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: Former Honeywell Skinner Valve
Facility Address: 95 Edgewood Avenue, New Britain, CT
Facility EPA ID #: CT001149582 (Part A Interim Status)

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.

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).

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	✓			VOCs* exceedances of SWP & I/C VC
Air (indoors)[2]		✓		Air testing results indicate no exceedance of a OSHA PELs or ACGIH TLV
Surface Soil (e.g., <2 ft)	✓			VOCs, TPH, metals, and PCBs detected at concentrations exceeding direct exposure criteria; however, these locations are under pavement or building.
Surface Water	✓			VOCs were detected at concentrations exceeding GA/GAA x10 at two sampling locations.
Sediment	✓			TPH and chromium were detected at a concentration exceeding I/C DEC. PCBs were detected at a concentration exceeding RDEC in an initial sample, but below the detection limit in a replicate sample.
Subsurf. Soil (e.g., >2 ft)	✓			VOCs detected at concentrations exceeding direct exposure criteria
Air (outdoors)		✓		A PID did not detect elevated background concentrations during investigations conducted outside.

_____ 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.

__✓__ 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): Groundwater at the site is contaminated with VOCs at concentrations which exceed the I/C VC and SWP criteria applicable to the property and above federal drinking water standards. However, groundwater is not used for drinking and the VOCs in groundwater are not impacting indoor air quality (Appendix C). Surface water samples contained VOCs (methylene chloride, 1,1-DCA, cis-1,2-DCE, and TCE) at concentrations exceeding GA/GAA x10. TPH and chromium were detected in sediment samples at concentrations exceeding I/C DEC at two locations. PCBs were detected at a concentration exceeding the RDEC at location SED-2. A subsequent replicate sample did not contain PCBs at concentrations above the method detection limit. Soil samples collected from depths greater than two feet contain VOCs at concentrations that exceed direct exposure criteria. At three locations, other COCs (TPH, Chromium, and PCBs) were detected at depths less than two feet at concentrations above applicable criteria. These locations were under the building or pavement. Outdoor air quality was monitored during recent field investigations. A PID did not detect elevated background concentrations.
*List of abbreviations attached.

[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	---	No	---	No[xx]		No	
Air (indoors)	---	No	---				
Soil (surface, e.g., <2 ft)	---	No	---	No[xx]	Yes	---	---
Surface Water	---	Yes			Yes	---	---
Sediment	---	Yes			Yes	---	---
Soil (subsurface e.g., >2 ft)				No[xx]			---
Air (outdoors)	---	---	---	---	---		

*No Aquatic Life Criteria calculated for COCs detected.
[xx]No construction planned – would use a Health & Safety Plan.

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).

✓ 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): Groundwater is not used for either industrial or drinking water purposes. Shallow (0-2') soil is impacted above risk-based standards, in certain AOCs; however, no complete pathway exists. Shallow soil in these areas (under buildings or under pavement) are considered inaccessible or isolated; therefore, exposure is expected to be minimal. The surface water and sediments at the site are associated with a wetland area located along the southern property boundary. The area is thickly vegetated making access difficult. A portion of the wetland and stream is within a fenced area, thereby limiting access and exposure. VOCs were detected in surface water samples. TPH, chromium and PCBs were detected in sediment samples. Although no standards exist for sediments, soil standards have been applied as a conservative measure. Sediment at the edge of the wetlands may be exposed during periods of low water levels and at that time, soil standards would apply. Site security including video cameras and no trespassing signs is used to restrict site access to authorized personnel and visitors.

[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)?

   ✓ 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): Complete pathways exist for workers to be exposed to surface water and sediment. However, Parker Hannifin has an environmental management plan in place that is designed to mitigate and/or eliminate worker exposure by institutional and environmental controls. Worker exposure to surface water and sediment is unlikely relative to the environmental health and safety plan in place and also because there are no operations conducted at the facility that require activity near surface water or sediment.

Complete pathways exist for trespassers to be exposed to surface soil, surface water, and sediment. Although there is no fence along Edgewood Avenue, the remaining perimeter of the property is fenced. Because the facility operates five days during the week and occasional Saturdays, trespassing is likely limited to weekends.

