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:	**Kennametal, Inc.**
Facility Address:	**442 Chalybeate Spring Road**
	P.O. Box 161
	Bedford, PA 15522
Facility EPA ID #:	**PAD 00 439 7683**

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 "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)

Facility History

Kennametal, Inc. is a manufacturer of carbide-tipped steel tools for mining and highway construction applications. The facility contains two distinct manufacturing areas. In Manufacturing Area 1, tungsten carbide powders are ground and pressed into tool tips of various shapes. These tool tips then undergo sintering, honing, blasting and grinding. In Manufacturing Area 2, the steel bodies that hold the tungsten carbide tips are manufactured. The tungsten carbide tips also undergo brazing in this area. Other Manufacturing Area 2 operations include heat treating, annealing, snowplow blade fabrications, washing, rust inhibiting, painting, bucket label printing, packaging, storing and shipping.

Prior to 1981, some wastewaters generated at the facility were treated and released to three lagoons, designated Lagoon Nos. 1, 2 and 3. Lagoon Nos. 1 and 2 were constructed in 1965 and 1970, respectively, and both received heat treat rinse water, paint stripping solution, grinding and cutting fluids, neutralized acidic cleaning solution and washer station wastewater. Lagoon No. 3 was put into service in 1970 and received water-based coolants, neutralized acidic cleaning solution and washer station wastewater until 1981. All three of these lagoons have been closed. Since 1981, Kennametal has treated the above waste streams in its own wastewater treatment plant which discharges to the Bedford municipal sewer system. (Draft RCRA Facility Investigation Report for the Kennametal, Inc. Manufacturing Facility, July 12, 1995)

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

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?

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 - skip to #8 and enter "IN" status code.

Rationale and Reference(s):

Since the early 1980s, more than 30 monitoring wells have been installed at Kennametal to assess the groundwater quality beneath the site. Seven monitoring wells have been monitored annually in order to document that groundwater contamination is not migrating off-site. The main contaminants of concern in the groundwater are 1,1,1-Trichloroethane and its degradation products, which are concentrated at two areas on the site: near Former Lagoon No. 3 and west of Former Lagoon No. 2. The highest concentrations of 1,1,1-TCA as of the last few groundwater monitoring events have been in the range of 600 micrograms per liter (ug/l) to 1,000 ug/l. The maximum contaminant level (MCL) for drinking water for 1,1,1-TCA is 200 ug/l. Other contaminants found at or just above the MCL include vinyl chloride (as high as 7 ug/l compared to an MCL of 2 ug/l), 1,1-dichloroethene (as high as 37 ug/l compared to an MCL of 7 ug/l) and tetrachloroethene (one time detection at 8 ug/l compared to an MCL of 5 ug/l). (Description of Current Conditions, May 27, 1992; Draft RCRA Facility Investigation Report for the Kennametal, Inc. Manufacturing Facility, July 12, 1995; Annual Groundwater Monitoring Program Results - Round 1 thru 7, November 13, 1996 through March 27, 2002)

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).

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"[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):

Since the early 1980s, more than 30 monitoring wells have been installed at Kennametal to assess the groundwater quality beneath the site. The main contaminants of concern in the groundwater are 1,1,1-Trichloroethane and its degradation products, which are concentrated at two areas on the site: near Former Lagoon No. 3 and west of Former Lagoon No. 2. Groundwater has been pumped from wells located in the vicinity of Former Lagoon No. 3 since the mid-1980s. Groundwater that is collected from these wells is treated in a batch-mode air-stripper to remove the volatile organic compounds (VOCs). There is no evidence that suggests that groundwater contamination has ever migrated off-site. Kennametal has a groundwater monitoring program in place to verify that the groundwater contamination is not migrating off-site.

