16	EPA 8270C	16K0078/ZT
Fluorene	0.7	5.0	ND	5.0	ug/L	1	11/7/16	EPA 8270C	16K0078/ZT
Hexachlorobenzene	1.2	5.0	ND	5.0	ug/L	1	11/7/16	EPA 8270C	16K0078/ZT
Hexachlorobutadiene	0.8	5.0	ND	5.0	ug/L	1	11/7/16	EPA 8270C	16K0078/ZT
Hexachlorocyclopentadiene	1.4	5.0	ND	5.0	ug/L	1	11/7/16	EPA 8270C	16K0078/ZT
Hexachloroethane	0.01	5.0	ND	5.0	ug/L	1	11/7/16	EPA 8270C	16K0078/ZT
Indeno (1,2,3-cd) pyrene	1.1	5.0	ND	5.0	ug/L	1	11/7/16	EPA 8270C	16K0078/ZT
Isophorone	0.8	5.0	ND	5.0	ug/L	1	11/7/16	EPA 8270C	16K0078/ZT
2-Methylnaphthalene	0.01	5.0		**9.2**	ug/L	1	11/7/16	EPA 8270C	16K0078/ZT
Naphthalene	0.4	5.0	ND	5.0	ug/L	1	11/7/16	EPA 8270C	16K0078/ZT
2-Nitroaniline	1.1	5.0	ND	5.0	ug/L	1	11/7/16	EPA 8270C	16K0078/ZT
3-Nitroaniline	1.3	5.0	ND	5.0	ug/L	1	11/7/16	EPA 8270C	16K0078/ZT
4-Nitroaniline	0.8	5.0	ND	5.0	ug/L	1	11/7/16	EPA 8270C	16K0078/ZT
Nitrobenzene	0.4	5.0	ND	5.0	ug/L	1	11/7/16	EPA 8270C	16K0078/ZT
N-Nitrosodiphenylamine	0.8	5.0	ND	5.0	ug/L	1	11/7/16	EPA 8270C	16K0078/ZT
N-Nitrosodi-n-propylamine	1.7	5.0	ND	5.0	ug/L	1	11/7/16	EPA 8270C	16K0078/ZT
Phenanthrene	0.3	5.0	ND	5.0	ug/L	1	11/7/16	EPA 8270C	16K0078/ZT
Pyrene	1.2	5.0	ND	5.0	ug/L	1	11/7/16	EPA 8270C	16K0078/ZT
1,2,4-Trichlorobenzene	0.5	5.0	ND	5.0	ug/L	1	11/7/16	EPA 8270C	16K0078/ZT
4-Chloro-3-methylphenol	1.1	5.0	ND	5.0	ug/L	1	11/7/16	EPA 8270C	16K0078/ZT
2-Chlorophenol	0.9	5.0	ND	5.0	ug/L	1	11/7/16	EPA 8270C	16K0078/ZT
2,4-Dichlorophenol	0.4	5.0	ND	5.0	ug/L	1	11/7/16	EPA 8270C	16K0078/ZT
2,4-Dimethylphenol	0.4	5.0	ND	5.0	ug/L	1	11/7/16	EPA 8270C	16K0078/ZT
4,6-Dinitro-2-methylphenol	0.7	5.0	ND	5.0	ug/L	1	11/7/16	EPA 8270C	16K0078/ZT
2,4-Dinitrophenol	2.6	10.0	ND	10.0	ug/L	1	11/7/16	EPA 8270C	16K0078/ZT

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WORK ORDER: 1611024 **COC Number:**

Valero
3400 East Second St
Benicia, CA 94510

Project: Valero NESHAP
PO Number: 4503499083
Project Manager: Kimberly Ronan
Project #: [none]

Sample Results
(Continued)

Sample: **Self Diversion to RP (Continued)**
1611024-01 (Aqueous)

Sample Type: Grab

Sample Date: October 28, 2016 3:

Prep Date: November 7, 2016 9:22

Analyte	MDL	Reporting Limit	Qual	Result	Unit	Dilution Factor	Date Analyzed	Method	Batch/ Analyst
Semi-Volatile Organic Compounds by EPA 8270 (Continued)									
2-Methylphenol	2.0	5.0	ND	5.0	ug/L	1	11/7/16	EPA 8270C	16K0078/ZT
4-Methylphenol	1.2	5.0	ND	5.0	ug/L	1	11/7/16	EPA 8270C	16K0078/ZT
2-Nitrophenol	0.6	5.0	ND	5.0	ug/L	1	11/7/16	EPA 8270C	16K0078/ZT
4-Nitrophenol	0.9	5.0	ND	5.0	ug/L	1	11/7/16	EPA 8270C	16K0078/ZT
Pentachlorophenol	4.1	5.0	ND	5.0	ug/L	1	11/7/16	EPA 8270C	16K0078/ZT
Phenol	0.5	5.0	ND	5.0	ug/L	1	11/7/16	EPA 8270C	16K0078/ZT
2,4,5-Trichlorophenol	0.5	5.0	ND	5.0	ug/L	1	11/7/16	EPA 8270C	16K0078/ZT
2,4,6-Trichlorophenol	0.3	5.0	ND	5.0	ug/L	1	11/7/16	EPA 8270C	16K0078/ZT
Surrogate: 2-Fluorobiphenyl		32-144		82.4%			11/7/16	EPA 8270C	16K0078/ZT
Surrogate: Phenol-d6		5-93		41.1%			11/7/16	EPA 8270C	16K0078/ZT
Surrogate: Nitrobenzene-d5		34-141		75.0%			11/7/16	EPA 8270C	16K0078/ZT
Surrogate: 2-Fluorophenol		23-92		48.8%			11/7/16	EPA 8270C	16K0078/ZT
Surrogate: 2,4,6-Tribromophenol		22-154		98.0%			11/7/16	EPA 8270C	16K0078/ZT
Surrogate: p-Terphenyl-d14		28-157		100%			11/7/16	EPA 8270C	16K0078/ZT

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WORK ORDER: 1611024 **COC Number:**

Valero
3400 East Second St
Benicia, CA 94510

Project: Valero NESHAP
PO Number: 4503499083
Project Manager: Kimberly Ronan
Project #: [none]

Sample Results
(Continued)

Sample: **Self Diversion to RP**
1611024-02 (Aqueous)

Sample Type: Grab

Sample Date: October 28, 2016 3:

Prep Date: November 11, 2016 9:40

Analyte	MDL	Reporting Limit	Qual	Result	Unit	Dilution Factor	Date Analyzed	Method	Batch/ Analyst
Volatile Organic Compounds									
Benzene	0.120	1.00		**6.44**	ug/L	2	11/11/16	EPA 8260 B	16K0085/ZT
Bromobenzene	0.380	1.00	ND	0.380	ug/L	2	11/11/16	EPA 8260 B	16K0085/ZT
Methylene Chloride	0.620	4.00	ND	0.620	ug/L	2	11/11/16	EPA 8260 B	16K0085/ZT
Bromochloromethane	0.180	1.00	ND	0.180	ug/L	2	11/11/16	EPA 8260 B	16K0085/ZT
Bromodichloromethane	0.240	1.00	ND	0.240	ug/L	2	11/11/16	EPA 8260 B	16K0085/ZT
Bromoform	0.240	1.00	ND	0.240	ug/L	2	11/11/16	EPA 8260 B	16K0085/ZT
Bromomethane	0.560	1.00	ND	0.560	ug/L	2	11/11/16	EPA 8260 B	16K0085/ZT
n-Butylbenzene	0.600	1.00		**4.00**	ug/L	2	11/11/16	EPA 8260 B	16K0085/ZT
sec-Butylbenzene	0.280	1.00		**1.62**	ug/L	2	11/11/16	EPA 8260 B	16K0085/ZT
tert-Butylbenzene	0.280	1.00	ND	0.280	ug/L	2	11/11/16	EPA 8260 B	16K0085/ZT
Carbon Tetrachloride	0.200	1.00	ND	0.200	ug/L	2	11/11/16	EPA 8260 B	16K0085/ZT
Chlorobenzene	0.260	1.00	ND	0.260	ug/L	2	11/11/16	EPA 8260 B	16K0085/ZT
Chloroethane	0.420	1.00	ND	0.420	ug/L	2	11/11/16	EPA 8260 B	16K0085/ZT
Chloroform	0.240	1.00		**0.860**	ug/L	2	11/11/16	EPA 8260 B	16K0085/ZT
Chloromethane	0.640	1.00	ND	0.640	ug/L	2	11/11/16	EPA 8260 B	16K0085/ZT
2-Chlorotoluene	0.440	1.00	ND	0.440	ug/L	2	11/11/16	EPA 8260 B	16K0085/ZT
4-Chlorotoluene	0.220	1.00	ND	0.220	ug/L	2	11/11/16	EPA 8260 B	16K0085/ZT
Dibromochloromethane	0.160	1.00	ND	0.160	ug/L	2	11/11/16	EPA 8260 B	16K0085/ZT
1,2-Dibromo-3-chloropropane	0.540	1.00	ND	0.540	ug/L	2	11/11/16	EPA 8260 B	16K0085/ZT
1,2-Dibromoethane	0.300	1.00	ND	0.300	ug/L	2	11/11/16	EPA 8260 B	16K0085/ZT
Dibromomethane	0.300	1.00	ND	0.300	ug/L	2	11/11/16	EPA 8260 B	16K0085/ZT
1,2-Dichlorobenzene	0.220	1.00	ND	0.220	ug/L	2	11/11/16	EPA 8260 B	16K0085/ZT
1,3-Dichlorobenzene	0.200	1.00	ND	0.200	ug/L	2	11/11/16	EPA 8260 B	16K0085/ZT
1,4-Dichlorobenzene	0.200	1.00	ND	0.200	ug/L	2	11/11/16	EPA 8260 B	16K0085/ZT
Dichlorodifluoromethane	0.400	1.00	ND	0.400	ug/L	2	11/11/16	EPA 8260 B	16K0085/ZT
1,1-Dichloroethane	0.320	1.00	ND	0.320	ug/L	2	11/11/16	EPA 8260 B	16K0085/ZT
1,2-Dichloroethane	0.420	1.00	ND	0.420	ug/L	2	11/11/16	EPA 8260 B	16K0085/ZT
1,1-Dichloroethene	0.400	1.00	ND	0.400	ug/L	2	11/11/16	EPA 8260 B	16K0085/ZT
cis-1,2-Dichloroethene	0.280	1.00	ND	0.280	ug/L	2	11/11/16	EPA 8260 B	16K0085/ZT

