September 29, 2005

DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION

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

Migration of Contaminated Groundwater Under Control

Facility Name:	*Former Hyatt Clark Industries, Inc.*
Facility Address:	*1300 Raritan Road, Clark, New Jersey*
Facility EPA ID #:	NJD002457174

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

Facility Information

Unless specifically noted, all directional references in this report use true north. Project north references are noted by the word "project" in parentheses. Project north is approximately 47 degrees west of true north.

The former Hyatt Clark Industries (HCI) Site is approximately 87 acres in size and is bounded to the (project) south and east by Raritan Road and Walnut Road, respectively. The (project) northern and eastern portions of the Site are bounded by Conrail rail lines. The Site spans both Clark and Cranford Townships. Land use in the surrounding half mile radius is mixed. To the (project) south lies a U.S. Gypsum plant with other commercial and residential properties. To the (project) east, along Walnut Avenue, are industrial, commercial, and residential properties. Land use to the (project) north of the site is primarily residential. (Project) west of the site is the Karnak Chemical Corporation and other commercial and residential properties. Branches of the Rahway River are located approximately 2,500 feet southeast of the Site. The US Gypsum facility, which operates two production wells for nonpotable process use, is located across Raritan Road to the southeast of the Site.

The Site was undeveloped when General Motors (GM) purchased the land in 1937. In 1938, a plant was constructed and originally manufactured hard-rubber products such as automobile steering wheels and door handles. For the majority of the plant's history, antifriction roller bearings, used by the automotive and railroad industries, were the primary product manufactured. Manufacturing processes included hot forming, machining, heat treatment, quenching, drawing, tumbling, deburring, and assembly. In 1981, the facility was bought out by employees, who formed HCI. HCI filed for bankruptcy in August 1987. Shortly thereafter, all plant operations ceased. In 1989, ownership of the Site reverted to GM. The Site was decommissioned and vacant until it was redeveloped as a golf course which opened in August 2002.

The facility obtained numerous air permits from the New Jersey Department of Environmental Protection (NJDEP) Bureau of Air Pollution, a New Jersey Pollutant Discharge Elimination System (NJPDES) permit for surface water discharged from cooling water blow-down and stormwater runoff through five outfalls to the Rahway River, and an NJDEP Bureau of Underground Storage Tanks permit. In 1982, a NJDEP, RCRA inspection and investigation was conducted and identified a number of areas where operational losses and apparent spills had occurred. A revised RCRA Part A application was submitted to NJDEP in 1983. When NJDEP requested a RCRA Part B permit application from HCI, it was informed that HCI was operating under protection of federal bankruptcy law, would be ceasing operation, and would not be filing a Part B permit application.

Due to the bankruptcy of HCI, a remedial investigation was not performed prior to the transfer of ownership of the Site to GM as required under the Environmental Cleanup and Responsibility Act (ECRA) (NJAC 7:1-3). GM signed an Administrative Consent Order in 1989 to address the requirements under ECRA. The Site is currently regulated under the NJDEP Industrial Site Recovery Act (ISRA). GM performed site and remedial investigations from 1988 through 1995. Additional investigations, focusing on groundwater, were performed in 1996, 1997, and 1999. GM also conducted an above-ground facilities decommissioning program from 1989 through 1991. The decommissioning activities included removal and disposal of all wastes (including asbestos) and equipment, cleaning and inspection of all areas, and subsequent demolition, removal, and disposal of above-ground structures. In September 1994, all USTs were removed from the Site.

No private or industrial wells for water supply were identified during extensive well searches based on NJDEP well records and a door-to-door survey from 1991 through 2005 (see Figure 1). In summary, there are no domestic or public supply wells downgradient of the Site within a one-mile radius (URS 1998).

A Remedial Action Workplan (RAW) for contaminated soil was submitted in 1998 and approved by NJDEP in 1999. GM implemented the RAW and submitted a Remedial Action Report (RAR) in November 2000. The soil remedy for the Site is a multi-layer containment system and a deed notice. Construction of the containment system was completed in April 2000. In accordance with NJDEP Technical Regulations, a deed notice was filed with the Union County clerk on November 13, 2002 and rerecorded on April 15, 2003. The *containment system reduces migration of constituents from soil to groundwater by creating a barrier to precipitation infiltration through the soil column. The system consists of 6 inches to 5 feet of general grading fill; a geotextile cushion layer; 40-mil LLDPE membrane; geosynthetic drainage composite consisting of high-density polyethylene geonet with geotextile filter fabrics bonded top and bottom; 2.5 feet minimum to a maximum of 18 feet barrier protection layer; and, topsoil. Implementation of institutional controls (deed notice) restricts future activities at the Site to use as a golf course and ensures that the integrity of the containment system is maintained and direct contact with soil is prevented. Site inspections have been conducted to ensure the integrity of the containment system and to observe continued compliance with the Deed Notice. The inspections show that the containment system has been maintained and is in excellent condition.*

A Remedial Action Workplan (RAW) for contaminated groundwater was submitted in 2001. The proposed remedial action for dissolved-phase concentrations of volatile organic compounds (VOCs) in overburden and shallow bedrock groundwater is monitored natural attenuation (MNA). A Classification Exception Area (CEA) restricting the use of groundwater in the vicinity of the Site that does not meet the applicable unrestricted use criteria (Appendix A) will be implemented upon NJDEP approval.

In 1992, GM initiated oil recovery from wells using a product skimming system. Approximately 2,400 gallons of light non-aqueous phase liquid (LNAPL) were recovered using the product skimming system. In 1997, the interim free product recovery (IPR) system was installed at the Site. The IPR system consists of total-fluids-pumping from a network of recovery wells. The IPR system was converted into the final product recovery (FPR) system in 2001 as part of the final remedy for the Site. Total product recovered with the IPR System as of June 2005 is approximately 34,400 gallons. Treated water from the FPR system is currently discharged under NJPDES Permit No. NJ 8000352.

References

URS. 1998. Remedial Action Workplan for Soil. Former Hyatt Clark Industries, Inc. Site. October.

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 #6 and enter"IN" (more information needed) status code.

Rationale:

Potential Sources of Groundwater Contamination
GM has conducted comprehensive remedial investigations to identify potential source areas for groundwater impacts (including VOC sources). GM believes it has mitigated all potential sources of VOC groundwater contamination at the HCI Site. GM has presented the following information to demonstrate that VOC sources of dissolved phase impacts to groundwater have been mitigated, as listed in the references section: ARCADIS 1997, 1998; GM 1998a, 1998b, 1999, 2005; URS 1990, 1996, 1997, 1998a, 1998b, 1999a, 1999b, 2000..

GM implemented several source investigation and remediation activities at the Site. The initial activities were associated with the facility decommissioning. During decommissioning GM removed potential above ground sources including drums, tanks, and piping. Underground storage tanks were removed and clean closure was completed for each tank. Utilities and other appurtenances were also properly removed or cleaned and abandoned.

GM conducted a sampling program to investigate potential source areas in soil. Approximately 1,300 samples were collected and analyzed for VOCs among other analytes. In addition, every soil sample collected was field screened with a PID and olfactory observations were noted. The results of the investigation showed that a VOC source is not present in soil. As presented in the NJDEP approved Soil RAW (URS 1998), remediation for VOCs in soil was not necessary.

GM has demonstrated that free product at the Site is not a source of the chlorinated VOC contamination in the groundwater. Samples of the product have been analyzed for VOCs among other analytes. The results indicate that the product is not the source of chlorinated VOCs in groundwater. Most of the product is located in the west central portion of the Site. Overburden and shallow bedrock monitoring wells that are within the delineated free product area generally do not have exceedences of chlorinated VOCs in the groundwater. Chlorinated VOCs in overburden and shallow bedrock groundwater occur primarily in the southwest section of the Site near the former maintenance building and drum storage area where chlorinated VOCs were used and stored. The spatial separation between the groundwater impacted by chlorinated VOCs and the areas containing product also indicates that the product is not the source of the chlorinated VOCs.

Concentrations of VOCs in groundwater do not indicate the presence of free or residual sources of dense nonaqueous-phase liquid (DNAPL) sources at the Site. The absence of DNAPL has been confirmed during 12 monitoring events since March 1998. DNAPL has not been detected based on more than 800 recorded measurements. The maximum concentrations of VOCs detected in on-site groundwater are at least an order of magnitude less than 1 % of the solubility for each compound detected. These maximum concentrations are not indicative of a free or residual DNAPL source of chlorinated VOCs.

Even though the investigation results indicated that product is not the source of chlorinated VOCs in groundwater, GM is recovering product through active and passive methods consistent with the NJDEP Technical Requirements for Site Remediation.

GM also conducted a comprehensive investigation of the deep bedrock hydrogeology and groundwater quality. The investigation included a thorough study of the bedrock structure to facilitate the understanding of groundwater fate and transport. The investigation included the installation of 6 pilot holes to depths ranging from 350 to 500 feet, geophysical logging including borehole image process system, selective zone sampling, monitoring well installation, and continuous water level monitoring. The result of the investigation, summarized in the RAW for Groundwater, establishes a clear connection between the upgradient source and the impacts observed in the deep bedrock beneath the site. The connection is based on the historic pumping of the Hyatt Clark water supply wells, current and historic pumping of the Gypsum wells, the VOC signature of the deep bedrock groundwater, and an upgradient source located along a preferential groundwater flow path (i.e. along bedrock strike). The strike directly connects the upgradient site and the HCI Site. The strike path extends linearly from the Site through the MW-10 cluster, the MW-31 cluster and MW-85B3 (N.J. geodetic N53E).

The VOC signature of the deep bedrock groundwater beneath the HCI Site and the off-site upgradient site is shown using pie diagrams. The pie diagrams illustrate the signature of dissolved phase VOCs in groundwater. Pie diagrams were prepared for the overburden, shallow bedrock, and the deep bedrock groundwater beneath the HCI Site, the off-site upgradient source and the US Gypsum production wells (Figures 2 and3). Relative proportions of PCE, TCE, 1,1,1-TCA, 1,2-DCE, and 1,1-DCE/DCA concentrations were used to create a chemical signature for each well. The radius, and therefore the size of the pie diagram is proportional to the total VOC concentration. If trichlorofluoromethane was detected it is noted by "FREON PRESENT" adjacent to the diagrams. Trichlorofluoromethane was never detected in the on-site overburden and shallow bedrock groundwater.

The VOC signatures show that the signatures from the deep bedrock beneath the HCI Site are similar to the signatures from the groundwater at the off-site upgradient source and dissimilar to the signature from on-site groundwater in the overburden and shallow bedrock. In addition, the concentrations at the off-site source are much greater than the concentrations at the HCI Site, which also shows that source of these VOCs is off-site. The VOC signatures and the concentration gradient show a clear connection between the off-site upgradient source and the impacted deep bedrock groundwater beneath the HCI Site.

GM has submitted information concerning historical pumping of the three abandoned production wells at the Site. These three production wells were installed in the 1940s and abandoned in April 1990. During peak production, each well pumped approximately 1 million gallons per day. The pumping of the HCI production wells, combined with the United States (US) Gypsum production wells, which are downgradient of the HCI Site and are currently operating, enhanced movement along strike from the upgradient off-site source to the HCI Site.

Groundwater Conditions

The geology at the Site consists of an uppermost overburden unit consisting of heterogeneous fill composed of various materials ranging from silty clay to coarse gravel and cobbles. Generally, the thickness of the fill is approximately 10 feet in the vicinity of the former main building. The underlying unit is composed of water-saturated, silty fine sand, with a varying thickness from only a few feet to almost 30 feet in the (project) northwest corner of the Site. Underlying the silty fine sand unit is till/weathered bedrock, ranging from approximately 2 to 10 feet thick. The till is a reddish-brown clay or silt, derived from the Passaic Formation. The till is very dense and can contain large rock clasts or pebbles of gneiss, quartzite, sandstone, and quartz. The upper surface of the bedrock tends to be weathered with clay filled fractures alternating with seams of competent rock and silty clay. The depth to bedrock ranges from approximately 20 to 50 feet below land surface. The bedrock elevation is highest in the central portion of the Site. All strike and dip values show a very similar trend, northeast-southwest strike and gentle northwest dip. Groundwater at the Site exists in the overburden, shallow bedrock, and deep bedrock. The average depth to groundwater at the Site is between 10 to 40 feet bgs.

Overburden groundwater at the Site area is controlled by discharge to the Rahway River (i.e., groundwater is flowing to the southeast). Localized depressions in the water table are centered at overburden pumping wells *in the interim free product recovery (IPR) system. Outside the pumping influences, groundwater flow conforms to the regional flow, generally southeast towards the Rahway River.*

Shallow bedrock was defined to be approximately the upper 30 feet of the bedrock. Similarly to the overburden groundwater, localized depressions in the water table are due to the pumping associated with the IPR system and installation of the containment system. Outside the pumping influences, groundwater flow conforms to the regional flow towards the southeast.

Groundwater in the deep bedrock flows to the south-southeast. Two US Gypsum production wells, which supply process water for the manufacture of paper for wallboard, are located downgradient 1,000 feet to the south (USG-1) and 500 feet to the southeast (USG-2), and extend to depths of approximately 500 and 300 feet bgs, respectively. Continuous water level monitoring has indicated that all on-site deep bedrock wells respond to pumping of the US Gypsum wells (ARCADIS 1999 ; Appendix B), indicating that the US Gypsum wells are hydraulically connected to deep bedrock groundwater at the Site. Recent records show that the majority of pumping occurs from USG-1, while USG-2 is pumped intermittently based on demand. Well construction details for USG-1 and USG-2 show that they were constructed as an open borehole within the bedrock, indicating that the wells extract water from both the shallow and deep bedrock units (GM 2001).

Summary of Groundwater Remedial Investigations
The initial groundwater investigation from 1988 through 1991 was focused on defining the overburden groundwater quality and investigating the extent of free product (URS 1995). The primary constituents detected in the overburden groundwater were chlorinated VOCs, and the highest concentrations of chlorinated VOCs were detected in the southwestern portion of the Site.

A subsequent groundwater remedial investigation was conducted from 1995 through 1996 to investigate shallow bedrock (defined to be approximately the upper 30 feet of the bedrock) groundwater quality and further delineate free product beneath the Site (ARCADIS 1997). Consistent with the results of the initial investigation, the highest concentrations of chlorinated VOCs in the shallow bedrock groundwater and the most free product were detected in the (project) western portion of the Site.

A supplemental groundwater remedial investigation was conducted in 1997 to mainly delineate and recover free product (ARCADIS 1999). In addition, the natural attenuation potential in groundwater was assessed and the two US Gypsum production wells were sampled to evaluate groundwater quality in the vicinity of the Site. Chlorinated VOCs were the only constituents that exceeded the NJDEP Class IIA groundwater quality standards (GWQS) in the US Gypsum production wells; but groundwater from these wells is not used for potable purposes.

Semi-annual groundwater monitoring was initiated in 1997, and semi-annual reports were filed with NJDEP since 1999. The groundwater samples were analyzed for Priority Pollutant VOCs, semivolatile organic compounds (SVOCs), polychlorinated biphenyls (PCB), pesticides, metals and cyanide, total phenols, and total petroleum hydrocarbons (TPH). In March 2000, a modified program was implemented that no longer monitored pesticides, metals, cyanide, total phenols, and TPH. Semi-annual groundwater monitoring to evaluate contaminant concentrations in the overburden, shallow bedrock, and deep bedrock units is ongoing (ARCADIS 2005). Water level and product thickness measurements are also collected during the semi-annual groundwater monitoring events.

A deep bedrock investigation and water-level monitoring study was conducted in March 1999, and the results showed that the US Gypsum wells influence water levels in all deep bedrock wells and do not significantly influence water levels in the overburden and shallow bedrock with the exception of the shallow bedrock monitoring wells MW-37B and MW-39B located at the southern portion of the Site (ARCADIS 1999).

In 1998, off-site monitoring wells were installed in the overburden and sampled in response to the results of a groundwater investigation conducted by Villa Construction Company on its property located adjacent to and (project) west of the Site. These off-site monitoring wells were analyzed for the same parameters as the semi-

annual groundwater monitoring program. Four VOCs were detected in the off-site wells that exceed the NJDEP Class IIA GWQS, but the VOC signature for the off-site groundwater sample with the highest concentration of tetrachloroethene (PCE) did not match the VOC signatures in samples collected from on-site wells. Differences between VOC concentrations in samples from off-site wells and samples from on-site wells indicated that the VOC concentrations observed off-site were not related to on-site impacts (ARCADIS 1999).

A supplemental deep bedrock investigation was performed subsequently to provide additional groundwater quality and hydraulic data along strike and dip for the deep bedrock (ARCADIS 2001). In addition, GM reviewed the NJDEP file for the Terminal Avenue site located approximately 2,500 feet west (upgradient) of the Site, which began operations in 1960. Based on investigative work conducted at the Terminal Avenue site (EcolSciences 2004), TCE has been detected in overburden groundwater at concentrations greater than 200,000 ug/L and trichlorofluoromethane at concentrations greater than 2,000 ug/L. GM believes that the information collected from the on-site investigations and from those conducted at the Terminal Avenue site demonstrates that deep bedrock groundwater quality at the HCI Site is primarily from an off-site source. Evidence to support an off-site contribution to the deep bedrock groundwater quality includes the high TCE and other chlorinated VOC concentrations in the deep bedrock at a location (MW-10B) upgradient of on-site sources, differences in contaminants between deep bedrock wells and overburden/shallow bedrock wells, and the presence of trichlorofluoromethane in deep bedrock wells that has not been detected in the overburden/shallow bedrock units (ARCADIS 2001).

As stated in the NJDEP September 2004 letter (NJDEP 2004), NJDEP agreed that an off-site contribution to the contamination at the HCI Site exists at depth. In the same letter, NJDEP also requested that GM install off-site monitoring wells to further characterize upgradient ground water quality even though NJDEP acknowledged that it may be difficult to quantify accurately the degree of off-site contribution. Even though GM believes that such data should be collected as part of the investigation associated with the Terminal Avenue site, GM has agreed to install two wells downgradient of the Terminal Avenue site without waiting for the further investigation of the Terminal Avenue site, in the interest of providing NJDEP with additional off-site upgradient data.

References:

ARCADIS Geraghty & Miller. 1997. Groundwater Remedial Investigation Report. Former Hyatt Clark Industries, Inc. Site.

ARCADIS Geraghty & Miller. 1998. Supplemental Groundwater Remedial Investigation. Former Hyatt Clark Industries, Inc. Site.

ARCADIS Geraghty & Miller. 1999. Groundwater Summary and Work Plan. Former Hyatt Clark Industries, Inc. Site.

ARCADIS Geraghty & Miller. 2001. Remedial Action Workplan for Groundwater. Former Hyatt Clark Industries, Inc. Site.

ARCADIS Geraghty & Miller. 2005. March 2005 Interim Groundwater Monitoring Report. Former Hyatt Clark Industries, Inc. Site, Clark, New Jersey. June 30.

General Motors Corporation (GM). 1998a. Letter from Kim Tucker-Billingslea, GM Worldwide Facilities Group, to Christopher Blake, NJDEP Bureau of Northern Case Management: Responses to NJDEP comments dated February 10, 1998.

General Motors Corporation (GM). 1998b. Letter from Kim Tucker-Billingslea, GM Worldwide Facilities Group to Wayne Bevan, NJDEP Industrial Site Evaluation: Responses to the NJDEP comments dated August 13, 1998; responses to comments on Item I - Supplemental Remedial Investigation and Interim RAW dated January 9, 1998; Item II - Response to NJDEP Letter of February 10, 1998; Item III - Remedial Investigation Report dated April 29, 1998; Item IV - Additional Responses to NJDEP Letter of February 10, 1998.

General Motors Corporation (GM). 1999. Letter from Kim Tucker-Billingslea, GM Worldwide Facilities Group to Wayne Bevan, NJDEP Industrial Site Evaluation: Responses to the NJDEP comments regarding the Remedial Action Workplan dated October 23, 1998 and the Groundwater Summary and Workplan dated June 13, 1999.

General Motors Corporation (GM). 2001. Letter from Kim Tucker-Billingslea, GM Worldwide Facilities Group, to Alan Straus, USEPA Region 2: Responses to USEPA Questions regarding CA725 and CA750. November 12.

General Motors Corporation (GM). 2005. Letter from Kim Tucker-Billingslea, GM Worldwide Facilities Group, to Christopher Blake, NJDEP Bureau of Northern Case Management: Responses to NJDEP comments dated April 8, 2005.

New Jersey Department of Environmental Protection (NJDEP). 2004. Letter to GM Kim Tucker-Billingslea, GM Worldwide Facilities Group. September 7.

URS Consultants. 1990. RCRA Closure Report. Former Hyatt Clark Industries, Inc. Site.

URS. 1995. Remedial Investigation Report. March.

URS Greiner. 1996. Underground Storage Tank Closure Report. Former Hyatt Clark Industries, Inc. Site.

URS Greiner. 1997. Evaluation of TPH Soil Excavation and In-Situ Remediation. Former Hyatt Clark Industries, Inc. Site.

URS Greiner. 1998a. Evaluation of TPH Soil Excavation in the OW-22 and OW-25 Area. Former Hyatt Clark Industries, Inc. Site.

URS Greiner. 1998b. Summary of PCB Contamination in Soils Proposed Remedial Action. Former Hyatt Clark Industries, Inc. Site.

URS Greiner Woodward Clyde. 1999a. Monthly Progress Report No. 1 For the Soils Remediation Action. Former Hyatt Clark Industries, Inc. Site.

URS Greiner Woodward Clyde. 1999b. Monthly Progress Report No. 2 For the Soils Remediation Action. Former Hyatt Clark Industries, Inc. Site.

URS. 2000. Remedial Action Report. Former Hyatt Clark Industries, Inc. Site.

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

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

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

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

Rationale:

Semi-annual rounds of groundwater quality data have been collected at the Site since 1997. The results for the four most recent rounds of semi-annual monitoring (Fall 2003 to Spring 2005) are discussed in this section (ARCADIS 2003, 2004a, 2004b, 2005). The information for chemicals exceeding the drinking water screening criteria is summarized in Table 1.

Drinking water screening criteria used to identify contaminated groundwater are based on Federal maximum contaminant levels (MCLs) and risk-based drinking water criteria for constituents without MCLs. The risk-based drinking water criteria are calculated using standard default exposure factors for estimating reasonable maximum exposures (RME) via daily drinking water consumption, and target cancer risk of 10^{-5} *and a noncancer hazard quotient (HQ) of 1. The drinking water screening criteria are shown on Table 1 and in the attached Figures 4 through 6 for groundwater quality data box figures.*

Overburden

Based on the four most recent rounds of monitoring, 9 VOCs detected in overburden groundwater samples exceeded the drinking water screening criteria. All of these compounds are chlorinated VOCs. The maximum detected concentrations of these VOCs in the overburden groundwater and their locations are shown in Table 1.

Historically, SVOCs have only been detected infrequently in overburden groundwater samples, and most of the detected concentrations are below the NJDEP Groundwater Quality Standards (GWQS), with some sporadic exceptions. As proposed in the Groundwater Summary and Work Plan (ARCADIS 1999), and approved by NJDEP in its letter dated 29 August 2000, the semi-annual groundwater monitoring program no longer includes SVOC analyses.

Historically, PCBs have been detected infrequently, but they have been detected at concentrations greater than the GWQS in some samples. Because of their very low solubility, the detection of PCBs in groundwater was suspected to be associated with particulates in the sample and not to be representative of the dissolved-phase concentrations. PCB concentrations decreased when low-flow sampling methods were used. In addition, PCBs were not detected in overburden wells along the facility boundary at concentrations greater than the screening criteria. The maximum detected concentration of total PCBs in the overburden groundwater that exceed the drinking water screening criteria and its location are shown in Table 1.

[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).

Historically, some metals detected in overburden groundwater samples have exceeded the GWQS. Results from previous sampling rounds and filtered groundwater samples indicate that the majority of the metals concentrations exceeding the screening criteria were the result of turbidity in the sample and not representative of the dissolved-phase concentrations. Metal concentrations generally decreased when low-flow sampling methods were used. As proposed in the Groundwater Summary and Work Plan (ARCADIS 1999), and approved by NJDEP in their letter dated 29 August 2000, the semi-annual groundwater monitoring program no longer includes metal analyses, except for MW-20 where LNAPL was formerly observed. As requested by NJDEP, all the above-mentioned parameters, including metals, were sampled when LNAPL was no longer observed at this well.

Therefore, concentrations of VOCs and PCBs in overburden groundwater meet the definition of contamination, while SVOCs, pesticides, and metals do not meet the definition of contamination.

Shallow Bedrock
Based on the four most recent rounds of monitoring, 6 VOCs detected in shallow bedrock groundwater samples exceeded the drinking water screening criteria. All of these compounds are chlorinated VOCs. The maximum detected concentrations of these VOCs in the shallow bedrock groundwater and their locations are shown in Table 1.

Historically, SVOCs were not detected frequently nor were they detected in shallow bedrock groundwater samples at concentrations greater than the GWQS, with the exception of two concentrations of bis (2-ethylhexyl) phthalate, a common laboratory contaminant. As proposed in the Groundwater Summary and Work Plan (ARCADIS 1999), and approved by NJDEP in their letter dated 29 August 2000, the semi-annual groundwater monitoring program no longer includes SVOC analyses.

Historically, PCBs have been detected infrequently, but they have been detected at concentrations greater than the GWQS in some samples. Because of their very low solubility, the detection of PCBs in groundwater was thought to be associated with particulates in the sample and not to be representative of the dissolved phase concentrations. PCB concentrations decreased when low-flow sampling methods were used. The maximum detected concentration of total PCBs in the shallow bedrock groundwater and its location are shown in Table 1.

Historically, some metals detected in shallow bedrock groundwater samples have exceeded the GWQS. Results from previous sampling rounds and subsequent dissolved groundwater samples indicate that the majority of the metals concentrations exceeding the screening criteria were the result of turbidity in the sample and not representative of the dissolved-phase concentrations. Metal concentrations generally decreased when low-flow sampling methods were used. As proposed in the Groundwater Summary and Work Plan, and approved by NJDEP in their letter dated 29 August 2000, the semi-annual groundwater monitoring program no longer includes metals analysis, except for one well (MW-37B). Metals concentrations in Well MW-37B did not exceed the screening criteria for the latest four rounds of sampling.

Therefore, concentrations of VOCs and PCBs in shallow bedrock groundwater meet the definition of contamination, while SVOCs, pesticides, and metals do not meet the definition of contamination.

Deep Bedrock
As discussed in Question 1, GM believes that groundwater monitoring data at and upgradient of the Site indicate that the deep bedrock groundwater quality at the Site is strongly influenced by an off-site source, and any site-related influence is insignificant in comparison. Currently, NJDEP is evaluating the relative significance of influences from the Site and from other adjacent sites.

Based on the four most recent rounds of monitoring, 5 VOCs detected in deep bedrock groundwater samples exceeded the drinking water screening criteria. All of these compounds are chlorinated VOCs. The maximum detected concentrations of these VOCs in the deep bedrock groundwater and their locations are shown in Table 1.

SVOCs have not been detected in deep bedrock groundwater samples, with one exception, bis (2-ethylhexyl) phthalate, a common laboratory contaminant. PCBs have not been detected in deep bedrock groundwater samples. Metals have not been detected at concentrations greater than the drinking water screening criteria except for three detections of lead in Spring 1999. The semi-annual groundwater monitoring program no longer includes SVOC and metals analysis for deep bedrock groundwater.

In addition to on-site groundwater sampling, four off-site wells (two US Gypsum production wells and two off-site upgradient residential wells) were sampled in December 1997 to evaluate bedrock groundwater quality in the vicinity of the Site. The two US Gypsum production wells (300 and 500 feet deep) were sampled given their proximity to the Site, approximately 500 and 1,000 feet across Raritan Road to the southeast (downgradient of the Site). Chlorinated VOCs were the only constituents that exceeded GWQS. The constituent with the highest concentration was TCE (120 ug/L). Trichlorofluoromethane was also detected in the samples from the US Gypsum wells. This compound has never been detected on the HCI Site in the overburden or the shallow bedrock groundwater, suggesting that an off-site source has impacted these wells. The two off-site residential wells, located approximately 2,000 feet northwest (upgradient) of the Site, were also sampled in January 1999 for VOCs and trichlorofluoromethane. These compounds were not detected in samples from the residential wells in both events.

Therefore, concentrations of VOCs in deep bedrock groundwater meet the definition of contamination, while SVOCs, PCB, pesticides, and metals do not meet the definition of contamination.

Light Non-Aqueous Phase Liquid (LNAPL)
As discussed in the Remedial Action Plan for Free Product (ARCADIS 2000), LNAPL containing PCBs has been observed at the overburden groundwater table and within the overburden saturated zone and shallow bedrock. The LNAPL is addressed as part of the on-going product recovery and installation of the containment system (ARCADIS 2005).

References:

ARCADIS Geraghty & Miller. 1999. Groundwater Summary and Work Plan. Former Hyatt Clark Industries, Inc. Site.

ARCADIS Geraghty & Miller. 2000. Remedial Action Work Plan for Free Product. Former Hyatt Clark Industries, Inc. Site.

ARCADIS Geraghty & Miller. 2001. Remedial Action Workplan for Groundwater. Former Hyatt Clark Industries, Inc. Site.

ARCADIS Geraghty & Miller. 2003. September 2003 Interim Groundwater Monitoring Report. Former Hyatt Clark Industries, Inc. Site, Clark, New Jersey. December 19.

ARCADIS Geraghty & Miller. 2004a. March 2004 Interim Groundwater Monitoring Report. Former Hyatt Clark Industries, Inc. Site, Clark, New Jersey. June 25.

ARCADIS Geraghty & Miller. 2004b. September 2004 Interim Groundwater Monitoring Report. Former Hyatt Clark Industries, Inc. Site, Clark, New Jersey. December 17.

ARCADIS Geraghty & Miller. 2005. March 2005 Interim Groundwater Monitoring Report. Former Hyatt Clark Industries, Inc. Site, Clark, New Jersey. June 30.

EcolSciences Inc. 2004. Phase II Site Investigation Block 58, Lot 4, 100 Terminal Avenue, Township of Clark, Union County, New Jersey.

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

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

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

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

Rationale:

Semi-annual groundwater quality data in overburden, shallow bedrock, and deep bedrock groundwater for the six most recent rounds of monitoring (Fall 2002 to Spring 2005) are presented in Figures 4 to 6. Only chemicals with at least one concentration exceeding the drinking water screening criterion are shown on the figures. The concentrations that are higher than the screening criteria are highlighted.

Overburden and Shallow Bedrock
As presented in the Remedial Action Work Plan (ARCADIS 2001) and recent Groundwater Monitoring Reports (ARCADIS 2003, 2004a, 2004b, 2005), regional flow in the overburden and shallow bedrock groundwater at the Site is generally to the southeast. However, pumping in the LNAPL recovery wells, installed in 1997 as part of the IPR System, has altered the gradient such that flow in the southwestern portion of the Site in the overburden and shallow bedrock groundwater is drawn to the vicinity of these wells (ARCADIS 2003, 2004a, 2004b, 2005). The IPR system was converted into the final product recovery (FPR) system in 2001 as part of the final remedy for the Site, and continues to provide hydraulic control of overburden and shallow bedrock groundwater. As a result, contamination in the following overburden wells is not expected to migrate beyond the existing area of contamination under current conditions (MW-21, MW-38, MW-19, MW-18, MW-20 and MW-8).

Contaminated overburden groundwater located outside the influence of the LNAPL pumping wells (i.e., migration would not be controlled by pumping), include the following: MW-35 (PCBs), MW-37R (TCE), MW-39 (TCE), MW-41 (1,1-DCE, PCE, TCE, and VC), and MW-45 (1,1-DCE and PCE). Contaminant concentrations present in MW-37R and MW-45 are stable. Figure 4 shows the semi-annual monitoring data at the on-site overburden groundwater wells. It can be seen in this figure that concentrations in MW-35, MW-39 and MW-41 are gradually decreasing. In addition, contaminant concentrations in the wells at the Site boundary (i.e., MW-37R, MW-39, MW-13, and MW-12) are either stable or decreasing. Thus, the migration of contaminated groundwater in the overburden is stabilized.

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[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.

Contaminated shallow bedrock groundwater located outside the influence of the LNAPL pumping wells include the following instances: MW-7 (PCBs), MW-9 (1,1-DCE, PCE, TCE, VC and PCBs), MW-9B (1,1-DCE, cis-1,2-DCE, PCE, trans-1,2-DCE, TCE, and VC), MW-35B (PCBs), MW-37B (1,1-DCE and TCE), MW-38B (1,1-DCE, cis-1,2-DCE, PCE, TCE, and VC), and MW-39B (TCE). Contaminant concentrations in MW-7, MW-9, MW-9B, MW-35B, MW-38B, and MW-39B are generally stable. Figure 5 shows the semi-annual monitoring data at the shallow bedrock groundwater wells. It can be seen in this figure that contaminant concentrations in the wells at the Site boundary (i.e., MW-37B, MW-39B, MW-4, and MW-36B) are either stable or decreasing. Thus, the migration of contaminated groundwater in the shallow bedrock groundwater is stabilized.

Overburden and shallow bedrock groundwater wells exhibiting PCB contamination are all delineated downgradient by wells with concentrations below the screening criteria. Overburden and shallow bedrock groundwater wells exhibiting VOC contamination are not all delineated downgradient by wells with concentrations below the screening criteria. As such, a groundwater model was used as part of the proposed CEA determination to estimate the maximum distance which VOC concentrations in overburden and shallow bedrock groundwater would extend downgradient of the Site (ARCADIS 2001). Simulations indicate that the downgradient distance of the plume of contamination would be limited to 500 ft after 99 years. The CEA boundary map and other CEA information are presented in Appendix A. Therefore, based on concentration trends and modeling predictions, contaminated overburden and shallow bedrock groundwater is expected to remain within 500 ft of the Site boundary.

Deep Bedrock

Contaminated deep bedrock groundwater, though attributed primarily to an off-site source, is also stabilized because it is captured by the two US Gypsum production wells. Based on the 2004 pumping information, USG-1 and USG-2 pumped at an average rate of approximately 143 and 80 gpm, respectively. A study was performed to determine the degree to which the US Gypsum wells influence groundwater flow and the extent to which the wells capture/contain impacted deep bedrock groundwater from beneath the HCI Site. The results of the analysis indicate that pumping of the US Gypsum wells captures the impacted deep bedrock groundwater from beneath the HCI Site. A detailed discussion of the study is provided in Appendix B and C, and the findings are summarized below.

