DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION

Interim Final 2/5/99

RCRA Corrective Action
Environmental Indicator (EI) RCRIS code (CA725)

Current Human Exposures Under Control

Facility Name: **Plaquemine Remediation Services, LLC**
Facility Address: **32655 Gracie Lane, Plaquemine, LA 70764**
Facility EPA ID #: **LAD 000 778 514-OP-1, AI #873**

1. Has **all** available relevant/significant information on known and reasonably suspected releases to soil, groundwater, surface water/sediments, and air, subject to RCRA Corrective Action (e.g., from Solid Waste Management Units (SWMU), Regulated Units (RU), and Areas of Concern (AOC)), been **considered** in this EI determination?

   _X_ If yes - check here and continue with #2 below.

   _____ If no - re-evaluate existing data, or

   _____ if data are not available skip to #6 and enter "IN" (more information needed) status code.

BACKGROUND

Definition of Environmental Indicators (for the RCRA Corrective Action)

Environmental Indicators (EI) are measures being used by the RCRA Corrective Action program to go beyond programmatic activity measures (e.g., reports received and approved, etc.) to track changes in the quality of the environment. The two EI developed to-date indicate the quality of the environment in relation to current human exposures to contamination and the migration of contaminated groundwater. An EI for non-human (ecological) receptors is intended to be developed in the future.

Definition of "Current Human Exposures Under Control" EI

A positive "Current Human Exposures Under Control" EI determination ("YE" status code) indicates that there are no "unacceptable" human exposures to "contamination" (i.e., contaminants in concentrations in excess of appropriate risk-based levels) that can be reasonably expected under current land- and groundwater-use conditions (for all "contamination" subject to RCRA corrective action at or from the identified facility (i.e., site-wide)).

Relationship of EI to Final Remedies

While Final remedies remain the long-term objective of the RCRA Corrective Action program the EI are near-term objectives which are currently being used as Program measures for the Government Performance and Results Act of 1993, GPRA). The "Current Human Exposures Under Control" EI are for reasonably expected human exposures under current land- and groundwater-use conditions ONLY, and do not consider potential future land- or groundwater-use conditions or ecological receptors. The RCRA Corrective Action program's overall mission to protect human health and the environment requires that Final remedies address these issues (i.e., potential future human exposure scenarios, future land and groundwater uses, and ecological receptors).

Duration / Applicability of EI Determinations

EI Determinations status codes should remain in RCRIS national database ONLY as long as they remain true (i.e., RCRIS status codes must be changed when the regulatory authorities become aware of contrary information).

2. Are groundwater, soil, surface water, sediments, or air **media** known or reasonably suspected to be **"contaminated"**[1] above appropriately protective risk-based "levels" (applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action (from SWMUs, RUs or AOCs)?

	Yes	No	?	Rationale* / Key Contaminants
Groundwater	X			Metals, Pesticides, VOCs, SVOCs, 4-chloro-2-methylaniline
Air (indoors)[2]		X		
Surface Soil (e.g., <2 ft)	X			VOCs, SVOCs, Pesticides
Surface Water		X		
Sediment		X		
Subsurf. Soil (e.g., >2 ft)	X			SVOCs, 4-chloro-2-methylaniline, 2-chloro-6-methyl-benzenamine, 3-chloro-2-methylbenzenamine
Air (outdoors)		X		

____ If no (for all media) - skip to #6, and enter "YE," status code after providing or citing appropriate "levels," and referencing sufficient supporting documentation demonstrating that these "levels" are not exceeded.

X If yes (for any media) - continue after identifying key contaminants in each "contaminated" medium, citing appropriate "levels" (or provide an explanation for the determination that the medium could pose an unacceptable risk), and referencing supporting documentation.

____ If unknown (for any media) - skip to #6 and enter "IN" status code.

*See below for Rationale

Rationale and Reference(s):

Facility Background: This site, which consisted of the Main Facility and Barge Slip, was a hazardous waste treatment, storage, and disposal facility. Operations involved the disposal of liquid waste into a deep well injection system. The RCRA/HSWA permit for the facility was issued on January 10, 1994. In October 2006, operations were concluded and Notification of Closure was submitted to the Louisiana Department of Environmental Quality (LDEQ) on June 24, 2008. The injection well was plugged and abandoned as of February 27, 2009, and closure activities for the facility were completed about March 18, 2009. The LDEQ issued the RCRA Closure Certification/Verification on July 2, 2009. Continued groundwater monitoring, site investigation and remediation will be conducted under a cooperative agreement (effective date of June 12, 2012) between Plaquemine Remediation Services, LLC (PRS) and LDEQ.