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WORK ORDER: 1611024 **COC Number:**

Valero
3400 East Second St
Benicia, CA 94510

Project: Valero NESHAP
PO Number: 4503499083
Project Manager: Kimberly Ronan
Project #: [none]

Sample Results
(Continued)

Sample: **Self Diversion to RP (Continued)**
1611024-02 (Aqueous)

Sample Type: Grab

Sample Date: October 28, 2016 3:

Prep Date: November 11, 2016 9:40

Analyte	MDL	Reporting Limit	Qual	Result	Unit	Dilution Factor	Date Analyzed	Method	Batch/ Analyst
Volatile Organic Compounds (Continued)									
trans-1,2-Dichloroethene	0.320	1.00	ND	0.320	ug/L	2	11/11/16	EPA 8260 B	16K0085/ZT
1,2-Dichloropropane	0.260	1.00	ND	0.260	ug/L	2	11/11/16	EPA 8260 B	16K0085/ZT
1,3-Dichloropropane	0.180	1.00	ND	0.180	ug/L	2	11/11/16	EPA 8260 B	16K0085/ZT
2,2-Dichloropropane	0.320	1.00	ND	0.320	ug/L	2	11/11/16	EPA 8260 B	16K0085/ZT
1,1-Dichloropropene	0.260	1.00	ND	0.260	ug/L	2	11/11/16	EPA 8260 B	16K0085/ZT
Ethylbenzene	0.160	1.00		**9.04**	ug/L	2	11/11/16	EPA 8260 B	16K0085/ZT
Hexachlorobutadiene	0.860	1.00	ND	0.860	ug/L	2	11/11/16	EPA 8260 B	16K0085/ZT
Isopropylbenzene	0.160	1.00		**2.34**	ug/L	2	11/11/16	EPA 8260 B	16K0085/ZT
p-Isopropyltoluene	0.320	1.00		**2.76**	ug/L	2	11/11/16	EPA 8260 B	16K0085/ZT
Naphthalene	0.920	1.00		**17.2**	ug/L	2	11/11/16	EPA 8260 B	16K0085/ZT
n-Propylbenzene	0.260	1.00		**3.78**	ug/L	2	11/11/16	EPA 8260 B	16K0085/ZT
Styrene	0.280	1.00	ND	0.280	ug/L	2	11/11/16	EPA 8260 B	16K0085/ZT
1,1,1,2-Tetrachloroethane	0.200	1.00	ND	0.200	ug/L	2	11/11/16	EPA 8260 B	16K0085/ZT
1,1,2,2-Tetrachloroethane	0.460	1.00	ND	0.460	ug/L	2	11/11/16	EPA 8260 B	16K0085/ZT
Tetrachloroethene	0.320	1.00	ND	0.320	ug/L	2	11/11/16	EPA 8260 B	16K0085/ZT
Toluene	0.240	1.00		**29.6**	ug/L	2	11/11/16	EPA 8260 B	16K0085/ZT
1,2,3-Trichlorobenzene	0.560	1.00	ND	0.560	ug/L	2	11/11/16	EPA 8260 B	16K0085/ZT
1,2,4-Trichlorobenzene	0.580	1.00	ND	0.580	ug/L	2	11/11/16	EPA 8260 B	16K0085/ZT
1,1,1-Trichloroethane	0.320	1.00	ND	0.320	ug/L	2	11/11/16	EPA 8260 B	16K0085/ZT
1,1,2-Trichloroethane	0.240	1.00	ND	0.240	ug/L	2	11/11/16	EPA 8260 B	16K0085/ZT
Trichloroethene	0.320	1.00	ND	0.320	ug/L	2	11/11/16	EPA 8260 B	16K0085/ZT
Trichlorofluoromethane	0.460	1.00	ND	0.460	ug/L	2	11/11/16	EPA 8260 B	16K0085/ZT
1,2,3-Trichloropropane, TCP	0.500	1.00	ND	0.500	ug/L	2	11/11/16	EPA 8260 B	16K0085/ZT
1,2,4-Trimethylbenzene	0.600	1.00		**41.0**	ug/L	2	11/11/16	EPA 8260 B	16K0085/ZT
1,3,5-Trimethylbenzene	0.400	1.00		**12.0**	ug/L	2	11/11/16	EPA 8260 B	16K0085/ZT
Vinyl Chloride	0.540	1.00	ND	0.540	ug/L	2	11/11/16	EPA 8260 B	16K0085/ZT
o-Xylene	0.320	1.00		**27.2**	ug/L	2	11/11/16	EPA 8260 B	16K0085/ZT
m,p-Xylenes	0.600	2.00		**60.6**	ug/L	2	11/11/16	EPA 8260 B	16K0085/ZT
cis-1,3-Dichloropropene	0.240	1.00	ND	0.240	ug/L	2	11/11/16	EPA 8260 B	16K0085/ZT
trans-1,3-Dichloropropene	0.180	1.00	ND	0.180	ug/L	2	11/11/16	EPA 8260 B	16K0085/ZT

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WORK ORDER: 1611024

COC Number:

Valero
3400 East Second St
Benicia, CA 94510

Project: Valero NESHAP
PO Number: 4503499083
Project Manager: Kimberly Ronan
Project #: [none]

Sample Results
(Continued)

Sample: **Self Diversion to RP (Continued)**
1611024-02 (Aqueous)

Sample Type: Grab

Sample Date: October 28, 2016 3:

Prep Date: November 11, 2016 9:40

Analyte	MDL	Reporting Limit	Qual	Result	Unit	Dilution Factor	Date Analyzed	Method	Batch/ Analyst
Volatile Organic Compounds (Continued)									
Methyl-tert-butyl ether (MTBE)	0.280	1.00	ND	0.280	ug/L	2	11/11/16	EPA 8260 B	16K0085/ZT
Surrogate: Dibromofluoromethane		70-130		109%			11/11/16	EPA 8260 B	16K0085/ZT
Surrogate: Toluene-d8		70-130		102%			11/11/16	EPA 8260 B	16K0085/ZT
Surrogate: 4-Bromofluorobenzene		70-130		98.5%			11/11/16	EPA 8260 B	16K0085/ZT

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WORK ORDER: 1611024 **COC Number:**

Valero
3400 East Second St
Benicia, CA 94510

Project: Valero NESHAP
PO Number: 4503499083
Project Manager: Kimberly Ronan
Project #: [none]

Quality Control

Volatile Organic Compounds

Prepared & Analyzed: Nov-10-16

Analyte	Source Result	Result	Qual	Reporting Limit	Unit	Spike Level	% REC	%REC Limits	RPD	RPD Limit
Batch: 16K0080									**Analyst:** ZT	
Blank (16K0080-BLK1)										
Benzene		**ND**		0.000500	mg/L					
Surrogate: Toluene-d8		0.0195			mg/L	0.0200	97.5	70-130		
LCS (16K0080-BS1)										
Benzene		**0.0232**		0.000500	mg/L	0.0200	116	80-120		
Surrogate: Toluene-d8		0.0203			mg/L	0.0200	102	70-130		
Matrix Spike (16K0080-MS1)		**Source: 1611024-03**								
Benzene	ND	**0.0169**		0.000500	mg/L	0.0200	84.5	80-120		
Surrogate: Toluene-d8		0.0210			mg/L	0.0200	105	70-130		
Matrix Spike Dup (16K0080-MSD1)		**Source: 1611024-03**								
Benzene	ND	**0.0205**		0.000500	mg/L	0.0200	102	80-120	19.3	20
Surrogate: Toluene-d8		0.0198			mg/L	0.0200	99.0	70-130		
Batch: 16K0085									**Analyst:** ZT	
Blank (16K0085-BLK1)										
Benzene		**ND**		0.500	ug/L					
Bromobenzene		**ND**		0.500	ug/L					
Methylene Chloride		**ND**		2.00	ug/L					
Bromochloromethane		**ND**		0.500	ug/L					
Bromodichloromethane		**ND**		0.500	ug/L					
Bromoform		**ND**		0.500	ug/L					
Bromomethane		**ND**		0.500	ug/L					
n-Butylbenzene		**ND**		0.500	ug/L					
sec-Butylbenzene		**ND**		0.500	ug/L					
tert-Butylbenzene		**ND**		0.500	ug/L					
Carbon Tetrachloride		**ND**		0.500	ug/L					
Chlorobenzene		**ND**		0.500	ug/L					
Chloroethane		**ND**		0.500	ug/L					
Chloroform		**ND**		0.500	ug/L					
Chloromethane		**ND**		0.500	ug/L					
2-Chlorotoluene		**ND**		0.500	ug/L					
4-Chlorotoluene		**ND**		0.500	ug/L					
Dibromochloromethane		**ND**		0.500	ug/L					
1,2-Dibromo-3-chloropropane		**ND**		0.500	ug/L					
1,2-Dibromoethane		**ND**		0.500	ug/L					
Dibromomethane		**ND**		0.500	ug/L					

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WORK ORDER: 1611024 **COC Number:**

Valero
3400 East Second St
Benicia, CA 94510

Project: Valero NESHAP
PO Number: 4503499083
Project Manager: Kimberly Ronan
Project #: [none]

Quality Control
(Continued)

Volatile Organic Compounds (Continued)

Prepared & Analyzed: Nov-11-16

Batch: 16K0085 (Continued) **Analyst:** ZT

Blank (16K0085-BLK1)

