

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: OMG Americas
Facility Address: Two Mile Run Road, Franklin, PA 16323
Facility EPA ID #: PAD014130439

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).

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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?

- 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:

TPH was found to exceed regulatory limits during 1991 sampling performed by Civil and Environmental Consultants (CEC) at monitoring wells in the vicinity of the Mineral Spirits Release SWMU area. A free product recovery system, installed in this area between 1992 and 1994, failed to operate effectively and was shut down within months of it becoming operational in 1994. Free product recovery has continued using periodic hand bailing at affected monitoring and recovery wells. CEC conducted groundwater sampling and analysis for VOCs (Method 8240), SVOCs (Method 8270), Metals (Method 6010/7000 series) in 1993 during which the following constituents were detected at locations in the vicinity of the Former Spent Filter Cake Disposal Area at levels exceeding PA DEP ACT 2 and, with the exception of Lead which has no established EPA Region III level, EPA Region III Tap Water RBC standards: Acetone, Arsenic, Beryllium, Cadmium, Cobalt, Lead, Nickel, and Vanadium. No records documenting remediation of groundwater at these locations subsequent to this 1993 sampling were available for review.

A Remedial Investigation Report (RIR), initiated in June 2002, was performed and the results were combined with the results from previous investigations. Benzene was identified in groundwater above its Act 2 standard in four wells: W-3, ERM-7, MW-1, and MW-4. Naphthalene was identified at concentrations above its groundwater Medium Specific Concentration (MSC) in samples from RW-1, ERM-7, and MW-1. Several Metals, described above, were identified as exceeding their groundwater MSCs in samples collected in 1993 from wells W-1, W-2, and W-3. Barium was identified as exceeding its groundwater MSCs in wells MW-1, MW-2, and MW-8. Lead was identified as exceeding its groundwater MSCs in MW-13. Nickel was identified as exceeding its groundwater MSCs in ERM-14 and MW-1. And silver was identified as exceeding its groundwater MSCs in MW-13.

Benzene, naphthalene, aluminum, arsenic, barium, iron, manganese, nickel, and silver were detected in groundwater at concentrations in excess of their respective Act 2 direct-contact MSCs for non-residential used aquifers.

List of References used throughout EI:

1. Environmental Indicator Inspection Report For OMG Americas, USACE Norfolk, April 2001
2. Remedial Investigation Report, CEC, March 2004
3. Human Health and Ecological Risk Assessment, CEC, August 17, 2007 (revised June 9, 2008)

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).

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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:

The conceptual site model (CSM) shows that historic site operations have impacted soils and groundwater and produced a localized pocket of light, non-aqueous phase liquids in the subsurface. Analytical results from the groundwater sampling activities conducted in June and August 2002 as part of the RIR were plotted to determine if any contaminant plumes were evident. Based on current and existing data, no contaminant plumes were identified. Therefore, a fate and transport analysis was unable to be conducted. However, the analytical results indicate groundwater constituents are not migrating from the property and appear to be stabilized.

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:

Groundwater flow patterns and potential groundwater discharge points were evaluated in the section 6.2 of the RIR. The results of the evaluation were that groundwater flowed toward, and discharged into, Two-Mile Run and Race Run. As part of the RIR, surface water and sediment samples were collected. Silver was the only compound that was detected in surface water at a concentration that exceeded Water Quality Criteria for Toxic Substances for either Fish and Aquatic Life Criteria. No Volatile or Semi-Volatile Organics were detected in surface water samples and no other parameters were detected above the human health criteria. The following compounds were detected at concentrations exceeding their respective MSCs for sediments (based on one-tenth of the non-residential used aquifer soil to groundwater MSC): Pyrene, Lead, Cobalt, and Thallium.

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5. Is the discharge³ of "contaminated" groundwater into surface water likely to be "insignificant" (i.e., the maximum concentration³ 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 concentration³ 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 concentration³ 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 concentrations³ 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.

Rationale:

To determine the surface water concentrations of constituents of potential ecological concern (CPECs) from groundwater discharge into Two-Mile Run and Race Run, the Pennsylvania Single Discharge Wasteload Allocation Computer Program for Toxic Substances (PENTOXSD) was used. The resultant surface water concentrations of CPECs in Two-Mile Run and Race Run were all below DEP's acute fish criteria and chronic fish criteria for aquatic life.

However, based upon a database search, it was discovered that five aquatic species of concern could be present at or near the site, therefore, these five species and the wetlands were considered as potential ecological receptors and further evaluated in an ecological risk assessment screening. This screening provided evidence that the potential for risks to aquatic species of concern in Race Run is unlikely and that the potential for risks to aquatic species of concern in Two-Mile run is more likely.

Based on the results of the RIR, it was determined that the ecological risk assessment should be continued to evaluate the risk and effect on aquatic species or habitats of concern. To address the potential effects, a presence/absence study of the aquatic species of concern in Two-Mile Run and additional surface water, sediment, and plant tissue samples from the wetlands were collected and analyzed for the CPECs identified in the ecological screening. From the results, there was no evidence found that the Site is imparting adverse effects and/or risks to the ecological receptors present.

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 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-assessment⁵, 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:

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:

As part of the Act 2 process, the next step proposed to be implemented by OMG is preparing a Cleanup Plan. The Cleanup Plan will almost certainly contain a section dedicated to long-term groundwater monitoring to continue to demonstrate observed migration, trends, and quality of site groundwater. Furthermore, due to the presence of LNAPL, free product measurement and recovery will likely continue using periodic hand bailing at affected monitoring and recovery wells.

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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 OMG Americas, facility, EPA ID # PAD014130439, located at Two Mile Run Road, Franklin, PA 16323. 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)  Date 9/19/08
(print) Kevin Bilash
(title) RCRA Project Manager

Supervisor (signature)  Date 9-22-08
(print) Paul Gotthold
(title) Associate Director, Office of Pennsylvania Remediation
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