

Record of Decision

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**Central Landfill
Johnston, Rhode Island
Operable Unit 2**

September 2002

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DECLARATION FOR THE RECORD OF DECISION

**Central Landfill
Johnston, Rhode Island
EPA ID# RID980520183
Operable Unit 2 (OU2)**

STATEMENT OF BASIS AND PURPOSE

This decision document presents the decision that no further remedial action is warranted for Operable Unit 2 (OU2) at the Central Landfill Superfund Site (“the Site”), in Johnston, Rhode Island, in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), 42 USC §9601 *et seq.*, as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), and, to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 CFR Part 300 *et seq.*, as amended. The Director of the Office of Site Remediation and Restoration (OSRR) has been delegated the authority to approve this Record of Decision (ROD).

This decision was based on the Administrative Record, which has been developed in accordance with Section 113 (k) of CERCLA, and which is available for review at the Marion J. Mohr Memorial Library, 1 Memorial Avenue, Johnston, Rhode Island, and at the United States Environmental Protection Agency (EPA), Region 1, OSRR Records Center in Boston, Massachusetts. The Administrative Record Index (Appendix C to the ROD) identifies each of the items comprising the Administrative Record upon which the ROD is based.

The State of Rhode Island concurs with this ROD.

DESCRIPTION OF THE RECORD OF DECISION

The Central Landfill Superfund Site is defined as a 154 acre licensed landfill located in the central portion of a 612-acre parcel (“the Facility”) in Johnston, Rhode Island. The Central Landfill Superfund Site is comprised of two operable units. The Regional Administrator signed the Record of Decision for Operable Unit 1 (OU1) on June 17, 1994. The OU1 ROD selected a source control remedy designed to prevent or minimize the continued release of hazardous substances into the environment. In summary, the OU1 source control remedy requires the following components: capping a 121 acre portion of the 154 acre landfill also known as the Phase 1 area; hydraulic containment and treatment of contaminated groundwater from a “hot spot” area located within the 121 acre, Phase 1 area; deed restrictions on groundwater and land use; evaluating the existing landfill gas collection and combustion system; long-term environmental monitoring; and preventing Site access.

Operable Unit 2 (OU2) investigated the impacts to off-Site areas not completely addressed by the OU1 investigations including surface water, soils and sediments. The OU2 investigations also included off-Site groundwater but only in areas beyond the boundaries of the 612-acre Facility. The human health and environmental risk assessments conducted, as part of the OU2 investigations, did not show any risks that warrant action under CERCLA. Therefore, no further remedial action is necessary.

EPA’s decision not to undertake any further remedial action beyond that already required by the OU1 ROD may be revised, in the future, if continued environmental monitoring that is being performed as part of the OU1 source control remedy reveals changed conditions that require

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further remedial action.

STATUTORY DETERMINATIONS

EPA has determined that no further remedial action, beyond the OU1 source control remedy, is necessary to protect human health and the environment. However, because the OU1 source control remedy will result in hazardous substances remaining on-Site above health-based levels, Site reviews will be conducted at a minimum every five years to ensure that human health and the environment are being protected. The first "Five-Year Review" for the Site is scheduled to be completed in 2003.

ROD DATA CERTIFICATION CHECKLIST

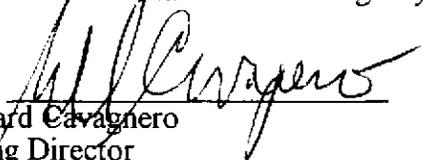
The following information is included in the Decision Summary section of this Record of Decision. Additional information can be found in the Administrative Record for this Site.

1. Information about chemicals of potential concern (COPCs) and their respective concentrations.
2. Determination that the COPCs, with OU1 completed, do not pose a risk to human health and the environment.
3. Current and future land and groundwater use assumptions used in the baseline risk assessment and ROD.
4. Land and groundwater use that will be available at the Site as a result of the ROD.
5. Decisive factors that led to the selection of no further remedial action for this ROD.

AUTHORIZING SIGNATURES

This ROD documents a no further remedial action decision for OU2 at the Central Landfill Superfund Site. EPA made this decision with the concurrence of the Rhode Island Department of Environmental Management.

U.S. Environmental Protection Agency

By: 
Richard Cavagnero
Acting Director
Office of Site Remediation and Restoration
Region 1

Date: 9-26-02

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SITE NAME, LOCATION AND BRIEF DESCRIPTION

The Rhode Island Resource Recovery Corporation (RIRRC) owns and operates the active Central Landfill, which is situated on a 612-acre parcel ("the Facility") located at 65 Shun Pike in Johnston, Rhode Island. The Central Landfill is about 10 miles west-southwest of Providence, Rhode Island. The Central Landfill Superfund Site ("the Site") is defined as the 154 acres located in the central portion of RIRRC property that has been licensed for municipal solid waste landfilling by the State of Rhode Island. The 154 acre Central Landfill Superfund Site is comprised of two areas: a 121 acre area, also known as the Phase 1 area; and a 33 acre expansion area also known as the Phase 2 and 3 areas (see Figure 1). The 121 acre, Phase 1 area is where disposal of hazardous and non-hazardous wastes historically took place at the Site. Waste disposal activities in the Phase 1 area stopped in April 1993. Municipal solid waste landfilling in the Phase 2 and 3 areas is ongoing.

The properties within a radius of approximately 2,500 feet of the landfill are primarily composed of undeveloped property, residential property and commercial/agricultural property. Businesses include a pig farm, a transfer station, a recycling Facility, other refuse handling facilities, a screw machine products manufacturer, and various small businesses associated with vehicle repair and transportation concerns.

The State has classified the groundwater beyond the Facility, in general, as GA (suitable for public or private drinking water use without treatment). The groundwater underneath the 154 acre Site is classified as GC (areas which, because of present or past land use or hydrological conditions, the Director of the RIDEM has determined to be more suitable for certain waste disposal practices than for development as a drinking water supply). The State has also established a GB (groundwater resources which the Director has designated not suitable for public or private drinking water use without treatment) buffer zone around the landfill. The limit of the GB classification was set at 100 feet from the GC boundary in the up-gradient direction. In the down-gradient direction, the GB classification is defined as the closest of the following: a.) property boundary, b.) surface water body, c.) wetland, or d.) 500 feet from the GC boundary.

The Federal groundwater classification is, however, more stringent than the State classification. More specifically, for groundwater at and beyond the edge of the waste management area (i.e., 154 acre landfill), the groundwater is classified as Class II, current or potential drinking water.

A more complete description of the area can be found in Section 2.0 of the OU2 Remedial Investigation Report (GZA, 2001).

DEFINITIONS (see also Appendix B, Glossary of Terms and Acronyms)

Central Landfill - See below and Figure 1.

The Central Landfill Superfund Site, (the "Site"): The 154 acre licensed landfill (incorporating Phases 1, 2, and 3) located in the central portion of a 612-acre parcel in Johnston Rhode Island.

Phase 1 area: 121-acre unlined portion of the Site.

Phase 2 and 3 areas: 33-acre expansion area of the Site.

Facility: 612-acre contiguous area owned by RIRRC that includes the Site.

OU2 Study Area: 1,333-acre area that surrounds, but does not include the Site.

SITE HISTORY AND ENFORCEMENT ACTIVITIES

History of Site Activities

The landfill has been owned and operated by the RIRRC since 1980. The landfill is the largest sanitary landfill in Rhode Island, and the majority of Rhode Island's communities rely on the landfill for their solid waste disposal. Prior to 1980, the Silvestri Brothers owned the property. From 1952 to 1955 they used a portion of the property as a combination sand and gravel/quarry stone operation.

From 1955 to 1962 the Silvestri Brothers operated the property as a refuse-burning dump. From 1962 to 1980, the landfill was used as a solid and hazardous waste disposal area. The landfill is currently comprised of two areas, a 121-acre area and a 33-acre expansion area. The 121-acre area (or Phase 1 area) was used prior to 1980 (by the Silvestri Brothers) for the disposal of municipal and hazardous waste. Located within the 121-acre area is an approximately half-acre area where about 1.5 million gallons of manifested hazardous wastes (wastes with paperwork that describes their nature and origin) were disposed of between 1976 and 1979. See Figure 2. Within this half-acre hazardous waste area ("hot spot"), bulk liquid waste was dumped into trenches that had previously been excavated into bedrock. The wastes disposed of in this area included latex waste, acid waste, corrosive waste, water-soluble oils and waste solvents, including methylene chloride, toluene, 1,1,1-trichloroethane and tetrachloroethylene. EPA believes that prior to 1976 a large quantity of non-manifested liquid hazardous waste may also have been disposed of in this half-acre area ("hot spot").

From May 1979 to February 1981, approximately 5 to 10 acres in the northeast portion of the landfill in the vicinity of the "hot spot" received large volumes of untreated liquid sewage sludge. That area was subsequently covered with about fifteen feet of landfill debris and daily soil cover. Since RIRRC took over operation of the landfill in 1980, the solid waste stream has been as high as 6,000 tons per day. In 1996 the landfill received approximately 3,100 tons of solid waste per day.

In 1982, the RIRRC complied with a Rhode Island order to close the areas (including the "hot spot") that had received hazardous material. These areas have been excavated, consolidated, backfilled, and capped to minimize further contamination of the groundwater and surface water, and re-vegetated as part of the closure plan.

In 1986, RIRRC, in conjunction with the RIDEM and the Town of Johnston initiated a project to provide public drinking water to area residents. The project was completed in 1990. A 12-megawatt landfill gas to electricity Facility has been constructed at the landfill and has been in operation since 1990. RIRRC has expended approximately \$23,000,000 acquiring residentially zoned property located within 2,000 feet of the Phase 1 area shown on Figure 1. The Rhode Island Legislature mandated this property acquisition.

A more detailed description of the Site history can be found in Section 1 of the OU2 Remedial Investigation Report.

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History of Federal and State Investigations, Removal, and Remedial Actions

Federal Investigations and Remedial Actions

In 1984, the Central Landfill Site was proposed for inclusion on EPA's National Priority List (NPL). The Site was added to the NPL in June 1986. Fieldwork for a Remedial Investigation (RI) commenced in 1987, after the RIRRC signed an Administrative Order on Consent with the EPA to study the nature and extent of contamination at the Site. During the fieldwork, investigations were divided into two operable units: Operable Unit 1 (OU1) addresses source control; Operable Unit 2 (OU2) addresses management and migration of hazardous substances originating from the Site.

The RI, Baseline Risk Assessment, and Feasibility Study for OU1 were completed during 1993. A ROD for OU1 was issued in June 1994. Work plans, sampling and analysis plans, and quality assurance plans for the OU2 RI were developed from 1993-1995. Most fieldwork for the OU2 RI was completed between June 1992 and July 1998. Some additional sampling, used in the final draft of the OU2 RI, was conducted in December 2000. The OU2 RI and Baseline Risk Assessment Report were completed in March 2001.

State of Rhode Island Enforcement Activities

On December 10, 1979, RIDEM advised the Silvestri Brothers that the landfill must comply with the newly adopted Hazardous Waste Facility Rules and Regulations to maintain its status as an existing but inactive hazardous waste management Facility. In response, the Silvestri Brothers applied for continued status as an existing hazardous waste management Facility.

In December 1980, the RIRRC purchased the Silvestri Brothers Landfill renaming it the Central Landfill. After the property was transferred to the RIRRC, RIDEM determined that the landfill was a hazardous waste management Facility and in February 1981, ordered RIRRC to close the hazardous waste disposal area. The hazardous waste disposal area (HWDA1) was identified and closed in July 1982 in accordance with closure plans developed by RIRRC. Subsequent work indicated that the closure did not cover the actual hazardous waste disposal area. Consequently, a second area was located and designated as HWDA2, or the "hot spot", and is now being addressed as part of the OU1 Remedial Action.

RIDEM issued a Notice of Violation and Order to RIRRC on March 15, 1985, for alleged violations of R.I.G.L. 2-1-21 related to alteration of wetlands. RIRRC was ordered to take certain corrective actions and pay an administrative fine. By an amended Consent Agreement executed on November 3, 1986, RIRRC agreed to resolve the issues in the Notice of Violation and Order.

On March 3, 1988, RIDEM/Division of Air and Hazardous Materials issued a Decision and Order associated with RIRRC's application for an interim license to continue operations at the landfill. The Order granted the operating permit to RIRRC and contained significant operational management requirements. In response, RIRRC prepared a work plan for sediment and surface water sampling on or near the landfill as well as a groundwater monitoring plan.

A Notice of Intent to Enforce dated April 3, 1989 again notified RIRRC of alleged violations of R.I.G.L. 2-1-21. The Notice required RIRRC to take specific actions to stop alterations of wetlands and to submit necessary reports and studies relating to the restoration of alleged altered wetlands. By Consent Agreement executed on July 6, 1989, RIRRC agreed to resolve the issues raised in the Notice of Intent. A Consent Agreement dated July 23, 1991, supersedes the above-mentioned Consent Agreements dated November 3, 1986, and July 6, 1989.

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RIDEM issued a Notice of Violation and Order and Penalty (NOVAP) to RIRRC on July 2, 1991, for alleged violations of R.I.G.L. Section 23-18.9-1. RIRRC was ordered to immediately cease the operation of a solid waste management Facility in interim Area 3 and pay an administrative penalty. By a Consent Agreement executed on 23 July 1991, RIRRC agreed to resolve the issues in the NOVAP and pay an administrative penalty.

RIDEM issued a Notice of Violation (NOV) to RIRRC on February 10, 1998, for alleged violations of Regulations 2.3.06(d)(3) and 7.3.02, Rules and Regulations for Composting Facilities and Solid Waste Management Facilities. RIRRC was ordered to immediately commence chipping of the stockpiled brush, tree waste, and processed wood at the east end of the Facility and submit a plan that establishes a policy for the examination of all incoming loads of alternative daily cover.

RIDEM issued a Notice of Violation (NOV) to RIRRC on October 13, 1999, for alleged violations of Solid Waste Regulation Number 1, Rules 1.4.03, 1.7.13, 1.7.11 and Solid Waste Regulation Number 2, Rules 2.3.04 and 2.3.06. RIRRC was ordered to immediately take remedial measures to prevent objectionable odors from migrating beyond the property lines of the Facility and pay an administrative penalty. By a Consent Agreement executed on 5 January 2001, RIRRC agreed to resolve the issues in the NOV and pay an administrative penalty.

RIDEM issued a Notice of Violation (NOV) to RIRRC on December 4, 2000, for alleged violations of Solid Waste Regulation Number 1, Rule 1.4.03. RIRRC was ordered to immediately take remedial measures and continue with said measures to prevent objectionable odors from migrating beyond the property lines of the Facility and pay an administrative penalty. By a Consent Agreement executed on January 5, 2001, RIRRC agreed to resolve the issues in the NOV and pay an administrative penalty.

RIDEM issued a Notice of Violation (NOV) to RIRRC on February 20, 2001, for alleged violations of Solid Waste Regulation Number 1, Rules 1.4.03(C), and Air Pollution Control Regulation Number 9, Rules 9.68 and 9.69. RIRRC was ordered to immediately take any and all actions required to achieve and maintain compliance with Solid Waste Regulation 1, Section 1.4.03(C) as it relates to objectionable odors and pay an administrative penalty. By a Consent Agreement executed on June 8, 2001, RIRRC agreed to resolve the issues in the NOV and pay an administrative penalty.

Federal Enforcement Activities

In June 1984, EPA issued an Administrative Order to RIRRC pursuant to the authority granted the Agency under Section 3013 of the Resource Conservation and Recovery Act (RCRA), 42 U.S.C. §6934. The Order required RIRRC to produce a proposal for the monitoring, sampling, testing, analysis, and reporting at the Central Landfill. The Order was based on EPA's determination that the landfill may have presented and may present a substantial hazard to human health and the environment. This proposal formed the basis for the performance of the Remedial Investigation for OU1 under the Administrative Order on Consent between RIRRC and EPA issued in 1987.

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The EPA and RIRRC entered into a Consent Order to perform a Remedial Investigation and Feasibility Report (RI/FS) in April 1987. Fieldwork for the OU1 RI was conducted from January 1986 to November 1991 and the RI was completed in March 1993. The FS for OU1 was completed in December 1993.

EPA issued a Record of Decision (ROD) for OU1 in June 1994 describing source control remedial actions to be taken at the Site. After two years of negotiation between EPA and RIRRC, agreement was reached on the Scope of Work and a Consent Decree for the cleanup and reimbursement of EPA's costs. The cleanup plan approved in the OU1 ROD is being performed by RIRRC under the 1996 Consent Decree. RIRRC completed design of the landfill cap in the fall of 1997. Construction of the cap began in the summer of 1998, and is planned to be complete in 2005. Construction of the "hot spot" hydraulic containment and treatment system is currently scheduled for completion in 2006.

EPA also has initiated formal enforcement actions against RIRRC to address violations of the Clean Air Act. These violations relate primarily to collection and control of landfill gas during the ongoing landfill operations, not the Superfund response action as part of OU1. Based on evidence contained in the Rhode Island Department of Environmental Management's records, the landfill gas emitted from the operating landfill appears to be at least one source of odor problems in the neighborhood around the Facility. These Clean Air Act enforcement actions are designed to ensure that RIRRC collects and controls landfill gas in compliance with all laws that EPA has the authority to enforce. Thus far, EPA has issued two administrative compliance orders and a notice of violation as preliminary steps in the overall enforcement process. The enforcement process has not yet been concluded. EPA's goal is to obtain, by the end of the enforcement process, the collection and control of as much landfill gas as possible and, in so doing, reduce the impact that any landfill gas odors may be having on the residents of Johnston, Rhode Island living near the landfill.

COMMUNITY PARTICIPATION

Throughout the Site's history, community concern and involvement has been high. EPA has kept the community and other interested parties apprised of the Site activities through informational meetings, fact sheets, press releases and public meetings. Below is a chronology of public outreach efforts.

- In November 1987, EPA issued a Fact Sheet describing the Remedial Investigation process at Central Landfill Site.
- In September 1993, EPA issued a fact sheet that summarized the results of the OU1 Remedial Investigation.
- In February 1994, EPA made the Administrative Record available for public review at the information repositories located at EPA's offices in Boston and at the Marion J. Mohr Library in Johnston, RI.
- EPA published a notice and brief analysis of the OU1 Proposed Plan in the Providence Journal on February 8, 1994 and made the plan available to the public at the Marion J. Mohr Library information repository.
- On February 22, 1994, EPA held an informational meeting to discuss the results of the OU1 Remedial Investigation and the cleanup alternatives presented in the OU1 Feasibility Study

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Report and to present the Agency's Proposed Plan for OU1. Also during this meeting, the Agency answered questions from the public.

- From February 13 to March 14, 1994, the Agency held a 30-day comment period to accept public comments on the alternatives presented in the OU1 Feasibility Study, the OU1 Proposed Plan, and on any other documents previously released to the public. A formal public hearing was held on February 28, 1994.
- EPA signed the OU1 Record of Decision (Source Control) on June 17, 1994.
- In the fall of 1999, the Central Landfill Action Committee (CLAC) was formed. Established as a citizens advisory group, the purpose of the Central Landfill Action Committee was to bring together appropriate federal, state and local authorities with local residents to work together to address and correct existing landfill problems impacting the community. The committee was also established as a forum for open and ongoing dialogue between agency representatives and residents on landfill and other environmental concerns. The committee was made up of citizens from Johnston, Scituate and Cranston, officials from the Rhode Island Department of Environmental Management (RIDEM), Rhode Island Department of Health, the United States Environmental Protection Agency (EPA), Rhode Island Resource and Recovery, Inc. (RIRRC), New England Ecological Development Inc. (NEED), the Mayor of Johnston, the Johnston Town Council and local representatives.

The Central Landfill Action Committee met bi-monthly. During the meetings the committee evaluated technical data, and discussed possible solutions to over 75 environmental issues associated with the landfill and nearby facilities. The committee prioritized these issues and formulated a series of recommendations that were compiled in a report and presented to key senior-level environmental officials at RIDEM and the EPA who are involved in regulating the landfill operations.

- In February and March 2001, EPA Site managers held separate meetings with the Providence Water Board, officials from the towns of Scituate, Cranston, and Johnston, and US Senator Lincoln Chaffee to discuss groundwater behavior and landfill operations at the Site, and to review the status of OU2 investigations.
- In early April 2001, EPA issued a fact sheet on the information obtained during the groundwater investigations at the Site.
- In late April and May 2001, EPA held public meetings in each of the communities surrounding the landfill. EPA presented information on the groundwater investigations to residents at these public meetings.
- On August 13, 2001, EPA published a notice of the OU2 Proposed Plan in the Providence Journal and made the Proposed Plan and the Remedial Investigation available to the public at the Marion J. Mohr Library information repository.
- On August 14, 2001, EPA held an informal public meeting at the Johnston High School to explain the results of the Central Landfill Superfund Site OU2 Remedial Investigation and Feasibility Study and to present to residents EPA's proposed plan for off-Site groundwater, surface water, soils, and sediments.

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- On August 30, 2001, the Agency held a public hearing to discuss the OU2 Proposed Plan and to accept oral comments. A transcript of this meeting, and a summary of the public comments received, and the Agency's response to comments are included in the Responsiveness Summary, which is in Part 3 of this Record of Decision.
- From August 14, 2001 to September 14, 2001, the Agency held a 30-day public comment period to accept written public comments on the OU2 Proposed Plan and on other documents previously released to the public. An extension to the public comment period was requested and as a result, it was extended to September 21, 2001.

SCOPE AND ROLE OF OPERABLE UNIT OR RESPONSE ACTION

As with many Superfund Sites, the problems at the Central Landfill Superfund Site are complex. As a result, EPA divided the work at the Site into two Operable Units (OUs). The scope and role of the two OUs is summarized below.

Scope And Role of OU1

The first operable unit addresses source control at the Site through the following actions:

- Evaluate the nature and extent of the sources of contamination at the Site;
- Characterize the potential routes of off-Site migration of contaminants including air, surface water and groundwater;
- Conduct studies to determine if groundwater from the Central Landfill Superfund Site is migrating towards the Scituate Reservoir;
- Conduct a Human Health Risk Assessment, and a Feasibility Study of source control remedial options; and
- Identify potential data gaps that would need to be addressed as part of the OU 2 follow-up studies.

The OU1 studies into the nature and extent of contamination at the Site concluded that the 121-acre, Phase 1 landfill area was the source of contamination that required a Superfund Response Action. The approximately 0.5 acre "hot spot", located within the 121 acre, Phase 1 area, was identified as the major source of Volatile Organic Compound (VOC) contamination at the Site.

The OU1 studies evaluated three potential pathways by which contaminants could migrate from the Phase 1 area into the surrounding environment. These pathways were groundwater, surface water, and air. Additional studies concluded that groundwater migration in bedrock was the most significant contaminant pathway. The OU1 studies found no evidence to suggest that contaminated groundwater under the Site was migrating to the Scituate Reservoir, a major water supply for Providence, RI.

The OU1 Human Health risk assessment concluded that there are no complete exposure pathways for human receptors under present Site conditions but there were under future use conditions. An Environmental Risk Assessment was not performed as part of the OU1 studies. The complete exposure pathways for human receptors under future use conditions at the Central Landfill Site are:

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1. Potential ingestion (drinking), dermal absorption and inhalation of volatiles in shower air from groundwater originating from the Site that supplies off-Site wells located in areas outside the toe of the landfill, and
2. Potential direct contact with and incidental ingestion of surface water in the Upper Simmons Reservoir and Almy Reservoir.

Ambient air sampling and analysis conducted as part of the OU1 studies did not indicate an impact on air quality at off-Site residential areas. On-Site air concentrations were below limits established under the Occupational Safety and Health Act (OSHA) to be protective of worker exposure. Therefore, the OU1 Human Health Risk Assessment concluded that, under present conditions, the exposure to VOCs potentially released from the Site did not appear to be a significant pathway for either the resident or the on-Site worker.

Based on estimated future concentrations of contamination in the surface waters of the Upper Simmons and Almy Reservoirs, the OU1 Human Health Risk Assessment concluded that there would be no significant risks associated with the recreational use of these two water bodies. However, as discussed below, it was recognized that there was insufficient data to completely characterize the human health risks associated with the recreational use of these two water bodies.

The OU1 Human Health Risk Assessment did conclude that there was a potential future risk to human health from ingestion (drinking) and dermal contact of groundwater. Exposure estimates for the future use of groundwater were based on monitoring wells located outside the toe of the 121-acre, Phase 1 landfill area. The exposure estimates for groundwater were conservatively assumed to be present in a theoretical water supply well located just outside the toe of the 121-acre (within the Facility), Phase 1 landfill area for an exposure period of 30 years.

The data gaps identified as part of the OU1 studies that were to be addressed as a part of the OU 2 studies are:

- Insufficient data exists to completely characterize the Site's impacts to off-Site surface water (e.g., Upper Simmons and Almy Reservoirs), soils and sediment;
- Insufficient information exists on the nature and extent of groundwater contamination beyond the boundaries of the Facility; and
- Insufficient information exists to be certain that all residents in the vicinity of the landfill have taken advantage of the availability of public water.

As discussed above, the OU1 Human Health Risk Assessment concluded that there is a potential future risk to human health from ingestion (drinking) and dermal contact of groundwater beyond the toe of the landfill but within the Facility. The 121-acre, Phase 1 landfill area is the source of this groundwater contamination. Therefore, the OU1 remedial action focused on controlling this source of groundwater contamination. The EPA selected the OU1 source control remedial action in a Record of Decision (ROD) signed on June 17, 1994. The source-control remedy described in the OU1 ROD includes:

- Constructing a multi-layer RCRA C cap over the 121 acre, Phase 1 area and incorporating the existing 32 acre Rhode Island Department of Environmental Management (RIDEM) approved cap on the side slopes;

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- Hydraulically containing and treating groundwater in the “hot spot” area of the landfill and discharging the treated groundwater to either surface water or the Cranston Waste Water Treatment Plant;
- Implementing deed restrictions on groundwater use and land development within property owned by the Rhode Island Resource Recovery Corporation;
- Initiating a long-term program of sampling and analysis of groundwater, surface water, and air;
- Conducting a detailed evaluation of the existing landfill gas collection and combustion system; and
- Preventing access.

The RIRRC is performing the OU1 source control remedial action under a 1996 Consent Decree. The RIRRC completed design of the cap in the fall of 1997. Construction of the cap began in the fall of 1998, and is currently scheduled for completion in 2005. Construction of the “hot spot” hydraulic containment and treatment system is currently scheduled for completion in 2006.

Scope and Role of OU 2

The second operable unit (OU2) supplements the work performed at OU1 by evaluating and addressing where necessary the following:

- Impacts from the Site to surface water, sediments, and soils;
- Nature and extent of groundwater contamination beyond the Facility through the installation of additional monitoring wells and sampling of residential wells;
- Conducting a baseline human health and ecological risk assessments for groundwater beyond the Facility, and surface water, sediments, and soil (within the OU2 1,333 acre study area as shown on Figure 1);
- Conducting a residential well survey to determine whether or not residents are using groundwater and whether or not Site-related hazardous substances have migrated to residential wells; and
- Ensuring restrictions on groundwater and land use within the Facility and within the OU2 study area are adequate to prevent potential future ingestion (drinking) and dermal absorption of contaminants.

The remedy selected by this ROD combined with the ROD signed in 1994 for OU1 represents the final action for this Site.

SITE CHARACTERISTICS

This section summarizes information obtained as part of the RI activities for OU2. EPA directed the RIRRC to carry out the RI field activities by conducting monitoring well drilling, and surface water, groundwater, soil, and sediment sampling programs designed specifically to document

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hazardous substance migration routes. The information collected from these field activities would then be used to evaluate potential human and ecological risks.

The sources of contamination, release mechanisms, exposure pathways to receptors for groundwater, surface water, sediments, and soils, as well as other Site-specific factors are discussed below as part of a Conceptual Site Model (CSM). The CSM is a three-dimensional "picture" that documents current and potential future Site conditions and shows what is known about human and environmental exposures through hazardous substance release and migration to potential receptors. The risk assessment and the decision that no further remedial action is necessary are both based on this CSM.

Conceptual Site Model

The OU1 RI showed that municipal wastes, industrial wastes, and sewage disposed of in the Phase 1 area of the Site have contaminated the groundwater beneath the landfill and beyond the toe of the landfill with a variety of metals, semi-volatile organic compounds (SVOCs), and nutrients (e.g., ammonia, nitrate, etc.). Building on this, the OU2 RI evaluated the transport mechanisms that hazardous substances may travel from the Phase 1 area. Once these transport mechanisms were determined, the potential impact areas were evaluated for the presence of contaminants of potential concern from the Phase 1 area. Human Health and Environmental Risk assessments were then performed to determine whether or not the hazardous substances traveling from the Phase 1 area are having an impact on human or ecological receptors. The primary modes of contaminant transport evaluated in the OU2 RI were as follows: groundwater, surface water, sediments, and fugitive dust. See Figure CS-1.

Other Potential Off-Site Contamination Sources

The Conceptual Site Model, which describes hazardous substance movement and the sources of human and environmental risk, is complicated by the fact that there are several potential sources of soil and water contamination in the vicinity of the Central Landfill Superfund Site. The OU2 RI identified nine additional sources (described in Section 3.10 of the OU2 RI) that could be contributing to groundwater and surface water contamination in the vicinity of the Site. They are as follows: A. Macera Dump, Cece Macera Landfill, L. Vinagro and J. Vinagro Landfills, M. Earl Adams Company, MacDonald & Watson Property, Shun Pike Disposal Pits, Taraco Precision Testing, Inc., Lot 66, and Macera Brothers Dump.

Because there are so many other potential sources of contamination to groundwater and surface water, a significant effort was made to correlate surface and groundwater migration patterns with the location of all identified sources of concern. What follows is a general description of the conclusions reached from that effort. A more detailed discussion of these conclusions is contained in Section 6.3 of the OU2 RI. See also Figure 4.

Sources North of the Site

Historic surface and groundwater sampling data indicated a relatively widespread area of low to moderate volatile organic compound (VOC) contamination to the North of the Site, in an area that is hydraulically up-gradient from the landfill (this means that surface water and groundwater

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flows from this northern area towards the landfill). Available information summarized in the OU2 RI indicates that the Site is not the source of the VOC contamination in this area.

Sources East of the Site

To the East of the Site is an area that contains a number of Sites being addressed by authorities including CERCLA, RCRA, and State authorities. These Sites are being addressed in separate actions. Some sampling locations (former residential wells) have shown hazardous substances that, because of groundwater flow patterns and types of hazardous substances, are most likely from the "Shun Pike Disposal Pits" rather than the Central Landfill Superfund Site. Other residential well locations East of the landfill show hazardous substances that are not Central Landfill contaminants of concern. Since some chemicals found in these wells have never been found during any other Central Landfill Superfund Site groundwater investigations, it is highly unlikely that the Central Landfill Superfund Site is the source of this contamination.

Sources South of the Site

To the South of the Site is an area that also contains a number of Sites being addressed by authorities including CERCLA, RCRA, and State authorities. Several OU2 groundwater monitoring wells have shown contamination that, because of groundwater flow patterns and types of hazardous substances, is probably related to these other waste Sites. These wells are on the southern side of Cedar Swamp Brook. Groundwater contours indicate that Cedar Swamp Brook acts as a discharge / drainage area, with groundwater coming from the Central Landfill flowing south to the brook and groundwater coming from the north flank of Lawton Hill flowing north to the brook. Under ambient conditions it would be extremely unlikely that groundwater could flow from the Central Landfill beneath Cedar Swamp Brook and impact wells at the southern side of the brook.

Sources to the West of the Site

The M.E. Adams Site is located due west of the Site. A removal action at M.E. Adams was performed by EPA to address Site-related hazardous substances. Groundwater flows from the West to the East on to the Facility. It does not appear that contaminants from that Site are affecting groundwater on the Site.

Hydrogeologic Studies

The area in the vicinity of Central Landfill is typically underlain by glacial till, which in turn is underlain by fractured granitic bedrock. As a consequence of this geologic setting, groundwater is generally found beginning at shallow depths. "Groundwater divides" typically coincide with "surface water divides". "Divides" are borders between watersheds. Generally, water on one side of a divide will tend to stay on the same side of a divide. Often "divides" are high points for groundwater. This was observed on an area-wide basis at Central Landfill by comparing published water table data to local topography. See Figure 3 for groundwater directional flow and gradients.

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To fully understand surface water contamination in the area, one must have an understanding of groundwater flow. Site studies have determined that the bedrock acts as a porous medium, and groundwater generally flows from areas of high elevation to areas of low elevation. Observed groundwater pressure (piezometric) measurements were used to develop empirical models of groundwater flow. These models indicate that the regional groundwater flow field is on average about 200 feet deep.

OU1 studies concluded that groundwater migration in bedrock is the most significant pathway for transporting contamination from the Site to nearby surface waters, sediments and wetlands.

OU 2 studies have shown that groundwater primarily moves from the Site towards the Cedar Swamp Brook (a hydraulic discharge area) and the Upper Simmons reservoir (southeast of the landfill). This means that surface waters downgradient of the Upper Simmons Reservoir are probably not impacted by Site-related contaminated groundwater. In addition, a groundwater divide exists at the northern tip of the landfill. A small portion (approximately 2%) of the groundwater from this area flows towards the Almy Reservoir in the northeast. See Figure 3.

The remainder of this section discusses the groundwater, surface water and sediment, and soils (fugitive dust) that have been affected by hazardous substances from the Site according to the RI investigations.

Groundwater Contamination

Municipal drinking water has been provided to residents and businesses living within the OU2 Study area. RIRRC has deed restrictions in place to prevent use of groundwater on property it owns and a proposed local ordinance will prevent use of wells for drinking water or putting in new wells for residents where municipal water is available. However, because groundwater is a potential drinking water source, groundwater contamination is a concern.

As part of the OU1 investigations within the boundaries of the 612 acre Facility, groundwater samples were taken from 67 monitoring wells at 41 locations. The analysis of samples collected around the perimeter of the Site showed elevated concentrations of many volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs) and inorganics. The analysis of samples collected in the vicinity of the "hot spot" area showed much higher concentrations of VOCs and SVOCs. The analysis of samples taken from monitoring wells close to the 612-acre property line detected only slightly elevated levels of a few VOCs, SVOCs, and inorganics. This indicates that groundwater contamination levels are declining as groundwater moves away from the Site towards the Facility boundary.

As part of the OU 2 investigations, two rounds of groundwater samples were collected from 21 monitoring wells installed off-Site and 10 active or former residential wells in the vicinity of the Central Landfill Site. See Figure 2. The wells were used to determine the groundwater gradients and direction of flow surrounding the Site and vicinity. They were also used to identify the contaminants found in the groundwater. Although the groundwater within the Facility has been impacted by the contaminants found at the landfill, the results showed that contaminants from the Site have not significantly impacted the groundwater outside of the 612-acre Facility. See Appendix D, Table 1A. This is not to say that there is no detection of contamination outside of

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the Facility. There were detections of the Site-related contaminants at wells directly influenced (groundwater flow path) by the landfill. Beryllium and manganese were detected above Safe Drinking Water Maximum Contaminant Levels (MCLs). Neither of these hazardous substances of these caused and unacceptable human health or ecological risk. A residential well (RW43/275) located in the northeast portion of the OU2 Study area was used (the only one being used at the time of the RI that was not yet connected to municipal water) to calculate potential future risks associated with groundwater leaving the Facility. This well is no longer being used as all residences are supplied by municipal water. Please see Appendix D, Table 1A – Summary of Detected Analytical Results Well RW43/275.

During the RI, it was discovered that there were other sources of contamination in the vicinity of the landfill through the groundwater sampling program. The results of the groundwater sampling program showed that some monitoring wells and residential wells are affected by VOCs, SVOCs, and PCBs, and lead in groundwater from sources other than the Central Landfill Site (not Site-related) such as the “Shun Pike Waste Disposal Pits”, as indicated earlier.

Groundwater was also analyzed for metals. Both total and dissolved metals in groundwater appear to be randomly distributed in samples collected outside the boundaries of the 612-acre Facility. Because metals also occur naturally in groundwater, the significance of all the observed levels were evaluated on the basis of risk in the Human Health Risk Assessment, which is described later.

Small concentrations of some pesticides were detected in monitoring well samples (but not in background or residential wells). The presence of these compounds (aldrin, delta-BHC, gamma-BHC, dieldrin, and endosulfan I) in samples from wells located in close proximity to waste disposal areas at the Central Landfill suggests that the Site is a potential source. However their sporadic detection, both spatially and temporally, and the apparent random distribution of the BHC isomers in both groundwater and surface water, are indicative of multiple, low-level sources.

Surface Water and Sediments

Surface water samples collected during the OU1 and OU2 Remedial Investigations show that the major source of surface water contamination is through discharge of groundwater that passed beneath the Phase 1 area of the Site. To a much lesser extent, surface waters and sediments in close proximity to the landfill (Cedar Swamp Brook, Quarry Stream, and the sedimentation ponds) can also be affected by runoff from the Site as well as fugitive dust and litter. Please refer to Appendix D- Table 8.13.

Although surface water is not used as a drinking water supply, surface water contamination is a concern because it may affect the health of recreational water users. Surface water contamination may also affect aquatic animals, plants, and the animals that feed on this aquatic biota. Contaminated sediments have the potential to cause harm to organisms that live within them, or to fish or birds that feed on sediment-dwelling organisms.

The approximately 1,333-acre OU2 Study Area straddles a portion of the surface water divide that separates the watersheds of the Upper Simmon Reservoir and the Almy Reservoir.

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Approximately 867 acres (65%) of the OU2 Study Area is in the watershed of the Upper Simmon Reservoir and 267 acres (20%) is in the watershed of the Almy Reservoir, the remaining 200 acres (15%) discharges to the northeast in the watershed supplying Dry Brook, which is the outlet for the Almy Reservoir.

A surface water sampling program was performed in conjunction with a sediment sampling program. During two rounds of data gathering, surface water samples were collected from 51 unique locations in the OU2 Study Area and sediment samples were collected from 58 locations. See Figure 2. Many of the sediment and surface water samples were taken from the same location. Low levels of organic hazardous substances associated with the Site were found in surface water samples collected from Sedimentation Pond No. 2, Sedimentation Pond No. 3, Cedar Swamp Brook, and the northern portion of Upper Simmon Reservoir. These included chlorobenzene, a contaminant of concern selected in the OU1 ROD. These hazardous substances were not observed in samples collected from the Almy Reservoir, Almy wetlands, the Quarry Stream, or the Lower Simmon Reservoir. Inorganic hazardous substances associated with the Site, particularly manganese, were also detected in various surface water samples. The OU2 RI noted that manganese was probably not disposed of in significant volumes at the Central Landfill. Various chemical conditions within the landfill are thought to release naturally occurring manganese from parent rock and landfill cover soils into the groundwater, and from there it up-wells into surface waters.

Sediment samples were also tested for metals, VOC, SVOCs and other chemical characteristics. Because sediments often have the capacity to remove and retain hazardous substances from groundwater, they can accumulate hazardous substances that have the potential to affect aquatic organisms and the fish that feed on those organisms. Sediment concentrations of VOCs and metals do not seem to show any clear pattern relative to the Site, but this may be because there are multiple potential sources of these hazardous substances in the area. Sediment concentrations of SVOCs do show some relation to the Site. Because of the low correlation between SVOCs in the sediments and SVOCs in surface water, migration of these low-solubility compounds probably occurs via particles suspended in runoff and not groundwater flow. The widest variety and highest concentrations of SVOCs were reported in samples collected to the southeast of the landfill in Sedimentation Ponds No. 2 and No. 3, and in the Upper Simmon Reservoir delta. Sediment samples were also tested for PCBs and pesticides, and over 80 percent of the samples contained no PCB or pesticide residues. The extent of pesticide contamination appears randomly distributed across all areas of interest within the 1,333-acre Study Area, and is probably due to the historical agricultural nature of the area. PCBs were not identified as a contaminant of concern in the OU1 baseline risk assessment.

Soil (Fugitive Dust)

Prior to the on-going capping operation, fugitive dust was one potential pathway of contamination. Seventeen surface soil samples were taken from various locations around the Site. The wind direction at the landfill is predominantly from the Site to the south-southeast (although there is significant seasonal and daily variation). The sampling program included 15 target locations generally downwind from the landfill and two generally "upwind" samples intended to serve as background locations for comparison. See Figure 2 for sampling locations. Please also see Appendix D - Table 8.13.

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Low levels of VOCs and metals were found both upwind and downwind of the Site, and their distribution showed no distinct pattern. SVOCs were also found in some surface soil samples. Concentrations of site-related contaminants did not exceed protective levels set for Site soils.

One location that showed the highest concentration of SVOCs was equidistant between the landfill toe-of-slope and the New England Ecological Development property, at which stockpiled recycled materials had burned for several months. Bis(2-ethylhexyl)phthalate (DHEP) was found in all target and background soil samples. It was reported at its maximum concentration in a sample that was collected 1,400 feet from the landfill, one of the most distant sampling locations. However, DHEP was not a selected COPC because it did not exceed soil screening criteria. DHEP concentrations in the background samples were generally below those in the target samples.

The pesticides 4,4'-DDE and 4,4'-DDT were detected in more than half of the non-background surface sampling locations and at one of the background locations. The presence of these and other pesticides at very low levels in the soil samples is likely the result of historic pesticide use in the area and not waste disposal practices at the Site. This statement is based on the fact that: (1) pesticides were not identified as contaminants of concern at the Site under OU1, and (2) the 1,333-acre Study Area and surrounding areas have been, and in some cases still are, used for agricultural purposes, and pesticide residues would be expected under those circumstances.

Potentially affected human and ecological populations

The discussion above shows that Site-related contamination is present in various media surrounding the Central Landfill. This contamination, however, can only affect human and ecological populations if those populations come into contact with the contamination in sufficiently high concentrations to create a risk. The OU2 Human Health and Ecological risk assessments (summarized below) evaluated the potential exposures for various human and ecological populations.

Humans could be exposed to Site contamination through drinking contaminated groundwater at nearby businesses and residences, swimming or fishing in contaminated surface water, or coming into contact with contaminated soils, sediments, or dust. Additionally, adult workers at the landfill Facility itself could be exposed to surface water, sediments, and soils during routine operations and maintenance, cleanup and closure activities at the landfill.

Ecological populations that could be exposed to contamination include aquatic plants and animals exposed to contaminated sediments and surface waters, animals and plants exposed to contaminated wetland areas, and animals and plants exposed to contaminated soils and dust.

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CURRENT AND POTENTIAL FUTURE SITE AND RESOURCE USES

Current Land Use

The Town of Johnston is a community of about 30,000, located in the north central portion of the State of Rhode Island. An irregularly shaped property line that reflects its border with numerous smaller, privately and publicly owned lots characterizes the Facility. The bordering areas are either undeveloped, residential (primarily single family residences) or commercial/industrial. Businesses operating in the vicinity of the Facility include municipal/commercial transfer stations and demolition debris recycling and disposal facilities; refuse hauling companies, various vehicle repair shops and hazardous waste/oil Transportation Storage and Disposal Facilities (TSDF). RIDEM has identified 38 locations near the Site, which have been the subject of some form of evaluation, including six CERCLIS Sites for which Preliminary Assessments and Site Investigations have been performed.

Most of the Site is located in the watershed of the Upper Simmon Reservoir, with a small portion in the watershed of the Almy Reservoir. Both of these water bodies are used for recreational purposes only (i.e., they are not drinking water supplies). The Site is also about 2.5 miles east of the watershed of the Scituate Reservoir, which is a water supply for the greater Providence area. The Reservoir is 1.4 miles west of the western edge of the Facility property line.

The Facility is partially fenced and vehicular entry is limited to secured roadways. In addition, two armed security guards patrol the Facility 24 hours/day. The following major RIRRC operations (within the Facility) are located primarily east-southeast of the Site: a vehicle maintenance Facility, materials recycling Facility, and a landfill gas-to-energy plant. The remaining portion of the OU2 Study Area includes residential property acquired by RIRRC within the 2,000 feet of the Site at a cost of \$23 Million. This property acquisition was primarily to the north and east along Bishop Hill Road, Central Avenue, and Scituate Avenue. There are also several small businesses located primarily to the south and east of the landfill. All of these residences have been connected to municipal water. Homes along Simmon Lake Drive (which are hydro-geologically downgradient from the Site) have all been demolished. Business operations (not owned by RIRRC) within the 1,333-acre Study Area include: a screw machine products manufacturer, a commercial welder, a demolition contractor, vehicle repair shop, refuse transfer station, C&P recycling operation, refuse hauling company, and a former hazardous waste/oil TSD business. All businesses within the OU2 Study area are also connected to municipal water.

The Upper and Lower Simmon Reservoirs, (which are man-made impoundments), are located southeast of the Site, and have been included within the boundaries of the 1,333-acre Study Area. A small portion of the 1,333-acre Study Area northeast of the landfill, including a small portion of the Phase 1 area is located in the watershed of the Almy Reservoir, which has also been included as part of 1,333-acre Study Area. The Upper and Lower Simmon Reservoirs and the Almy Reservoir are classified as Class B surface waters by RIDEM. Class B waters are designated for fish and wildlife habitat and recreational activities. They shall be suitable for compatible industrial processes and cooling, hydropower, aqua-cultural uses, navigation, and irrigation and other agricultural uses. These waters shall have good aesthetic value.

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The majority of the groundwater in the 1,333-acre Study Area has been classified by RIDEM as GA, except for the area immediately surrounding and below the licensed landfill. The groundwater below the Site is classified as GC - suitable for certain waste disposal activities. The area surrounding the active landfill (Site) has been classified as GB for distances of 100 feet in the upgradient direction, and the closest of the following in the downgradient direction: property boundary, surface water body or wetland, or 500 feet from the landfill boundary. A number of small areas within 1,333-acre Study Area have been classified as GA-NA (non-attainment) areas; many of these are located in the vicinity of industrial facilities not owned by RIRRC.

The Federal groundwater classification is more stringent than the State classification in the OU2 Study Area. More specifically, for groundwater at and beyond the edge of the waste management area (i.e., 154 acre Site), the groundwater is classified as Class II, current or potential drinking water.

A well reconnaissance was conducted as part of the RI that identified 86 existing or suspected private water supply wells within the OU2 Study Area boundary. Sixty-four of these wells were located on properties owned by RIRRC, and 22 wells were identified on properties not owned by RIRRC. However, all businesses and residences located within the 1,333 Acre OU2 Study area have been connected to municipal water.

As part of the OU1 remedy, RIRRC filed a Declaration of Covenants and Environmental Protection/Conservation Easement on property it owns at the 612-acre Facility. This Covenant prohibits the use of groundwater except for remediation purposes, prohibits the installation of groundwater wells or the use of existing groundwater wells and prohibits the alteration of the groundwater flow in any way. Further, the Town of Johnston is about to adopt a Town ordinance that, among other things, prohibits the use of groundwater wells and prohibits the Building Inspector from issuing permits for the construction of groundwater wells in any location where access to Town public water is available and where the well or proposed well is located in certain described areas including where groundwater has been classified by the State as GAA non-attainment, GA non-attainment, GB, GB non-attainment or GC and where it is located in the OU2 areas recommended for institutional controls. Should this ordinance not be adopted or be repealed or amended, RIRRC would be responsible for implementing in the requirements of the proposed ordinance in accordance with the OU1 ROD and subsequent 1996 Consent Decree. Copies of the proposed ordinance and the Covenant are in the Administrative Record.

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Future Land Use

Land uses in the 1,333-acre Study Area are not likely to change significantly. Landfill operations will continue and will expand including the reconstruction of Quarry Stream, relocation of Cedar Swamp Brook, and construction of a new 45-acre lined waste cell (designated Phase IV) to the south-southwest of the existing Phase I, II, and III areas. It is anticipated that the properties currently used as residences will remain residential. RIRRC properties within the 1,000-foot buffer zone will either remain undeveloped or be used for landfill-related purposes. Town of Johnston Assessors records, current as of April 1997, show that 15 residentially-zoned properties fall partially or wholly within the 1,333-acre Study Area and are undeveloped and not owned by RIRRC. Further, recent observations suggest that development, including apparent industrial development, is taking place on formerly residential, undeveloped property west of the Upper Simmon Reservoir. The Town of Johnston requires that all new construction be connected to the municipal water supply system where available. Due to the availability of municipal water, the proposed Town ordinance which will prohibit use or installation of groundwater wells, and the environmental restrictions on land use and groundwater use on RIRRC's property, it is extremely unlikely that developers will be able to install private potable water supplies.

SUMMARY OF SITE RISKS

A baseline risk assessment was performed to estimate the probability and magnitude of potential adverse human health and environmental effects from exposure to hazardous substances in the OU2 Study Area associated with the Central Landfill Site assuming no remedial action in addition to that required by the 1994 ROD for OU1 was taken. The human health risk assessment (HHRA) followed a four step process: 1) hazard identification, which identified those hazardous substances which, given the specifics of the Site were of potential significant concern; 2) exposure assessment, which identified actual or potential exposure pathways, characterized the potentially exposed populations, and determined the extent of possible exposure; 3) toxicity assessment, which considered the types and magnitude of adverse health effects associated with exposure to hazardous substances, and 4) risk characterization and uncertainty analysis, which integrated the three earlier steps to summarize the potential and actual risks posed by hazardous substances at the Site, including carcinogenic and non-carcinogenic risks and a discussion of the uncertainty in the risk estimates. A summary of the OU 2 human health risk assessment is discussed below followed by a summary of the OU 2 environmental risk assessment.

OU 2 Human Health Risk Assessment

The human health risk assessment was completed to characterize potential health risks under baseline conditions (i.e., assuming no remediation in addition to that required by the 1994 ROD for OU1) and to help evaluate whether or not additional remedial response actions are warranted. Concentrations of compounds found in soil, sediment, surface water, and groundwater were compared to federal and state standards. Lead, as a special compound, had its concentrations compared to EPA's screening level in soil and action level for drinking water. For those hazardous substances that have concentrations exceeding the screening standards, also called contaminants of potential concern (COPCs), a quantitative risk evaluation was done for cancer and non-cancer adverse health effects, using Site-specific exposure assumptions. The total

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receptor-specific Hazard Indices (HIs) and Incremental Lifetime Cancer Risks (ILCRs) calculated for these COPCs were then compared to EPA benchmarks and acceptable risk limits.

Data from surface soils, surface water, sediment, and groundwater obtained from OU2 studies were evaluated. Soil samples were collected from locations downgradient of the Site. Please refer to Figure 2 of this document and Figure 3-1 of the Remedial Investigation (RI). Downgradient locations include areas unexcavated and affected only by wind driven deposition from the Site; VOCs, SVOCs, pesticides, and metals were detected in these surface soil samples. Surface water and sediment samples were collected from the Almy and Upper Simmon Reservoirs, Cedar Swamp Brook, Quarry Stream, associated wetland areas, and four landfill Sedimentation Ponds. VOCs, SVOCs, pesticides/PCBs, and metals were detected in sediment samples. Similar hazardous substances were detected in surface water samples. Chemical testing results from 19 monitoring wells located outside the boundary of the Site and each of ten sampled residential supply wells were evaluated when selecting COPCs for the groundwater risk evaluation. VOCs, SVOCs, pesticides, and metals were detected in these groundwater samples.

The objectives of the OU2 Remedial Investigation and Human Health Risk Assessment with respect to groundwater included estimation of the potential risks to human health posed by current and future use of groundwater as drinking water if impacted by contamination emanating from the Central Landfill Site. Public drinking water supplies have been made available to residents and businesses in the vicinity of the Site. Currently all residents and businesses are connected to municipal water. In addition, the OU1 remedy included institutional controls to prevent the use of groundwater. These controls include a proposed local ordinance that will prevent private well use where there is municipal water available is expected to be adopted soon and a "restrictive covenant" on the use of groundwater on property owned by RIRRC at the Facility. Therefore, human health risks from groundwater exposure were evaluated at identified points of existing groundwater use (i.e., supply wells) that are potentially impacted by contamination emanating from the Central Landfill Site, as determined by the hydro-geologic studies presented in Section 7.1 of the RI. Only one such well that uses groundwater as drinking water was identified for OU2, designated RW43/275. With respect to this well, among the COPCs selected from hazardous substances detected in the 19 monitoring wells and 10 residential supply wells, only metals were detected, with only beryllium and manganese exceeding MCLs. Since the studies were conducted, RW43/275 has been connected to the municipal water supply and, therefore, potential future risks are extremely unlikely.

Compounds listed in the following table were considered COPCs based on comparison of Site data to appropriate standards and guidelines for each media.

The exposure point concentrations (EPCs) are estimates of the concentration of a hazardous substance to which a human receptor may be exposed. In this HHRA, EPCs were generally estimated using 95 percent upper confidence limits in accordance with EPA guidance. The exceptions to this approach included: fish ingestion, future surface water, and fugitive dust. EPCs for these exposures were estimated using models as described in the OU 2 RI Section 8.24.

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**TABLE 1
CONTAMINANTS OF POTENTIAL CONCERN
CENTRAL LANDFILL - OU2
JOHNSON, RHODE ISLAND**

Media	Contaminants of Potential Concern		
	Volatile Organic Compounds	Semivolatile Organic Compounds and Pesticides	Metals
Soil	None	benzo(a)pyrene, benzo(g,h,i)perylene, and phenanthrene	aluminum, arsenic, barium, manganese, and zinc
Groundwater	1,4-dichlorobenzene, benzene, carbon tetrachloride, chlorobenzene, chloroform, cis-1,2-dichloroethene, trichloroethene, and vinyl chloride	bis(2-ethylhexyl) phthalate, phenanthrene, aldrin, and dieldrin	aluminum, arsenic, barium, beryllium, cadmium, copper, iron, lead, manganese, nickel, and thallium
Sediment	None	benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, and phenanthrene	aluminum, arsenic, beryllium, cadmium, lead, manganese, thallium, and vanadium
Surface Water	tetrachloroethene (all VOCs found in groundwater were retained as potential COCs for future conditions)	Aldrin	arsenic, beryllium, lead, manganese, mercury, and thallium

Potential human health effects associated with exposure to COPCs were estimated quantitatively or qualitatively through the development of several hypothetical exposure pathways. These pathways were developed to reflect the potential for exposure to hazardous substances based on the present uses, potential future uses, and location of the Site. Please see Figure CS-1. A number of receptors and exposure scenarios were evaluated in the HHRA. Table 2 presents the receptors and exposure scenarios considered in the HHRA. Receptors included: (a) Facility workers assumed to contact sediment and surface water in sedimentation ponds, Cedar Swamp Brook, and Quarry Stream, (b) local residents (children and adult) assumed to use groundwater for drinking water and other household uses, and (c) local residents assumed to engage in recreational activities in the Almy or Upper Simmon Reservoirs as children and adults (recreators), and assumed to trespass onto the 612-acre Facility, OU2 upland areas, Cedar Swamp

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Brook, Quarry Stream, and sedimentation ponds as adolescents (trespassers). Please refer to Section 8.2 of the RI for a more detailed discussion of exposure assumptions.

**TABLE 2
EXPOSURE ASSESSMENT SUMMARY¹
CENTRAL LANDFILL - OU2
JOHNSTON, RHODE ISLAND**

Receptor	Exposure Point	Activity	Time Period	Medium	Exposure Route
Resident (Adults and Children)	Residence	Household water use	Current and Future	Groundwater	Ingestion, Inhalation, and Dermal Contact
Local Residents (Recreators and Trespassers)	Upper Simmons and Almy Reservoirs	Swimming	Current and Future	Surface water	Dermal Contact and Incidental Ingestion
				Sediments	Dermal Contact and Incidental Ingestion
		Fishing	Current and Future	Fish	Ingestion
	OU2 Upland Areas	Trespassing/ Recreation	Current and Future	Surficial Soils	Dermal Contact and Incidental Ingestion
				Fugitive Dust	Inhalation
	Cedar Swamp Brook, Quarry Stream and Sedimentation Ponds	Trespassing/ Recreation	Current and Future	Sediments	Dermal Contact and Incidental Ingestion
Surface Water				Dermal Contact	
Adult Facility (Worker at Facility)	Sedimentation Ponds	Dredging of Ponds	Current	Sediments	Dermal Contact and Incidental Ingestion
				Surface water	Dermal Contact
	Cedar Swamp Brook, Quarry Stream	Outside work activities	Current	Sediments	Dermal Contact and Incidental Ingestion
				Surface water	Dermal contact

¹ This table summarizes the receptors and exposure pathways that were quantified in the human health risk assessment portion of the RI. These scenarios were selected for quantification because they were considered the most likely to present a risk.

Excess lifetime cancer risks were determined for each exposure pathway by multiplying the daily intake level with the chemical specific cancer potency factor. Cancer potency factors have been developed by EPA from epidemiological or animal studies to reflect a conservative "upper

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bound" of the risk posed by potentially carcinogenic compounds. That is, the true risk is unlikely to be greater than the risk predicted. The resulting risk estimates are expressed in scientific notation as a probability (e.g. 1×10^{-6} for 1/1,000,000) and indicate (using this example), that an average individual is not likely to have greater than a one in a million chance of developing cancer over 70 years as a result of Site-related exposure (as it was defined in the HHRA) to the compound at the stated concentration. All risks estimated represent an "excess lifetime cancer risk" - or the additional cancer risk on top of that which we all face from other causes, such as cigarette smoke or exposure to ultraviolet radiation from the sun. The chance of an individual developing cancer from all other (non-Site-related) causes has been estimated to be as high as one in three. EPA's generally acceptable risk range for Site-related exposure is 10^{-4} to 10^{-6} . Current EPA practice considers carcinogenic risks to be additive across chemicals and pathways when assessing exposure to a mixture of hazardous substances.

In assessing the potential for adverse effects other than cancer, a hazard quotient (HQ) is calculated by dividing the daily intake level by the reference dose (RfD) or other suitable benchmark. Reference doses, developed by EPA, represent a level to which an individual may be exposed that is not expected to result in any deleterious effect. RfDs are derived from epidemiological or animal studies and incorporate uncertainty factors to help ensure that adverse health effects will not occur. A $HQ \leq 1$ indicates that a receptor's dose of a single hazardous substance is less than the RfD, and that toxic non-carcinogenic effects from that chemical are unlikely. The Hazard Index (HI) is generated by adding the HQs for all chemical(s) of concern that affect the same target organ (e.g. liver) within or across those media to which the same individual may reasonably be exposed. A $HI \leq 1$ indicates that toxic non-carcinogenic effects are unlikely.

Following EPA guidance, EPA-derived dose-response criteria for both non-cancer and cancer endpoints were obtained from the most current resources: EPA's IRIS database and the 1997 Update of EPA's Health Effects Assessment Summary Tables (HEAST), when not available in IRIS. For several chemicals, no RfDs and/or RfCs are presented in the 1997 HEAST and a footnote indicates that the values are available from the Superfund Health Risk Technical Support Center (TSC). The TSC provided several provisional dose-response values.

The EPA has not derived dose-response values for lead in IRIS. In the absence of dose-response values, a bio-kinetic uptake model is generally used to evaluate exposures to lead. In accordance with recent EPA guidance, the concentration of lead in soil was compared to the EPA's screening level for lead in soil for residential scenarios of 400 ppm and the Rhode Island Permissible Exterior Soil/Dust Standard. The concentration of lead in groundwater was compared to EPA's lead action level for drinking water of 0.15 mg/L. Based on the low concentrations of lead present in Site soils and groundwater, the use of the bio-kinetic uptake model was not necessary.

For the purposes of this risk assessment, Site-related risks were the focus of comparisons to EPA criteria. Table 3 depicts the carcinogenic/non-carcinogenic risk summary of the reasonable maximum exposure scenarios for the present and potential future exposure pathways and receptors evaluated in the HHRA. Only the total Site-related risks are presented in this ROD. Readers are referred to Section 8.40 of the RI for a more comprehensive risk summary of individual COPCs under each exposure pathway evaluated and for estimates of the central tendency exposure risk estimates.

**TABLE 3
SUMMARY OF CUMULATIVE HAZARD INDICES AND RISK ESTIMATES
CENTRAL LANDFILL - OU2
JOHNSTON, RHODE ISLAND**

<u>RECEPTOR</u>	<u>AREA</u>	<u>EXPOSURE MEDIA/ROUTE</u>	<u>NONCARCINOGENIC HAZARD INDEX</u>	<u>INCREMENTAL LIFETIME CANCER RISK ESTIMATE</u>
<u>Resident (Current)</u>	<u>Well #RW43/275²</u>	<u>Groundwater</u>	<u>8.5E-01</u>	<u>NC³</u>
<u>Local Resident¹ (Recreator/ Trespasser) Current Conditions</u>	<u>Almy Reservoir On-Site Sedimentation Pond Cedar Swamp Brook and Quarry Stream</u>	<u>Sediment Surface Water Surface Soil Fugitive Dust</u> <u>Total:</u>	<u>4.9E-01</u>	<u>5E-05</u>
<u>Local Resident¹ (Recreator/ Trespasser) Future Conditions</u>	<u>Almy Reservoir On-Site Sedimentation Pond Cedar Swamp Brook and Quarry Stream</u>	<u>Sediment Surface Water Surface Soil Fugitive Dust</u> <u>Total:</u>	<u>4.8E-01</u>	<u>5E-05</u>
<u>Local Resident¹ (Recreator/ Trespasser) Current Conditions</u>	<u>Upper Simmons Reservoir On-Site Sedimentation Pond Cedar Swamp Brook and Quarry Stream</u>	<u>Sediment Surface Water Surface Soil Fugitive Dust Fish</u> <u>Total:</u>	<u>4.1E-01</u>	<u>6E-05</u>
<u>Local Resident¹ (Recreator/ Trespasser) Future Conditions</u>	<u>Upper Simmons Reservoir On-Site Sedimentation Pond Cedar Swamp Brook and Quarry Stream</u>	<u>Sediment Surface Water Surface Soil Fugitive Dust</u> <u>Total</u>	<u>2.4E-01</u>	<u>5E-05</u>
<u>Facility Worker</u>	<u>Cedar Swamp Brook and Quarry Stream Sedimentation Pond</u>	<u>Sediment Surface Water</u> <u>Total:</u>	<u>2.4E-03</u>	<u>3E-07</u>

1. It was assumed that recreators that are present either at the Almy Reservoir or Upper Simmons Reservoir may also trespass onto the site. Thus, risks for the current recreator at the Almy Reservoir, the future recreator at the Almy Reservoir, the current recreator at the Upper Simmons Reservoir, and the future recreator at the Upper Simmons Reservoir, were summed with risks for the trespasser.

2. The residential well designated RW43/275 is the only residential well with VOC's in accordance with EPA Guidance. Risks via inhalation of volatiles in GW is considered to be approximately equal to risks via ingestion.

3. NC - Not Calculated.

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Quantitative Non-Cancer and Cancer Risk Estimates

The Site-related non-cancer and cancer risks for residential well users, using data from the only active residential well (RW43/275) at the time of the baseline risk assessment for OU2 were within or lower than the acceptable EPA risk limits (under both central tendency and high-end conditions).

The hazardous substance detected in groundwater at RW43/275 that could contribute to cancer risk from ingestion of this groundwater was beryllium, with concentrations slightly exceeding MCLs. However, as of March 1998, EPA had withdrawn the oral cancer slope factor for beryllium due to an inadequate oral database to assess carcinogenicity. The original data used to develop the oral slope factor did not show a statistically significant increase in tumors in the treated group relative to the control group. Thus, evaluation of carcinogenic health threats posed by beryllium is not required at this time pending more studies on which a new oral slope factor can be based. No other carcinogenic contaminants were detected in groundwater at RW43/275.

Two contaminants were evaluated for potential non-cancer risks from exposures to groundwater at RW43/275. Manganese and beryllium both have non-cancer effects. Like beryllium, manganese concentrations at RW43/275 exceeded MCLs. Non-cancer risks (hazard indices) were calculated for exposures to manganese and beryllium through ingestion of groundwater at RW43/275. Total non-cancer risks from both contaminants detected in groundwater at RW43/275 were less than the EPA's hazard index limit of 1.0.

It should be noted that since the studies, RW43/275 has been connected to municipal water and a proposed local ordinance or institutional controls obtained by RIRRC will prohibit further use of groundwater wells. During the upcoming five-year review of this Site (pursuant to OU1), the remedy will be reviewed for continued protectiveness including ensuring that all institutional controls are in place. If a new oral cancer slope factor for beryllium is in place at that time, a Site-related cancer risk for beryllium will be calculated at that time, if necessary.

Total Site-related cancer risks for other exposure pathways and other receptors were all within EPA's acceptable risk range of 10^{-4} to 10^{-6} or below this risk range. Total Site-related non-cancer risks for all exposure pathways and receptors were below EPA's limit of hazard index of 1.0.

Qualitative Risk Evaluations

As explained above in Hydrogeologic Studies Section of this ROD, the Upper Simmon Reservoir is the only recreational fishery with a significant potential to be impacted by the Site. However, none of the concentrations of surface water COPCs measured in the Upper Simmon Reservoir exceeded EPA Ambient Water Quality Criteria (AWQC) (for fish consumption). Based on the lack of AWQC exceedences and based on fish tissue data and food web modeling that was performed for the ecological risk assessment, it was concluded that the Site has not adversely affected the edibility of the fish in the Reservoir. Furthermore, the conservative quantitative assessment of potential fish consumption risks indicated no Superfund Site-related health risks are anticipated.

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Maximum concentrations of dissolved arsenic in Almy Reservoir, the Sedimentation Ponds, Cedar Swamp Brook and the Quarry Stream exceeded its AWQC for fish consumption, and aldrin in the Sedimentation Ponds exceeded its AWQC. Since, the Sedimentation Ponds, Quarry Stream, and Cedar Swamp Brook do not provide a recreational fishery, fish consumption in these areas was not considered a complete exposure pathway. Based on hydro-geological studies that concluded that very little of the groundwater beneath the Site flows in the direction of Almy Reservoir, the HHRA concluded that it is unlikely that the Site contributed significantly to the elevated arsenic concentrations detected in the Almy Reservoir. For this reason, the risk at these water bodies suggested by this exceedence due to fish consumption was not attributed to the Site.

The concentrations of lead measured in OU2 upland soils were below federal and state criteria that are protective of residential exposures to children. Therefore, it was concluded that risks from exposures to lead in OU2 upland soils by trespassers or Facility workers are not of concern.

Conclusions of the HHRA

COPCs present in the groundwater beyond the 612-acre Facility, and soil, surface water, and sediments within the 1,333 acre OU2 study area, do not pose significant risks to human receptors, assuming the exposure scenarios evaluated in the HHRA (Sections 8.23-8.25 of the OU2 RI). Institutional controls required as part of OU1 that prohibit use of the groundwater ensure that there is no significant risk to human receptors.

Although there are no significant Site-related risks associated with the groundwater beyond the Facility, the groundwater is not suitable for use as a drinking water supply (refer to Sections 6 and 7 of the RI). However it is still considered a current or potential drinking water supply under the federal groundwater classification system. A public water supply has been made available to residents and businesses throughout the area of the landfill. RIRRC has purchased properties within close proximity to the landfill. As part of OU1, deed restrictions have been placed on those properties, restricting groundwater use and land development. In addition, Johnston, RI is presently about to vote on an ordinance that prohibits the use of groundwater wells where municipal water is available. This risk assessment assumes that residents' downgradient of Site are NOT and will not be using groundwater as a drinking water source, but rather that residents are using and will use the public water supply as their drinking water source.

In addition, to ensure that the OU1 and OU2 remedial decisions remain protective, a groundwater monitoring system will remain in place to monitor any future migration of contaminants away from the landfill. This groundwater monitoring system incorporates the monitoring wells from OU1 and the OU2 study area. Also, because waste was left in place during OU1, the Site will undergo a review to ensure that human health and the environment are being protected every five years as mandated by CERCLA.

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Uncertainty

There are sources of uncertainty in each step of the human health risk assessment for this Site.

The sources of uncertainty in the hazard identification step include adequacy of the Site characterization, quality of data collection, treatment of samples during transport and in the laboratory, and treatment of the analytical data during validation.

For the purposes of identifying risks associated with Site-related hazardous substances versus risks from naturally occurring substances or hazardous substances from other sources, the HHRA included a comparison of Site concentrations to background concentrations. A total of seven metals (in four different media) were identified as occurring at concentrations that were consistent with background concentrations obtained from areas unaffected by the Site. The seven metals were beryllium in all media; aluminum in groundwater, soils, and sediments; arsenic, cadmium, lead, and vanadium in sediment; and barium in groundwater. These compounds were included in the risk characterization process. The inclusion of these hazardous substances in the computation of the total hazard index and total incremental lifetime cancer risk is a conservative factor and overestimates the public health risk estimates for Site-related risks.

The areas of the exposure assessment that have the potential to introduce the greatest uncertainty are: (1) estimation of EPCs, including statistics and modeling; (2) characterization of current and future land uses and exposure pathways; and (3) calculation of exposure doses through the use of receptor-specific and chemical-specific parameters. For the EPCs, modeling was conducted to estimate fugitive dust concentrations due to dirt bike activity, to estimate fish tissue concentrations in the Upper Simmon Reservoir, and to predict future surface water concentrations in the Almy and Upper Simmon Reservoirs. Conservative exposure assumptions regarding exposure point concentrations, land-use, frequency, and duration of exposure are used to estimate the maximum risk. These conservative assumptions have tended to overestimate the risk from exposure. The assumptions can be found in Section 8 of the RI.

Based on health-protective assumptions made in each step of the risk assessment process, the risks presented in the HHRA are likely to be overestimates of any actual risks associated with exposure to Site-related hazardous substances.

OU2 Ecological Risk Assessment

An Ecological Risk Assessment (ERA) was conducted to evaluate whether significant adverse impacts to the natural community may have occurred from exposure to hazardous substances migrating from the Site, or if there may be a significant risk of adverse impacts in the future. The ERA (Section 9.00 of the OU2 RI) generally followed the approach outlined in EPA guidance documents.

Three primary potential routes of hazardous substance migration from the Site to the surrounding environment have been identified as groundwater migration, surface water transport, and fugitive dust. Each is discussed in detail in the OU2 ERA.

The Exposure Point Concentrations (EPCs) were estimated in the ERA using sampling results from the OU2 RI as well as groundwater hazardous substance transport models and biological

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hazardous substance uptake models. EPCs are the concentrations of hazardous substances that organisms in various environments may be exposed to under current and future conditions.

Inorganic hazardous substances were screened by comparing EPCs to background concentrations and toxicity "benchmarks". The term "benchmark" is used as a generalized term because ecological risk assessments rely upon a mixture of state and federal criteria, standards and guidelines. For each exposure area, the maximum detected concentration of the inorganic hazardous substance was compared to the maximum detected concentration in the background data set. The maximum concentration detected within the exposure area was also compared to the appropriate toxicity benchmark concentration. Hazardous substances were considered to be contaminants of potential ecological concern (COPECs) if they had a maximum concentration greater than the maximum background concentration, and the maximum concentration was greater than the toxicity benchmark concentration. If the maximum concentration was less than the maximum background concentration or the maximum concentration was below the benchmark, then the hazardous substance was eliminated from further consideration.

As per EPA policy, background data were not considered in the screening procedure for organic (i.e., manmade) hazardous substances; organic hazardous substances were screened from the ERA based on the comparison to benchmark concentrations only.

Toxicity benchmark concentrations are intended to be protective of organisms whose main route of exposure is via direct contact; they typically do not take into consideration potential impacts to predator organisms that are exposed via the food web. Therefore, some hazardous substances were retained as COPECs because they have the potential to be highly bio-accumulative (i.e., chemicals that build up in predator organisms when they are present in lower concentrations in prey organisms), and have a significant potential to adversely affect higher levels of the food web. COPECs within the OU2 include VOCs, SVOCs, PCBs, pesticides, and inorganic hazardous substances.

Table 4 presents the exposure pathways of concern. The table presents the exposure media, ecological receptors, exposure routes, and assessment and measurement endpoints used to evaluate the data. Site-specific, biological evaluations performed for the risk assessment were focused on those areas that have the greatest potential for adverse impact from the Site; namely Sedimentation Pond 4, Sedimentation Ponds 2 & 3 and Channels, the Upper Simmon Reservoir, and the Lower Simmon Reservoir. In summary, these evaluations consisted of surface water and sediment toxicity tests, qualitative benthic invertebrate community surveys, acid volatile sulfides (AVS) and simultaneously extracted metals (SEM) analysis, and food chain modeling using measured or modeled hazardous substance concentrations in prey items.

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**TABLE 4
ECOLOGICAL EXPOSURE PATHWAYS OF CONCERN
CENTRAL LANDFILL - OU2
JOHNSTON, RHODE ISLAND**

Exposure Medium	Sensitive Environment Flag (Y or N)	Receptor	Endangered/Threatened Species Flag (Y or N)	Exposure Routes	Assessment Endpoints	Measurement Endpoints
Sediment	N	Fish	N	Direct contact (including ingestion and respiration) with COPECs from resuspended sediment	Protection of Fish from Toxic Effects of COPECs	Sediment Elutriate Toxicity Test using <i>Pimephales promelas</i>
		Planktonic and Epiphytic Organisms	N	Direct Contact (including ingestion and respiration) with COPECs from resuspended sediment	Protection of Planktonic and Epiphytic Organisms as a Prey Base for Fish	Sediment Elutriate Toxicity Test using <i>Ceriodaphnia dubia</i>
		Benthic Organisms	N	Direct contact (including ingestion and respiration) with sediment COPECs	Protection of Benthic Community as Prey Base for Fish and Wildlife	1. Sediment Toxicity Tests using <i>Hyalella azteca</i> 2. Qualitative survey of benthic invertebrate community 3. Ratio between Acid Volatile Sulfides and Simultaneous Extracted Metals
		Local Wildlife	N	Exposure to Sediment COPECs via Prey Species and Incidental Ingestion of Sediment	Protection of Local Wildlife Species from Toxic Effects due to Exposure to Sediment COPECs through the Food Web	Food Web Assessment for the Great Blue Heron
Surface Water	N	Fish	N	Direct contact (including ingestion and respiration) with COPECs in Surface Water	Protection of Fish from Toxic Effects of COPECs	1. Surface Water Toxicity Tests using <i>Pimephales promelas</i>
		Planktonic and Epiphytic Organisms	N	Direct contact (including ingestion and respiration) with COPECs in Surface Water	Protection of Planktonic and Epiphytic Organisms as a Prey Base for Fish	1. Surface Water Toxicity Tests using <i>Ceriodaphnia dubia</i> 2. Qualitative Survey of Plankton Community
		Local Wildlife	N	Exposure to Surface Water COPECs via Prey Species and Drinking Water	Protection of Local Wildlife Species from Toxic Effects due to Exposure to Sediment COPECs through the Food Web	Food Web Assessment for the Great Blue Heron
Soil	N	Local Wildlife	N	Exposure to Soil COPECs via Prey Species and Incidental Ingestion	Protection of Local Wildlife Species from Toxic Effects due to Exposure to Soil COPECs Through the Food Web	1. Food Web Assessment for the American robin. 2. Food Web Assessment for the Meadow Vole 3. Food Web Assessment for the Short-Tailed Shrew

Conclusions of the ERA

Based on toxicity tests performed on surface water and sediment samples from the Upper and Lower Simmon Reservoirs, on AVS and SEM analyses performed for sediment, and on qualitative surveys of the biota in the reservoirs, this ERA demonstrates that there are no significant risks to aquatic biota including fish, planktonic and epiphytic organisms, and benthic

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organisms. Also, there are no significant indirect impacts to fish and wildlife, which depend on those aquatic species for food.

The hazardous substances that migrated from the Site do not appear to pose a significant risk of harm to herons or to other wildlife that may be exposed to hazardous substances in surface water, sediment, or prey items through food web modeling. This is based on the relatively low Toxicity Quotients (TQs) in combination with the distribution of the hazardous substances relative to potential migration pathways from the Site, and the conservative uncertainty inherent in the food web assessment.

Food web assessments for the American robin, meadow vole, and short-tailed shrew ruled out the potential for significant risks to wildlife that feed within the wooded areas surrounding the active portions of the landfill property. The hazardous substances that may have migrated from the Site to surrounding wooded areas do not pose a significant risk of harm to meadow voles, robins, shrews, or species with similar feeding habits. This is based on the relatively low TQs in combination with the distribution of hazardous substances relative to potential migration pathways from the Site, COPECs detected at concentrations that are comparable to typical concentrations for soil in Massachusetts and the eastern United States, and the conservative uncertainty inherent in the food web assessment.

Existing condition EPCs are comparable to, or greater than estimated future condition concentrations of COPECs in the Upper Simmon Reservoir so the results of the measurement endpoints evaluated for existing conditions can be extrapolated to future conditions. Based on these extrapolations, there is not a significant risk of harm to ecological receptors under future conditions from migration of groundwater hazardous substances to the Upper Simmon Reservoir.

The potential for adverse effects from Site-related hazardous substances is much greater in water bodies within the Central Landfill Drainage Area (See Figure 3 - Upper Simmon Reservoir, Cedar Swamp Brook) as compared to the Almy Reservoir, which receives a relatively minor (less than 2%) contribution of landfill-derived groundwater. Since the risk assessment results indicated that there are no significant risks in the Central Landfill Drainage Area, a significant risk of harm to receptors in the Almy Reservoir under current or future conditions from the migration of Site-related hazardous substances is not expected.

Uncertainty

As with the HHRA, there are several uncertainties inherent in the data collected and the evaluations performed for an ERA. The uncertainties are associated with the following areas of the ERA:

- Chemical Data
- Toxicity Tests
- Qualitative Biological Surveys
- Food Web Evaluations
- AVS and SEM Analyses

The uncertainties may contribute to a conservative assessment (i.e., increase the chance of indicating a significant risk when risk is actually low). Many of the uncertainties in this ERA tended to make the risk assessment more conservative. However, some of the uncertainties may have underestimated risk while the effects of other uncertainties is not known. For example, because background concentrations of metals were used to screen out hazardous substances from

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being COPECs, background risks, which contribute to the overall risks were not taken into account. Conversely, because only a small number of background samples were collected, it is possible that some hazardous substances that were carried through the ERA were not Site-related. A more complete discussion of these uncertainties is included in the Section 9 of the RI.

Conclusions of the OU2 Baseline Risk Assessment

Because the baseline risk assessments revealed no unacceptable human health or ecological risks related to the Site, no further remedial actions other than those currently required by the OU1 Source Control Record of Decision are necessary.

DOCUMENTATION OF NO SIGNIFICANT CHANGES

EPA presented a Proposed Plan for remediation of the Site on August 14, 2001 that proposed that no further remedial action was necessary to address off-Site human health and ecological risks in groundwater (beyond the 612-acre Facility), surface water, soils, and sediments. EPA reviewed all written and verbal comments submitted during the public comment period. It was determined that no significant changes to the remedy, as originally identified in the Proposed Plan, were necessary.

STATE ROLE

The Rhode Island Department of Environmental Management has reviewed the Remedial Investigation, and Baseline Risk Assessments for Central Landfill Superfund Site (OU2) to determine if the decision to take no further remedial action is consistent with all federal and state standards. The Rhode Island Department of Environmental Management concurred with the Record of Decision for the Central Landfill Superfund Site (OU2) in a letter (dated October 22, 2001). A copy of the letter of concurrence is attached as Appendix A.

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Part 3: The Responsiveness Summary

PART 3: THE RESPONSIVENESS SUMMARY

Responsiveness Summary

**Central Landfill
Johnston, Rhode Island
Operable Unit 2**

September 26, 2002

Central Landfill, Johnston, Rhode Island Operable Unit 2 Responsiveness Summary

A. OVERVIEW

The Central Landfill Superfund Site is defined as a 154 acre licensed landfill located in the central portion of a 612-acre parcel in Johnston Rhode Island. The Central Landfill Superfund Site is comprised of two operable units. The Regional Administrator signed the Record of Decision (ROD) for Operable Unit 1 (OU1) on June 17, 1994. The OU1 ROD selected a source control remedy designed to prevent or minimize the continued release of hazardous substances to the environment. In summary, the OU1 source control remedy requires the following components: capping a 121 acre portion of the 154 acre landfill also known as the Phase I area; hydraulic containment and treatment of contaminated groundwater from a hot spot area located within the 121 acre Phase I area; deed restrictions on groundwater and land use; evaluating the existing landfill gas collection and combustion system; long-term environmental monitoring; and preventing access.

Operable Unit 2 (OU2) investigated the impacts to off-Site areas (1,333 acres surrounding the site - see Figure 1) that were not completely addressed by the OU1 investigations including surface water, soils and sediments. The OU2 investigations also included groundwater but only in areas beyond the boundaries of the 612- acre parcel. At the time of the public comment period for OU2, construction of the capping component of the OU1 cleanup plan had already started. After reviewing groundwater, soil, and sediment data collected as part of the OU 2 studies, EPA concluded that no further actions beyond those required by the OU1 source control Record Of Decision were necessary to protect public health and the environment.

Comments received during the comment period (August 14, 2001 through September 21, 2001) for this ROD indicate that the public is extremely upset about ongoing operations at the Central Landfill and very skeptical about the conclusions and no-further-action recommendation in the OU2 Proposed Plan. EPA received no comments from the public that supported its preferred no-further-action alternative. People who commented on the ROD, in general, disbelieved the groundwater data produced by GZA, wanted some form of independent data collection, and felt there were problems with EPA's handling of public involvement. Many public comments claimed that health problems in the area are attributable to the past or ongoing operation of the landfill. The Rhode Island DEM has concurred with EPA's no-further-action recommendation.

These sections follow:

- Background on Community Involvement
- Summary of Comments Received During the Public Comment Period and EPA Responses
 - o Part I: Summary and Response to Local Community Concerns
 - o Part II: Detailed Responses to Specific Legal and Technical Questions
- Remaining Concerns
- Attachments: CLF Public Hearing Transcript, August 30, 2001, comment letters.

B. BACKGROUND ON COMMUNITY INVOLVEMENT

Throughout the Site's history, community concern and involvement, has been high. The community's concerns have revolved primarily around continued landfilling operations at the Central Landfill and the associated truck traffic and odors. There has also been community concern over the possibility that contaminated groundwater from the Central Landfill Superfund Site is migrating to the Scituate Reservoir. EPA has kept the community and other interested parties apprised of the Site activities through informational meetings, fact sheets, press releases and public meetings.

In February 1994, EPA made the administrative record for OU1 available for public review at EPA's offices in Boston and at the Marion J. Mohr Library in Johnston, Rhode Island. EPA published a notice and brief analysis of the OU1 Proposed Plan in the Providence Journal on February 8, 1994 and made the plan available to the public at the Marion J. Mohr Library.

In September 1993 EPA issued a fact sheet, which summarized the results of the OU1 Remedial Investigation. On February 22, 1994, EPA held an informational public meeting to discuss the results of the OU1 Remedial Investigation and the cleanup alternatives presented in the OU1 Feasibility Study Report and to present the Agency's OU1 Proposed Plan. Also during this meeting, the Agency answered questions from the public. From February 13 to March 14, 1994, the Agency held a 30-day comment period to accept public comment on the alternatives presented in the OU1 Feasibility Study and the OU1 Proposed Plan and on any other documents previously released to the public. On February 28, 1994, the Agency held a formal public hearing to discuss the OU1 Proposed Plan and to accept any oral comments.

Many of the comments received from the community for the OU1 Proposed Plan raised serious objections to EPA allowing RIRRC to continue landfilling operations in the Phase II and III areas. There was concern that a delay in closing the Phase I area caused by the Phase II and III operations would allow for infiltration of precipitation through any uncapped areas of Phase I resulting in continued leachate generation. Many people who commented felt that closing Central Landfill should have been a component of EPA's preferred alternative. There were also some objections to not excavating the chemical sludge in the hot spot area and not including southern perimeter groundwater collection and treatment in the preferred alternative.

C. SUMMARY OF COMMENTS RECEIVED DURING THE PUBLIC COMMENT PERIOD AND EPA RESPONSES

The public comment period on the proposed plan for OU2 at the Central Landfill Site was held from August 14, 2001 to September 21, 2001 (this includes a one-week extension of the comment period requested at the public hearing). Comments received during this time are summarized below. Part I of this section addresses those community concerns and comments that are non-technical in nature. Responses to specific legal and technical comments are provided in Part II. Comments in each part are categorized by topic.

Part I B Summary and Response to Local Community Concerns

Quality of the Remedial Investigation

1) At the public hearing, in letters, and in e-mails, several residents voiced strong concerns about the fact that GZA, Inc. performed the Remedial Investigation (RI) for OU2. Residents strongly doubted the data and conclusions in the RI, and did not believe that any contractor hired by RIRRC could produce an objective Remedial Investigation. An attorney representing two residents said that the level of public concern at this Site should have precluded the use of a

contractor hired and paid for by RIRRC.

EPA Response: EPA recognizes that the recommendations in the OU 2 Proposed Plan must be based on high-quality, verifiable information from the OU 2 RI. To ensure its quality, EPA closely monitored data gathering and analysis for the OU2 RI. Under CERCLA, EPA has the authority to oversee the implementation of a RI prepared by a party that is liable for the costs of remediating a contaminated Site. Generally, when there is a cooperative Potentially Responsible Party available, and EPA determines that the action will be done promptly and properly, EPA allows the PRP to perform the work for the remedial investigation and feasibility study under the supervision of the EPA. For the Central Landfill OU2 RI, EPA made this determination as to RIRRC. RIRRC then submitted GZA as its contractor. EPA checked to see if GZA is debarred. EPA also reviewed, revised, and approved the work plan that was used to develop the RI. EPA and its independent environmental oversight contractor, Tetra Tech NUS, Inc. (TTNUS) reviewed, revised, and approved the locations of all groundwater monitoring wells and sampling locations. Monitoring wells and sampling locations were added when EPA felt that more data was needed to accurately characterize local environmental conditions. EPA and its oversight contractor also monitored the actual construction of the monitoring wells.

EPA or EPA's contractors carefully reviewed all of GZA's data. When critical groundwater, sediment, or surface water samples were taken, EPA or its independent contractor was present during fieldwork to collect a split sample. A split sample is simply collecting a second sample at the same time and under the same conditions as the primary sample. The split sample is then sent to a laboratory, different from the primary sample, to be analyzed using EPA approved analytical procedures.

Split samples of sediment, surface water, and groundwater were collected between December 1995 and February 1996 during a portion of the OU2 RI field activities performed by GZA. Surface water and sediment samples were collected from the Lower and Upper Simmons Reservoir, the Almy Reservoir, Cedar Swamp Brook and Sedimentation Pond No. 2, while groundwater samples were collected from 24 monitoring wells and ten residential wells. A comparison of the results indicated that the TTNUS, EPA's contractor and GZA results are generally in agreement. Because it engaged in aggressive oversight of GZA's work, EPA is confident that the Remedial Investigation for OU2 accurately reflects the environmental conditions. Copies of comparison tables are included at the end of this responsiveness summary.

2) One commenter asked, what GZA's qualifications are, when was it hired by RIRRC, how was it selected, and how much was it paid.

EPA's Response: GZA GeoEnvironmental, Inc. (GZA) is a multi-disciplinary environmental, hydrogeologic, remediation, and geotechnical consulting company. GZA has worked at more than 49 National Priority List Sites, including five in Rhode Island. GZA has a staff of approximately 500 people that includes groundwater, environmental, chemical, civil, geotechnical, and mechanical engineers; hydrogeologists, geologists, toxicologists, biologists, industrial hygienists; and other technical professionals. GZA is headquartered in Norwood, Massachusetts, and has branch offices in ten other states, including Providence, Rhode Island. GZA is licensed to provide services in Rhode Island. GZA was first retained as a geohydrological consultant to Wehren Engineering in 1984, as a result of a competitive bidding process, for design work at the landfill. In 1986 when the Central Landfill was listed on the NPL, GZA was chosen in a competitive bidding process by RIRRC to develop the OU1-Remedial Investigation and Feasibility Study. Both EPA and the citizen's group, WATER, had discussions with RIRRC during the selection process, but ultimately RIRRC was responsible for the final selection of the Remedial Investigation contractor. EPA does not have any direct information about how much RIRRC paid GZA; this information should be requested from RIRRC.

3) Several residents at the public hearing and in letters suggested that EPA must perform an independent data gathering and analysis instead of accepting the RI performed by GZA. Other residents asked if EPA would give grants to citizens to conduct independent testing through local universities.

EPA's Response: As noted in response to comment 1 above, EPA is confident in the accuracy of the OU2 RI because of its aggressive oversight program and feels that additional RI data gathering is unnecessary. There are no grants available for sampling analysis.

Public Health

4) Many residents at the public hearing felt that health or medical studies of residents near the landfill were necessary. Several felt that health risks from the Site in general were inadequately studied. One person recommended that the Rhode Island Medical Society or the American Medical Association be asked to conduct the studies. Several comments identified specific people with respiratory problems, cancers, diabetes, or other diseases that the commenters believed were attributable to the landfill.

EPA's Response: The OU2 RI examined contamination in groundwater, surface water, sediments, and soils attributable to the Central Landfill Superfund Site. The OU2 RI risk assessment did not find levels of Site-related contamination that would pose a threat to public health or the environment. Because of this finding, it is very unlikely that local health problems are attributable to Central Landfill Superfund-Site-related contaminants. RIDEM has concurred with the OU1 and OU2 RODs. The Agency for Toxic Substances and Disease Registry (ATSDR), and / or the Rhode Island Department of Health should be contacted for additional information regarding neighborhood-specific health concerns or local health studies that have or maybe conducted in the future.

5) A resident who lives on Apple Tree Lane and who fills his swimming pool with well water wondered if swimming in that water would have any adverse health effects.

EPA's Response: EPA has concluded that this area is not affected by Site-related contamination from the Central Landfill Superfund Site; however, other sources of contamination may exist in the area that are not related to Central Landfill.

6) One resident wanted to know if there could be possible cumulative effects from drinking water near the Site even though all the chemicals found in the water are below MCLs (as stated in the Proposed Plan on page 3).

EPA's Response: The Proposed Plan indicates detectable concentrations of site contaminants found beyond the landfill and within the Upper Simmons Reservoir; however, all detections are below the State and Federal Standards for drinking water otherwise known as Maximum Contaminant Levels (MCLs) except for beryllium and manganese. See Section of the ROD entitled "Quantitative Non-Cancer and Cancer Risk Estimates" for further explanation. It must be stressed that this statement refers to contaminants attributable to the OU1 Superfund site.

The Central Landfill OU2 human health risk assessment used risk-based screening criteria that take into account the possibility of multiple contaminants. Twenty-three contaminants exceeded the screening criteria at least once among the 26-groundwater wells screened in the human health risk assessment. Following this screening step, wells that were being used as a drinking water source at the time were identified and the flow path of groundwater from the landfill was studied. One well was identified as being both actively used for drinking water and being in the flow path

of groundwater beneath the Superfund portion of the landfill. Risks from contaminants detected above screening criteria in that well were calculated. These risks were totaled to estimate "cumulative" risk from multiple contaminants. The total cumulative non-cancer hazard index was below EPA's acceptable risk limit. The total cumulative cancer risk was within EPA's acceptable risk range of 1×10^{-4} to 1×10^{-6} excess cancer risks under high-end conditions.

7) A commenter ask if seagulls could transfer any of the hazardous contaminants found in the landfill to other areas where they would affect people's health.

EPA's Response: No. The hazardous substances that was the subject of all of EPA's studies at the Central Landfill Site are covered and not accessible to seagulls.

8) One person said that a resident who lives on the Almy Reservoir outlet stream was afraid to swim in the stream because of landfill contamination.

EPA's Response: The data in the RI show no measurable contamination from the Central Landfill Superfund Site in the Almy Reservoir. If there are any problems with the water in this stream, they are not caused by contaminants from the Central Landfill Superfund Site.

9) One resident on Central Avenue noted that she and her husband have a vegetable garden that they water from a well. She asked if they should be concerned about their health.

EPA's Response: The OU2 RI found that there were no Site-related contaminants in groundwater flowing off the Central Landfill Superfund Site at levels above safe drinking water standards except for beryllium and manganese. See Section of the ROD entitled "Quantitative Non-Cancer and Cancer Risk Estimates" for further explanation. The majority of the groundwater from the Site flows in a southeasterly direction. There are, however, other sources of groundwater contamination in the area that are not related to Central Landfill. If there are continued concerns about such watering practices, gardeners should have their well water and soil tested, or should use municipal water for watering their plants.

10) One commenter indicated that the OU2 RI appears to advise the public that fishing, swimming, and other recreational activities in the OU2 area do not pose unacceptable human health risks, but this is contrary to the experience of neighbors who live with the polluted waters of the Almy and Simmons Lake Reservoirs.

EPA's Response: The OU2 RI risk assessment is very careful to note that people engaged in fishing, swimming, other recreational activities face no excess risks from Superfund Site-related contaminants. This is not an endorsement of the safety of these water bodies. It is instead a scientifically supported conclusion that these lakes are not significantly affected by contamination from the Central Landfill Superfund Site. There may be many other sources of pollution or contamination that affect the quality of these water bodies. The Rhode Island DEM (RIDEM), not EPA, determines the overall suitability of Rhode Island water bodies for fishing, swimming, and other activities.

Illegal activities related to the landfill

11) Several commenters made reference to past illegal dumping at the landfill. People at the public hearing referred to hundreds of tanker trucks going to the Site during the 60s and 70s. Some people claimed that as much as 40 million gallons of hazardous waste was dumped there. The Gambino crime family was mentioned during the public hearing as one possible source of illegal hazardous waste.

EPA's Response: These allegations are not relevant to the RI or proposed plan which address the potential for migration of hazardous substances from the Site. All costs of investigating and remediating hazardous substances at the Site, whatever their source, are being borne by the RIRRC; therefore EPA has no reason to investigate allegations of illegal waste disposal decades ago.

12) Several commenters suggested that past and current activities at the landfill are being affected by graft, payoffs, land transaction irregularities, and other illegal activities. In particular one comment letter suggested that a RI state representative and the Mayor of Johnston benefited from close connections to RIRRC, and sold property within the landfill buffer zone to RIRRC at a value that suggested the land would be used for future commercial development.

EPA's Response: These allegations are not relevant to the OU2 RI or proposed plan which address the potential for migration of hazardous substances from the site. EPA is unaware of any graft, land transfers, or other illegal payments related to this Superfund Site.

13) A commenter stated that nobody knows all the different chemicals that went into the ground when the illegal dumping was occurring.

EPA's Response: EPA has developed sufficient data from sampling and analysis to know what contaminants are to be found in the soil and groundwater of the Site. EPA's data on the contamination is located in the RI for OU1 and RI of OU2.

Alternative Solutions

14) Several people suggested that EPA's proposed no-further-action alternative was insufficient. They proposed that EPA should close the dump, buy out existing nearby residents, and/or work directly with residents to develop a new remedial plan.

EPA's Response: Based on the conclusions of the OU2 RI, the data does not warrant the closing of the Central Landfill. Risk assessments conducted during these studies did not indicate that the Superfund portion of the landfill presented a significant human health or ecological risk in areas beyond the facility for groundwater and within the facility for surface water and sediment. Because EPA is confident of these conclusions, a new remedial plan is not necessary. The landfill is licensed by the state of Rhode Island, not EPA, and citizen concerns about ongoing operations should be shared with state regulators.

Costs

15) A commenter asked how much the OU2 RI cost and who paid for it.

EPA's Response: The OU2 RI was paid for by RIRRC including oversight costs born by EPA. RIRRC has not provided its own cost to EPA. EPA has not yet calculated all of EPA and the state's oversight costs. These costs, when calculated, are reimbursable by the RIRRC.

16) A commenter asked how much did EPA spend on the public hearing.

EPA's Response: EPA sent four full-time personnel and four employees from Tetratech NUS (TTNUS) to attend the public hearing. EPA has not yet calculated the exact cost of the public hearing. The costs, when calculated, are reimbursable by the RIRRC.

Environmental Justice

17) Several commenters cited the study *Unequal Exposure to Ecological Hazards* by Daniel Faber and Eric Krieg. They noted that the burden of living near an operating landfill and Superfund Site constituted an environmental injustice for the residents in the area.

EPA's Response: EPA recognizes that environmental burdens are unequally distributed, and that residents near the Central Landfill may face many different potential sources of environmental harm. The OU2 RI, however, shows that nearby residents face no additional environmental burden from the Superfund Site-related contaminants found at the Central Landfill Site. Environmental Justice concerns should be directed to Kathy Castagna EPA's Environmental Justice Coordinator at 617-918-1429.

Landfill Operations/Current Conditions

18) A commenter indicated that RIRRC promised a 2,000-foot buffer zone in deeds. They also indicated that this buffer zone has been violated, and RIRRC is selling it to private investors and developers, but the RI treats that zone as if it still existed.

EPA's Response: As a part of OU1, RIRRC has filed a restrictive covenant on land it owns at the Facility, which prohibits the use of groundwater wells on their property. In addition, the town of Johnston is in the process of adopting an ordinance, which controls the use of groundwater wells. The human health risk assessment evaluated risks without regard to the buffer zone, but rather based on existing and possible exposures. Sediment and surface water exposures are unaffected by property ownership. The contaminated soil exposure scenario evaluated in the risk assessment assumed that trespassers could be exposed while visiting landfill areas. Should those areas be sold for commercial or residential use, a new risk evaluation might be appropriate if soil contamination exists in those areas. Groundwater exposure risks were evaluated at the one identified well within the groundwater flow path that was at the time being used as a drinking water source. It is no longer being used as a drinking water source. The control of groundwater use has been accomplished by deed restrictions and a soon to be adopted local ordinances prohibiting the use of groundwater. The use of groundwater in this area could potentially alter the groundwater flow directions resulting in a change in the distribution of groundwater contaminants. The OU1 remedy incorporates a groundwater monitoring program and a review of the site every 5 years to ensure the remedy remains protective of human health and the environment.

19) A commenter indicated that the landfill is still accepting waste with hazardous components (e.g., it accepted 58,000 cubic yards of solid waste contaminated with metals, organic chemicals, PCBs, oils, and elevated levels of lead from New England Ecological Development, Inc. (NEED) recycling). They also stated that someone should inspect incoming trucks and the landfill should not accept any more hazardous material.

EPA's Response: The landfill is not licensed to accept hazardous waste. It is only licensed to accept solid waste. Specific violations should be reported to RIDEM or EPA.

20) Several commenters complained about the power of RIRRC in the Town of Johnston.

These complaints included comments about recent legislation that allows RIRRC to override local zoning, efforts by RIRRC to develop in its buffer zone, concerns that RIRRC has violated EPA and RIDEM rules many times and concerns that RIRRC had been operating and expanding the landfill without a basic operating expansion permit since 1991.

EPA's Response: EPA is aware of the landfill expansion pursuant to a permit issued by RIDEM. The permit allows RIRRC to expand to accept solid waste. The OU1 remedy was designed to remain protective as the landfill expanded.

21) One commenter stated that RIRRC has plans to develop an industrial park on its property and that this development will include blasting. The commenter asked if EPA will restrict blasting near the Superfund Site because of the possible ramifications.

EPA's Response: EPA is concerned with blasting if it will cause a remedy to fail or lose its effectiveness. As part of the OU1, RIRRC filed a restrictive covenant which prohibits any land use on RIRRC's property that would disturb the remedy.

22) A commenter asked if the cap for OU1 has been completed. They also asked for the completion schedule for the construction of the OU1 landfill cap if it was not yet complete.

EPA's Response: The OU1 Cap is currently scheduled to be completed in 2006.

23) A commenter stated that an EPA report (RID980520183) indicated that the owner of the landfill complied with a State order in 1982 to close the areas that have received hazardous waste; these areas were excavated, backfilled and capped then re-vegetated. This commenter asked for the specific location of this work.

EPA's Response: An area designated as hazardous waste disposal area 1 (HWDA1) was believed to be the location of the Hot Spot in the early 1980s. This was not confirmed to be true. The actual hot spot area (HWDA2) was located approximately 400 feet southeast of the HWDA1. HWDA1 was located in the vicinity of monitoring well WE87-1 as shown on Figure 2-1 of the OU1 RI Report. The both areas were capped in 1999 as part of the landfill capping required by the OU1 ROD.

24) A commenter stated that the RI should be accurate about the existing size of the landfill and of RIRRC's land ownership. They also indicated RI calls the landfill a "630-acre parcel" and felt that this was inaccurate. They asked about the amount of land that RIRRC owns and suggested that this makes the RI outdated.

EPA's Response: EPA agrees that this is confusing and has added definitions at the beginning of the ROD to clarify any misunderstanding. They are as follows:

The Central Landfill Superfund Site, (the "Site"): The 154 acre licensed landfill (incorporating Phases 1, 2, and 3) located in the central portion of a 612-acre parcel in Johnston Rhode Island.

Phase 1 area: 121-acre unlined portion of the Site.

Phase 2 and 3 areas: 33-acre expansion area of the Site.

Facility: 612-acre contiguous area owned by RIRRC that includes the Site.

OU2 Study Area: 1,333-acre area that surrounds, but does not include the Site.

The 630-acre area represents the licensed landfills, operations area, and the surrounding gravel borrow areas. The landfill facility is composed of several parcels all of which are contiguous to each other. RIRRC now owns additional properties within Johnston and Cranston. These properties are either not used for solid waste management operations and/or are not contiguous with the landfill facility (e.g., the 2550 Plainfield Pike Recycling Facility). As such, they are not included in the description or acreage estimate of the facility.

Timing

25) A commenter asked about the timing of the release of the Proposed Plan and its proponent.

EPA's Response: EPA's Proposed Plan was released when the RI was completed and it was prepared by EPA. Based on the results of the baseline risk assessment (included in the OU2 RI), no threat to public health or the environment was identified from Site-related contamination. Therefore, the next step in the remedy selection process is the issuance of a proposed plan, which recommends EPA's preferred alternative for public comment.

26) A commenter indicated that the data used in the RI is old, most of it from 1996 to 1997. The commenter also asked as to the reasons for not obtaining more data after 1997. The landfill doesn't look like it did back then. The commenter also asked for the reasons why has it taken so long to accomplish this study and the capping of the landfill.

EPA's Response: EPA found the data from 1996 and 1997 to be reliable, and subsequent monitoring results are consistent with this prior data. See Admin Record for Quality Assurance Project Plan. The data gathered since 1997 will be included in future monitoring reports as part of the OU1 activities. Generally the Superfund process takes considerable time and requires coordination between the Potentially Responsible Parties, State, Federal, and local officials to gather sufficient data to make an informed decision on the next step. The fact that the landfill has changed in appearance since 1997 or even since the first draft of the OU2 RI report was prepared does not impact the interpretations of the OU2 RI. The landfill is currently being capped as required in the OU1 ROD.

Air Contamination

27) Many people complained about the air quality around the landfill. Several suggested that odors and air contaminants from the landfill were responsible for health problems in the area.

EPA's Response: Because OU2 covers groundwater, surface water, sediments and fugitive dust only and OU2 contributes minimally to air contamination, this is not an OU2 issue. EPA does not have definitive medical proof that odor from landfill gas at Central Landfill is triggering significant adverse health impacts. ATSDR is presently conducting a health study designed to determine if there is evidence supporting a plausible causal link between odors and air contaminants and reported serious adverse health effects. EPA is aware of citizens' complaints about such adverse impacts, and EPA is undertaking all appropriate legal measures under the Clean Air Act to reduce the emission of landfill gas from the landfill, as described below.

EPA has initiated formal enforcement actions against RIRRC to address violations of the Clean Air Act. These violations relate primarily to collection and control of landfill gas. Based on evidence contained in the Rhode Island Department of Environment Management's records, the

gas emitted from the landfill appears to be at least one source of odor problems in the neighborhood around the landfill. These Clean Air Act enforcement actions are designed to ensure that RIRRC collects and controls landfill gas in compliance with all laws that EPA has the authority to enforce. Thus far, EPA has issued two administrative compliance orders and a notice of violation as preliminary steps in the overall enforcement process. The enforcement process has not yet been concluded. EPA's goal is to obtain, by the end of the enforcement process, the collection and control of as much landfill gas as possible and, in so doing, reduce the impact that any landfill gas may be having on the residents living near the landfill.

28) A commenter indicated that if the "Hot Spot" identified in the OU2 RI is connected to the gas ventilation system at the landfill, then some of the air contamination released along with other landfill gases is coming from that part of the Superfund Site.

EPA's Response: Although this comment is not directly related to OU2, EPA can provide some information to the commenter. The Hot Spot is located on the eastern-central flank of the Phase I Landfill. The vast majority of observed odors and measured surface methane emissions were from the western, southwestern and northwestern slopes of the Phase II and III Landfills. A landfill gas collection system was installed in the Hot Spot area in August of 1995. Since that time landfill gas has been collected and burned in on-Site flares or used in the engines of the electrical generating facility, both of which have a minimum contaminant destruction efficiency of 98%. In 1998 RIRRC commenced construction of a multi-layer plastic cap over the 121-acre Phase I Landfill. Capping of the Hot Spot and surrounding area was completed in 1999 further improving the landfill gas collection efficiency in that area. Based on this information, EPA believes that landfill gas generated in the Hot Spot is not contributing to surface emissions or off-Site odors.

Other Issues

29) Several people wanted to know why RIDEM and RIRRC were not present at the Public Hearing.

EPA's Response: Although RIDEM and RIRRC representatives were not at the front of the room, they were in attendance at the public hearing.

30) A commenter wanted to know the EPA's Project Manager (Byron Mah) role on this project for the past two years.

EPA's Response: Mr. Mah has provided technical oversight for the second operable unit of this project. He has been working on the completion of the RI, coordination with State, Federal, and local agencies, and elected officials. He prepared the proposed plan, the ROD, and this Responsiveness Summary.

31) A commenter asked as to why didn't EPA shut down the landfill when it was first brought to the agency's attention. The commenter further asked as to the reasons for locating the landfill where it is.

EPA's Response: Landfilling began at the Central Landfill facility in 1955. The majority of the liquid industrial/hazardous waste reportedly disposed took place in the 1970s and was already covered by septage waste and municipal solid waste at the time EPA became involved in the Site.

At that time the facility was being operated and licensed by the State as a sanitary solid waste disposal facility. Once involved, EPA began its site investigations which ultimately lead to listing the Site on the NPL in 1986.

32) A commenter asked about the differences between the OU2 proposed remedial plan versus the remedial plan indicated in the OU1 ROD.

EPA's Response: The current (OU2) proposed remedial plan does not change the requirements of the previous (OU1) ROD. Landfill capping, hydraulic containment and treatment, access restrictions, a detailed evaluation of the landfill gas collection and combustion systems, deed restrictions on area groundwater use and long-term groundwater, surface water, and air monitoring are still required. The majority of these actions are either ongoing (e.g., capping and long-term environmental monitoring), in the engineering design/study phase (e.g., hydraulic containment, and detailed evaluation of the landfill gas collection/combustion systems), or have been completed (e.g., deed restrictions). All are progressing in accordance with the schedules identified in the Consent Decree.

33) A commenter stated that RIDEM issued a violation to Solid Waste Management (the precursor to RIRRC) back in 1983 for violating the Fresh Water Wetlands Act. The remedy was to build a cap and discharge treated ground water into on-Site surface water or the Cranston Waste Water treatment plant. The commenter believes there was no sewer line into Cranston until the year 2000-2001.

EPA's Response: Although there have been a number of wetlands violations at the Central Landfill in the past, these violations have been addressed through restoration and/or replication of impacted wetlands. The state issued an order in February 1981 to close the hazardous waste disposal area, but as explained in the ROD, the area capped was incorrectly identified. Subsequently, the OU1 remedy required capping the landfill, pumping and treating the groundwater, and groundwater discharge. The RIRRC facility was connected to the Cranston POTW in the early 1990s when the first leachate pretreatment plant was constructed. No additional connections for the landfill were made in the past two years.

Part II B Detailed Responses to Specific Legal and Technical Questions

Geology/Groundwater

34) One commenter indicated that The Geology Profile in the handout shows the wells drilled into the bedrock. The commenter also indicated that it appears that the wells get shallower as one head's west towards the Scituate Reservoir and deeper as one heads towards the Simmons Reservoir. They also stated that the Profile does not indicate where the trenches were excavated into the bedrock for the toxins as per EPA Site description RID980520183. The place was a gravel pit long before it was a dumping Site. They asked about the depth of the Site. They indicated that the Profile shows the hot spot in the landfill, but the EPA Site description doesn't show the same thing.

EPA's Response: A number of deep and shallow wells have been drilled around the circumference of the facility. In general, drilling depths for "shallow bedrock" wells were selected to penetrate a minimum of 30 feet into bedrock, conditions permitting. Drilling depths for the 10 "deep bedrock" wells (i.e., WE87-ML1 through BML5, MW91-ML6 through -ML-8, MW95-ML9 and MW97-ML10) were selected to penetrate to a specified elevation: elevation

150 above mean sea level (MSL) was selected for wells ML-1 to ML-5; ML-6 and ML-7 were to penetrate to elevations 200 and 100 MSL, respectively; and elevation 0 MSL was selected for wells ML-8 through ML-10. This resulted in drilling depths ranging from 155 feet below ground surface to 310.5 feet below ground surface depending on the ground surface elevation at the borehole location. Borehole WE87-ML3 is 275 feet deep, contains 5 monitoring wells and was drilled into Lineament No. 2. This lineament (potential bedrock fracture) was mapped by URI professors as running from the Central Landfill to the Scituate Reservoir. Quarterly testing of water at this location has not shown any landfill-derived contamination. Borehole MW95-ML9 is the deepest well at the facility and penetrates to 310.5 feet. This well was drilled in what has been identified as the center of the contaminant plume migrating from the Hot Spot. Shallow monitoring wells (e.g., less than 100 feet deep) in this area have shown significant landfill derived contamination while the deeper bedrock zones (>100 to 310 feet deep) have not. More deep wells were drilled between the landfill and the Cedar Swamp Brook/Upper Simmons Reservoir as the study progressed because earlier drilling and testing identified this area as the primary point of groundwater and contaminant movement. The approximately 1/2-acre Hot Spot is located within the licensed limits of the landfill along the eastern-central boundary of the Phase I Landfill. This location is shown on Figure 2-1 of the OU2 Remedial Investigation Report (OU2 RI Report). Additional details on conditions within the Hot Spot are provided in Section 6.32.3 of the March 1993 OU1 Remedial Investigation Report (OU1 RI Report). As shown on Figure 6-5 of the OU1 RI Report, the Hot Spot has been identified as running from elevation 370 in the northwest down to elevation 362 in the southeast.

35) Several commenters claimed that the original gravel pit on the Central Landfill Site had a depth of as much as 618 feet below sea level. This depth would be far below the deepest monitoring well used in the analysis of OU2. Others noted that there was more than one deep "hole" at the original Site into which hazardous wastes could have been dumped. The commenters asked as to how does EPA know that contamination from the Site is not in deep (below 600 foot) groundwater.

EPA's Response: The comment that the original gravel pit at Central Landfill was excavated to an elevation of 618 feet below sea level cannot be supported by any of the data gathered during either the OU1 or OU2 Remedial Investigations. The top of bedrock was encountered at varying elevations depending on the location of the well, refer to Table 4-1. However, in general, the top of bedrock within the landfill area is between elevation 400 and 300 feet above sea level.

The groundwater data collected at the Site indicates that groundwater from both sides of Cedar Swamp Brook and the Upper Simmons Reservoir flow into these surface water bodies. Vertical ground water flow under the landfill was discussed in the OU1 RI Section 7.41.2. This section of the OU1 RI and the ground water flow nets presented on Figures 7-5, 7-6, and 7-7 indicate that ground water at the Landfill flows downward and then moves toward the Cedar Swamp Brook. This general flow pattern is supported by the ground water elevations observed in monitoring wells installed under the landfill and adjacent to the brook. This evidence is documented in the OU1 RI and found in subsequent monitoring of wells installed through the landfill from 1987 to 1997.

The ground water elevations are higher under the landfill and lower in the wells located adjacent to the brook. This distribution of ground water elevations indicates that the ground water from the landfill flows toward the brook. The data on the figures also indicates that under the landfill the ground water flows downward, as indicated by lower ground water elevations observed in the deeper wells compared to the shallow wells. Further review of these figures indicates that the ground water adjacent to the brook flows upward as indicated by higher ground water elevations in the deep wells compared to the shallow wells next to the brook. Finally the ground water

elevations in the monitoring wells next to the brook are lower than the elevations in the wells under the landfill. This distribution of ground water elevations indicates that both the shallow and deep ground water under the landfill flows toward the brook. Therefore, any contaminant that may be located in the deep ground water under the landfill, even below the existing wells, will flow toward the brook and upward into the brook. If contaminants were present below the landfill and a depth below the existing wells then these contaminants would be detected in the deep monitoring wells located adjacent to the brook.

Based on the available data the ground water quality in the deep monitoring wells located adjacent to the brook is the result of ground water quality in the deep ground water under the landfill. As an example, a review of the data for the well cluster M95, (MLA, MLB and MLC) and MW95-53 located adjacent to the brook, is presented below.

OU2 RI Table 4-1, Summary of Drilling and Well Installation Details, indicates that MW95 MLA is a shallow well in this cluster and MW95 MLC is the deep well in the cluster. Monitoring well MW95-53 is the shallowest well at this location. Table 5-1, Summary of Groundwater Elevations B OU2 Task 3A Piezometric Measurements, page 4 of 9, indicates that the highest ground water elevation was observed in the deepest monitoring well, MW95 MLC, 304 feet. The lowest ground water elevation was observed in MW95-53, elevation 299.3 feet. As stated previously this data indicates that the ground water at depth is flowing upward and into the brook. Table 6-8, OU2 RI/FS B CLP Volatile Organic Results B Groundwater Samples, pages 9 and 10 of 18, indicates that chlorobenzene, a contaminant identified at the hot spot in the landfill, was not detected in the deep wells in MW95 MLA, MLB, and MLC. However, chlorobenzene was detected in the shallow well MW95-53 at a concentration of between 29 to 4 parts per billion.

This distribution of the contaminants and the ground water elevations indicates that the deep ground water under the landfill is not having an adverse impact on the water quality leaving the landfill.

36) Several commenters at the public hearing did not accept EPA's description of groundwater flow at the Site. Some felt that more groundwater from the landfill must be flowing towards Almy Reservoir, and cited Samuel J. Pollock's *Ground-water Map of the North Scituate Quadrangle, Rhode Island* (1960) which shows groundwater flow towards the reservoir. Others noted that wells on Reservoir Avenue seem to have the most contamination problems but, according to the RI, these wells are not affected by landfill leachate. One noted that extensive blasting at the Site has created fractures in the bedrock that could allow leachate to migrate in directions different from surface water flows.

EPA's Response: The groundwater flow directions presented in the RI are based on actual field data gathered during the investigations for both OU1 and OU2. Data from these investigations indicate that the bulk of the Central Landfill waste material is located in the Upper Simmons watershed and not in the Almy Reservoir watershed. The "hot spot" area, which appears to be the major source for groundwater contamination, is located in the Simmons reservoir watershed. The data used to investigate the Central Landfill for both the OU1 RI and OU2 RI was not available in 1960 when Samuel J. Pollock was preparing the ground water map of North Scituate. The groundwater flow directions presented in the OU2 RI are based on observed data gathered for the purpose of evaluating groundwater at the landfill. The water quality of the wells along Reservoir Avenue appears to be related to other sources. As noted in Section 3.11 of the OU2 RI Report, as many as 38 Sites of known or suspected environmental concern have been identified by the EPA and/or RIDEM in the neighborhoods surrounding the Central Landfill. The comment regarding the potential impacts to groundwater flow caused by blasting does not indicate when or where the blasting occurred. If the blasting occurred prior to or during the field investigation, any resulting

bedrock fractures would be revealed in the groundwater elevations and resulting groundwater flow directions measured in the OU2 RI. If the blasting mentioned in the comment is referring to the construction of the power plant then impacts to the bedrock at the Central Landfill are unlikely. The power plant Site is located about 3,200 feet from the landfill and blasting for the power plant is unlikely to have any significant effect on the bedrock at the landfill.

37) One commenter indicated that Simmonsville Brook (which is 30-feet wide) is as close to the landfill as it seems visually, it must be pumping water into the Superfund Site all day every day.

EPA's Response: The US Geological Survey topographic map that includes the Central Landfill Site does not show a Simmonsville Brook flowing past the landfill. According to these maps, the only brook that flows next to the landfill is named Cedar Swamp Brook and it flows into the Upper Simmons Reservoir. The groundwater elevations in monitoring wells adjacent to Cedar Swamp Brook and the surface water elevation indicate that groundwater flows into the brook and the brook does not discharge water into the landfill or the Superfund Site.

38) One commenter indicated that there was a landslide at the landfill. They wanted to know what effect would this have on the migration of contamination, and if it would change anything for EPA when these things happen.

EPA's Response: In August/September of 1999 there were a series of heavy rainfalls that resulted in significant erosion of a portion of the southeastern slope of the Phase I Landfill. This resulted in a deep gully between an area that had previously been capped and an area where cap construction was under way. Old refuse and several landfill gas transmission lines were exposed in the gully.

The landfill gas lines were inspected and found to be intact. However, the exposed trash may have temporarily contributed to a short-term increase in landfill gas emissions. RIRRC and the capping subcontractor (ENSR Construction, Inc.) responded to the situation immediately and the gully was filled, the gas pipes reburied and the slope regraded with sand and gravel cover within 2 weeks.

This short-term condition may have contributed temporarily to on-Site and off-Site odors; however, there is no evidence that it had any measurable effect on groundwater or off-Site surface water quality that would fall under the authority of the Superfund program.

39) One commenter asked if the landfill was close to the "Underground river" that he had been told comes through the area from the White Mountains.

EPA's Response: EPA has reviewed all available information about groundwater flow in the region. There are no "underground rivers" in the vicinity of the landfill.

40) One commenter noted that EPA's "profile" states that private wells are not impacted by the ground water from the Superfund Site. Yet the ATSDR toxin report of RID980520183 shows Lead, Tetrachloroethylene and Trichloroethylene in private wells.

EPA's Response: Groundwater contamination was identified in samples from a number of the private water supply wells on properties in the vicinity of Central Landfill. However, as noted in Section 3.11 of the OU2 RI Report, the EPA and/or DEM in the neighborhoods surrounding the

Central Landfill have identified as many as 38 other Sites of known or suspected environmental concern. The RI reviewed the suite of contaminants detected in each of the private wells and compared this to the suite of contaminants known to be present in groundwater contaminated by the landfill as well as contaminants known or suspected to be associated with the other contaminated Sites in the area.

On March 15, 1989, in a Preliminary Public Health Assessment ATSDR reported Lead, PCE, and TCE in private wells off-site. On August 7, 1992, "an Environmental Consultation – Review of Groundwater flow in the vicinity of Central Landfill, Providence County, RI" found contamination spread widely over the area bounded by the Scituate Reservoir, Hartford Avenue, I-295, and Plainfield Pike. 14 Sites on CERLIS are found in this area. The contamination in the private wells could not be assigned to any particular site, including Central Landfill.

The locations of the private wells were then compared to groundwater flow directions from the landfill and surrounding contaminated Sites. Based on this analysis it was determined that no existing private supply wells are being contaminated by groundwater coming from the Central Landfill Superfund Site.

Legal Issues with the Administrative Record and Public Involvement

41) A commenter indicated that EPA's Administrative Record omits correspondence, memorandum and other documents. Specifically there are no documents between 12/24/97 and the release of the OU2 RI in August 2001. Further, the Administrative Record does not explain the basis of "releasability" of the documents.

EPA's Response: The Administrative Record contains all public documents that were used in the process of making a remedy decision. EPA received the raw data necessary for the RI, a study critical to the remedy decision, by the end of December, 1997. From January, 1998 through July, 2001, EPA compiled that data and issued the RI in August, 2001. During 1998 through the first half of 2001, EPA kept the public apprised of the status of EPA's OU2 investigations through meetings with town officials, issuing a fact sheet and a Proposed Plan, and holding public meetings in each town surrounding the landfill.

42) A commenter indicated that EPA did not adequately involve the public in the development of the Administrative Record.

EPA's Response: Public involvement is achieved through the public comment period where the public is invited to review the administrative record documents and submit oral and written comments. EPA also holds informational public meetings and a formal public hearing. All comments, responses to comments, and the hearing transcript are contained in the administrative record for this site.

43) A commenter stated that an ATSDR health assessment is required for all Sites on the NPL, but the Administrative Record does not have an ATSDR health risk assessment for OU2.

EPA's Response: An ATSDR health assessment was conducted for the entire Central Landfill Superfund Site including groundwater, a subject of OU2. Copies of these documents may be obtained by calling ATSDR toll free at 1-888-422-8737 or by email at icatsdr@cdc.gov. This health assessment is included with the final Administrative Record.

44) A commenter indicated that prior to establishing a protocol to locate contamination from the Central Landfill, the residents of the area should have been consulted regarding the history of

the Site and the history of contamination of their private residential wells.

EPA's Response: Several extensive work plans were prepared to guide the Operable Unit 1 and Operable Unit 2 Remedial Investigations. Good faith efforts were made to gain relevant historical information. Numerous data sources were considered during the preparation of investigation work plans including: RIDEM complaint files and notice of violation files; Rhode Island Department of Health and EPA records documenting 8 years of sampling and analytical results (1980 through 1988) for more than 300 residential and public supply wells surrounding the landfill; and aerial and satellite photographs showing suspect disposal areas.

In addition the Site investigations included joint sampling programs at the Site with RIRRC representatives of the former neighborhood group (WATER) during which valuable information was exchanged concerning disposal practices and water quality. A residential well/water quality questionnaire was also sent to the 81 surrounding residents regarding private water supply wells and water quality testing results. A total of 19 responses were received.

Liability Issues/Deed Restrictions

45) A commenter indicated that EPA should modify the first paragraph of Section 11 of the OU2 RI to state that anyone who relies on the information contained in this report should have recourse for any injuries or harm that may result.

EPA's Response: Under CERCLA, EPA has the authority to oversee the implementation of an RI prepared by a party that is liable for the costs of remediating a contaminated Site and can require that the RI be done properly. Further, pursuant to CERCLA, EPA can independently verify the data and analyses presented in the RI. However, neither CERCLA nor any other statute gives EPA the authority to create a cause of action, in strict liability, negligence, or other ground, by which third parties that rely on a RI produced by a liable party can sue its authors and disseminators.

46) At least one commenter noted that they couldn't get homeowners insurance because they are within a hazardous waste area.

EPA's Response: Any residential homeowner who was informed by an insurer that he could not receive homeowner's insurance because of the insurer's concern that it might be held liable by EPA for contamination emanating from the Site should contact EPA.

47) A commenter indicated that EPA's proposed plan says that deed restrictions will be placed on groundwater use and development around the landfill. They wanted to know how do these restrictions fit with RIRRC's current plans to develop an industrial park in the area. They also asked if RIRRC will get EPA's permission for its industrial park. They also wanted to know if this use conflicts with the proposed deed restrictions.

EPA's Response: The Industrial park does not fall under EPA jurisdiction as long as it does not disrupt the Site remedy. Generally this means that the use of new or existing wells must comply with institutional controls from the first operable unit remedy.

48) One commenter noted that their original deed put their home within RIRRC's 2000-foot buffer area. They noted that this buffer area has now been eliminated by RIRRC, and they asked if EPA's deed restrictions could be as easily eliminated.

EPA's Response: Institutional controls are not easily eliminated. Deed restrictions in place as a result of OU1 extend to the land owned by RIRRC within the Facility. Groundwater use outside

the facility is subject to soon to be adopted Town of Johnston ordinance.

49) Several people noted that they had lived in the area for years before they found out about groundwater and other contamination. They wanted to know who has the responsibility to inform residents that they may have contaminated property or well water.

EPA's Response: EPA has notified property owners when it has found contaminated groundwater on their properties in the course of EPA's investigations for the OU1 and OU2 RIs. EPA believes that RIDEM and RIRRC have also informed property owners of contamination that the agencies found in property owners' soil or groundwater. Property owners still concerned that their land or groundwater might be contaminated should contact RIDEM, RIRRC, or local public health authorities to learn what responsibilities state and local agencies have to inform property owners of contamination.

0187-EPA-4711

Contract No. 68-W8-0117

August 6, 1996

Mr. John Courcier (HBO)
U.S. Environmental Protection Agency
J.F. Kennedy Federal Building
Boston, Massachusetts 02203

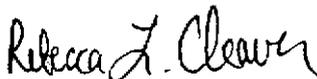
Subject: Split-Sampling Positive Detections Summary Tables, Operable Unit 2 RI,
Central Landfill, RI/FS Oversight, W.A. No. 40-1L71

Dear Mr. Courcier:

Halliburton NUS (HNUS) has prepared the enclosed memorandum and summary tables to present a comparison of all positive detections for split-samples which were collected during technical oversight activities conducted at Central Landfill in Johnston, Rhode Island as part of the OU2 Remedial Investigation. These split-sampling activities were conducted between December 1995 and February 1996, and included collection of surface water, sediment, and groundwater split-samples. A complete summary of associated field activities was previously submitted to you on April 15, 1996 (see "Trip Report: Technical Oversight and Split-Sampling"). The completed Tier II data validation memoranda which present the validated results for all HNUS split-sampling data were submitted to EPA in eleven memoranda dated between January 24 and April 12, 1996.

If you require additional information or have any questions regarding this transmittal, please contact me at (508) 658-7899.

Very truly yours,



Rebecca L. Cleaver
Project Manager

PMO - @

RLC:gmd

Enclosure

cc: D. Kelley (EPA) w/enc.
G. Gardner/A. Ostrofsky (HNUS) w/enc.
File 0883-1.0 w/enc.

**POSITIVE DETECTIONS SUMMARY AND COMPARISON
SURFACE WATER, SEDIMENT AND GROUNDWATER SPLIT-SAMPLES
CENTRAL LANDFILL - OPERABLE UNIT 2
JOHNSTON, RHODE ISLAND**

Split-samples were collected at the Central Landfill Site in Johnston, Rhode Island between December 1995 and February 1996 during a portion of the OU2 RI field activities performed by the PRP's contractor, GZA GeoEnvironmental, Inc. Sediment, surface water, and groundwater split-samples were collected and analyzed in accordance with the HNUS approved Draft Sampling and Analysis Plan dated March 1995.

A comparison of the validated split-sample results for all positive detections, and positive detection summary tables 01 through 06 are presented below.

GROUNDWATER SAMPLES

The organic analysis positive detection summary for the groundwater sample results are presented in Table 01 and the metal positive summary results are presented in Table 02. Comparison is as follows:

Volatile Organics: GZA and HNUS volatile organic compound results are in agreement. Isopropylbenzene was only analyzed by HNUS. All groundwater results for isopropylbenzene were non-detected, except for a positive hit below the quantitation limit for sample RW-43-036.

Semivolatile Organics: GZA and HNUS semivolatile organic results are in agreement. Carbazole was analyzed by HNUS only. The carbazole results for groundwater were non-detected except for sample RW-43-036 which has a positive hit below the contract required quantitation limit (CRQL).

Pesticide/PCBs: HNUS results for samples RW-43-036 and MW-95-47 have some positive hits below the CRQL while the GZA results are all non-detected at a higher quantitation limit. Consequently, results are in agreement.

Metals: GZA results for aluminum in samples RW-43/070T and RW-43/036 are positive values while HNUS results are non-detected. The relative percent difference (RPD) for zinc between the average HNUS field duplicate results and the GZA result for sample MW-95-47 is above the 35% value considered appropriate for split water samples.

SURFACE WATER SAMPLES

The organic analysis positive detection summary for the surface water sample results are presented in Table 03 and the metal positive summary results are presented in Table 04. Comparison is as follows:

Volatile Organics: GZA and HNUS volatile organic compound results are in agreement. Chlorobenzene was the only positive hit above the CRQL for samples SW95-14 and SW95-34.

Semivolatile Organics: GZA and HNUS semivolatile organic results are in agreement. Some positive hits below the CRQL are in agreement with the non-detected CRQL result for the split sample.

Pesticide/PCBs: No positive results above the CRQL were reported. Endosulfan II was reported as a positive hit below the CRQL in the HNUS results for sample SW95-34.

Metals: GZA and HNUS results for the metal analysis are in agreement. The rejected result for arsenic in the GZA data for sample SW95-34 was reported as non-detected in the HNUS results.

SEDIMENT SAMPLES

The organic analysis positive detection summary for the sediment sample results are presented in Table 05 and the metal positive summary results are presented in Table 06. Comparison is as follows:

Volatile Organics: Acetone; 2-butanone; and chlorobenzene were reported as positive results. Acetone and 2-butanone HNUS results for sample SED95-01 are about five to eight times greater than the GZA results and the RPDs are above the 50% quality control limit allowed for split sediment samples. The average result for 2-butanone in the HNUS field duplicate pair was above the CRQL while the GZA result for the split-sample SED95-14 was non-detected. Chlorobenzene positive results are in agreement for samples SED95-14 and SED95-34.

The difference between GZA and HNUS ketone compound concentrations summarized above might be due to heated and non-heated conditions during the purging of the volatile organic compounds for sediment samples.

Semivolatile Organics: GZA and HNUS semivolatile organic results are in agreement. Some positive hits below the CRQL are in agreement with the non-detected CRQL result for the corresponding split-sample. The average fluoranthene result for the HNUS field duplicate pair SED95-14 agrees with the fluoranthene result reported by GZA.

Pesticide/PCBs: Aldrin was reported as a positive hit in the GZA data results for samples SED95-06, SED95-14 and SED95-34, while it was reported as non-detected in the HNUS data. HNUS data results for aroclor 1242, aroclor 1260 and several pesticide compounds are positive values below the CRQL while the GZA results for the same compounds are non-detected. However, the results are in agreement since the positive results are below the CRQL results of the split-sample.

Metals: The GZA and HNUS metal results for the split sediment samples are in agreement with the following exceptions. The RPD for chromium was above 50%, and arsenic was reported as non-detected by HNUS and as a positive value by GZA for the split-sample SED95-01. The RPDs for copper and zinc are above the 50% quality control limit for the split-sample SED95-12. The HNUS results for copper for all sediment split-samples were greater than the GZA results.

Antimony was reported as non-detected in the GZA data and as a positive value below GZA's quantitation limit for sample SED95-12. Also the RPD for cobalt for this split-sample was above the quality control criteria. The RPDs for copper and nickel were above the 50% criteria in the split-sample SED95-34.

In summary, HNUS and GZA split-sampling analytical data are generally in agreement, as detailed above. More discrepancies were noted in sediment samples, than in other sample media, which could possibly be related to sample heterogeneity.

TABLE 01
GROUNDWATER SPLIT-SAMPLING RESULTS: POSITIVE DETECTIONS SUMMARY
ORGANIC COMPOUNDS
CENTRAL LANDFILL, OU2, JOHNSTON, RHODE ISLAND

SAMPLE LOCATION: DATE SAMPLED: COMMENT:	RW-43/070T 02/07/96 Residential tap Active		RW-43-036 02/08/96 Residential well Not in use		MW-95-47 12/21/95 Monitoring well HNUS Field Duplicate		
	HNUS	GZA	HNUS	GZA	HNUS	HNUS(DUP)	GZA
VOLATILE ORGANIC (ug/L)							
Chloroethane	1.0 U	1.0 U	0.9 J	0.9 J	1.0 U	1.0 U	1.0 U
Benzene	1.0 U	1.0 U	9.2	11	0.7 J	0.7 J	0.8 J
Chlorobenzene	1.0 U	1.0 U	1.0 U	1.0 U	16	14	14
Isopropylbenzene	1.0 U	NA	0.9 J	NA	1.0 U	1.0 U	NA
SEMIVOLATILES (ug/L)							
Dibenzofuran	10 U	5 U	4 J	4 J	10 U	10 U	5 U
Phenanthrene	10 U	5 U	2 J	2 J	10 U	10 U	5 U
Anthracene	10 U	5 U	10 U	3 J	10 U	10 U	5 U
Carbazole	10 U	NA	2 J	NA	10 U	10 U	NA
bis(2-Ethylhexyl)phthalate	10 U	5 U	2 J	5 U	1 J	10 U	5 U
PESTICIDES (ug/L)							
alpha-BHC	0.050 U	0.010 U	0.027 J	0.010 U	0.050 U	0.050 U	0.010 U
delta-BHC	0.050 U	0.010 U	0.050 U	0.010 U	0.0014 J	0.050 U	0.010 U
Endosulfan I	0.050 U	0.010 U	0.007 J	0.010 U	0.050 U	0.050 U	0.010 U
Dieldrin	0.10 U	0.010 U	0.029 J	0.020 U	0.10 U	0.10 U	0.010 U
4,4'-DDE	0.10 U	0.010 U	0.015 J	0.020 U	0.10 U	0.10 U	0.010 U
Endrin	0.10 U	0.010 U	0.10 U	0.020 U	0.0011 J	0.10 U	0.010 U
Endosulfan II	0.10 U	0.010 U	0.025 J	0.020 U	0.10 U	0.10 U	0.010 U
4,4'-DDD	0.10 U	0.010 U	0.015 J	0.020 U	0.10 U	0.10 U	0.010 U
Endosulfan sulfate	0.10 U	0.010 U	0.10 U	0.020 U	0.10 U	0.0040 J	0.010 U
Methoxychlor	0.50 U	0.010 U	0.20 J	0.10 U	0.50 U	0.50 U	0.010 U
Endrin aldehyde	0.10 U	0.010 U	0.076 J	0.020 U	0.0030 J	0.0020 J	0.010 U
alpha-Chlordane	0.050 U	0.010 U	0.040 J	0.010 U	0.050 U	0.050 U	0.010 U

NOTES:

NA: Not analyzed

U = Non-detected, numerical

J = Value is estimated

R = Result is rejected

TABLE 02
GROUNDWATER SPLIT-SAMPLING RESULTS: POSITIVE DETECTIONS SUMMARY
METAL ANALYSIS (ug/L)
CENTRAL LANDFILL, OU2, JOHNSTON, RHODE ISLAND

SAMPLE LOCATION: DATE SAMPLED: COMMENT:	RW-43/070T 02/07/96 Residential tap Active		RW-43-036 02/08/96 Residential well Not in use		MW-95-47 12/21/95 Monitoring well HNUS Field Duplicate		
	HNUS	GZA	HNUS	GZA	HNUS	HNUS(DUP)	GZA
ALUMINUM	33.9 U	13.5	61.1 U	110	26.9 J	15.0 U	R
BARIUM	2.5	2.5	232	227	113 J	113 J	103 J
CADMIUM	1.0 U	0.5 U	1.0 U	1.2 J	2.0 UJ	2.0 UJ	0.44 J
CALCIUM	8510	8880	20200	230000	98100 J	97400 J	91300
CHROMIUM	1.0 U	0.7 U	1.0 U	2.8 U	3.7 J	3.0 U	3.40 U
COBALT	1.0 U	0.5 U	4.5	6.2 J	4.0 U	4.0 U	3.50 U
COPPER	155	119 J	1.6 UJ	R	2.2 J	2.0 U	R
IRON	14.0 U	26.8 U	9950 J	7610	278	248	180 J
MAGNESIUM	1430	1530 J	75200	80000	23300 J	23100 J	20000
MANGANESE	1.0 U	4.8 UJ	10600	13000	5290 J	5240 J	4670
POTASSIUM	678	766 J	86700	79600	20700 J	20200 J	23300 J
SODIUM	4390	4890 J	116000	162000 J	71600 J	70900 J	70500
THALLIUM	8.0 U	3.5 U	17.6	8.4	2.0 U	2.0 U	3.50 U
ZINC	30.0 U	6.8 UJ	46.3 U	22.7 UJ	81.3 J	78.3 J	115 J

NOTES:

NA = Not Analyzed

J = Value is estimated

U = Non-detected, numerical
value is the quantitation limit

R = Result is rejected

TABLE 03
 SURFACE WATER SPLIT-SAMPLING RESULTS: POSITIVE DETECTIONS SUMMARY
 ORGANIC COMPOUNDS
 CENTRAL LANDFILL, OU2, JOHNSTON, RHODE ISLAND

SAMPLE LOCATION:	SW95-01		SW95-06		SW95-12		SW95-14			SW95-34	
DATE SAMPLED:	12/05/95		12/06/95		12/07/95		12/08/95			12/12/95	
COMMENT:	Surface Water Lower Simmons Reservoir		Surface Water Upper Simmons Reservoir		Surface Water Almy Reservoir		Surface Water Cedar Swamp Brook HNUS Field Duplicate			Surface Water Sedimentation Pond No. 2	
VOLATILE ORGANICS (ug/L)	HNUS	GZA	HNUS	GZA	HNUS	GZA	HNUS	DUPL	GZA	HNUS	GZA
Chlorobenzene	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	3.5	3.6	4	8	9
SEMIVOLATILES (ug/L)											
Diethylphthalate	10 U	5 U	10 U	5 U	4 J	5 U	10 U	10 U	5 U	2 J	5 U
Di-n-butylphthalate	10 U	5 U	1 J	5 U	10 U	5 U	10 U	10 U	5 U	10 U	5 U
bis(2-Ethylhexyl)phthalate	10 U	5 U	10 U	5 U	10 U	5 U	10 U	1 J	5 U	10 U	5 U
PESTICIDE/PCBs (ug/L)											
Endosulfan II	0.10 U	0.020 U	0.10 U	0.020 U	0.10 U	0.020 U	0.10 U	0.10 U	0.020 U	0.005 J	0.020 U

NOTES:

- NA = Not Analyzed
- J = Value is estimated
- U = Non-detected, numerical value is the quantitation limit
- R = Result is rejected

TABLE 04
 SURFACE WATER SPLIT-SAMPLING RESULTS: POSITIVE DETECTIONS SUMMARY
 METAL ANALYSIS (ug/L)
 CENTRAL LANDFILL, OU2, JOHNSTON, RHODE ISLAND

SAMPLE LOCATION: DATE SAMPLED: COMMENT:	SW95-01		SW95-06		SW95-12		SW95-14			SW95-34	
	12/05/95 Surface Water Lower Simmons Reservoir		12/06/95 Surface Water Upper Simmons Reservoir		12/07/95 Surface Water Almy Reservoir		12/08/95 Surface Water Cedar Swamp Brook HNUS Field Duplicate			12/12/95 Surface Water Sedimentation Pond No. 2	
	HNUS	GZA	HNUS	GZA	HNUS	GZA	HNUS	DUPL	GZA	HNUS	GZA
ALUMINUM	194 U	144 U	220 U	240 U	115 U	66.7 U	457	398	530	326	313
ARSENIC	2.3 U	2.3 J	2.3 U	1.4 J	2.3 U	2.00 UJ	2.3	2.3 U	2.0 U	2.7 U	R
BARIUM	43.1	41.9 J	48.1	46.5 J	9.6	11.30 U	31.1	32.3	40.4 J	46.9	46.2 J
BERYLLIUM	0.50 U	0.25 UJ	0.50 U	0.3 UJ	0.50 U	0.34 UJ	0.82 J	0.74 J	0.72 UJ	0.50 U	0.5 J
CADMIUM	1.2 U	0.2 U	1.2 U	0.49 U	1.2 U	0.20 U	1.2 U	1.2 U	0.20 U	1.2 U	0.2 J
CALCIUM	34300	30700 J	38300	35800 J	5190	4650 UJ	19500	20400	20600 J	30200	28000 J
CHROMIUM	1.8 U	1.5 U	1.8 U	3.3 U	1.8 U	1.60 U	1.8 U	1.8 U	2.40 U	1.8 U	1.7 J
IRON	662	785 J	960	935 J	172	164.0 UJ	2940	2980	3180 J	2450	2360
LEAD	2.5	1.5 U	1.9 J	2.4 U	1.3 J	2.5 U	4.2	4.2	7.70 U	3.6 UJ	4.50 U
MAGNESIUM	8700	7630	9770	8540	1230	1150 J	4670	4820	5200	8260	8230
MANGANESE	1210	1110 J	1900	1790 J	19.3	27.1 J	1270	1320	1520 J	1640	1590
MERCURY	0.18 UJ	0.09 U	0.34 UJ	0.21 U	0.10 U	0.09 U	0.10 U	0.10 U	0.09 U	0.74 U	0.32 J
POTASSIUM	9840	9830 J	10600	11000 J	1390	1040 J	5730	5940	6700 J	10200	11800
SODIUM	42300	38400	47400	41900	12200 J	9990	23100	24300	24500	43900	42600 J
ZINC	21.0 U	14.9 U	31.7 U	24.6 U	18.2 U	14.7 U	45.6 U	44.1 U	42.1 U	38.8 U	32.3 J

NOTES:

- NA = Not Analyzed
- J = Value is estimated
- U = Non-detected, numerical value is the quantitation limit
- R = Result is rejected

TABLE 05
 SEDIMENT SPLIT - SAMPLING RESULTS: POSITIVE DETECTIONS SUMMARY
 ORGANIC COMPOUNDS
 CENTRAL LANDFILL, OU2, JOHNSTON, RHODE ISLAND

SAMPLE LOCATION: DATE SAMPLED: COMMENT:	SED96-01 12/05/95 Sediment Lower Simmons Reservoir		SED96-06 12/06/95 Sediment Upper Simmons Reservoir		SED96-12 12/07/95 Sediment Almy Reservoir		SED96-14 12/08/95 Sediment Cedar Swamp Brook HNUS Filed Duplicate			SED96-34 12/13/95 Sediment Sedimentation Pond No. 2	
	HNUS	GZA	HNUS	GZA	HNUS	GZA	HNUS	DUPL	GZA	HNUS	GZA
VOLATILE ORGANICS (ug/Kg)											
Acetone	1500 J	180 J	NA	NA	420 UJ	45 UJ	56 UJ	310 J	43 UJ	22 UJ	46 UJ
2-Butanone	300 J	57	NA	NA	R	20 U	10 J	49 J	20 U	14 UJ	10 J
Chlorobenzene	R	20 U	NA	NA	R	20 U	57	41	44	4 J	4 J
SEMI-VOLATILES (ug/Kg)											
Acenaphthene	R	710 U	NA	NA	R	660 U	440 UJ	94 J	55 J	460 U	490 U
Fluorene	R	710 U	NA	NA	R	660 U	440 UJ	100 J	63 J	460 U	490 U
Phenanthrene	R	710 U	NA	NA	R	660 U	260 J	710 J	410 J	79 J	150 J
Anthracene	R	710 U	NA	NA	R	660 U	68 J	190 J	79 J	460 U	490 U
Carbazole	R	710 U	NA	NA	R	660 U	440 UJ	73 J	510 U	460 U	490 U
Flouranthene	180 J	710 U	NA	NA	410 J	97 J	440 J	1100 J	620	170 J	240 J
Pyrene	190 J	76 J	NA	NA	380 J	97 J	440 J	1000 J	700	160 J	250 J
Butylbenzylphthalate	R	710 U	NA	NA	R	150 J	61 J	200 J	170 J	460 U	310 J
Benzo(a)anthracene	R	710 U	NA	NA	R	660 U	210 J	520 J	310 J	84 J	130 J
Chrysene	R	710 U	NA	NA	R	660 U	230 J	570 J	300 J	96 J	130 J
bis(2-Ethylhexyl)phthalate	220 J	710 U	NA	NA	R	460 J	1200 J	3700 J	2000	380 J	550
Di-n-octylphthalate	R	710 U	NA	NA	R	660 U	110 J	570 J	270 J	460 U	490 U
Benzo(b)fluoranthene	R	710 U	NA	NA	R	85 J	190 J	550 J	450 J	72 J	170 J
Benzo(k)fluoranthene	R	710 U	NA	NA	R	660 U	160 J	420 J	150 J	76 J	51 J
Benzo(a)pyrene	R	710 U	NA	NA	R	660 U	180 J	460 J	250 J	74 J	120 J
Indeno(1,2,3-cd)pyrene	R	710 U	NA	NA	R	660 U	65 J	130 J	73 J	49 J	53 J
Dibenzo(a,h)anthracene	R	710 U	NA	NA	R	660 U	440 UJ	79 J	510 U	460 U	490 U
Benzo(a,g,h)perylene	R	710 U	NA	NA	R	660 U	67 J	120 J	79 J	50 J	58 J
PESTICIDE/PCBs (ug/Kg)											
Heptachlor	0.89 J	3.1 U	0.39 J	2.7 U	R	3.3 U	2.3 UJ	2.7 UJ	2.6 U	2.3 U	2.2 U
Aldrin	R	3.1 U	3.3 UJ	2.8	R	3.3 U	2.3 UJ	2.7 UJ	3.4	2.3 U	3
Dieldrin	R	6.1 U	8.4 UJ	5.3 U	R	6.6 U	0.55 J	0.92 J	5.0 U	4.6 U	4.3 U
4,4'-DDE	R	6.1 U	3.3 UJ	5.3 U	R	6.6 U	4.4 UJ	1.2 J	5.0 U	5.2	4.3 U
4,4'-DDD	3.7 J	6.1 U	3.9 J	5.3 U	14 J	6.6 U	1.9 J	2.7 J	5.0 U	3.0 J	4.3 U
4,4'-DDT	0.75 J	6.1 U	8.4 UJ	5.3 U	R	6.6 U	4.4 UJ	5.2 UJ	5.0 U	4.6 U	4.3 U
Alpha - chlordane	R	3.1 U	1.5 J	2.7 U	R	3.3 U	1.5 J	2.7 J	2.6 U	2.4	2.2 U
Gamma - chlordane	R	3.1 U	1.4 J	2.7 U	R	3.3 U	1.7 J	2.4 J	2.6 U	1.6 J	2.6 J
Aroclor 1242	R	61 U	21 J	53 U	R	66 U	33 J	41 J	50 U	33 J	43 U
Aroclor 1260	R	61 U	26 J	53 U	R	66 U	12 J	19 J	50 U	18 J	43 U

NOTES:

NA = Not Analyzed
 J = Value is estimated
 U = Non-detected, numerical
 value is the quantitation limit
 R = Result is rejected

TABLE 06
 SEDIMENT SPLIT-SAMPLING RESULTS: POSITIVE DETECTIONS SUMMARY
 METAL ANALYSIS (mg/Kg)
 CENTRAL LANDFILL, OU2, JOHNSTON, RHODE ISLAND

SAMPLE LOCATION: DATE SAMPLED: COMMENT:	SED95-01		SED95-12		SED95-14			SED95-34	
	12/05/95 Sediment Lower Simmons Reservoir		12/07/95 Sediment Almy Reservoir		12/08/95 Sediment Cedar Swamp Brook HNUS Filed Duplicate			12/13/95 Sediment Sedimentation Pond No. 2	
	HNUS	GZA	HNUS	GZA	HNUS	DUPL	GZA	HNUS	GZA
ALUMINUM	22400 J	22400 J	17000 J	20000 J	15400 J	16100 J	18200 J	11500	10300
ANTIMONY	R	0.79 U	R	0.93 U	R	6.3 J	0.72 U	3.4 UJ	R
ARSENIC	12.6 UJ	16.3 J	11.3 UJ	11.5 J	5.7 J	9.0 J	10.8 J	5.3 J	1.4 J
BARIUM	268 J	287	78.6 J	94.9 J	186 J	147 J	233 J	83.5	67.3
BERYLLIUM	10.9 J	11.4	26.6 J	27.8	1.8 J	2.3 J	2.1	2.9 J	2
CADMIUM	4.5 UJ	4.0 J	5.2 UJ	4.3 J	0.37 UJ	R	R	0.34 U	0.15 U
CALCIUM	5800 J	5750	2720 J	3220	3860 J	3750 J	4590	2570	2090
CHROMIUM	17.8 J	31.0	14.5 UJ	11.9	63.6 J	79.3 J	76.2	13.6	10
COBALT	18.9 J	22.6	9.8 UJ	12.8 J	12.3 J	12.7 J	22.4	5.7 J	8.1 J
COPPER	50.7 J	37.2	52.5 J	31	50.5 J	37.5 J	41.0	24.3	13.8
IRON	37000 J	34800 J	28000 J	29600 J	29000 J	304000 J	34000 J	20900	15700
LEAD	73.5 J	93.0 J	216 J	262 J	33.2 J	31.2 J	42.9 J	42.1 J	32.4
MAGNESIUM	2900 J	2970 J	934 J	1030 J	7620 J	6500 J	9310 J	2060	1580
MANGANESE	11000 J	11100	880 J	1050 J	793 J	855 J	1010 J	505	392
MERCURY	R	0.37	R	0.4	0.11 J	0.10 J	0.17	0.08 U	0.1 J
NICKEL	30.3 J	20.3	17.3 J	8.3 U	19.5 J	21.6 J	22.3	7.9 J	2.8
POTASSIUM	4510 J	5060	729 J	589 J	7110 J	5780 J	8450	3040	2640 J
SELENIUM	R	4.50 U	4.2 J	1.2 U	R	R	0.96 U	1.1 UJ	0.9 UJ
SODIUM	593 UJ	173 J	252 UJ	126 J	153 UJ	183 UJ	42.3 U	223 U	29.2 U
THALLIUM	R	15.7 J	R	2.2 U	R	R	1.7 U	1.0 UJ	1.6 U
VANADIUM	75.0 J	70.0	50.2 J	51.9 J	36.7 J	36.8 J	42.2 J	17.0	12.4
ZINC	481 J	411 J	1120 J	629 J	188 J	146 J	179 J	151 J	113 J

NOTES:

- NA = Not Analyzed
- J = Value is estimated
- U = Non-detected, numerical value is the quantitation limit
- R = Result is rejected

0187-EPA-4659

Contract No. 68-W8-0117

April 15, 1996

Mr. John Courcier (HBO-HON)
U.S. Environmental Protection Agency
J.F. Kennedy Federal Building
Boston, Massachusetts 02203

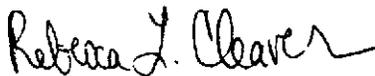
Subject: Trip Report: Technical Oversight and Split-Sampling, Operable Unit 2 RI,
Central Landfill, RI/FS Oversight, W.A. No. 40-1L71

Dear Mr. Courcier:

Halliburton NUS (HNUS) has prepared the enclosed trip report to summarize technical oversight and split-sampling activities conducted at Central Landfill in Johnston, Rhode Island as part of the OU2 Remedial Investigation. These activities were conducted between December 1995 and February 1996, and included collection of surface water, sediment, and groundwater split-samples. As previously discussed, HNUS will prepare a summary table of positive detections for all split-sampling analytical results following the receipt of all validated PRP data.

If you require additional information or have any questions regarding this transmittal, please contact me at (508) 658-7899.

Very truly yours,



Rebecca L. Cleaver
Project Manager

PMO - @

RLC:gmd

Enclosure

cc: D. Kelley (EPA) w/enc.
G. Gardner/A. Ostrofsky (HNUS) w/enc.
File 0883-1.0 w/enc.

bcc: K. O'Neill

**TRIP REPORT: TECHNICAL OVERSIGHT AND SPLIT-SAMPLING
SURFACE WATER, SEDIMENT AND GROUNDWATER SAMPLING ACTIVITIES
CENTRAL LANDFILL - OPERABLE UNIT 2
JOHNSTON, RHODE ISLAND**

Technical oversight and split-sample collection was provided by Halliburton NUS Corporation (HNUS) for a portion of field activities performed at the Central Landfill Site in Johnston, Rhode Island by the PRP's contractor, GZA GeoEnvironmental, Inc. (GZA). The field activities included sediment and surface water sampling, and groundwater sampling (including monitoring wells and residential wells). The overall objective of the technical oversight and split-sample collection was to ensure that EPA-approved protocols and sampling procedures were implemented during the field activities being performed by GZA, as previously scoped and approved in GZA's Final Draft Sampling and Analysis Plan (GZA, November 1995), as amended in associated EPA/HNUS review comments and corresponding GZA responses to these comments.

The technical oversight and split-sample collection was conducted in accordance with the HNUS approved Draft Sampling and Analysis Plan (HNUS, March 1995). The general locations for proposed split-sample collection for surface water and sediment, low-flow groundwater, and residential well sampling were selected and/or approved by EPA prior to the sampling event. Required modifications to two planned locations (both residential well locations) and one added sample location (Lower Simmons Reservoir) were then approved by EPA during the course of field activities, as discussed below. The observations made by HNUS during technical field oversight activities (see dates listed in Table 1 below), did not identify any problems which represent a concern over the quality or technical approach used by GZA to collect the field data. The field procedures utilized by GZA were generally in compliance with their EPA-approved Sampling and Analysis Plan and general EPA-approved protocols.

All surface water and sediment sampling locations were surveyed in the field by GZA using a portable GPS unit. The mapped locations of these samples is anticipated to be provided at a later date by GZA, with their presentation of analytical results. Following the validation and receipt of all analytical data results from GZA, a "positive hits" summary table will be prepared by HNUS presenting a comparison of all positive detections for all split-sample results (for both GZA and/or HNUS split-samples), as previously discussed with EPA.

Including QA/QC samples, a total of 40 samples were collected during split-sampling activities; these included 5 surface water locations and 5 corresponding sediment locations, 1 groundwater monitoring well location, 2 residential well locations, and 27 required QA/QC samples including duplicates, trip blanks, rinsate blanks, and Performance Evaluation (PE) samples. All split-samples collected by HNUS were shipped to Contract Laboratory Program (CLP) or DAS analytical laboratories for analysis. The sampling schedule was determined by GZA; as requested by EPA, HNUS provided oversight on the days of predicted sample collection for those

locations requested for sampling by EPA. Table 1 provides a summary of split-sample locations, sample identification numbers, and dates of split-sample collection.

The following is a summary of the HNUS site visit dates with the activities observed and/or performed by HNUS personnel (K. O'Neill):

December 5, 1995 (Tuesday): Lower Simmons Reservoir

Weather: clear, sunny, temperature in 30's°F.

Observed GZA sample bottle preparation/labelling. Decontamination of surface water and sediment sampling equipment including Wildco Alpha Water Bottle Sampler, LaMotte Bottom Sampling Dredge, Ekman Bottom Sampling Dredge, and standard Soil Auger Buckets.

Collection of surface water and sediment sample (SW/SED95-01) from the Lower Simmons Reservoir. GZA had previously reported to HNUS that they would sample Upper Simmons Reservoir today, however, their sampling activities took longer than planned. Under EPA approval, HNUS collected this added split-sample location from Lower Simmons Reservoir, rather than collecting no split samples on this day.

There was a thin layer of ice on most of the Lower Simmons Reservoir. It was determined that the sampling boat would be overloaded and unsafe if HNUS attended the sampling crew in the GZA boat. Observations were made by HNUS from shore using binoculars. The surface water and sediment samples were placed on ice and stored at the HNUS warehouse overnight for 12/6/95 shipment.

December 6, 1995 (Wednesday): Upper Simmons Reservoir

Weather - clear, sunny, high temperature of 42°F.

Observed decontamination of surface water and sediment sampling equipment. Collection of a surface water and sediment sample (SW/SED95-06) from the Upper Simmons Reservoir. Sample collection was observed by HNUS from shore. After sample collection all samples (including 12/5/95 sample) were packaged and shipped to the appropriate CLP and DAS laboratories for analysis.

December 7, 1995 (Thursday): Almy Reservoir

Weather - clear, temperature of 45°F.

Observed decontamination of surface water and sediment sampling equipment. Collection of surface water and sediment sample SW/SED95-12 from Almy Reservoir. HNUS brought a small boat in order to permit closer observation of

**TABLE 1
SPLIT-SAMPLING LOCATIONS SUMMARY
CENTRAL LANDFILL - OPERABLE UNIT 2
JOHNSTON, RHODE ISLAND**

Sample Identification Number	Sample Location	Sample Matrix	Sample Date
SW/SED 95-01	Lower Simmons Reservoir *	surface water and sediment	12/05/95
SW/SED 95-06	Upper Simmons Reservoir	surface water and sediment	12/06/95
SW/SED 95-12	Almy Reservoir	surface water and sediment	12/07/95
SW/SED 95-14 (and duplicates)	Cedar Swamp Brook	surface water and sediment	12/08/95
SW/SED 95-34	Sedimentation Pond No. 2	surface water and sediment	12/13/95
MW-95-47 (and duplicate)	Monitoring Well MW-95-47	groundwater (onsite monitoring well)	12/21/95
RW-043/070T	Residential tap water supply from 1257 Central Pike, northwest of landfill	groundwater (residential well, still in service)	02/07/96
RW-043/036	Hand dug well south of landfill, approximately 200 feet northeast of MW-P location	groundwater (residential well, not in use)	02/08/96

* Additional sample location, added after fieldwork was initiated, as requested by EPA.

GZA sampling procedures. Took photos of the Wildco Alpha Bottle Sampler and Ekman Dredge in use during sample collection.

December 8, 1995 (Friday): Cedar Swamp Brook

Weather: clear and cold, temperature near 32°F.

Observed collection of surface water and sediment sample SW/SED95 -14 (and duplicate) from Cedar Swamp Brook in a midstream area behind a small overflowing stone dam. The sample was collected southeast of landfill slope at a point near expected groundwater to stream recharge. Most of the stream bottom was rip-rap with most of the sediment deposition between the rock.

Performed staff gauge inspection and took photos at each staff gauge location. Staff gauges were reported to be re-surveyed on a monthly basis. The staff gauges appeared to be installed and functioning satisfactorily.

After sample collection, all samples (including 12/7/95 sample) were packaged and shipped to the appropriate CLP and DAS laboratories for analysis.

December 13, 1995 (Wednesday): Sedimentation Pond No. 2

Weather: partial cloudiness, temperature at 30°F.

Observed collection of surface water and sediment sample location SW/SED95-34 in Sedimentation Pond No. 2. Ice had formed on the pond to a thickness of approximately 4 to 5 inches. The samples were collected after opening a hole in the ice using a pry-bar. Photos were taken of the Alpha Bottle Sampler and the auger bucket being used to collect the sample. The sample was packaged and shipped to the appropriate CLP and DAS laboratories for analysis.

December 21, 1995 (Thursday): Groundwater Sampling

Weather: overcast, temperature below freezing, light snow with high winds, approximately 6 inches of snow cover from 12/20/95 storm.

Observed setup and assisted in split-sample collection of groundwater sample from MW95-47 location using low-flow sampling technique. Observed GZA preparation and partial well purging of multi-level well MW95-ML9. After sample collection, the sample was packaged and shipped to the appropriate CLP and DAS laboratories for analyses.

February 7, 1996 (Wednesday): Residential Well Sampling

Weather: clear skies, temperature in mid-20's°F, wind at 5 to 10 mph and approximately 3 inches of snow cover.

Observed purging of residential well supply system and collection of split samples at an indoor tap location, the Luchka residence at #1257 Central Pike (RW-043/070T), which is located across the street from the originally planned location. GZA reported that they had recently determined the water supply at the original planned location was only occasionally used for livestock, therefore, EPA was notified and agreed to sample the more active well.

GZA personnel then attempted to collect a residential well sample from the planned location "031/038", located near the western shore of Upper Simmons Reservoir. However, the groundwater supply system for this well was no longer intact or functional and no samples were collected at this location. An alternative location was selected for sampling on the following day.

February 8, 1996 (Thursday): Residential Well Sampling

Weather: partial clouds, temperature in low 30's°F,

Final day of split-sampling and oversight activities. Observed GZA purge and sample well location RW-043/036 as an alternate location replacing "031/038" for split-sample collection, as explained above, and as approved by EPA. The well was a two-foot diameter hand dug well lined with stones, and was sampled by GZA using low-flow sampling methodology with a two-inch submersible pump. Samples from February 7 and 8 were packaged and shipped to the CLP and DAS laboratories for analyses.

CENTRAL LANDFILL SUPERFUND SITE
PUBLIC HEARING

DATE: August 30, 2001

TIME: 7:00 p.m.

PLACE: Johnston High School
Johnston, Rhode Island

RICHARD BOYNTON, U.S. EPA HEARING OFFICER

CAPITOL COURT REPORTING (401) 453-1005

1 (PUBLIC HEARING COMMENCED AT 7:45 P.M.)

2 ERNEST PETROCHELLI: I came here because
3 I've been involved with this landfill since around 1983.
4 I don't intend to take any time up here this evening.
5 I'm gonna leave it to you people, you seem to know a lot
6 more than I do. The only thing, I read that paper today
7 where it said the assessment of the situation that
8 contaminants are seeping off landfill property but not at
9 hazardous levels. I respectfully disagree and I think we
10 can.

11 We've been living this for many years in the town of
12 Johnston and I'm gonna leave this, but when the first
13 wells were installed, John, you remember, the Dodis lived
14 on Central Avenue.

15 JOHN STEPHENS: Sure did.

16 ERNEST PETROCHELLI: That well right
17 across the street, they went in, they took their house
18 and they knocked it down.

19 JOHN STEPHENS: That's right.

20 ERNEST PETROCHELLI: So there's gotta be
21 something there. If you would like me to take you there,
22 I will take you there. I don't know if that well's still
23 in existence. But what bothers me as a person -- and
24 these are all human beings here. You people tell us

1 people talk.

2 THE CHAIRMAN: So we can make a record.

3 AUDIENCE MEMBER: This is from the Agency
4 of Toxicology Disease Registry from Washington, D.C.

5 THE CHAIRMAN: You will get a chance to
6 comment.

7 ERNEST PETROCHELLI: Well, I'm going to
8 finish. I told you about the cancer. When I went out
9 and told people, because I heard some of them were not
10 going to fill out that survey, and I'm one who believes
11 they should fill it out. I went house to house. I
12 stopped on Reservoir Avenue and at the last -- not the
13 last house but first house I stopped in, I knew the lady,
14 she had the thing in her nose. What's wrong with you?
15 Cancer. I go next door to her neighbor. Cancer. The
16 lady across the street. Cancer.

17 What is happening? I think the Stephens had a big
18 problem -- they do not have a big problem with your well.
19 Where is this coming from. I mean, everything is pure
20 but the people of the town of Johnston are suffering.

21 And that's what we want. We want responsible answers.

22 I'm gonna leave the questions to Mr. Grace and
23 Mr. Stephens and Mr. Major. They understand the problem
24 a little better than I do. I have brought only a bit,

1 everything is okay. You go to Old Pocasset Road. The
2 first house on the top, the woman has cancer. You go to
3 the last house on the bottom, the woman has cancer and
4 her daughter is sick. There's a lady that lives right
5 there, she can't sleep because of her asthma problems.
6 Something is causing it. Something is causing it. So we
7 disagree with your findings. Respectfully disagree.
8 We'd like to know if we can go even deeper.

9 Now, I only told you about the ones on Old Pocasset.
10 But there are also incidences of cancer, two of them
11 right on Apple Tree Lane, which is on the other side. I
12 think the neighbors, Mr. Major and the lady across the
13 street, Peter's wife -- not Peter. Phil's wife, cancer.

14 Now, what disturbed me the last time, and you
15 mentioned Mr. Sweet or Dr. Sweet. We were right in this
16 room. They were gonna take a survey. I don't know if
17 that survey has been conducted right now but all I know
18 is --

19 AUDIENCE MEMBER: Who's Dr. Sweet?

20 ERNEST PETROCHELLI: Dr. Sweet came here
21 with Dr. Carter.

22 AUDIENCE MEMBER: Okay, can I interrupt
23 for a second? Here's a report --

24 AUDIENCE MEMBER: Why don't you let

1 but if you come to my home on my table, and I didn't want
2 to bring it all here, we have a pack like this. We've
3 been listening to this for so, so, so many years. Please
4 help the people of the town of Johnston. Give us the
5 straight scoop. That's all I have to say.

6 (applause)

7 THE CHAIRMAN: Thank you,
8 Mr. Petrochelli. Mr. Stephens, you'd like to make a
9 comment for the record?

10 JOHN STEPHENS: My name is John Stephens,
11 I represent WATER, We Are The Endangered Residents. We
12 had an environmental group, we started in 1980. We're the
13 people who put your water in the ground up there. We're
14 the Town of Johnston. We raised \$15 million, took us ten
15 years. I had no water at my house for ten years.

16 I have a wife, and my oldest son just retired from
17 the Air Force, are diabetics. Why? Because theres
18 trichloroethylene 2 in their pancreases. It's costing
19 you people a fortune for my son with a 50 percent
20 disability. He was on a C19 for fifteen years defending
21 this country.

22 Then I listen to the rhetoric. I'm going to give
23 you a little history what goes on here because these
24 people don't know what when on. I've lived here 36

1 years, put up with this thing for 36 years. Tried to run
 2 a business and an environmental group. Did more in the
 3 environmental group. I'm going to tell you people
 4 something. You see that water in the ground up there?
 5 That cost five, six people \$30,000 a piece.
 6 How did we get on the Superfund Site, ladies and
 7 gentlemen. The first Superfund Site, it's a, it's a
 8 study of how bad the landfill are. This is a dump. And
 9 then it goes by parameters. The reason I know so much
 10 about it, we had two lawyers from Washington. Schwartz
 11 and Graham. And the man that gave us these lawyers was a
 12 man named Hugh Kaufman, works for the EPA. In fact I saw
 13 him this summer in Florida. I didn't come home from
 14 Florida, ladies and gentlemen, because I have bronchitis.
 15 I don't have any trouble in Florida. People who live on
 16 Reservoir Avenue used to remember the flowers I used to
 17 raise, they thought that's what was doing it to me. It
 18 wasn't. It was the air. Last November I brought the CDC
 19 in here again.
 20 I've been doing this since 1978. We got degrees,
 21 Ph.Ds in dump. Six of us. Now some of these gentlemen
 22 have left Johnston because they will not live here
 23 anymore. My children have left because they won't live
 24 here anymore. I'm a native American. This was my

1 country. My grandfather used to say the strangers you
 2 pay don't know enough to piss upstream where they're
 3 going to drink the water down. And it's true.
 4 This landfill, or dump, had 40,000 -- 40
 5 million gallons of hazardous waste dumped in there. I'm
 6 going to give you a name. Gambino. Any of you people
 7 know who the Gambinos are in New York, New Jersey? Eddy
 8 Gambino, the nephew to himself was a customer of mine in
 9 a gas station I ran in Orange, New Jersey in the '50s.
 10 We had a problem down there. It was about the largest
 11 cracking systems as on, what's now the New Jersey
 12 Turnpike. Used to be Route 9. Used to dump their waste
 13 on the streets of Newark down by the power plant to keep
 14 the dust down. If you won't take my word for it, go
 15 down, look, research it in the papers down there. Well,
 16 two boys died because of it and they passed groundwater
 17 laws.
 18 The mafia wanted to get in a legal business and they
 19 brought it up here. Legal. No groundwater laws in Rhode
 20 Island, Massachusetts, Vermont, Connecticut. That's
 21 where it all went. We used to see a hundred trucks a
 22 week going into Sylvestris. These are not drums, ladies
 23 and gentlemen. These were tankers. Too bad Jerry
 24 Sylvestri wasn't still alive because he was there one

1 night when it had an explosion. Spent three months in a
 2 hospital when he got burned.
 3 Up where you see the mountain, ladies and
 4 gentlemen -- and another thing, that is not your garbage,
 5 ladies and gentlemen. That garbage was out of state
 6 waste. I was up there picketing one day and I saw
 7 customers of mine, Thomas L. Gray -- I can give you these
 8 names -- bringing haz -- bringing waste into this dump
 9 because we used to charge \$11 a ton. Down there it was
 10 54 and 60. They were making money bringing it here.
 11 That mountain you see is not your garbage. And under
 12 that mountain was a hole about 130, 140 feet deep.
 13 Now in 1966, I think, the Sylvestri Brothers came
 14 before a commission we had here. We didn't have a
 15 government like we have here today. There was only 2,300
 16 people of us in this town. We had a town administrator
 17 and he -- they asked to have a construction waste permit
 18 to fill that hole in. And they said if you give us this,
 19 we'll collect the cans. In those days we burned the
 20 papers, we took our junk up to the Scituate Reservoir,
 21 and Mr. Rosa took our swill to the pig farm. We had it
 22 made. We really did.
 23 Now, we gave them the permit. They bought a couple
 24 of trucks, everything was fine. Until, and I'm not going

1 to mention the people that brought this to you because
 2 they weren't involved in it as, per se. But now come the
 3 waste. You can ask my older sons, they used to go up
 4 there with a .22 to shoot stuff and they could see -- no,
 5 I'm not going to finish up, sir. You want me to make a
 6 comment, I'm gonna tell -- there's a lot of people here
 7 that are new.
 8 THE CHAIRMAN: I understand that.
 9 JOHN STEPHENS: Well, I don't care, sir.
 10 I'm here. I'm gonna talk to these people.
 11 THE CHAIRMAN: Many of these other people
 12 want to speak.
 13 JOHN STEPHENS: That's all right. I'm
 14 going to keep going. About ten more minutes. Sit down.
 15 Because let me tell you, ladies and gentlemen.
 16 They're going to tell you it's a million and a half
 17 gallons of waste up there. Eddy Gambino was enrolled in
 18 prison in 1984 when we were fighting the incinerator.
 19 Nobody's forgot about that. 250 -- 2,500-ton
 20 incinerator. Well, a water group took it on and we beat
 21 them. We were on national television that night. Big
 22 deal. I -- we were on talk shows because a little group,
 23 five men, beat the state.
 24 Then we decided to sue the State of Rhode Island, we

1 sued them for a hundred thousand dollars. We won in
2 federal court. We took this money -- not a cent. We
3 took services from the state and we tested your wells.
4 If you could see what we found in those wells is
5 unbelievable. Mine was the first one. In fact it was on
6 the front page of the Journal.

7 There was only at that time two laboratories in the
8 United States that could do this. One was in Michigan
9 and one was in California. Registered by the EPA and
10 federal government. Cost \$1,800 to test, ladies and
11 gentlemen. We spent \$80,000 testing wells. So don't
12 tell me I don't know what I'm doing.

13 Secondly, the dumping up there came because they
14 dumped not only there, they dumped in Cranston on Pontiac
15 Avenue, Log Road, Davis, Elena and Picilli(phonetic).
16 Same people. All legal. There was no laws to stop these
17 people. May have been immoral but it wasn't illegal.
18 Millions of gallons. Himself was in jail, saw me in the
19 paper, called up and said, "Hey, shoe shine. I see you
20 in the front page of the paper. I'm gonna send you some
21 documents. I put \$7 million in that dump of Sylvestris
22 with my trucking company." Now does that tell you
23 anything, ladies and gentlemen?

24 In 1987, we did a conductivity test. We looked for

1 fissures. We had Froelig and Fisher from the University
2 of Rhode Island and 20 graduate students. I couldn't
3 understand why my well was the first one polluted. You
4 know why? Because the fissure runs through my -- I have
5 a pure artesian well which means that my well comes to
6 the top. Right now it's probably going over.

7 So when you talk about water, water just doesn't go
8 down, it's pressurized and comes up. There's a mountain
9 over here, it comes up over here. It will go up on the
10 side of the mountain. So all this water is mixing with
11 that mess up there. Now we put the mountain on top of
12 it, all that tonnage, and we squeezed it all out. My
13 wife's a diabetic because of it and my oldest son is.

14 Our lawyer when we were fighting this was Arlene
15 Violet. Everybody knows who Arlene Violet is, don't you?
16 This guy Hugh Kaufman brought us Schwartz and Graham.
17 Schwartz was a young lawyer who wrote the first laws for
18 the EPA. Do you know who he is? All right. I will
19 finish up when I'm ready.

20 THE CHAIRMAN: Well, I mean, we have --

21 JOHN STEPHENS: I came up from Florida
22 here to do this. Yeah? Well, they can talk.

23 Now, this has been going on since 1978. I have been
24 to hundreds of these meetings, ladies and gentlemen. Do

1 you see any change up there? It still goes on. If this
2 was a private dump they'd have closed them up. They
3 closed all the private dumps in Rhode Island, didn't
4 they?

5 AUDIENCE MEMBER: And they put it here,
6 in Johnston.

7 JOHN STEPHENS: Exactly. So this is why
8 our wells are polluted. Now you got city water because
9 we sued the state, we went to Washington. My house,
10 everybody passes my house on the corner of Reservoir
11 Avenue. I cannot sell that house, I cannot get insurance
12 on it. That was designated a hazardous waste area
13 because the well was so bad, and I used to water all my
14 lawn, so I could get a \$250,000 grant for the first pipes
15 in the ground. And that's what we did. We scrounged and
16 scrounged that money. Didn't cost the taxpayers of
17 Johnston one red cent. When we got done we left a
18 million dollars down here at the town hall. I can't find
19 that either.

20 So you see, this is what we're facing. This study
21 they did was done by Goldberg Zone(phonetic) way back,
22 nothing came of it. Nothing's gonna come of this. And
23 don't tell me that leachate isn't leaving that dump
24 because I can show you well reports, and some of these

1 people are no longer with us because of that.

2 Now we got an air problem. Don't talk about the
3 water, we don't drink the wells anymore. We got a hell
4 of an air problem. We've got monitors going on in houses
5 that nobody knows about. We're not gonna tell anybody.
6 We're finding real problems. We're finding cause and
7 effect.

8 I'm about ready to launch a hundred million dollar
9 lawsuit against the State of Rhode Island for my wife and
10 my son, and maybe against the Town of Johnston. But the
11 trouble with that is, gentlemen and ladies, that's your
12 money and I don't want to do that. We've been going
13 through this for years. But it's your money I would
14 spend, because that tax money you worked hard for and I
15 can't see going for a lawsuit. But they should have
16 cleaned that dump up and closed it. They knew it was a
17 hazardous waste when it was done. And the man who did
18 this was your own lieutenant governor. Lived right
19 across the street from you. Need I say more?

20 So, ladies and gentlemen, all I'm trying to tell you
21 people, this EPA thing isn't going to do you any good.
22 Not one damn bit of good because that's a money maker up
23 there. The graft in that thing has been unbelievable. I
24 told you, I spent a million dollars of your money on that

1 other study because we were in charge of it. The water
2 group, we got powerful, we were able to get things done.
3 That's how we raised 15 million dollars to put the pipes
4 in the ground, otherwise we wouldn't have water today.

5 AUDIENCE MEMBER: Can I make a little
6 correction on what you just said? I agree with you a
7 hundred percent except for one fact.

8 JOHN STEPHENS: What's that?

9 AUDIENCE MEMBER: You said in 1978.

10 JOHN STEPHENS: That's when it started.

11 AUDIENCE MEMBER: I built my house in
12 1964 on Peck Hill Road. There was never less than ten
13 trucks passing my house from midnight till four o'clock
14 in the morning.

15 JOHN STEPHENS: Oh, I know that. I know
16 it.

17 AUDIENCE MEMBER: 6,000-gallon tankers,
18 multiply it out. Ten trucks, 30 days a month, is well
19 over a million gallons. It went on for years.

20 JOHN STEPHENS: Years. That's what I
21 said, Bob.

22 AUDIENCE MEMBER: But I'm just trying to
23 extend the fact --

24 JOHN STEPHENS: And the problem is,

1 he hadn't have been here we wouldn't have gotten as far
2 as we did get.

3 Now, I want to tell you something, people, one more
4 thing. I think what they ought to do is buy us all out.
5 Buy all the houses up there, make the whole damn place a
6 dump. What do you say?

7 (applause)

8 JOHN STEPHENS: Thank you, ladies and
9 gentlemen. I'm not going to take any more of your time
10 up but just remember what I told you. Everything you see
11 here --

12 AUDIENCE MEMBER: Bogus.

13 JOHN STEPHENS: Exactly. We've gone
14 through this how many times? How much money did this
15 cost us? Tell the people that. What did we pay those
16 people to do this?

17 THE CHAIRMAN: Thank you, Mr. Stephens.
18 Christine Buttner, you'd like to make a comment.

19 JOHN STEPHENS: Are you going to tell us
20 how much it cost?

21 THE CHAIRMAN: No.

22 JOHN STEPHENS: You're not?

23 THE CHAIRMAN: No.

24 JOHN STEPHENS: Why not?

1 ladies and gentlemen, it just didn't come from New Jersey
2 because once this got going, it came from New York.
3 Because New York has well water laws. I was down there.
4 See we've lived this thing. We have lived this thing. I
5 have two people sick because of it. My family -- hey, I
6 ran a business. Sometimes my partner would say to me,
7 "We gonna run this business or are you going to be an
8 environmentalist?"

9 We got into the Rhode Island Environmental and took
10 it over because we were sick of bird watching. We said
11 we're going to become the mop and get something done.

12 Nobody has mentioned the fact that the auto club
13 went in there. Jim Tericani, two of my people and I laid
14 in that dump with a state policeman with ultraviolet
15 cameras at night to catch these people. We put them in
16 jail, but we still got the dump.

17 So think about what's going on here. I am gonna
18 call Mr. Kaufman, this guy is way up in the EPA. He told
19 me this summer, "If you have a problem again, John, call
20 me." Because if you could have seen the way this thing
21 went in Topple Springs you would have never believed it.
22 They got a problem.

23 And you see these people here? Two of them came in
24 late. They went home. That's how bad I'm talking. If

1 THE CHAIRMAN: Because I'm not.

2 JOHN STEPHENS: Why? In other words
3 you're not working for us then, are you? You're working
4 for the government.

5 AUDIENCE MEMBER: Can I say something?
6 (discussion amongst audience)

7 CHRISTINE BUTTNER: I have a few things
8 to say myself in regards to this situation. I have a
9 letter before me, in front of me from Lincoln Almond, the
10 governor, on February 9, 2001. I also have one from Jack
11 Reed, the senator, okay? And Lincoln C. Almond. I also
12 have one from the state Senate and this is pertaining to,
13 there were selected individuals that we all know that
14 were bought out. I am totally familiar with it. Let me
15 tell you something, I have letters right here in my hands
16 in black and white. If you care to read them straight
17 out, be my guest.

18 I did a little bit of research myself and I just
19 want to find and let you people know that this lady that
20 lived right beside me, not -- I would say not beside me,
21 let me correct myself. Diagonally across from me on 77
22 Old Pocasset Road, okay? And she was removed from the
23 premises due to her son being ill. A letter was
24 presented to Mr. Reed and Governor Almond and they had

1 her removed. It's right here written in black and white.
2 I have it in my hand. Will anybody get it in their
3 hands? Definitely not. This is my proof.

4 I did a little research also yesterday in town hall.
5 I found that she did not sell her house yet, the closing
6 is tomorrow. And the reason for not selling the house
7 was because a gentleman I spoke with in pertaining to
8 R & J Construction, Incorporation, a radon corporation,
9 that knows no houses in that vicinity could be sold due
10 to high radon levels. I'm not saying it's caused by the
11 landfill. Don't get in an uproar there. Okay? But one
12 thing I am saying is that here is the letter. According
13 to Mrs. O'Lynn, the state -- including that her son's
14 illness is directly caused basically by the gas emissions
15 from the landfill.

16 Well, this little boy had asthma, okay? I too have
17 asthma. I have had asthma -- I never had it when I moved
18 there, but I contacted it afterwards. And I do -- I do
19 have documentation on that and no, will I submit it to
20 anybody? Not any of you people because I want to know
21 for a fact that just as she was taken out of there by the
22 government in the State of Rhode Island, okay, right
23 there in black and white, why don't you do anything for
24 anybody else? There is a health issue here. Wake up and

1 smell the coffee.

2 JOHN STEPHENS: No, smell the dump.

3 CHRISTINE BUTTNER: That's about what we
4 smell between the gas -- and let me know that I do make
5 regular calls due to -- I don't know if you people can
6 smell it, I don't know where you live, but let me tell
7 you something, I could sure smell the gasses in my house
8 for the last past few days and I have made phone calls to
9 the people, and you know something? Doesn't seem to me
10 nobody does jack shit about anything here. Do they care
11 about anybody? Who the hell do you people work for? And
12 I am so glad that you did send me this so that I could
13 come to your meeting tonight because you know something?
14 Now you see the truth. You are only a minor thing. You
15 step in at the late point of the game. You know nothing
16 of what is consisted in this landfill and before they
17 even -- even before Rhode Island Resource Recovery owned
18 it. You have no idea. No idea.

19 And I didn't buy my house from Rhode Island Resource
20 Recovery. I happened to buy my house from a private
21 owner. It doesn't mean nothing because they promised --
22 even the people who purchased from them -- a 2,000 foot
23 buffer zone in their deeds. Did they give it to them?
24 No, they did not. They infringed upon our 2,000 feet and

1 built what they wanted to build because the governor has
2 the run of the state, and the Rhode Island landfill has
3 the run of the town. And you can't tell anybody any
4 different. You can fool some people some time but you
5 can't fool them all the time. Because I have this right
6 in my hands, and this is right from the senator's office.
7 How much more can you get? I think you should buy these
8 people out. We have a right to be entitled to be bought
9 out just as the first buyout.

10 You've taken our life from us, you take our quality
11 of air from us, you take our drinking water. And, you
12 know, another thing is is that I don't understand. You
13 people realize you have a Superfund Site up there, okay?
14 And I want you people to enlighten me how in good God and
15 good faith can you ever allow any real estate to sell any
16 property in that proximity, and resell and buy houses
17 back and -- okay? And me being a resident and buying
18 from a private owner, I come to a house that was hooked
19 up to well water for five years. Five years I had no
20 knowledge of wells being contaminated in the area. This
21 man confirmed my point.

22 That's as far as I'm gonna go with that because, you
23 know, we have the proof, we have the facts and that's all
24 we need. Okay? And I just wanted to make it a point

1 also, my neighbor, which is Angela Sheridan, also asked
2 me to make it a point -- she could not appear here this
3 evening -- that she, too, also has a very rare ailment,
4 and a little boy down the street 14 years old died of a
5 rare form of leukemia whose house still presently has
6 well water.

7 I think you people need to wake up. I still have
8 well water in my house, and you know something? Not
9 nobody even checked into it, did they? And I drank it
10 for five years before I tapped between city and well. I
11 have both in my house, but for five years I had no
12 knowledge of that being contaminated in that vicinity and
13 what was dumped in that dump by these other Sylvestri
14 Brothers. I had no idea and neither do you. None of you
15 sitting here. You haven't been here long enough. Thank
16 you. I would like to make it for the record. Thank you.

17 (applause)

18 THE CHAIRMAN: I'll make sure --

19 CHRISTINE BUTTNER: But I want them right
20 back.

21 THE CHAIRMAN: You can mail us copies.
22 This is Arthur Grace, he's gonna make a comment.

23 ARTHUR GRACE: A lot of you people here
24 today are not familiar with the ATSDR. The Agency for

1 Toxic Substance Disease Registry regulates how much
2 toxicity is taken into your body through hazardous waste
3 sites, dumps, illegal dumps, whatever. This is a -- I
4 don't even know. Eighteen pages of violations. A lot of
5 the people in Rhode Island are putting this whole
6 landfill issue on the State of Rhode Island and the Town
7 of Johnston. We're not the victims here -- we're the
8 victims as far as we got to live with it, but it's the
9 State of Rhode Island's problem. It's not just the
10 Johnston's problem, okay?

11 Approximately a year and a half ago we discovered
12 58,000 cubic yards of hazardous waste dumping. DEM calls
13 it solid waste. Let me explain to you in their own words
14 what is considered solid waste that can be accepted in
15 the landfill and what is considered hazardous waste.

16 Solid waste, this is a search warrant by DEM.
17 Original document. Search -- solid waste means garbage,
18 refuse, other discarded solid waste generated by
19 residential, institutions, commercial, industrial and
20 agricultural sources but does not include solids or
21 dissolved material, land, domestic sewage or sewage
22 sludge; nor does it include hazardous waste as defined in
23 the Hazardous Waste Management Act 19.1 of this title.

24 Robert Recchia of 90 Mill Street did in fact dump

1 hazardous waste.

2 Right now, folks, they are trucking 58,000 cubic
3 yards to your Central Landfill as of today. They're
4 turning it to 40 trucks a day to your landfill. That's
5 per order of DEM. Okay? The biggest kicker of the
6 parade is this: Here is the state legislation actual
7 documents of NEED Recycling. Guess who made the
8 hazardous waste? NEED Recycling has produced the
9 hazardous waste. He has not been stopped, he has not
10 been -- he still produces it every day, folks. Econolog
11 which you burn in your fireplaces has never been tested
12 by DEM, never been tested by EPA, never been tested by
13 the State of Washington, nobody. Okay? You burn this in
14 your house. He claims on his box it's one hundred
15 percent virgin wood. Guess what, folks. You take a pile
16 of sawdust, put it in a cup, you know what sawdust does?
17 It sinks. You take econolog, put it in a cup of water,
18 it expands. What does particle board do when you put it
19 in water? It expands. Particle board is outlawed. You
20 cannot use it as a subfloor according to the Building
21 Commission of Rhode Island because of the glues and the
22 toxicity of the glues. It's right here according to
23 Rhode Island.

24 You people are going after the dump, which is a good

1 58,000 cubic yards of hazardous waste behind Plainfield
2 Valley Condominiums. Mr. Mulhaire -- this is quote
3 unquote -- Mr. Mulhaire stated that the analytical data
4 shows that the metals, organic chemicals, PCBs and oils
5 were contained within these samples submitted. He also
6 stated that there was an elevated level of lead, other
7 metals present in various concentrations. Mr. Mulhaire
8 stated the analytical data shown in the solid samples
9 submitted to be analyzed would be considered a solid
10 waste. And that the leachate sample is considered a
11 pollutant. This analytical data is not consistent of
12 dumping of acceptable clean fill. Mr. Mulhaire went on
13 to state that there are violations of the Recchia
14 property for operating an unlicensed solid waste
15 management facility.

16 Right there, three of the things he stated are
17 considered hazardous waste. PCB is hazardous waste,
18 folks. I called the Department of Environmental
19 Management. I said I have some shingles that contain
20 lead off the side of my house, can I dump them in the
21 landfill? They told me no, you cannot. They are
22 considered hazardous waste. I said it's only two bucket
23 loads. They are considered hazardous waste. I talked to
24 a gentleman named Chris Schaeffer. He told me that it's

1 thing, which I'm all for. I'm going after the dump. The
2 problem is we gotta stop the people putting it in the
3 dump. We're going after the -- we're going after the
4 problem after it's already there. We need to stop the
5 people from dumping it there. We need to have every
6 truck that goes in there tested, which is according by
7 Rhode Island State law, am I correct? Oh, you don't know
8 the answer. But according to Rhode Island State law,
9 they're supposed to do spot inspections of all the trucks
10 to make sure there's no asbestos, you know, no
11 out-of-state waste. Nothing. Nothing gets tested.
12 Okay?

13 You turn around and you look at this, there's
14 hundreds of pages. These are all documents. All right?
15 From what NEED Recycling, Robert Recchia and the Central
16 Landfill have done. Okay? Robert Recchia pled guilty to
17 trying to run us all over which everybody knows. Okay?
18 Now the Central Landfill has put up \$200,000 to -- yeah,
19 Rhode Island Resource Recovery, I stand corrected. Rhode
20 Island Resource Recovery has put up \$200,000 and given it
21 to Robert Recchia to remove the so-called solid waste --
22 by DEM's own words it says hazardous waste. Why would a
23 dump accept hazardous waste?

24 LOUIS VINAGRO, SR.: (from audience) Why

1 is a good question. This is what -- I'm not here to
 2 defend my family, my son. But as far as him making the
 3 logs and everything else, why didn't they come in and
 4 stop him before? This is something that's all talk and
 5 it's all done by the State of Rhode Island, them monkeys
 6 up in the state house robbing all the taxpayers of the
 7 state of Rhode Island. Plus the Town of Johnston's
 8 getting it. I'm getting robbed because now they're
 9 picking on my grandson. I'm not picking on you.

10 Now, everything they do is not legal. Everything's
 11 wrong. They've been bringing this stuff in here, they're
 12 accepting it. Listen, I started them boys doing this not
 13 to go to Sylvestri Landfill. I went to Sylvestri
 14 Landfill when that gentleman said it was a hole deeper
 15 than what they think it is. I hauled gravel out of there
 16 to some of them jokers. Mr. Wright and also
 17 Mr. Bendicks, they were getting their payoff. I was the
 18 man to see everything that went on.

19 Bribery business. I want the FBI, CIA in here.
 20 This is a problem over here. Don't go blame the
 21 politicians and everybody else. Blame the State House.
 22 Not you.

23 ARTHUR GRACE: I respect you a hundred
 24 and ten percent. The man is absolutely right. This is

1 Louis Vinagro's father for who don't know it. All right?
 2 He is saying in his own words why didn't they stop him,
 3 and he's right. Why did he get as far as he got without
 4 being stopped. That is my question here today and it
 5 comes from his own father. This is one of the most
 6 respectful men I've known. I don't know him personally
 7 but I know what he did for the state and what he did when
 8 he was a younger gentleman and what his wife did. Okay?

9 What Louis doing, whether he knows it's right or
 10 wrong, I don't know. But the point is the DEM, EPA
 11 should have shut him down and said, Louie, this is wrong,
 12 this is illegal, you can't do this. But you know what?
 13 They don't do it. He is producing millions and millions
 14 of square yards of hazardous waste or solid waste,
 15 whatever you want to call it. But it cannot be produced
 16 in this town every single day. Right, you have to
 17 recycle. He only had --

18 (discussion amongst audience members)

19 LOUIS VINAGRO, SR.: Now if it's a
 20 hazardous waste it should be gone from the landfill.
 21 Let's bring it to a recycler who's supposed to handle
 22 that.

23 ARTHUR GRACE: That's my point exactly,
 24 Mr. Vinagro.

1 LOUIS VINAGRO, SR.: (from audience) I
 2 understand what you're trying to put up on EPA. But, you
 3 know, I started them boys being employed and they got
 4 this deed. Believe me, I know my oldest son wants to do
 5 it right. Now -- Louis, he got so beyond, I don't know
 6 why he's putting up with all this because he can pack up
 7 his bags, (inaudible) to do what he's doing in Johnston,
 8 Rhode Island. And the State of Rhode Island don't
 9 recognize it because it's all political, my friend.
 10 Because I know that the handbag used to go to Sylvestris.
 11 I knew if I opened my mouth there'd be a few going to
 12 jail. That I'll tell you right now. It's all political.

13 ARTHUR GRACE: I agree with you. I
 14 commend you for what you're saying, sir. I really do. I
 15 am not disrespecting your family.

16 LOUIS VINAGRO, SR.: (from audience) I'm
 17 putting up with the smell and it's not even a thousand
 18 feet away from my window. My beautiful picture window.
 19 I had a block on my air conditioner vent. Here's my
 20 wife. You know, last week here you look great. You know
 21 why I look great? I'm fighting. I have prostrate
 22 cancer, leukemia, diabetes. What else have I got? Tell
 23 them. You think I'm going to go fight the State of Rhode
 24 Island? I won't have a chance. And I asked one of my

1 specialists that takes care of my lungs, he said don't
 2 get me involved, they'll take my license away from me.
 3 And some of these people on Central Avenue and myself,
 4 I'm directly across, and people on Central Avenue get --
 5 that thing is burning every night 24 hours a day and I'm
 6 suffering with it. I don't say anything. I'm saying it
 7 tonight. I don't go to council meetings, I don't want to
 8 get involved with this mess.

9 ARTHUR GRACE: I don't want to disrespect
 10 you.

11 LOUIS VINAGRO, SR.: They're taking it
 12 from out of state and they're bringing it to Rhode
 13 Island. What is this supposed to be, the dump of the
 14 world? Don't they understand the dump ain't going to be
 15 here forever?

16 ARTHUR GRACE: All's I'm asking is -- I
 17 mean I've lived in this town eleven years. All's I ask
 18 is, Louis, knock it off. Clean it up. Central Landfill,
 19 knock it off. Don't accept this. It's hazardous waste.
 20 Shut it down. No more hazardous waste. No more lead, no
 21 more asbestos, no more nothing. If you're gonna produce
 22 econologs, get them inspected. Prove they're a hundred
 23 percent. You know what I mean? Jan Reitsma turns
 24 around, I have over 20 letters from, you know, Senator

1 Jack Reed, Patrick Kennedy, everybody, you know, where
2 Jan Reitsma says it's the attorney general's problem. He
3 says no -- then the attorney general sends a letter back
4 saying no it's not. So, he sent it to the Secretary of
5 State. Jan Reitsma needs a -- I can't say that word but.

6 JOHN STEPHENS: Yes, you can.

7 ARTHUR GRACE: No. He needs to either do
8 it or get off his pot. You know what I mean? This is
9 the director of DEM that's supposed to be looking out for
10 us people here in the town and he is doing absolutely
11 nothing. Every time I have called Jan Reitsma, you know
12 what it gets? "How many media stations have you called,
13 Mr. Grace?"

14 And I said, "How many do I have to call, Jan?" I
15 said, "Do I have to take this to a national level before
16 you turn around?" I said, "Do I have to embarrass the
17 State of Rhode Island as a, as a state, which is a
18 beautiful state, which is one of the prettiest in the
19 country, I think." I said, "Do I have to embarrass the
20 state of Rhode Island because you don't want to do your
21 job and Linc Almond doesn't want to do his job or Fogarty
22 doesn't want to do his job and you guys won't even see
23 me? Is that what it's going to take?" And I said fine.

24 People, welcome to CNN. You're all national.

1 which has been well contaminated which has never been
2 tested by the EPA. What's the answer to that, gentlemen?

3 Let me read you something from the restraining
4 order. "The unidentified driver of lead trucking would
5 only say that he was hired by Patriot Hauling to pick up
6 this material and deliver it to the site," which is
7 Recchia's. "The site driver operator of Patriot Hauling
8 vehicle stated that Mr. Spiers -- which is the ME -- that
9 Patriot Hauling was buying the ground up wood peg
10 material from NEED, and delivering it to NEED Mill Street
11 property."

12 That's Louie Vinagro that we almost voted in for
13 mayor dumping in our back yard. And that's a legal
14 binding agreement per order of DEM. What's wrong with
15 the picture, folks? You gotta get rid of the problem
16 before you solve the solution.

17 (DISCUSSION AMONGST AUDIENCE)

18 THE CHAIRMAN: Mary Cerra.

19 MARY CERRA: Good evening, everyone. I'm
20 here to submit testimony that was given for a bill that I
21 introduced in my first term as a legislator. I
22 introduced a buyout based on the Central Landfill
23 committee meetings and the price of the people, which
24 then alerted me to make that my first and most difficult

1 They're here right now. We just made it to the national
2 level because, you know why? There is 303 hazardous
3 waste dump sites in the State of Rhode Island. 303. Do
4 you realize that? That means every three square miles
5 you are walking on a hazardous waste site. This is known
6 hazardous waste sites. How many is unknown is not even
7 reported.

8 AUDIENCE MEMBER: Listen to the stupidity
9 of this state. We don't want to put a container port in
10 in Quonset where we can get heating oil without worrying
11 about river icing up. And that arrow that's on there is
12 aimed straight at Narragansett Bay. Now, I've got a head
13 for my boat. If I pump that head into the bay, they'd
14 jump all over me for making a couple of spills. That
15 thing is going into the bay every single day. We're not
16 supposed to be doing anything about that. Nobody pays
17 attention to anything in this regard.

18 That, that well of mine, like I said, is 310 feet
19 deep, they're checking at 200 feet. Where is all the
20 stuff that's well below that? I even think that the
21 bottom of that landfill is well below the 200-foot
22 levels. So how are they --

23 ARTHUR GRACE: Let me give you a
24 summation. Robert Recchia's land borders Simmons Brook,

1 bill. But I -- I was able to handle it. Within this at
2 least we managed to get to committee. Went to finance,
3 the hearing was held, we came out of committee. We had a
4 final meeting so the vote could be had. So we weren't
5 just pushed out. We were -- we were heard and they
6 listened to us.

7 Tonight I have with me the tapes and I am going to
8 submit them as part of the record. I would like to read
9 how I'm going to submit them. This is going to the U.S.
10 Environmental Protection Agency, August 30, 2001.

11 "To whom it may concern: I am submitting two video
12 recordings of the meetings held between the House Finance
13 Committee and the people in the area of the Central
14 Landfill. These meetings were held on April 11, 2001 and
15 May 30, 2001. After reviewing these videos, you will
16 have a clearer understanding of the residents' concerns
17 regarding all the issues surrounding the Central
18 Landfill. Sincerely, Mary Cerra, Representative 55th
19 District."

20 This wasn't an easy bill but I felt it's good to
21 start off with something this difficult because I will
22 learn a lot faster. So here are two videos that I am
23 submitting and here is the letter -- no, they are your
24 videos to keep to please go over the videos. They will

1 tell you a story. You will hear the testimony of the
2 people. You will hear their cries.

3 And then we also had a tour of the landfill. And
4 when you see the tour where Patti took a tour with the
5 Finance Committee chairman, myself, the attorney of the
6 Finance Department. We toured the Central Landfill and
7 we saw the little things that were necessary to see.

8 It wasn't long then there was a bill that was
9 introduced, another one called 433. That 433 was a bill
10 that takes away the local zoning powers from the Town of
11 Johnston. So Resource Recovery can do whatever they want
12 there as 433 allowed them that opportunity. That was
13 voted in the Senate by Beaudoin who is a member of Rhode
14 Island Resource Recovery. And also passed in the
15 House -- passed on the floor of the Senate; came to the
16 House. I knew I had something difficult when it came to
17 the House because being new on the block, a new kid on
18 the block, I knew I was working with something very
19 difficult. However, I think we had a real good fight and
20 they really did listen to us. So I, I feel credited for
21 what they did do.

22 But I got on that floor with my 433, and believe me,
23 I told every representative that sat and didn't vote
24 that -- for that 433, that they needed to be concerned

1 about their communities because Resource Recovery can go
2 to any community now and do what they're doing in the
3 town of Johnston. And maybe that's our way to get rid of
4 them. So, it may be what wasn't beneficial is beneficial
5 now.

6 Now, I know you people are great people and I know
7 you're trying. I'm not saying you're sitting here
8 because you don't care. You have a job and that's what's
9 important and I understand that. And I want to be fair.
10 But I wrote a letter to the governor because I wanted him
11 to veto that 433. Please veto that or sign it, whatever
12 he thought was right. But the governor decided not to
13 veto it, not to sign it, and I'm still waiting for a
14 reply with an explanation. I believe that if he didn't
15 veto it and he didn't sign it, it -- I need an
16 explanation. Why? Based on the constitutionality of the
17 bill. I believe it's unconstitutional. And that's what
18 I want to hear. And that was another one of my
19 questions. I'm still waiting for my answer, I sent the
20 second letter. I'm sure if I don't get that one I'll
21 have to visit the attorney general.

22 And I sent him, by the way, a copy of the 433 with a
23 letter explaining every section of that law and what it
24 would do and I said, "Please, Governor, under the

1 assumption that you read the bill, let me inform you of
2 the harm you did to the people of Johnston. Governor, I
3 guess you knew it was a bad bill but once again big
4 business, not the people, had your ear."

5 Tonight I would like to go over a newspaper article.
6 This newspaper article I have here was 1989, Friday,
7 March 24, 1989. "For its size, Rhode Island spews out
8 most toxic chemicals, EPA study says."

9 I wrote a few notes, I just wanted to go over some
10 of them. According to EPA estimates, Rhode Island
11 industries releases 17 million pounds of the chemicals
12 into the air. In 1987 that translates into 16,000 pounds
13 per square mile. And three times and more than New
14 Jersey, the second ranked state. Numbers for 1989 will
15 not be available for several months. Thomas Dan Vando,
16 chief of the toxic and radiation assessment section of
17 the EPA's New England division said, "It may not give --
18 it may not be surprising that a small-developed
19 population state will have emissions that may be of more
20 concern than a larger state. In fact, when the ranking
21 is circulated on the basis of state population, a very
22 rough indicator of an industrialized nation, Rhode Island
23 ranks the ninth."

24 That's pretty sad for a small state. So all I can

1 say is I will see that you get a copy of this newspaper.
2 Okay. You certainly may have those in the record because
3 that means local zoning leaving the people of Johnston,
4 EPA please be on the lookout because then they can do
5 whatever they want and nobody's gonna care.

6 I believe at -- with -- when the 433 bill did go
7 down, I put in a resolution, an emergency one to gather
8 a -- create a special House commission to study the
9 feasibility of extending the buffer zone adjacent to the
10 Resource Recovery Corporation Landfill in the town of
11 Johnston. And I'm going to get this commission together,
12 but I'll tell the public now, if I don't have any video,
13 if I don't have any stenographer, if I don't have any
14 translation of any kind, I will not do this because this
15 will not benefit you. What it will do is only make --
16 build you up to something that you have to fail with and
17 I don't want to put my people through that again.

18 So I will go with this providing everything is
19 documented because this is now something that I, I will
20 only chair. I don't choose the people. But I will chair
21 it so I want you people to know that. I don't want
22 another Central Landfill Action Committee whereby we're
23 meeting and meeting and meeting and meeting and nothing
24 is developing. That's just a waste of time and all it's

1 doing is building up your pressure.

2 So I say, EPA, whatever you can do for us, we look
3 at you as our greatest. In fact, Mr. Bob Mendoza did
4 indicate to the finance chairman, please buy these people
5 out. He wrote a letter telling them to buy them out.
6 And all I can say is if they can buy us -- these people
7 out, they can do whatever they want once they build up
8 that wall. At least they're protecting the people's
9 environment and their government.

10 And I want to thank you for listening and I want to
11 thank you all for being here.

12 THE CHAIRMAN: Mr. Vinagro, would you
13 like to say something more?

14 LOUIS VINAGRO, SR.: I said enough, sir.
15 Thank you.

16 THE CHAIRMAN: You're welcome, sir.
17 Mr. Major. Bill Major.

18 BILL MAJOR: Yes. My name is Bill Major,
19 I live at 12 Apple Tree Lane, Johnston, Rhode Island.
20 I'm speaking for my -- not only for myself but as also as
21 a spokesperson for the Citizens Local Alliance to Save
22 Our Properties of Cranston, Johnston. I would like to
23 specifically at this public meeting tonight by the United
24 States Environmental Protection Agency to propose a plan

1 for off-site impacts from the Central Landfill Superfund
2 site. A copy of the Central Landfill Superfund site
3 proposed plan, along with other technical documents
4 related to the site will be available for review on
5 August 14, 2001, and an information repository from
6 Marion Mohr Memorial Library Site in Johnston, Rhode
7 Island.

8 With that said, first off, the Environmental
9 Protection Agency's Superfund proposed plan at the
10 library, at the Johnston Library did not include any
11 testing data from December 1997 through the present. And
12 it took a full week for EPA to get this information to
13 citizens on Thursday, August 23, 2001. Noting that for
14 the record, since we do have time boundaries to submit
15 our core issues protecting our families' health and our
16 environment in writing, since we did not get this data
17 until the 23rd of August, I think we need to go over
18 these volumes and volumes of bureaucratic regurgitated
19 documentation. We need an extension of one week. It's
20 overwhelming.

21 Now they piled layers and layers merely from GZA
22 Environmental Services, Resource Recovery's hired
23 consultants. You took this data and you went and
24 regurgitated it and regurgitated it. This house of

1 cards, the foundation is by Resource Recovery's own hired
2 consultants paid. If you pay somebody to do a study,
3 they're gonna come out with the results you want. Let's,
4 let's be fair.

5 So with that said, after receiving this second
6 packet on August 23, which included two disks. The first
7 disk reflected correspondence from December 1997; the
8 second disk does not have any correspondence whatsoever.
9 It has no correspondence beyond the 1997 date. It merely
10 reflects the final report. They come out with a big pile
11 of -- a final report. There's been no communication or
12 correspondence from '97 up and through this summer.

13 The truth is what we need to see. We still don't --
14 do not have any correspondence of what was said and
15 drafted by the Environmental Protection Agency. We are
16 concerned that we only have releasable reports by EPA.
17 Not any non-releasable is what we just found out there's
18 non-releasable correspondence up there they're keeping
19 from the public in the final report. We have not
20 received any of the important correspondence reflecting
21 who has reviewed these reports.

22 What we don't know is if there is someone in the
23 Environmental Protection Agency who might have questioned
24 this specific testing process. Nothing except the final

1 report by GZA Environmental Services Group, Resource
2 Recovery's paid consultants. This control process
3 appears to be a sham. It is unfairly slanted towards
4 politically powerful state agencies and air public
5 officials. We do not have any politically -- we do not
6 have any documents from Mr. Byron Mah, EPA's project
7 manager, addressing the leachate on the record. What has
8 Mr. Mah worked on for the past two years? He only was
9 put on this in January 1999 and what has he done?

10 We do know that Mr. Byron Mah jumped the gun. He
11 put the cart before the horse. He went to the only
12 newspaper in this -- he communicated with a reporter from
13 the only newspaper in this state. As a result, this is
14 what Mr. -- the people in this state are misled to
15 believe. EPA: The landfill contamination no threat to
16 neighbors. These stories go on. And Mr. Byron Mah is
17 the only one who's quoted. Architects show the Superfund
18 site as having no effect on the Scituate Reservoir, Almy
19 Reservoir, private wells, or on the health of people,
20 plants or animals in the nearby neighborhoods, said EPA
21 project manager Byron Mah. This is unconscionable.

22 The Superfund site is a half acre section of the
23 landfill that is the former dumping ground for at least
24 1.5 million gallons of liquid hazardous waste. A

1 cocktail of everything from acids to petroleum products
2 to solvents.

3 Let me get the record clear. This is not, as
4 promoted by EPA's representative, a half acre Superfund
5 hot spot. This is a massive 121-acre Superfund site, one
6 of the biggest on the East Coast of this nation. Who's
7 protecting the public's best interest?

8 With that said. Fact: The EPA's mission by statute
9 is to protect the public's health and our environment.
10 What is the Environmental Protection Agency's position
11 here tonight? Do we have a problem or don't we? EPA
12 says we don't have any problem. This is EPA. The first
13 thing that we all need to acknowledge is that there is a
14 problem and a serious one affecting human health in our
15 environment before we can promote a so-called remedial
16 plan. In the absence of such an acknowledgement by the
17 EPA, how can you have a rescue plan?

18 In order to devise a solution, first of all EPA
19 needs to admit that there is a problem. By taking Rhode
20 Island Resource Recovery Corporation's paid consultants,
21 GZA Environmental Services, controlled testing data, the
22 Environmental Protection Agency appears to be in denial.
23 This is a problem of a fundamentally flawed irrevocable
24 oversight monitoring system, and if the EPA does not

1 remedial plan. But it can't be based on a description of
2 the problem that suggests that there is no problems.

3 There are serious ecological health problems and
4 environmental injustices on this specific area, the State
5 of Rhode Island. We are concerned with the lack of
6 independent fair evaluations by the Environmental
7 Protection Agency of the existing health problems in this
8 specific area around the state Central Landfill. We know
9 people and a child who have died of cancer, and others
10 who are dying of cancer. Also included diabetes and
11 numerous other ecological health hazards. How can EPA
12 and Mr. Byron Mah say that the 121-acre Superfund site is
13 all hunky-dory.

14 Fact: There have been no medical studies -- none --
15 addressing local residents' health problems. How can you
16 go out and say everything's hunky-dory when they have not
17 done any health problems studies. We do not need an
18 engineer hired by Rhode Island Resource Recovery
19 Corporation to tell us our family's health is not
20 negatively affected. Why is there no need for studies
21 addressing the serious health conditions in this
22 residential area around the state Central Landfill.

23 We need credible institutions like the Rhode Island
24 Medical Society or the American Medical Association to

1 acknowledge that there is a problem, then there is no
2 reason for EPA to promote a plan.

3 That is not how our Environmental Protection Agency
4 is supposed to work. We have the Rhode Island Resource
5 Recovery Corporation, a quasi-public state agency's paid
6 consultants, GZA -- Goldberg, Zoya & Associates. The
7 same ones who built the 52 wells that they're doing the
8 testing from, which came at the right time. Knocked me
9 off my chair.

10 Self-police. They self-police and that's the basic
11 root of our problem. That's the foundation of this house
12 of cards. It's controlled by Resource Recovery. We have
13 Rhode Island Resource Recovery, a quasi-public state
14 agency, paid consultant GZA, control a cursory data put
15 forth by EPA representative, Mr. Byron Mah, stating that
16 miraculously, there is no longer any contaminated
17 leachate poison from the 121-acre federal Superfund site.
18 And so, until we have agreement on the dimensions of the
19 problems, there really cannot be a remedial plan devised.

20 One element of this process cannot impose its will;
21 specifically Rhode Island Resource Recovery Corporation's
22 hired consultants, GZA Environmental Services controlled
23 testing data. I want to say clearly, we are willing and
24 eager to sit down with EPA and work together to devise a

1 immediately evaluate and document the serious health
2 problems in this specific area. Also, we need
3 independent, objective testing done by professionals with
4 impeccable credentials. For example, we appeal for a
5 grant from the EPA so that citizens would be able to work
6 with Brown University chemists and their staffs to do
7 their testing. Our families require and deserve no less.
8 We have no confidence in Rhode Island Resource Recovery's
9 consultant's controlled testing data. It is not
10 consistent with our experience, and the residents will
11 not accept this cursory documentation by GZA
12 Environmental Services that is flawed.

13 I repeat, we all need to remember that EPA's job is
14 to protect the public's health and our environment. What
15 is EPA doing? You are enabling Rhode Island Resource
16 Recovery Corporation to perpetrate this whitewash. The
17 Citizens local Alliance to Save our Properties will be
18 addressing the core issues in writing to the EPA,
19 including others in Washington that truly do care about
20 human health and the environment. These are the issues.
21 Public health and the environment, together. A
22 connection that resonates with the public. Wake up.

23 Of course we the citizens have come to realize that
24 sadly we cannot count on EPA alone to make our

1 environment cleaner. EPA is supposed to be our country's
 2 environmental watchdog. Who's watching the watchdog?
 3 The public must do that. We must make sure the EPA and
 4 our local state and federal-elected officials take the
 5 appropriate actions. The EPA should be making the
 6 reduction of ecological health hazards and environmental
 7 injustices their only priority; not continuing to enable
 8 these politically powerful special interests to continue
 9 business as usual. By legitimizing our current system
 10 environmental regulatory checks and balances, we hope the
 11 EPA takes to heart our very practical advice and value
 12 human health concerns. The citizens will not tolerate
 13 these flagrant environmental injustices in our community.
 14 EPA needs to do their job. This report is not truthful.

15 In closing, I would like to bring to EPA's attention
 16 a study just completed in June 2000, only one year ago.
 17 And I won't get into this report because of time
 18 boundaries and the patience. However, this study was
 19 done by two Ph.d.s from Boston, Massachusetts and
 20 Buffalo, New York titled The Harmful Exposure to
 21 Ecological Health Hazards, a preliminary report on
 22 environmental injustices in the Commonwealth of
 23 Massachusetts. What this report does, in a nutshell, it
 24 will tell you about how one community will be struggling

1 with a federal Superfund site; another community will be
 2 struggling with high truck traffic and a constant diesel
 3 fuel trucks which creates abnormally high cancer rates in
 4 their community. Another community will be subjected to
 5 massive trash transfer stations. Another community will
 6 be subjected to municipal landfills. Another community
 7 might be subjected to a methane gas power plant. Another
 8 community might be subjected to a power plant whose folks
 9 are treated by sewer sludge, which creates other cancer
 10 causing agents, throwing other carbons in our community.

11 We have all of these grave environmental injustices
 12 in this one square mile of Johnston, Rhode Island.
 13 That's what we're living with, and if I could just point
 14 out one thing --

15 Please don't invade my space, sir. I took a lot of
 16 time to be here tonight. We're gonna give you this in --
 17 we've got a lot to give you. Not just what we're saying
 18 here tonight. And we want an extension of one week but
 19 we'll have it the 14th. You didn't give us the data.
 20 This is unbelievable what the citizens have got to do.
 21 You're the EPA.

22 For residents living near the Superfund and other
 23 major toxic waste sites, the National Research Council
 24 also found a certain pattern of other health problems,

1 including heart disease, spontaneous abortions, and
 2 general malformations. And death rates while infants and
 3 children suffer high incidences of chronic abnormalities,
 4 leukemia, kidney, urinary tract infections, seizures,
 5 learning disabilities, hyperactivities, skin disorders,
 6 reduced weight, central nervous system damage and
 7 Hodgkin's disease. Exposure to industrial chemicals is
 8 also believed by scientists to be contributing to the
 9 dramatic increases in cancer of the intestines, prostate
 10 gland, kidney, breast, skin and lung, as well as
 11 malignant myeloma, non-Hodgkin's lymphoma, and numerous
 12 childhood cancers.

13 In thousands of communities across the United
 14 States, millions of gallons of highly toxic chemicals,
 15 including mercury dioxin, PCBs, arsonic, heavy metals,
 16 such as chromium, have been dumped in the midst of
 17 unsuspecting neighborhoods. These sites poison the land,
 18 contaminate our drinking water and cause cancer, birth
 19 defects, liver damage and other health effects.

20 With that said, this is what we're struggling with,
 21 living with in Johnston. EPA needs to do their job and
 22 protect the public's health and our environment by
 23 ensuring fair, independent environmental impact studies
 24 addressing the cumulative ecological health hazards and

1 grave environmental injustices in one small area; merely
 2 1.3 miles from our basic life state's major water supply,
 3 the Scituate Reservoir watershed.

4 Please do not allow further contamination of our
 5 properties. Please do not continue to spread it around
 6 our homes, and please do not continue to allow poisoning
 7 of our families and our children with carcinogens from
 8 contaminated water and air. Please allow us to go to bed
 9 tonight without fear that tomorrow morning will bring us
 10 financial ruin and may bring a devastating illness to our
 11 families.

12 Again, the United States Environmental Protection
 13 Agency needs to do their job. This report is not
 14 truthful. We have over 50 pages of documentations from
 15 the citizens in only the last two years. We've got
 16 Mr. Jim Powell[sic] release that federal Superfund site
 17 in April 1999, Resource Recovery's taken our public
 18 buffer zone land away and selling it to private investors
 19 and developers in order to put ramps, exit/entrance
 20 ramps, bringing carcinogenic diesel fuel trucks into our
 21 residential neighborhood, bypassing the Federal Highway
 22 Administration. This has never been done before in this
 23 nation as pointed out by Mr. Robert Mendoza for EPA who
 24 oversees Rhode Island's environmental programs. Never.

1 But they used FHA's good name to get behind this.
 2 FHA had nothing to do with it because they're not putting
 3 one dollar into it. They're selling our public
 4 residential buffer zone land. The trees that was
 5 established in 1988 by Rhode Island DEM, 2000-foot trees
 6 to mitigate the groundwater depluming from that Central
 7 Landfill and that Superfund site. And they'll lead you
 8 to believe here tonight, through misrepresentations by
 9 Mr. Mah with the press in this state that, that that
 10 water only goes into the Upper Simmons Reservoir. And
 11 believe me, we will not allow our children or fish there
 12 to swim there, and I would like to ask you to drink some
 13 of that water. My wife has some water from a well from
 14 our neighbor whose boy died of an unusual cancer, his
 15 grandfather died, his dad just had a breakdown. Drink
 16 some of this water.
 17 I -- you don't see GZA drinking this water, you
 18 don't see Resource Recovery here tonight. You don't see
 19 Rhode Island Department of Environmental Management here.
 20 There is no one here protecting the public land and the
 21 public's health and the public's best interest.
 22 This map we have from someone who worked at Resource
 23 Recovery putting that leachate facility in. This map's
 24 aerial U.S. geographical mark shows clearly the bedrock

1 and the water table in that landfill. They might lead
 2 you to believe that it doesn't affect the Scituate
 3 Reservoir. The Central Landfill Action Committee, we
 4 worked almost nine months in that committee to try to
 5 solve the problems. It was disbanded by Rhode Island
 6 DEM.
 7 Fact: A former councilman 25 years ago made it
 8 perfectly clear. They were blasting and dynamiting in
 9 that landfill Superfund site like gangbusters. The fill
 10 used in cracks, no one knows where it's going. But I can
 11 say absolutely that this map clearly states the water
 12 table is way above the bedrock. That water contaminates
 13 the Almy Reservoir, all the wells in that area. And
 14 they're here tonight, Mr. Byron Mah told the press that
 15 that is not affecting Almy Reservoir and our wells. It's
 16 like a miracle. Mr. Mah created a miracle. He made the
 17 121-acre Superfund site turn into a half-acre site, and
 18 now he's telling us we can all hook up our wells because
 19 everything's hunky-dory.
 20 So with that said, I know I'm carrying on a bit but
 21 we, the people, want to thank you for providing me this
 22 opportunity to plead for relief against these
 23 unconscionable ecological health hazards and
 24 environmental injustices.

1 Again, I want to -- one more thing for the record.
 2 On these 50 violations of violations that we only got in
 3 the last two years by Rhode Island DEM and EPA, I want to
 4 make one thing perfectly clear. Rhode Island Resource
 5 Recovery Corporation's been operating and expanding on
 6 that landfill without any basic operating expansion
 7 permit since 1991. Thus, they have not connected and
 8 plugged into the regulatory oversight agencies. It's
 9 like they didn't exist.
 10 There is no documentation on the environmental web
 11 site or any web site showing the pollution from this
 12 massive mess in our town next to our Scituate Reservoir.
 13 It's mind boggling. Resource Recovery's track record and
 14 our state leaders' inaction clearly speaks for itself.
 15 By consensus, this Central Landfill Action Committee
 16 leadership management team, specifically the CEO and
 17 chairman who's nothing but a wealthy real estate
 18 developer, big-time campaign contributor; the executor
 19 director is merely an attorney for Adler, Pollock &
 20 Sheehan, a politically powerful law firm who gives out
 21 the endorsements and the funds; their expertise is land
 22 use management, not landfills and executive director.
 23 So with that said, by consensus, nothing's been done
 24 to this day. Instead they award a pay raise and gave it

1 two more lawyer lobbyists to railroad this bill through
 2 the General Assembly when we the people are totally shut
 3 out, left out and taxed out.
 4 Thank you for your patience tonight and I appreciate
 5 it again. We will have these concerns in writing, but we
 6 have some really core concerns we demand and require
 7 responses. Thank you.
 8 THE CHAIRMAN: Patti Major.
 9 PATTI MAJOR: Good evening. My name is
 10 Patti Major. My husband Bill and I are spokespersons for
 11 the Citizens Local Alliance to Save our Properties
 12 (CLASP) in Johnston, Rhode Island. I just wanted to say
 13 thank you for all of you being here and putting the time
 14 in, and especially EPA and Tetra Tech and the
 15 stenographer. We truly do appreciate it. But if you
 16 could put yourselves in our shoes and live the way we've
 17 been living, you'd probably have more understanding.
 18 We know you don't want to be here. We don't like
 19 coming out to meetings and meetings and meetings pleading
 20 and begging for our life, for the -- for basic to life
 21 clean air and clean water for our children and families.
 22 We're -- this is serious. This is our life.
 23 We -- as my husband had said, we will be putting
 24 numerous questions and concerns in writing and submit

1 them to the EPA before the deadline date. However, at
2 this time I would like to highlight a few of our major
3 concerns and comments.

4 At the basic of all of this is GZA Environmental
5 Services who did the sampling, the testing, who are the
6 hired paid consultant for Rhode Island Resource Recovery
7 Corporation. This is the basics that everything was
8 taken from. We question and challenge the integrity and
9 the validity of the data. As Mr. Mah said the last
10 meeting, August 14, the integrity and validity of the
11 data is critical. It's crucial. That's what everything
12 else is based on, the results.

13 If you have the wrong information or not enough
14 information or lacking information or inaccurate
15 information to begin with, and you extrapolate it and
16 expand and hypothesize and use mathematical formulas and
17 quantitatively and qualitatively as Tetra Tech did, and
18 hypothesize and come up with all these great things,
19 you're brilliant people. You know your job, you know
20 what you're doing. However, you were given the wrong
21 information to begin with. Therefore, all your hard
22 work -- because it just doesn't make sense. I mean, as
23 you can hear tonight, what your results came up with is
24 totally illogical, nonsensical to anyone who's lived in

1 this area. Even those of us who have only lived here a
2 short time. It's astonishing, and I hope you have a
3 better understanding of it tonight and know why so many
4 of us is so outraged at this report, the results.

5 The basic sampling data on which everything in this
6 study is based is seriously flawed, selected,
7 questionable, biased and slanted. Therefore all the
8 so-called results are really unreliable and suspect.
9 Because it comes from a basic flaw. The results -- many
10 of the results are contradictory and illogical to what we
11 all know.

12 It's like the EPA seems to have -- you really should
13 have had input from the citizens who know instead of --
14 who live near the Central Landfill, rather than jumping
15 the gun and putting out a press release. We wonder why
16 this happened. Why was this done now? It's unusual for
17 EPA press releases to get so much press and to even come
18 out ahead of time. I mean, this was like, wow. And it
19 says everything's wonderful.

20 Why was this done? Who's behind it? It appears
21 that this press release is basically to quell people's
22 fears about the Scituate Reservoir. Like, oops, the
23 landfill's got contaminations, not going to the
24 reservoir. But we're not really going to talk too much

1 about the other end because we don't care. You're just
2 human receptors. You're just, you know, collateral
3 damage if anything happens to that side. But we care
4 about the Scituate Reservoir so let's put out this press
5 release quick quick and stop any more inquiries or
6 anybody who's, like, thinking like what is going on down
7 at Rhode Island Resource Recovery Central Landfill.

8 It's amazing the expansions, the noise, the tracts
9 of land, acres and acres of trees falling, grinding,
10 odors, noxious gasses, byparticulate matters. You know,
11 and all this, not to mention what's in the landfill.
12 However, let me get back to my point, I'm jumping.

13 But we do question that part. Why it came out.
14 Because you're in essence saying there's no problem and
15 that's a big concern. There's obviously, obviously a
16 problem and we need to all talk about it and come to some
17 agreement and understanding and identify the problem.
18 Identify the root of the problem so we can make some
19 reasonable, logical, intelligent solutions to protect the
20 health, safety, welfare and the lives, the air, the water
21 of our children and families. That's all we want. We
22 just want to live our life. We don't want to have to do
23 this.

24 And one -- couple other things, quick things. Can

1 you believe the wordsmithing in -- it's amazing, the
2 wordsmithing in EPA's environmental news release and in
3 the proposed plan, the Superfund program. And in the
4 five volume report, one through five, prepared by GZA
5 Environmental Services. You cannot say you have proved
6 scientifically that the contaminants from the Central
7 Landfill Superfund site do not go beyond their boundaries
8 without a doubt. We have many doubts based on what is
9 presented in the study. Just look at a lot of the words.
10 Estimates. Developed. Hypothetical. Prepared. Oh, GZA
11 prepared this for you. Look out.

12 That's the other thing. Open your eyes and look for
13 the truth. If you don't go looking for it, you're not
14 going to find it. If you say, well, we know a couple of
15 things that was in supposedly the hot spot, so we're jugs
16 gonna look for those couple of chemicals. We're not
17 going to actually look to see what's there. I mean,
18 heaven forbid we actually find out the truth and what is
19 actually there, and what is actually emanated from there?
20 That's what we're searching for. The truth, justice, and
21 fairness.

22 Also, because everything is based on GZA
23 Environmental Services, hired by Rhode Island Resource
24 Recovery, the citizens want to know how they were hired,

1 when they were hired, and what are all their
 2 qualifications. We have a right to know this.
 3 There's -- you know, we want to know GZA Environmental
 4 Services, who they are, when they were hired by Resource
 5 Recovery, what was the process they went through. How
 6 long have they been -- it seems like a long time. And
 7 what were their qualifications.
 8 It's just amazing. A quick side note. In -- I went
 9 to the library. Of course heaven forbid anybody went to
 10 the library and looked up this information. But I did.
 11 I went to the library and I took out those volumes. I
 12 even made copies of pages. You know what's amazing? GZA
 13 prepared this, volumes and volumes. Just one thing
 14 that's just so glaring a misrepresentation. GZA, who's
 15 been involved in working for Resource Recovery for all
 16 these years, in section -- in Volume 1, page 2-1, on the
 17 bottom it says Central Landfill, Operational Unit 2,
 18 final Rhode Island report, March 2001. Note the date.
 19 2001.
 20 Now above it this whole thing is 2.00 area
 21 characterization. You know, it's just amazing, on the
 22 bottom of the page it's March 2001. And from their
 23 description of the area characterization; for example,
 24 they have includes all property within 2,000-foot

1 landfill buffer zone. They're saying we have a buffer
 2 zone. In March of 2001. Hurray! Hurray! And they work
 3 for Resource Recovery and they did the sampling and they
 4 did the testing. Should we trust them if they don't even
 5 know what the area looks like at the present point in
 6 time?
 7 Another note. They say -- they talk the area around
 8 the -- they're calling it -- it's only 154-acre. It's
 9 located -- Oh, the O.U.I., Operational Unit 1, which is
 10 the Superfund site. Let's get this clear. There's so
 11 much confusion. Phase I of the Central Landfill is
 12 121 acres. In that Phase I is the hot spot. There is no
 13 lining, it leachates right through. It's been blasted,
 14 dug. We know all that. Then piggy backed on to that was
 15 Phase II and Phase III, 33 acres. That is included in
 16 the 154-acre Superfund status.
 17 People are so confused because different places you
 18 read, there's different things. It's so confusing. And
 19 that's another big thing. That's what's been promoted in
 20 the newspaper. That half acre Superfund hot spot. I
 21 mean, let's be clear about it, how massive it is. It's
 22 located on a 630-acre parcel that is owned by Resource
 23 Recovery. Now, come on. When did Resource Recovery own
 24 630 acres only? I'd say that was back in maybe '93? I'm

1 just taking a guess. How much land do they own now?
 2 Why, if this says March 2001, why doesn't it say what's
 3 accurate. See how outdated and outlandish a lot of this
 4 information is?
 5 And I could go on and on. I mean, I could make
 6 comments on every paragraph just about. You know, but I
 7 don't have that much -- I need a lifetime to do that
 8 considering the volumes. But you get the point.
 9 Let me just sum up. In one other major concern, in
 10 1987 Rhode Island Resource Recovery signed an
 11 administrative order of consent, the AOC, with EPA to
 12 investigate the extent of contamination at the landfill
 13 itself. Now think about this. For my dealings and all
 14 we've learned, I mean, we're intelligent, rational
 15 average human beings. Common sense tells you you don't
 16 let Rhode Island Resource Recovery investigate their own
 17 contamination when they continue to contaminate it
 18 because they're making millions and millions of dollars.
 19 Does that make any sense at all?
 20 This is a serious problem and bells alarms should go
 21 off. And what makes anyone think we will get true and
 22 valid data from them? I mean, think about it. So who is
 23 really looking for the truth and valid data. If EPA
 24 really cares, and we know you do, about protecting our

1 children and families, it is imperative to get fair,
 2 accurate, independent data. The citizens request EPA or
 3 funds from EPA to do a fair, independent valid sampling
 4 and testing of data. Go back to square one. Let's slow
 5 down, let's do things right. Whitewashing this, covering
 6 up, it's not gonna make it go away, it's just gonna make
 7 it worse. And we live here, children are growing up
 8 here. This is too valuable. People's lives count.
 9 It -- the other thing I already mentioned, there --
 10 we need to have medical studies. It appears that this is
 11 being rushed through the system, this proposed plan. It
 12 really appears that it's being rushed right through the
 13 system without taking the time to do a necessary study of
 14 the serious and numerous health problems in the area.
 15 Why are there abnormal, numerous, serious health problems
 16 in the area? You ask yourself. There's a problem here.
 17 Let's look at it. Let's find out.
 18 And one quick -- as you can see I have a lot of
 19 notes. I think I covered it all. Oh, for the record,
 20 Mr. Stephens question we'd like answered because this is
 21 a formal hearing, they'll have to answer it. How much
 22 did EPA spend on all of this, with your lovely Power
 23 Point presentation, all your beautiful mailings. How
 24 much? And coming down and all your valuable time. You

1 would think -- we'd like to know, okay?

2 Also, you would think Rhode Island DEM and GZA
3 should be here since, I mean, they're -- it's like you
4 guys are taking the brunt of it. Tetra Tech. I mean,
5 you know, really. And EPA, they're putting you out in
6 front -- and Resource Recovery, typical what they usually
7 do, they turn around and say, oop, they did it. Oop, the
8 landfill wasn't covered right, slope was too steep, oop,
9 the contractor did it, we didn't do nothing. DEM said we
10 had to do it. The General Assembly said we had to do it,
11 EPA said it. We don't do anything. Isn't it amazing.

12 Thank you for all your time and truly, truly, look
13 into your conscience and your heart and please help the
14 children and families in this area. Thank you.

15 THE CHAIRMAN: Now Ron Tanguay. Did I
16 say that right?

17 RON TANGUAY: Pretty close.

18 THE CHAIRMAN: That's T-A-N-G-U-A-Y.

19 RON TANGUAY: Okay, the first thing I
20 just wanted to clear up is that this recommendation
21 proposal is just based on groundwater, has nothing to do
22 with air quality or anything like that, right? So no
23 one -- now the -- the hot spot is -- can also connected
24 to the venting system they have within the landfill,

1 You know, I go through chemotherapy and stuff like that,
2 which is -- it sounds -- chemotherapy sounds like such a
3 nice word, like aroma therapy, but it really isn't. If
4 you know anyone who's been through it it's a really tough
5 thing.

6 But what I'm wondering about is since no one -- I
7 called up to a testing company to see if I could have my
8 well water tested. And they told me, well, what do you
9 want it tested for? They sent me a list that had about
10 30 chemicals on it.

11 JOHN STEPHENS: Twenty-nine.

12 RON TANGUAY: Okay, 29. I'm sorry. I
13 just averaged it. It was about 29 chemicals. Now, and
14 there was prices on this list for each chemical for the
15 test. I mean, I think it was going to cost me about
16 \$2,000 roughly.

17 JOHN STEPHENS: \$1,850.

18 RON TANGUAY: You got it down, okay.

19 JOHN STEPHENS: I did so many, you
20 wouldn't believe.

21 RON TANGUAY: Okay. And, and that
22 doesn't even tell me if I'm testing for the right
23 chemicals. I have no idea what these chemicals are.

24 Now, on your page 3 of your thing, it says that --

1 where they vent out gasses and what not? What's that?
2 Oh, okay.

3 THE CHAIRMAN: We'll respond later.

4 RON TANGUAY: Okay, I'll assume that the
5 hot spot is connected to these, this gas thing they have.
6 So there's some kind of air, things from the hot spot
7 getting out and released in the air along with the other
8 gasses that the landfill has. It's collected.

9 Now, it seems like no one really knows what all the
10 different chemicals that went into the ground were when
11 they did all this illegal dumping, or legal dumping
12 whatever it was. We've got -- you know, we live on Apple
13 Tree Lane. We have city water. We also have a well in
14 our house which is connected to our outdoor piping. And
15 we filled the swimming pool with it because we were told
16 there was nothing wrong with the water and what not.
17 Okay. So I mean, we've been swimming in it for a few
18 years and, you know, don't know if it has any effect.

19 I currently have cancer. I've been in treatment for
20 two and a half years now. Shortly after I moved in to
21 the Providence area I was discovered with it so I can't
22 say, yeah, I got my cancer from being there but I don't
23 know if any, like this well water that I've been swimming
24 in has had any effect on prolonging the cancer I have.

1 page 3 here. It says that, you know, all detections are
2 below the State and Federal Standards for drinking water
3 otherwise known as the Maximum Contaminant Levels (MCLs).
4 Okay. And I'm wondering, okay, there's all these
5 different chemicals in the water. Well, and they're all
6 under the MCLs, but what's the cumulative affect of this.
7 For instance, I like vinegar on my french fries and I
8 like baking soda in my cake, but I know if I take
9 those -- those two chemicals are totally safe, but if I
10 take those two chemicals and put them together, I'm going
11 to have a heck of a mess. And if I drink that I'd
12 probably get sick. You know, so what is the effect of
13 all these different chemicals that are in there. Each
14 one might be, yeah, below the minimum level, but if you
15 put toluene and xylene and all these other things, what
16 does that effect have on human beings. You know, we
17 don't know.

18 The other thing was, you know, that, that really
19 strikes me as interesting is on your map, you're showing
20 that, like, part of the leachate or whatever goes off in
21 this direction. Well, this happens to be the direction
22 Resource Recovery kind of put a nice path to move the
23 houses, and then also there's a nice path directly over
24 here they built a beautiful ballpark for kids to go play

1 in. You know, that was one of the things when we moved
2 in, we saw that ballpark, we said how can there be any
3 kind of hazardous stuff here, they built this ballpark.
4 It's beautiful. You know, if I've got my son playing
5 baseball, I don't want him to be sucking in air that's
6 really going to hurt him.

7 You know, so they put that nice path for that water
8 to drip out there. Now, the other -- most of it they say
9 goes down here into the Simonsville Reservoir. And in
10 that, it almost sounds like they've given up on that
11 reservoir. You know, I've looked there because my kids
12 went to go fishing when I first moved here and it looks
13 pretty bad. I mean, I don't know, you know, what
14 chemicals are there but it just doesn't look like it
15 would be an environmental friendly area.

16 Now, I know a couple of years ago my father had some
17 land up in Cumberland, and part of it was a little swamp
18 land. He wanted to fill it in and he started to fill it
19 in and DEM got on him like white on rice and made him
20 stop right away. You know, and I don't understand, well,
21 okay, now that's just a little swamp land, he's got an
22 acre and a half of land so it was probably, you know,
23 like maybe a fifth of an acre. A very small area, you
24 know. And they got on him. Now here it seems like this

1 whole upper -- you know, Simonsville Reservoir is
2 contaminated, I don't know with what chemicals or
3 whatever but, you know, it seems like where's DEM
4 stepping in for that to kind of block that. Or what
5 steps are going to be taken to clean up that area.

6 Now, when we went to the State House, they had the
7 video and one of things that got the most attention was
8 when they showed about a couple thousand sea gulls flying
9 around the landfill. Now, I know sea gulls are kind of
10 promiscuous and they don't care where they go and I'm
11 sure one day they go in the Simonsville Reservoir; the
12 next day they go on the Almy Reservoir and the next day
13 they probably go to the Scituate Reservoir. You know.
14 Now, I mean, that's -- you know, that's what sea gulls
15 do. They fly wherever they can find food and what not.
16 So, you know, if they're picking up stuff in the Almy
17 Reservoir or even if they're in the landfill area eating
18 food, garbage, whatever, going in the water, you know,
19 they get contaminants on their bodies. I gotta assume
20 that happens. And yet, you know, they go from body to
21 body. You know. So the fact that it's -- maybe not
22 necessarily going through the groundwater doesn't mean
23 that contaminants aren't being spread around to all these
24 different bodies of water.

1 Last year there was kind of a landslide at the
2 landfill and I think there was about 30 acres that got
3 wiped out and washed up and went to the creeks and, you
4 know. And what effect does that have? You know, does
5 that change anything when all these things happen. You
6 know, Resource Recovery says, well, that was the
7 contractor that did that and they made a mistake. You
8 know. And it seems like all these things are developed
9 and planned. I mean, I don't understand like it's --
10 this has been going on since the '80s. Why all this
11 takes so long and it seems like if you decide to put on a
12 cap on the property, you go and put a cap on the
13 property. It shouldn't take you four or five years to
14 accomplish this. But what do I know.

15 In your top page is -- your top page here of your
16 proposal plan, it says deed restrictions will be placed
17 on groundwater use and development around the landfill.
18 Well, lo and behold, we've got a company called Resource
19 Recovery who wants to develop an industrial park in that
20 area. Now, when you put an industrial park, typically
21 you got to put retention ponds and all that type of
22 stuff. Where does that come into the plans? Do they get
23 permitting to do that? These deed restrictions, where do
24 they show up. I know when we bought a house they put in

1 our deed that we're within a 2,000-foot buffer zone of
2 the landfill but now they've taken that away. So, you
3 know, what are these deed restrictions you're talking
4 about here? You know.

5 And, I mean, just the last point is, is why does
6 this seem to be taking so long? I mean, it just seems
7 like, you know, several people here have been going at
8 this for years and years and years. We're fairly new to
9 it and we've been inundated since we moved in here. We
10 never went to a town council meeting before, I don't know
11 if that's good or bad, but never went to the State House
12 and testified. All these things. And we've just gotten
13 so caught up in this. It's like taking over our lives.

14 We -- you know, we looked at Apple Tree Lane and, I
15 mean, we were probably stupid to buy from Resource
16 Recovery and, you know, we didn't check out all the
17 things. But when you look at that street it's just like
18 a nice little street, nice little country street,
19 beautiful houses. You know, I mean, where the area is
20 it's so convenient to go anywhere in the state. You
21 know, we can drive a few miles and get to Atwood Avenue
22 and Hartford Avenue, and there's all the stores you'd
23 ever want. You know, so it's a nice place to live but
24 yet, because of this Resource Recovery and all these

1 problems, you know, it's been a nightmare. You know, we
 2 want to just be able to enjoy all that. I don't know
 3 with my cancer how long I've got left and, you know, I
 4 want to be able to enjoy whatever I got. You know, you
 5 take a different attitude when you know that your life is
 6 being threatened; that you want to enjoy every day you
 7 can get. And to have to waste life going to these kind
 8 of things is really a sad shape when the state and the
 9 U.S. government should be taking care of us and
 10 protecting us in these areas, you know.

11 And, I mean, if this report has its issue says that
 12 there's no problem with the water, well, I think
 13 Mr. Vinagro is going to sue the state, could probably sue
 14 the EPA because they're saying everything's fine. You
 15 know, all these people on Reservoir Ave. seem to have the
 16 most problem with their wells but yet they say the water
 17 doesn't flow in that direction. I can't understand, you
 18 know, you know, the logic behind that. Well, that's
 19 about all I got to say. Thank you.