Because no standards have been calculated for sediments, direct exposure criteria for soil have been applied as a conservative measure. However, the potential exposure period for a trespasser is significantly less than the time period used in the equation for a long-term resident. Sediments may also be inaccessible when frozen during the winter months and when water levels are high during spring and fall. As a result, human exposures to sediment are likely not significant.

[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):

✓ YES - 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 Honeywell, Inc. Skinner Valve Division facility, EPA ID # CTD001149582, located at 95 Edgewood Avenue, New Britain, 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) Marina Roser Date 8-28-02 9-10-2002
(print) Marina Roser
(title) Sanitary Engineer 3

Supervisor (signature) John England Date 9/3/02
(print) John England
(title) Supervising Environmental Analyst
(EPA Region or State) Connecticut

Matthew R. Hagland
Section Chief
Reg. I.
RCRA Corrective Action Program
9/10/02

Locations where References may be found:

See attached list of references. All documents on file with the CT DEP., 79 Elm St., Hartford, CT and at URS.

Contact telephone and e-mail numbers

(name) Marina Roser
(phone #) (860) 424-3574
(e-mail) Marina.Roser@po.state.ct.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.

DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION

Interim Final 2/5/99

RCRA Corrective Action
Environmental Indicator (EI) RCRIS code (CA750)

Migration of Contaminated Groundwater Under Control

Facility Name: Former Honeywell Skinner Valve
Facility Address: 95 Edgewood Avenue, New Britain, CT
Facility EPA ID #: CT001149582 (Part A Interim Status)

1. Has **all** available relevant/significant information on known and reasonably suspected releases to the groundwater media, subject to RCRA Corrective Action (e.g., from Solid Waste Management Units (SWMU), Regulated Units (RU), and Areas of Concern (AOC)), been **considered** in this EI determination?

   ✓ If yes - check here and continue with #2 below.

   _____ If no - re-evaluate existing data, or

   _____ if data are not available, skip to #8 and enter "IN" (more information needed) status code.

BACKGROUND

Definition of Environmental Indicators (for the RCRA Corrective Action)

Environmental Indicators (EI) are measures being used by the RCRA Corrective Action program to go beyond programmatic activity measures (e.g., reports received and approved, etc.) to track changes in the quality of the environment. The two EI developed to-date indicate the quality of the environment in relation to current human exposures to contamination and the migration of contaminated groundwater. An EI for non-human (ecological) receptors is intended to be developed in the future.

Definition of "Migration of Contaminated Groundwater Under Control" EI

A positive "Migration of Contaminated Groundwater Under Control" EI determination ("YE" status code) indicates that the migration of "contaminated" groundwater has stabilized, and that monitoring will be conducted to confirm that contaminated groundwater remains within the original "area of contaminated groundwater" (for all groundwater "contamination" subject to RCRA corrective action at or from the identified facility (i.e., site-wide)).

Relationship of EI to Final Remedies

While Final remedies remain the long-term objective of the RCRA Corrective Action program the EI are near-term objectives which are currently being used as Program measures for the Government Performance and Results Act of 1993, GPRA). The "Migration of Contaminated Groundwater Under Control" EI pertains ONLY to the physical migration (i.e., further spread) of contaminated ground water and contaminants within groundwater (e.g., non-aqueous phase liquids or NAPLs). Achieving this EI does not substitute for achieving other stabilization or final remedy requirements and expectations associated with sources of contamination and the need to restore, wherever practicable, contaminated groundwater to be suitable for its designated current and future uses.

Duration / Applicability of EI Determinations

EI Determinations status codes should remain in RCRIS national database ONLY as long as they remain true (i.e., RCRIS status codes must be changed when the regulatory authorities become aware of contrary information).

2. Is **groundwater** known or reasonably suspected to be **"contaminated"**[1] above appropriately protective "levels" (i.e., applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action, anywhere at, or from, the facility?

   ✓ If yes - continue after identifying key contaminants, citing appropriate "levels," and referencing supporting documentation.

