

2.5 **OU4 - The Raybestos Memorial Field**

The Remedial Investigation is complete, and the Feasibility Study is in progress. This area, a former ball field and park, was built using waste fill from the Raymark Facility (see Figure 1-2). In 1992, EPA fenced this area, sampled and removed drummed wastes, and placed a soil cover over contamination at the site. EPA released a final Remedial Investigation in June 1999 that described the nature and extent of contamination at this area.

EPA plans to release a Feasibility Study in 2001. EPA will select and document its chosen cleanup solution once the Feasibility Study has been reviewed by state and local officials and the public. Cleanup options currently being evaluated for this operable unit include capping existing wastes in place; excavation of all wastes for off-site disposal; treatment of wastes; consolidation of up to 155,000 cubic yards of Raymark wastes from other operable units with existing wastes at OU4 (affording possible reuse of the property); and consolidation of up to 422,000 cubic yards of Raymark wastes from other operable units with existing wastes at OU4 (possibly preventing reuse of the property).

2.6 **OU5 - The Shore Road Area**

This area is a roughly 4-acre section of Shore Road near the Housatonic Boat Club and the former Shakespeare Theater that borders on the Housatonic River (see Figure 1-2). As a temporary measure, contamination in this area was covered with an interim plastic fabric barrier and wood chips by the CT DEP in 1993. The area was sampled extensively in 1998/1999 and high levels of contamination were present in the surface soils. As the area is contaminated, and because the plastic barrier was beginning to wear and the wood chips were beginning to erode, EPA accelerated cleanup. An Engineering Evaluation/Cost Analysis (EE/CA), completed in June, 1999, presented cleanup alternatives. In September 1999, following the public comment period, EPA released an Action Memorandum documenting its cleanup strategy.

The Action Memorandum stated that EPA will test waste stabilization techniques that could minimize the release of waste dust during the excavation of Shore Road wastes. It also stated that wastes from the Shore Road Study Area will be deposited in a temporary storage facility within Stratford. During the public comment period on the EE/CA, EPA discussed the Raybestos Memorial Ballfield and/or the Contract Plating Company property as potential

temporary storage facilities for the approximately 35,000 cubic yards of soil. Based on the negative public support for waste storage at either location, EPA decided to suspend final remedial action at the study area. Instead an interim removal action was planned. This action included limited temporary capping of contaminated hot spots, relocation of utilities, repair of existing stone riprap revetment, restoration of the western shoulder and embankment cover along Shore Road, and placement of sheet piling to prevent erosion of materials.

EPA began these excavation and cleanup activities in November, 1999 and completed the interim action in July, 2000. As EPA completes investigations for other Raymark operable units in Stratford, it will decide on a final remedy for this study area that is compatible with the other operable units.

2.7 OU6 - Commercial Properties

A Remedial Investigation is in progress. This 48-acre area encompasses approximately 22 commercial properties, many along Ferry Creek that received Raymark wastes as fill (see Figure 1-2). Additional properties may be added to the list in the future. These areas are being investigated separately by EPA because commercial landowners face a unique set of issues related to site cleanups under Superfund.

The type and extent of contamination at these sites will be described in the Remedial Investigation scheduled for release in 2001. A Feasibility Study examining cleanup options for this area is also planned for 2001. The particular cleanup approaches for these properties will vary by property depending on the extent of contamination and the risks to human health and the environment at each property. Cleanup options may include addressing portions of each property containing Raymark wastes through excavation, consolidation, treatment, or capping.

2.8 OU7 - Lower Ferry Creek, Selby Pond, and the Housatonic River Wetlands

A Remedial Investigation is in progress. This area includes approximately 36 acres of wetlands roughly in the center of the Raymark Industries, Inc Superfund Site (see Figure 1-2). Interim measures for this operable unit have included placement of signs at Selby Pond warning people not to eat eels caught in the pond, and placement of signs warning of contamination within the wetlands. EPA has also excavated contamination from a residential area abutting Selby Pond.

EPA recently completed sampling for these water bodies that make up OU7 in which Raymark wastes have been deposited through dumping and erosion.

The contamination in these areas will be documented in a Remedial Investigation Report scheduled for release in 2000. A Feasibility Study for these areas is planned to be released in 2001. This area contains approximately 315,000 cubic yards of contaminated soils and fill and approximately 50,000 cubic yards of contaminated sediment. Possible cleanup approaches for this operable unit include capping in place, treatment, excavation, and dredging with wetland restoration.

