DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION
Interim Final 2/5/99
RCRA Corrective Action
Environmental Indicator (EI) RCRIS code (CA725)
Current Human Exposures 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 soil, groundwater, surface water/sediments, and air, 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 #6 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 "Current Human Exposures Under Control" 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 "Current Human Exposures Under Control" EI are for reasonably expected human exposures under current land- and groundwater-use conditions ONLY, and do not consider potential future land- or groundwater-use conditions or ecological receptors. The RCRA Corrective Action program's overall mission to

protect human health and the environment requires that Final remedies address these issues (i.e., potential future human exposure scenarios, future land and groundwater uses, and ecological receptors).

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).

Current Human Exposures Under Control
Environmental Indicator (EI) RCRIS code (CA725)

2. Are groundwater, soil, surface water, sediments, or air **media** 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 (from SWMUs, RUs or AOCs)?

	Yes	No	?	Rationale / Key Contaminants
Groundwater			X	Reviewed documents indicated that one or more of the SWMUs present at the ACF facility may be affecting groundwater quality at the facility. A release of triethylene amine (TEA) was discovered near the AST used to store this fluid on April 7, 1988. The affect of the release on groundwater underlying the facility is unknown.
Air (indoors)[2]		X		
Surface Soil (e.g., <2 ft)			X	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. A release of TEA was discovered near the AST used to store this fluid on April 7, 1988. The limits of soil affected by the release are unknown.
Surface Water			X	Six possible sources of releases of hazardous waste to surface water were identified at the facility. The sources included spills, deposition of dust into the James River, wastewater discharges, discharges from sedimentation areas, groundwater discharge, and storm water discharge.
Sediment			X	Six possible sources of releases of hazardous waste to surface water that could also affect sediment quality were identified at the facility. The sources included spills, deposition of dust into the James River, wastewater discharges, discharges from sedimentation areas, groundwater discharge, and storm water discharge.
Subsurf. Soil (e.g., >2 ft)			X	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. A release of TEA was discovered near the AST used to store this fluid on April 7, 1988. The limits of soil affected by the release are unknown.

Air (outdoors)			X	The facility has released baghouse dust to the atmosphere during periods when air pollution control equipment has malfunctioned. The facility also had an air emission problem during 1978 and 1979.

☐ If no (for all media) - skip to #6, and enter "YE," status code after providing or citing appropriate "levels," and referencing sufficient supporting documentation demonstrating that these "levels" are not exceeded.

☐ If yes (for any media) - continue after identifying key contaminants in each "contaminated" medium, citing appropriate "levels" (or provide an explanation for the determination that the medium could pose an unacceptable risk), and referencing supporting documentation.

☒ If unknown (for any media) - skip to #6 and enter "IN" status code.

Rationale and Reference(s):

The ACF 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 RCRA-FA (June 1989) stated that the ACF facility has released baghouse dust to the atmosphere during periods when air pollution control equipment has malfunctioned. The facility also had an air emission problem during 1978 and 1979. During this time period, facility employees alleged that ACF did not operate the baghouses properly resulting in air emissions damaging the paint on cars. Complaints were also received from neighboring manufacturing plants. The baghouse dust was considered a hazardous waste until 1991. In addition to the baghouse dust, acetylene gas is released into the atmosphere when treating carbide slag.

Portions of the facility appear to be located within a 100-year flood plain. The James River bounds the facility to the west and Archer Creek bounds the facility to the south. Reviewed documents identified five possible sources of releases of hazardous waste to surface water. The sources included spills, deposition of dust into the James River, wastewater discharges, discharges from sedimentation areas, and groundwater discharge. Oil was discharged into the James River from a No. 2 fuel oil UST in 1989. The release was designated Solid Waste Management Unit-10 (SWMU-10) during a September 2005 EPA, Region III site visit. Wind rose diagrams reviewed for Lynchburg, Virginia indicate that winds are often from the northeast during Spring and Fall; thus, fugitive dust would likely be deposited in the James River during these seasons. The wastewater treatment system, designated SWMU-8 and industrial water treatment plant, designated SWMU-40 during the September 2005 EPA, Region III site visit, discharge into the James River. The landfill sedimentation area, designated SWMU-6 and drainage and sedimentation area for the baghouse dust treatment area, designated SWMU-7 during the September 2005 EPA, Region III site visit, discharge directly into the James River. The findings of a 1981 groundwater study concluded that groundwater above James River elevations flows to the west towards the river. Another potential source of hazardous releases to surface water is the storm water system. Storm water has historically and is currently discharged directly and indirectly to the James River and Archer Creek.

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.

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 appropriately protective risk-based "levels" (for the media, that identify risks within the acceptable risk range).

[2] Recent evidence (from the Colorado Dept. of Public Health and Environment, and others) suggest that unacceptable indoor air concentrations are more common in structures above groundwater with volatile contaminants than previously believed. This is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration necessary to be reasonably certain that indoor air (in structures located above (and adjacent to) groundwater with volatile contaminants) does not present unacceptable risks.

