

## DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION

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

**Facility Name:** Caribe General Electric Products, Inc.  
**Facility Address:** P.R. Road 149 Km. 67, Calle Carrion Maduro Final, Juana Diaz, Puerto Rico  
**Facility EPA ID#:** PRD090282757

#### **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 EIs 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 objectives of the RCRA Corrective Action program, the EIs 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 is for reasonably expected human exposures under current land- and groundwater-use conditions ONLY, and does 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 Determination status codes should remain in the 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 Information**

Caribe General Electric (GE) Products, Inc., is a five-acre site located in the south central part of the Island of Puerto Rico in the municipality of Juana Diaz, near the intersection of Routes 14 and 149. GE began operations at this site on August 30, 1957, originally leasing the property from the Puerto Rico Industrial Development Company (PRIDCO). GE acquired the property in 1987. Prior to use by GE, the

site was used to grow sugar cane. The GE facility manufactured electric wiring devices including switches, receptacles, starters, and relays. Manufacturing of switches containing mercury (Hg) was discontinued at the facility in 1970. Electroplating of the manufactured electric wiring devices began at this facility in 1971. This site was listed on the National Priorities List (NPL) as a Superfund Site by USEPA in 1983 due to a mercury-contaminated landfill (Solid Waste Management Unit (SWMU) 1) at the site. The Superfund program took responsibility for overseeing cleanup of this landfill. All remedial actions have been completed and USEPA has determined that no further action is necessary with regards to this unit.

According to the RCRA Facility Assessment (RFA) Report, GE notified USEPA of its hazardous waste activity on August 5, 1980, and was classified as a hazardous waste generator facility and storage facility. Hazardous wastes reported as being generated were F006, F007, F008, and F009 wastes. A revised notification was submitted on September 1, 1987, however, indicating that only F006 and D007 were generated. The Part A permit application was submitted on November 14, 1980. In 1987, GE requested a change in status from a hazardous waste storage facility to only a hazardous waste generator facility. On April 21, 1987, GE was requested by USEPA to submit either a RCRA Part B Permit Application or a closure plan for Container Storage Area No. 1, which was the only RCRA unit at the facility. GE submitted the closure plan on May 17, 1988. The RFA was performed and submitted on May 10, 1989, in order to implement any necessary corrective action.

GE discontinued operations at the site in May 2000. All units (SWMUs and Areas of Concern (AOCs)) at the site have been removed and closed. The site is currently secured by a chain link security fence and is subject to 24-hour security provided by an on-site security guard. No industrial activities are currently taking place at the site.

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

**Summary of SWMUs and AOCs:** The following seven SWMUs and two AOCs were identified in the RFA Report (May, 1989). Details pertaining to each are outlined below. A site map is provided in Attachment 1 and outlines the location of each SWMU and AOC at the site.

