DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION

Interim Final 2/5/99

RCRA Corrective Action
Environmental Indicator (EI) RCRIS code (CA725)

Current Human Exposures Under Control

Facility Name:	**GE Bridgeport**
Facility Address:	**1285 Boston Avenue, Bridgeport CT 06610**
Facility EPA ID #:	**CTD001453711**

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?

   __X__ 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.

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 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 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 "Current Human Exposures Under Control" EI are for reasonably expected human exposures under current land- and groundwater-use conditions ONLY, and do 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 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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General Electric Company's Bridgeport Facility is approximately 76.5-acres and includes approximately 1.5 million square feet of former manufacturing and office buildings, a former disposal area, parking areas, a 5-acre pond (Stillman Pond), three brooks, and a 6-acre athletic field. With the exception of the fenced athletic field located on the west side of the Site, the remainder of the Site has been used for industrial purposes for nearly 100 years. Public access to the property is restricted by chain link fencing and 24-hour security. For the evaluation set forth below, the "appropriately protective risk-based "levels" for the athletic field were the Connecticut Remediation Standard Regulations (CTRSRs) Residential Direct Exposure Criteria (DEC) and, for the remainder of the site, the CTRSRs Industrial/Commercial DEC. All buildings are located on the industrial portion of the Site; therefore, the RSRs Industrial/Commercial Volatilization Criteria were used to assess indoor air. An environmental land use restriction (ELUR) stating that the Site is solely used for industrial/commercial purposes has not been recorded in the land records.

2. Are groundwater, soil, surface water, sediments, or air **media** 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 (from SWMUs, RUs or AOCs)?

	Yes	No	?	Rationale / Key Contaminants
Groundwater	__	_X_	___	The CTRSRs Groundwater Protection Criteria do not apply because the Site has been designated as a GB groundwater area. Public water supply service is available in the area of the Site. A potable well survey has been completed and no potable wells were identified within 500 feet of the Site
Air (indoors)[2]	___	_X_	___	There have been no exceedances of the proposed Industrial/Commercial Volatilization Criteria. In March 2003, the CTDEP proposed revisions to the Volatilization Criteria as part of their application to the USEPA for authorization of the RCRA Corrective Action Program. The CTDEP has since requested that all environmental professionals compare site data to the proposed criteria.
Surface Soil (e.g., <2 ft)	_X_	___	___	Primary constituents detected above CTRSR Industrial/Commercial DEC include polynuclear aromatic hydrocarbons (PAHs), metals, and extractable total petroleum hydrocarbons (ETPH). Polychlorinated biphenyls (PCBs), VOCs and pesticides were detected above CTRSR Industrial/Commercial DEC in isolated portions of the Site. In the athletic fields, limited areas, all of which are entirely covered by pavement, contain arsenic, dieldrin, PAHs, and ETPH at concentrations above the Residential DEC.
Surface Water	_X_	___	___	Surface water is designated by the CTDEP as Class C, which allows discharges from industrial and municipal wastewater treatment systems and cooling waters. Class C surface water bodies are not to be used for potable purposes. Therefore, this assessment did not reference criteria applicable to surface water ingestion. Arsenic, mercury, thallium and bis(2-ethyl-hexyl)phthalate did sporadically exceed the CTDEP Water Quality Standards, Human Health Criteria for consumption of Organisms Only; however, it is unclear if their occurrences relate to releases from the Site or from upgradient sources. In