Water-level measurements were collected from deep and shallow bedrock monitoring wells at the HCI Site. A comparison of the water-level measurements to the pumping records from USG-1 and USG-2 shows that there is a clear hydraulic connection between the deep bedrock groundwater beneath the HCI Site and both US Gypsum wells. Water-level measurements were also collected at the HCI Site and at the US Gypsum facility to prepare deep bedrock groundwater elevation contour maps. The water-level contour maps indicate that groundwater flow direction in the deep bedrock is south-southeast toward the US Gypsum wells. Groundwater elevations at the downgradient (southern) boundary of the HCI Site range between 38 and 40 feet msl and the water level in the USG-1 was approximately 16 feet msl (during pumping). A discussion of the water-level measurements, the pumping records from the US Gypsum wells, and the water-level contour maps is provided in Appendix B.

Two groundwater modeling techniques were used to further demonstrate capture of the deep bedrock groundwater by the US Gypsum wells. A discussion of these groundwater modeling techniques and their results is provided in Appendix C. The first model illustrates the well head protection area for the US Gypsum wells using the methods required by the New Jersey Geological Survey (NJGS). Results of the model indicate that the capture zone for these wells encompasses a significant area up- and down-gradient of the HCI Site. The second technique used a MODFLOW groundwater flow model with particle tracking to illustrate the general pattern of groundwater flow from the HCI Site to the US Gypsum Wells, assuming isotropic horizontal hydraulic conductivity. To account for horizontal anisotropy associated with the regional structure of the bedrock (Passaic Formation), the MODFLOW *model was also used with anisotropic horizontal hydraulic conductivity having a ratio of 10:1 to simulate preferential flow along strike. This ratio is the same as the ratio used in the NJGS Well Head Protection Area model for this bedrock formation. As such, this anisotropic version of the MODFLOW model is a blend of the first two modeling techniques, and provides a more integrated picture of how groundwater in the deep bedrock flows to the US Gypsum pumping wells. The results of these models are consistent with the hydraulic gradient measurements which show that pumping of the US Gypsum production wells would capture impacted deep bedrock groundwater from beneath the HCI Site. In particular, the anisotropic MODFLOW model predicts a hydraulic head difference between the downgradient boundary of the HCI Site and USG-1 that is within a factor of two of the measured head difference between monitoring wells at the downgradient Site boundary and the water level in USG-1.*

In addition, Figure 6 shows the semi-annual monitoring data at the deep bedrock groundwater wells. It can be seen in this figure that contaminant concentrations are generally stable. Thus, the migration of contaminated groundwater in the deep bedrock groundwater is stabilized. In addition to the monitoring to support the CA750 determination discussed in answer to Question 7, GM is planning further characterization of deep bedrock groundwater upgradient (between the AT&T and the Hyatt Clark site) and side-gradient (east of MW-85B3) as part of its continuing effort to develop information necessary to support an appropriate remedy decision for groundwater at the Hyatt Clark site.

LNAPL
Data from previous studies have sufficiently characterized the extents of the LNAPL (ARCADIS 2002, 2004b, 2005). The LNAPL is expected to remain within the existing areas shown in Figure 7, as no significant migration of LNAPL has been observed since monitoring began. In addition, the existing FPR system will continue to provide mass removal and further hydraulic control of LNAPL. Thus, the migration of LNAPL is stabilized.

References:

ARCADIS Geraghty & Miller. 2001. Remedial Action Workplan for Groundwater. Former Hyatt Clark Industries, Inc. Site.

ARCADIS Geraghty & Miller. 2002. Response Letter to NJDEP Request.

ARCADIS Geraghty & Miller. 2003. September 2003 Semi-Annual Groundwater Monitoring Report, Former Hyatt Clark Industries, Inc. Site, Clark, New Jersey. December 19.

ARCADIS Geraghty & Miller. 2004a. March 2004 Interim Groundwater Monitoring Report, Former Hyatt Clark Industries, Inc. Site, Clark, New Jersey. June 25.

ARCADIS Geraghty & Miller. 2004b. September 2004 Interim Groundwater Monitoring Report, Former Hyatt Clark Industries, Inc. Site, Clark, New Jersey. December 17.

ARCADIS Geraghty & Miller. 2005. March 2005 Interim Groundwater Monitoring Report, Former Hyatt Clark Industries, Inc. Site, Clark, New Jersey. June 30.

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

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

_X_ 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:

The nearest point of surface water is the Rahway River, which is located approximately 2,500 ft southeast of the Site (ARCADIS 2001). Given that the general groundwater flow directions in the overburden and shallow bedrock groundwater zones are to the southeast, the potential exists for overburden and shallow bedrock groundwater to discharge into the Rahway River. Potential impacts to the Rahway River were predicted using a groundwater fate and transport model (ARCADIS 2001). The model predicted that the VOC concentrations (based on TCE) at the downgradient site boundary (average of 8.2 ug/L) would attenuate to less than 1 ug/L within about 500 feet of the Site. Therefore, contaminated groundwater from overburden and shallow bedrock does not discharge into the Rahway River.

The deep bedrock groundwater at the Site also generally flows to the southeast but is captured by the US Gypsum production wells as discussed in Question 3. Thus, deep bedrock groundwater does not discharge into the Rahway River or other surface water bodies.

References:

ARCADIS Geraghty & Miller. 2001. Remedial Action Workplan for Groundwater. Former Hyatt Clark Industries, Inc. Site.

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 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[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):

Footnotes:

[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):

Footnotes:

[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?"

__X__ If yes - continue after providing or citing documentation for planned activities or future sampling/measurement events. Specifically identify the well/measurement locations which will be tested in the future to verify the expectation (identified in #3) that groundwater contamination will not be migrating horizontally (or vertically, as necessary) beyond the "existing area of groundwater contamination."

_____ If no - enter "NO" status code in #8.

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

Rationale:

As discussed in Question 1, semi-annual groundwater monitoring to evaluate contaminant concentrations in the overburden, shallow bedrock, and deep bedrock unit was initiated in 1997 and is currently ongoing. Data collected from this groundwater monitoring program will be used to confirm that the existing area of groundwater contamination at the Site remains the same. A program for monitoring the extent and thickness of LNAPL is also ongoing (ARCADIS 2005) to confirm that the existing area of LNAPL remains the same and the current recovery system continues to be effective in providing hydraulic control. In addition, pumping records for US Gypsum production wells will be compiled annually to ensure that the contaminated deep bedrock groundwater remains to be captured by these production wells.

