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:	Textileather Corporation
Facility Address:	3729 Twining Street, Toledo, Ohio 43612
Facility EPA ID #:	OHD 980 279 376

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 #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 "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?

__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.

References:

- *Description of Current Conditions Report.* December 2009. Haley & Aldrich, Inc.
- *Eastern Property Boundary Data Report.* May 2010. Haley & Aldrich, Inc.
- *Field Event #1 Data Report.* June 2010. Haley & Aldrich, Inc.
- *Eastern Property Boundary Investigation Summary and Evaluation Report.* October 2010. Haley & Aldrich, Inc.
- *Field Event #2 Data Report.* November 2010. Haley & Aldrich, Inc.
- *Field Event #2A and #2B Data Report.* July 2011. Haley & Aldrich, Inc.
- *RCRA Environmental Indicators CA750 Migration of Contaminated Groundwater Under Control Report.* July 29, 2011. Haley & Aldrich, Inc.

Rationale: Groundwater data has been obtained from the first water bearing unit, the lacustrine silt and clays. Permeability for these fine-grained deposits is typically 10^{-5} to 10^{-6} cm/sec. The lacustrine silt and clays extend to a depth of approximately 38 feet below ground surface (bgs) and is underlain by silty clay till, with Silurian age dolomite bedrock at approximately 80 feet bgs. Groundwater is typically encountered at a depth of about 4 feet bgs, and ranges from 1 to 10 feet bgs.

Dissolved Phase - Thirty (30) monitoring wells and five (5) piezometers at the site were sampled one to three times from February 2010 to June 2011. They are screened from 5 to 15 feet below ground surface to intercept the water table within the lacustrine silt and clays. The following exceedances of MCLs in groundwater were identified. Many of the exceedances occur in the upgradient portions of the site boundary:

- Antimony (MCL of 6 ppb) - the MCL was exceeded at three (3) sample locations, ranging from 7 to 41 ppb.
- Arsenic (MCL of 10 ppb) - the MCL was exceeded at eleven (11) sample locations, ranging from 11 to 56 ppb.
- Cadmium (MCL of 5 ppb) - the MCL was exceeded at one (1) sample location at 8.9 ppb.
- Bis(2-ethylhexyl)phthalate (MCL of 6 ppb) - the MCL was exceeded at ten (10) sample locations, ranging from 7 to 1,410 ppb.
- Vinyl chloride (MCL of 2 ppb) - the MCL was exceeded at one (1) sample location at 17 ppb.

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[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).

Bis(2-ethylhexyl)phthalate is associated with past processes and was detected at its highest concentration of 1,410 ppb at monitoring well location MW-1018 at Building 53 at the Solvent Recovery Area (AOI-2), located within the interior portion of the site.

Di-n-octyl phthalate is associated with past processes and was detected at fifteen (15) locations, typically in low ppb amounts but at 12,500 ppb at sample locations MW-1018 and MW-1019. Di-n-octyl phthalate does not have an MCL. As described above, a high concentration of bis(2-ethylhexyl)phthalate is also present at MW-1018.

Tetrahydrofuran was historically used at the site and was detected in groundwater at nine (9) sample locations. Concentrations ranged from 1 to 180,000 ppb. Tetrahydrofuran does not have an MCL. It is mainly found in two areas, at the North AST Farm (AOI-21), and in the vicinity of the Solvent Recovery Area (AOI-2) and Building 69 (AOI-13).

A facility production well cased down to 106-feet and open to a depth of 492-feet in the dolomite bedrock was located at the interior of the site (AOI -2) and was sampled in February 2010. No exceedances of MCLs were found. The well has since been abandoned to eliminate a potential migration pathway of near-surface contaminants to the regional bedrock aquifer.

LNAPL - Free product in the form of LNAPL was identified at isolated locations across the site.