   _____ If no - skip to #8 and enter "YE" status code, after citing appropriate "levels," and referencing supporting documentation to demonstrate that groundwater is not "contaminated."

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

   Rationale and Reference(s): Analytical results of groundwater samples collected at and hydrogeologically downgradient of the source areas indicate concentrations of VOCs* in groundwater which exceed the I/C VC criterion (specifically TCE, 1,1 DCE, and VC) and SWP criterion (specifically TCE, PCE and 1,1 DCE). Applicable I/C VC RSR criteria are as follows: TCE – 540 ug/l; 1,1 DCE – 6 ug/l; and VC – 2 ug/l. Applicable SWP criteria are as follows: TCE – 2340 ug/l; PCE – 88 ug/l; and 1,1 DCE – 96 ug/l. The concentrations also exceed the federal DWSs. However, groundwater is not used for drinking water purposes.

   VOC plumes have been detected in the shallow, intermediate, and deep zones of the unconsolidated aquifer. In general, the plumes are in alignment with the observed groundwater flow direction. Historical monitoring of groundwater concentrations for the past eight years indicates a steady state in the size of the plumes. Copies of tables summarizing groundwater analytical data and maps illustrating the extent of groundwater impact are attached.

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).

*List of abbreviations attached.

3. Has the **migration** of contaminated groundwater **stabilized** (such that contaminated groundwater is expected to remain within "existing area of contaminated groundwater"[2] as defined by the monitoring locations designated at the time of this determination)?

✓ If yes - continue, after presenting or referencing the physical evidence (e.g., groundwater sampling/measurement/migration barrier data) and rationale why contaminated groundwater is expected to remain within the (horizontal or vertical) dimensions of the "existing area of groundwater contamination"[2]).

____ If no (contaminated groundwater is observed or expected to migrate beyond the designated locations defining the "existing area of groundwater contamination"[2]) - skip to #8 and enter "NO" status code, after providing an explanation.

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

Rationale and Reference(s): Groundwater monitoring has been conducted at the site since at least 1992. Three monitoring wells (MW-7, MW-8, and MW-9) located downgradient of the closed surface impoundment have shown concentrations of the four VOCs exceeding RSR standards which have remained relatively stable; e.g., within the same order of magnitude (see attached tables summarizing groundwater analytical data). This pattern is also seen in these three wells for total VOCs. (Dames & Moore, 1999a*)

Additionally, cluster wells installed downgradient of the source areas (MW-13I, MW-13D, MW-14I, MW-14D, MW-15S, MW-15I, MW-15D, MW-16D, and MW-17D) have contained concentrations of VOCs that have remained relatively stable (e.g., same order of magnitude, or decreased). (Dames & Moore, 1998, 1999a). In addition to the waste pile and impoundments, 33 Areas of Concern (AOCs) were identified on the site. These AOCs are described in more detail in Section 3 of the attachment.

The CT DEP has verbally concurred with a proposed interim remedial measures design (two-phase vacuum extraction system) in the vicinity of the closed lagoons. This system was started January 18, 2000. (Dames & Moore, 1999b). This system is remediating impacted soil and groundwater in the immediate vicinity of the closed surface impoundment. The area containing the closed surface impoundment and treatment system was not transferred as part of the property transfer. Section 8 in the attachment describes in greater detail the installation and operation of the treatment system.

Continued groundwater monitoring will be performed under post closure monitoring and compliance with the Property Transfer Act (PTA) to document groundwater migration stabilization.

[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.

*List of references attached.

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

✓ If yes - continue after identifying potentially affected surface water bodies.

_____ If no - skip to #7 (and enter a "YE" status code in #8, if #7 = yes) after providing an explanation and/or referencing documentation supporting that groundwater "contamination" does not enter surface water bodies.

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

Rationale and Reference(s): A wetland area and associated stream is located on and immediately south (hydrogeologically downgradient) of the closed impoundment and other potential source areas under and around the manufacturing building. It is expected that groundwater discharges to the wetlands and surface water stream. This discharge is not impacting the surface water at concentrations that pose unacceptable risk. Surface water sampling was conducted during Phase III of PTA activities; the results are presented in the attached Tables.