Analyte	Source Result	Result	Qual	Reporting Limit	Unit	Spike Level	% REC	%REC Limits	RPD	RPD Limit
1,2-Dichlorobenzene		ND		0.500	ug/L					
1,3-Dichlorobenzene		ND		0.500	ug/L					
1,4-Dichlorobenzene		ND		0.500	ug/L					
Dichlorodifluoromethane		ND		0.500	ug/L					
1,1-Dichloroethane		ND		0.500	ug/L					
1,2-Dichloroethane		ND		0.500	ug/L					
1,1-Dichloroethene		ND		0.500	ug/L					
cis-1,2-Dichloroethene		ND		0.500	ug/L					
trans-1,2-Dichloroethene		ND		0.500	ug/L					
1,2-Dichloropropane		ND		0.500	ug/L					
1,3-Dichloropropane		ND		0.500	ug/L					
2,2-Dichloropropane		ND		0.500	ug/L					
1,1-Dichloropropene		ND		0.500	ug/L					
Ethylbenzene		ND		0.500	ug/L					
Hexachlorobutadiene		ND		0.500	ug/L					
Isopropylbenzene		ND		0.500	ug/L					
p-Isopropyltoluene		ND		0.500	ug/L					
Naphthalene		ND		0.500	ug/L					
n-Propylbenzene		ND		0.500	ug/L					
Styrene		ND		0.500	ug/L					
1,1,1,2-Tetrachloroethane		ND		0.500	ug/L					
1,1,2,2-Tetrachloroethane		ND		0.500	ug/L					
Tetrachloroethene		ND		0.500	ug/L					
Toluene		ND		0.500	ug/L					
1,2,3-Trichlorobenzene		ND		0.500	ug/L					
1,2,4-Trichlorobenzene		ND		0.500	ug/L					
1,1,1-Trichloroethane		ND		0.500	ug/L					
1,1,2-Trichloroethane		ND		0.500	ug/L					
Trichloroethene		ND		0.500	ug/L					
Trichlorofluoromethane		ND		0.500	ug/L					
1,2,3-Trichloropropane, TCP		ND		0.500	ug/L					
1,2,4-Trimethylbenzene		ND		0.500	ug/L					
1,3,5-Trimethylbenzene		ND		0.500	ug/L					
Vinyl Chloride		ND		0.500	ug/L					
o-Xylene		ND		0.500	ug/L					
m,p-Xylenes		ND		1.00	ug/L					

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WORK ORDER: 1611024 **COC Number:**

Valero
3400 East Second St
Benicia, CA 94510

Project: Valero NESHAP
PO Number: 4503499083
Project Manager: Kimberly Ronan
Project #: [none]

Quality Control
(Continued)

Volatile Organic Compounds (Continued)

Prepared & Analyzed: Nov-11-16

Analyte	Source Result	Result	Qual	Reporting Limit	Unit	Spike Level	% REC	%REC Limits	RPD	RPD Limit
Batch: 16K0085 (Continued)										**Analyst:** ZT
Blank (16K0085-BLK1)										
cis-1,3-Dichloropropene		**ND**		0.500	ug/L					
trans-1,3-Dichloropropene		**ND**		0.500	ug/L					
Methyl-tert-butyl ether (MTBE)		**ND**		0.500	ug/L					
Surrogate: Dibromofluoromethane		23.4			ug/L	20.0	117	70-130		
Surrogate: Toluene-d8		20.2			ug/L	20.0	101	70-130		
Surrogate: 4-Bromofluorobenzene		23.8			ug/L	20.0	119	70-130		
LCS (16K0085-BS1)										
Benzene		**22.7**		0.500	ug/L	20.0	114	80-120		
Chlorobenzene		**19.7**		0.500	ug/L	20.0	98.5	80-120		
1,1-Dichloroethene		**22.1**		0.500	ug/L	20.0	110	80-120		
Toluene		**21.4**		0.500	ug/L	20.0	107	80-120		
Trichloroethene		**21.7**		0.500	ug/L	20.0	108	80-120		
Surrogate: Dibromofluoromethane		21.5			ug/L	20.0	108	70-130		
Surrogate: Toluene-d8		20.3			ug/L	20.0	102	70-130		
Surrogate: 4-Bromofluorobenzene		20.7			ug/L	20.0	104	70-130		

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WORK ORDER: 1611024 **COC Number:**

Valero
3400 East Second St
Benicia, CA 94510

Project: Valero NESHAP
PO Number: 4503499083
Project Manager: Kimberly Ronan
Project #: [none]

Quality Control
(Continued)

Semi-Volatile Organic Compounds by EPA 8270

Prepared & Analyzed: Nov-07-16

Batch: 16K0078 **Analyst:** ZT

Blank (16K0078-BLK1)

Analyte	Source Result	Result	Qual	Reporting Limit	Unit	Spike Level	% REC	%REC Limits	RPD	RPD Limit
Dimethyl Phthalate		ND		5.0	ug/L					
Acenaphthene		ND		5.0	ug/L					
Acenaphthylene		ND		5.0	ug/L					
Anthracene		ND		5.0	ug/L					
Benzidine		ND		20.0	ug/L					
Benzoic Acid		ND		20.0	ug/L					
Benzo (a) anthracene		ND		5.0	ug/L					
Benzo (b) fluoranthene		ND		5.0	ug/L					
Benzo (k) fluoranthene		ND		5.0	ug/L					
Benzo (g,h,i) perylene		ND		5.0	ug/L					
Benzo (a) pyrene		ND		5.0	ug/L					
Benzyl Alcohol		ND		5.0	ug/L					
Bis (2-chloroethoxy) methane		ND		5.0	ug/L					
Bis (2-chloroethyl) Ether		ND		5.0	ug/L					
Bis (2-chloroisopropyl) Ether		ND		5.0	ug/L					
Bis (2-ethylhexy) Phthalate		ND		5.0	ug/L					
4-Bromophenyl Phenyl Ether		ND		5.0	ug/L					
Butylbenzyl Phthalate		ND		5.0	ug/L					
4-Chloroaniline		ND		5.0	ug/L					
2-Chloronaphthalene		ND		5.0	ug/L					
4-Chlorophenyl Phenyl Ether		ND		5.0	ug/L					
Chrysene		ND		5.0	ug/L					
Dibenzo (a,h) anthracene		ND		5.0	ug/L					
Dibenzofuran		ND		5.0	ug/L					
Di-n-butyl Phthalate		ND		5.0	ug/L					
1,2-Dichlorobenzene		ND		5.0	ug/L					
1,3-Dichlorobenzene		ND		5.0	ug/L					
1,4-Dichlorobenzene		ND		5.0	ug/L					
3,3'-Dichlorobenzidine		ND		10.0	ug/L					
Diethyl Phthalate		ND		5.0	ug/L					
2,4-Dinitrotoluene		ND		5.0	ug/L					
2,6-Dinitrotoluene		ND		5.0	ug/L					
Di-n-octyl Phthalate		ND		5.0	ug/L					
Fluoranthene		ND		5.0	ug/L					
Fluorene		ND		5.0	ug/L					
Hexachlorobenzene		ND		5.0	ug/L					

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WORK ORDER: 1611024 **COC Number:**

Valero
3400 East Second St
Benicia, CA 94510

Project: Valero NESHAP
PO Number: 4503499083
Project Manager: Kimberly Ronan
Project #: [none]

Quality Control
(Continued)

Semi-Volatile Organic Compounds by EPA 8270 (Continued

Prepared & Analyzed: Nov-07-16

Analyte	Source Result	Result	Qual	Reporting Limit	Unit	Spike Level	% REC	%REC Limits	RPD	RPD Limit
Batch: 16K0078 (Continued)										**Analyst:** ZT
Blank (16K0078-BLK1)										
Hexachlorobutadiene		**ND**		5.0	ug/L					
Hexachlorocyclopentadiene		**ND**		5.0	ug/L					
Hexachloroethane		**ND**		5.0	ug/L					
Indeno (1,2,3-cd) pyrene		**ND**		5.0	ug/L					
Isophorone		**ND**		5.0	ug/L					
2-Methylnaphthalene		**ND**		5.0	ug/L					
Naphthalene		**ND**		5.0	ug/L					
2-Nitroaniline		**ND**		5.0	ug/L					
3-Nitroaniline		**ND**		5.0	ug/L					
4-Nitroaniline		**ND**		5.0	ug/L					
Nitrobenzene		**ND**		5.0	ug/L					
N-Nitrosodiphenylamine		**ND**		5.0	ug/L					
N-Nitrosodi-n-propylamine		**ND**		5.0	ug/L					
Phenanthrene		**ND**		5.0	ug/L					
Pyrene		**ND**		5.0	ug/L					
1,2,4-Trichlorobenzene		**ND**		5.0	ug/L					
4-Chloro-3-methylphenol		**ND**		5.0	ug/L					
2-Chlorophenol		**ND**		5.0	ug/L					
2,4-Dichlorophenol		**ND**		5.0	ug/L					
2,4-Dimethylphenol		**ND**		5.0	ug/L					
4,6-Dinitro-2-methylphenol		**ND**		5.0	ug/L					
2,4-Dinitrophenol		**ND**		10.0	ug/L					
2-Methylphenol		**ND**		5.0	ug/L					
4-Methylphenol		**ND**		5.0	ug/L					
2-Nitrophenol		**ND**		5.0	ug/L					
4-Nitrophenol		**ND**		5.0	ug/L					
Pentachlorophenol		**ND**		5.0	ug/L					
Phenol		**ND**		5.0	ug/L					
2,4,5-Trichlorophenol		**ND**		5.0	ug/L					
2,4,6-Trichlorophenol		**ND**		5.0	ug/L					
Surrogate: 2-Fluorobiphenyl		89.9			ug/L	100	89.9	32-144		
Surrogate: Phenol-d6		157			ug/L	200	78.5	5-93		
Surrogate: Nitrobenzene-d5		89.6			ug/L	100	89.6	34-141		
Surrogate: 2-Fluorophenol		161			ug/L	200	80.5	23-92		
Surrogate: 2,4,6-Tribromophenol		163			ug/L	200	81.5	22-154		
Surrogate: p-Terphenyl-d14		106			ug/L	100	106	28-157		

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WORK ORDER: 1611024 **COC Number:**

Valero
3400 East Second St
Benicia, CA 94510

Project: Valero NESHAP
PO Number: 4503499083
Project Manager: Kimberly Ronan
Project #: [none]

Quality Control
(Continued)