Current Human Exposures Under Control
Environmental Indicator (EI) RCRIS code (CA725)

3. Are there **complete pathways** between "contamination" and human receptors such that exposures can be reasonably expected under the current (land- and groundwater-use) conditions?

Summary Exposure Pathway Evaluation Table

Potential **Human Receptors** (Under Current Conditions)

"Contaminated" Media	Residents	Workers	Day-Care	Construction	Trespassers	Recreation	Food[3]
Groundwater	?	?	?	?	?	?	?
Air (indoors)							
Soil (surface, e.g., <2 ft)	?	?	?	?	?	?	?
Surface Water	?	?	?	?	?	?	?
Sediment	?	?	?	?	?	?	?
Soil (subsurface e.g., >2 ft)	?	?	?	?	?	?	?
Air (outdoors)	?	?	?	?	?	?	?

Instructions for Summary Exposure Pathway Evaluation Table:

1. Strike-out specific Media including Human Receptors' spaces for Media which are not "contaminated" as identified in #2 above.

2. enter "yes" or "no" for potential "completeness" under each "Contaminated" Media -- Human Receptor combination (Pathway).

Note: In order to focus the evaluation to the most probable combinations some potential "Contaminated" Media - Human Receptor combinations (Pathways) do not have check spaces ("___"). While these combinations may not be probable in most situations they may be possible in some settings and should be added as necessary.

☐ If no (pathways are not complete for any contaminated media-receptor combination) - skip to #6, and enter "YE" status code, after explaining and/or referencing condition(s) in-place, whether natural or man-made, preventing a complete exposure pathway from each contaminated medium (e.g., use optional Pathway Evaluation Work Sheet to analyze major pathways).

☐ If yes (pathways are complete for any "Contaminated" Media - Human Receptor combination) - continue after providing supporting explanation.

☒ If unknown (for any "Contaminated" Media - Human Receptor combination) - skip to #6 and enter "IN" status code.

Rationale and Reference(s):

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

[3] Indirect Pathway/Receptor (e.g., vegetables, fruits, crops, meat and dairy products, fish, shellfish, etc.)

Current Human Exposures Under Control
Environmental Indicator (EI) RCRIS code (CA725)

4. Can the **exposures** from any of the complete pathways identified in #3 be reasonably expected to be **"significant"**[4] (i.e., potentially "unacceptable" because exposures can be reasonably expected to be: 1) greater in magnitude (intensity, frequency and/or duration) than assumed in the derivation of the acceptable "levels" (used to identify the "contamination"); or 2) the combination of exposure magnitude (perhaps even though low) and contaminant concentrations (which may be substantially above the acceptable "levels") could result in greater than acceptable risks)?

☐ If no (exposures can not be reasonably expected to be significant (i.e., potentially "unacceptable") for any complete exposure pathway) - skip to #6 and enter "YE" status code after explaining and/or referencing documentation justifying why the exposures (from each of the complete pathways) to "contamination" (identified in #3) are not expected to be "significant."

☐ If yes (exposures could be reasonably expected to be "significant" (i.e., potentially "unacceptable") for any complete exposure pathway) - continue after providing a description (of each potentially "unacceptable" exposure pathway) and explaining and/or referencing documentation justifying why the exposures (from each of the remaining complete pathways) to "contamination" (identified in #3) are not expected to be "significant."

☒ If unknown (for any complete pathway) - skip to #6 and enter "IN" status code

Rationale and Reference(s):

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

[4] If there is any question on whether the identified exposures are "significant" (i.e., potentially "unacceptable") consult a human health Risk Assessment specialist with appropriate education, training and experience.

Current Human Exposures Under Control
Environmental Indicator (EI) RCRIS code (CA725)

5. Can the "significant" **exposures** (identified in #4) be shown to be within **acceptable** limits?

☐ If yes (all "significant" exposures have been shown to be within acceptable limits) - continue and enter "YE" after summarizing and referencing documentation justifying why all "significant" exposures to "contamination" are within acceptable limits (e.g., a site-specific Human Health Risk Assessment).

☐ If no - (there are current exposures that can be reasonably expected to be "unacceptable")- continue and enter "NO" status code after providing a description of each potentially "unacceptable" exposure.

☒ If unknown (for any potentially "unacceptable" exposure) - continue and enter "IN" status code.

Rationale and Reference(s):

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

Current Human Exposures Under Control
Environmental Indicator (EI) RCRIS code (CA725)

6. Check the appropriate RCRIS status codes for the Current Human Exposures Under Control EI (event code CA725), 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, "Current Human Exposures Under Control" has been verified. Based on a review of the information contained in this EI Determination, "Current Human Exposures" are expected to be "Under Control" at the INTERMET-Archer Creek Foundry, EPA ID #VAD00820506, located at 1132 Mount Athos Road, Lynchburg, Virginia under current and reasonably expected conditions. This determination will be re-evaluated when the Agency/State becomes aware of significant changes at the facility.

☐ NO - "Current Human Exposures" are NOT "Under Control."

☒ 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
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