

9/26/02

DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION

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

Facility Name: Xerox Corporation, Joseph C. Wilson Center for Technology - Webster
Facility Address: 800 Phillips Road
Webster, New York 14580
Facility EPA ID #: NYD0022111324

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

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).

Facility Background Description:

The facility occupies approximately 1000 acres of land in the Town of Webster. The areas adjacent to the site on the east, south and west are mixed use and are zoned for industrial, commercial, residential and farm uses. The area to the north of the site is zoned for residential and farming uses. Activities at the facility include research, development and the manufacturing and/or refurbishing of electrostatic copying machines and associated consumable materials (such as toner). Operations began in 1956. Xerox operates hazardous waste tanks and container storage areas in accordance with a 373-2 Hazardous Waste Management Permit. Groundwater monitoring and corrective action is also performed under the authority of the Permit. One hundred and five (105) Solid Waste Management Units have been identified, of which eighty (80) of the units have been categorized as requiring no further action. Volatile organic contaminants are the primary concern at each of the Investigative sites. Metals contamination is also present, to a lesser extent. The corrective action program addresses environmental contamination at seven (7) major "Investigative Sites", and also addresses contamination at certain other on-site locations.

Facility Map: The attached figure presents a map of the facility.

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?

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 is contaminated with Volatile Organic Contaminants. Primary constituents are Trichloroethylene, Tetrachloroethylene, 1,1,1-Trichloroethane, 1,1-Dichloroethane 1,2,-Dichloroethene, Toluene, and Vinyl Chloride. Total Volatile Organic Contaminant concentrations are greater than 100,000 ppb at some locations. Metals contamination is also present in groundwater at concentrations which slightly exceed the groundwater standards.

References:

- Final RFI and Summary Reports (various dates).
- Groundwater Monitoring Program Major/Minor Reports (submitted semi-annually).
- 6NYCRR 373-2 Hazardous Waste Management Permit (NYSDEC Permit # 8-2654-00064/00040).

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).

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.

Rationale and Reference(s): Numerous Corrective Measures have been implemented in order to remediate and contain groundwater contamination. Implemented measures include conventional pump and treat technology, blasting of bedrock trenches to enhance groundwater recovery, two phase (water/vapor) extraction and removal of source (soils) materials. Groundwater recovery operations began in 1986 and installation of an extensive system of two phase extraction wells began in 1992. A comprehensive groundwater monitoring program has been in effect to provide continuing assessment of groundwater conditions and to gauge the progress of corrective measures. During the 1999 calendar year, forty million (40,000,000) gallons of contaminated groundwater and over two hundred million (200,000,000) cubic feet of aspirated air were recovered and treated, resulting in the removal of more than one thousand five hundred (1500) pounds of contaminant mass.

References:

- Final RFI and Summary Reports (various dates).
- Groundwater Monitoring Program Major/Minor Reports (submitted semi-annually).
- 6NYCRR 373-2 Hazardous Waste Management Permit (NYSDEC Permit # 8-2654-00064/00040).

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?

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): A small drainage ditch in the vicinity of Building 209 has been tested and at times has shown elevated concentrations of volatile organic contaminants. Detected contaminants are the same as those associated with the Building 209 Investigative Site which is currently being remediated.

References:

- RCRA Facility Investigation Final Report, Building 209 Investigative Site, October 1993.
- Building W-209 RFI Summary Report, October, 1996.
- Groundwater Monitoring Program Major/Minor Reports (submitted semi-annually).
- 6NYCRR 373-2 Hazardous Waste Management Permit (NYSDEC Permit # 8-2654-00064/00040).

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)?

 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 concentration³ 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 concentration³ 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 concentrations³ 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): The affected drainage ditch is located entirely on-site and Volatile Organic Contaminant concentrations are much lower as water moves away from the Building 209 area. Downstream monitoring is performed in accordance with a SPDES Permit and there have been no SPDES violations due to volatile organic contaminant concentrations.

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 implemented⁴)?

_____ 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.

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): Continued corrective measures and the associated groundwater monitoring programs are required under Xerox's 373-2 Hazardous Waste Management Permit. These programs will continue under the authority of the Permit. (Minor modifications to the programs may be implemented with Department approval.)

References:

- Final RFI and Summary Reports (various dates).
- Groundwater Monitoring Program Major/Minor Reports (submitted semi-annually).
- 6NYCRR 373-2 Hazardous Waste Management Permit (NYSDEC Permit # 8-2654-00064/00040).

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 Xerox Corporation - Joseph C. Wilson Center for Technology, EPA ID # NYD002211324, located at **800 Phillips Road, Webster, New York, 14580**. 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) Denise M. Radtke Date: 9/26/02
(print) Denise Radtke
(title) Engineering Geologist II

Supervisor (signature) Edward P. Miles Date: 9/26/02
(print) Edward Miles
(title) Engineering Geologist III
(EPA Region or State) EPA Region II - New York State

Bureau (signature) Paul Merges Date: 9/26/02
Director (print) Paul Merges
(title) Director, Bureau of Radiation and Hazardous Site Management
(EPA Region or State) EPA Region II - New York State

Locations where References may be found:

New York State Department of Environmental Conservation, Central Office
50 Wolf Road
Albany, New York 12233

Regional Headquarters
6274 East Avon-Lima Road
Avon, New York 14414

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