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 Deer Park, LP**
Facility Address:	**2027 Battleground Road, Deer Park, Texas 77536**
Facility EPA ID #:	**TXD055141378**

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?

   __√__ 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.

_____ 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):

Key contaminants include chlorobenzene, chloroform, trichloroethene, and tetrachloroethene.

Hazardous constituents and appropriate groundwater concentration "levels" are cited in Table 1 of the facility's Compliance Plan (dated September 8, 1993).

See the facility's *Compliance Plan Semi-Annual Reports* for additional groundwater contaminants and their concentrations.

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)

Clean Harbors Deer Park, LP currently operates a Corrective Action Program (CAP). In this CAP, groundwater recovery operations are used to pump-and-treat contaminated groundwater, and to maintain an inward gradient for groundwater flow so that no contaminated groundwater moves away from the facility (see Rollins Environmental Services†, *Phase II Corrective Action Plan*, September 5, 1995; and TNRCC‡ response letter, October 2, 1995).

Pumping volumes, analytical data, pieziometric maps, and contaminant isopleth maps are given in the facility's *Compliance Plan Semi-Annual Reports*.

Clean Harbors Deer Park, LP (then Rollins Environmental Services (TX), Inc.) conducted a sampling program for Stratum 1 wells along the northern border of its property, including Stratum 1 wells belonging to its neighbor, Intercontinental Terminals Company (ITC). Minimal cross-property contamination was detected to the north; none was detected to the northwest towards Buffalo Bayou. The discussion of this issue is found in Section 2.9 of the *Final Corrective Measures Study (CMS) Report* (ENCOTEC 1995).

To delineate the contaminant plumes in the direction of Buffalo Bayou, Clean Harbors Deer Park, LP (then Rollins Environmental Services) installed a Stratum 3 well on a neighbor's property (Intercontinental Terminals Company [ITC]) in 1993 to delineate the northwest extent of contaminant migration. The samples from this well showed no contamination. The discussion of this issue is found in Section 2.9 of the *Final Corrective Measures Study (CMS) Report* (ENCOTEC 1995).

Additionally, Appendix P of the *Final Corrective Measures Study (CMS) Report* (Ground Water Flow Estimate Modeling: Northwest Property Boundary–Stratum 3) discusses groundwater modeling of Stratum 3 that indicates off-site migration of contaminated groundwater would have traveled less than 100-ft. (31-m) past the property boundary to the north and northwest, and that pumping reverses the travel direction back towards the facility.

Note: † Former name of Clean Harbors Deer Park, LP

‡ Acronym for the Texas Natural Resource Conservation Commission, former name of Texas Commission on Environmental Quality

[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)

In determining as to whether or not hydraulic communication exists between groundwater (i.e., in Stratum 1) and surface water, the potential flow path has been eliminated. The only area where intercommunication could have taken place is where Tucker Bayou crosses the property and where its channel had eroded down below the water table. In 1989–1990, the facility lined the entire channel of Tucker Bayou (formerly called the "County Ditch" by site workers) with concrete or with concrete culvert where it crosses the property, thereby preventing any intermingling of groundwater and surface water.

For a detailed discussion of studies that have shown groundwater "contamination" does not enter surface water bodies at the Clean Harbors Deer Park, LP facility, please see Section 5.1.1. of the *Final RCRA Facility Investigation (RFI) Report* (ENCOTEC 1992) and Section 2.5 of the *Final Corrective Measures Study (CMS) Report* (ENCOTEC 1995).

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 judgement/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.

Not Applicable.

Rationale and Reference(s):

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

6. Can the **discharge** of "contaminated" groundwater into surface water be shown to be "**currently acceptable**" (i.e., not cause impacts to surface water, sediments or eco-systems that should not be allowed to continue until a final remedy decision can be made and implemented[4])?

_____ If yes – continue after either: 1) identifying the Final Remedy decision incorporating these conditions, or other site-specific criteria (developed for the protection of the site's surface water, sediments, and eco-systems), and referencing supporting documentation demonstrating that these criteria are not exceeded by the discharging groundwater; OR 2) providing or referencing an interim-assessment,[5] appropriate to the potential for impact, that shows the discharge of groundwater contaminants into the surface water is (in the opinion of a trained specialists, including ecologist) adequately protective of receiving surface water, sediments, and eco-systems, until such time when a full assessment and final remedy decision can be made. Factors which should be considered in the interim-assessment (where appropriate to help identify the impact associated with discharging groundwater) include: surface water body size, flow, use/classification/ habitats and contaminant loading limits, other sources of surface water/sediment contamination, surface water and sediment sample results and comparisons to available and appropriate surface water and sediment "levels," as well as any other factors, such a effects on ecological receptors (e.g., via bio-assays/benthic surveys or site-specific ecological Risk Assessments), that the overseeing regulatory agency would deem appropriate for making the EI determination.

_____ If no – (the discharge of "contaminated" groundwater can not be shown to be "**currently acceptable**") – skip to #8 and enter "NO" status code, after documenting the currently unacceptable impacts to the surface water body, sediments, and/or eco-systems.

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

Not Applicable.

Rationale and Reference(s):

[4] Note, because areas of inflowing groundwater can be critical habitats (e.g., nurseries or thermal refugia) for many species, appropriate specialist (e.g., ecologist) should be included in management decisions that could eliminate these areas by significantly altering or reversing groundwater flow pathways near surface water bodies.

[5] The understanding of the impacts of contaminated groundwater discharges into surface water bodies is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration to be reasonably certain that discharges are not causing currently unacceptable impacts to the surface waters, sediments or eco-systems.