**SWMU 1, Mercury Contaminated Landfill:** This land disposal unit contained waste fill that was contaminated with mercury. This area is also referred to as the West Field, as it is located on the west side of the GE plant and actually extends onto the adjacent property to the west, which is owned by PRIDCO. This landfill was used between 1957 and 1969 for the disposal of defective parts from silent mercury switches. USEPA was notified in 1981 as to the presence of mercury at the site. In 1983, USEPA placed this unit on the NPL list. Remediation of this unit has been ongoing and was completed in April, 2000. Remediation began by excavating waste fill material and physically separating the high-concentration wastes containing free mercury. Contaminated soil and residual materials, totaling 13,424 tons, were excavated from this unit and shipped off site for disposal. In addition, 172 tons of metallic components were sent for retort at an off-site facility. All excavated areas were then backfilled with clean soil. Confirmatory sampling indicated that all mercury levels in soil at this unit are now reduced to a level less than the residential Preliminary Remediation Goal (PRG) of 39 mg/kg, which was established by the USEPA in the Revised Baseline Risk Assessment (Ref. 4). Groundwater monitoring was conducted during and after the excavations were performed and indicated that groundwater had not been adversely impacted by the waste fill material at this unit (Refs. 2 and 4). The initial sampling (December, 1991) was conducted as part of the Supplemental Remedial Investigation, during which the network of 11 monitoring wells (10 shallow, 1 deep) at the site were sampled for VOCs, total mercury, inorganic mercury and organic mercury. Several chlorinated hydrocarbons were detected (tetrachloroethane, trichloroethane, and 1,1,1-trichloroethane); however, constituent levels did not exceed the Maximum Contaminant Levels (MCL), the primary drinking water standard as defined by the Safe Drinking Water Act (Ref. 2). During the final groundwater monitoring event in March 2000 to confirm post remedial action cleanup goals had been achieved, groundwater samples were collected from eight of the existing monitoring wells (MW-1, MW-3, MW-5, MW-6, MW-7, MW-8S, MW-8D, MW-9) (See Attachment 2). Groundwater samples were analyzed for total mercury and all results (max. 0.63 µg/L) were below the MCL (2.0 µg/L) (Ref. 4). Thus, the Remedial Action Report and Final Closeout Report concluded that groundwater had not been impacted by activities at this unit and that no long-term groundwater monitoring would be necessary at the site. USEPA has concluded that no further action is necessary for soil or groundwater at this unit (Refs. 4, 5, and 6). has concluded that NFA is necessary for soil or groundwater at this unit (Refs. 4, 5, and 6).

**SWMU 2, Container Storage Area No. 1 (CSA 1) for FOO6 wastes:** This unit consisted of a 480 square foot enclosed storage area with concrete floors, concrete and steel walls, fenced

gates, a metal roof, and secondary containment to capture any releases. Storage at this unit began in 1980. The unit was closed in 1990. Wastes stored in this unit included F006 sludge, D007, and spent chromate solution from electroplating processes. No releases were ever reported at this unit. This unit underwent RCRA closure in 1990. Initial concrete samples indicated elevated levels of chromium and metals contamination in excess of EPA health-based standards (Ref. 6). Delineation of the contamination was performed and approximately ten cubic yards of contaminated concrete and soil were removed. Confirmatory samples indicated that constituent levels had been reduced to levels below the EPA health-based standards, and the area was subsequently backfilled. The RCRA Closure Plan was approved by the Puerto Rico Environmental Quality Board (EQB) on March 29, 1991 (Ref. 6). USEPA and EQB have determined no further action is required for this unit.

**SWMU 3, Container Storage Area No. 2 (CSA 2) for Spent Oil:** This unit was used for the storage of non-regulated, non-hazardous used oil. Storage at this unit began in 1986 and ceased in 1989 (Ref. 4). The unit consisted of a 180 square foot area with a concrete floor, aluminum walls, aluminum roof, and secondary containment system (Ref. 1). Per the 1989 RFA, no known releases were documented at this unit and no further action was recommended. USEPA and EQB have concurred with the no further action determination (Ref. 6).

**SWMU 4, Container Storage Area No. 3 (CSA 3) for Metal Scrap:** This unit consisted of two outdoor areas (Area 1 and 2) that were utilized for temporary storage in 1988, with all storage ceasing in 1989. Area 1 was utilized to store brass scrap and consisted of a concrete floor, roof, and fence around the perimeter. Area 2 was utilized to store raw materials and measured approximately 600 square feet in size. Area 2 also consisted of a concrete floor, aluminum walls, and roof. Neither of these areas had secondary containment systems. No hazardous waste products were ever stored in either of these two areas, nor was there any evidence of past releases in these areas (Ref. 1). Given the short length of time this area was used, the types of materials stored in this location, and the low permeability attributed to site soils, GE recommended no further action for this area (Ref. 6). USEPA has concurred with this no further action determination (Ref. 7).