- Calender Basement (AOI - 01) - PCB-containing Therminol oil seeps into the Calender Basement and is collected and disposed off-site. A slight sheen, indicating potential free product, is observed in monitoring wells MW-1015 and MW-1016 beneath the building and just north of the Calender Basement. However, the MCL for PCBs was not exceeded at these wells during the one sampling event.
- PZ-31 (located between AOI-02 and AOI-15) - In the vicinity of the Solvent Recovery Area and South AST Farm, up to seven (7) feet of free product consisting of a mixture of phthalates is present.
- MW-1018 (AOI-02) - This is the location where the highest concentration of dissolved phase bis(2-ethylhexyl)phthalate was found. A slight sheen to limited globules of LNAPL was observed at MW-1018 during sampling and well development.
- MW-1019 (AOI-23) - A slight sheen to limited globules of LNAPL was observed at MW-1019 during sampling and well development. This well has a dissolved phase concentration of 12,500 ppb of di-n-octyl phthalate.

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.

References:

- *RCRA Facility Investigation Work Plan.* December 2009. Haley & Aldrich, Inc.
- *Eastern Property Boundary Data Report.* May 2010. Haley & Aldrich, Inc.
- *Field Event #1 Data Report.* June 2010. Haley & Aldrich, Inc.
- *RCRA Facility Investigation Work Plan Addendum #1.* June 2010. Haley & Aldrich, Inc.
- *Eastern Property Boundary Investigation Summary and Evaluation Report.* October 2010. Haley & Aldrich, Inc.
- *Field Event #2 Data Report.* November 2010. Haley & Aldrich, Inc.
- *RCRA Facility Investigation Work Plan Addendum #2.* February 2011. Haley & Aldrich, Inc.
- *RCRA Facility Investigation Work Plan Addendum #3.* May 2011. Haley & Aldrich, Inc.
- *Field Event #2A and #2B Data Report.* July 2011. Haley & Aldrich, Inc.
- *RCRA Environmental Indicators CA750 Migration of Contaminated Groundwater Under Control Report.* July 29, 2011. Haley & Aldrich, Inc.

Rationale: Groundwater flow patterns at the Textileather facility are shown to be controlled by the presence of leaky, old sanitary and storm sewers, and basements, which are constructed in the lacustrine silt and clays below the water table, approximately 10 feet bgs. Figure 3A and 3B of the July 2011, EI Report document an inward gradient on three sides of the site, the north, west, and east. The hydraulic head difference toward the sewers and basements varies from 2 to 10 feet. Leakage into the sewers and dewatering of the basements appears to effectively capture the contaminated groundwater at the site.

The lacustrine silt and clays are fine-grained and do not yield significant quantities of groundwater. During well development, recharge can take up to one day, and during low-flow sampling, drawdown is difficult to minimize. Measurement of water flow rate in the storm sewers during base-flow conditions yielded a flow rate of approximately 6 gpm at the point where it drains southward into the main trunk line that discharges

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[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.

to Fraleigh Creek and subsequently, to the Ottawa River. Flow rates in the main trunk line were approximately 457 gpm. A majority of the main storm sewer lines have flows of less than 1 gpm during base-flow conditions. Flow in the sanitary sewer was not measured, but is routed and managed at the City of Toledo POTW.

These site groundwater flow conditions are believed to have occurred for some time and are supported by the limited and minor exceedances of MCLs at the property boundary, and the presence of isolated areas of LNAPL within the interior portion of the site that do not show significant migration within the fine-grained lacustrine silt and clays. It is concluded that the hydraulic control provided by the sewers and basements has stabilized the migration of contaminated groundwater.

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

X — 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.

References:

- *RCRA Facility Investigation Work Plan Addendum #1.* June 2010. Haley & Aldrich, Inc.
- *Field Event #2 Data Report.* November 2010. Haley & Aldrich, Inc.
- *RCRA Environmental Indicators CA750 Migration of Contaminated Groundwater Under Control Report.* July 29, 2011. Haley & Aldrich, Inc.

Rationale: There are two sanitary sewer mains and three storm sewer mains at the site (see Figure 5 of the July 2011, EI Report). The two sanitary sewer mains discharge to the City of Toledo POTW for treatment. The three storm sewer mains flow southward and discharge to a storm sewer trunk line that runs east-to-west. The storm discharges from the site combine with other discharges in the trunk line, which ultimately discharges to Fraleigh Creek, southwest of the site. Fraleigh Creek is a man-made drainageway that conveys stormwater to the Ottawa River. Therefore, through the connection of storm sewers, diluted contaminated groundwater discharges to Fraleigh Creek and the Ottawa River.

