



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 1  
1 CONGRESS STREET, SUITE 1100  
BOSTON, MASSACHUSETTS 02114-2023

EPA RECORDS CENTER Group  
Pratt & Whitney Aircraft  
CTD000844399  
R13  
ROMS # 10A1

November 15, 1999

Ms. Lauren N. Levine  
C/O Pratt & Whitney  
400 Main St, M/S 124-26  
East Hartford, CT 06108

Re: RCRA Corrective Action  
Pratt & Whitney, Colt St. Facility  
EPA ID No. CTD000844399

Dear Ms. Levine:

The United States Environmental Protection Agency (EPA) is pleased to inform you that EPA has determined that the Pratt & Whitney, Colt Street facility has achieved the federal goal of Stabilization.

EPA New England considers Stabilization as the achievement of the two Environmental Indicators (EI), *Current Human Exposures Under Control* and *Migration of Contaminated Groundwater Under Control*. These EI's were originally set forth in a July 29, 1994 memorandum by then Director of EPA's Office of Solid Waste, Michael Shapiro. This memorandum has been the subject of recent amendments; the most current amendment to the EI's is set forth in a February 5, 1999 Interim Final memorandum under Acting Director of EPA's Office of Solid Waste, Elizabeth Cotsworth.

Stabilization is an interim goal meaning that the environmental conditions at a given site/facility do not pose a current risk to human health. You should be aware, therefore, that any change in facility operations or land use which results in a human health exposure scenario would affect this determination.

Also, because Stabilization is an interim goal, facilities that achieve the goal of Stabilization should be aware that they will be expected to achieve the goal of a final remedy at some point in the future. Environmental actions intended for the purpose of achieving Stabilization should therefore be consistent with any anticipated final remedy. Facilities should be particularly careful when considering construction activities which could ultimately impact the ability to achieve a final remedy.

Thank you for your continuing commitment to environmental excellence. If you have any questions, please do not hesitate to contact me at (617) 918-1238.

Sincerely,

A handwritten signature in black ink that reads "Aaron R. Gilbert". The signature is written in a cursive style with a large initial 'A'.

Aaron R. Gilbert,  
RCRA Corrective Action Section

cc: C. Casey EPA  
M. Hoagland EPA  
J. Perez EPA  
V. Riva P&W  
P. Sheridan P&W  
E. Waterman EPA

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**DOCUMENTATION OF  
ENVIRONMENTAL INDICATOR  
DETERMINATION MIGRATION OF  
CONTAMINATED GROUNDWATER  
UNDER CONTROL**

**Pratt & Whitney  
Colt Street  
East Hartford, CT**

**March 1999  
Revised September 1999**

**Prepared for**

**PRATT & WHITNEY  
400 Main Street  
East Hartford, CT 06108**

**Prepared by**

**LOUREIRO ENGINEERING ASSOCIATES  
100 Northwest Drive  
Plainville, CT 06062**

**LEA Comm. # 68VB201**

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RCRA RECORDS  
FACILITY *Pratt & Whitney Aircraft Group*  
ID # *CT0000844377*  
*R-13*  
RDMS # *1041*

**RESPONSE TO EPA COMMENTS**  
**P&W Colt Street**  
**Environmental Indicator Evaluation for Migration of Contaminated Groundwater**  
**CA750**

The following are responses to the June 9, 1999 EPA comments. The response to each comment is provided in italics.

**General Comments**

1. After reviewing the 1998 RCRA Annual Groundwater Monitoring Report, Loureiro Engineering Associates, February 1999, it came to our attention that metals analysis was conducted on filtered samples. It is EPA New England – Region I policy that for risk assessment purposes metals analysis be conducted on unfiltered samples. As a result, please ensure that all future sampling of groundwater is conducted on unfiltered samples. Also, please refer to the U.S. EPA Region I Low Stress (low flow) Purging and Sampling Procedures for the Collection of Groundwater Samples From Monitoring Wells.

*In May of 1999, groundwater samples were collected from nine monitoring wells at the Colt Street Facility for risk assessment purposes. Both filtered and unfiltered metals samples were collected and analyzed. The unfiltered metals samples were collected for comparison to VCAP risk-based screening levels. The results of this sampling are presented in Attachment 3.*

*Currently, RCRA groundwater monitoring samples are collected in accordance with the **Comprehensive Groundwater Monitoring Plan**, dated October 13, 1993, and approved by the Connecticut DEP. Section 7.1.2 of the Plan describes sample handling and collection. The Plan indicates that samples collected for dissolved metals and metalloid analysis will be filtered immediately after collection. The semi-annual groundwater sample collection is conducted in accordance with this plan.*

Furthermore, future analysis should include the full suite of inorganics on EPA's Target Analyte List (i.e., to include the elements Manganese and Iron which were present in the former waste lagoon sludge). Alternately, prepare a list of constituent of concern (COCs) for EPA approval based on previous sampling results (including groundwater, sludge, etc.) and a review of document that identify virgin products that were used and wastes generated on site.

This sampling (at a minimum) is necessary given the exceedance of a regulatory standard for Chromium a reported in the Annual Groundwater Monitoring Report for 1998. Specifically, in March 1998 Chromium was detected at a concentration of 193 ug/l and 140 ug/l at CS-PZ-01.

*The analysis currently conducted during the semi-annual monitoring events is based on the approved **Comprehensive Groundwater Monitoring Plan**, referenced above. This Plan does not require sampling for the full suite of inorganics on EPA's Target Analyte List. Sampling will continue to be conducted in accordance with the approved Plan.*

*Chromium was not detected at CS-PZ-01 during the March 1999 sampling event, further confirming that the concentration of chromium detected during the March 1998 sampling*

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*event was an anomaly. Chromium will continue to be monitored during the semi-annual groundwater sampling events.*

2. Re-screen the Colt Street data after Conceptual Site Model screening levels are finalized.

*The report entitled "Conceptual Site Models and Screening Levels for Pratt & Whitney's VCAP Connecticut Facilities" was finalized on September 15, 1999. None of the screening levels applicable to groundwater were revised however, the results of analysis on unfiltered groundwater samples were screened against the criteria for groundwater protective of surface water. The results are as follows:*

***Groundwater Protective of Surface Water***

*The only exceedances of the Groundwater Screening Levels Based on Surface Water Protection (Table 3-7) reported are for iron, and are based on the May 1999 groundwater sampling event. Iron was detected at 2.18 mg/L (CS-MW-03A) and at 1.70 mg/L (CS-MW-04A). The generic P&W Groundwater SL listed in Table 3-7 is 1,000 ug/L, based on a PQL of 100 ug/L. The PQL was used in preparing Table 3-7 because a clean-up criterion for iron was not included in the Connecticut RSRs on which the screening levels were based. However, there is a USEPA Ambient Water Quality Criterion protective of chronic health for iron in freshwater of 1,000 ug/L. This criterion, which was published in 1992, is also expected to be protective of exposures to offsite recreators via incidental ingestion of and dermal contact with iron. Based on a dilution attenuation factor of 10, a conservative screening level of 10,000 ug/L should apply to iron in groundwater for surface water protection. No concentrations of iron were detected in groundwater above 10,000 ug/L. Therefore, no exceedances are reported to have occurred.*

**Specific Comments**

3. On page 1, P&W claims that all available information has been considered in making the Migration of Contaminated Groundwater Under Control Environmental Indicator (EI) determination. However, page 4 refers only to the last four years of groundwater monitoring data. P&W should revise both the Human Exposures and Ground Water Releases EI's to include and evaluation of all existing data and to provide complete references to this data. (Note: This older data is required to help interpret the significance, if any, of the recent exceedance of the screening level for chromium.)

Furthermore, we found the database summary table for 1994-98 data to be quite helpful. If historical data is already in the database please also include similar tables for this older data.

*The analytical data used in making the EI determination is that which is available in terms of being easily accessible. No analytical data prior to 1994 is available in the database, and therefore, it was not considered. The EI determination is based on current site conditions. The review of historical data is to evaluate changes or significant fluctuations in the*

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*constituents present in the groundwater. The review of analytical data back to 1994 is adequate to make this assessment. The compilation of analytical data pre-1994 would be a cumbersome task, and would be of limited value. In addition, analytical data from future sampling events will continue to be compared to historic data for identification of changes or fluctuations in concentrations of the constituents monitored.*

Also, please include summary tables for detects and for exceedances of relevant criteria.

Although useful, it is not necessary to provide summary tables that include a complete list of the constituents that were included in the analyses (typically Table 1) if this information has been previously provided to EPA (e.g. quarterly monitoring reports) and is included in the EI determination by reference.

*The summary tables included in Attachment 3 are as follows:*

<i>Table 1</i>	<i>Summary of On-site Monitoring Wells</i>
<i>Table 2</i>	<i>Summary of Groundwater Analytical Results (including a complete list of constituents that were included in the analyses)</i>
<i>Table 3</i>	<i>Summary of Constituents Detected in Groundwater</i>
<i>Table 4(a)</i>	<i>Summary Table of Exceedances of Groundwater Screening Criteria Based on Surface Water</i>
<i>Table 4(b)</i>	<i>Summary Table of Exceedances of Soil Screening Levels for an On-site Groundskeeper</i>
<i>Table 5</i>	<i>Data Qualifiers Used in the Summary Tables</i>

4. On page 3, correct the attachment citations.

There are errors in the references in the text regarding which attachment contains what information.

*These corrections have been made.*

5. On page 3, expand the answer to Item No. 2 to note:
- 1) That the conclusion is also supported by the fact that there is no current use (or, by state classification, anticipation of use) of the groundwater as drinking water (the groundwater in this area is classified as GB); and
  - 2) That the criteria used to evaluate the groundwater are designed to be protective of the surface waters, Willow Brook and the Connecticut River, which receive groundwater that flows from the site.

*This addition has been made.*

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6. Page 4: Please provide specific references to the VCAP screening criteria that are used in this evaluation. Also, please verify that this is done throughout the documents for both groundwater releases under control and human exposures under control.

*The appropriate references to the VCAP screening criteria have been added.*

7. Contamination exists at the site in excess of the VCAP screening levels given that chromium was detected at a concentration of 193 ug/l and 140 ug/l (duplicate) at CS-PZ-01, in March 1998. Therefore, P&W should check yes on page 3, item 2. It is not apparent that these results are an anomaly. As a result, chromium data prior to 1994 needs to be reviewed in order to verify the claim that there are “no significant increasing or decreasing trends in concentrations.” If the chromium contamination is determined to be other than an anomaly, the source of the chromium must be determined.

Finally, as a result of checking yes to item no. 2 on page 3 of the checklist, P&W should respond and provide justification to item numbers 3 (migration of contaminated groundwater) through 7 (groundwater monitoring).

*Please refer to the discussion in Section 2 of the EI Determination regarding the presence of chromium in groundwater. Based on the conclusion that the chromium concentration detected in CS-PZ-01 in March of 1998 is an anomaly, which is further confirmed by results of groundwater monitoring for CS-PZ-01 collected during March of 1999, nois the appropriate response to item number 2.*

8. Attachment 2: Please provide definitions for the data qualifiers used in data summary tables.

*A table of data qualifiers is included as Table 5 in Attachment 3.*

9. The one round of surface water sampling conducted in February 1999 is not adequate to make a determination regarding an upgradient source of chromium or the following volatile organic compounds: 1,1-dichloroethylene; cis-1,2-dichloroethylene; 1,1,1-trichloroethane and trichloroethylene. As a result, P&W will need to perform additional surface water sampling to verify the statements made in the EI evaluation **and/or** provide references to documents that contain additional surface water data (e.g., P&W Main Street Facility) that support this claim. In addition, provide a text discussion that supports this claim by detailing what is known about the upgradient source.

*Additional surface water data for the reach of Willow Brook adjacent to the Colt Street facility are not available. However, data have recently been collected from an upgradient reach of the process sewer that discharges to Willow Brook just upstream of the Colt Street facility. These data clearly identify the process sewer as the source of the chromium and VOCs detected in Willow Brook. This source (groundwater infiltrating the underground pipeline) was discovered during removal of accumulated sediment from the pipe. Upon removal of the sediment, it was observed that discolored groundwater was infiltrating the*

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*pipeline and this groundwater was sampled. The sample results indicate the presence of chromium and VOCs that, under normal operating conditions, are diluted by process water and stormwater prior to discharge to Willow Brook just upstream from Colt Street. Copies of the analytical results for the infiltrating groundwater are included in the back of Attachment 3.*

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**DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION**

Interim Final 2/5/99

**Migration of Contaminated Groundwater Under Control**

**Facility Name:** Pratt & Whitney, Colt Street Wastewater Treatment Facility  
**Facility Address:** Colt Street, East Hartford, Connecticut  
**Facility EPA ID #:** CTD000844399

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?

  x   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

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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).

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

\_\_\_\_\_ If yes - continue after identifying key contaminants, citing appropriate “levels,” and referencing supporting documentation.

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

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

Rationale and Reference(s):

The Colt Street Facility is an industrial wastewater treatment facility constructed to provide for the treatment of wastewater generated at the Pratt & Whitney Main Plant at 400 Main Street, East Hartford, Connecticut. The Colt Street Facility was constructed with two Hazardous Waste Management Units (HWMUs) to temporarily store wastewater treatment sludge and filter cake (designated as hazardous waste under 40 CFR 261.3). These units have not been used since 1982. Samples of groundwater, indoor air, surface soil (i.e. those soils located at depths less than or equal to 2 feet below the ground surface), surface water, and sediment have been collected during the performance of investigation activities performed at the site.

A report entitled *Conceptual Site Models and Screening Levels for Pratt & Whitney's VCAP Connecticut Facilities* was prepared by Gradient Corporation (Gradient Report). This report was issued on December 19, 1997, revised on September 18, 1998 and finalized on September 15, 1999. Copies of applicable portions of this report, those portions addressing the Colt Street Facility, have been included as Attachment No. 1. For the Colt Street Facility, the Gradient Report provides a facility-specific conceptual site model, a description of facility-specific exposure media and exposure pathways, a description of potential receptors, a rationale and approach to screening analytical data generated for exposure media, and screening levels for exposure media. For the Colt Street Facility, the Gradient Report identifies the applicable receptors, exposure media and pathways which require screening as follows:

- 1) grounds keepers, surface soil, by ingestion and dermal contact (Table 3-10);
- 2) indoor workers, indoor air, inhalation (Table 3-4);
- 3) off-site recreators, surface water, ingestion and dermal contact (Tables 3-6, 3-7);
- 4) off-site recreators, sediment, ingestion and dermal contact (Table 3-10).

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This documentation of environmental indicator determination is based on a review of all available relevant/significant data as it applies to these receptors for the identified exposure media and pathways.

Groundwater samples have been collected from groundwater monitoring wells installed at the Pratt & Whitney Colt Street Wastewater Treatment Facility as part of a RCRA groundwater monitoring since February 1982 and from a single well installed in October 1998 as part of the VCAP risk assessment activities. The well installed in October 1998 is identified as CS-MW-10. The initial RCRA groundwater monitoring well network was installed in 1981 and consisted of four groundwater monitoring wells (CS-MW-01 through CS-MW-04). In 1985, CS-MW-02 was replaced with well CS-MW-02A and two new wells were added (CS-MW-03A and CS-MW-04A) to augment the existing well network. In November 1991, four piezometers were installed to assist in the evaluation of groundwater flow (CS-PZ-01 through CS-PZ-04). In March 1992, additional wells (CS-MW-05 through CS-MW-09) were installed for possible inclusion in the RCRA groundwater monitoring network and to further assist in the evaluation of groundwater flow at the site. Currently, the RCRA groundwater monitoring well network consists of wells CS-MW-02A through CS-MW-04A, CS-MW-05 through CS-MW-07, CS-MW-09, and CS-PZ-01. Provided as Attachment No. 2 is a Site Plan depicting the location of each of the groundwater monitoring points. The site plan also presents groundwater contours generated from data collected during the October 1998 groundwater sampling event. Provided as Attachment No. 3 is a database listing of analytical data for groundwater samples collected during the period from March of 1994 through May 1999 and a summary of constituents detected in groundwater samples collected from onsite monitoring wells and piezometers for purposes of risk assessment during May of 1999.

The report entitled *1998 RCRA Annual Groundwater Monitoring Report Pratt & Whitney, Colt Street Facility East Hartford, Connecticut CTD 000844399* provides an evaluation of the last four years of analytical data for groundwater samples collected from the onsite groundwater monitoring wells which are included in the RCRA groundwater monitoring program. This report, which has been provided to the EPA and the Connecticut Department of Environmental Protection (DEP), indicates that concentrations in groundwater for constituents of concern for the site have shown no significant increasing or decreasing trend during the previous four years.

The sampling network is determined adequate to assess the general groundwater quality at the site. As the data from the previous four years show no significant increasing or decreasing trends in concentrations of constituents in groundwater, the groundwater beneath the Colt Street facility is determined to be stabilized. The groundwater data provided in the attachments has been compared to the numeric screening levels published in the Gradient Report. Specifically, the groundwater data have been compared to the numeric criteria published in Table 3-7 of the above-referenced report. The table is titled

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*Generic P&W Groundwater Screening Levels (SLs) Based on Surface Water Protection P&W VCAP, Connecticut Facilities.* The sampling network is determined adequate to assess the general groundwater quality at the site and the concentrations detected in groundwater are not increasing with time. With the exceptions noted below, constituents were not detected in groundwater at concentrations above the numeric criteria published in the above referenced table.

The first exception is for chromium, detected in a duplicate sample pair collected from location CS-PZ-01, at a maximum concentration of 0.193 mg/l in the March 1998 sampling event. Samples collected from CS-PZ-01 during the period from 1994 to September 1997 indicate an average concentration of chromium of 0.029 mg/l. The groundwater analytical data from the October 1998 sampling event for CS-PZ-01 indicates a concentration of chromium of 0.0149 mg/l. In addition, chromium was not detected in the groundwater sample collected from CS-PZ-01 during the March 1999 sampling event. It appears that the March 1998 chromium concentration detected at CS-PZ-01 represents an anomaly (it is nearly twice the next highest concentration detected at that location). In addition, the former data show no significant increasing or decreasing trends in concentrations of constituents in groundwater and the current data do not exceed appropriate screening criteria. Therefore, no further evaluation of groundwater data is necessary with regard to assessing potential exposures to offsite receptors for chromium.

The other exception is for iron detected in unfiltered samples collected in May 1999. The total iron concentrations reported exceed the screening level for groundwater discharging to surface water that was derived by multiplying the PQL times a default dilution factor of 10. The PQL was used in preparing the screening level because a clean-up criterion for iron was not included in the Connecticut RSRs on which the screening levels were based. However, there is a federal chronic ambient water quality criterion for iron that is 1 ppm. When the default dilution factor is applied, the screening level becomes 10 ppm, which is well in excess of the highest detected concentration. Therefore, no further evaluation of groundwater data is necessary with regard to assessing potential exposures to offsite receptors for iron.

In addition, the following should be noted:

- 1) This conclusion is supported by the fact that there is no current use (or, by state classification, anticipation of use) of the groundwater as a drinking water (the groundwater in this area is classified as GB); and
- 2) The criteria used to evaluate the groundwater are designed to be protective of the surface water, Willow Brook and the Connecticut River, which receive groundwater that flows from the site.

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Footnotes:

<sup>1</sup>“Contamination” and “contaminated” describes media containing contaminants (in any form, NAPL and/or dissolved, vapors, or solids, that are subject to RCRA) in concentrations in excess of appropriate “levels” (appropriate for the protection of the groundwater resource and its beneficial uses).





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5. Is the **discharge** of “contaminated” groundwater into surface water likely to be “**insignificant**” (i.e., the maximum concentration<sup>3</sup> of each contaminant discharging into surface water is less than 10 times their appropriate groundwater “level,” and there are no other conditions (e.g., the nature, and number, of discharging contaminants, or environmental setting), which significantly increase the potential for unacceptable impacts to surface water, sediments, or 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<sup>3</sup> of key contaminants discharged above their groundwater “level,” the value of the appropriate “level(s),” and if there is evidence that the concentrations are increasing; and 2) provide a statement of professional judgment/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<sup>3</sup> of each contaminant discharged above its groundwater “level,” the value of the appropriate “level(s),” and if there is evidence that the concentrations are increasing; and 2) for any contaminants discharging into surface water in concentrations<sup>3</sup> greater than 100 times their appropriate groundwater “levels,” the estimated total amount (mass in kg/yr) of each of these contaminants that are being discharged (loaded) into the surface water body (at the time of the determination), and identify if there is evidence that the amount of discharging contaminants is increasing.

\_\_\_\_\_ If unknown - enter “IN” status code in #8.

Rationale and Reference(s):

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<sup>3</sup> 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<sup>4</sup>)?

\_\_\_\_\_ If yes - continue after either: 1) identifying the Final Remedy decision incorporating these conditions, or other site-specific criteria (developed for the protection of the site’s surface water, sediments, and 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,<sup>5</sup> appropriate to the potential for impact, that shows the discharge of groundwater contaminants into the surface water is (in the opinion of a trained 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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<sup>4</sup> Note, because areas of inflowing groundwater can be critical habitats (e.g., nurseries or thermal refugia) for many species, appropriate specialist (e.g., ecologist) should be included in management decisions that could eliminate these areas by significantly altering or reversing groundwater flow pathways near surface water bodies.

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



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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).

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 Pratt & Whitney Colt Street Wastewater Treatment Facility, EPA ID #CTD000844399, located at Colt Street, East Hartford, Connecticut. 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) Aaron R. Gilbert  
(print) Aaron R. Gilbert  
(title) Env. Eng, EPA, RCRA C.A.

Date 9/24/99 *EW 9/24/99*

Supervisor (signature) Matthew S. Hoagland  
(print) Matthew S. Hoagland  
(title) Section Chief  
(EPA Region or State) Region I

Date 10/25/97

Locations where References may be found:

USEPA Region I Records Center  
\_\_\_\_\_  
\_\_\_\_\_

Contact telephone and e-mail numbers

(name) Aaron Gilbert  
(phone #) 617-914-1238  
(e-mail) gilbert.aaron@epa.gov

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**Attachment No. 1**

**Copies of Applicable Sections  
*Conceptual Site Models and Screening Levels*  
For  
*Pratt & Whitney's VCAP Connecticut Facilities*  
Gradient Corporation, Issued December 19, 1997  
Revised on September 18, 1998  
Revised on September 15, 1999**

## 5 East Hartford Colt Street Facility

A facility-specific CSM for the East Hartford Colt Street facility is developed in this chapter based on the activities undertaken at the facility. The generic P&W screening levels developed in Chapter 3 are evaluated for their applicability to facility-specific exposure conditions.

### 5.1 Introduction

The Colt Street facility in East Hartford, Connecticut is an industrial wastewater treatment plant that treats dilute process wastewater from the nearby Main Street facility (Figure 5-1). The Colt Street facility is situated on an approximately 12-acre parcel between Riverside Drive to the east and Connecticut River to the west. Treated wastewater from the plant is discharged to the Connecticut River. The property surrounding the facility is zoned industrial (Pratt & Whitney/LEA, 1996).

On August 29, 1997, Gradient conducted a facility visit and interviewed Pratt & Whitney employees to understand land use and activities at the Colt Street facility. The visit and interviews revealed that the Colt Street facility is different from Pratt & Whitney manufacturing plants described by the generic conceptual site model in that there are only a few potential receptors on-site, and activities with potential for environmental exposure are limited. The only employees at Colt Street are wastewater treatment plant operators. These workers maintain the treatment system, sample wastewater, and conduct visual inspections of groundwater monitoring wells. They are not involved in any digging on-site and can be best described as passive land users.

The unique characteristics of the Colt Street facility are:

- There is one building on site. The building has two levels, the first level has a three-bay garage and parts of the treatment plant (soda ash tanks), and the second level houses the control center and security monitoring station. There are no basements in the building.
- Two sludge lagoons located northwest of the facility were previously used for disposal of sludges from the wastewater treatment plant. These surface impoundments have been excavated, backfilled, and regraded. Process sludges are now transported off-site for disposal.

- Surface water run-off generally drains to the Connecticut River and Willow Brook, which flows northwest near the facility and then curves to the south where it enters the Connecticut River (Pratt & Whitney /LEA, 1996).
- Groundwater flows radially toward Willow Brook and the Connecticut River from the central portion of the facility (Pratt & Whitney/LEA, 1996).

## 5.2 Facility-Specific CSM and Screening Levels

The generic P&W CSM is modified, as appropriate, to: 1) delete any exposure scenarios or exposure pathways considered not to be "complete" at the East Hartford Colt Street facility, and 2) add exposure scenarios (*i.e.*, receptors, pathways, and media) not included in the generic P&W CSM, if needed. Exposure conditions at the East Hartford Colt Street facility are also evaluated against exposure conditions used in the development of generic P&W screening levels to determine if any modifications to these screening levels are required to reflect unique facility-specific conditions.

Although the likelihood of potential exposure at the Colt Street facility is much less than at other facilities, the potential exposure scenarios and exposure conditions at the East Hartford Colt Street facility are similar to exposure scenarios and conditions presented in the generic P&W CSM and the generic P&W screening levels. Consequently, no modifications to the generic P&W screening levels are proposed for the Qualitative Risk Assessment.

Figure 5-2 presents the potential receptors at the Colt Street facility and the complete exposure pathways for these receptors. Receptors are broadly categorized as on-site and off-site receptors, although no off-site contamination has been detected near the Colt Street facility. On-site receptors and screening levels for the Colt Street facility are:

- Excavating Laborers -- Subsurface construction-type work is undertaken on a very infrequent basis at this facility. However, since DPR is used to control such exposures, no screening is required, as discussed in Section 3.0.
- Maintenance Workers -- Subsurface maintenance work is undertaken on a very infrequent basis at this facility. However, since DPR is used to control such exposures, no screening is required, as discussed in Section 3.0. Indoor air exposure is subsumed in the Indoor Work scenario. Since all exposures for this receptor are either controlled by DPR or subsumed in other receptors, no screening is required.

- Groundskeepers -- Exposure scenario same as in generic P&W CSM. No modifications to generic P&W screening levels proposed. As mentioned earlier, the same Groundskeepers maintain the grounds at all 3 East Hartford P&W facilities (Main Street, Willgoos, and Colt Street).
- Indoor Workers -- Exposure scenario same as in generic P&W CSM. No modifications to generic P&W screening levels proposed.
- Samplers -- Samplers do not contact surface water and sediment when collecting NPDES samples from a man-hole on site. Samplers' exposure to surface soil is subsumed within the Groundskeepers scenario. Samplers' exposure to indoor air is subsumed within the Indoor Worker scenario. Therefore, no screening is required for this receptor.
- Trespassers -- Not applicable, the facility is staffed 24-hours per day and is surrounded by a fence, including areas along the Connecticut River, precluding access to the facility from the river.
- On-Site Recreators -- Not applicable; employees do not recreate on-site or in the nearby surface waters.

Off-site receptors and screening levels considered for the Colt Street facility are:

- Off-Site Utility Repair Workers -- Not applicable because the facility directly abuts Willow Brook and the Connecticut River, the receiving waters for the facility's groundwater. Therefore, there are no off-site areas where Utility Repair Workers might be exposed to facility-related contaminants.
- Off-Site Recreators -- Recreators might be exposed to surface water and sediment in Willow Brook and the Connecticut River. Exposure scenario same as in generic P&W CSM. No modifications to generic P&W screening levels proposed.
- Off-Site Residents -- Not applicable because groundwater flow is toward the Connecticut River, which abuts the facility. Hence, there are no residential buildings between the facility and the river.

Table 5-1 summarizes the facility-specific CSM and compares the potential facility-specific receptors to the generic CSM receptors. Primary consideration is given to whether the exposure conditions described by the generic CSM are significantly different from facility-specific exposure conditions. Exposure Areas (EAs) for each of the East Hartford Colt Street facility receptors are also identified (Figure 5-3).

Table 5-2 presents a summary of the exposure media and pathways for each receptor and points the reader to other tables which contain the screening levels for these media and pathways.

**Table 5-1  
Summary of Facility-Specific Receptors and Comparison to Generic P&W Receptors  
Pratt & Whitney, East Hartford Colt Street Facility, CT**

Potential Receptors	Exposure assumptions significantly different from generic CSM?	Facility-Specific Receptor Characteristics	Exposure Area
Excavating Laborers	No screening proposed since exposures are controlled by DPR.		
Maintenance Workers	Yes. No screening proposed since all exposures except indoor air exposure are controlled by DPR; indoor air exposure is subsumed by Indoor Worker scenario.	Not applicable	Not Applicable
Groundskeepers	No	Since the generic P&W screening levels were based on Groundskeepers' cumulative exposure at the three East Hartford facilities (Main Street, Colt Street, and Willgoos), no modifications to the generic screening levels are necessary.	Figure 5-3
Indoor Workers	No		Figure 5-3
Samplers	Yes, exposure subsumed by Groundskeepers and Indoor Workers	Not applicable	Not applicable
Trespassers	Yes, no exposure	Not applicable	Not applicable
On-Site Recreators	Yes, no exposure	Not applicable	Not applicable
Off-Site Utility Repair Workers	Yes, no exposure	Not applicable	Not applicable
Off-Site Recreators	No	None	Not defined*
Off-Site Residents	Yes, no exposure	Not applicable	Not applicable

*Notes:*

*NSP: No Screening Proposed*

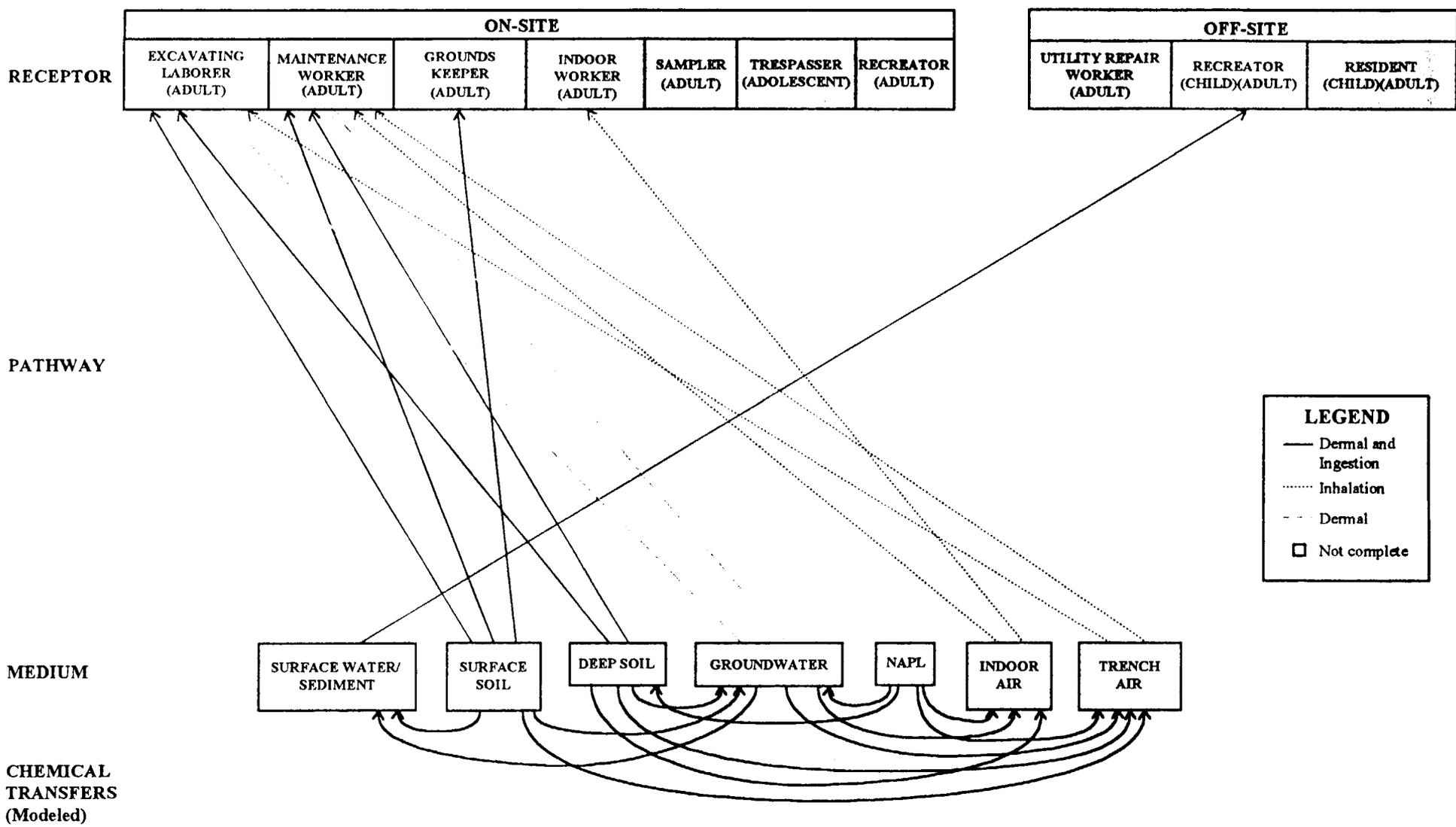
*\* Exposure areas are not defined, however screening is proposed as indicated in Table 5-2.*

**Table 5-2  
Summary of Screening Levels and Proposed Screening Approach  
Pratt & Whitney, East Hartford Colt Street Facility, CT**

<b>Exposure Media</b>	<b>Soil</b>	<b>Trench Air</b>	<b>Indoor Air</b>	<b>Surface Water</b>	<b>Sediment</b>	<b>Groundwater</b>
<b>Exposure Pathways</b>	<b>Ingestion and Dermal</b>	<b>Inhalation</b>	<b>Inhalation</b>	<b>Ingestion and Dermal</b>	<b>Ingestion and Dermal</b>	<b>Dermal</b>
Groundskeepers	Table 3-10	N/A	N/A	N/A	N/A	N/A
Indoor Workers	N/A	N/A	Table 3-4	N/A	N/A	N/A
Off-Site Recreators	N/A	N/A	N/A	Table 3-6, 3-7	Table 3-10	N/A
Proposed Screening Approach	Compare max by EA to P&W soil screening level	NSP	Compare measured indoor air concentrations to on-site indoor air screening levels; for off-site, compare measured groundwater concentrations near facility boundary to CT groundwater criteria	Compare surface water, groundwater concentrations to CT criteria	Compare max by EA to P&W soil screening level	NSP

*Notes:*

*N/A: Indicates that receptor is not exposed to medium/pathway.  
NSP: No Screening Proposed*



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

**Attachment No. 2**

**Site Plan  
*Environmental Indicator Determination  
For  
Pratt & Whitney Colt Street Facility***

**US EPA New England  
RCRA Document Management System (RDMS)  
Image Target Sheet**

**RDMS Document ID# 1041**

**Facility Name:** Pratt & Whitney (Colt Street)

**Phase Classification:** R-13

**Document Title:** Environmental Indicator (EI) Determination,  
Migration of Contaminated Groundwater Under Control (CA750YE)  
- Pratt & Whitney (Colt Street)

**Date of Document:** 10-25-1999

**Document Type:** EI Determination

**Purpose of Target Sheet:**

**Oversized**                       **Privileged**

**Page(s) Missing**               **Other** (Please Provide Purpose  
Below)

**Comments:** Determination of Environmental Indicators, Migration  
of Contaminated Groundwater Under Control - Site Plan

**\* Please Contact the EPA New England RCRA Records Center to View This Document \***

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

**Attachment No. 3**

***Summary of Groundwater Analytical Data  
and  
Constituents Detected in Groundwater  
Environmental Indicator Determination  
For  
Pratt & Whitney Colt Street Facility***

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**GROUNDWATER MONITORING  
IN SUPPORT OF  
VCAP RISK ASSESSMENT  
(STEP 2)**

**Pratt & Whitney  
Colt Street  
East Hartford, CT**

**July 1999  
Revised September 1999**

**Prepared for**

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Table 3	Summary of Constituents Detected in Groundwater
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## 1. SUMMARY

A second round of groundwater monitoring was performed at the Pratt & Whitney, Colt Street facility in East Hartford, Connecticut in support of the Voluntary Corrective Action Program (VCAP) Risk Assessment. Groundwater samples were collected from nine existing monitoring wells on site. The samples collected were analyzed for the following filtered and unfiltered metals: arsenic, barium, beryllium, cadmium, chromium (total and hexavalent), copper, lead, mercury, nickel, selenium, silver, zinc, iron, manganese, and also cyanide.

## 2. FACILITY INFORMATION

The Colt Street facility is located in East Hartford, Connecticut. The facility occupies approximately 12 acres and lies to the west of the Main Street facility and east of the Connecticut River. The Colt Street facility maintains an industrial wastewater treatment system, which receives wastewater via a pipeline from the Main Street facility in East Hartford, and discharges treated wastewater to the Connecticut River.

## 3. METHODOLOGY

Groundwater samples were collected by LEA personnel on May 5 and May 12, 1999 from nine existing monitoring wells. Prior to sampling the depth to water and total depth of each monitoring well were recorded. From this information the total volume of water contained in each monitoring well was calculated. The water was purged initially and parameters such as pH, temperature and conductivity were recorded. Once the initial volume of water was removed, the monitoring well was purged a minimum of three times the standing water volume. The turbidity of the groundwater was measured upon purging three well volumes. Samples were collected using a peristaltic pump equipped with dedicated polyethylene tubing. The filtered metals samples collected were filtered in the field using a dedicated 0.45-micron in-line filter assembly. Unfiltered samples for metals were collected as well. The containers were sealed, placed in a cooler, and shipped to Lancaster Laboratories under chain-of-custody procedures for analysis for metals (arsenic, barium, beryllium, cadmium, copper, lead, mercury, nickel, selenium, silver, zinc, iron, and manganese) and cyanide. The cyanide samples were not filtered. Samples were also sent to Averill Environmental Laboratories to be tested for hexavalent and total chromium using the same procedures described above.

In addition, one equipment blank, one duplicate sample and one performance evaluation sample were collected for quality assurance/quality control (QA/QC) purposes.



The locations of all monitoring wells are shown on the Site Plan provided as Attachment No. 2 of the *Environmental Indicator Evaluation for Migration of Contaminated Groundwater (EI)*.

