

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: Ashland Distribution Corporation DSO Facility
Facility Address: 5420 Speaker Road, Kansas City, Kansas
Facility EPA ID #: KSD057889313

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).

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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?

 X 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):

Groundwater sampling at the site was completed in June 1999 prior to installation of a Soil Vapor Extraction/Air Sparging pilot system. Several compounds were detected in site groundwater above the level of concern. A summary of the compounds detected is presented below:

Compound	High Concentration in Site Groundwater (mg/L)	MCL* (mg/L)	Number of Wells Detected
Acetone	130	NA	1 of 20
2-butanone	12.0	NA	1 of 20
Ethylbenzene	32.0	0.700	7 of 20
4-methyl-2-pentanone	8.6	NA	1 of 20
Methylene chloride	2.2	0.005	1 of 20
Toluene	33.0	1.0	7 of 20
Xylenes	94.0	10.0	9 of 20

Additional groundwater sampling was conducted in October 2000 following completion of the Soil Vapor Extraction/Air Sparging Pilot Study. A summary of this data is presented below:

Compound	High Concentration in Site Groundwater (mg/L)	MCL* (mg/L)	Number of Wells Detected
Acetone	49.0	NA	1 of 5
Benzene	0.11	0.005	2 of 5
cis-1,2-dichloroethene	0.52	0.070	4 of 5
1,1-dichloroethane	0.63	NA	2 of 5
Ethylbenzene	23.0	0.70	5 of 5
Methylene chloride	7.1	0.005	2 of 5
Toluene	43.0	1.0	5 of 5
Xylenes	64.0	10.0	5 of 5

(1) Numbers in bold exceed level of concern

(2) MCL are utilized as the level of concern

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).

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(3) NA indicates an MCL is not established for this compound

* Maximum Contaminant Levels (MCLs), the maximum permissible level of a contaminant in water delivered to any user of a public water system under the Safe Drinking Water Act

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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)?

 X 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):

An evaluation of groundwater at the facility was completed in 1992 during the RCRA Facility Investigation (RFI). The results of this groundwater sampling and analysis were presented in the “Supplemental RFI Report, GTI, 1992.” An additional groundwater sampling program was conducted in March and June, 1999. Based on groundwater data obtained during these evaluations, the migration of groundwater containing VOCs has to have stabilized. Further discussion is presented below.

Horizontal Migration:

Attached to this document are Figure 1 and Figure 2, which present the extent of groundwater containing VOCs in November 1992 (Figure 1) and March/June 1999 (Figure 2). A comparison of the two indicates the following:

- The groundwater plume is not moving since wells downgradient of the plume (MW-10, MW-11, MW-12 and MW-13) show no VOCs in June 1999.
- The size of the overall area of groundwater containing VOCs is slightly smaller in 1999 than it was in 1992. This indicates that the plume is essentially stable, and is not moving downgradient.

Vertical Migration:

Six deep wells have been installed at the site to monitor the vertical extent of VOCs in groundwater. Four of the wells did not have detectable levels during the June 1999 sampling event. The remaining two wells, located within the existing plume, did not contain VOCs above the MCLs. Based on this information, there does not appear to be vertical migration of the VOCs groundwater.

Additional Discussion:

A soil vapor extraction (SVE) and air sparging system pilot study was conducted at the site in

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.

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January 2000. The findings of the pilot study indicated that Air Sparging and SVE would be effective in removing VOCs from the subsurface. Following the successful pilot study, a full-scale SVE and Air Sparging SVE System was installed to reduce future sources of VOCs to groundwater. The full-scale Air Sparging System began operation in January 2001. Monitoring of the air removed from the subsurface indicates the system is removing approximately 18 pounds of VOCs per 24 hours of operation from the soil and groundwater. The air sparging portion of the system is designed to remove VOCs from the groundwater and impart oxygen into the subsurface to stimulate natural attenuation. The SVE portion of the system is designed to remove VOCs from the vadose zone to significantly reduce future sources of VOCs to groundwater. Operation of this system will provide additional assurance the plume migration will remain under control in the future. Analysis of groundwater sampling data indicates that natural attenuation of VOCs is occurring at the site and is limiting migration of the plume. This analysis is presented in detail in the Corrective Measures Study for the site submitted to USEPA in February 2001.

Based on the analysis presented herein, the migration of groundwater containing VOCs is under control at the site as shown in Figure 1 and Figure 2. Annual groundwater sampling for VOCs will be conducted to document that the migration of groundwater containing VOCs remains under control.

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

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

X 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):

Discharges to surface water of groundwater were not identified at the site. The groundwater gradient in the site area generally slopes to the northwest, towards the Kansas River. As discussed in item number 3, the migration of groundwater containing VOCs has stabilized and migration towards the Kansas River has not been identified by groundwater sampling between 1992 and 1999 (see Figures 1 and 2.)

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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 implemented⁴)?

_____ 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 as 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.

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.

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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):

A Soil Vapor Extraction and Air Sparging System has been installed and is currently operating at the site to reduce concentrations of VOCs in the source area. The objective of this system is to remove VOCs from soil and groundwater at the Ashland site and to stimulate natural attenuation of VOCs in groundwater. The Corrective Measures Study submitted in February 2001 included provisions for annual groundwater sampling at the site for VOCs and provide data to evaluate whether migration of groundwater remains under control in the future.

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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 Ashland facility, EPA ID #KSD057889313, located at 5420 Speaker Road, Kansas City, Kansas. Specifically, this determination indicates that the migration of "contaminated" groundwater is under control, and that monitoring will 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	<u>(signature) original signed by</u> <u>(print) Harry Gabbert</u> <u>(title) Geologist, Region 7 ARTD/RCAP</u>	Date <u>9/19/01</u>
Supervisor	<u>(signature) original signed by</u> <u>(print) John Smith</u> <u>(title) Chief, Region 7 ARTD/RCAP</u> <u>(EPA Region or State)</u>	Date <u>9/19/01</u>

Locations where References may be found:

Region 7 Records Center
USEPA Region 7
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