**SWMU 5, Wastewater Treatment Unit No. 1 (WWT-1) for Chromate Reduction:** This unit consisted of an aboveground 125-gallon fiberglass tank. This unit was utilized from 1971 to December 1988 and was part of the facility's wastewater treatment system (SWMUs 5, 6, and 7). This unit was utilized for the facility's chromate oxidation-reduction process, where hexavalent chrome from the electroplating process was chemically reduced to trivalent chrome by the addition of sodium metabisulfite and sulphuric acid. A subsurface secondary containment system, resembling a basement, surrounded this unit (Ref. 1). The Decontamination Summary Report for SWMUs 5, 6, and 7 (April 2001) documents the cutting, containerizing, and disposal of this unit. Concrete and soil samples were collected in the secondary containment surrounding this unit. Several inorganics (chromium, nickel) were detected at elevated levels; however, all detected concentrations were below the EPA Region 3 Risk Based Concentrations (RBC) for Industrial Soil (Ref. 6). GE plans to conduct additional remedial activities in the area of SWMU 7 (which is immediately adjacent to the secondary containment unit) in the future (i.e., additional assessment, risk assessment, and or additional excavation) in order appropriately address all residual contamination (Ref. 6). GE recommended no further action for this unit. USEPA accepted the no further action proposal on May 5, 2001 (Ref. 6).

**SWMU 6, Wastewater Treatment Unit No. 2 (WWT-2) for Neutralization/Chemical**

**Precipitation:** This unit consisted of an open aboveground 500-gallon tank. This unit was utilized from 1971 to December 1988, and was part of the facility's wastewater treatment system (SWMUs 5, 6, and 7). This unit was utilized for neutralization of the electroplating wastewaters and chromate reduction wastewaters (received from SWMU 5). Acidic wastes received in this unit were be combined with non-chromate wastes (i.e., concentrated acid and/or alkali wastes) for treatment. Like SWMU 5, a subsurface secondary containment system resembling a basement surrounded this unit (Ref. 1). The Decontamination Summary Report for SWMUs 5, 6, and 7 (April 2001) documents the cutting, containerizing, and disposal of this unit. No known documented releases occurred at this unit. During the cutting and containerizing of this unit, the integrity of the secondary containment unit was inspected and deemed to be intact. No concrete or soil sampling is documented for this unit. GE recommended no further action for this unit. USEPA accepted the no further action proposal on May 5, 2001 (Ref. 6).

**SWMU 7, Wastewater Treatment Unit No. 3 (WWT-3) for Sludge Sedimentation (Sludge**

**Settling Tank):** This unit consisted of a large underground reinforced concrete settling tank, with a capacity of 6,000 gallons. This unit was in service from 1971 to December 1988 and was part of the facility's wastewater treatment system (SWMUs 5, 6, and 7). This unit was utilized for removal of all the undesirable solids prior to a gradual metering of the neutral wastewater in the sewer system (Ref. 1). According to the RFA Report, wastewaters from this plant were monitored regularly to ensure appropriate constituent levels were being released to the municipal sewer. F006 sludge was generated during the sedimentation of the solids and was placed in 55-gallon drums and stored in CSA 1 (SWMU 2). This unit had no secondary containment system, with the exception of the reinforced concrete walls (Ref. 1). The Decontamination Summary Report for SWMUs 5, 6, and 7 (April 2001) documents the cleaning of the tank, the evaluation of its integrity, the demolition of the tank, and the concrete and soil sampling conducted at this unit. A total of 22 concrete samples were taken from this tank. Chromium and nickel were detected at elevated levels, however all detected concentrations were below the Region 3 RBCs for Industrial Soil. GE plans to conduct additional remedial activities at this unit in the future (i.e., additional assessment, risk assessment, and or additional excavation) in order appropriately address all residual contamination (Ref. 6).