Currently, there are no established standards for surface water samples. The surface water protection criteria (SWPC) listed in the RSRs are for comparison to groundwater samples where ground water is likely to impact surface water.

In the absence of established standards for surface water, the surface water samples collected were compared to the GA/GAA groundwater protection criteria multiplied by ten. In the surface water samples collected and analyzed for VOCs, SVOCs, metals, TPH, and PCBs, none of the concentrations exceed the GA/GAA groundwater protection criteria multiplied by ten except for methylene chloride, 1,1-DCE, cis,1-2-DCE, and TCE in sample SW-1 and TCE in Sample SW-2. The sample collected downstream from sample SW-1 contained 1,1-DCE at a concentration that was one order of magnitude lower, which slightly exceeded the GA/GAA groundwater protection criteria multiplied by ten (50 ug/L) at a concentration of 51 ug/L.

5. Is the **discharge** of "contaminated" groundwater into surface water likely to be **"insignificant"** (i.e., the maximum concentration[3] of each contaminant discharging into surface water is less than 10 times their appropriate groundwater "level," and there are no other conditions (e.g., the nature, and number, of discharging contaminants, or environmental setting), which significantly increase the potential for unacceptable impacts to surface water, sediments, or eco-systems at these concentrations)?

✓ If yes - skip to #7 (and enter "YE" status code in #8 if #7 = yes), after documenting: 1) the maximum known or reasonably suspected concentration[3] of key contaminants discharged above their groundwater "level," the value of the appropriate "level(s)," and if there is evidence that the concentrations are increasing; and 2) provide a statement of professional judgement/explanation (or reference documentation) supporting that the discharge of groundwater contaminants into the surface water is not anticipated to have unacceptable impacts to the receiving surface water, sediments, or eco-system.

_____ If no - (the discharge of "contaminated" groundwater into surface water is potentially significant) - continue after documenting: 1) the maximum known or reasonably suspected concentration[3] of each contaminant discharged above its groundwater "level," the value of the appropriate "level(s)," and if there is evidence that the concentrations are increasing; and 2) for any contaminants discharging into surface water in concentrations[3] greater than 100 times their appropriate groundwater "levels," the estimated total amount (mass in kg/yr) of each of these contaminants that are being discharged (loaded) into the surface water body (at the time of the determination), and identify if there is evidence that the amount of discharging contaminants is increasing.

_____ If unknown - enter "IN" status code in #8.

Rationale and Reference(s): Concentrations of VOC constituents (PCE, TCE, 1,1 DCE) in groundwater immediately upgradient of the surface water bodies (wetlands and stream) are present at concentrations greater than the state groundwater standards for protection of surface water. However, the mixing of this groundwater with surface water results in concentrations of the discharging groundwater at levels which are acceptable as indicated by the surface water sampling conducted as part of the Phase III of PTA activities. Because there are no existing standards for surface water, the concentrations detected were compared to the GA/GAA groundwater protection criteria multiplied by ten. The Phase III surface water sampling detected Methylene chloride at 110 ug/L, 1,1-DCE at 160 ug/L, cis-1,2 DCE at 870 ug/L, and TCE at 51 ug/L. 1,1-DCE was the only constituent detected at a location 200 feet downstream that slightly exceeded the GA/GAA groundwater protection criteria multiplied by ten. In general, constituents detected at the downstream location were slightly above or below the method detection limit and did not exceed the GA/GAA groundwater protection criteria multiplied by 10. (See discussion under Item 4.)

The CT DEP has approved an IRM design that began operation on January 18, 2000. This system will treat groundwater and resultantly will reduce VOC concentrations in groundwater that discharges to surface water.

[3] As measured in groundwater prior to entry to the groundwater-surface water/sediment interaction (e.g., hyporheic) zone.

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

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[4] Note, because areas of inflowing groundwater can be critical habitats (e.g., nurseries or thermal refugia) for many species, appropriate specialist (e.g., ecologist) should be included in management decisions that could eliminate these areas by significantly altering or reversing groundwater flow pathways near surface water bodies.

