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 Company, Division of Ashland, Inc.
Facility Address:	150 West Fourth Avenue, Freedom, PA 15042
Facility EPA ID #:	PAD000797548

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 "Current Human Exposures Under Controls" 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 "Migration of Contaminated Groundwater Under Control" EI pertains ONLY to the physical migration (i.e., further spread) of contaminated groundwater 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 risk-based "levels" (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

X "contaminated."

_____ If unknown (for any media) – skip to #8 and enter "IN" status code.

Rationale and Reference(s):

References:

Ashland Distribution Company. Division of Ashland, Inc. 2002. Section J: Corrective Action for Solid Waste Management Units. In Renewal Application for a Hazardous Waste Storage Permit. Rev: May 13, 2002; June 18, 2003; December 31, 2003.

Environmental Strategies Corporation. 1996. Act 2 Final Report. Pittsburgh, Pennsylvania. December 13, 1996.

Pennsylvania Land Recycling Program. 2001. Statewide Health Standards. November 24, 2001.

Rationale:

On March 3, 1989, approximately 930 gallons of n-butyl acetate were released to the ground in the location of the aboveground storage tank used for storing n-butyl acetate near the southern side of Warehouse No. 3. The storage tank was cleaned and removed from the site, and the affected soil was excavated. During a follow-up investigation, 8 soil borings were advanced in the area surrounding the former tank pad. Perched groundwater was encountered in three of the borings at depths ranging from 2.9 to 4 feet below grade and a monitoring well was completed in each of these borings. Water samples collected from one of the wells detected the following VOCs at levels above the Statewide Health Standards for Organic Regulated Substances in Groundwater (Used Aquifers, TDS ≤ 2,500, NR):

1,2-dichloroethene:	maximum concentration = 1,400 ug/L	risk-based level = 100 ug/L
Tetrachloroethene:	maximum concentration = 2,500 ug/L	risk-based level = 5 ug/L
Toluene:	maximum concentration = 1,200 ug/L	risk-based level = 1,000 ug/L

A comparison of the PA Act 2 Statewide Health Standards for Organic Regulated Substances in Soil, Soil to Groundwater Numeric Values, Used Aquifers, TDS ≤ 2,500, Non-Residential, 100x GW MSC, to the levels of the substances found in residual concentrations from the confirmatory soil sampling, identified the following as key contaminants:

Acetone:	maximum concentration = 4,700 mg/kg	risk-based level = 1,000 mg/kg
Ethylbenzene:	maximum concentration = 73 mg/kg	risk-based level = 70 mg/kg
Methyl ethyl ketone:	maximum concentration = 3,100 mg/kg	risk-based level = 580 mg/kg

[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).

Methanol:	maximum concentration = 2,300 mg/kg	risk-based level = 1,000 mg/kg
Methyl chloride:	maximum concentration = 23 mg/kg	risk-based level = 0.3 mg/kg
Tetrachloroethene:	maximum concentration = 20 mg/kg	risk-based level = 0.5 mg/kg
Toluene:	maximum concentration = 360 mg/kg	risk-based level = 100 mg/kg
1,1,1-Trichloroethane:	maximum concentration = 32 mg/kg	risk-based level = 20 mg/kg
Trichloroethene:	maximum concentration = 26 mg/kg	risk-based level = 0.5 mg/kg

Despite the results indicated above, the groundwater is not reasonably suspected to be contaminated because the soil to groundwater pathway is incomplete. The Ashland facility is positioned on top of a bluff that overlooks State Route 65. Beyond Route 65 are industrial properties and finally the Ohio River. As evidenced by the soil borings, the soils at the Ashland facility are clay rich and dry. Due to the high clay content, the water found in the shallow wells was more likely perched stormwater as opposed to a seasonal high water table or groundwater. Furthermore, the depth between the soils and the phreatic surface is likely greater than 100 feet based on the surface elevation change between the facility and the Ohio River, which is the presumed discharge location for groundwater in the vicinity of the facility. This conclusion is largely supported by the field observations made during the advancement of a deep boring at the site where no groundwater was encountered to a depth of 66.5 feet. Additionally, much of the facility has been paved thereby reducing the chance for infiltration and further migration of residual concentrations of contaminants.

As far as any residual concentrations of contaminants in the soil, because the soil to groundwater pathway is incomplete, exposure cannot occur and the residual concentrations in the soil pose no threat to human health or the environment. The concrete floor inside Warehouse No. 3 has been replaced and is free of cracks, holes or deterioration based on DEP's observations during a site visit on 6/19/08. Because of the presence of the roof and the concrete floor, precipitation is prevented from coming in contact with the soils and therefore any residual concentrations of contaminants are unable to migrate. This was again evidenced by soil borings inside Warehouse No. 3 where soils within the former tank cavity were observed to be clay-rich and dry. These field observations support the conclusion that the residual concentrations of constituents present in the soil below the warehouse building will not migrate to groundwater. Similarly, the residual concentrations of constituents near the former underground gasoline and diesel fuel tanks are present within clay-rich soil. Additionally, the former underground gasoline tank is covered by an asphalt surface that significantly minimizes the potential for precipitation to come in contact with the soil.

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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)?

_____ 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.

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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):

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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 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 "level(s)," and if 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.

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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 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 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 a "NO" status, 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):

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[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):

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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).

X	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 Distribution Company facility, EPA ID PAD 000797548 located at 150 West Fourth Avenue, Freedom, PA 15042. 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: /s/ Date 09/24/2009
Kevin Bilash
RCRA Project Manager

Supervisor: /s/ Date 09/24/2009
Paul Gotthold
Associate Director, Office of Pennsylvania Remediation

Locations where References may be found:

References can be found at PA DEP's Pittsburgh office and US EPA's Region III office.

Contact telephone and e-mail numbers: