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:	New Castle Industries, Inc., Tanner Plating Division
Facility Address:	925 Industrial Street, New Castle, PA 16101
Facility EPA ID #:	PAD 010 466 688

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).

2. Is **groundwater** 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 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 (for any media) – skip to #8 and enter "IN" status code.

Rationale and Reference(s):

The facility is situated on approximately 5.2 acres of land, zoned for industrial use. New Castle Industries operated as a large quantity generator of hazardous waste under USEPA ID number PAD010466688. The facility manufactured and re-manufactured rolls for the production of plastic sheet products. Current and/or historic roll manufacturing began with receipt of steel tube of specified thickness and diameter. Sandblasting of the outer surface may be required to remove oxide scale. Final fabrication processes include machining the outer tube diameter to specified tolerances followed by chrome plating to provide a hardened surface. The outer chrome plated surface is further machined and polished to customer specifications and tolerances. The chromium plating area is located in the west-central portion of the building. The current system includes three active plating tanks and a floor drain system.

This site consists of historic fill extending 6 to 7 feet below grade. According to the Remedial Investigation, fill material was placed throughout the Shenango River Valley to elevate the ground surface for industrial development. Electroplating operations resulted in the release of metals to soil and groundwater at the property. The primary metals of concern in soil and groundwater are chromium, antimony, lead, and arsenic. Some chromium was found to be moving off-site in the groundwater. The facility continues manufacturing and plating at this address. A six foot high cyclone security fence surrounds the entire New Castle property and adjacent properties.

Electroplating operations resulted in the release of metals to soil and groundwater at the Tanner Plating property. The primary metal of concern from operations that are found in soil and groundwater is chromium. Remedial investigative findings show groundwater containing dissolved phase metals has migrated south/southeast under the off-site, downgradient industrial properties including BPI Minerals, Bridges & Towers, Adrian Realty (CSX Transportation), RESCO Products, Industrial Property Management, and Penn Power (First Energy). Soil and groundwater analytical data demonstrate that metals concentrations do not represent an unacceptable risk to human health or the environment, under a non-residential (commercial/industrial) land use scenario (i.e., excludes schools, nursing homes, or other residential-style facilities or recreational areas). Fate and transport modeling supports attainment of the PADEP Act 2 Site Specific Standard through exposure pathway elimination for hexavalent chromium and antimony in fill material/soil and chromium, antimony, and arsenic in groundwater.

[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).

Newcastle Industries has monitoring data from 50 groundwater wells both on and off-site, both deep and shallow. The contaminants of concern in groundwater are chromium, antimony, and arsenic.

The PADEP ACT2 MCS screening value for total dissolved chromium in used aquifers is the same as the drinking water MCL limit for total dissolved Chromium (100 ug/L). PADEP's screening value for chromium in nonuse, non residential, aquifer groundwater is 100,000 ug/L. The highest exceedence at the facility was 24,000 ug/L, found in well TW-48, located in the center of the Newcastle Industries property, adjacent to the former plating bath condensate scrubber tank.

The PADEP ACT2 MCS screening value for dissolved antimony in used aquifers is 6 ug/L. PADEP's screening value for Antimony in nonuse groundwater is 6,000 ug/L. The highest value for Antimony at the facility was 440 ug/L.

The PADEP ACT2 MCS screening value for dissolved arsenic in used aquifers is 10 ug/L. PADEP's screening value for Arsenic in nonuse groundwater is 10,000 ug/L. The highest value at the facility was 82.4 ug/L.

The primary source of chromium released to the subsurface was the former plating drain trough. The trough was replaced in 2003 with a chemical resistant fiberglass liner system. This trough replacement prevents further releases of chromium and other contaminants to the subsurface. Past chrome plating operations at the facility most likely contributed to the elevated levels of arsenic and antimony found in groundwater.

For more details see the Remedial Investigation Final Report, Volume I and II, February 14, 2012, Groundwater Analytical Summary Table 8.

An impermeable surface consisting of asphalt, concrete, 2-foot thick soil cover, or equivalent will be maintained above a 100 foot by 26 foot area outside the current building and the Plating Area inside the current building. Groundwater exposure pathway elimination is assured through passage of a municipal ordinance in February 2010 by the City of New Castle titled "Ward Groundwater Use Restriction Area", which encompasses the site area. Passage of the referenced municipal ordinance was the basis for a Uniform Environmental Covenant Act (UECA) Waiver Request submitted to PADEP in a letter dated May 20, 2010 pertaining to off-site, downgradient properties. PADEP approved the UECA Waiver Request in a letter dated August 5, 2010. In addition, PADEP has approved a Non-Use Aquifer Determination for the adjacent and downgradient RESCO Products property (formerly New Castle Refractories, Inc. and Dixon Ticonderoga) in a letter dated October 1, 2009.

There are no completed pathways between "contamination" and human receptors.

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.

Rationale and Reference(s):

Monitoring wells MW-19S/D, MW-20S/D, MW-16S/D, and MW-24S/D form the last line of wells that monitor groundwater before it moves off-site to the Shenango River. Contamination levels in these perimeter wells are below MCL limits (with the only exception being MW-16S, which had a total chromium concentration of 1680 ug/L, as is shown in sampling results found in Table 8 of The Remedial Investigation Final Report, Volume I and II, February 14, 2012. The Pennsylvania PENTOXSD model outputs for the average and maximum concentrations/velocity scenarios show that diffuse flow of chromium in groundwater does not represent an unacceptable risk to the Shenango River.

[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.

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.

Rationale and Reference(s):

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 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[3] 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):

Chromium in shallow groundwater-

New Castle Industries (Tanner Plating) collected groundwater data quarterly over a five year period. This data shows that Chromium concentrations are under steady-state or decreasing concentrations in the shallow groundwater aquifer. The modeled Chromium concentrations that discharge to the Shenango River via diffuse flow do not result in an exceedance of Pennsylvania surface water criteria. The Pennsylvania PENTOXSD model results show that the diffuse flow of Chromium concentrations within the shallow groundwater plume do not represent an unacceptable risk to the Shenango River.

Chromium in deep groundwater-

The deep plume exists at a depth of 15 to 20 ft bgs, which is below the base of the Shenango River. The groundwater analytical dataset, collected over a five year period, shows that Chromium concentrations in the deep plume are under steady state or decreasing conditions. The model outputs for the average and maximum concentrations/velocity scenarios show that diffuse flow of chromium in groundwater does not represent an unacceptable risk to the Shenango River.

For more details on transport and exposure pathway evaluation see The Remedial Investigation Final Report, Volume I and II, February 14, 2012.

[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 "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 a "NO" status, 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?"

_____ 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):

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 New Castle Industries, Inc., Tanner Plating Division, EPA ID # PAD 010 466 688, located at 925 Industrial Street, New Castle, PA 16101. 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) [signature] Date 4/15/14

(print) Grant Duffcy

(title) RCRA Project Manager

Supervisor: (signature) [signature] Date 4-15-14

(print) Paul Gotthold

(title) Assoc. Dir., PA Remediation, LCD

(EPA Region or State) EPA Region III

Locations where References may be found:

References have been appended to the Environmental Indicator Report and can also be found at PADEP's Meadville office and USEPA's Region III office.

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