Site investigations have been conducted for six (6) Solid Waste Management Units (SWMUs), New Area of Concern (AOC), and Other Areas Identified by LDEQ. In the 1988 RCRA Facility Assessment (RFA), six SWMUs (SWMU #2 – Steel Pipeline from Barge Receiving/Unloading Area to Main Facility, SWMU #8 – Old Surface Impoundments at Barge Slip, SWMU #9 – Old Plastic Pipeline, SWMU #11 –Old Tanks

I, II, III, IV, V, VI, VII, VIII, IX and X at the Barge Slip, SWMU #12 – Old Truck Unloading Area, and SWMU #13 – Old Tanks in the Main Facility Nos. 12A, 12B, 13, 14, 15, 16, and 17) were recommended for investigation of environmental media impacts. Sampling at the SWMUs was performed according to the 1994 RCRA Facility Investigation (RFI) workplan, and the RFI report was submitted to LDEQ in November 2000. An addendum RFI workplan, dated March 2001, was implemented, and the Addendum RFI report (August 2003) for the SWMUs was submitted to LDEQ. Further investigation for the SWMUs and Other Areas Identified by LDEQ was conducted, and the Additional Soil and Groundwater RFI Report was submitted in April 2009. Some additional investigation of the soil and groundwater in the areas of SWMU #13 at the Process Area and SWMUs #8 and #11 at the Barge Terminal Area was recommended, and the completed investigation results have been submitted in the Additional Soil and Groundwater Investigation Report – Process Area and Barge Slip Area, dated October 2011. In November 2000, the LDEQ was notified of the New AOC, which is located in the northwest corner of the property containing the former Main Facility (process area) and consists of five former surface impoundments. The RFI report for the New AOC was submitted to LDEQ in June 2007 and a Corrective Measures Study is planned. Details of investigations and detected constituents can be found in the RFI reports and other documents listed in the reference section.

Groundwater: There is an existing groundwater monitoring system that is sampled semi-annually located in the Main Facility (refer to attachment for well locations and descriptions). No volatile organic compounds (except common lab contaminants, such as acetone) or semi-volatile organic compounds have been detected. Metals concentrations are generally below the method detection limits or within background concentrations. For the SWMUs and Other Areas Identified by LDEQ, groundwater contaminants including some VOCs, SVOCs, 2-methylnaphthalene, 3-methylphenol, 4-methylphenol, 4-chloro-2-methylaniline, and several metals, have been identified above the Louisiana Risk Evaluation and Corrective Action Program (RECAP), October 20, 2003 screening standards in some of the SWMUs and areas. Delineation of the extent of the contaminants was determined in the additional investigations and results indicate some levels exceeding the RECAP Management Option – 1 (MO-1) standards. Groundwater contamination in the New AOC has been delineated to MO-1 levels. The groundwater monitoring plan will be updated to include groundwater monitoring in the New AOC area. A Corrective Measures Study is planned to evaluate future remedial action and management of the area. The attachment includes tables showing concentrations of constituents of concern (COCs) for groundwater and figures of sample locations in the SWMUs, Other Areas, and New AOC.

Air (indoors): There are no indoor air impacts. There are no sources of contaminants or operations inside of structures at the facility. Shallow soil and groundwater in the vicinity of the former office and operations buildings (enclosed structures) are not contaminated with volatile organic compounds, so accumulations of contaminants indoors is not occurring.

Surface and Subsurface Soils: Samples collected in the SWMUs and Other Areas Identified by LDEQ indicated contaminants in some of the SWMUs and Other Areas. Soil concentrations greater than RECAP

MO-1 levels have been reported for the Process area (SWMU# 13) and Barge Slip area (SWMUs #8 and #11). Contaminated soils have been identified and delineated horizontally and vertically to RECAP MO-1 standards in the New AOC. Refer to the attachment for tables and figures describing soil data in the SWMUs, Other Areas, and New AOC.

Surface Water: No impacts to surface water are believed to have occurred from the SWMUs, New AOC and Other Areas Identified by LDEQ.

Sediments: No impacts to sediments from the investigated areas are suspected.

Air (outdoors): Outdoor air impacts are not likely because the facility has ceased operations and all tanks and other structures have been dismantled and removed. The former injection well was plugged and abandoned as of February 27, 2009. The former surface impoundments (SWMU #8 and New AOC) were backfilled, closed and have a soil-vegetation cover.

References:

Cameron-Cole and Aquaterra, August 2003. *RCRA Facility Investigation (RFI) Addendum Sampling and Analysis Report,* Clean Harbors Plaquemine, LLC Facility.

Louisiana Department of Environmental Quality, June 2012. *Cooperative Agreement for Site Investigation and Remediation Between the LDEQ and Plaquemine Remediation Services,* LLC, *AI# 873*, Effective Date of June 12, 2012.

Louisiana Department of Environmental Quality, October 20, 2003. *Risk Evaluation/Corrective Action Program.*

Michael Pisani & Associates, Inc., June 5, 2007. *RCRA Facility Investigation Report for New AOC, Volume 1,* Clean Harbors Plaquemine, LLC Facility.