2.9 OU8 - Beacon Point Boat Launch Area and Elm Street Wetlands

A Remedial Investigation is in progress. This 21-acre area is the southernmost operable unit of the Raymark Industries, Inc. Superfund site, and includes the Beacon Point boat launch area and wetlands along Elm Street (see Figure 1-2). EPA removed contaminated soil from several acres of an Elm Street residential property within this area in 1994. This soil was consolidated and capped at the Raymark Facility. EPA recently completed sampling for these areas.

EPA will issue a Remedial Investigation describing the nature and extent of contamination in these areas in 2001. The Feasibility Study for these areas is also anticipated in 2001. This area contains approximately 200,000 cubic yards of contaminated soils and fill, and 18,000 cubic yards of sediment. Possible cleanup approaches include capping in place, treatment, excavation, and dredging with wetland restoration.

3.0 STANDARDS REVIEW AND UPDATE

No Federal or State chemical-specific applicable or relevant and appropriate requirements (ARARs) were identified for the selected source control remedial action at the Raymark Facility. As a result, there were no cleanup standards applicable to the site.

During the post cleanup phase, there are regulation standards applied to the site for operation and maintenance activities. State regulatory requirements for air pollution control and discharge of stormwater are being complied with according to the CT DEP. Groundwater monitoring at the site is a Federal requirement for post-closure care, however, the objective of the groundwater

monitoring is to provide long term monitoring data that will describe the groundwater quality and flow regime in the water bearing formations beneath the cap. As this is a source control remedy and groundwater remediation is being handled comprehensively throughout Stratford, no comparison to groundwater regulatory standards will be done under this five-year review. Groundwater remediation standards are not applicable to this source control remedy, and will be evaluated as part of OU2.

Table 3-1 presents the ARARs that were developed in the Feasibility Study (FS) and used throughout the implementation of the remedy. The table was developed to confirm that operation and maintenance of the Raymark Facility complies with applicable ARARs, and to verify whether any newly promulgated regulations affect the remedy.

At the time the Final FS was issued and the ROD signed, the Regulations of Connecticut State Agencies, Remediation Standard, Sections 22a-133k-1 through 22a-133k-3 were only proposed regulations. These regulations, though only proposed at the time of evaluation of remedial alternatives, have not changed and were considered in determining cleanup standards. While these cleanup standards may have impacted the selection of the remedy, no soils were remediated under the selected remedy, and the cleanup standards are not relevant to this five-year review. The preliminary remediation goals (PRGs) set for the contaminants of concern selected in the FS were more protective than the direct exposure criteria in the proposed regulations. The current direct exposure criteria are the same as the proposed criteria.

Compliance with construction applicable ARARs was not confirmed in the Final Remedial Action Report (Foster Wheeler, 1999). It is assumed that all ARARs were complied with during the construction segment of the remedy implementation. The Regulatory Compliance Plan prepared by Foster Wheeler (July 1995) details how project activities during the demolition segment would achieve compliance with the regulations.

4.0 SITE VISIT SUMMARY AND INTERVIEWS

A site visit to the OU1-Raymark Facility was conducted on August 3, 2000 to observe the condition of the property, especially the cap system, to view the current operation of the soil gas collection and treatment system and the DNAPL removal system, and to obtain information on the operation and maintenance of the OU1-Raymark Facility from the CT DEP. The CT DEP

**TABLE 3-1
ARARs REVIEW
FIVE-YEAR REVIEW
RAYMARK INDUSTRIES INC. SITE
STRATFORD, CONNECTICUT**

AUTHORITY	REQUIREMENT	REQUIREMENT SYNOPSIS	ACTIONS TAKEN TO ATTAIN REQUIREMENT	STATUS
Federal Regulatory Requirements	RCRA - General Facility Standards (40 CFR 265.10 - 265.18) (O&M only)	General facility requirements outline general waste analysis, security measures, inspections, and training requirements.	Remedial actions conducted under this alternative were constructed and are operated in accordance with the substantive provisions of this requirement.	O&M Manual provides information on applicable provisions of this requirement that appear to be followed.
	RCRA - Preparedness and Prevention (40 CFR 265.30 - 265.37) (O&M only)	Outlines requirements for safety equipment and spill control.	Safety and communication equipment are maintained at the site and local authorities would be familiarized with the site operations, in accordance with the substantive provisions of these requirements.	As required, public safety officials have toured facility, have access to the property, and were given the name of a designated contact person.
	RCRA - Contingency Plan and Emergency Procedures (40 CFR 265.50 - 265.56) (O&M only)	Outlines requirements for emergency procedures to be used following explosions, fires, etc.	Contingency plans would be developed and response activities would be implemented in accordance with the substantive provisions of these requirements.	Auto-dialer on alarm system and numerous overlapping shut-down sensors are on the NAPL and gas collection systems. No written contingency plan has been prepared.
	RCRA - Groundwater Monitoring (40 CFR 265.90 - 265.93) (O&M only)	Details requirements for groundwater monitoring and responding to releases from Solid Waste Management Units.	A groundwater monitoring program would be developed in accordance with the substantive provisions of these requirements.	O&M Manual details groundwater monitoring procedures. No off-site upgradient wells sampled for evaluation as background. As detailed in the ROD, not all parameters are being analyzed for on-site.
	RCRA - Closure and Post-Closure (40 CFR 265.110 - 265.120)	Details requirements for closure and post-closure of hazardous waste facilities.	Remedial actions implemented under this alternative would be designed to meet the substantive provisions of this requirement.	The Remedial Action Report and O&M Manual provide compliance information for these requirements that appear to be followed.

TABLE 3-1 (cont.)
 ARARs REVIEW
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Raymark OU1, CT

AUTHORITY	REQUIREMENT	REQUIREMENT SYNOPSIS	ACTIONS TAKEN TO ATTAIN REQUIREMENT	STATUS
Federal Regulatory Requirements (Continued)	RCRA - Tank Systems Closure & Post-closure Care (40 CFR 265.197)	Contains closure and post-closure requirements for tank systems or individual tanks used for storage of hazardous wastes.	Decontamination and removal of hazardous waste storage tanks would be conducted in accordance with the substantive provisions of these requirements	Remedial Action Report indicates these regulations were complied with during construction. No tanks remain on the property.
	RCRA - Surface Impoundments (40 CFR 265.228)	Details the closure requirements for a RCRA surface impoundment.	The design, construction, maintenance, and monitoring of the cap would meet the substantive provisions of this requirement.	O&M Manual details maintenance of cap integrity and groundwater monitoring to protect the closed covered surface impoundments. BD/DA details steps taken to prevent cap damage.
	RCRA - Landfills (40 CFR 265.310)	Includes requirements for the closure and post-closure of landfills.	The remedy would comply since a final cover was designed and constructed to meet the ARAR for existing landfills.	O&M Manual details maintenance of cap integrity and groundwater monitoring to protect the closed covered landfill. BD/DA details steps taken to prevent cap damage.
	TSCA - PCB Storage and Disposal (40 CFR 761.60, .75, .79)	This regulation establishes standards for the storage, disposal, and incineration of PCBs at a concentration greater than 50 ppm.	The remedy would comply with the exception of certain landfill requirements, which were waived under TSCA.	No soil was removed from OU1 during implementation of the remedy, and a waiver for PCB disposal has been granted as stated in the ROD.
	CAA NESHAPS (40 CFR 61 Subpart M (61.145, 61.150, 61.151) Subpart M, 61.154 (Construction only)	These regulations specify requirements regarding removal, management, and disposal of asbestos.	Handling and disposal of soils containing asbestos and building demolition debris containing asbestos did comply with the substantive provisions of these regulations.	Remedial Action Report indicates these regulations were complied with during construction.

TABLE 3-1 (cont.)
 ARARs REVIEW
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AUTHORITY	REQUIREMENT	REQUIREMENT SYNOPSIS	ACTIONS TAKEN TO ATTAIN REQUIREMENT	STATUS
State Regulatory Requirements	Connecticut Air Pollution Regulations - Stationary Sources (Sec. 22a-174-3 RCSA)	Requires that stationary sources of air pollutants meet specified standards prior to construction and operation. Prohibits operation of sources that interfere with attainment of Air Quality Standards.	The gas collection and treatment system was designed to meet substantive standards established under these regulations.	CT DEP indicates the gas collection and treatment system complies with these regulations
	Connecticut Air Pollution Regulations (Sec. 22a-174-4, 22a-174-5, and 22a-174-7 RCSA) (Construction only)	These sections specify air emissions monitoring requirements, emissions sampling and analysis methods, and general air pollution control equipment operation requirements.	Operation and monitoring of the emission control systems was conducted in accordance with the substantive requirements of these regulations.	Remedial Action Report indicates these regulations were complied with during construction.
	Connecticut Air Pollution Regulations - Fugitive Dust Emissions (RCSA 22a-174-18b) (Construction only)	Requires that reasonable precautions be taken to prevent particulate matter from becoming airborne during demolition and construction activities and material handling operations.	Activities involving building demolition, soil excavation or handling, and cap construction were conducted in a manner to minimize fugitive dust emissions from the facility.	Remedial Action Report indicates these regulations were complied with during construction.
	Connecticut Air Pollution Regulations - Hazardous Air Pollutants (RCSA 22a-174-29) (O&M only)	Establishes testing requirements and allowable concentrations for any stack emission for the constituents listed.	Emissions control systems for vapor control were designed and operated to meet the substantive requirements of these regulations.	CT DEP indicates the gas collection and treatment system complies with these regulations

