

**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: INTERMET-Archer Creek Foundry  
 Facility Address: 1132 Mount Athos Road, Lynchburg, VA 24504  
 Facility EPA ID #: VAD00820506

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**

The INTERMET-Archer Creek Foundry (ACF) is located at 1132 Mount Athos Road in Lynchburg, Campbell County, Virginia. The facility is located in a mainly industrial use area; however, a few residential properties are located in the general area. According to ACF, the closest residential home is located approximately 2,500 feet from the facility. The property on which the ACF facility was constructed is 193 acres in size. A large portion of the 193 acres is comprised of undeveloped wooded land. ACF operates a large manufacturing plant at the property. The plant is comprised of a casting foundry (formerly referred to as the Small Castings Foundry), warehouse, and associated asphalt parking lot, rail spurs, roadways, and landscaped areas. Several small out buildings are also used at the ACF facility. The majority of the manufacturing plant was constructed in 1972, with several additions added and renovations performed over the years.

The facility manufactures metal parts for automobiles, heavy trucks, small internal combustion engines, computers, industrial tools, and household appliances. Manufacturing at the facility began in 1973. Manufacturing activities include mainly melting and casting of metal parts, with some limited machining and painting. Over the years, the company has been bought and sold and is currently owned by Lynchburg Foundry, LLC d/b/a INTERMET-Archer Creek Foundry and is wholly owned by INTERMET Corporation, LLC. Lynchburg Foundry Company was merged into Lynchburg Foundry, LLC. When the facility was owned and operated by Lynchburg Foundry Company it was referred to as the Archer Creek Plant.

Numerous hazardous chemicals, non-hazardous chemicals, and petroleum products have historically been and are currently used during the manufacturing process. The raw chemicals and petroleum products are stored in small aboveground storage tanks (ASTs), 55-gallon drums, and carboys. The hazardous and non-hazardous wastes generated at the facility are stored in ASTs, 55-gallon drums, carboys, and small containers pending disposal/treatment. The facility is considered a major source for air pollution emissions (for both criteria and hazardous air pollutants) and is classified as a large quantity generator of hazardous wastes. The following are permits and registration numbers for the facility:

- Air Permits, Including Title V, No. 30121
- VDPES Permit, VA 0006262
- Landfill Permits, Onsite 456 and 347 and Offsite 517
- EPA Hazardous Waste No. VAD 988222949 for the Lower Basin part of the facility (i.e., the Warehouse) and the Pattern Shop
- EPA Hazardous Waste No. VAD 000820506 for the Archer Creek Foundry and entire facility

Hazardous wastes historically generated, handled, and stored at the facility include the following:

- D001 - waste ignitable liquids (flash point <140 degrees °F)
- D002 - corrosive waste (pH of less than 2 or greater than 12.5)
- D003 - reactive solid waste
- D006 - toxic solid waste containing cadmium
- D008 - toxic solid waste containing lead
- F001 - spent halogenated solvents used in degreasing
- F002 - spent halogenated solvents used in degreasing

Wastes stored at the facility are generated during research and development, product quality assurance testing, and product manufacturing.

Solid non-hazardous wastes generated at the facility includes commercial wastes (trash, cardboard, pallets, drums, bags, etc.), foundry production wastes (used sand, used/broken cores, carbide slag, cupola slag, used refractory, baghouse dust, used air pollution bags or filters, used grinding wheels), and waste fluids (oil, metal cleaner, rust preventive testing fluids, spent scrubber liquid, etc.). Commercial waste has and is disposed off-site through contracted trash hauling services to either Campbell County landfill or City of Lynchburg landfill. Foundry production wastes were formerly disposed at the on-site landfills or off-site Falwell landfill (an industrial captive landfill used only by the Lynchburg Foundry Lower Basin Plant and Archer Creek Plant) until the landfills were full. After the landfills were full, the foundry production wastes were disposed in commercial and local landfills (Amelia, Old Dominion, Fluvana County, Campbell County, and City of Lynchburg). A review of the disposal records by ACF indicates that off-site disposal began in February 2002, with some on-site disposal continuing until October 2002. Disposal at the Falwell Landfill ceased in October 2002.

