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: **Bell Aerospace Textron (Textron Reality Operations)**
Facility Address: Wheatfield, New York
Facility EPA ID #: NYD0002106276

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).

Current Human Exposures Under Control
Environmental Indicator (EI) RCRIS code (CA725)

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_	___	___	**VOC's**
Air (indoors)[2]	___	___	**_X_**	
Surface Soil (e.g., <2 ft)	_X_	___	___	**VOC's**
Surface Water	___	_X_	___	
Sediment	___	_X_	___	
Subsurf. Soil (e.g., >2 ft)	_X_	___	___	**VOC's**
Air (outdoors)	___	_X_	___	

_____ 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.

__X__ 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.

_X__ If unknown (for any media) - skip to #6 and enter "IN" status code. ***(In order to present a more complete representation of the status of the site, the reviewer has chosen not to skip to #6.)***

Rationale and Reference(s):

___

RCRA Facility Investigation

Textron Realty Operations (TRO) has completed the investigation of releases of hazardous waste constituents at the Wheatfield facility(see Figure 1). As a result of the investigation, TRO has concluded that hazardous waste constituents have been released to the fill/soil and groundwater beneath the facility.

The most significant source of contaminants is the former "Neutralization Pond" which was a surface impoundment located in the north-east area of the facility. That unit was dewatered in 1984, sludge and soils were removed in 1987, and the unit was closed in 1988 by placement of a low permeability clay cap over the excavated area. Because the TRO did not achieve "clean closure" of the pond, the NYSDEC has determined that the pond shall be regulated as a "hazardous waste disposal unit".

On the basis of the June 1991 "RCRA Facility Investigation, Neutralization Pond, Textron Realty Operations Wheatfield Plant, Final Report", releases of hazardous waste constituents may also have occurred from the following SWMUs:

9. Helicopter Blade Bonding Building

13. Rocket Test Building

Because those SWMUs are in the vicinity of the neutralization pond, and because they are hydraulically connected with the groundwater contaminant plume emanating from the pond, they were addressed under the corrective measures program for the pond.

Aqueous phase contamination (up to 100,000 ppm vocs) has been observed in the soils and unconsolidated sediments (overburden) at the facility and in the bedrock. The extent of the nonaqueous phase plume in the overburden appears to be limited to the facility property. The extent of the aqueous phase bedrock plume is considerably greater. Contamination of the upper bedrock zone (Zone 1) extends as a pear shaped lobe from the neutralization pond to a point approximately five thousand feet (5000 ft) southeast of the pond. A list of the hazardous waste constituents which have been released to the groundwater, and the "groundwater protection standard" for the constituents is included in Table 1.

TABLE 1

PARAMETER	CAS#	GROUNDWATER PROTECTION STANDARD (µ/L)
Volatile Organic Compounds		
Methylene chloride	75-09-2	5.0
Trichloroethylene	79-01-6	5.0
1,1,1-Trichloroethane	71-55-6	5.0
Acetone	67-64-1	5.0 x 10[1]
1,2-Dichloroethylene (total)	75-35-4	5.0
Vinyl chloride	75-01-4	2.0
Carbon disulfide	75-15-0	5.0 x 10[1]
1,1-Dichloroethylene	75-35-4	5.0
1,1-Dichloroethane	75-34-4	5.0

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.

Current Human Exposures Under Control

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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	No	No	No	No	No	No	No
Air (indoors)	No	uncertain	No	No	No	No	
Soil (surface, e.g., <2 ft)	NO	No	No	No	No	No	No
Surface Water	No	No	No	No	No	No	No
Sediment	No	No	No	No	No	No	No
Soil (subsurface e.g., >2 ft)	No	No	No	No	No	No	No
Air (outdoors)	No	No	No	No	No	No	

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.

_X_ 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).**(See notes below regarding Home Well Survey and Bergholtz Creek)**

__X_ If yes (pathways are complete for any "Contaminated" Media - Human Receptor combination) - continue after providing supporting explanation. ***(See note below regarding indoor air.)***

Rationale and Reference(s):

Home Well Survey

Despite the fact that the residential area downgradient of the TRO facility has been connected to a public water system for more than thirty years, many of the older homes in the area originally relied on wells as their source of water. Therefore, as part of the RFI, TRO was required to evaluate the status of the residential wells On three occasions(March 1987, November 1987 and September 1990) TRO conducted a house to house survey to identify the locations of homes with wells that could potentially intercept the off-site bedrock groundwater plume. As part of the survey, TRO sent registered letters to the residents notifying them of the existence of the plume and offering to decommission the wells free of charge.