TABLE 3-1 (cont.)
 ARARs REVIEW
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AUTHORITY	REQUIREMENT	REQUIREMENT SYNOPSIS	ACTIONS TAKEN TO ATTAIN REQUIREMENT	STATUS
State Regulatory Requirements (Continued)	Connecticut Hazardous Waste Site Management Regulations (Sec. 22a-449(c)-105, RCSA) (Construction and O&M)	These regulations outline requirements for the management and disposal of hazardous wastes, and the construction, location, operation, and closure of hazardous waste treatment, storage, and disposal facilities. These regulations incorporate by reference substantial portions of 40 CFR 265 (RCRA).	This alternative complies with those portions of the regulations that are more stringent than the corresponding federal RCRA regulations cited herein.	CT DEP indicates the remedy currently complies with these regulations.
	Connecticut Water Quality Standards (issued pursuant to Sec. 22a-426 CGS) (Construction and O&M)	Establishes designated uses for groundwater and surface water and identifies the criteria necessary to support these uses.	The remedy complies with water quality standards since actions are taken to minimize further degradation of groundwater and surface water.	Remedy continues to minimize further degradation of groundwater and surface water.
	Connecticut - Discharge of Stormwater Associated with Industrial Activity (Sec. 22a-430b, 22a-430, CGS; Sec. 22a-430-1 to -8, RCSA) (Construction and O&M)	Establishes permit, monitoring and reporting requirements for the management and discharge of storm waters.	The remedy complies with the substantive requirements of this regulation.	The CTDEP indicates that a permit has not been obtained to discharge stormwater, however, since the site is "inactive" a permit is not required. Once construction of the shopping center at the site begins, a permit would be required of the owners. This will be monitored by CTDEP.

**TABLE 3-1 (cont.)
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AUTHORITY	REQUIREMENT	REQUIREMENT SYNOPSIS	ACTIONS TAKEN TO ATTAIN REQUIREMENT	STATUS
State Regulatory Requirements (Continued)	Connecticut - Air Pollution Control – Control of Odors (Sec. 22a-174-23 RCSA) (Construction and O&M)	This regulation prohibits emission of substances that constitute nuisances because of objectionable odors. Several compounds have specific concentration limits.	The remedy complies with this regulation during implementation.	According to CT DEP and the town, to date, no nuisances because of objectionable odors have been documented.
Criteria, Advisories, Guidance	Connecticut Coastal Management Act (Title 22a, Chapter 440, Sections 90-122)	Establishes a list of adverse impacts against which activities within the coastal zone must be evaluated.	The remedy complies with these regulations. Water quality impacts as discharges of on-site generated stormwater to surface waters was managed in accordance with the CT DEP's stormwater program to comply with stormwater standards.	Stormwater discharge permits were obtained during construction of the remedy. Currently a permit is not required as the site is inactive. Current owners are required to obtain a permit before construction at the site begins.
	TSCA PCB Spill Clean-up Policy (40 CFR 761.120-135)	This policy applies to recent PCB spills and establishes cleanup levels for PCB spills of 50 ppm or greater at 10 ppm for non-restricted access areas and 25 ppm for restricted access areas.	This policy was considered in the management of PCB contamination.	No soil was removed from OU1 during implementation of the remedy.
	Guidance on Remedial Actions of Superfund Sites with PCB Contamination (EPA/540/G-90/007, Aug. 1990)	Describes various scenarios and considerations pertinent to determining the appropriate level of PCBs that can be left in each contaminated media to achieve protection of human health and environment.	This guidance was considered in management of PCB contamination, and the remedy would be consistent with this guidance.	BD/DA Report indicates the remedy is consistent with the guidance.

**TABLE 3-1 (cont.)
ARARs REVIEW
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AUTHORITY	REQUIREMENT	REQUIREMENT SYNOPSIS	ACTIONS TAKEN TO ATTAIN REQUIREMENT	STATUS
Criteria, Advisories, Guidance (Cont'd)	CAA NAAQS for Particulate Matter (40 CFR 50.6) (Construction only)	The particulate matter NAAQS specifies maximum primary and secondary 24 hour concentrations for particulate matter in the ambient air. These ambient air concentrations are not designed to apply to specific sources; rather, states may promulgate State Implementation Plan emission limits applicable to sources, which would result in attainment and maintenance of the NAAQS. Connecticut has not promulgated any particulate matter emission limits applicable to this source.	Fugitive dust emissions from soil-waste handling activities were minimized with temporary enclosures and dust suppressants.	BD/DA Report indicates these actions should be sufficient to provide compliance with this regulation.
	RCRA, Air Emissions from TSDFs, (40 CFR, Part 265, Subpart CC) (Proposed 56 Fed Reg. 33490-33598, 7/22/91)	Proposed standards for air emissions from treatment, storage, disposal facilities with VOC concentration equal to or greater than 500 ppm.	Proposed standards were considered in design of the vapor control system if threshold VOC concentrations are met.	BD/DA report indicates these standards should be sufficient to provide compliance with this regulation for the gas collection system.
	U.S. EPA Technical Guidance - Final Covers of Hazardous Waste Landfills and Surface Impoundments (EPA/530-SW-89-047)	Provides technical specifications for the design of multi-layer covers at landfills where hazardous wastes were disposed.	This guidance was considered in the design of the cap and associated systems.	Cap construction is consistent with this guidance.

**TABLE 3-1 (cont.)
ARARs REVIEW
FIVE-YEAR REVIEW
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AUTHORITY	REQUIREMENT	REQUIREMENT SYNOPSIS	ACTIONS TAKEN TO ATTAIN REQUIREMENT	STATUS
Criteria, Advisories, Guidance (Cont'd)	Proposal for the Connecticut Cleanup Standard Regulations (22a-133K CGS)	The proposed regulations would define minimum hazardous waste site remediation standards, specify numeric criteria for cleanup of soils and groundwater, and specify a process for establishing alternative, site specific cleanup standards.	Portions of this guidance were considered in implementing the remedy, even though the regulations were not in effect.	Promulgated since remedy design, CTDEP indicates remedy currently complies with regulations.

Notes:

Compliance with construction applicable ARARs was not confirmed in the Remedial Action Report (Foster Wheeler, 1999). It is assumed that all ARARs were complied with during the construction segment of the remedy implementation. This table verifies whether any newly promulgated regulations affect the remedy, and whether O&M complies with applicable ARARs.

- CGS - Connecticut General Statutes
- RCSA - Regulations of Connecticut State Agencies
- BD/DA - Basis of Design/Design Analysis Report (Foster Wheeler, 1996)
- O&M - Operations and Maintenance Manual (Foster Wheeler, 1998)

currently oversees the operation and maintenance of the OU1-Raymark Facility. The site visit was conducted with Mr. Ron Curran (CT DEP) and Mr. Jon Melone (Metcalf and Eddy) who have been trained to operate the facility. Field log reports, current to June 29, 2000, and vapor sampling results were obtained at this time. Refer to Figure 2-1 for the current site layout. Information relating to the operation and maintenance of the Raymark Facility obtained during the site visit, and subsequent review of the information, is summarized below.

- No daily maintenance at the facility is required according to the Final Operation and Maintenance (O&M) Manual. An alarm auto-dialer alerts facility operators through pagers in the event of equipment failures, security breaches, and fire. The systems are equipped such that malfunctions in one segment of a system will cause the entire system to shut down automatically. Local officials have toured the facility and the fire department has access to the property should entry to the site be necessary. A written contingency plan is not currently in place as required by 40 CFR 265 Subpart D.
- Equipment in the western and eastern treatment buildings is frequently monitored for wear and tear, and malfunctioning pieces are replaced when necessary. According to Mr. Curran and Mr. Melone, equipment problems have included malfunctioning flow meters in the blowers, pumps and conductivity probes in the DNAPL recovery system, and level gauges in the sumps of the stormwater discharge system. The flow meters and level gauges have all been replaced, and the equipment for the DNAPL recovery system is in the process of being replaced. The conductivity probes have eroded due to the low pH in the one recovery well being pumped, and the pumps are fouled from "scum" inside the wells preventing proper flow.
- Review of field logs and inspection sheets indicates inspections and preventative maintenance appear to be performed close to the schedule set forth in the O&M Manual. Flow rates and photoionization detector (PID) readings are taken at the soil gas collection (SGC) headers, process data from the air blowers and thermal oxidation unit are monitored, and the DNAPL recovery system is inspected regularly. Weekly and monthly inspections are also conducted. The cap is inspected monthly, and to date, no major damage has occurred. Unauthorized use of the facility has occurred resulting in only minor surface damage to the asphalt and curbing that did not affect the integrity of the cap. At the time of the site visit, vegetation along the northern boundary was

overgrown and large weeds were growing in the unpaved areas of the cap. Both situations were noted by Mr. Curran and Mr. Melone. Cracks in the paved areas of the cap had recently been sealed. The monthly and quarterly inspections appear to have taken place as indicated in the O&M Manual.

- There are five DNAPL recovery wells installed at the facility. Only one DNAPL recovery well (RW-3) is currently being pumped. To date, the other four wells have not produced DNAPL. The pump in the well is turned on manually about every 2 months because the conductivity probe, which senses a buildup of NAPL and triggers the pump automatically, is not functioning. The duration of time the pump operates is recorded on the field log sheets, however, recently the pump has been clogged. As a result, the amount of liquid pumped from the well cannot be calculated. The amount of liquid in the DNAPL storage tank is estimated using a dip stick to measure the depth of liquid. The amount of DNAPL in the tank is also estimated using an interface probe to determine the DNAPL/liquid interface. Currently, the 1,000 gallon stainless steel tank contains approximately 430 gallons of liquid, of which 130 gallons is estimated to be DNAPL, the remainder is water. Samples of DNAPL from RW-3 have been analyzed to determine disposal characteristics.
- Soil gas collection system sampling at the site includes VOC readings using a PID from soil gas samples from the headers in the soil gas collection (SGC) and enhanced soil gas collection (ESGC) systems, and vacuum readings from the vacuum monitoring wells. These samples are collected at least as frequently as indicated in the O&M Manual, and are documented on the field log forms. Samples of the influent and effluent of the carbon canisters for the SGC system in the western treatment building are also collected to monitor possible filter breakthrough. Intermittent samples are collected from the influent to the thermal oxidation unit. According to Mr. Curran, the influent results from the carbon canisters and the thermal oxidation unit are below concentrations that would require treatment, so subsequently, analysis of effluent samples is not necessary. A letter from Raymond C. Porter (Metcalf and Eddy) to Bill Heiple at Metcalf and Eddy confirms that "The concentrations observed at the inlets to the treatment units at both the East and West Treatment facilities were below the MASC [maximum allowable stack concentrations] levels for the respective facilities. Thus, the discharge of the off gases to

the atmosphere without treatment would not exceed the MASC levels at the stack exit or hazard limiting values at off-site locations.”

- Sampling of on-site groundwater monitoring wells is also required. To date, one round of sampling data (August 1999) is available. One additional round of sampling has been performed on 13 wells (April 2000), but those results are not included in this report. Samples are analyzed for parameters as stated in the O&M Manual, however, that list does not completely comply with the list of contaminants in 40 CFR 265.92. It is unclear why the O&M manual parameters are different from the 40 CFR 265.92 parameters, as no EPA/State Memorandum of Understanding (MOU) has been signed detailing the states duties and regulatory variations.
- Fifty-two wells were analyzed for VOCs, 7 of the 52 wells were also analyzed for SVOCs, and 4 of the 52 were analyzed for PCBs. The discussion of groundwater analytical data in the Draft Initial Post-Remediation Groundwater Monitoring Report (Metcalf and Eddy, 1999) indicated VOCs concentrations are consistent with VOC results from December 1997, and appear to be relatively stable. Only one SVOC, 4-nitrophenol was detected. No PCBs were detected.
- Environmental land use restrictions, used to limit future activities that could result in intrusion into the cap, exposures to the wastes beneath the cap, and damage to the cap system, were incorporated into the deed as part of the sale of the property to Wal-Mart Real Estate Business Trust, STFD, LLC, and Home Depot U.S.A, Inc. in February 2000.

Locally, the Director of Health has indicated that the Town of Stratford has been contacted by a resident concerned about the potential impact of stormwater runoff from the cap on his property, which is located south of the Facility. According to local officials little difference in stormwater impacts, either before or after placement of the cap, has been observed in that area.

5.0 SUMMARY OF FINDINGS

The primary purpose of this first five-year review is to evaluate whether the remedial action selected for the Raymark Industries, Inc. Site OU1 remains protective of human health and the environment. As discussed in Section 1.2, the objectives of the remedial action are to minimize

direct exposures (incidental ingestion and dermal contact) to the contaminated soil-waste materials, to limit the leaching of contaminants to groundwater from on-site sources, and to minimize potential risk to human health associated with inhalation exposures to airborne asbestos and/or volatilized organic compounds.

The findings of this five-year review indicate that these objectives have been or are currently being met.

- The cap minimizes direct exposures to the contaminated soil-waste materials. Inspections of the cap and land use restrictions in the deed appear to be sufficient to ensure long-term protectiveness.
- With the cap and DNAPL recovery system in place, the leaching of contaminants to groundwater from on-site sources is limited. Long term groundwater monitoring of onsite wells will provide data on groundwater quality, flow direction, and potential impacts to downgradient groundwater. In conjunction with groundwater monitoring under OU2 (groundwater), long term groundwater monitoring of onsite wells will aid in determining whether the cap continues to function effectively.
- The risk to human health associated with inhalation exposures to airborne asbestos and/or volatile organic compounds was minimized during the demolition and construction phases of remedy implementation through perimeter air monitoring and fugitive emissions control measures. Currently the cap prevents exposure to asbestos found in the soil waste materials (asbestos and asbestos containing materials were removed from on-site buildings, machinery, and piping prior to demolition and disposed at an off-site facility). Vapor migration off-site or into proposed onsite buildings is prevented by a soil gas collection (SGC) system and enhanced soil gas collection (ESGC) system. These systems control volatile organic emissions from beneath the cap through a high permeability vapor collection layer above the waste and underneath the cap's hydraulic barrier.

Any substantial aspect of the remedial action that fails to conform to remedial objectives would be considered an area of noncompliance. Based on the information evaluated as part of this Type I five-year review, no substantial areas of noncompliance with the remedial objectives were noted.

Minor areas of discrepancy (as discussed in Section 4.0) are discussed below with recommendations.

1. A written contingency plan has not been prepared as required under 40 CFR 265 Subpart D.
2. Groundwater monitoring is not being performed as required in 40 CFR Subpart F. Parameters establishing groundwater quality, specifically chloride and sulfate, and some parameters listed in Appendix III of Subpart F, are not being analyzed. Quarterly sampling has not been consistently performed.
3. A groundwater sampling plan is provided in the Operation and Maintenance Manual, however, a Memorandum of Understanding (MOU) between EPA and the State of Connecticut detailing the duties required by the State of Connecticut and allowable regulatory variations might be valuable. Trends in groundwater contaminant levels should continue to be evaluated and reported under the O&M sampling activities.
4. A review of the limited available groundwater data was performed to determine if continued pumping of DNAPL recovery well RW-3 (the only recovery well currently recovering DNAPL; see Figure 2-2) is warranted. Table 5-1 summarizes the data from sampling and analysis of the former J cluster and the MW-14 cluster. DNAPL had been detected in wells in the J cluster, which was located in/near the former acid neutralization pits (Figure 2-1). This cluster has been abandoned since the installation of the cap at the site. The MW-14 cluster (which consists of three wells – bedrock, overburden, and shallow – installed during cap installation) is adjacent to the location of these former acid neutralization pits. VOC results for these locations are summarized on Table 5-1, and compared to one percent of the effective solubility of specific contaminants detected in the DNAPL sample collected from MW-J2 in 1996.