[5] The understanding of the impacts of contaminated groundwater discharges into surface water bodies is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration to be reasonably certain that discharges are not causing currently unacceptable impacts to the surface waters, sediments or eco-systems.

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

__✓__ 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): Post-closure groundwater monitoring for the closed surface impoundments is required under 40 CFR 265 Subpart F and a Consent Order (No. HM474) between Honeywell and the CT DEP, and is being implemented on a semi-annual basis on selected wells. Annual groundwater monitoring reports are submitted to the CT DEP on an annual basis in March following the year of monitoring.

The groundwater monitoring program is reviewed at least annually to assess if modifications to the plan are indicated.

Post-remediation groundwater monitoring will also be required under the RSRs.

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 **Honeywell Inc., Skinner Valve Division** facility, EPA ID # **CTD001149582**, located at **95 Edgewood Avenue, New Britain, CT**. 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) Marina Roser Date 8-28-02 E-W 9/10/2002
(print) Marina Roser
(title) Sanitary Engineer 3

Supervisor (signature) John England Date 9/3/02
(print) John England
(title) Supervising Environmental Analyst
(EPA Region or State) Connecticut

Matthew R. Hoagland
Matthew R. Hoagland
Section Chief, RCRA
Corrective Action Program
Reg. I.
9/10/02

Locations where References may be found:

List of References attached.
All references are on file at the CT DEP. at 79 Elm Street, Hartford, CT
and at URS Corp., 500 Enterprise Drive, Suite 3B, Rocky Hill, CT

Contact telephone and e-mail numbers

(name) Marina Roser
(phone #) (860) 424-3574
(e-mail) Marina.Roser@po.state.ct.us

REFERENCES

Former Honeywell/Skinner Valve Facility
95 Edgewood Avenue
New Britain, Connecticut

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Final Report Phase I Transfer Act Site Assessment and Work Plan for Phase II Transfer Act Site Assessment, Honeywell Skinner Valve Division Facility, New Britain, Connecticut, Dames & Moore, June 15, 1999.

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2001 Annual Groundwater Monitoring Report Former Honeywell Skinner Valve Facility, New Britain, Connecticut, URS Corporation, February 28, 2002.

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2001 ANNUAL GROUNDWATER MONITORING REPORT FORMER HONEYWELL SKINNER VALVE FACILITY NEW BRITAIN, CONNECTICUT

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HONEYWELL
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URS CORPORATION - CONNECTICUT
500 ENTERPRISE DRIVE, SUITE 3B
ROCKY HILL, CONNECTICUT 06067

1.1.2 Post-Closure Monitoring Well Network

In November 1981, four monitoring wells, MW-1 (old), MW-2 (old), MW-3 (old), and MW-4 (old), were installed at the facility to assess groundwater quality and gradient. Use of these wells was discontinued due to unsatisfactory construction[1]. Nine new wells, MW-1, MW-2, MW-3, MW-4, MW-5, MW-6, MW-7, MW-8, and MW-9, were installed at the site between June 1985 and October 1988. MW-5 was reportedly destroyed by a snow plow in early 1988 and was replaced with well MW-5R. From 1994 through 1998, groundwater at the facility has been monitored for post-closure requirements through quarterly sampling and analysis of these nine wells[2]. Two of the nine wells, MW-5R and MW-6, are located hydraulically upgradient of the former waste management units. The remaining seven wells, MW-1, MW-2, MW-3, MW-4, MW-7, MW-8, and MW-9, are located downgradient of the units. In 1997, Honeywell requested, and CTDEP approved, eliminating wells MW-3 and MW-4 from the post-closure network because the results of analysis of groundwater samples collected from these wells had historically been non-detect for site constituents. CTDEP also approved Honeywell's request to reduce the frequency of groundwater monitoring for VOCs to semi-annually, and monitoring for cadmium and chromium to annually.

In 1998, a one-year "Targeted" groundwater monitoring program was initiated at the request of the CTDEP. This program included sampling wells completed in intermediate and deeper zones of the aquifer (see Section 3.0 for discussion of zones[3]). Based on the results of the 1998 sampling, modifications to the post-closure sampling plan were recommended in the Dames & Moore (now URS) *1998 Annual Groundwater Monitoring Report*, dated March 1, 1999. The modifications were proposed because the then current post-closure monitoring program focused only on wells completed in the shallow zone of the aquifer in the immediate vicinity of the closed waste management units; VOCs in the intermediate and deep zones of the shallow aquifer, and VOCs at the downgradient edge of the plume present in all three zones were not monitored. On

[1] These wells will be abandoned during Phase III investigation activities scheduled for Spring 2001 under the Property Transfer Act.

[2] See Section 2.1 for discussion of analytical parameters.

March 3, 1999, a meeting was held at the CTDEP to discuss the recommended modifications to the post-closure monitoring program. As a result of this meeting, the post-closure monitoring plan, as presented in the *1998 Annual Groundwater Monitoring Report*, was approved by CTDEP contingent upon including monitoring wells MW-6 and MW-15D. The revised post-closure monitoring program and the objectives of the sampling, based on the March 3, 1999 meeting with the CTDEP, are summarized below:

- MW-2, MW-12I and MW-2D – Groundwater samples collected from these wells, located immediately adjacent to the closed lagoons, will be monitored for VOCs in shallow, intermediate and deep groundwater, respectively. The objective of this sampling is to monitor groundwater quality in the three zones immediately downgradient of the closed lagoons.
- MW-15D – Groundwater samples collected from this well, located between the closed lagoons and the downgradient edge of the deep zone plume, will be monitored for VOCs. The objective of this sampling is to monitor groundwater quality in the deep zone at a location between the closed lagoons and the downgradient extent of the deep zone plume.
- MW-8 and MW-15S – Groundwater samples collected from these wells, located at the downgradient edge of the VOC plume will be monitored for VOCs. The objective of this sampling is to monitor groundwater quality in the shallow zone at the downgradient limit of the shallow zone plume.
- MW-14I and MW-15I – Groundwater samples collected from these wells, located at the downgradient edge of the VOC plume will be monitored for VOCs. The objective of this sampling is to monitor groundwater quality at the downgradient limit of the intermediate zone plume.
- MW-16D and MW-17D - Groundwater samples collected from these wells, located at the downgradient edge of the VOC plume, will be monitored for VOCs. The objective of this sampling is to monitor groundwater quality in the deep zone at the downgradient limit of the deep zone plume.

[3] Intermediate and deep zone wells were installed in April 1997 to further evaluate the vertical and horizontal extent of the plume.

- MW-6 - Groundwater samples collected this well located upgradient of the VOC plume, will be monitored for VOCs. The objective of this sampling is to monitor groundwater quality in the shallow zone upgradient of the closed lagoons.

Monitoring well locations are illustrated on Figures 2, 3, and 4. Post-closure monitoring well construction details are summarized in Table 1.

3.0 HYDROGEOLOGY

The stratigraphy beneath the site consists of four unconsolidated lithologic units which include (in stratigraphic sequence from land surface): 1) a surficial fill layer; 2) a silt layer; 3) a layer of varved silts and clays; and 4) glacial till. These unconsolidated layers overlie bedrock. The bedrock underlying the site is Portland Arkose, which is a reddish-gray, fractured sandstone, siltstone and shale unit. Detailed information regarding the hydrogeology of the site is presented in the Dames & Moore (now URS) report "*Assessment of the Geology and Extent and Migration of Chlorinated Volatile Organics Compound in Unconsolidated Deposits*", dated July 19, 1994. A summary of the hydrology of the site is presented below.

The fill layer is approximately three to four feet thick and consists of excavated and reworked glacial till used to build up grade at the site for construction of the facility. The base of this fill zone is typically at a depth of approximately ten feet below ground surface (bgs). The lower few tenths of a foot to 1.9 feet of the fill layer have been observed to be saturated when water levels are high during the spring. The unit is not, however, saturated throughout the entire year. The fill layer overlies a silt layer which varies in thickness from two to eight feet. The silt layer is a poorly stratified clayey sand silt. The silt layer is underlain by varved silt and clay. These alternating layers of red-brown silt and clay, which contain occasional layers of fine sand, range in thickness from 13 to 17 feet. The glacial till unit consists of an eight to ten foot thick layer of a red-brown, dense, heterogeneous mixture of sand, silt and clay, with occasional gravel, cobbles and boulders. The varved silt and clay unit and the glacial till unit are typically saturated throughout the entire year.

Monitoring wells were installed at the site to assess groundwater quality within the various lithologic units. For the purpose of the assessment, wells were either designated as shallow, intermediate or deep zone wells. Monitoring wells completed within each zone are included in the post-closure monitoring program. The zones are described briefly below.

- Shallow - Wells designated as shallow zone wells have screens across the fill and silt units, with some of the screens extending into the top of the varved silt and clay. Monitoring wells installed in this zone are screened across the groundwater interface, at depths ranging from 3 to 13 feet bgs. The purpose of these wells is to assess groundwater quality within the shallow zone of the surficial aquifer. Shallow zone wells sampled during 2001 included MW-2, MW-6 and MW-8. MW-15S was not sampled during 2001 because the well was beneath water during both sampling quarters and hence not accessible.
- Intermediate - Wells designated as intermediate are typically screened across the varved silt and clay layer. The screen depths range from 10 to 20 feet bgs. The purpose of these wells is to assess groundwater quality within the intermediate zone of the surficial aquifer. Intermediate zone wells sampled during 2001 included MW-12I and MW-14I. MW-15I was not sampled during 2001 because the well was beneath water during both sampling quarters and hence not accessible.
- Deep - Deep zone designated wells have screens set across the glacial till unit, typically at depths greater than 20 feet bgs. The purpose of these wells is to assess groundwater quality within the deepest zone of the surficial aquifer. The deep zone wells sampled during 2001 included MW-2D, MW-16D, and MW-17D. MW-15D was not sampled during 2001 because the well was beneath water during both sampling quarters and hence not accessible.

Based on existing site information, groundwater in the shallow zone, particularly the fill, discharges into adjacent surface water bodies. Although the intermediate zone is believed to serve as an aquitard, groundwater in the shallow zone likely commingles with the underlying intermediate zone.

Based on field permeability tests conducted by Geraghty & Miller in January 1988 using slug test methodology, the horizontal hydraulic conductivity of the intermediate zone ranges from 1.7 X 10E-2 to 2.9 X 10E-1 feet per day, and the horizontal hydraulic conductivity of the glacial till unit (deeper zone) is approximately 6.7 X 10E-1 feet per day. The hydraulic conductivity of the shallow zone was not determined by Geraghty & Miller.

Piezometric surface maps have been prepared using groundwater elevations measured at site wells during groundwater sampling events. Table 2 summarizes groundwater elevations[4]. Piezometric surface maps were prepared for the shallow, intermediate and deep zones, and are presented as Figures 2, 3, and 4, respectively. Based on groundwater elevation measurements, groundwater in the shallow zone of the surficial aquifer flows in a southwesterly direction, groundwater in the intermediate zone of the surficial aquifer flows in a southerly direction and groundwater in the deep zone of the surficial aquifer flows in a southeasterly direction.

[4] Groundwater was encountered during the 2001 sampling events at depths ranging from 1.59 feet bgs to 10.75 feet bgs.

- PCE was not detected above the laboratory method detection limit in any of the groundwater samples collected this year
- Detected 1,2-cis-DCE concentrations ranged from 320 µg/L in the groundwater sample collected from MW-8 to 7,800 ug/L in the groundwater sample collected from well MW-6.
- 1,2-trans-DCE was not detected above the laboratory method detection limit in any of the groundwater samples collected during this year.
- 1,1-DCA and 1,1,1-TCA were detected only in the groundwater sample from well MW-6S, at a concentration of 370 ug/L and 480 ug/L, respectively.
- Vinyl chloride was not detected above the laboratory method detection limit in any of the groundwater samples collected during this year.
- 1,1-DCE was not detected above the laboratory method detection limit in any of the groundwater samples collected during this year.

4.2 Groundwater Quality Trends

A review of groundwater monitoring results collected from 1997 through 2001, as summarized in Table 5, indicates the following:

Shallow Zone

As indicated by the analytical results of samples from well MW-2, shallow zone groundwater immediately downgradient of the closed impoundment is impacted with VOCs. As depicted in Table 5, concentrations of VOCs in well MW-2 have remained relatively consistent since 1997. VOCs at concentrations much less than these in well MW-2, have remained relatively consistent in the farthest downgradient wells, wells MW-8 and MW-15, since 1997 and 1998, respectively.

Intermediate Zone

As indicated by the analytical results of samples from well MW-12I, intermediate zone groundwater immediately downgradient of the closed impoundment was impacted with VOCs. Concentrations of VOCs in intermediate zone groundwater immediately downgradient of the closed lagoon have decreased since 1997. As depicted in Table 5, total VOC concentrations in the downgradient well MW-12I have decreased from 1,224 ug/l in September 1997 to non-detect concentrations in September 2001. As is evident by the continuing non-detect concentrations of VOCs in downgradient intermediate zone wells (MW-14I & MW-15I), the VOC impacts previously observed in well MW-12I are not migrating beyond the immediate downgradient area of the surface impoundment.

Deep Zone

As indicated by the analytical results of samples from well MW-2D, deep zone groundwater immediately downgradient of the closed impoundment is impacted to some extent with VOCs. TCE has been detected in this well at a concentration of 1.7 ug/L. All other VOCs are non-detect in this well. As indicated by the analytical results from MW-14D and MW-15D, deep zone groundwater farther downgradient of the closed lagoon is impacted with VOCs. As indicated by VOC concentrations in wells MW-2D, MW-15D, and MW-17D, concentrations of VOCs in the deep zone groundwater have remained relatively consistent since 1997. VOCs have not been detected above method detection limits in MW-16D since 1997.

4.3 Other Sources of Groundwater Impact

Samples collected from the shallow and deep groundwater zones upgradient of the closed lagoons, as indicated by analytical results from MW-6 and MW-6D, suggest there may be another source of VOCs in the shallow and deep zone. The results of investigative activities conducted in accordance with the Property Transfer Act identified three major source areas of VOCs upgradient of the closed lagoons. These sources are associated with former activities

conducted inside the facility. These sources were formerly located in the current maintenance shop and current laboratory.

4.4 Water Quality Comparison to Tabulated Regulatory Standards

Since groundwater in the immediate vicinity of the site is not used for domestic purposes, corrective action is governed by the standards set forth in the Remediation Standard Regulations (RSRs) for GB classified groundwater. The applicable RSRs standards for GB groundwater include the Surface Water Protection Criteria (SWPC) and the Industrial/Commercial Volatilization Criteria (I/C VC) criteria; these criteria are included on Tables 3, 4, and 5. As groundwater at the site is not used as a source of drinking water, and is classified as GB, remediation to the Groundwater Protection Criteria (GWPC) is not necessary.

The following is a list of observed exceedences of the RSRs Criteria:

- The concentration of TCE in both the second and third quarter samples from MW-2S exceeded both the SWPC and the I/C VC.
- The concentration of TCE the third quarter sample from well MW-11d exceeded both the SWPC and the I/C VC.
- Concentrations of TCE in wells MW-14D, MW-11I AND MW-17D exceed the I/C VC.
- The concentration of PCE in the third quarter sample from well MW-14D exceeded the SWPC.

It is unlikely that current industrial use of the property will change in the future. The I/C VOL criteria would therefore apply as long as a land use restriction is placed on the property preventing construction of a building without appropriate measures to protect human health. The potential impact of VOCs exceeding the SWP criteria will be evaluated in accordance with activities to be performed to achieve stabilization under the RCRA Voluntary Corrective Action Program. The biannual report submitted to the CTDEP for this past reporting period includes a discussion of stabilization activities (URS, February, 2001).