Thirty-five (35) wells were identified within approximately 3/4-mile of the site. All of these wells are either upgradient of the facility or on the opposite side of a tributary to Dunning Creek. In 1984, PADEP sampled three nearby homeowner wells for VOC's; none were detected. In June 1992, EPA collected samples from nine residences located in the vicinity of the site and had them analyzed for VOCs and total metals. With the exception of one sample containing a trace concentration of methylene chloride, no VOCs were detected in the samples. Methylene chloride is a common laboratory contaminant and its detection in the sample can not be attributed to Kennametal, Inc. operations. The metals levels in the samples were within the normal ranges expected for groundwater in the area. (Description of Current Conditions, May 27, 1992; Draft RCRA Facility Investigation Report for the Kennametal, Inc. Manufacturing Facility, July 12, 1995; Annual Groundwater Monitoring Program Results - Round 1 thru 7, November 13, 1996 through March 27, 2002)

[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.

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.

X 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):

Shallow and deep aquifer zones have been identified at the Kennametal site. The shallow aquifer includes overburden sediments and shallow and weathered bedrock of the Marcellus shale formation. Groundwater flow in the shallow aquifer is east-northeast toward the unknown tributary of Dunning Creek. The deep aquifer zone consists of the fractured Marcellus formation. Groundwater flow in this aquifer is northeast parallel to the fold axis of the Evitts Creek syncline. Groundwater samples collected from wells tapped into the deep aquifer have not exhibited contamination.

Historical groundwater monitoring has shown that the existing groundwater recovery system has controlled the migration of the 1,1,1-TCA plume and reduced the mass of 1,1,1-TCA present in the area near Lagoon No. 3. Kennametal, Inc. has agreed to continue its groundwater recovery operations until the 1,1,1-TCA concentration in the aquifer is no longer above the MCL, or until further reductions in 1,1,1-TCA concentrations are not possible.

The other area of groundwater contamination (west of Lagoon No. 2) contains smaller concentrations of VOCs than the plume near Lagoon No. 3. Only 1,1-dichloroethene has been found in this area at a concentration above the MCL. Historical groundwater monitoring has shown that this smaller plume is immobile and has not had any impact on the unnamed tributary to Dunning Creek. (Description of Current Conditions, May 27, 1992; Draft RCRA Facility Investigation Report for the Kennametal, Inc. Manufacturing Facility, July 12, 1995; Annual Groundwater Monitoring Program Results - Round 1 thru 7, November 13, 1996 through March 27, 2002; Kennametal Correspondence of July 31, 1996; EPA Correspondence of August 23, 1996)

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[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)?

.

____ 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 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 concentration[3] 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 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):_____

[3] 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[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 "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):_____

[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.

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?"

X 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):

Groundwater has been pumped from wells located in the vicinity of Former Lagoon No. 3 since the mid-1980s. Groundwater that is collected from these wells is treated in a batch-mode air-stripper to remove the VOCs. Kennametal, Inc. has agreed to continue its groundwater recovery operations until the 1,1,1-TCA concentration in the aquifer is no longer above the MCL, or until further reductions in 1,1,1-TCA concentrations are not possible.

Kennametal, Inc. agreed to annually monitor seven groundwater wells to verify that the contaminated plumes are not migrating from their current locations and to ensure that the groundwater recovery system is continuing to reduce the level of VOCs in the groundwater near Lagoon No. 3. EPA is considering reducing the monitoring frequency requirement since the analytical results from the past five annual monitoring events have indicated little or no change at several of the sampling locations.(Description of Current Conditions, May 27, 1992; Draft RCRA Facility Investigation Report for the Kennametal, Inc. Manufacturing Facility, July 12, 1995; Kennametal Correspondence of July 31, 1996; EPA Correspondence of August 23, 1996)

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).

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 **Kennametal, Inc.** facility, EPA ID # **PAD 00 439 7683**, located at **442 Chalybeate Spring Road, Bedford, PA 15522**. 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 04-28-97
Andrew Clibanoff
Remedial Project Manager

Supervisor (signature) _____ Date 06-17-02
Paul Gotthold
PA Operations Branch Chief
EPA, Region 3

Locations where References may be found:

Facility RCRA Project File
EPA, Region III
1650 Arch Street
Philadelphia, PA 19103-2029

Contact telephone and e-mail numbers:

(name) Andrew Clibanoff
(phone #) 215-814-3391
(e-mail) clibanoff.andrew@epa.gov