Safety-Kleen Consulting and Aquaterra Engineering, November 2000. *RCRA Facility Investigation (RFI) Report,* Safety-Kleen (Plaquemine), Inc.

Shaw Environmental & Infrastructure, Inc., October 11, 2011. *RCRA Facility Investigation - Additional Soil and Groundwater Investigation Report – Process Area and Barge Slip Area,* Plaquemine Remediation Services, LLC.

Shaw Environmental & Infrastructure, Inc., April 7, 2011. *Additional Soil and Groundwater Investigation,* Plaquemine Remediation Services, LLC.

Shaw Environmental & Infrastructure, Inc., April 2009. *RCRA Facility Investigation Additional Soil and Groundwater Investigation Report – Solid Waste Management Units,* Clean Harbors Plaquemine, LLC Facility.

Shaw Environmental & Infrastructure, Inc., June 5, 2007. *RCRA Facility Investigation Report for New AOC, Volume 2. Management Option 1: Risk Evaluation/Corrective Action Program Report,* Clean Harbors Plaquemine, LLC Facility.

Terracon Consultants, Inc. February 23, 2012. *2011 Annual Groundwater Report*, Plaquemine Remediation Services, LLC.

Footnotes:

[1] "Contamination" and "contaminated" describes media containing contaminants (in any form, NAPL and/or dissolved, vapors, or solids, that are subject to RCRA) in concentrations in excess of appropriately protective risk-based "levels" (for the media, that identify risks within the acceptable risk range).

[2] Recent evidence (from the Colorado Dept. of Public Health and Environment, and others) suggest that unacceptable indoor air concentrations are more common in structures above groundwater with volatile contaminants than previously believed. This is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration necessary to be reasonably certain that indoor air (in structures located above (and adjacent to) groundwater with volatile contaminants) does not present unacceptable risks.

3. Are there **complete pathways** between "contamination" and human receptors such that exposures can be reasonably expected under the current (land- and groundwater-use) conditions?

Summary Exposure Pathway Evaluation Table

Potential **Human Receptors** (Under Current Conditions)

"Contaminated" Media	Residents	Workers	Day-Care	Construction	Trespassers	Recreation	Food[3]
Groundwater	no	yes	no	yes	no	no	no
~~Air (indoors)~~	___	___	___	___	___	___	___
Soil (surface, e.g., <2 ft)	no	yes	no	yes	no	no	no
~~Surface Water~~	___	___	___	___	___	___	___
~~Sediment~~	___	___	___	___	___	___	___
Soil (subsurface e.g., >2 ft)	no	yes	no	yes	no	no	no
~~Air (outdoors)~~	___	___	___	___	___	___	___

Instructions for Summary Exposure Pathway Evaluation Table:

1. Strike-out specific Media including Human Receptors' spaces for Media which are not "contaminated") as identified in #2 above.

2. enter "yes" or "no" for potential "completeness" under each "Contaminated" Media -- Human Receptor combination (Pathway).

Note: In order to focus the evaluation to the most probable combinations some potential "Contaminated" Media - Human Receptor combinations (Pathways) do not have check spaces ("___"). While these combinations may not be probable in most situations they may be possible in some settings and should be added as necessary.

___ If no (pathways are not complete for any contaminated media-receptor combination) - skip to #6, and enter "YE" status code, after explaining and/or referencing condition(s) in-place, whether natural or man-made, preventing a complete exposure pathway from each contaminated medium (e.g., use optional Pathway Evaluation Work Sheet to analyze major pathways).

_X_ If yes (pathways are complete for any "Contaminated" Media - Human Receptor combination) - continue after providing supporting explanation.

___ If unknown (for any "Contaminated" Media - Human Receptor combination) - skip to #6 and enter "IN" status code

Rationale and Reference(s):

Residents: There are no residential areas within the facility site, and no offsite impacts to groundwater or soils providing pathways of exposure to nearby residents. The shallow groundwater is not used as drinking water in the area.

Workers: Site access is limited to facility workers, contractors, and authorized visitors. Because the site is inactive, the only workers are maintenance personnel and occasional environmental contractor or other contract workers. The workers pathway is considered to be complete for groundwater and surface and

subsurface soils.

Day-Care: The day-care pathway is incomplete because there are no day-care facilities within or near the site.

Construction: The construction workers pathway is complete for impacted media (groundwater and surface and subsurface soils).

Trespassers: The former main facility and barge slip area have security fencing which limits access into the areas. Therefore, the trespassers pathway is incomplete. A new fence surrounding the entire barge slip and impacted soil areas was recently installed in August 2012.

Recreation: The recreation pathway is considered incomplete. There are no recreational activities onsite and security fences keep trespassers from entering the site. Offsite contaminated media has not been identified.