#### **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).

**Migration of Contaminated Groundwater Under Control  
Environmental Indicator (EI) RCRIS code (CA750)**

2. Is **groundwater** known or reasonably suspected to be “contaminated” 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 and Reference(s):

Groundwater monitoring is currently performed for one of the on-site landfills (Landfill No. 517). Groundwater monitoring is also performed on the sedimentation ponds as required by the VPDES permit. Reviewed documents indicated that one or more of the SWMUs present at the ACF facility may be affecting groundwater quality at the facility. Groundwater is currently used as a potable water supply at the ACF facility and surrounding area. A few of the waste collection and storage areas and large portions of the facility are not paved with asphalt or concrete and comprised of bare soil, grass, and gravel. Contaminants present in the wastes stored on unlined portions of the facility could leach into soil and groundwater underlying these areas. Contaminants could also leach into soil and groundwater beneath unlined portions of the landfill. Reviewed documents also indicated that the facility may have released hazardous constituents to the soil through dust emissions during air treatment control malfunctions.

According to the ACF, a release of TEA was discovered near the AST used to store this fluid on April 7, 1988. The TEA release was designated SWMU-30 during the September 2005 EPA, Region III site visit. Some of the released TEA was recovered, temporarily stored onsite, and later transported offsite for disposal. On June 15, 1988 impacted soil associated with the TEA release was removed and more TEA liquid in the subsurface was discovered. The discovered TEA was recovered. The removed impacted soil and recovered TEA were temporarily stored onsite and later transported offsite for disposal. The regulatory agencies notified of the release, regulatory cleanup requirements, condition of soil and groundwater after implementation of the cleanup activities, and regulatory status of the cleanup was not provided by ACF.

The findings of a 1981 groundwater study concluded that groundwater above James River elevations flows to the west towards the river; thus, groundwater may discharge into the river.

The degree and extent of impacts to groundwater at the facility and potential health risks posed to facility workers and general public from the impacts requires further evaluation to make this determination.

Footnotes:

“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).

**Migration of Contaminated Groundwater Under Control  
Environmental Indicator (EI) RCRIS code (CA750)**

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):

The degree and extent of impacts to groundwater at the facility and potential health risks posed to facility workers and general public from the impacts requires further evaluation to make this determination.

<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.

**Migration of Contaminated Groundwater Under Control  
Environmental Indicator (EI) RCRIS code (CA750)**

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):

The findings of a 1981 groundwater study concluded that groundwater above James River elevations flows to the west towards the river; thus, groundwater may discharge into the river. More information pertaining to the degree and extent of impacts to groundwater at the facility and potential discharges of groundwater into the James River and/or Archer Creek is needed to make this determination.

**Migration of Contaminated Groundwater Under Control  
Environmental Indicator (EI) RCRIS code (CA750)**

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 concentrations 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 concentrations 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 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 and Reference(s):

More information pertaining to the degree and extent of impacts to groundwater at the facility and potential discharges of groundwater into the James River and/or Archer Creek is needed to make this determination.

<sup>3</sup> As measured in groundwater prior to entry to the groundwater-surface water/sediment interaction (e.g., hyporheic) zone.

**Migration of Contaminated Groundwater Under Control  
Environmental Indicator (EI) RCRIS code (CA750)**

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.
  - 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):

More information pertaining to the degree and extent of impacts to groundwater at the facility and potential discharges of groundwater into the James River and/or Archer Creek is needed to make this determination.

<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.

**Migration of Contaminated Groundwater Under Control  
Environmental Indicator (EI) RCRIS code (CA750)**

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):**

ACF indicated groundwater and surface water monitoring is currently being conducted at the facility; however, the frequency of the monitoring events and location of all monitoring points (monitoring wells and surface water sampling locations) were not provided by ACF.



**Migration of Contaminated Groundwater Under Control  
Environmental Indicator (EI) RCRIS code (CA750)**

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 INTERMET-Archer Creek Foundry, EPA ID #VAD00820506, located at 1132 Mount Athos Road, Lynchburg, Virginia. 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) \_\_\_\_\_ -s- Date \_\_\_\_\_  
(print) \_\_\_\_\_  
(title) \_\_\_\_\_

Supervisor (signature) \_\_\_\_\_ -s- Date \_\_\_\_\_  
(print) \_\_\_\_\_  
(title) \_\_\_\_\_  
(EPA Region or State) \_\_\_\_\_

Locations where References may be found:

US EPA Region III  
Waste & Chemicals Management Division  
1650 Arch Street  
Philadelphia, PA 19103

Contact telephone and e-mail numbers

(name) Denis M. Zielinski  
(phone #) 215-814-3431  
(e-mail) zielinski.denis@epa.gov