The survey identified 102 locations with wells. The vast majority of wells were shallow wells which were installed into the overburden. None of the wells were used for drinking water, but eight wells were considered "active"(6 were used for irrigation and 2 were identified as having possible future use). TRO sampled each of the eight active wells. Hazardous waste constituents (VOCs) were detected in only one well, a well that was not in use at the time, but was identified by the owner as having a possible future use.

In June1991, the New York State Department of Health sent a letter to all residents with wells informing them of the presence of the bedrock groundwater contamination. The letter included a recommendation to refrain from using water from the well and informed the homeowner s of their responsibility to alert potential purchasers of their home to the potential exposure to groundwater contamination associated with the well. The letter also included a recommendation to accept TRO's offer to decommission their well. To date, TRO has decommissioned 27 wells. An additional 45 wells had either been previously abandoned by the owner or were buried and inaccessible.

In order to minimize the potential exposures associated with the presence of remaining wells, on an annual basis, TRO is required to provide written notification to all those whose property is located in the vicinity of the contaminant plume and who have "accessible wells" that the well water may be contaminated and that its use should be restricted. In addition, the notification must also include a statement that indicates TRO's willingness to decommission the well free of charge.

The NYSDEC believes that these actions are appropriate to control human exposures via the groundwater exposure pathway.

<u>Bergholtz Creek</u>

Groundwater modeling performed as part of the CMS evaluated the potential impacts of off-site groundwater discharge to Berholtz Creek. Because the creek is incised into the overburden and because the overburden groundwater is clean in the vicinity of the creek, significant discharge of contaminated groundwater into the creek was not predicted by the model. Sediment and water samples were collected in the creek. The sampling results indicate that if there is discharge of the groundwater contaminant plume into the creek it is insignificant.

__X___ If unknown (for any "Contaminated" Media - Human Receptor combination) - skip to #6 and enter "IN" status code ***(See note below regarding indoor air.)***

INDOOR AIR

Although contaminated bedrock groundwater flows beneath a residential area downgradient of the facility, the off-site overburden groundwater zone , which is more than 15 feet thick, is clean. Therefore, at the time that Final Corrective Measures were selected for the facility, it was not thought that an exposure pathway from the contaminated bedrock groundwater through the clean overburden groundwater and into indoor air in the nearby residences was significant.

As stated previously, overburden groundwater contamination is present on-site. Because the indoor air sampling data from Colorado which were presented at the January 1999 RCRA National Meeting in Washington, DC suggest that indoor air contamination may be more pervasive than previously thought, the NYSDEC is hesitant to rule out the possibility that an exposure pathway to indoor air may exist above the on-site overburden plume. (Note: At the time that the NYSDEC issued the Permit for Final Corrective Measures at the facility none of the Agencies involved with the remedy selection (NYSDEC, NYSDOH and USEPA Region 2) believed that air exposures related to migration of VOCs from the on-site soils and groundwater was a significant threat. In fact, the quantitative risk assessment which was performed by Environ estimated that the total risk to on-site workers during ambient and construction activities ranged from 1.29 x 10(-5) to 1.81 x 10(-6) respectively.)

Corrective Measures Study

Subsequent to the completion of the RCRA Facility Investigation, TRO submitted a "Final Report on Corrective Measures Study, Bell Aerospace Textron Wheatfield Plant" in 1991 to evaluate and identify technologies which could be applied to remediate the groundwater degradation in the study area.

General corrective measures objectives were to abate and remediate any significant threat to public health and the environment due to the release from the neutralization pond. The Corrective Measures Study (CMS) was submitted to and approved by the Department in June 1991. The CMS provided several potential corrective actions based upon engineering feasibility; demonstrated or expected effectiveness; protection of human health and the environment; and technical reliability. Alternatives which did not meet these

criteria either singularly or in combination were rejected.

The CMS included the performance of a "Baseline Risk Assessment for the Bell Aerospace Textron Facility Wheatfield, New York (Environ Corporation, February, 1991)". That risk assessment evaluated potential on-site and off-site exposures via groundwater, surface water, soil and air pathways. According to the baseline risk assessment, the only significant risk of exposure would be from Zone 1 groundwater, hydraulically downgradient from the TRO plant, if extracted by domestic wells. The surrounding community is serviced by municipal water, therefore, the risk, if any, would be associated with the use of the Zone 1 groundwater for irrigation purposes. As such, the foremost intent of corrective measures was to mitigate the dissolved phase plume in Zone 1. However, in order to effectively mitigate the dissolved phase plume, the source of the plume (the DNAPL plume) would need to be removed or contained. Consequently, corrective measures for the DNAPL plume were given significant consideration.

The CMS concluded that it is currently not possible to completely remove DNAPL from the subsurface bedrock fractures in much the same way that it is not possible to remove 100 percent of oil from an oil field. The DNAPL remaining after "remediation" by DNAPL "removal" would have the potential to allow the development of a very large dissolved phase plume. Remediation of the DNAPL plume by pumping or other extraction methods, therefore, is not a technically feasible nor an effective corrective measures alternative. The CMS concluded that the technically feasible and effective alternative is to control the dissolution of the DNAPL by hydraulically or physically containing the DNAPL.

The selected corrective measures identified by the CMS were to develop two separate groundwater recovery and treatment systems, one to hydraulically contain the DNAPL and the other to remove the dissolved phase contamination, primarily in the Zone 1 aquifer. The intent of the Off-Site system was to remediate the dissolved phase plume in the Zone 1 aquifer which migrated off the on-site area. The intent of the On-Site system was to

hydraulically contain the DNAPL and remediate dissolved phase contamination beneath the TRO facility located on-site. By hydraulically containing the DNAPL, risks of further off-site migration of the source of the dissolved phase contamination will be eliminated.

Implementation of the selected remedial program was undertaken in a phased approach to expedite installation of the remedial program. The Off-Site system was designed and installed first followed by the design and installation of the On-Site system. The Off-Site groundwater remedial system has been operating since March 1993. The On-Site groundwater remedial system has been operating since April 1995. TRO has capped and covered areas where contaminated soils were observed. In addition, TRO has implemented institutional measures to address potential off-site and on-site pathways.

Performance Monitoring

TRO currently performs routine monitoring of select groundwater monitoring wells and extraction wells to evaluate the performance of the On-Site and Off-Site systems. During each monitoring event, the hydraulic performance of the On-Site and Off-Site system is evaluated to determine if the systems are operating in accordance with the intent of the system's objective. In addition, during each monitoring event chemical analysis of groundwater samples from select wells is performed. Groundwater samples collected from monitoring and extraction wells are analyzed for VOC's according to USEPA SW-846 Method 8240 or 8260. An evaluation of the groundwater chemistry is also used to determine if the systems are operating in accordance with the intent of the system's objective.

The review of the hydraulic response in bedrock Zone 1 due to the operation of the Off-Site system indicates that the system is operating in accordance with the design objectives. There is a consistent and significant overlap of the cone-of-depression and the contaminant plume in the off-site area. Groundwater flow directions have remained relatively consistent since start-up of the Off-Site system in March 1993.

The hydraulic response in Zone 1 due to the operation of the On-Site system has

generally met the design expectations of establishing a zone of groundwater capture over the DNAPL plume; maintaining an upward gradient between Zone 3 and Zone 1; maintaining a downward gradient between the overburden materials and Zone 1; and establishing and maintaining a groundwater capture zone along the southern property boundary of the TRO facility between extraction wells EW-7 and EW-8. Although a significant ground water capture zone has been established along the southern property boundary of TRO, a small component of groundwater was noted to be flowing south between EW-7 and EW-8. An additional extraction well, EW-13, was recently installed in the area between EW-7 and EW-8 in order to enhance groundwater capture along the southern boundary of the facility.

TRO has been performing quarterly monitoring events since 1990. Recent monitoring data (see "1998-1999 Summary and System Performance, Off-Site and On-Site Ground Water Extraction System") indicate that, in general, contaminant concentrations detected in groundwater samples from both the on-site and off-site monitoring wells are gradually declining, as anticipated. (Representative Figures are attached.)

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

Current Human Exposures Under Control

Environmental Indicator (EI) RCRIS code (CA725)

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."

Groundwater and soil contamination has been addressed. Final Corrective Measures have been selected and the Corrective Measures have been implemented. These actions, coupled with the institutional controls, are designed to preclude completion of any potentially significant human exposure pathways through those media.

____ 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."

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

Rationale and Reference(s):_____**See discussion above on Indoor Air.**

[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.

Current Human Exposures Under Control
Environmental Indicator (EI) RCRIS code (CA725)

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

_X_ 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). **(With the possible exception of on-site indoor air.)**

_____ 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.

__X___ If unknown (for any potentially "unacceptable" exposure) - continue and enter "IN" status code **Indoor Air on-site.**

Rationale and Reference(s):_____**See discussion above**.

Current Human Exposures Under Control
Environmental Indicator (EI) RCRIS code (CA725)

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):

____ 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 _____ _____ facility, EPA ID #_____, located at _____ 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."

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

With the exception of a possible indoor air exposure at the on-site area, all other aspects of exposure pathways have been

addressed. Current human exposures to groundwater and soil contamination are under control. The NYSDEC is awaiting further guidance from EPA regarding the indoor air issue. In addition, indoor air sampling is being contemplated at the facility.

Completed by (signature) _____ Date ___9/29/99___

(print) William E. Wertz, Ph.D.

(title) Senior Engineering Geologist

Supervisor (signature) _____ Date 9/30/99

(print) Paul J. Merges

(title) Director, Bureau of Radiation & Hazardous Site Management

(EPA Region or State) NYSDEC

Locations where References may be found:

NYSDEC
Division of Solid and Hazardous Materials
50 wolf Road
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(name) William E. Wertz, Ph.D.
(phone #) (518) 457-9253
(e-mail) wewertz@gw.dec.state.ny.us

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.

RCRA Corrective Action

Environmental Indicator (EI) RCRIS code (CA750)

Migration of Contaminated Groundwater Under Control

Facility Name: **Bell Aerospace Textron (Textron Reality Operations)**

Facility Address: Wheatfield, New York

Facility EPA ID #: NYD0002106276

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 "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)

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):_ **RCRA Facility Investigation**

Textron Realty Operations (TRO) has completed the investigation of releases of hazardous waste constituents at the Wheatfield facility(see Figure 1). As a result of the investigation, TRO has concluded that hazardous waste constituents have been released to the fill/soil and groundwater beneath the facility.

The most significant source of contaminants is the former "Neutralization Pond" which was a surface impoundment located in the north-east area of the facility. That unit was dewatered in 1984, sludge and soils were removed in 1987, and the unit was closed in 1988 by placement of a low permeability clay cap over the excavated area. Because the TRO did not achieve "clean closure" of the pond, the NYSDEC has determined that the pond shall be regulated as a "hazardous waste disposal unit".

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9. Helicopter Blade Bonding Building

13. Rocket Test Building

Because those SWMUs are in the vicinity of the neutralization pond, and because they are hydraulically connected with the groundwater contaminant plume emanating from the pond, they were addressed under the corrective measures program for the pond.

Aqueous phase contamination (up to 100,000 ppm vocs) has been observed in the soils and unconsolidated sediments (overburden) at the facility and in the bedrock. The extent of the nonaqueous phase plume in the overburden appears to be limited to the facility property. The extent of the aqueous phase bedrock plume is considerably greater. Contamination of the upper bedrock zone (Zone 1) extends as a pear shaped lobe from the

neutralization pond to a point approximately five thousand feet (5000 ft) southeast of the pond. A list of the hazardous waste constituents which have been released to the groundwater, and the "groundwater protection standard" for the constituents is included in Table 1.

TABLE 1

PARAMETER	CAS#	GROUNDWATER PROTECTION STANDARD (µ/L)
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Vinyl chloride	75-01-4	2.0
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1,1-Dichloroethylene	75-35-4	5.0
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–

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):____

General corrective measures objectives were to abate and remediate any significant threat to public health and the environment due to the release from the neutralization pond. The Corrective Measures Study (CMS) was submitted to and approved by the Department in June 1991. The CMS provided several potential corrective actions based upon engineering feasibility; demonstrated or expected effectiveness; protection of human health and the environment; and technical reliability.

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hydraulically contain the DNAPL and remediate dissolved phase contamination beneath the TRO facility located on-site. By hydraulically containing the DNAPL, risks of further off-site migration of the source of the dissolved phase contamination will be eliminated.

Implementation of the selected remedial program was undertaken in a phased approach to expedite installation of the remedial program. The Off-Site system was designed and installed first followed by the design and installation of the On-Site system. The Off-Site groundwater remedial system has been operating since March 1993. The On-Site groundwater remedial system has been operating since April 1995. TRO has capped and covered areas where contaminated soils were observed. In addition, TRO has implemented institutional measures to address potential off-site and on-site pathways.