Food: The food (indirect pathway/receptor) pathway is not complete. There are no agricultural or dairy activities on or near the site. Offsite contamination has not been detected.

References:

See Question #2 for list of references.

[3] Indirect Pathway/Receptor (e.g., vegetables, fruits, crops, meat and dairy products, fish, shellfish, etc.)

4. Can the **exposures** from any of the complete pathways identified in #3 be reasonably expected to be **"significant"**[4] (i.e., potentially "unacceptable" because exposures can be reasonably expected to be: 1) greater in magnitude (intensity, frequency and/or duration) than assumed in the derivation of the acceptable "levels" (used to identify the "contamination"); or 2) the combination of exposure magnitude (perhaps even though low) and contaminant concentrations (which may be substantially above the acceptable "levels") could result in greater than acceptable risks)?

__X__ If no (exposures can not be reasonably expected to be significant (i.e., potentially "unacceptable") for any complete exposure pathway) - skip to #6 and enter "YE" status code after explaining and/or referencing documentation justifying why the exposures (from each of the complete pathways) to "contamination" (identified in #3) are not expected to be "significant."

_____ If yes (exposures could be reasonably expected to be "significant" (i.e., potentially "unacceptable") for any complete exposure pathway) - continue after providing a description (of each potentially "unacceptable" exposure pathway) and explaining and/or referencing documentation justifying why the exposures (from each of the remaining complete pathways) to "contamination" (identified in #3) are not expected to be "significant."

_____ If unknown (for any complete pathway) - skip to #6 and enter "IN" status code

Rationale and Reference(s):

Workers and Construction: The contaminant concentrations in groundwater, surface soil and subsurface soil are above the acceptable levels in some areas of the facility and may result in exposures to workers, especially during excavation, construction, and environmental sampling activities. However, the potential exposures would not be significant because proper health and safety measures would be utilized. The facility would require safety measures, such as personal protection equipment (PPE), to limit significant exposures of contaminated media to workers at the facility. Health and Safety plans are commonly developed and followed for any environmental media sampling and/or remediation projects.

References:

See Question #2 for list of references.

[4] If there is any question on whether the identified exposures are "significant" (i.e., potentially "unacceptable") consult a human health Risk Assessment specialist with appropriate education, training and experience.

5. Can the "significant" **exposures** (identified in #4) be shown to be within **acceptable** limits?

_____ If yes (all "significant" exposures have been shown to be within acceptable limits) - continue and enter "YE" after summarizing and referencing documentation justifying why all "significant" exposures to "contamination" are within acceptable limits (e.g., a site-specific Human Health Risk Assessment).

_____ If no (there are current exposures that can be reasonably expected to be "unacceptable")- continue and enter "NO" status code after providing a description of each potentially "unacceptable" exposure.

_____ If unknown (for any potentially "unacceptable" exposure) - continue and enter "IN" status code

Rationale and Reference(s):_____

6. Check the appropriate RCRIS status codes for the Current Human Exposures Under Control EI event code (CA725), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (and attach appropriate supporting documentation as well as a map of the facility):

X YE - Yes, "Current Human Exposures Under Control" has been verified. Based on a review of the information contained in this EI Determination, "Current Human Exposures" are expected to be "Under Control" at the Plaquemine Remediation Services, LLC facility, EPA ID # LAD 000 778 514-OP-1, AI #873, located at 32655 Gracie Lane, Plaquemine, LA 70764 under current and reasonably expected conditions. This determination will be re-evaluated when the Agency/State becomes aware of significant changes at the facility.

___ NO - "Current Human Exposures" are NOT "Under Control."

___ IN - More information is needed to make a determination.

Completed by (signature) Celeste Bonnecaze Date 9/25/12

(print) Celeste Bonnecaze
Geologist 3

Supervisor (signature) [illegible] Date 9/25/12

(print) LEWIS DONLON
Geologist Supervisor
Louisiana Department of Environmental Quality

Locations where References may be found:

Clean Harbors Environmental Services, Inc.
13351 Scenic Highway
Baton Rouge, LA 70807

Louisiana Department of Environmental Quality
Public Records
602 N. Fifth Street, Baton Rouge, LA 70802
http://www.deq.louisiana.gov/portal/tabid/2231/Default.aspx/

Contact telephone and e-mail numbers

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(phone #) 225-219-3766
(e-mail) Celeste.Bonnecaze@la.gov

FINAL NOTE: THE HUMAN EXPOSURES EI IS A QUALITATIVE SCREENING OF EXPOSURES AND THE DETERMINATIONS WITHIN THIS DOCUMENT SHOULD NOT BE USED AS THE SOLE BASIS FOR RESTRICTING THE SCOPE OF MORE DETAILED (E.G., SITE-SPECIFIC) ASSESSMENTS OF RISK.

ATTACHMENT

available
upon request