References:

ARCADIS Geraghty & Miller. 2005. March 2005 Interim Groundwater Monitoring Report, Former Hyatt Clark Industries, Inc. Site, Clark, New Jersey. June 30.

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).

<u>YE</u> 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 *<u>Former Hyatt Clark Industries, Inc.</u>*, EPA ID # *<u>NJD002457174</u>* located in *<u>Clark, New Jersey</u>*. 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: General Motors Corporation
Worldwide Facilities Group

Reviewed by: Lucas Kingston, Hydrogeologist
Booz Allen Hamilton (for EPA Region 2)

Also reviewed by: ______________________________ Date:____________________
Alan Straus, RPM
RCRA Programs Branch
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______________________________ Date:____________________
Barry Tornick, Section Chief
RCRA Programs Branch
EPA Region 2

Approved by: Original singed by: Date: September 30, 2005
Adolph Everett, Chief
RCRA Programs Branch
EPA Region 2

Locations where references may be found:

References reviewed to prepare this EI determination are identified after each response. Reference materials are available at Environ Corp., Princeton, New Jersey office.

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Migration of Contaminated Groundwater Under Control
Environmental Indicator (EI) RCRIS code (CA750)

Table 1: Maximum Detected Groundwater Concentrations Exceeding Drinking Water Screening Criteria
Former Hyatt Clark Industries, Inc., Clark, New Jersey

Aquifer	Chemical	Max. Conc (mg/L)	Well ID	Sample Date	Drinking Water Screening Criteria (mg/L)		NJDEP GWQS (mg/L)
Overburden	Carbon Tetrachloride	7.2E-02	MW-8	9/23/2004	5.0E-03	mcl	2.0E-03
	1,1-Dichloroethane	4.4E-01	MW-8	9/23/2004	3.7E+00	nc	5.0E-02
	1,2-Dichloroethane	6.0E-03	MW-19	9/29/2003	5.0E-03	mcl	2.0E-03
	1,1-Dichloroethene	1.2E-01	MW-8	9/23/2004	7.0E-03	mcl	2.0E-03
	cis-1,2-Dichloroethene	8.1E-01	MW-20	9/22/2004	7.0E-02	mcl	7.0E-02
	trans-1,2-Dichloroethene	2.9E-01	MW-20	3/12/2004	1.0E-01	mcl	1.0E-01
	Tetrachloroethene	3.0E-02	MW-41	9/15/2004	5.0E-03	mcl	1.0E-03
	1,1,1-Trichloroethane	4.9E-01	MW-8	9/23/2004	2.0E-01	mcl	3.0E-02
	Trichloroethene	4.2E-01	MW-20	9/22/2004, 9/30/2003	5.0E-03	mcl	1.0E-03
	Vinyl Chloride	4.5E-01	MW-20	9/30/2003	2.0E-03	mcl	5.0E-03
	PCBs (total)	2.9E-02	MW-18	9/15/2004	5.0E-04	mcl	5.0E-04
Shallow Bedrock	Benzene	1.0E-03	MW-37B; MW-39B	3/9/2004; 3/10/2004	5.0E-03	mcl	1.0E-03
	1,1-Dichloroethane	2.0E-01	MW-9B	3/11/2004	3.7E+00	nc	5.0E-02
	1,2-Dichloroethane	3.0E-03	MW-38B	9/30/2003	5.0E-03	mcl	2.0E-03
	1,1-Dichloroethene	8.2E-02	MW-9B	3/11/2004	7.0E-03	mcl	2.0E-03
	cis-1,2-Dichloroethene	4.5E-01	MW-9B	9/22/2004	7.0E-02	mcl	7.0E-02
	trans-1,2-Dichloroethene	2.4E-01	MW-9B	9/22/2004	1.0E-01	mcl	1.0E-01
	Tetrachloroethene	4.4E-02	MW-38B	9/20/2004	5.0E-03	mcl	1.0E-03
	1,1,1-Trichloroethane	3.6E-02	MW-9B	3/11/2004	2.0E-01	mcl	3.0E-02
	Trichloroethene	3.8E-01	MW-9B	9/29/2003	5.0E-03	mcl	1.0E-03
	Vinyl Chloride	1.7E-01	MW-9B	9/22/2004, 9/29/2003	2.0E-03	mcl	5.0E-03
	PCBs (total)	1.5E-03	MW-7	9/26/2003	5.0E-04	mcl	5.0E-04
Deep Bedrock	Chloroform	1.9E-02	MW-85B3	9/25/2003	8.0E-02	mcl	6.0E-03
	1,1-Dichloroethane	9.5E-02	MW-10B	9/29/2003	3.7E+00	nc	5.0E-02
	1,2-Dichloroethane	8.0E-03	MW-10B	9/29/2003	5.0E-03	mcl	2.0E-03
	1,1-Dichloroethene	8.6E-02	MW-31B2	9/30/2003	7.0E-03	mcl	2.0E-03
	Tetrachloroethene	6.8E-02	MW-31B2	9/30/2003	5.0E-03	mcl	1.0E-03
	Trichloroethene	5.3E-01	MW-31B2	9/30/2003	5.0E-03	mcl	1.0E-03
	Vinyl Chloride	1.0E-02	MW-10B	9/20/2004	2.0E-03	mcl	5.0E-03

Notes:

1. The groundwater data included in this table are from the four most recent rounds of semi-annual monitoring - September 2003, March and September 2004, and March 2005. Chemicals exceeding either the drinking water screening criteria or NJDEP GWQS are included in this table.
2. The Drinking Water Screening Criteria hierarchy is the Federal MCL (mcl), and then the lower of the integrated Drinking Water Criteria at a target cancer risk of 1E-05 (c) and a target hazard quotient of 1 (nc).
3. The NJDEP GWQS, shown for reference only, are based on the higher of the Groundwater Quality Standards for Class II-A groundwater and the Interim Specific and Generic Criteria.