[2] "existing area of contaminated groundwater" is an area (with horizontal and vertical dimensions) that has been verifiably demonstrated to contain all relevant groundwater contamination for this determination, and is defined by designated (monitoring) locations proximate to the outer perimeter of "contamination" that can and will be sampled/tested in the future to physically verify that all "contaminated" groundwater remains within this area, and that the further migration of "contaminated" groundwater is not occurring. Reasonable allowances in the proximity of the monitoring locations are permissible to incorporate formal remedy decisions (i.e., including public participation) allowing a limited area for natural attenuation.

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4. Does "contaminated" groundwater **discharge** into **surface water** bodies?

_X_ 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):_____ **Groundwater modeling performed as part of the CMS evaluated the potential impacts of off-site groundwater discharge to Berholtz Creek. Because the creek is incised into the overburden and because the overburden groundwater is clean in the vicinity of the creek, significant discharge of contaminated groundwater into the creek was not predicted by the model. Sediment and water samples were collected in the creek. The sampling results indicate that if there is discharge of the groundwater contaminant plume into the creek it is insignificant.**

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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)?

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_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 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. **(See discussion above.)**

_____ 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.

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6. Can the **discharge** of "contaminated" groundwater into surface water be shown to be "**currently acceptable**" (i.e., not cause impacts to surface water, sediments or eco-systems that should not be allowed to continue until a final remedy decision can be made and 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.

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7. Will groundwater **monitoring** / measurement data (and surface water/sediment/ecological data, as necessary) be collected in the future to verify that contaminated groundwater has remained within the horizontal (or vertical, as necessary) dimensions of the "existing area of contaminated groundwater?"

_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):__

Performance Monitoring

TRO currently performs routine monitoring of select groundwater monitoring wells and extraction wells to evaluate the performance of the On-Site and Off-Site systems. During each monitoring event, the hydraulic performance of the On-Site and Off-Site system is evaluated to determine if the systems are operating in accordance with the intent of the system's objective. In addition, during each monitoring event chemical analysis of groundwater samples from select wells is performed. Groundwater samples collected from monitoring and extraction wells are analyzed for VOC's according to USEPA SW-846 Method 8240 or 8260. An evaluation of the groundwater chemistry is also used to determine if the systems are operating in accordance with the intent of the system's objective. (See the attached Table for a list of the wells in the monitoring network.)

The review of the hydraulic response in bedrock Zone 1 due to the operation of the Off-Site system indicates that the system is operating in accordance with the design objectives. There is a consistent and significant overlap of the cone-of-depression and the contaminant plume in the off-site area (See Figure 8). Groundwater flow directions have remained relatively consistent since start-up of the Off-Site system in March 1993.

The hydraulic response in Zone 1 due to the operation of the On-Site system has generally met the design expectations of establishing a zone of groundwater capture over the DNAPL plume; maintaining an upward gradient between Zone 3 and Zone 1; maintaining a downward gradient between the overburden materials and Zone 1; and establishing and maintaining a groundwater capture zone along the southern property boundary of the TRO facility between extraction wells EW-7 and EW-8. Although a significant ground water capture zone has been established along the southern property boundary of TRO, a small component of groundwater was noted to be flowing south between EW-7 and EW-8. An additional extraction well, EW-13, was recently installed in the area between EW-7 and EW-8 in order to enhance groundwater capture along the southern boundary of the facility.

TRO has been performing quarterly monitoring events since 1990. Recent monitoring data (see "1998-1999 Summary and System Performance, Off-Site and On-Site

Ground Water Extraction System") indicate that, in general, contaminant concentrations detected in groundwater samples from both the on-site and off-site monitoring wells are gradually declining, as anticipated. (Representative Figures are attached.)

Migration of Contaminated Groundwater Under Control
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8. Check the appropriate RCRIS status codes for the Migration of Contaminated Groundwater Under Control EI (event code CA750), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (attach appropriate supporting documentation as well as a map of the facility).

_X__ YE - Yes, "Migration of Contaminated Groundwater Under Control" has been verified. Based on a review of the information contained in this EI determination, it has been determined that the "**Migration of Contaminated Groundwater" is "Under Control" at the "Bell Aerospace Textron" facility , EPA ID # NYD0002106276, located at Walmer Road, Wheatfield, NY.** 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 9/29/99
(print) William E. Wertz, Ph.D.
(title) Senior Engineering Geologist

Supervisor (signature) _____ Date 9/30/99

(print) Paul J. Merges

(title) Director, Bureau of Radiation &Hazardous Site Management

(EPA Region or State) NYSDEC

Locations where References may be found:

NYSDEC

Division of Solid & Hazardous Materials

Rm 460

50 Wolf Road

Albany NY 12233

Contact telephone and e-mail numbers

(name)__William E. Wertz

(phone #)___(518) 457-9253

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SUMMARY OF HYDRAULIC MONITORING DATA
JANUARY 1999 MONITORING EVENT
FORMER TEXTRON INC. WHEATFIELD, NEW YORK FACILITY
(Measurements Recorded January 26, 1999)
* Denotes well at which chemical monitoring is performed.