#### 4. RESULTS

A summary of the groundwater monitoring well information including the screened interval, reference elevation, and groundwater elevations for the monitoring wells sampled are provided in Table 1. A summary of the analytical results for this event, as well as events conducted during the period from 1994 to the present, is provided in Table 2. A summary of the constituents detected for this event, as well as events conducted during the period from 1994 to the present, is provided in Table 3. The unfiltered samples are designated as total concentrations ('total') in the tables. The monitoring well locations are shown on the Site Plan provided as Attachment 2 of the EI.

Relatively low metal concentrations were detected in the monitoring wells sampled during the May 1999 event. In general higher metal concentrations were detected in the unfiltered samples as compared to the filtered ones from the same monitoring well. The highest detected metal concentrations in the unfiltered samples included barium (0.0900 mg/l); cadmium (0.0032 mg/l); chromium (total) (0.033 mg/l); copper (0.0135 mg/l); iron (2.180 mg/l); manganese (0.064 mg/l); nickel (0.111 mg/l); and zinc (0.0246 mg/l). The highest cyanide concentration detected was 0.0087 mg/l.

The filtered samples also detected low concentrations of metals in monitoring wells sampled. The highest metal concentrations detected in the filtered samples included barium (0.038 mg/l); cadmium (0.0015 mg/l); chromium (hexavalent) (0.024 mg/l); iron (0.0413 mg/l); manganese (0.0016 mg/l); nickel (0.0838mg/l); and zinc (0.012 mg/l).

A comparison of the concentrations from the filtered versus the unfiltered samples in most cases resulted in reasonable agreement. Concentrations of iron and manganese consistently differed by an order of magnitude between the filtered and unfiltered samples from the monitoring wells tested. Cadmium was detected in the unfiltered samples in groundwater from CS-MW-05, CS-MW-06, and CS-MW-09, while the filtered sample had no detection. Due to the low concentrations observed in the samples, the results would indicate a reasonable agreement between filtered and unfiltered samples.

Monitoring wells CS-MW-05 and CS-PZ-01 exhibited low levels of cyanide (0.0063 mg/l and 0.0087 mg/l correspondingly).



Groundwater data were compared to the numeric criteria published in Table 3-7 of the *Conceptual Site Models and Screening Levels for Pratt & Whitney's VCAP Connecticut Facilities*, prepared by Gradient Corporation, issued on December 19, 1997, revised on September 18, 1998, and September 15, 1999. The table is titled *Generic P&W Groundwater Screening Levels (SLs) Based on Surface Water Protection P&W VCAP, Connecticut Facilities*. With the exception noted below, constituents were not detected in groundwater at concentrations above the numeric criteria published in the above referenced table. A summary of the exceedances of the applicable screening levels is provided as Table 4.

In some instances, the total iron concentrations reported exceed the screening level for groundwater discharging to surface water that was derived by multiplying the PQL times a default dilution factor of 10. The PQL was used in preparing the screening level because a clean-up criterion for iron was not included in the Connecticut RSRs on which the screening levels were based. However, there is a federal chronic ambient water quality criterion for iron (1 ppm) which is also expected to be protective of incidental ingestion and dermal contact with surface water for offsite recreators. When the default dilution factor is applied, the screening level becomes 10 ppm, which is well in excess of the highest detected concentration of 2.18 mg/l.

A comparison of the duplicate samples collected for both filtered and unfiltered metals from monitoring well CS-MW-04A gave reasonable agreement. The same compounds were detected in the unfiltered duplicate samples. The relative percent differences observed in the unfiltered samples varied up to 51% (iron 1.79 and 1.06 mg/l) indicating an acceptable agreement due to the low concentrations observed. The same compounds were also detected in the filtered duplicate samples with the exception of iron (0.0176 mg/l), which was detected in only one of the duplicate samples. The relative percent differences observed in the filtered samples varied up to 2% (barium 0.0107 and 0.0109 mg/l) also indicating an acceptable agreement. The equipment blank sample did not indicate any contamination.

A performance evaluation sample for lead and arsenic was also submitted for analysis. The concentration for arsenic was reported to be 0.177 mg/l, which lies between the vendor-certified acceptance values (0.150-0.236 mg/l). The concentration for lead was reported to be 0.384 mg/l, which lies outside the vendor-certified acceptance criteria (0.410-0.590 mg l). However, zinc (0.0110 mg/l) was also reported present although it was not specified by the vendor as present (false positive). These results were obtained for quality assurance/quality control (QA/QC) purposes. In response to these results Lancaster conducted an investigation and attributed the deviation observed for lead to potential inaccuracies with the dilutions. The importance of using



care in making dilutions was stressed to the analysts and technicians involved. The presence of zinc as a false positive (0.0110 mg/l) was attributed to possible low level contamination.



**Table 1**

**Pratt & Whitney, East Hartford, CT  
Colt Street Wastewater Treatment Facility  
Summary of Onsite Monitoring Wells**

<b>Location Identifier</b>	<b>Depth to Top of Screen (ft)</b>	<b>Depth to Bottom of Screen (ft)</b>	<b>Length of Screen (ft)</b>	<b>Top of Casing Elevation (ft)</b>
CS-MW-02A	8	18	10	21.6
CS-MW-03A	5.5	15.5	10	18.4
CS-MW-04A	5	15	10	19.06
CS-MW-05 *	15	25	10	31.73
CS-MW-06	6	16	10	26.23
CS-MW-07	5	15	10	27.98
CS-MW-09	7	17	10	27.83
CS-MW-10	7.5	16.5	9	27.61
CS-PZ-01*	12	22	10	28.39

**Notes:**

\* Indicates a well with screen section below the water table. All other wells are constructed with screen section intersecting water table.