				addition, because the pond is closed to the public for fishing and restricted by 24-hour security and fences, only trespassers hypothetically would be fishing in the pond. It is highly unlikely that any trespassers would be able to catch consumable aquatic organisms repeatedly throughout the trespasser's lifetime in sufficient quantities for these sporadic exceedances to pose a health risk. Because the pond is dammed, fish are unable to migrate downstream.
Sediment	___	_X_	___	RSR risk-based soil criteria do not apply to sediment, and other regulatory agencies have not issued any applicable criteria protective of human health for direct contact with sediment. The lack of sediment criteria for human health likely reflects the fact that such contact is rare and limited. At this site, direct contact with sediment by trespassers is particularly unlikely, given that access to the pond and streams is restricted by 24-hour security and fences.
Subsurf. Soil (e.g., >2 ft)	_X_	___	___	Primary constituents detected above CTRSR Industrial/Commercial DEC include PAHs, metals, and ETPH. PCBs, VOCs, pesticides and phthalates were detected above the Industrial/Commercial DEC in isolated portions of the site. Metals, PAHs, dieldrin and ETPH were detected in subsurface soils above the Residential DEC in the athletic field, but the detections were in samples collected >2 feet below grade, with many samples located below pavement.
Air (outdoors)	___	_X_	___	VOCs have not been detected in the vadose zone at concentrations that would be expected to contribute to any air quality concerns on the site.

_____ If no (for all media) - skip to #6, and enter "YE," status code after providing or citing appropriate "levels," and referencing sufficient supporting documentation demonstrating that these "levels" are not exceeded.

Yes If yes (for any media) - continue after identifying key contaminants in each "contaminated" medium, citing appropriate "levels" (or provide an explanation for the determination that the medium could pose an unacceptable risk), and referencing supporting documentation.

_____ If unknown (for any media) - skip to #6 and enter "IN" status code.

Rationale and reference(s):

The response is based on analytical results collected at the site from 2006 through 2008 as part of a site wide soil and groundwater investigation (completed to satisfy RCRA Corrective Action) and during a Screening Level Ecological Risk Assessment and Baseline Ecological Risk Assessment. Samples collected prior to 2006 were not considered because the samples were collected in some cases using outdated sampling procedures, detection limits were higher than many applicable criteria, or the analytical methods may not be compliant with the current analytical procedures.

The following reports maintained at the CTDEP also contain details discussing the status of soil, sediment, groundwater, and surface-water quality at the Site:

"Site Investigation Work Plan, General Electric Company 1285 Boston Avenue, Bridgeport, Connecticut" prepared for General Electric Company, prepared by Leggette, Brashears and Graham, Inc., dated October 2006

"Screening Level Ecological Risk Assessment, General Electric Company Facility, Bridgeport, Connecticut – Revision 1" prepared for General Electric Company, prepared by ENVIRON International Corporation, dated July 2007

"Baseline Ecological Risk Assessment, General Electric Company Facility, Bridgeport, Connecticut" prepared for General Electric Company, prepared by ENVIRON International Corporation, dated May 2008

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 appropriately protective risk-based "levels" (for the media, that identify risks within the acceptable risk range).

[2] Recent evidence (from the Colorado Dept. of Public Health and Environment, and others) suggest that unacceptable indoor air concentrations are more common in structures above groundwater with volatile contaminants than previously believed. This is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration necessary to be reasonably certain that indoor air (in structures located above (and adjacent to) groundwater with volatile contaminants) does not present unacceptable risks.

3. Are there **complete pathways** between "contamination" and human receptors such that exposures can be reasonably expected under the current (land- and groundwater-use) conditions?

Summary Exposure Pathway Evaluation Table

Potential **Human Receptors** (Under Current Conditions)

"Contaminated" Media	Residents	Workers	Day-Care	Construction	Trespassers	Recreation	Food[3]
~~Groundwater~~	--	--	--	--	--	--	--
~~Air (indoors)~~	--	--	--	--	--	--	--
Soil (surface, e.g., <2 ft)	No	No	No	Yes	Yes	No	No
Surface Water	No	No	No	No	Yes	No	No
~~Sediment~~	--	--	--	--	--	--	--
Soil (subsurface e.g., >2 ft)	No	No	No	Yes	No	No	No
~~Air (outdoors)~~	--	--	--	--	--	--	--

Instructions for Summary Exposure Pathway Evaluation Table:

1. Strike-out specific Media including Human Receptors= spaces for Media which are not "contaminated") as identified in #2 above.

2. enter "yes" or "no" for potential "completeness" under each "Contaminated" Media -- Human Receptor combination (Pathway).