Semi-Volatile Organic Compounds by EPA 8270 (Continued

Prepared & Analyzed: Nov-07-16

Analyte	Source Result	Result	Qual	Reporting Limit	Unit	Spike Level	% REC	%REC Limits	RPD	RPD Limit
Batch: 16K0078 (Continued)										**Analyst:** ZT
LCS (16K0078-BS1)										
Acenaphthene		**37.8**		5.0	ug/L	50.0	75.6	31-123		
1,4-Dichlorobenzene		**39.7**		5.0	ug/L	50.0	79.4	26-113		
2,4-Dinitrotoluene		**31.5**		5.0	ug/L	50.0	63.0	34-128		
N-Nitrosodi-n-propylamine		**37.2**		5.0	ug/L	50.0	74.4	30-139		
Pyrene		**27.5**		5.0	ug/L	50.0	55.0	27-136		
1,2,4-Trichlorobenzene		**35.6**		5.0	ug/L	50.0	71.2	29-105		
4-Chloro-3-methylphenol		**39.6**		5.0	ug/L	50.0	79.2	28-125		
2-Chlorophenol		**37.8**		5.0	ug/L	50.0	75.6	29-104		
4-Nitrophenol		**18.5**		5.0	ug/L	50.0	37.0	0.4-90		
Pentachlorophenol		**30.8**		5.0	ug/L	50.0	61.6	1-165		
Phenol		**19.3**		5.0	ug/L	50.0	38.6	1-90		
Surrogate: 2-Fluorobiphenyl		102			ug/L	100	102	32-144		
Surrogate: Phenol-d6		154			ug/L	200	77.0	5-93		
Surrogate: Nitrobenzene-d5		81.7			ug/L	100	81.7	33-141		
Surrogate: 2-Fluorophenol		159			ug/L	200	79.5	23-92		
Surrogate: 2,4,6-Tribromophenol		146			ug/L	200	73.0	22-154		
Surrogate: p-Terphenyl-d14		82.2			ug/L	100	82.2	28-157		

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WORK ORDER: 1611024

COC Number:

Valero
3400 East Second St
Benicia, CA 94510

Project: Valero NESHAP
PO Number: 4503499083
Project Manager: Kimberly Ronan
Project #: [none]

Notes and Definitions

Item	Definition
Dry	Sample results reported on a dry weight basis.
ND	Analyte NOT DETECTED at or above the reporting limit.
%REC	Percent Recovery
DF	Dilution Factor
LCS	Lab Control Sample
LCSD	Lab Control Sample Duplicate
MDL	Minimum Detection Limit
MRL	Minimum Reporting Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
RPD	Relative Percent Difference
Source	Sample that was matrix spiked or duplicated

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1611024

Valero Benicia Refinery
Bioassay Laboratory Chain of Custody

Sample Destination: Delta

LabCode: D 16-302

Date: 4-Nov-16

Report Results To: Kimberly.Ronan@valero.com
Marisol.Pacheco-Mendez@Valero.com

Phone:

Fax 1:

e-mail : David.Johnston@Valero.com

Fax 2:

PO# Delta NESHAPS 4503499083-10

Cost Center 417190

Sample Notes or Special Instructions

#	Sample ID	Turn Around	Sample Size	# of Samples	Date	Time	GRAB	COMP	Preserve	Temp.	Total Se 200.7	Oil & Grease EPA 1664	NH3 as N SM 4500 -NH3	CA 17 Metals EPA 200.7	Chronic *Mysidopsis bahia*	Benzene 8020	EOL Benzene (EPA 8260)	TOC - SM5310		EPA 8260	EPA 8270					
											Testing Requested															
1	Self Diversion to RP	Routine	1L	2	28-Oct	3:30	☑	☐	None	4.0											X					
2	Self Diversion to RP	Routine	VOA	3	28-Oct	3:30	☑	☐	HCl	4.0										X						
3	NESHAP Chem Sewer	Routine	VOA	2	1-Nov	16:00	☑	☐	HCl	4.0										X						
4	NESHAP ISF Outlet	Routine	VOA	2	1-Nov	16:00	☑	☐	HCl	4.0										X						
5							☐	☐																		
6							☐	☐																		
7							☐	☐																		
8							☐	☐																		
9							☐	☐																		

Samples Prepared By: 11/4/16 1000 Date/Time — D. Johnston Print Name

Relinquished By: 11/4/16 1030 Date/Time — Received By: Chelsea Feeney 11/4/16 11:20 Date / Time

T=6°C

Delta 11-4-16

ED_001593_00014848

To: Lin, Sharon[Lin.Sharon@epa.gov]
Cc: Ronan, Kimberly A[Kim.Ronan@valero.com]; Cuffel, Donald[Don.Cuffel@valero.com]; Bourbon, Elizabeth[Elizabeth.Bourbon@valero.com]; Bluntzer, Megan[Megan.Bluntzer@valero.com]; Suhami, Iren[Iren.Suhami@valero.com]
From: Pacheco-Mendez, Marisol
Sent: Sat 4/22/2017 8:12:29 PM
Subject: Valero Benicia-EOL-10 Data From April
2017-4-6 to 8_EOL-10 BZ_R1704040.pdf

Hello Sharon,

Pursuant to item 63 of the Consent Agreement and Final Order negotiated between EPA and Valero (RCRA EPA ID No. CAD063001770, TRI ID No. 94510XXNCS3400E), please see attached for end of line (EOL) sampling point EOL-10 data collected on April 6, 7 and 8, 2017. This data was received from the contractor laboratory on April 21, 2017.

The self-diversion was a result of the storm event at the time of these results.

Please confirm receipt of this email.

Please contact me if you have any questions.

Regards,

Marisol Pacheco-Mendez

Valero Benicia Refinery

Staff Environmental Engineer

707-745-7573

April 21, 2017

Analytical Report

Client:	**Valero** 3400 East Second St Benicia, CA 94510
Attn:	**Marisol Pacheco-Mendez**

Work Order #:	1704040
Project:	Delta Benzene
Project #:	[none]
P.O. Number:	4503805062-10
Project Received:	April 10, 2017 13:33
Project Reported:	April 21, 2017 16:49

Sincerely,

Hossein Khoshkhoo

H. Khoshkhoo, Ph.D.
Laboratory Director / President

WORK ORDER: 1704040

COC Number:

Valero
3400 East Second St
Benicia, CA 94510

Project: Delta Benzene
PO Number: 4503805062-10
Project Manager: Marisol Pacheco-Mendez
Project #:[none]

Sample Summary

Lab ID	Sample	Matrix	Date Sampled	Date Received
1704040-01	EOL 10	Aqueous	April 6, 2017 19:30	April 10, 2017 13:33
1704040-02	EOL 10	Aqueous	April 6, 2017 19:30	April 10, 2017 13:33
1704040-03	EOL 10	Aqueous	April 7, 2017 12:00	April 10, 2017 13:33
1704040-04	EOL 10	Aqueous	April 8, 2017 12:00	April 10, 2017 13:33

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WORK ORDER: 1704040 **COC Number:**

Valero
3400 East Second St
Benicia, CA 94510

Project: Delta Benzene
PO Number: 4503805062-10
Project Manager: Marisol Pacheco-Mendez
Project #:[none]

Sample Results

Sample Date: April 6, 2017 19:30

Sample: EOL 10
1704040-01 (Aqueous) **Sample Type:** Grab **Prep Date:** April 11, 2017 8:26

Analyte	Reporting Limit	Qual	Result	Unit	Dilution Factor	Date Analyzed	Method	Batch/ Analyst
Semi-Volatile Organic Compounds by EPA 625								
Dimethyl Phthalate	0.0100		ND	mg/L	2	4/11/17	EPA 625	17D0082/ZT
Acenaphthene	0.0100		ND	mg/L	2	4/11/17	EPA 625	17D0082/ZT
Acenaphthylene	0.0100		ND	mg/L	2	4/11/17	EPA 625	17D0082/ZT
Anthracene	0.0100		ND	mg/L	2	4/11/17	EPA 625	17D0082/ZT
Benzidine	0.0400		ND	mg/L	2	4/11/17	EPA 625	17D0082/ZT
Benzoic Acid	0.0400		ND	mg/L	2	4/11/17	EPA 625	17D0082/ZT
Benzo (a) anthracene	0.0100		ND	mg/L	2	4/11/17	EPA 625	17D0082/ZT
Benzo (b) fluoranthene	0.0100		ND	mg/L	2	4/11/17	EPA 625	17D0082/ZT
Benzo (k) fluoranthene	0.0100		ND	mg/L	2	4/11/17	EPA 625	17D0082/ZT
Benzo (g,h,i) perylene	0.0100		ND	mg/L	2	4/11/17	EPA 625	17D0082/ZT
Benzo (a) pyrene	0.0100		ND	mg/L	2	4/11/17	EPA 625	17D0082/ZT
Benzyl Alcohol	0.0100		ND	mg/L	2	4/11/17	EPA 625	17D0082/ZT
Bis (2-chloroethoxy) methane	0.0100		ND	mg/L	2	4/11/17	EPA 625	17D0082/ZT
Bis (2-chloroethyl) Ether	0.0100		ND	mg/L	2	4/11/17	EPA 625	17D0082/ZT
Bis (2-chloroisopropyl) Ether	0.0100		ND	mg/L	2	4/11/17	EPA 625	17D0082/ZT
Bis (2-ethylhexy) Phthalate	0.0100		ND	mg/L	2	4/11/17	EPA 625	17D0082/ZT
4-Bromophenyl Phenyl Ether	0.0100		ND	mg/L	2	4/11/17	EPA 625	17D0082/ZT
Butylbenzyl Phthalate	0.0100		ND	mg/L	2	4/11/17	EPA 625	17D0082/ZT
4-Chloroaniline	0.0100		ND	mg/L	2	4/11/17	EPA 625	17D0082/ZT
2-Chloronaphthalene	0.0100		ND	mg/L	2	4/11/17	EPA 625	17D0082/ZT
4-Chlorophenyl Phenyl Ether	0.0100		ND	mg/L	2	4/11/17	EPA 625	17D0082/ZT
Chrysene	0.0100		ND	mg/L	2	4/11/17	EPA 625	17D0082/ZT
Dibenzo (a,h) anthracene	0.0100		ND	mg/L	2	4/11/17	EPA 625	17D0082/ZT
Dibenzofuran	0.0100		ND	mg/L	2	4/11/17	EPA 625	17D0082/ZT
Di-n-butyl Phthalate	0.0100		ND	mg/L	2	4/11/17	EPA 625	17D0082/ZT
1,2-Dichlorobenzene	0.0100		ND	mg/L	2	4/11/17	EPA 625	17D0082/ZT
1,3-Dichlorobenzene	0.0100		ND	mg/L	2	4/11/17	EPA 625	17D0082/ZT
1,4-Dichlorobenzene	0.0100		ND	mg/L	2	4/11/17	EPA 625	17D0082/ZT
3,3'-Dichlorobenzidine	0.0200		ND	mg/L	2	4/11/17	EPA 625	17D0082/ZT
Diethyl Phthalate	0.0100		ND	mg/L	2	4/11/17	EPA 625	17D0082/ZT
2,4-Dinitrotoluene	0.0100		ND	mg/L	2	4/11/17	EPA 625	17D0082/ZT

