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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: *Clean Harbors Colfax, LLC**
Facility Address: *3763 Highway 471 Colfax LA 71417*
Facility EPA ID #: **EPA ID # LAD 981 055 791, Agency Interest # 32096**

*** This Environmental Indicator form addresses the inactive unit referred to as the "Old Burn Area".**

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?

   Yes__ 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	___	*See Groundwater EI rationale*
Air (indoors)[2]	___	X	___	*No GW Plume beneath buildings*
Surface Soil (e.g., <2 ft	X	___	___	*Workplan to sample soil has been submitted*
Surface Water	___	X	___	*Run-off does not contact waste materials*
Sediment	___	X	___	*Not impacted as surface waters are not impacted*
Subsurf. Soil (e.g., >2 ft)	X	___	___	*Workplan to sample soil has been submitted*
Air (outdoors)	___	X	___	*No unacceptable human health risk was identified*

_____ 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.

Rationale and Reference(s): See rationale presented at the end of the EI form for references and documentation.

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~~	___	___	___	___			___
~~Air (indoors)~~	___	___	___				
Soil (surface, e.g., <2 ft)	No	Yes	No	Yes	Yes	No	No
~~Surface Water~~	___	___			___	___	___
~~Sediment~~	___	___			___	___	___
Soil (subsurface e.g., >2 ft)				Yes			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).

__√__ 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): Even the pathways marked complete have a low likelihood of occurrence. The Old Burn Area is located within a 700-acre site (Figure 1, attached) with the property boundaries clearly marked for no trespassing and fenced. All access gates to the area are locked except the main gate that is secured by a guard. Access to the facility by persons other than site workers, contractors, regulatory authorities, and authorized visitors is highly restricted. There are no residences on the 700 acres surrounding the Old Burn Area. Most of the property surrounding the area is timberland. Facility workers and contractors have access to the facility, however site activities are controlled and directed by operation procedures. Operations at Old Burn Area ceased in 1993. Closure of the area began in 1996 with the removal of the burn pads and magazines. Some soil excavation in the burn pad areas was also conducted. Samples of the soil and groundwater were also collected. No work activities have been conducted in this portion of the site since 1996, and the area of soil contamination is known and avoided.

[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): Facility workers and contractors have access to the facility, however site activities are controlled and largely dictated by operation procedures. Operations at the Old Burn Area ceased in 1993. Closure of the area began in 1996 with the removal of the burn pads and magazines. Some soil excavation in the former burn pad and magazine areas was also conducted. Samples of the soil and groundwater were also collected. No work activities have been conducted in this portion of the site since 1996, and the area of soil contamination is known and avoided. A RECAP workplan to further investigate the Old Burn Area is pending review and approval by the LDEQ. The results of this investigation will be used to determine if additional closure/remedial activities will be required. Facility workers and contractors will use protective equipment during the field investigation and any subsequent closure work in the Old Burn Area. Preliminary data indicates that remaining anthropogenic organic compounds detected on the Old Burn Area soils are at concentrations generally near or below likely risk based standards based on much broader site uses.

[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):

YE 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 *Clean Harbors Colfax, LLC* facility, EPA ID # *LAD 981 055 791, Agency Interest # 32096,* located at *3763 Highway 471 Colfax, LA 71417* 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) D. R. McQ Date 5-1-12
(print) DAVID R. McQUEEN
(title) GEOLOGIST

Supervisor (signature) Date 5-1-12
(print) CAREY T. DICHARRY, JR.
(title) GEOLOGIST SUPERVISOR
(EPA Region or State)

Locations where References may be found:

See attached documentation for references and sources of information used in the Old Burn Area EI Human exposure assessment. A vicinity and site maps showing the location of the Old Burn Area is attached.

Contact telephone and e-mail numbers

(name) - _____
(phone #) - _____
(e-mail) - _____

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.

Current Human Exposures Under Control – Old Burn Area
Discussion and References

The source of the information regarding environmental conditions at the inactive Old Burn Area at the Clean Harbors Colfax Facility can be found in workplans prepared in accordance with the Louisiana Department of Environmental Quality (LDEQ) Risk Evaluation /Corrective Action Program. An investigation workplan was submitted to LDEQ dated November 12, 1998. The workplan was a revision of a 1997 plan. LDEQ requested the revision in order to bring the workplan into compliance with the requirements of the newly established RECAP program. Additional revisions to the workplan were also provided as part of the RCRA Part I and Part II Permit Renewal Application (2003 and 2004).