Note: In order to focus the evaluation to the most probable combinations some potential "Contaminated" Media - Human Receptor combinations (Pathways) do not have check spaces ("___"). While these combinations may not be probable in most situations they may be possible in some settings and should be added as necessary.

____ If no (pathways are not complete for any contaminated media-receptor combination) - skip to #6, and enter "YE" status code, after explaining and/or referencing condition(s) in-place, whether natural or man-made, preventing a complete exposure pathway from each contaminated medium (e.g., use optional Pathway Evaluation Work Sheet to analyze major pathways).

Yes If yes (pathways are complete for any "Contaminated" Media - Human Receptor combination) - continue after providing supporting explanation.

_____ If unknown (for any "Contaminated" Media - Human Receptor combination) - skip to #6 and enter "IN" status code

Rationale and Reference(s):

As discussed in the introduction to this form, with the exception of the athletic fields, the property is used entirely for industrial/commercial purposes. Consequently, the site does not have any Residents or Day-Care, nor are areas of the Site used to grow vegetables, fruits, crops, meat or dairy products. Fishing is not allowed in any water body located on the Site. Thus, the Residents and Food receptors can be ruled out from further consideration. Complete exposure pathways for the remaining four receptors are discussed below.

At the present time, "Workers" at the Site include several GE employees and security guards. A majority of the site

is paved. Access to unpaved areas of the site containing contaminated surface soils is restricted by fencing. Therefore, there is no potential for Workers to be exposed to contamination at the site.

"Construction Workers" at the Site include contractors and consultants involved in maintenance, demolition, investigation, remediation, or construction, as well as utility workers who inspect or repair utilities. Construction Workers are xpected to follow Site health and safety procedures and rules that minimize contact with constituents in soil and surface water. Nonetheless, accidental exposures are remotely possible.

Trespassers are people who access the Site without authorization, despite the presence of exterior fencing, 24-hour security, and secondary internal fencing around the former disposal area and the spool yard. In the past, Trespassers have been intercepted at the Site and immediately escorted off the property. Their presence on the Site is typically infrequent and brief. Nonetheless, Trespassers could contact surface soil or surface water while on the Site. They are not present at the Site long enough to catch aquatic organisms inhabiting the brooks or pond located on the Site. Contact by trespassers with surface soil that underlies pavement and with subsurface soil is not plausible.

Recreation occurs at the athletic fields. However, contact with impacted soil there is not possible, given that all exposed soils meet residential criteria within 2 feet of the surface and any soils within 2 feet of surface that contain constituents above the Residential DEC are covered with asphalt. Therefore, there are no complete exposure pathways for the recreational scenario.

References may be found in the following reports maintained at the CTDEP:

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"Screening Level Ecological Risk Assessment, General Electric Company Facility, Bridgeport, Connecticut – Revision 1" prepared for General Electric Company, prepared by ENVIRON International Corporation, dated July 2007

"Baseline Ecological Risk Assessment, General Electric Company Facility, Bridgeport, Connecticut" prepared for General Electric Company, prepared by ENVIRON International Corporation, dated May 2008

[3] Indirect Pathway/Receptor (e.g., vegetables, fruits, crops, meat and dairy products, fish, shellfish, etc.)

4 Can the **exposures** from any of the complete pathways identified in #3 be reasonably expected to be **"significant"**[4] (i.e., potentially "unacceptable" because exposures can be reasonably expected to be: 1) greater in magnitude (intensity, frequency and/or duration) than assumed in the derivation of the acceptable "levels" (used to identify the "contamination"); or 2) the combination of exposure magnitude (perhaps even though low) and contaminant concentrations (which may be substantially above the acceptable "levels") could result in greater than acceptable risks)?

__X__ If no (exposures can not be reasonably expected to be significant (i.e., potentially "unacceptable") for any complete exposure pathway) - skip to #6 and enter "YE" status code after explaining and/or referencing documentation justifying why the exposures (from each of the complete pathways) to "contamination" (identified in #3) are not expected to be "significant."