7. Will groundwater **monitoring** / measurement data (and surface water/sediment/ecological data, as necessary) be collected in the future to verify that contaminated groundwater has remained within the horizontal (or vertical, as necessary) dimensions of the "existing area of contaminated groundwater?"

   _√_ If yes – continue after providing or citing documentation for planned activities or future sampling/measurement events. Specifically identify the well/measurement locations which will be tested in the future to verify the expectation (identified in #3) that groundwater contamination will not be migrating horizontally (or vertically, as necessary) beyond the "existing area of groundwater contamination."

   _____ If no – enter "NO" status code in #8.

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

Rationale and Reference(s)

Monitoring of groundwater at the facility will be performed either semi-annually or quarterly as directed in the facility's Compliance Plan.

8. Check the appropriate RCRIS status codes for the Migration of Contaminated Groundwater Under Control EI (event code CA750), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (attach appropriate supporting documentation as well as a map of the facility).

√ YE - Yes, "Migration of Contaminated Groundwater Under Control" has been verified. Based on a review of the information contained in this EI determination, it has been determined that the "Migration of Contaminated Groundwater" is "Under Control" at the Clean Harbors Deer Park, LP facility, EPA ID #TXD055141378, located at 2027 Battleground Road, Deer Park, TX 77536-0609. Specifically, this determination indicates that the migration of "contaminated" groundwater is under control, and that monitoring wil be conducted to confirm that contaminated groundwater remains within the "existing area of contaminated groundwater". This determination will be re-evaluated when the Agency becomes aware of significant changes at the facility.

_____ NO - Unacceptable migration of contaminated groundwater is observed or expected.

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

Completed by (signature) _____ Date _____
Craig M. Dingler
Groundwater Supervisor

Supervisor
(signature) _____ Date _____
Dennis Wainwright
General Manager
Clean Harbors Deer Park, LP

Locations where References may be found:

All references are available from Clean Harbors Deer Park, LP or can be viewed in file rooms at the Texas Commission on Environmental Quality (TCEQ) offices in Austin or Houston:

ENCOTEC 1992. *Final RCRA Facility Investigation (RFI) Report for Rollins Environmental Services (TX), Inc.*†, June 10, 1992.
ENCOTEC 1995. *Final Corrective Measures Study (CMS) Report for Rollins Environmental Services (TX), Inc.*†, March 30, 1995.
Rollins Environmental Services (TX), Inc.†, 1995. *Phase II Corrective Action Plan*, September 5, 1995.
Safety-Kleen (Deer Park), Inc.†, 1999. *Semi-Annual Compliance Plan Groundwater Monitoring Report (October 1998–March 1999)*, May 25, 1999.
Safety-Kleen (Deer Park), Inc.†, 1999. *1998 Annual Facility Report*, January 1999.
TCEQ‡ *RCRA Operating Permit HW-50089-001*, March 15, 1988 as amended April 26, 1994.
TCEQ‡ *Compliance Plan Permit CP-50089-001*, September 8, 1993.

Notes: † Former names of Clean Harbors Deer Park, LP
‡ Formerly known as Texas Natural Resource Conservation Commission (TNRCC)

Contact telephone and e-mail numbers

(name) Timothy F. Kent
(phone #) (281) 930-2300
(e-mail) Kent.Timothy@cleanharbors.com

8. Check the appropriate RCRIS status codes for the Migration of Contaminated Groundwater Under Control EI (event code CA750), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (attach appropriate supporting documentation as well as a map of the facility).

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_____ NO - Unacceptable migration of contaminated groundwater is observed or expected.

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

Completed by (signature)_____ Date _7-21-03_____
(print) Kelly Wilson
(title) TCEQ Project Manager

Supervisor (signature)_____ Date _7-21-03_____
(print) Don Boothby
(title) Supervisor_____
(EPA Region or State) TCEQ_____

Locations where References may be found:

Attach a copy of this facility's database printout. Highlight the reports which support the "YE" determination. Clean Harbors completed the CA 750 EI Checklist on June 27, 2003. The TCEQ approved the checklist on July 21, 2003.

Contact telephone and e-mail numbers

(name) Kelly Wilson_____
(phone #) (512) 239-6210_____
(e-mail) kcarpent@tceq.state.tx.us ____

Final Note: The purpose of the Migration of Contaminated Groundwater EI is to verify that the groundwater plume is stable. A "YE" determination does not constitute a screening tool to end the corrective action process. The "YE" determination may be changed at any time as new information becomes available.

SWR# 50089

Migration of Contaminated Groundwater Under Control
Environmental Indicator (EI) RCRIS code (CA750)

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_____ NO - Unacceptable migration of contaminated groundwater is observed or expected.

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Completed by (signature) _____ Date: *07-21-03*
(print) *Kelly K. Wilson*
(title) TCEQ Project Manager

Supervisor (signature) _____ Date: *07-21-03*
(print) *Don Boothby*
(title) *Supervisor*
Texas Commission on Environmental Quality

Locations where References may be found:
*Clean Harbors completed the CA 750 EI Checklist on June 27, 2003. The TCEQ approved the checklist on June 21, 2003.*_____
*References may be found in: TCEQ Central Records, Austin, TX*_____
_____
_____

Contact telephone and e-mail numbers

(name) *Kelly Wilson*
(phone #) *512-239-6210*
(e-mail) *kcarpent@tceq.state.tx.us*

Final Note: The purpose of the Migration of Contaminated Groundwater EI is to verify that the groundwater plume is stable. A "YE" determination does not constitute a screening tool to end the corrective action process. The "YE" determination may be changed at any time as new information becomes available.

Note: Administrative information on signature page in italics was added to electronic file 4/12/04.