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WORK ORDER: 1704040 **COC Number:**

Valero
3400 East Second St
Benicia, CA 94510

Project: Delta Benzene
PO Number: 4503805062-10
Project Manager: Marisol Pacheco-Mendez
Project #:[none]

Sample Results
(Continued)

Sample Date: April 6, 2017 19:30

Sample: EOL 10 (Continued)
1704040-01 (Aqueous) **Sample Type:** Grab **Prep Date:** April 11, 2017 8:26

Analyte	Reporting Limit	Qual	Result	Unit	Dilution Factor	Date Analyzed	Method	Batch/ Analyst
Semi-Volatile Organic Compounds by EPA 625 (Continued)								
2,6-Dinitrotoluene	0.0100		ND	mg/L	2	4/11/17	EPA 625	17D0082/ZT
Di-n-octyl Phthalate	0.0100		ND	mg/L	2	4/11/17	EPA 625	17D0082/ZT
Fluoranthene	0.0100		ND	mg/L	2	4/11/17	EPA 625	17D0082/ZT
Fluorene	0.0100	J	**0.00240**	mg/L	2	4/11/17	EPA 625	17D0082/ZT
Hexachlorobenzene	0.0100		ND	mg/L	2	4/11/17	EPA 625	17D0082/ZT
Hexachlorobutadiene	0.0100		ND	mg/L	2	4/11/17	EPA 625	17D0082/ZT
Hexachlorocyclopentadiene	0.0100		ND	mg/L	2	4/11/17	EPA 625	17D0082/ZT
Hexachloroethane	0.0100		ND	mg/L	2	4/11/17	EPA 625	17D0082/ZT
Indeno (1,2,3-cd) pyrene	0.0100		ND	mg/L	2	4/11/17	EPA 625	17D0082/ZT
Isophorone	0.0100		ND	mg/L	2	4/11/17	EPA 625	17D0082/ZT
2-Methylnaphthalene	0.0100		**0.0364**	mg/L	2	4/11/17	EPA 625	17D0082/ZT
Naphthalene	0.0100		**0.0151**	mg/L	2	4/11/17	EPA 625	17D0082/ZT
2-Nitroaniline	0.0100		ND	mg/L	2	4/11/17	EPA 625	17D0082/ZT
3-Nitroaniline	0.0100		ND	mg/L	2	4/11/17	EPA 625	17D0082/ZT
4-Nitroaniline	0.0100		ND	mg/L	2	4/11/17	EPA 625	17D0082/ZT
Nitrobenzene	0.0100		ND	mg/L	2	4/11/17	EPA 625	17D0082/ZT
N-Nitrosodiphenylamine	0.0100		ND	mg/L	2	4/11/17	EPA 625	17D0082/ZT
N-Nitrosodi-n-propylamine	0.0100		ND	mg/L	2	4/11/17	EPA 625	17D0082/ZT
Phenanthrene	0.0100	J	**0.00878**	mg/L	2	4/11/17	EPA 625	17D0082/ZT
Pyrene	0.0100	J	**0.00422**	mg/L	2	4/11/17	EPA 625	17D0082/ZT
1,2,4-Trichlorobenzene	0.0100		ND	mg/L	2	4/11/17	EPA 625	17D0082/ZT
4-Chloro-3-methylphenol	0.0100		ND	mg/L	2	4/11/17	EPA 625	17D0082/ZT
2-Chlorophenol	0.0100		ND	mg/L	2	4/11/17	EPA 625	17D0082/ZT
2,4-Dichlorophenol	0.0100		ND	mg/L	2	4/11/17	EPA 625	17D0082/ZT
2,4-Dimethylphenol	0.0100		ND	mg/L	2	4/11/17	EPA 625	17D0082/ZT
4,6-Dinitro-2-methylphenol	0.0100		ND	mg/L	2	4/11/17	EPA 625	17D0082/ZT
2,4-Dinitrophenol	0.0400		ND	mg/L	2	4/11/17	EPA 625	17D0082/ZT
2-Methylphenol	0.0100		ND	mg/L	2	4/11/17	EPA 625	17D0082/ZT
4-Methylphenol	0.0100		ND	mg/L	2	4/11/17	EPA 625	17D0082/ZT
2-Nitrophenol	0.0100		ND	mg/L	2	4/11/17	EPA 625	17D0082/ZT
4-Nitrophenol	0.0100		ND	mg/L	2	4/11/17	EPA 625	17D0082/ZT

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WORK ORDER: 1704040 **COC Number:**

Valero
3400 East Second St
Benicia, CA 94510

Project: Delta Benzene
PO Number: 4503805062-10
Project Manager: Marisol Pacheco-Mendez
Project #:[none]

Sample Results
(Continued)

Sample Date: April 6, 2017 19:30

Sample: EOL 10 (Continued)
1704040-01 (Aqueous) **Sample Type:** Grab **Prep Date:** April 11, 2017 8:26

Analyte	Reporting Limit	Qual	Result	Unit	Dilution Factor	Date Analyzed	Method	Batch/ Analyst
Semi-Volatile Organic Compounds by EPA 625 (Continued)								
Pentachlorophenol	0.0100		ND	mg/L	2	4/11/17	EPA 625	17D0082/ZT
Phenol	0.0100		ND	mg/L	2	4/11/17	EPA 625	17D0082/ZT
2,4,5-Trichlorophenol	0.0100		ND	mg/L	2	4/11/17	EPA 625	17D0082/ZT
2,4,6-Trichlorophenol	0.0100		ND	mg/L	2	4/11/17	EPA 625	17D0082/ZT
1,2-Diphenylhydrazine	0.0100		ND	mg/L	2	4/11/17	EPA 625	17D0082/ZT
N-Nitrosodimethylamine	0.0100		ND	mg/L	2	4/11/17	EPA 625	17D0082/ZT
Surrogate: 2-Fluorophenol	23-91		77.5%			4/11/17	EPA 625	17D0082/ZT
Surrogate: Phenol-d6	5-93		69.5%			4/11/17	EPA 625	17D0082/ZT
Surrogate: Nitrobenzene-d5	34-141		72.8%			4/11/17	EPA 625	17D0082/ZT
Surrogate: 2-Fluorobiphenyl	32-144		94.0%			4/11/17	EPA 625	17D0082/ZT
Surrogate: 2,4,6-Tribromophenol	22-154		103%			4/11/17	EPA 625	17D0082/ZT
Surrogate: p-Terphenyl-d14	29-157		90.6%			4/11/17	EPA 625	17D0082/ZT

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WORK ORDER: 1704040 **COC Number:**

Valero
3400 East Second St
Benicia, CA 94510

Project: Delta Benzene
PO Number: 4503805062-10
Project Manager: Marisol Pacheco-Mendez
Project #:[none]

Sample Results
(Continued)

Sample Date: April 6, 2017 19:30

Sample: EOL 10
1704040-02 (Aqueous) **Sample Type:** Grab **Prep Date:** April 12, 2017 12:00

Analyte	Reporting Limit	Qual	Result	Unit	Dilution Factor	Date Analyzed	Method	Batch/ Analyst
Volatile Organic Compounds by EPA 624								
Acrolein	0.00500		ND	mg/L	1	4/12/17	EPA 624	17D0088/HK
Acrylonitrile	0.00200		ND	mg/L	1	4/12/17	EPA 624	17D0088/HK
Benzene	0.000500		**0.00320**	mg/L	1	4/12/17	EPA 624	17D0088/HK
Bromodichloromethane	0.000500		ND	mg/L	1	4/12/17	EPA 624	17D0088/HK
Bromoform	0.000500		ND	mg/L	1	4/12/17	EPA 624	17D0088/HK
Bromomethane	0.000500		ND	mg/L	1	4/12/17	EPA 624	17D0088/HK
Carbon Tetrachloride	0.000500		ND	mg/L	1	4/12/17	EPA 624	17D0088/HK
Chlorobenzene	0.000500		ND	mg/L	1	4/12/17	EPA 624	17D0088/HK
Chloroethane	0.000500		ND	mg/L	1	4/12/17	EPA 624	17D0088/HK
Chloroform	0.000500		ND	mg/L	1	4/12/17	EPA 624	17D0088/HK
Chloromethane	0.000500		ND	mg/L	1	4/12/17	EPA 624	17D0088/HK
Dibromochloromethane	0.000500		ND	mg/L	1	4/12/17	EPA 624	17D0088/HK
1,2-Dichlorobenzene	0.000500		ND	mg/L	1	4/12/17	EPA 624	17D0088/HK
1,3-Dichlorobenzene	0.000500		ND	mg/L	1	4/12/17	EPA 624	17D0088/HK
1,4-Dichlorobenzene	0.000500		ND	mg/L	1	4/12/17	EPA 624	17D0088/HK
1,1-Dichloroethane	0.000500		ND	mg/L	1	4/12/17	EPA 624	17D0088/HK
1,2-Dichloroethane	0.000500		ND	mg/L	1	4/12/17	EPA 624	17D0088/HK
1,1-Dichloroethene	0.000500		ND	mg/L	1	4/12/17	EPA 624	17D0088/HK
trans-1,2-Dichloroethene	0.000500		ND	mg/L	1	4/12/17	EPA 624	17D0088/HK
1,2-Dichloropropane	0.000500		ND	mg/L	1	4/12/17	EPA 624	17D0088/HK
cis-1,3-Dichloropropene	0.000500		ND	mg/L	1	4/12/17	EPA 624	17D0088/HK
trans-1,3-Dichloropropene	0.000500		ND	mg/L	1	4/12/17	EPA 624	17D0088/HK
2-Chloroethylvinyl ether	0.000500		ND	mg/L	1	4/12/17	EPA 624	17D0088/HK
Ethylbenzene	0.000500		ND	mg/L	1	4/12/17	EPA 624	17D0088/HK
Methylene Chloride	0.000500		ND	mg/L	1	4/12/17	EPA 624	17D0088/HK
1,1,2,2-Tetrachloroethane	0.000500		ND	mg/L	1	4/12/17	EPA 624	17D0088/HK
Tetrachloroethene	0.000500		ND	mg/L	1	4/12/17	EPA 624	17D0088/HK
Toluene	0.000500		ND	mg/L	1	4/12/17	EPA 624	17D0088/HK
1,1,1-Trichloroethane	0.000500		ND	mg/L	1	4/12/17	EPA 624	17D0088/HK
1,1,2-Trichloroethane	0.000500		ND	mg/L	1	4/12/17	EPA 624	17D0088/HK
Trichloroethene	0.000500		ND	mg/L	1	4/12/17	EPA 624	17D0088/HK