_____ If yes (exposures could be reasonably expected to be "significant" (i.e., potentially "unacceptable") for any complete exposure pathway) - continue after providing a description (of each potentially "unacceptable" exposure pathway) and explaining and/or referencing documentation justifying why the exposures (from each of the remaining complete pathways) to "contamination" (identified in #3) are not expected to be "significant."

_____ If unknown (for any complete pathway) - skip to #6 and enter "IN" status code

Rationale and Reference(s):

As discussed above, only four exposure pathways for two receptor types are potentially complete (i.e., Construction Worker contact with surface soil and subsurface soil; Trespasser contact with surface soil and surface water). For the two potential receptors, the magnitude of potential exposures is low, due to low intensity (e.g., limited skin surface area exposed), low frequency (e.g., presence at the Site is rare, contact with impacted media is accidental), and low duration (e.g., contact is a rare event and/or does not persist over decades or a lifetime).

The effective average concentrations to which these receptors may be exposed are also expected to be low. If exposures were to occur to the limited number of receptors, the locations for such exposures would parallel movement of receptors throughout the Site. The receptors are unlikely to spend time on Site in locations containing the highest constituent concentrations, which tend to be found significantly below ground surface, in remote Sites areas (e.g., the former disposal area) or below pavement. Since contact and exposure is effectively averaged over all areas of the Site visited, and since many areas of the Site have constituent concentrations at or below appropriate levels, the resultant exposure point concentrations for receptors are not likely to be significant.

Therefore, exposures from the complete pathways identified in #3 are not expected to be significant.

References identified in response identified in question 1.

[4] If there is any question on whether the identified exposures are "significant" (i.e., potentially "unacceptable") consult a human health Risk Assessment specialist with appropriate education, training and experience.

5 Can the "significant" **exposures** (identified in #4) be shown to be within **acceptable** limits?

_____ If yes (all "significant" exposures have been shown to be within acceptable limits) - continue and enter "YE" after summarizing and referencing documentation justifying why all "significant" exposures to "contamination" are within acceptable limits (e.g., a site-specific Human Health Risk Assessment).

_____ If no (there are current exposures that can be reasonably expected to be "unacceptable")- continue and enter "NO" status code after providing a description of each potentially "unacceptable" exposure.

_____ If unknown (for any potentially "unacceptable" exposure) - continue and enter "IN" status code

Rationale and Reference(s):

6. Check the appropriate RCRIS status codes for the Current Human Exposures Under Control EI event code (CA725), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (and attach appropriate supporting documentation as well as a map of the facility):

__X_ YE - Yes, "Current Human Exposures Under Control" has been verified. Based on a review of the information contained in this EI Determination, "Current Human Exposures" are expected to be "Under Control" at the **GE Bridgeport** facility, EPA ID # **CTD001453711**, located at **1285 Boston Avenue in Bridgeport, CT** under current and reasonably expected conditions. This determination will be re-evaluated when the Agency/State becomes aware of significant changes at the facility.

____ NO - "Current Human Exposures" are NOT "Under Control."

____ IN - More information is needed to make a determination.

Completed by (signature) [signature] Date 6/16/09
(print) Amanda R. Flad
(title) Environmental Analyst, CTDEP

Supervisor (signature) [signature] Date 6-16-09
(print) DAVID RINGQUIST
(title) Supervising EA
(EPA Region or State) CTDEP

Locations where References may be found:

Site-wide findings from investigations completed to satisfy RCRA Corrective Action have yet to be published. Information can be reviewed in the following reports on file with the CTDEP.

"Site Investigation Work Plan, General Electric Company 1285 Boston Avenue, Bridgeport, Connecticut" prepared for General Electric Company, prepared by Leggette, Brashears and Graham, Inc., dated October 2006

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FINAL NOTE: THE HUMAN EXPOSURES EI IS A QUALITATIVE SCREENING OF EXPOSURES AND THE DETERMINATIONS WITHIN THIS DOCUMENT SHOULD NOT BE USED AS THE SOLE BASIS FOR RESTRICTING THE SCOPE OF MORE DETAILED (E.G., SITE-SPECIFIC) ASSESSMENTS OF RISK.