As described in the workplan, the Old Burn Area consisted of ten (10) former burn pad areas and four (4) explosive material storage magazines. The approximate locations and layout are shown on attached Figures 1 through 4 taken from the workplan. Additional general Facility information is found in the 2007 Draft Renewal Hazardous Waste Operation Permit for Container Storage Magazines and Areas, Preparation Building, and Thermal Treatment (Open burning/open detonation and the RCRA Part I and Part II Permit Application prepared by EcoScience Resource Group, LLC, dated August 2003 and revised December 2004.

The determination that Human Exposure is Under Control is based in part on the fact that there is no documentation of contamination exceeding risk based action levels in the following media associated with releases subject to RCRA corrective action. Additionally, access to the site, including the Old Burn area by persons other than site workers is highly restricted and complete exposure pathways therefore unlikely. The property boundary is clearly marked and fenced. An extensive property buffer exists around the Old Burn Area. All access gates are locked except for the main gate that is secured by a guard. A discussion of each exposure media is provided below:

- Groundwater – Groundwater monitoring is not performed at the facility and is not required at this time. Contamination of groundwater has not been documented at the site. The RECAP workplan presents results from two grab groundwater samples that were collected from open boreholes at depths of 50 to 60 feet below land surface. A third borehole was advanced to 80 feet and did not encounter groundwater. The only detections from these samples that exceeded RECAP screening standards were for chromium, lead, and nickel. Because these detections were for total metals from an undeveloped borehole, these results are unlikely to represent true groundwater conditions. It is unlikely that metals could leach to groundwater from the surface soil through more than 50 feet of soil. The contaminants detected in soil are not volatile or very soluble, and they are readily adsorbed on soil materials; there are no vapor hazards. Groundwater is not used at the site.

- Air (indoors) - Indoor air is not a concern at the Old Burn Area. No buildings are occupied or used at the Old Burn Area site. Dust and particulates are minimal soil left undisturbed pending planned testing.

- Surface Soil (e.g., <2 ft) – A RECAP workplan has been submitted to further investigate surface soils at the Old Burn Area. Review and approval of this workplan by the LDEQ is pending. Metal results from previous soil sampling were determined to be questionable due to quality control issues. The results of previous surface soil sampling events during closure activities at the Old Burn Area are described in Section 5.2 and summarized on Tables 1 and 2 of the RECAP workplan (see copies attached). No VOCs were detected during the sampling events. Some extractable explosive compounds (HMX, RDX, & 1,3,5-Trinitrobenzene) were detected at several sample locations. None of the detections exceeded the soil screening levels calculated (Table 3, RECAP Workplan) for these three detected compounds (copy attached).

- Surface Water – There is no evidence that any surface water body is in contact with contaminants at the site.

- Sediment – Sediments at the site are not known to be impacted as surface water in contact with sediments ~~have~~ has not been shown to be impacted.

- Subsurface Soils (e.g., >2 ft) – A RECAP workplan has been submitted to investigate surface soils at the Old Burn Area. Review and approval of this workplan by the LDEQ is pending. Metal results from previous soil sampling were determined to be questionable due to quality control issues.

- Air (outdoors) – There are no current air emissions as the Old Burn Area is not an active site, and contaminated soil is left undisturbed pending workplan approval.

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DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION

Interim Final 2/5/99

RCRA Corrective Action
Environmental Indicator (EI) RCRIS code (CA750)

Migration of Contaminated Groundwater Under Control

Facility Name: *Clean Harbors Colfax, LLC**
Facility Address: *3763 Highway 471 Colfax LA 71417*
Facility EPA ID #: **EPA ID # LAD 981 055 791, Agency Interest # 32096**

*** This Environmental Indicator form addresses the inactive unit referred to as the "Old Burn Area".**

1.Has all available relevant/significant information on known and reasonably suspected releases to the groundwater media, 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 #8 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 "Migration of Contaminated Groundwater Under Control" EI

A positive "Migration of Contaminated Groundwater Under Control" EI determination ("YE" status code) indicates that the migration of "contaminated" groundwater has stabilized, and that monitoring will be conducted to confirm that contaminated groundwater remains within the original "area of contaminated groundwater" (for all groundwater "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 "Migration of Contaminated Groundwater Under Control" EI pertains ONLY to the physical migration (i.e., further spread) of contaminated ground water and contaminants within groundwater (e.g., non-aqueous phase liquids or NAPLs). Achieving this EI does not substitute for achieving other stabilization or final remedy requirements and expectations associated with sources of contamination and the need to restore, wherever practicable, contaminated groundwater to be suitable for its designated current and future uses.