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WORK ORDER: 1704040 **COC Number:**

Valero
3400 East Second St
Benicia, CA 94510

Project: Delta Benzene
PO Number: 4503805062-10
Project Manager: Marisol Pacheco-Mendez
Project #:[none]

Sample Results
(Continued)

Sample Date: April 6, 2017 19:30

Sample: EOL 10 (Continued)
1704040-02 (Aqueous) **Sample Type:** Grab **Prep Date:** April 12, 2017 12:00

Analyte	Reporting Limit	Qual	Result	Unit	Dilution Factor	Date Analyzed	Method	Batch/ Analyst
Volatile Organic Compounds by EPA 624 (Continued)								
Trichlorofluoromethane	0.000500		ND	mg/L	1	4/12/17	EPA 624	17D0088/HK
Vinyl Chloride	0.000500		ND	mg/L	1	4/12/17	EPA 624	17D0088/HK
Methyl-tert-butyl ether (MTBE)	0.000500		ND	mg/L	1	4/12/17	EPA 624	17D0088/HK
Ethylenedibromide, EDB	0.000500		ND	mg/L	1	4/12/17	EPA 624	17D0088/HK
Surrogate: Dibromofluoromethane	70-130		115%			4/12/17	EPA 624	17D0088/HK
Surrogate: Toluene-d8	70-130		115%			4/12/17	EPA 624	17D0088/HK
Surrogate: 4-Bromofluorobenzene	70-130		118%			4/12/17	EPA 624	17D0088/HK

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WORK ORDER: 1704040 **COC Number:**

Valero
3400 East Second St
Benicia, CA 94510

Project: Delta Benzene
PO Number: 4503805062-10
Project Manager: Marisol Pacheco-Mendez
Project #:[none]

Sample Results
(Continued)

Sample Date: April 7, 2017 12:00

Sample: EOL 10
1704040-03 (Aqueous) **Sample Type:** Grab **Prep Date:** April 12, 2017 12:00

Analyte	Reporting Limit	Qual	Result	Unit	Dilution Factor	Date Analyzed	Method	Batch/ Analyst
Volatile Organic Compounds by EPA 624								
Acrolein	0.00500		ND	mg/L	1	4/12/17	EPA 624	17D0088/HK
Acrylonitrile	0.00200		ND	mg/L	1	4/12/17	EPA 624	17D0088/HK
Benzene	0.000500		ND	mg/L	1	4/12/17	EPA 624	17D0088/HK
Bromodichloromethane	0.000500		ND	mg/L	1	4/12/17	EPA 624	17D0088/HK
Bromoform	0.000500		ND	mg/L	1	4/12/17	EPA 624	17D0088/HK
Bromomethane	0.000500		ND	mg/L	1	4/12/17	EPA 624	17D0088/HK
Carbon Tetrachloride	0.000500		ND	mg/L	1	4/12/17	EPA 624	17D0088/HK
Chlorobenzene	0.000500		ND	mg/L	1	4/12/17	EPA 624	17D0088/HK
Chloroethane	0.000500		ND	mg/L	1	4/12/17	EPA 624	17D0088/HK
Chloroform	0.000500		ND	mg/L	1	4/12/17	EPA 624	17D0088/HK
Chloromethane	0.000500		ND	mg/L	1	4/12/17	EPA 624	17D0088/HK
Dibromochloromethane	0.000500		ND	mg/L	1	4/12/17	EPA 624	17D0088/HK
1,2-Dichlorobenzene	0.000500		ND	mg/L	1	4/12/17	EPA 624	17D0088/HK
1,3-Dichlorobenzene	0.000500		ND	mg/L	1	4/12/17	EPA 624	17D0088/HK
1,4-Dichlorobenzene	0.000500		ND	mg/L	1	4/12/17	EPA 624	17D0088/HK
1,1-Dichloroethane	0.000500		ND	mg/L	1	4/12/17	EPA 624	17D0088/HK
1,2-Dichloroethane	0.000500		ND	mg/L	1	4/12/17	EPA 624	17D0088/HK
1,1-Dichloroethene	0.000500		ND	mg/L	1	4/12/17	EPA 624	17D0088/HK
trans-1,2-Dichloroethene	0.000500		ND	mg/L	1	4/12/17	EPA 624	17D0088/HK
1,2-Dichloropropane	0.000500		ND	mg/L	1	4/12/17	EPA 624	17D0088/HK
cis-1,3-Dichloropropene	0.000500		ND	mg/L	1	4/12/17	EPA 624	17D0088/HK
trans-1,3-Dichloropropene	0.000500		ND	mg/L	1	4/12/17	EPA 624	17D0088/HK
2-Chloroethylvinyl ether	0.000500		ND	mg/L	1	4/12/17	EPA 624	17D0088/HK
Ethylbenzene	0.000500		ND	mg/L	1	4/12/17	EPA 624	17D0088/HK
Methylene Chloride	0.000500		ND	mg/L	1	4/12/17	EPA 624	17D0088/HK
1,1,2,2-Tetrachloroethane	0.000500		ND	mg/L	1	4/12/17	EPA 624	17D0088/HK
Tetrachloroethene	0.000500		ND	mg/L	1	4/12/17	EPA 624	17D0088/HK
Toluene	0.000500		ND	mg/L	1	4/12/17	EPA 624	17D0088/HK
1,1,1-Trichloroethane	0.000500		ND	mg/L	1	4/12/17	EPA 624	17D0088/HK
1,1,2-Trichloroethane	0.000500		ND	mg/L	1	4/12/17	EPA 624	17D0088/HK
Trichloroethene	0.000500		ND	mg/L	1	4/12/17	EPA 624	17D0088/HK

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WORK ORDER: 1704040 **COC Number:**

Valero
3400 East Second St
Benicia, CA 94510

Project: Delta Benzene
PO Number: 4503805062-10
Project Manager: Marisol Pacheco-Mendez
Project #:[none]

Sample Results
(Continued)

Sample Date: April 7, 2017 12:00

Sample: EOL 10 (Continued)
1704040-03 (Aqueous) **Sample Type:** Grab **Prep Date:** April 12, 2017 12:00

Analyte	Reporting Limit	Qual	Result	Unit	Dilution Factor	Date Analyzed	Method	Batch/ Analyst
Volatile Organic Compounds by EPA 624 (Continued)								
Trichlorofluoromethane	0.000500		ND	mg/L	1	4/12/17	EPA 624	17D0088/HK
Vinyl Chloride	0.000500		ND	mg/L	1	4/12/17	EPA 624	17D0088/HK
Methyl-tert-butyl ether (MTBE)	0.000500		ND	mg/L	1	4/12/17	EPA 624	17D0088/HK
Ethylenedibromide, EDB	0.000500		ND	mg/L	1	4/12/17	EPA 624	17D0088/HK
Surrogate: Dibromofluoromethane	70-130		155%			4/12/17	EPA 624	17D0088/HK
Surrogate: Toluene-d8	70-130		120%			4/12/17	EPA 624	17D0088/HK
Surrogate: 4-Bromofluorobenzene	70-130		115%			4/12/17	EPA 624	17D0088/HK

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WORK ORDER: 1704040 **COC Number:**

Valero
3400 East Second St
Benicia, CA 94510

Project: Delta Benzene
PO Number: 4503805062-10
Project Manager: Marisol Pacheco-Mendez
Project #:[none]

Sample Results
(Continued)

Sample Date: April 8, 2017 12:00

Sample: EOL 10
1704040-04 (Aqueous) **Sample Type:** Grab **Prep Date:** April 12, 2017 12:00

