

Documentation of Environmental Indicator Determination

September 2003

**RCRA Corrective Action
Environmental Indicator (EI) RCRIS code (CA750)**

Migration of Contaminated Groundwater Under Control

Facility Name: Former Edgewater Steel Limited
Facility Address: 300 College Avenue, Oakmont, PA 15139
Facility EPA ID #: PAD074966789

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"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?

	If yes – continue after identifying key contaminants, citing appropriate "levels," and referencing supporting documentation.
X	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. <i>(In order to present a more complete representation of the status of the site, the reviewer has chosen not to skip to #6.)</i>

Rationale and Reference(s):

See following pages for Rationale and Reference(s).

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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Response to Rational/Reference, Question 2

The following summarizes the most recent groundwater sampling events reported in PADEP and USEPA files (1984, 1986, 1987, 1991, and 1992 for the former EAF Dust Landfill and 1995 and 1996 for the Demolition Waste Landfill, both located on the southern portion of the site). Groundwater investigations were only conducted for two SWMUs; the former EAF Dust Landfill and the Demolition Waste Landfill.

While documented spills were predominantly released to the Allegheny River, it is unknown if tanks or equipment leaked or continue to leak, releasing primarily petroleum products to the groundwater and/or soil. Plants 1, 2, and 3 each have sump pits below the floors, which captured leaking fluid from hydraulic machinery like lathes and presses. The fluid contained in these pits was previously pumped to the Dravo[®] oil/water separator. However, a Draft Summary of Environmental Concerns dated June 11, 1998 and the Plant Manager reported that the sumps are not connected to the Dravo[®] oil/water separator unit and are pumped out periodically by a contractor. The Plant Manager was unsure of the capacity of the sump pits, however, he did indicate that they require cleaning frequently. The Plant Manager reported at the time of the EI site inspection that the sumps were clean shortly before the EI site inspection and they would soon need to be cleaned again. Plant operations ceased in November 2001, and it is unknown if equipment containing petroleum products were drained before the plant shutdown, or if they continue to leak. During the EI site inspection, the electrical panel of one press was observed to be covered with hydraulic oil due to leakage.

The integrity of these sump pits is unknown because they could not be inspected during the EI site inspection, as entering them required OSHA Confined Space certification. Due to the fact that the plant structures are believed to have been constructed in the 1920s, the integrity of these pits is questionable.

The current owner of the property where these sumps/pits are located, the Regional Industrial Development Corp. (RIDC), has been emptying the contents of several of these units. Several more need to be emptied.

Former EAF Dust Landfill

The monitoring well system for the former EAF dust landfill consisted of one upgradient monitoring well (MW-906) and four downgradient monitoring wells (MW-903, MW-904A, MW-904B, and MW-905), which were installed between 1982 and 1983.

1984 (Letters from the Edgewater Steel Corporation to USEPA, dated September 4, 1984 and April 17, 1985)

Groundwater samples were collected from each of the former EAF dust landfill monitoring wells in August 1984 for gross alpha and beta analysis and in December 1984 for radium-226 and radium-228 analysis. Alpha and beta results ranged from 0.19 to 5.8 pCi/l and 0.28 to 29 pCi/l, respectively. Radium-226 and radium-228 concentrations ranged from -0.2 to 0.7 pCi/l

1986 and 1987 (1986 CME and Groundwater Results Submitted to PADEP on July 30, 1987)

- 1,1,1-trichloroethane – ranged from non detect to 118 ppb
- Trichloroethylene – ranged from 2.7 to 150 ppb
- 1,1-dichloroethylene – ranged from non detect to 1.7 ppb
- Arsenic – non detect to 0.010 ppm
- TOX – less than 10 to 100 ppb

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1991 (CME results per a PADEP Internal Memo, dated May 23, 1991)

A CME conducted by PADEP at the site on March 13, 1991 (Internal PADEP Memo, dated May 23, 1991) indicated that MW-906 contained elevated concentrations of manganese, iron, and aluminum, which PADEP reported to be typical of water in alluvial aquifers. Barium was the only potential contaminant of concern, which was detected above detection limits, but even at its highest level (637 ppb in MW-906) was below the MCL of 1.0 mg/l. PADEP indicated that elevated levels of sodium and chlorides may be attributed to a sewer line which transverses the property.

