

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:** Former Marathon Carey-McFall Company (currently Logue Industries, Inc.)  
**Facility Address:** 120 South Arch St., Montoursville, PA 17754  
**Facility EPA ID #:** PAD 980550537

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"<sup>1</sup> 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 "contaminated."  
  X    
\_\_\_\_\_ If unknown (for any media) – skip to #8 and enter "IN" status code.

Rationale and Reference(s):

**Reference:** Logue Industries, Inc. (Former Marathon Carey-McFall Co.) Site Limited Phase II Investigation, URS, September 2009

Soil sampling in the highest probable source areas was performed during a Limited Phase II investigation in April 2009. Analytical results were screened against the Medium-Specific Concentration (MSC) Statewide Health Standards (SHS) per the Pennsylvania Land Recycling and Environmental Remediation Standards Act, Chapter 250, Administration of Land Recycling Program ('Act 2', June, 1997) (25 Pa. Code §§250.1 - 250.708) (as revised November 24, 2001). Although the current site use is non-residential, the groundwater has the potential to migrate offsite to residential areas, therefore Residential (R) Soil-to-Groundwater (S-GW) MSCs for soils in a Used Aquifer Area were considered when assessing potential soils impact on groundwater quality. Results of the screening are as follows:

- There are no exceedances for any MSCs for VOCs or PCBs.
- As shown below, while high, the total chromium results from green discolored soil samples collected at TP-09 and TP-12 (including a PIPE-01 sample) do not exceed the R or Non- Residential (NR) MSCs. Further, the corresponding hexavalent chromium results are also below the R and NR MSCs.

| Sample Location | Parameter            | Result (mg/kg) | R and NR S-GW MSCs (mg/kg) | R / NR DC MSCs (mg/kg) |
|-----------------|----------------------|----------------|----------------------------|------------------------|
| PIPE-01         | Chromium, Total      | 9,540          | 190,000                    | 190,000                |
| PIPE-01         | Chromium, Hexavalent | ND             | 190                        | 94 / 420               |
| TP-09(0.5-1)    | Chromium, Total      | 36,900         | 190,000                    | 190,000                |
| TP-09(0.5-1)    | Chromium, Hexavalent | 2.7 J          | 190                        | 94 / 420               |
| TP-12A(1-2)     | Chromium, Total      | 4,680          | 190,000                    | 190,000                |
| TP-12A(1-2)     | Chromium, Hexavalent | ND             | 190                        | 94 / 420               |

<sup>1</sup>"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).

- There were three samples with metals results that exceeded the R and NR S-GW MSCs (higher of either the 100xGW or Generic) for either cadmium and/or lead, as follows:

| Sample Location    | Parameter | Result (mg/kg) | R and NR Used Aquifer S-GW MSC (mg/kg) |
|--------------------|-----------|----------------|--|
| TP-09(0.5-1)       | Cadmium   | 40.1           | 38                                     |
| TP-09(0.5-1)       | Lead      | 474            | 450                                    |
| TP-11(4-6)         | Cadmium   | 54             | 38                                     |
| TRANS-TP-01(0.5-1) | Lead      | 472            | 450                                    |

The data relative to the S-GW MSCs was screened to make a determination as to whether any of the samples required additional analysis via the synthetic precipitate leaching procedure (SPLP) to assess probable impact to underlying groundwater versus use of the default S-GW MSCs. SPLP analysis for RCRA metals of the TP-09(0.5-1), TP-11(4-6), and TRANS-TP-01(0.5-1) samples was warranted.

SPLP RCRA metals analysis of those samples which exceeded the NR S-GW MSCs for soils in a Used Aquifer Area [TP-09(0.5-1), TP-11(4-6), and TRANS-TP-01(0.5-1)] was conducted. The SPLP analytical results indicate that relative to RCRA values for hazardous waste identification [via the toxicity characteristic leaching procedure (TCLP)], there are no exceedances in the dataset. However, there is one exceedance of the R/NR MSC for groundwater in a Used Aquifer Area, as shown below:

| Sample Location    | Parameter | Result (ug/L) | R / NR GW MSCs (ug/L) |
|--------------------|-----------|---------------|-----------------------|
| TRANS-TP-01(0.5-1) | Lead      | 47            | 5                     |

Therefore, the SPLP analytical results indicate that the soils at the TRANS-TP-01 location could contain a sufficient concentration of lead to have an impact on the underlying groundwater quality above the PADEP Act 2 R/NR GW MSCs. However, groundwater is not expected to be contaminated from this location based on the following rationale:

- concentrations in site soils indicate a minimal downward migration threat to the groundwater;
- specifically at the transformer location where the SPLP exceedance was identified at 0.5-1 feet, a sample was collected at the 1-2 foot depth with a lead result of 36.6 mg/kg which is below R and NR S-GW MSC and indicates, contrary to the SPLP lab results, that lead is not migrating vertically towards the groundwater.

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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"<sup>2</sup> 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"<sup>2</sup> )

\_\_\_\_\_ If no (contaminated groundwater is observed or expected to migrate beyond the designated locations defining the "existing area of groundwater contamination"<sup>2</sup>) - 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):

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<sup>2</sup> "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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Groundwater flows to the Loyalsock Creek and the Susquehanna River. However, site-related data is not available to determine if the groundwater is contaminated.

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5. Is the **discharge** of "contaminated" groundwater into surface water likely to be "**insignificant**" (i.e., the maximum concentration<sup>3</sup> 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<sup>3</sup> 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<sup>3</sup> 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):  
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<sup>3</sup> 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<sup>4</sup>)?

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<sup>5</sup> 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.

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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..

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

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Rationale and Reference(s):

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<sup>4</sup> 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.

<sup>5</sup> 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): \_\_\_\_\_





Facility Name: Former Marathon Carey-McFall Company (currently Logue Industries, Inc.)  
 EPA ID #: PAD 980 550 537  
 Location: Montoursville, PA 17754

### MIGRATION OF CONTAMINATED GROUNDWATER UNDER CONTROL (CA 750)