**AOC A, Satellite Area for Destripping of Brass Pieces:** This area was utilized for destripping of brass pieces. This operation was performed in a small metal tank approximately every six months to a year. During the December 21, 1988, RFA site visit, the tank and an additional drum were found to be half full with tin sludge generated from this process. During a follow-up visit on February 9, 1989, this waste was found stored in containers in SWMU 2. The concern for this area was for the appropriate disposal of the tin sludge. No documented releases of material have occurred from this area (Ref. 1). However, the RFA Report recommended that Puerto Rico's Inspection, Monitoring and Surveillance section ensure that the tin sludge was disposed of properly. GE demolished and decontaminate this area as documented in the Plating Facility Cleanup Report submitted on October 6, 1993 (Ref. 6). Rinsate and wipe samples were collected after the decommissioning was completed. Based upon the sample results, GE has concluded that no further action is necessary for this area (Ref. 6). USEPA has concurred with this determination (Ref. 7).

**AOC B, Electroplating Area:** AOC B consisted of tanks area were electroplating operations were performed. The operation dates for this area were not available in facility documentation. During the RFA visual site inspection on December 21, 1988, and February 9, 1989, the bases of the tanks were observed to be corroded and the lines from most of the tanks were leaking. Nickel

buildup was observed in the outlet of the nickel tank and on the concrete floor (Ref. 1). The RFA recommended that the Puerto Rico's Inspection, Monitoring and Surveillance section ensure that the corroded lines and tanks were repaired. GE demolished and decontaminated this area as documented in the Plating Facility Cleanup Report submitted on October 6, 1993 (Ref. 6). Rinsate and wipe samples were collected after the decommissioning was completed. Based upon sample results, GE has concluded that no further action is necessary for this unit (Ref. 6). USEPA has concurred with this determination (Ref. 7).r

In summary, all SMWUs and AOCs are closed and require no further action with the exception of additional activities that must be performed in the area of SWMU 7. Concrete and soil sample results collected in the area of SWMU 7 indicate that residual contaminant levels are below the Region 3 RBCs for industrial soil, and are thus not a concern for direct exposure based upon the current industrial use of this site. SWMU 1 has been the only identified potential source of groundwater contamination at the site. The network of eleven groundwater wells (10 shallow, 1 deep) located throughout the site were sampled as part of investigations associated with SWMU 1. Analytical results for the two sampling rounds that were conducted (December 1991, March 2000) indicated low levels of chlorinated hydrocarbons and total mercury were present in groundwater at the site. The detected levels were below the USEPA MCLs, and thus USEPA concluded that no further action was necessary for groundwater at this site.

**References:**

1. Letter from Ms. Flor L. del Valle, EQB Land Pollution Control Area, to Mr. Angel Chang, USEPA, re: RCRA Facility Assessment for Caribe GE Products, Inc. Dated May 10, 1989.
2. Supplemental Remedial Investigation (Final Draft), General Electric Wiring Devices Site, Juana Diaz, Puerto Rico. Prepared by Morrison Knudsen Environmental Services Group. Dated March 1993.
3. Region 2 RCRA Corrective Action Site Fact Sheet. Prepared by Mr. Samuel Ezekwo, USEPA. Dated February 10, 2000.
4. Remedial Action Report for General Electric Wiring Devices Site, Juana Diaz, Puerto Rico. Prepared by Metcalf & Eddy. Dated April 2000.
5. Final Closeout Report, GE Wiring Devices, Superfund Site, Juana Diaz, Puerto Rico. Prepared by USEPA. Dated June 20, 2000.
6. Letter from Mr. Rob Somers, Global Waste Manager, General Electric Company, to Mr. Sam Ezekwo, USEPA, re: Caribe GE Lighting's RCRA Corrective Action Status; Juana Diaz, Puerto Rico (with attachments). Dated June 8, 2001.
7. Teleconference between Sam Ezekwo, USEPA and Kristin McKenney, Booz Allen & Hamilton, re: Caribe GE Products, Inc. June 14, 2001.

2. Is **groundwater** known or reasonably suspected to be “**contaminated**”<sup>1</sup> 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.

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 - skip to #8 and enter “IN” status code.

### **Rationale:**

The site is situated in Holocene coastal plain alluvium. The underlying aquifer occurs within these alluvial terrace deposits (Ref. 1). The alluvial aquifer is overlain by unsaturated silt/clay and black silty clay units. The saturated thickness of the alluvial aquifer ranges from 2.5 feet at the eastern edge of the site to approximately 25 feet at the southwestern edge (Ref. 2). The depth to groundwater varies throughout the site and ranges from 25 to 58 feet below land surface. Perched water may occur locally above the black silty clay unit. The direction of groundwater flow is to the south-southwest under an average gradient of 0.0044 foot/foot (Ref. 2).

Based upon all available data (Refs. 1, 2 and 3), concentrations of contaminants in groundwater at the site have never exceeded regulatory limits. A total of 11 monitoring wells (10 shallow and 1 deep) have been installed at the site in order to monitor groundwater quality in the vicinity of the mercury landfill (SWMU 1). Attachment 2 depicts the site’s monitoring well network.

A sampling event was performed in December 1991 in support of a Supplemental Remedial Investigation (Ref. 2). Groundwater samples were analyzed for VOCs, total mercury, inorganic mercury, and organic mercury. Mercury was detected below the detection limit of 0.2 µg/L in all samples. Chlorinated hydrocarbons including tetrachloroethane, trichloroethane and 1,1,1-trichloroethane were detected in several of the samples; however, none of the detected concentrations exceeded the established MCL. Furthermore, no discernable trend could be established related to the site’s hydrogeology. Concentrations in upgradient or cross-gradient wells were similar to those in the downgradient wells.

A final sampling event was performed during March 2000 to confirm post remedial action cleanup goals had been achieved at the mercury landfill site. Groundwater samples were collected from the eight existing monitoring wells: MW-1, MW-3, MW-5, MW-6, MW-7, MW-8S, MW-8D and MW-9. The three remaining monitoring wells were either destroyed during Remedial Action activities (MW-2 and MW-4), or were no longer operable (MW-10). The groundwater samples were analyzed for total mercury and results were reported as below the detection limit of 0.17 µg/L with the exception of MW-9, which contained a concentration of 0.63 µg/L. However, this detected concentration was well below the MCL for mercury of 2.0 µg/L. The Remedial Action Report concluded that groundwater had not been

<sup>1</sup> “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).

impacted by remedial land treatment activities and that no long term groundwater monitoring would be performed at the site (Ref. 3).

**Table 1 - Maximum VOC Concentrations Detected during the Supplemental Remedial Investigation (SRI)**

Well Number	Contaminant	Maximum Concentration from SRI (µg/L)	USEPA MCL (µg/L)
MW-5	Benzene	0.3	5
MW-1	Bromodichloromethane	8	N/A
MW-8S	Carbon Disulfide	230	N/A
MW-1	Carbon Tetrachloride	0.3	5
MW-1	Chloroform	37	80 (p)
MW-1	Chloromethane	0.4	N/A
MW-1	Dibromochloromethane	1	80 (p)
MW-3	Tetrachloroethene	0.4	5
MW-5	Toluene	0.9	1,000
MW-7	1,1,1-Trichloroethane	2	200
MW-2	Trichloroethene	2	5

**References:**

1. Remedial Investigation, General Electric Wiring Devices Site, Juana Diaz, Puerto Rico. Prepared by Law Environmental Services. Dated October 1986.
2. Supplemental Remedial Investigation (Final Draft), General Electric Wiring Devices Site, Juana Diaz, Puerto Rico. Prepared by Morrison Knudsen Environmental Services Group. Dated March 1993.
3. Remedial Action Report for General Electric Wiring Devices Site, Juana Diaz, Puerto Rico. Prepared by Metcalf & Eddy. Dated April 2000.