Water in the storm and sanitary sewer lines was sampled in July and November of 2010. Contaminants that exceeded MCLs in groundwater or were detected in site LNAPL were compared to detections in the sewer lines.

PCB: Trace amounts of PCBs (1.5 ppb Aroclors) were found in the sanitary sewer before the connection with the city sewer system. PCBs in the storm sewer were found at 0.2 ppb in one of the three storm sewer lines prior to discharge to the east-west trunk line.

Phthalates: Two of the three storm sewer lines had estimated concentrations of 3 and 4 ppb of di-n-octyl phthalate prior to discharge to the east-west trunk line. Bis(2-ethylhexyl)phthalate was not detected.

Tetrahydrofuran: One of the storm sewer lines had an estimated concentration of 33 ppb of tetrahydrofuran.

Metals: Antimony was detected at 2 to 4 ppb in the three storm sewer lines just prior to discharge to the east-west trunk line and at 22 ppb in the sanitary sewer. Arsenic was detected at 2 to 5 ppb in the three storm sewer lines prior to discharge to the east-west trunk line and at 5 ppb in the sanitary sewer. Cadmiun was not detected in the storm sewers and at 0.5 ppb in the sanitary sewer.

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)?

X — 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 AIN@ status code in #8.

References:

- *RCRA Environmental Indicators CA750 Migration of Contaminated Groundwater Under Control Report.* July 29, 2011. Haley & Aldrich, Inc.

Rationale: None of the concentrations of contaminants detected in the storm sewer system approach ten times the appropriate groundwater level and all detections at sample points prior to discharge to the east-west trunk line are less than their MCLs (di-n-octyl phthalate and tetrahydrofuran do not have an MCL; tetrahydrofuran has a maximum acceptable toxicant concentration for surface water of 282,000 ppb). Furthermore, the volume of storm water from the site during base flow conditions is less than 1/70th of the total discharge of the trunk line to Fraleigh creek as measured on June 1, 2011. Therefore, at the point of discharge to Fraleigh Creek, concentrations of these contaminants found in the site storm sewers would likely be further diluted and reduced. The storm sewers should continue to be monitored under base-flow conditions to ensure that these "insignificant" discharges of contaminated groundwater to surface water remain.

[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 Alevels,@ 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):

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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.

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?"

X 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.

References:

- *RCRA Environmental Indicators CA750 Migration of Contaminated Groundwater Under Control Report.* July 29, 2011. Haley & Aldrich, Inc.

Rationale: Textileather proposes to obtain two rounds of water level measurements per year to ensure that the inward gradient is maintained. Sampling periods would be both during expected seasonal high and low water level events. Semiannual sampling of the three downgradient storm sewer manholes would be conducted during late-summer and mid-winter to obtain base-flow conditions. Parameters will include TCL VOCs, TCL SVOCs, TAL Metals, and PCBs. This proposed monitoring program will be performed until corrective measures are implemented. The proposed monitoring program is appropriate with the following modifications:

- Sample groundwater semiannually for phthalates at monitoring wells MW-1018, MW-1019, and MW-7H
- Sample groundwater semiannually for PCBs at monitoring wells MW-1015 and MW-1016. PCBs in these monitoring wells and the storm sewer system will be analyzed in the form of PCB homologs (not Aroclors).
- Sample groundwater semiannually for tetrahydrofuran at monitoring wells MW-3TL, MW-14H, PZ-33, PZ-35, MW-1018, and MW-19H
- Monitor PZ-31 for LNAPL monthly and manually remove encountered LNAPL. If LNAPL is no longer present, sample groundwater semiannually for phthalates.

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 Textileather facility, EPA ID # OHD 980 279 376, located at 3729 Twining Street, Toledo, Ohio. 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 (signature) Kenneth S. Bardo Date 8/18/11
(print) Kenneth S. Bardo
(title) Environmental Scientist

Supervisor (signature) George J Hamper Date 8/18/11
(print) George J Hamper
(title) Chief CAS2
(EPA Region or State) 5

Locations where References may be found:

RCRA 7th Floor File Room – Administrative Record for RCRA 3008(h) Consent Order

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