A review of Table 5-1 indicates that the trichloroethene (TCE) concentrations from MW-14B, a bedrock well, exceed the one-percent effective solubility of TCE in water during the August, 1999 sampling event. Further review indicates that the TCE concentration in this well has increased one order of magnitude from the previous sampling event in 1997. In general, the concentrations of VOCs in this well have increased with time with the exception of vinyl chloride. This increase in TCE (as well as tetrachloroethane) to a level that exceeds

**TABLE 5-1
DNAPL REVIEW
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RAYMARK INDUSTRIES, INC. SITE
STRATFORD, CONNECTICUT**

	Estimated effective solubility based on 1996 DNAPL ⁽¹⁾	1 Percent of effective solubility	MW-J1 (09/05/95) Shallow	MW-J3 (09/01/95) Med below J2	MW-J4 (09/01/95) Med Deep Below J3	MW-J5 (09/05/95) Bedrock	MW-14B (12/09/97)	MW-14B (08/24/99)	MW-14S (12/09/97)	MW-14S (12/02/98)	MW-14S (08/18/99)	MW-14D (12/09/97)	MW-14D (08/19/99)
Data Source	MW-J2		FW	FW	FW	FW	TtNUS	M & E	TtNUS	TtNUS	M & E	TtNUS	M & E
VOC (ug/l)													
1,1,1-Trichloroethane	8,395	83.9	0	310	80	190,000	1	46	3		6.7	150	
1,2-Dichloroethene (total)			150	88	67	0	20		1700	2600	2610	160	
Chlorobenzene			520	44	34	0	49	70	700	960	1020	160	81.2
Tetrachloroethene	179	1.8	0	87	79	0	1	8.8	0	0	0	26	
Trichloroethene	542,129	5,421.0	260	9,400	10,000	790,000	980	6800	120	0	26.9	7700	
Vinyl Chloride			400	17	12	0	27	0	680	1500	2190	27	

Note:

MW-J2 had recoverable DNAPL and has no reported groundwater data.

FW - Foster Wheeler Environmental Corporation

TtNUS - Tetra Tech NUS Inc.

M&E - Metcalf and Eddy

⁽¹⁾ Effective solubilities calculated using Raoult's Law and assuming IL DNAPL = 1 kg DNAPL

one-percent of the effective solubility indicates the possibility that DNAPL has migrated to the area around MW-14. DNAPL migration could be related to remedial activities at the site such as well installation, which could draw DNAPL to deeper depths or onsite compaction of soils and waste materials during cap installation. It is also possible that the pumping of RW-3 caused DNAPL in the overburden to migrate downward through the overburden and into the bedrock.

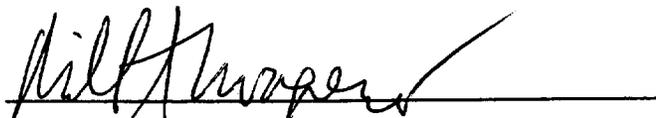
The contaminant concentrations observed in the overburden monitoring well MW-14D have decreased over time. In 1997, the TCE concentration in 1997 exceeded the one-percent effective solubility, indicating that this well is located at or very close to DNAPL. In 1999, TCE was not detected. A decrease in TCE concentration can indicate a decrease in either the volume or relative concentration of DNAPL. This significant a change in TCE concentration will require further evaluation.

The concentrations of VOCs in MW-14S appear to have increased slightly from 1997 to 1998, but appear to have stabilized during the 1999 sampling.

Review of the limited groundwater and DNAPL analytical results indicate that continued pumping of RW-3 may not be needed. This recommendation is made based on the small amount of DNAPL collected from the DNAPL recovery system and the observed increase of VOC concentrations at the MW-14 cluster that are at or exceed the one-percent effective solubility. These observations indicate the possibility that DNAPL has been mobilized during either pumping or other site remediation activities.

- 5) The monitoring of the groundwater quality at the site should continue and wells in the vicinity of possible DNAPL should be monitored using an interface probe to detect the presence of DNAPL. These new data should be evaluated and compared to one percent of their effective solubilities to determine if pumping of the DNAPL recovery well should resume.
- 6) Influent soil gas samples for the SGC and ESGC systems have concentrations that do not appear to require treatment. If this is the case, the CT DEP should discontinue treatment of soil gas by removing the thermal oxidation unit in the eastern treatment building and the carbon canisters in the western treatment building. Public perception may be the driving factor for whether soil gas treatment can be discontinued. One alternative may be to replace the thermal oxidation unit with carbon canisters similar to the ones used in the western SGC system.

The source control remedial action implemented at the Raymark Industries, Inc. Superfund Site Operable Unit No. 1 (Facility) continues to be protective of human health and the environment. The next five-year review will be conducted by July 2005.

for 

Patricia L. Meaney, Director

Office of Site Remediation and Restoration, Region I

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REFERENCES

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