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. Is **groundwater** known or reasonably suspected to be **"contaminated"**[1] above appropriately protective "levels" (i.e., applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action, anywhere at, or from, the facility?

_____ If yes - continue after identifying key contaminants, citing appropriate "levels," and referencing supporting documentation.

NO If no - skip to #8 and enter "YE" status code, after citing appropriate "levels," and referencing supporting documentation to demonstrate that groundwater is not "contaminated."

_____ If unknown - skip to #8 and enter "IN" status code.

Rationale and Reference(s): See rationale presented at the end of the EI form for references and documentation.

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 appropriate "levels" (appropriate for the protection of the groundwater resource and its beneficial uses).

3. Has the **migration** of contaminated groundwater **stabilized** (such that contaminated groundwater is expected to remain within "existing area of contaminated groundwater"[2] as defined by the monitoring locations designated at the time of this determination)?

_____ If yes - continue, after presenting or referencing the physical evidence (e.g., groundwater sampling/measurement/migration barrier data) and rationale why contaminated groundwater is expected to remain within the (horizontal or vertical) dimensions of the "existing area of groundwater contamination"[2]).

_____ If no (contaminated groundwater is observed or expected to migrate beyond the designated locations defining the "existing area of groundwater contamination"[2]) - skip to #8 and enter "NO" status code, after providing an explanation.

_____ If unknown - skip to #8 and enter "IN" status code.

Rationale and Reference(s):_____

[2] "existing area of contaminated groundwater" is an area (with horizontal and vertical dimensions) that has been verifiably demonstrated to contain all relevant groundwater contamination for this determination, and is defined by designated (monitoring) locations proximate to the outer perimeter of "contamination" that can and will be sampled/tested in the future to physically verify that all "contaminated" groundwater remains within this area, and that the further migration of "contaminated" groundwater is not occurring. Reasonable allowances in the proximity of the monitoring locations are permissible to incorporate formal remedy decisions (i.e., including public participation) allowing a limited area for natural attenuation.

4. Does "contaminated" groundwater **discharge** into **surface water** bodies?

_____ If yes - continue after identifying potentially affected surface water bodies.

_____ If no - skip to #7 (and enter a "YE" status code in #8, if #7 = yes) after providing an explanation and/or referencing documentation supporting that groundwater "contamination" does not enter surface water bodies.

_____ If unknown - skip to #8 and enter "IN" status code.

Rationale and Reference(s):

5. Is the **discharge** of "contaminated" groundwater into surface water likely to be **"insignificant"** (i.e., the maximum concentration[3] of each contaminant discharging into surface water is less than 10 times their appropriate groundwater "level," and there are no other conditions (e.g., the nature, and number, of discharging contaminants, or environmental setting), which significantly increase the potential for unacceptable impacts to surface water, sediments, or eco-systems at these concentrations)?

_____ If yes - skip to #7 (and enter "YE" status code in #8 if #7 = yes), after documenting: 1) the maximum known or reasonably suspected concentration[3] of key contaminants discharged above their groundwater "level," the value of the appropriate "level(s)," and if there is evidence that the concentrations are increasing; and 2) provide a statement of professional judgment/explanation (or reference documentation) supporting that the discharge of groundwater contaminants into the surface water is not anticipated to have unacceptable impacts to the receiving surface water, sediments, or eco-system.

_____ If no - (the discharge of "contaminated" groundwater into surface water is potentially significant) - continue after documenting: 1) the maximum known or reasonably suspected concentration[3] of each contaminant discharged above its groundwater "level," the value of the appropriate "level(s)," and if there is evidence that the concentrations are increasing; and 2) for any contaminants discharging into surface water in concentrations[3] greater than 100 times their appropriate groundwater "levels," the estimated total amount (mass in kg/yr) of each of these contaminants that are being discharged (loaded) into the surface water body (at the time of the determination), and identify if there is evidence that the amount of discharging contaminants is increasing.

_____ If unknown - enter "IN" status code in #8.

Rationale and Reference(s):_____

[3] As measured in groundwater prior to entry to the groundwater-surface water/sediment interaction (e.g., hyporheic) zone.