Analyte	Reporting Limit	Qual	Result	Unit	Dilution Factor	Date Analyzed	Method	Batch/ Analyst
Volatile Organic Compounds by EPA 624								
Acrolein	0.00500		ND	mg/L	1	4/12/17	EPA 624	17D0088/HK
Acrylonitrile	0.00200		ND	mg/L	1	4/12/17	EPA 624	17D0088/HK
Benzene	0.000500		ND	mg/L	1	4/12/17	EPA 624	17D0088/HK
Bromodichloromethane	0.000500		ND	mg/L	1	4/12/17	EPA 624	17D0088/HK
Bromoform	0.000500		ND	mg/L	1	4/12/17	EPA 624	17D0088/HK
Bromomethane	0.000500		ND	mg/L	1	4/12/17	EPA 624	17D0088/HK
Carbon Tetrachloride	0.000500		ND	mg/L	1	4/12/17	EPA 624	17D0088/HK
Chlorobenzene	0.000500		ND	mg/L	1	4/12/17	EPA 624	17D0088/HK
Chloroethane	0.000500		ND	mg/L	1	4/12/17	EPA 624	17D0088/HK
Chloroform	0.000500		ND	mg/L	1	4/12/17	EPA 624	17D0088/HK
Chloromethane	0.000500		ND	mg/L	1	4/12/17	EPA 624	17D0088/HK
Dibromochloromethane	0.000500		ND	mg/L	1	4/12/17	EPA 624	17D0088/HK
1,2-Dichlorobenzene	0.000500		ND	mg/L	1	4/12/17	EPA 624	17D0088/HK
1,3-Dichlorobenzene	0.000500		ND	mg/L	1	4/12/17	EPA 624	17D0088/HK
1,4-Dichlorobenzene	0.000500		ND	mg/L	1	4/12/17	EPA 624	17D0088/HK
1,1-Dichloroethane	0.000500		ND	mg/L	1	4/12/17	EPA 624	17D0088/HK
1,2-Dichloroethane	0.000500		ND	mg/L	1	4/12/17	EPA 624	17D0088/HK
1,1-Dichloroethene	0.000500		ND	mg/L	1	4/12/17	EPA 624	17D0088/HK
trans-1,2-Dichloroethene	0.000500		ND	mg/L	1	4/12/17	EPA 624	17D0088/HK
1,2-Dichloropropane	0.000500		ND	mg/L	1	4/12/17	EPA 624	17D0088/HK
cis-1,3-Dichloropropene	0.000500		ND	mg/L	1	4/12/17	EPA 624	17D0088/HK
trans-1,3-Dichloropropene	0.000500		ND	mg/L	1	4/12/17	EPA 624	17D0088/HK
2-Chloroethylvinyl ether	0.000500		ND	mg/L	1	4/12/17	EPA 624	17D0088/HK
Ethylbenzene	0.000500		ND	mg/L	1	4/12/17	EPA 624	17D0088/HK
Methylene Chloride	0.000500		ND	mg/L	1	4/12/17	EPA 624	17D0088/HK
1,1,2,2-Tetrachloroethane	0.000500		ND	mg/L	1	4/12/17	EPA 624	17D0088/HK
Tetrachloroethene	0.000500		ND	mg/L	1	4/12/17	EPA 624	17D0088/HK
Toluene	0.000500		ND	mg/L	1	4/12/17	EPA 624	17D0088/HK
1,1,1-Trichloroethane	0.000500		ND	mg/L	1	4/12/17	EPA 624	17D0088/HK
1,1,2-Trichloroethane	0.000500		ND	mg/L	1	4/12/17	EPA 624	17D0088/HK
Trichloroethene	0.000500		ND	mg/L	1	4/12/17	EPA 624	17D0088/HK

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WORK ORDER: 1704040 **COC Number:**

Valero
3400 East Second St
Benicia, CA 94510

Project: Delta Benzene
PO Number: 4503805062-10
Project Manager: Marisol Pacheco-Mendez
Project #:[none]

Sample Results
(Continued)

Sample Date: April 8, 2017 12:00

Sample: EOL 10 (Continued)
1704040-04 (Aqueous) **Sample Type:** Grab **Prep Date:** April 12, 2017 12:00

Analyte	Reporting Limit	Qual	Result	Unit	Dilution Factor	Date Analyzed	Method	Batch/ Analyst
Volatile Organic Compounds by EPA 624 (Continued)								
Trichlorofluoromethane	0.000500		ND	mg/L	1	4/12/17	EPA 624	17D0088/HK
Vinyl Chloride	0.000500		ND	mg/L	1	4/12/17	EPA 624	17D0088/HK
Methyl-tert-butyl ether (MTBE)	0.000500		ND	mg/L	1	4/12/17	EPA 624	17D0088/HK
Ethylenedibromide, EDB	0.000500		ND	mg/L	1	4/12/17	EPA 624	17D0088/HK
Surrogate: Dibromofluoromethane	70-130		115%			4/12/17	EPA 624	17D0088/HK
Surrogate: Toluene-d8	70-130		120%			4/12/17	EPA 624	17D0088/HK
Surrogate: 4-Bromofluorobenzene	70-130		110%			4/12/17	EPA 624	17D0088/HK

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WORK ORDER: 1704040 **COC Number:**

Valero
3400 East Second St
Benicia, CA 94510

Project: Delta Benzene
PO Number: 4503805062-10
Project Manager: Marisol Pacheco-Mendez
Project #:[none]

Quality Control

Semi-Volatile Organic Compounds by EPA 625

Prepared & Analyzed: Apr-11-17

Analyte	Source Result	Result	Qual	Reporting Limit	Unit	Spike Level	% REC	%REC Limits	RPD	RPD Limit
Batch: 17D0082										**Analyst:** ZT
Blank (17D0082-BLK1)										
Dimethyl Phthalate		**ND**		0.00500	mg/L					
Acenaphthene		**ND**		0.00500	mg/L					
Acenaphthylene		**ND**		0.00500	mg/L					
Anthracene		**ND**		0.00500	mg/L					
Benzidine		**ND**		0.0200	mg/L					
Benzoic Acid		**ND**		0.0200	mg/L					
Benzo (a) anthracene		**ND**		0.00500	mg/L					
Benzo (b) fluoranthene		**ND**		0.00500	mg/L					
Benzo (k) fluoranthene		**ND**		0.00500	mg/L					
Benzo (g,h,i) perylene		**ND**		0.00500	mg/L					
Benzo (a) pyrene		**ND**		0.00500	mg/L					
Benzyl Alcohol		**ND**		0.00500	mg/L					
Bis (2-chloroethoxy) methane		**ND**		0.00500	mg/L					
Bis (2-chloroethyl) Ether		**ND**		0.00500	mg/L					
Bis (2-chloroisopropyl) Ether		**ND**		0.00500	mg/L					
Bis (2-ethylhexy) Phthalate		**ND**		0.00500	mg/L					
4-Bromophenyl Phenyl Ether		**ND**		0.00500	mg/L					
Butylbenzyl Phthalate		**ND**		0.00500	mg/L					
4-Chloroaniline		**ND**		0.00500	mg/L					
2-Chloronaphthalene		**ND**		0.00500	mg/L					
4-Chlorophenyl Phenyl Ether		**ND**		0.00500	mg/L					
Chrysene		**ND**		0.00500	mg/L					
Dibenzo (a,h) anthracene		**ND**		0.00500	mg/L					
Dibenzofuran		**ND**		0.00500	mg/L					
Di-n-butyl Phthalate		**ND**		0.00500	mg/L					
1,2-Dichlorobenzene		**ND**		0.00500	mg/L					
1,3-Dichlorobenzene		**ND**		0.00500	mg/L					
1,4-Dichlorobenzene		**ND**		0.00500	mg/L					
3,3'-Dichlorobenzidine		**ND**		0.0100	mg/L					
Diethyl Phthalate		**ND**		0.00500	mg/L					
2,4-Dinitrotoluene		**ND**		0.00500	mg/L					
2,6-Dinitrotoluene		**ND**		0.00500	mg/L					
Di-n-octyl Phthalate		**ND**		0.00500	mg/L					
Fluoranthene		**ND**		0.00500	mg/L					

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685 Stone Road #11 & 12 • Benicia, CA 94510 • (707) 747-6081 • (800) 747-6082 • Fax (707) 747-6082

WORK ORDER: 1704040 **COC Number:**

Valero
3400 East Second St
Benicia, CA 94510

Project: Delta Benzene
PO Number: 4503805062-10
Project Manager: Marisol Pacheco-Mendez
Project #:[none]

Quality Control
(Continued)

Semi-Volatile Organic Compounds by EPA 625 (Continued) **Prepared & Analyzed: Apr-11-17**

Analyte	Source Result	Result	Qual	Reporting Limit	Unit	Spike Level	% REC	%REC Limits	RPD	RPD Limit
Batch: 17D0082 (Continued)										**Analyst:** ZT
Blank (17D0082-BLK1)										
Fluorene		**ND**		0.00500	mg/L					
Hexachlorobenzene		**ND**		0.00500	mg/L					
Hexachlorobutadiene		**ND**		0.00500	mg/L					
Hexachlorocyclopentadiene		**ND**		0.00500	mg/L					
Hexachloroethane		**ND**		0.00500	mg/L					
Indeno (1,2,3-cd) pyrene		**ND**		0.00500	mg/L					
Isophorone		**ND**		0.00500	mg/L					
2-Methylnaphthalene		**ND**		0.00500	mg/L					
Naphthalene		**ND**		0.00500	mg/L					
2-Nitroaniline		**ND**		0.00500	mg/L					
3-Nitroaniline		**ND**		0.00500	mg/L					
4-Nitroaniline		**ND**		0.00500	mg/L					
Nitrobenzene		**ND**		0.00500	mg/L					
N-Nitrosodiphenylamine		**ND**		0.00500	mg/L					
N-Nitrosodi-n-propylamine		**ND**		0.00500	mg/L					
Phenanthrene		**ND**		0.00500	mg/L					
Pyrene		**ND**		0.00500	mg/L					
1,2,4-Trichlorobenzene		**ND**		0.00500	mg/L					
4-Chloro-3-methylphenol		**ND**		0.00500	mg/L					
2-Chlorophenol		**ND**		0.00500	mg/L					
2,4-Dichlorophenol		**ND**		0.00500	mg/L					
2,4-Dimethylphenol		**ND**		0.00500	mg/L					
4,6-Dinitro-2-methylphenol		**ND**		0.00500	mg/L					
2,4-Dinitrophenol		**ND**		0.0200	mg/L					
2-Methylphenol		**ND**		0.00500	mg/L					
4-Methylphenol		**ND**		0.00500	mg/L					
2-Nitrophenol		**ND**		0.00500	mg/L					
4-Nitrophenol		**ND**		0.00500	mg/L					
Pentachlorophenol		**ND**		0.00500	mg/L					
Phenol		**ND**		0.00500	mg/L					
2,4,5-Trichlorophenol		**ND**		0.00500	mg/L					
2,4,6-Trichlorophenol		**ND**		0.00500	mg/L					
1,2-Diphenylhydrazine		**ND**		0.00500	mg/L					
N-Nitrosodimethylamine		**ND**		0.00500	mg/L					

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WORK ORDER: 1704040 **COC Number:**

Valero
3400 East Second St
Benicia, CA 94510

Project: Delta Benzene
PO Number: 4503805062-10
Project Manager: Marisol Pacheco-Mendez
Project #:[none]

Quality Control
(Continued)

Semi-Volatile Organic Compounds by EPA 625 (Continued)