	WELL Name	Top of Riser	Water Depth	Water Level		WELL Name	Top of Riser	Water Depth	Water Level
*	87-01(0)	588.10	14.82	573.28		87-21(0)	577.23	8.55	568.68
*	87-01(I)	587.99	15.23	572.76	*	87-21(I)	577.33	7.92	569.41
*	87-02(I)	589.21	15.18	574.03	*	87-22(0)	583.80	DRY	DRY
*	87-02(3)	588.63	12.93	575.70	*	87-22(I)	583.97	13.99	569.98
	87-04(0)	589.32	7.37	581.95	*	87-23(0)	587.27	9.63	577.64
	87-04(I)	589.08	12.64	576.44		87-23(I)	587.13	13.33	573.80
	87-04(3)	589.49	12.65	576.84	*	89-03(I)	581.01	15.05	565.96
	87-05(I)	589.37	13.76	575.61	*	89-04(I)	577.92	7.54	570.38
	87-05(3)	589.46	11.85	577.61		89-05(IA)	577.56	15.25	562.31
	87-06(I)	588.27	11.89	576.38		89-05(I B)	577.77	9.55	568.22
*	87-08(I)	589.48	12.02	577.46		89-06(I)	575.93	10.10	565.83
*	87-10(0)	587.30	11.00	576.30		89-07(I A)	577.66	11.99	565.67
	87-10(I)	587.52	14.90	572.62		89-07(I B)	577.48	11.24	566.24
	87-12(I)	583.84	14.10	569.74		89-12(I)	586.60	14.28	572.32
	87-13(0)	589.77	8.80	580.97		89-13(0)	588.18	9.47	578.71
	87-13(I)	590.06	13.40	576.66	*	89-14(0)	587.45	8.03	579.42
*	87-13(3)	589.91	12.43	577.48	*	89-14(I)	587.59	10.81	576.78
*	87-14(0)	589.56	9.60	579.96	*	89-15(I)	588.76	15.05	573.71
	87-14(I)	589.06	12.30	576.76	*	89-16(I)	576.76	6.15	570.61
	87-14(3)	590.35	12.30	578.05	*	89-17(I)	577.59	7.84	569.75
	87-15(0)	590.70	14.30	576.40		89-18(I)	576.75	12.72	564.03
	87-15(I)	590.27	11.98	578.29		93-02(I)	579.05	17.99	561.06
	87-715(3)	589.87	11.66	578.21	*	93-03(I)	572.30	12.05	560.25
	87-16(3B)	590.51	12.52	577.99	*	94-02(I)	574.50	8.60	565.90
	87-17(0)	589.50	12.09	577.41		96-01(I)	585.18	15.79	569.39
*	87-17(I)	589.62	11.60	578.02		96-02(I)	584.82	15.49	569.33
*	87-18(0)	585.95	11.89	574.06	*	B-8(0)	590.26	12.45	577.81
	87-18(I)	586.02	17.80	568.22		B-12(0)	589.48	12.41	577.07
	87-19(0)	581.57	3.00	578.57		B-13(I)	588.41	12.13	576.28
*	87-19(I)	581.47	12.79	568.68	*	B-14(I)	589.54	13.69	575.85
*	87-20(0)	578.77	4.30	574.47		89-SW(2)	577.54	8.12	569.42
*	87-20(I)	579.01	9.28	569.73	*	EW-2	568.15	8.35	559.80
*	EW-8	578.44	9.90	568.54	*	EW-3	569.56	N/A	556.50
*	DW-9	581.30	2.50	578.80	*	EW-4	570.07	N/A	549.70
*	DW-1 0	583.95	8.31	575.64	*	EW-5	569.47	N/A	554.00
*	DW- I 1	583.05	9.98	573.07	*	EW-6	568.17	6.97	561.20
*	DW-1 2	580.48	8.60	571.88	*	EW-7	580.96	14.05	566.91
	EW-1 3	579.84	11.04	568.80					