1992 (Sampling results submitted to PADEP by Halliburton NUS)

Halliburton NUS collected groundwater samples in August 1992 from MW-903, MW-904A, MW-904B, MW-905, and MW-906. Concentrations of arsenic, barium, and chromium were detected below 1 ppm. TOX concentrations ranged from 14 to 88 ppm.

PADEP allowed the Edgewater Steel Corporation to cease groundwater monitoring activities for the former EAF dust landfill because: 1) it could not be properly monitored due to hydraulic influences from nearby Plum Creek and 2) Edgewater removed the EAF dust and contaminated soil, thus clean closing the unit. Earth Sciences Consultants, on behalf of Edgewater, closed monitoring wells MW-903 through MW-906. Therefore this area posed no further groundwater contamination potential. Fay Construction currently owns the property where this unit was located.

Demolition Waste Landfill

The monitoring well system for the demolition waste landfill consisted of one upgradient monitoring well (MW-902), and three downgradient monitoring wells (MW-901, MW-907, and MW-908).

Sampling results submitted to PADEP by Edgewater Steel Limited for the fourth quarter of 1995 and the first and second quarters of 1996

Compound	MW-901			MW-902			MW-907		
	4 th Q 1995	1 st Q 1996	2 nd Q 1996	4 th Q 1995	1 st Q 1996	2 nd Q 1996	4 th Q 1995	1 st Q 1996	2 nd Q 1996
Calcium	58	77	78	55	56	61	44	47	53
Lead	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Sodium	70	77	78	24	22	25	18	16	17
Chloride	41	63	58	51	46	48	32	44	43
pH	6.7	6.6	6.5	6.7	7.2	6.9	5.8	7.3	6.0
Dissolved Solids	580	760	760	310	340	370	240	310	320

Groundwater sampling results submitted to PADEP by Edgewater Steel Limited for the fourth quarter of 1995 and the first and second quarters of 1996 indicated the following results (ppm) for a production well identified as ESG-07, which was sampled as part of the quarterly demolition waste landfill sampling activities:

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Response to Rational/Reference, Question 2

Compound	ESG-07		
	4th Q 1995	1st Q 1996	2nd Q 1996
Calcium	15	20	19
Lead	<0.05	<0.05	<0.05
Sodium	29	29	27
Chloride	60	57	53
pH	8.5	8.1	8.5
D i s s o l v e d Solids	130	170	150

It is unclear if well ESG-07 is MW-907.

This landfill was properly closed in place. Although PADEP has not received groundwater monitoring results since 1996, historical data does not suggest that the landfill caused a groundwater contamination problem. Fay Construction currently owns the property where this landfill is located.

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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. <i>(In order to present a more complete representation of the status of the site, the reviewer has chosen not to skip to #6.)</i>

Rationale and Reference(s):

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 and Reference(s): _____

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5. Is the **discharge** 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 concentration ³ of <u>key</u> 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 <u>each</u> 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. <i>(In order to present a more complete representation of the status of the site, the reviewer has chosen not to skip to #6.)</i>

Rationale and Reference(s):

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)?

	<p>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 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.</p>
	<p>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..</p>
	<p>If unknown – skip to 8 and enter "IN" status code. <i>(In order to present a more complete representation of the status of the site, the reviewer has chosen not to skip to #6.)</i></p>

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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.

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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. <i>(In order to present a more complete representation of the status of the site, the reviewer has chosen not to skip to #6.)</i>

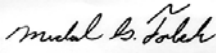
Rationale and Reference(s):

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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).

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 Former Edgewater Steel Corporation facility, EPA ID PAD 074 966 789 at 300 College Avenue, Oakmont, PA . 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: Carl Spadaro Date September 30, 2003
Carl Spadaro
Facilities Engineer – Waste Management
PADEP – SWRO

Supervisor:  Date September 30, 2003
Michael G. Forbeck, PE
Facilities Manager – Waste Management
PADEP - SWRO

Locations where References may be found:

References have been appended to the Environmental Indicator Report and can also be found at PADEP's Pittsburgh office, the Allegheny County Health Department's office in Pittsburgh and USEPA's Region III office.

Contact telephone and e-mail numbers:

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