Prepared & Analyzed: Apr-11-17

Analyte	Source Result	Result	Qual	Reporting Limit	Unit	Spike Level	% REC	%REC Limits	RPD	RPD Limit
Batch: 17D0082 (Continued)										**Analyst:** ZT
Blank (17D0082-BLK1)										
Surrogate: 2-Fluorophenol		0.138			mg/L	0.200	69.0	23-91		
Surrogate: Phenol-d6		0.112			mg/L	0.200	56.0	5-93		
Surrogate: Nitrobenzene-d5		0.0689			mg/L	0.100	68.9	34-141		
Surrogate: 2-Fluorobiphenyl		0.0569			mg/L	0.100	56.9	32-144		
Surrogate: 2,4,6-Tribromophenol		0.191			mg/L	0.200	95.5	22-154		
Surrogate: p-Terphenyl-d14		0.0788			mg/L	0.100	78.8	29-157		
LCS (17D0082-BS1)										
Acenaphthene		**0.0388**		0.00500	mg/L	0.0500	77.6	31-123		
1,4-Dichlorobenzene		**0.0302**		0.00500	mg/L	0.0500	60.4	27-113		
2,4-Dinitrotoluene		**0.0345**		0.00500	mg/L	0.0500	69.0	34-128		
N-Nitrosodi-n-propylamine		**0.0351**		0.00500	mg/L	0.0500	70.2	30-139		
Pyrene		**0.0302**		0.00500	mg/L	0.0500	60.4	27-136		
1,2,4-Trichlorobenzene		**0.0331**		0.00500	mg/L	0.0500	66.2	29-105		
4-Chloro-3-methylphenol		**0.0400**		0.00500	mg/L	0.0500	80.0	28-125		
2-Chlorophenol		**0.0289**		0.00500	mg/L	0.0500	57.8	29-104		
4-Nitrophenol		**0.0232**		0.00500	mg/L	0.0500	46.4	0-112		
Pentachlorophenol		**0.0369**		0.00500	mg/L	0.0500	73.8	0-165		
Phenol		**0.0189**		0.00500	mg/L	0.0500	37.8	0.4-70		
Surrogate: 2-Fluorophenol		0.124			mg/L	0.200	62.0	23-92		
Surrogate: Phenol-d6		0.0982			mg/L	0.200	49.1	5-93		
Surrogate: Nitrobenzene-d5		0.0693			mg/L	0.100	69.3	34-141		
Surrogate: 2-Fluorobiphenyl		0.0708			mg/L	0.100	70.8	32-144		
Surrogate: 2,4,6-Tribromophenol		0.187			mg/L	0.200	93.5	22-154		
Surrogate: p-Terphenyl-d14		0.0812			mg/L	0.100	81.2	29-157		

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WORK ORDER: 1704040 **COC Number:**

Valero
3400 East Second St
Benicia, CA 94510

Project: Delta Benzene
PO Number: 4503805062-10
Project Manager: Marisol Pacheco-Mendez
Project #:[none]

Quality Control
(Continued)

Volatile Organic Compounds by EPA 624

Prepared & Analyzed: Apr-12-17

Batch: 17D0088 **Analyst:** HK

Blank (17D0088-BLK1)

Analyte	Source Result	Result	Qual	Reporting Limit	Unit	Spike Level	% REC	%REC Limits	RPD	RPD Limit
Acrolein		ND		0.00500	mg/L					
Acrylonitrile		ND		0.00200	mg/L					
Benzene		ND		0.000500	mg/L					
Bromodichloromethane		ND		0.000500	mg/L					
Bromoform		ND		0.000500	mg/L					
Bromomethane		ND		0.000500	mg/L					
Carbon Tetrachloride		ND		0.000500	mg/L					
Chlorobenzene		ND		0.000500	mg/L					
Chloroethane		ND		0.000500	mg/L					
Chloroform		ND		0.000500	mg/L					
Chloromethane		ND		0.000500	mg/L					
Dibromochloromethane		ND		0.000500	mg/L					
1,2-Dichlorobenzene		ND		0.000500	mg/L					
1,3-Dichlorobenzene		ND		0.000500	mg/L					
1,4-Dichlorobenzene		ND		0.000500	mg/L					
1,1-Dichloroethane		ND		0.000500	mg/L					
1,2-Dichloroethane		ND		0.000500	mg/L					
1,1-Dichloroethene		ND		0.000500	mg/L					
trans-1,2-Dichloroethene		ND		0.000500	mg/L					
1,2-Dichloropropane		ND		0.000500	mg/L					
cis-1,3-Dichloropropene		ND		0.000500	mg/L					
trans-1,3-Dichloropropene		ND		0.000500	mg/L					
2-Chloroethylvinyl ether		ND		0.000500	mg/L					
Ethylbenzene		ND		0.000500	mg/L					
Methylene Chloride		ND		0.000500	mg/L					
1,1,2,2-Tetrachloroethane		ND		0.000500	mg/L					
Tetrachloroethene		ND		0.000500	mg/L					
Toluene		ND		0.000500	mg/L					
1,1,1-Trichloroethane		ND		0.000500	mg/L					
1,1,2-Trichloroethane		ND		0.000500	mg/L					
Trichloroethene		ND		0.000500	mg/L					
Trichlorofluoromethane		ND		0.000500	mg/L					
Vinyl Chloride		ND		0.000500	mg/L					
Methyl-tert-butyl ether (MTBE)		ND		0.000500	mg/L					

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WORK ORDER: 1704040 **COC Number:**

Valero
3400 East Second St
Benicia, CA 94510

Project: Delta Benzene
PO Number: 4503805062-10
Project Manager: Marisol Pacheco-Mendez
Project #:[none]

Quality Control
(Continued)

Volatile Organic Compounds by EPA 624 (Continued)

Prepared & Analyzed: Apr-12-17

Analyte	Source Result	Result	Qual	Reporting Limit	Unit	Spike Level	% REC	%REC Limits	RPD	RPD Limit
Batch: 17D0088 (Continued)										**Analyst:** HK
Blank (17D0088-BLK1)										
Ethylenedibromide, EDB		**ND**		0.000500	mg/L					
Surrogate: Dibromofluoromethane		0.0220			mg/L	0.0200	110	70-130		
Surrogate: Toluene-d8		0.0230			mg/L	0.0200	115	70-130		
Surrogate: 4-Bromofluorobenzene		0.0210			mg/L	0.0200	105	70-130		
LCS (17D0088-BS1)										
Benzene		**0.0160**		0.000500	mg/L	0.0200	80.0	80-120		
Chlorobenzene		**0.0210**		0.000500	mg/L	0.0200	105	80-120		
1,1-Dichloroethene		**0.0163**		0.000500	mg/L	0.0200	81.5	80-120		
Trichloroethene		**0.0187**		0.000500	mg/L	0.0200	93.6	80-120		
Methyl-tert-butyl ether (MTBE)		**0.0202**		0.000500	mg/L	0.0200	101	80-120		
Surrogate: Dibromofluoromethane		0.0250			mg/L	0.0200	125	70-130		
Surrogate: Toluene-d8		0.0230			mg/L	0.0200	115	70-130		
Surrogate: 4-Bromofluorobenzene		0.0230			mg/L	0.0200	115	70-130		

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WORK ORDER: 1704040 **COC Number:**

Valero
3400 East Second St
Benicia, CA 94510

Project: Delta Benzene
PO Number: 4503805062-10
Project Manager: Marisol Pacheco-Mendez
Project #:[none]

Notes and Definitions

Item	Definition
J	The result is less than the reporting limit, but greater than the MDL.
Dry	Sample results reported on a dry weight basis.
ND	Analyte NOT DETECTED at or above the reporting limit.
%REC	Percent Recovery
DF	Dilution Factor
LCS	Lab Control Sample
LCSD	Lab Control Sample Duplicate
MDL	Minimum Detection Limit
MRL	Minimum Reporting Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
RPD	Relative Percent Difference
Source	Sample that was matrix spiked or duplicated
J	Results > MDL but < MRL

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ED_001593_00014889

Valero Benicia Refinery
Bioassay Laboratory

Sample Destination: Delta

Date: 10-Apr-17

Report Results To: Marisol.Pacheco-Mendez@Valero.com

Phone: 745-7573

David.Johnston@Valero.com

PO# Delta Benzene - 4503805062-10

1704040

Sample Notes or Special Instructions

#	Sample ID	Turn Around	Sample Size	# of Samples	Date	Time	GRAB COMP	Preserve	Temp.	Total Se 200.7	Oil & Grease EPA 1664	NH3 as N SM 4500 -NH3	CA 17 Metals EPA 200.7	Chronic *Mysidopsis bahia*	Benzene 8020	EOL Benzene (EPA 8260)	TOC - SM5310		EPA 624	EPA 625			
										Testing Requested													
1	EOL 10	Routine	1L	2	6-Apr	7:30 PM	G	None	4.0											X			
2	EOL 10	Routine	VOA	2	6-Apr	7:30 PM	G	HCL	4.0										X				
3	EOL 10	Routine	VOA	2	7-Apr	12:00 AM	G	HCL	4.0										X				
4	EOL 10	Routine	VOA	2	8-Apr	12:00 AM	G	HCL	4.0										X				
5																							
6																							
7																							
8																							
9																							
10																							

Samples Prepared By: [signature] 4-10-17 1330 Date/Time D. Johnson Print Name

Relinquished By: [signature] 4-10-17 1333 Date/Time Received By: Prabhjot Dhillon

T=7.9°C

EOL 10 4-6-17

To: Lin, Sharon[Lin.Sharon@epa.gov]
Cc: Cuffel, Donald[Don.Cuffel@valero.com]; Bourbon, Elizabeth[Elizabeth.Bourbon@valero.com]; Bluntzer, Megan[Megan.Bluntzer@valero.com]; Pacheco-Mendez, Marisol[Marisol.Pacheco-Mendez@valero.com]
From: Ronan, Kimberly A
Sent: Sat 5/13/2017 1:19:15 AM
Subject: Valero Benicia Refinery-EOL-10 data from 5/6/17 & 5/11-12/17
R1705027.pdf
R1705053.pdf

Hello Sharon,

Pursuant to item 63 of the Consent Agreement and Final Order negotiated between EPA and Valero (RCRA EPA ID No. CAD063001770, TRI ID No. 94510XXNCS3400E), please see attached for end of line (EOL) sampling point EOL-10 data collected on May 6, 2017 and May 11 and 12,2017. This data was received from the contractor laboratory on May 10, 2017 and May 12, respectively.

Please confirm receipt of this email.

Please contact me if you have any questions.

Regards,

Kimberly Ronan

Manager - Environmental Engineering

Valero Benicia Refinery

(707)745-7990