3. Has the **migration** of contaminated groundwater **stabilized** (such that contaminated groundwater is expected to remain within “existing area of contaminated groundwater”<sup>2</sup> 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”<sup>2</sup>.
  - \_\_\_ If no (contaminated groundwater is observed or expected to migrate beyond the designated locations defining the “existing area of groundwater contamination”<sup>2</sup>) - skip to #8 and enter “NO” status code, after providing an explanation.
  - \_\_\_ If unknown - skip to #8 and enter “IN” status code.

**Rationale:**

This question is not applicable. See response to question #2.

<sup>2</sup> “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:**

This question is not applicable. See response to question #2.

5. Is the **discharge** of “contaminated” groundwater into surface water likely to be **“insignificant”** (i.e., the maximum concentration<sup>3</sup> 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 ecosystems 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<sup>3</sup> 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 ecosystem.

\_\_\_\_\_ If no - (the discharge of “contaminated” groundwater into surface water is potentially significant) - continue after documenting: 1) the maximum known or reasonably suspected concentration<sup>3</sup> 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<sup>3</sup> 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:**

This question is not applicable. See response to question #2.

<sup>3</sup> 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 ecosystems that should not be allowed to continue until a final remedy decision can be made and implemented<sup>4</sup>)?

\_\_\_\_\_ 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 ecosystems), and referencing supporting documentation demonstrating that these criteria are not exceeded by the discharging groundwater; OR 2) providing or referencing an interim-assessment<sup>5</sup>, appropriate to the potential for impact, that shows the discharge of groundwater contaminants into the surface water is (in the opinion of a trained specialist, including an ecologist) adequately protective of receiving surface water, sediments, and ecosystems, 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 ecosystem.

\_\_\_\_\_ If unknown - skip to 8 and enter “IN” status code.

**Rationale:**

This question is not applicable. See response to question #2.

<sup>4</sup> 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.

<sup>5</sup> 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:**

This question is not applicable. See response to question #2.

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).

- 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 Caribe General Electric Products, Inc. site, EPA ID# PRD090282757, located at P.R. Road 149 Km.67, Calle Carrion Maduro Final, in Juana Diaz, Puerto Rico. Specifically, this determination indicates that all available documentation for this site indicates that there are currently no groundwater impacts at this site. 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:** original signed by Date: 06/27/01  
Greg Eades, P.E.  
Civil Engineer  
Booz Allen & Hamilton

**Reviewed by:** original signed by Date: 06/29/01  
Pat Shanley  
Senior Environmental Scientist  
Booz Allen & Hamilton

**Also Reviewed by:** original signed by Date: 07/05/01  
Sam Ezekwo, RPM  
RCRA Programs Branch  
EPA Region 2

original signed by Date: 07/05/01  
Sam Ezekwo, Acting Section Chief  
RCRA Programs Branch  
EPA Region 2

**Approved by:** original signed by Date: 07/27/01  
Raymond Basso, Chief  
RCRA Programs Branch  
EPA Region 2

**Locations where references may be found:**

References reviewed to prepare this EI determination are identified after each response. Reference materials are available at the USEPA Region 2, RCRA Records Center, located at 290 Broadway, 15<sup>th</sup> Floor, New York, New York, and the New Jersey Department of Environmental Protection Office located at 401 East State Street, Records Center, 6<sup>th</sup> Floor, Trenton, New Jersey.

**Contact telephone and e-mail numbers:** Sam Ezekwo, EPA RPM  
(212) 637-4168  
[ezekwo.sam@epa.gov](mailto:ezekwo.sam@epa.gov)

**Attachments**

The following attachments have been provided to support this EI determination.

Attachment 1 - RCRA Corrective Action SWMUs

Attachment 2 - General Site Layout Showing Monitoring Well Locations

Attachment 3 - Summary of Media Impacts Table

Attachments truncated, see facility file (MSS, 03/06/02)