20 THE CHAIRMAN: Jeanette Fontaine, would
 21 you like to say something.

22 JEANETTE FONTAINE: I'm following a lot
 23 of very well-informed people so, and who had good
 24 historical facts. My name is Jeanette Fontaine and I

1 live on Central Avenue, and my family has been there
 2 since 1943 so I have seen these things get bigger and
 3 bigger and I -- I remember the group WATER in the late --
 4 well, '78 was it?

5 JOHN STEPHENS: In the '80s.

6 JEANETTE FONTAINE: Oh, '80s. And before
 7 that when we talked about Sylvestri, all these subjects
 8 were brought up at the town meetings. It's never been
 9 good and it isn't improving and it's getting worse. Used
 10 to be cancer to your body. The town of Johnston has
 11 cancer. The state has cancer. Because this is
 12 spreading. It's big. And EPA tells us that it's --
 13 everything is fine. But me, I feel like we're -- our
 14 intelligence is being insulted because something so
 15 massive, so deep and so high, it just can't be harmless.
 16 I just doubt it.

17 I doubt it and I doubt the integrity of the testing
 18 done by GZA who is hired by Resource -- Rhode Island
 19 Resource Recovery. As Patti said before me, and others,
 20 it isn't even the fox watching the chicken coop. It's
 21 the fox watching the fox. And the data is old. '96 and
 22 '97. What happened? Why -- why did this data stop after
 23 that? Was it hushed? I don't know. But we need some
 24 up-to-date data. I question that very much. Why we're

1 going on a report like this today on such old
 2 information. Many changes have happened since then. I
 3 know, I've been to council meetings, I've been to the
 4 landfill meetings. And a lot's happening in this town.
 5 And that landfill doesn't look like it did in '96, '97.
 6 It's monstrous. It's hard to believe that something that
 7 big is in our small state. Everyone should see it. I
 8 brought someone from Barrington there one day just to see
 9 it when she wanted to buy a recycling bin and she said
 10 this is Johnston? This is in Johnston? It is. And so
 11 people in this state don't know.

12 I learned recently, and I have been questioning the
 13 fact that four percent of the seepage is going into Almy
 14 Reservoir. That's a separate watershed. Now it's a
 15 shame that Simmonsville, Simmons Lake is contaminated and
 16 all that is very contaminated and is very hazardous we've
 17 been told. Well, not by EPA in this report but -- well,
 18 maybe they did. But it's a shame that another watershed
 19 is being polluted.

20 Now, four percent may not seem too much but it's a
 21 lot to me because that stream from Almy Reservoir runs by
 22 my property. It's on my property. The water runs on my
 23 property. I used to swim there but I don't anymore
 24 because I'm afraid to. Now, if it is running there,

1 contaminating that stream, but as it's been said before,
 2 it's contaminating all the way out to the bay, where's
 3 Save the Bay?

4 And of course the future is this blasting that is
 5 now going on, I understand, by the transfer site.
 6 Transfer site. Is that gonna do the same thing that NEED
 7 does? Transfer a lot of hazardous -- out-of-state
 8 hazardous waste which has been through, and that
 9 hazardous waste is coming into our little tiny state of
 10 Rhode Island. So that is not very comforting to we
 11 residents.

12 A lot of people in our area are not aware of what's
 13 going on, but when they wake up and find out, they should
 14 all have a deep concern, too. And of course the future
 15 blasting that will soon be going on for this monstrous
 16 power plant, that is something to dread also.

17 Now I know EPA comes in after the fact, after the
 18 damage is done. We already have a lot of damage that's
 19 been done and it'll be a lot worse, so EPA please keep an
 20 eye on us for the future. And right now I think you have
 21 enough grounds to investigate further the damage that's
 22 been done to us.

23 THE CHAIRMAN: Robert Sandberg here.

24 ROBERT SANDBERG: I'm Robert Sandberg. I

1 don't want to plead for you guys to do anything for us.
 2 I just want to state a few facts and then let the chips
 3 fall where they may.

4 Everything I see here defies logic. Everything I
 5 see you doing defies logic. The best of my ability to
 6 see looking at that landfill, it still hasn't been
 7 properly covered. The cap isn't there. I can look at
 8 that little brook that there, Simmonsville Brook. Well,
 9 you may call it a brook, but when something's about
 10 30-feet wide and running pretty doggone fast, I call it a
 11 river. And I watched them put that thing in, and they
 12 did a lot of dynamiting. They dug a monstrous trench in
 13 the bedrock. And as near as I can make out they didn't
 14 use any concrete or anything to cap it.

15 And that's a funny thing about water. Everybody
 16 sits there and thinks that water, you drop it on the
 17 ground and it's got some kind of a magic force and it
 18 goes straight down like an arrow. Pour some water on top
 19 of some sand or some sugar or anything you want and it
 20 will go on the top and it will come out the bottom.
 21 Probably about a 45-degree triangle wide. Obviously if
 22 that brook is as close as visually seems to be to the
 23 landfill, you're pumping water into that Superfund site
 24 all day, every day. All the time.

1 You worry about things like pollution. The arrow is
 2 heading down off of Simmonsville Reservoir, and it goes
 3 down through, down by Fletcher Avenue, goes to the
 4 Cranston Printworks, and Mr. Vinagro informed me tonight
 5 that Cranston Printworks can't even use the water. They
 6 have to bring it in from a different direction, a
 7 different water source. It's going right smack into
 8 Narragansett Bay. We're worried about the sand in the
 9 bottom of Narragansett Bay because we can't dredge it and
 10 we're pumping more pollutants than we could ever possibly
 11 imagine right into that bay.

12 You say your wells are 200 feet deep. I saw that
 13 hole well before it ever started to get filled up. As a
 14 matter of fact, there's a hell of a lot more than one
 15 hole over there. I give you a clue. There was a lot of
 16 dumping sites in there, and I'm sure that if you checked
 17 the web sites you'll find out where they are. The one I
 18 saw, I suspect is right now lower than the bottom of your
 19 200-foot well. So therefore you're checking something up
 20 here that's actually down there. What are you doing?

21 I mean I -- you don't have to be a genius, you don't
 22 have to be a scientist to figure this out. If you want
 23 to know where the doggone pollution is, drill a well
 24 600 feet deep, and then I dare you to take a cup of that

1 because I think you'd be dead in ten seconds. You guys
 2 aren't looking. I don't know if you don't want to look,
 3 I don't know if your bosses tell you not to look, or
 4 else -- I don't want to insult you, but obviously you
 5 don't really understand what the problem is.

6 Earlier I said that I live on Peckhill Road.
 7 Peckhill Road is only one road that goes to the dump.
 8 You can go Greenhill Road, you can go different areas,
 9 through Shun Pike. At my house alone, I'm being
 10 extremely conservative to say that in 1965, 1964, 1970,
 11 in all that time, a minimum of ten tanker trucks was
 12 passing my house. Now if they were passing my house,
 13 it's not anything to say that there wasn't an equal
 14 number going in Greenhill Road and coming in through Shun
 15 Pike or any other back road. But those were six thousand
 16 gallon tankers. That's what they tell me they hold
 17 anyway. And it doesn't take a hell of a genius to figure
 18 out that if you've got 30 days in a month and you're
 19 multiplying that times ten times six thousand, that
 20 you've made it by a million and a half every doggone
 21 month.

22 So every time you put this in the paper that there's
 23 a million and a half gallons of hazardous waste there, I
 24 have to tell you, you make me feel like you're a bunch of

1 buffoons because it's a stupid, absolutely ridiculous
 2 thing to say that there's only a million and a half
 3 gallons of hazardous waste in that hole. Absolutely
 4 totally ridiculous. I've seen Mr. Stephens' pile of
 5 manifest there, it must be six or seven inches thick.
 6 He's got the documentation, and everybody puts their head
 7 in the sand and makes believe that this doesn't happen,
 8 we don't have any of this stuff. We got a million and a
 9 half gallons of -- you know, most of it's water, doesn't
 10 mean shit.

11 Give me a break. I'm not that stupid, these people
 12 aren't that stupid. And if you're trying to pass off
 13 your report that there's nothing coming out of this area,
 14 you're insulting the whole damn bunch of us and you ought
 15 to be ashamed of yourself. How the hell do you go home
 16 and go to bed and sleep at night in a community where you
 17 ain't next to the landfill and we gotta live in this damn
 18 area. How do you do it? I hope to hell you don't bother
 19 going to church every Sunday because you'd be hypocrites.
 20 You'd have to be a hypocrite to go to church and put that
 21 report out.

22 Now, what do we gotta do to smarten this thing up?
 23 Everything that's there is ridiculous. Everything in
 24 that report is ridiculous. A kindergartner should be

1 able to figure out that it's ridiculous. How about going
2 back to stage one, do the testing yourself. I tell you,
3 drill one lousy well 600-foot deep, and boy, you'd change
4 your mind in a whole hell of a lot of a hurry.

5 I suspect that that water is going into the
6 reservoir. I suspect that it's going in every possible
7 direction. You can't make me believe that groundwater
8 runs in one direction all the time. You can't make me
9 believe that water only goes down because I know that
10 water goes back up again or else you wouldn't have any
11 true artesian wells that are bubbling out of the top of
12 the pipe.

13 When they put my well in my house, I had to drill
14 down 310 feet and hit water. And the pipe is full within
15 25 feet of the top. How come? That's because the
16 groundwater can go up just as easy it can go down. And
17 anybody that tells me different has gotta tell me that
18 I'm a fool at the same time. It's not the truth. It's
19 gonna seek a level. If there's a high area of water over
20 here, it will put groundwater pressures and bring it up,
21 and it will bring it up close to the surface.

22 I was told by a friend of mine that Narragansett
23 Brewery really went out of business because their water
24 was contaminated. I was also told that they had such an

1 your statement.

2 The water doesn't flow only away from that landfill.
3 It flows north, south, east and west thanks to all the
4 blasting that they did up there. The wells are down
5 200 feet. Well, that landfill started at 618 feet below
6 sea level. Now it's 813 feet above. So how can a
7 200-foot testing well get results? It can't.

8 I'm looking at you, Mr. Mah, because you're the one
9 I spoke to before.

10 BILL MAJOR: He's the guy. He's their
11 ringer.

12 JEROME LEDDY: We've been let down by you
13 and your people here. We've been let down by our
14 governor who appoints these people to these quasi-state
15 boards. We've been let down by the DEM who doesn't know
16 their ass from their elbow in this state. We've been let
17 down or we can't -- my kingdom for an unbiased report,
18 that's what I'd like to have up in this town.

19 This landfill and these people that run this
20 landfill control the media, they control everything about
21 us. They control our town. Now, thanks to the
22 legislators and the congressmen and the senators that
23 they put on the board of directors up there, they were
24 able to pass bills through, 4033, which gives them the

1 abundant supply of water at Narragansett Brewery that
2 they could pump, I think the number he told me was 12,000
3 gallons an hour out of that thing. How close is that
4 underwater stream that I've been told comes from the
5 White Mountains to the landfill. Did you ever check? Do
6 you have any tables or any charts or any information as
7 to where the underground rivers are running around here?
8 I suspect if you do, you didn't look at them. Or you hid
9 them or you didn't even bother to find out.

10 I'm sorry I'm accusing you guys but the facts are
11 there. The obvious facts are there. Your report is
12 ridiculous. Please don't try and insult me because I
13 ain't gonna take it very much longer, and I don't think
14 these people should have to take it much longer either.

15 (applause)

16 THE CHAIRMAN: Jeremy Leddy.

17 JEROME LEDDY: Jerome Leddy. I think we
18 all put a lot into this and, you know, I'm not about to
19 give up the ship so easily. I was away when all these
20 releases came out in the paper, and when I got back I was
21 highly insulted by -- personally insulted by the members
22 of this EPA. Where you actually knew how we stood and
23 you knew the facts as we gave you the facts prior. We
24 gave you unlimited resources before you came out with

1 right to supersede our town charter, our town council,
2 our mayor, which that wouldn't take much, he'd give it to
3 them. But they supersede anything. They're the ones
4 paying for these tests by GZA. And if you people believe
5 in GZA, well I got swamp land for you in Florida.
6 Because these people, they're bought and paid for by
7 Resource Recovery. So aren't all the lawyers that do
8 their bidding for them.

9 But it's all our money when it comes right down to
10 it. Whether it's a fine that they don't pay, it's all
11 our taxpayers money. A lot of it goes to the general
12 fund. A lot of it goes to campaign contributions if we
13 might. And we all know that for a fact.

14 So I think the problem starts with at the top of our
15 DEM and. That's where the problem starts. And it ends
16 with the people in Johnston having to fight for their
17 lives every other month or so because you people fail to
18 figure out the fact. You're going by GZA. I suggest
19 we -- you have unlimited resources at your disposal. And
20 you can get your own people up here and do the proper
21 testing before we have to pull another Woburn and do it
22 ourselves. And then everybody here is going to look
23 like, you know, not so good in the paper. And if you
24 think CNN being here tonight was something, well, when

1 you have to deal with 20/20 next, and whoever else we can
2 get a hold of, because we're not stopping until they stop
3 that landfill. That's it. Bottom line.

4 (applause)

5 THE CHAIRMAN: Thank you. I will now
6 close the hearing. This hearing is closed.

7
8 (PUBLIC HEARING CLOSED)

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1 CERTIFICATE

2
3 I, Lori P. Hamel, a Notary Public in and for the
4 State of Rhode Island, hereby certify that the foregoing
5 pages are a true and accurate record of my stenographic notes
6 that were reduced to print through computer-aided
7 transcription.

8 In witness whereof, I hereunto set my hand this
9 9th day of September, 2001.

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LORI P. HAMEL, RPR, NOTARY PUBLIC

My Commission Expires 6/24/05

**Record of Decision
Part 3: The Responsiveness Summary**

Appendix A: RI DEM Letter of Concurrence

Received RAB, 10/30/01



RHODE ISLAND
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

235 Promenade Street, Providence, RI 02908-5767

TDD 401-831-5508

22 October 2001

Ms. Patricia Meaney, Director
USEPA- New England Region
Office of Site Remediation and Restoration
1 Congress Street- Suite 1100
Boston, MA 02114-2023

Site: Central Lf OU 2
Break: 9.1
Other: 26868

RE: Record of Decision for Central Landfill (OU-2) Superfund Site

Dear Ms. Meaney:

The Department of Environmental Management (Department) has completed its review of the Record of Decision (ROD) for the Central Landfill (OU-2) Superfund Site. The U.S. Environmental Protection Agency's (EPA's) selected alternative for the Site, as presented in the ROD, is a No Action decision.

The Department has worked on this Site with your Agency from the early investigatory stages up through this current decision milestone. Based upon this Department's review of this ROD and the results of the remedial investigation activities conducted to date, we offer our concurrence on the decision.

The Department wishes to emphasize the following aspects of the ROD:

- The source-control remedy described in the OU1 ROD will serve to reduce the migration of any hazardous materials from the landfill to OU2. The OU1 ROD included:
 1. Constructing a multi-layer RCRA C cap over the 121 acre Phase I area and incorporating the existing 32 acre Department -approved cap on the side slopes;
 2. Hydraulic containment and treatment of groundwater in the hot spot area of the landfill and discharge of the treated groundwater to either on-Site surface water or the Cranston Waste Water Treatment Plant;
 3. Implementing deed restrictions on groundwater use and land development within property owned by the Rhode Island Resource Recovery Corporation (RIRRC);
 4. Initiating a long-term program of sampling and analysis of groundwater, surface water, and air.
- EPA will conduct five-year reviews to ensure that the remedial actions for OU1 continue to provide adequate protection of human health and the environment. Those reviews will also ensure that human health and the environment are protected in OU2.

Ms. Patricia Meaney
22 October 2001
Page 2

- It is this Department's understanding that RIRRC will provide municipal water to the [REDACTED] residence (Lot43/275). This will ensure that it is not used as potable water in the future.
- As was discussed previously, the proposed Johnston Town Ordinance to prohibit the installation of groundwater wells shall be adopted by the Johnston Town Council. If the ordinance is not adopted or is subsequently repealed or amended, the RIRRC concurs that under the OUI Consent Decree they are responsible for implementing additional institutional controls.

Thank you for providing us with an opportunity to review and concur with this important ROD.

Sincerely,



Jan H. Reitsma
Director

cc: Terrence Gray, RIDEM, Assistant Director
Leo Hellested, RIDEM, Office of Waste Management
William R. Macera, Mayor, Town of Johnston

Record of Decision
Part 3: The Responsiveness Summary

Appendix B: Glossary of Terms and Acronyms

Glossary of Terms and Acronyms

ACGIH	American Conference of Governmental Industrial Hygienists
ARAR	Applicable or relevant and appropriate requirement
AWQC	Ambient water quality criteria
BTEX	Benzene, toluene, ethyl benzene, xylene
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CERCLIS	Comprehensive Environmental Response, Compensation, and Liability Information System
CFR	Code of Federal Regulations
CNS	Central nervous system
COC	Contaminant of concern
COPC	Contaminant of potential concern
CSM	Conceptual site model
EPA	US Environmental Protection Agency
EPC	Exposure point concentration
ESD	Explanation of Significant Differences
Facility	612-acre contiguous area owned by RIRRC that includes the Site
FS	Feasibility study
gpm	Gallons per minute
GZA	GZA Inc. - RIRRC's contractor
HEAST	Health Effects Assessment Summary Tables
HHRA	Human health risk assessment
HI	Hazard index
HQ	Hazard quotient
IRIS	Integrated Risk Information System
LEL	Lowest effect level
LFI	Limited field investigation
MCL	Maximum contaminant level
MCLG	Maximum contaminant level goal
MIBK	4-methyl-2-pentanone
MM	Management of migration
NAPLs	Non-aqueous phase liquids
NCP	National Oil and Hazardous Substances Contingency Plan (40 CFR Part 300)
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List
NTCRA	Non-time critical removal action
O&M	Operation and maintenance
OSHA	Occupational Safety and Health Administration
OSRR	Office of Site Remediation and Restoration
OSWER	Office of Solid Waste and Emergency Response
OU1	Operable Unit 1
OU2	Operable Unit 2
OU2 Study Area	1,333-acre area that surrounds, but does not include the Site.
PAHs	Polynuclear aromatic hydrocarbons
PCBs	Polychlorinated biphenyls
PEC	Probable effects concentration

pH	Pouvoir hydrogene (expression of acidity/alkalinity)
Phase 1 area	121-acre unlined portion of the Site.
Phase 2&3	33-acre expansion area of the Site.
Areas	
POTW	Publicly owned treatment works
ppm	Parts per million
PRP	Potentially responsible party
RAGS	Risk Assessment Guidance for Superfund
RAO	Remedial action objective
RCRA	Resource Conservation and Recovery Act
RfD	Reference dose
RI	Remedial investigation
RIRRC	Rhode Island Resource Recovery Corporation, Inc.
RME	Reasonable maximum exposure
ROD	Record of Decision
SDWA	Safe Drinking Water Act
SELs	Severe effect levels
SQB	Sediment quality benchmark
SVOC	Semi-volatile organic compound
TAL	Target analyte list
TBC	To be considered
TCL	Target compound list
TEC	Threshold effects concentration
TLV	Threshold limit value
UCL	Upper confidence limit
USC	United States Code
VOC	Volatile organic compound

**Record of Decision
Part 3: The Responsiveness Summary**

Appendix C: Administrative Record Index and Guidance Documents

CENTRAL LANDFILL
OFFSITE INVESTIGATIONS (OU 2)
ADMINISTRATIVE RECORD FILE
RECORD OF DECISION 9/2002

3. REMEDIAL INVESTIGATION (RI)

1. REPORT: PRELIMINARY PUBLIC HEALTH ASSESSMENT.
AUTHOR: US DEPT OF HEALTH AND HUMAN SERVICES
DOC ID: 35281 03/15/1989 4 PAGES
2. MEMO : QUALIFYING SOIL/SEDIMENT DATA WITH LOW PERCENT SOLIDS.
AUTHOR: DEBORAH A SZARO, US EPA REGION 1
MOIRA M LATAILLE, US EPA REGION 1
DOC ID: 3221 03/29/1990 1 PAGE
3. REPORT: UPPER & LOWER SIMMONS RESERVOIRS DREDGING STUDY.
TO: RHODE ISLAND SOLID WASTE MANAGEMENT CORP
AUTHOR: MAGUIRE GROUP INC
DOC ID: 3025 06/01/1992 86 PAGES
4. LETTER: TRANSMITTAL OF 06/1992 DREDGING STUDY BY MAGUIRE GROUP INC.
TO: JAMES M BROWN, US EPA REGION 1
AUTHOR: DENNIS P ARUSSO, RHODE ISLAND SOLID WASTE MANAGEMENT CORP
DOC ID: 3017 06/18/1992 1 PAGE
5. LETTER: EPA COMMENTS TO REMEDIAL INVESTIGATION/FEASIBILITY STUDY OPERABLE
UNIT 2 TASK 1, UPPER SIMMONS RESERVOIR SEDIMENT SAMPLING &
ANALYSIS WORK PLAN, DRAFT.
TO: DENNIS P ARUSSO, RHODE ISLAND SOLID WASTE MANAGEMENT CORP
AUTHOR: JAMES M BROWN, US EPA REGION 1
DOC ID: 3029 07/07/1992 3 PAGES
6. LETTER: EPA COMMENTS TO REMEDIAL INVESTIGATION/FEASIBILITY STUDY,
OPERABLE UNIT 2 TASK 1, UPPER SIMMONS RESERVOIR SEDIMENT SAMPLING
& ANALYSES WORK PLAN, DRAFT.
TO: DENNIS P ARUSSO, RHODE ISLAND SOLID WASTE MANAGEMENT CORP
AUTHOR: JAMES M BROWN, US EPA REGION 1
DOC ID: 3109 07/07/1992 3 PAGES
7. LETTER: EPA COMMENTS TO REMEDIAL INVESTIGATION/FEASIBILITY STUDY,
OPERABLE UNIT 2 TASK 1, PHASE 1, REVISED UPPER SIMMONS RESERVOIR
SEDIMENT SAMPLING & ANALYSES WORK PLAN, DRAFT.
TO: DENNIS P ARUSSO, RHODE ISLAND SOLID WASTE MANAGEMENT CORP
AUTHOR: JAMES M BROWN, US EPA REGION 1
DOC ID: 3110 10/01/1992 3 PAGES
8. MISC : PROJECT SAMPLE SUMMARY, CHAIN OF CUSTODY, FEDERAL EXPRESS SLIPS.
AUTHOR: DAVID L HILL, CDM FEDERAL PROGRAMS CORP
DOC ID: 3289 10/23/1992 8 PAGES
9. SAMPLING & ANALYSIS DATA: NARRATIVE, LAB RESULTS.
AUTHOR: KENNETH M IVES, GP ENVIRONMENTAL SERVICES
DOC ID: 3288 11/24/1992 7 PAGES

CENTRAL LANDFILL
OFFSITE INVESTIGATIONS (OU 2)
ADMINISTRATIVE RECORD FILE
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3. REMEDIAL INVESTIGATION (RI) (cont)

10. REPORT: NARRATIVE, LAB RESULTS.

TO: US EPA REGION 1
AUTHOR: PHYLLIS A CHRISTOPHER, E A LABORATORIES
DOC ID: 3286 11/25/1992 6 PAGES

11. SAMPLING & ANALYSIS DATA: NARRATIVE, LAB RESULTS. 3 SAMPLES OF LOW
CONCENTRATION OF SOIL/SEDIMENT.

AUTHOR: WILLIAM TROUT, WEYERHAUSER
DOC ID: 3287 12/07/1992 9 PAGES

12. LETTER: EPA APPROVAL OF 01/1992 OPERABLE UNIT 2 WETLAND DELINEATION WORK
PLAN, WITH CONDITIONS.

TO: DENNIS P ARUSSO, RHODE ISLAND SOLID WASTE MANAGEMENT CORP
AUTHOR: JAMES M BROWN, US EPA REGION 1
DOC ID: 3111 02/22/1993 1 PAGE

13. LETTER: EPA COMMENTS, UPPER SIMMONS RESERVOIR SEDIMENT STUDY PHASE 1
REPORT/PHASE 2 WORK PLAN, OPERABLE UNIT 2 REMEDIAL INVESTIGATION
TASK 1, DATED 02/1993.

TO: DENNIS P ARUSSO, RHODE ISLAND SOLID WASTE MANAGEMENT CORP
AUTHOR: JAMES M BROWN, US EPA REGION 1
DOC ID: 3112 03/23/1993 2 PAGES

14. LETTER: RESPONSE TO EPA COMMENTS UPPER SIMMONS RESERVOIR SEDIMENT STUDY,
PHASE 1 REPORT/PHASE 2 WORK PLAN, OPERABLE UNIT 2 REMEDIAL
INVESTIGATION TASK 1, DATED 02/03/1993.

TO: DENNIS P ARUSSO, RHODE ISLAND SOLID WASTE MANAGEMENT CORP
AUTHOR: EDWARD A SUMMERLY, GZA GEOENVIRONMENTAL INC
MICHAEL A POWERS, GZA GEOENVIRONMENTAL INC
TIMOTHY L BRIGGS, GZA GEOENVIRONMENTAL INC
DOC ID: 3113 04/08/1993 6 PAGES

15. LETTER: GZA RESPONSE TO US EPA COMMENTS ON 12/1992 WETLANDS DELINEATION
WORK PLAN.

TO: DENNIS P ARUSSO, RHODE ISLAND SOLID WASTE MANAGEMENT CORP
AUTHOR: JAMES M BROWN, US EPA REGION 1
DOC ID: 3114 06/02/1993 2 PAGES

16. LETTER: GOVERNMENT PARTY REVIEW, PARTIAL APPROVAL OF OPERABLE UNIT 2
REMEDIAL INVESTIGATION WORK PLAN, DATED 05/1993.

TO: DENNIS P ARUSSO, RHODE ISLAND SOLID WASTE MANAGEMENT CORP
AUTHOR: JAMES M BROWN, US EPA REGION 1
DOC ID: 3115 07/05/1993 1 PAGE

17. LETTER: COMMENTS ON OPERABLE UNIT 2 REMEDIAL INVESTIGATION WORK PLAN,
DRAFT.

TO: JAMES M BROWN, US EPA REGION 1
AUTHOR: JUDITH S GRAHAM, RI DEPT OF ENVIRONMENTAL MANAGEMENT
DOC ID: 3119 07/06/1993 2 PAGES

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3. REMEDIAL INVESTIGATION (RI) (cont)

18. WORK PLAN: SCOPE OF WORK, REMEDIAL INVESTIGATION/FEASIBILITY OVERSIGHT,
OPERABLE UNIT 2.

AUTHOR: US ENVIRONMENTAL PROTECTION AGENCY

DOC ID: 3293 09/23/1993 5 PAGES

19. LETTER: EPA COMMENTS TO PUMP TEST WORK PLAN, OPERABLE UNIT 2 TASK 3,
09/1993.

TO: DENNIS P ARUSSO, RHODE ISLAND SOLID WASTE MANAGEMENT CORP

AUTHOR: JAMES M BROWN, US EPA REGION 1

DOC ID: 3116 10/13/1993 2 PAGES

20. REPORT: FISH SAMPLING & TISSUE ANALYSIS.

TO: DENNIS P ARUSSO, RHODE ISLAND SOLID WASTE MANAGEMENT CORP

AUTHOR: DONNA HOLDEN PALLISTER, ENVIRONMENTAL SCIENCE SERVICES

MICHAEL J BAER, ENVIRONMENTAL SCIENCE SERVICES

DOC ID: 3122 10/28/1993 38 PAGES

21. WORK PLAN: WORK PLAN FOR RISK ASSESSMENT, OPERABLE UNIT 2. DRAFT.

TO: US ENVIRONMENTAL PROTECTION AGENCY

AUTHOR: NUS/TETRA TECH INC

DOC ID: 3271 11/01/1993 65 PAGES

22. LETTER: RIDEM APPROVES TECHNICAL ASPECTS OF PUMP TEST WORK PLAN, BUT IS
CONCERNED ABOUT CRANSTON POTW PERMITTING COMPLIANCE STATUS.

TO: JAMES M BROWN, US EPA REGION 1

AUTHOR: JUDITH S GRAHAM, RI DEPT OF ENVIRONMENTAL MANAGEMENT

DOC ID: 3071 11/18/1993 1 PAGE

23. LETTER: EPA PARTIAL APPROVAL OF OPERABLE UNIT 2 REMEDIAL INVESTIGATION
WORK PLAN, 05/1993.

TO: DENNIS P ARUSSO, RHODE ISLAND SOLID WASTE MANAGEMENT CORP

AUTHOR: JAMES M BROWN, US EPA REGION 1

DOC ID: 3118 08/25/1994 8 PAGES

24. LETTER: FLOW METER CHAMBER INSTALLATION.

TO: JAMES M BROWN, US EPA REGION 1

AUTHOR: CLAYTON A CARLISLE, RHODE ISLAND SOLID WASTE MANAGEMENT CORP

DOC ID: 3120 09/14/1994 1 PAGE

25. LETTER: EPA COMMENTS, WELL INSTALLATION, OPERABLE UNIT 2 TASK 4, FIELD
SAMPLING PLAN, 09/1994.

TO: DENNIS P ARUSSO, RHODE ISLAND SOLID WASTE MANAGEMENT CORP

AUTHOR: JAMES M BROWN, US EPA REGION 1

DOC ID: 3123 10/25/1994 3 PAGES

26. LETTER: COMMENTS ON PROPOSED FIELD SAMPLING PLAN.

AUTHOR: LEO HELLESTED, RI DEPT OF ENVIRONMENTAL MANAGEMENT

DOC ID: 3072 10/28/1994 2 PAGES

CENTRAL LANDFILL
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3. REMEDIAL INVESTIGATION (RI) (cont)

27. LETTER: BASED ON RESULTS OF ATTACHED STUDY, THERE IS NO EVIDENCE THAT FISH CAUGHT, ANALYZED CONTAIN ELEVATED CONCENTRATIONS OF SELECTED INORGANIC TRACE METALS.
TO: EDWARD A SUMMERLY, GZA GEOENVIRONMENTAL INC
AUTHOR: DANA J ZEWINSKI, RHODE ISLAND SOLID WASTE MANAGEMENT CORP
DOC ID: 3121 11/07/1994 1 PAGE
28. LETTER: CLARIFICATION OF US EPA POSITION REGARDING PHYSICAL STUDIES PROPOSED IN FIELD SAMPLING PLAN.
TO: DENNIS P ARUSSO, RHODE ISLAND SOLID WASTE MANAGEMENT CORP
AUTHOR: JAMES M BROWN, US EPA REGION 1
DOC ID: 3126 01/18/1995 2 PAGES
29. MEMO : DEEP BEDROCK BOREHOLE MW95-ML9, MAP WITH PROPOSED LOCATION ATTACHED.
TO: DENNIS P ARUSSO, RHODE ISLAND SOLID WASTE MANAGEMENT CORP
JAMES M BROWN, US EPA REGION 1
AUTHOR: EDWARD A SUMMERLY, GZA GEOENVIRONMENTAL INC
DOC ID: 3253 02/08/1995 10 PAGES
30. REPORT: PROGRESS REPORT 1, 01/10-02/10,1995.
TO: DENNIS P ARUSSO, RHODE ISLAND SOLID WASTE MANAGEMENT CORP
AUTHOR: EDWARD A SUMMERLY, GZA GEOENVIRONMENTAL INC
DOC ID: 3222 02/10/1995 14 PAGES
31. LETTER: REQUEST THAT RISWMC BE ALLOWED TO PERFORM OPERABLE UNIT 2 RISK ASSESSMENT USING GZA.
TO: JAMES M BROWN, US EPA REGION 1
AUTHOR: DENNIS P ARUSSO, RHODE ISLAND SOLID WASTE MANAGEMENT CORP
DOC ID: 3128 03/10/1995 1 PAGE
32. LETTER: TRANSMITTAL OF DRAFT SAMPLING & ANALYSIS PLAN.
TO: JAMES M BROWN, US EPA REGION 1
AUTHOR: REBECCA L CLEAVER, NUS/TETRA TECH INC
DOC ID: 3172 03/16/1995 1 PAGE
33. LETTER: PROGRESS REPORT 2, 02/10-03/10/1995.
TO: DENNIS P ARUSSO, RHODE ISLAND SOLID WASTE MANAGEMENT CORP
AUTHOR: EDWARD A SUMMERLY, GZA GEOENVIRONMENTAL INC
DOC ID: 3223 03/22/1995 33 PAGES
34. LETTER: REVIEW OF WORK PLAN RESPONSE SUMMARY, OPERABLE UNIT 2 REMEDIAL INVESTIGATION, GZA, 02/17/1995, DRAFT.
TO: JAMES M BROWN, US EPA REGION 1
AUTHOR: REBECCA L CLEAVER, NUS/TETRA TECH INC
DOC ID: 3174 03/27/1995 5 PAGES
35. LETTER: EPA APPROVAL OF RISWMC 03/10/1995 REQUEST TO ALLOW RISWMC TO PERFORM OPERABLE UNIT 2, RISK ASSESSMENT.
TO: DENNIS P ARUSSO, RHODE ISLAND SOLID WASTE MANAGEMENT CORP
AUTHOR: JAMES M BROWN, US EPA REGION 1
DOC ID: 3131 04/04/1995 1 PAGE

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3. REMEDIAL INVESTIGATION (RI) (cont)

36. LETTER: TRANSMITTAL OF ECOLOGICAL CHARACTERIZATION REPORT, OPERABLE UNIT 2 REMEDIAL INVESTIGATION TASK 2, 06/1994.
TO: F TIMOTHY PRIOR, US DOI/US FISH & WILDLIFE SERVICE
AUTHOR: JAMES M BROWN, US EPA REGION 1
DOC ID: 3202 04/06/1995 2 PAGES
37. LETTER: PROGRESS REPORT 3, 03/10-04/10/1995.
TO: DENNIS P ARUSSO, RHODE ISLAND SOLID WASTE MANAGEMENT CORP
AUTHOR: EDWARD A SUMMERLY, GZA GEOENVIRONMENTAL INC
DOC ID: 3224 04/10/1995 7 PAGES
38. LETTER: EPA COMMENTS TO UPPER SIMMONS RESERVOIR. PHASE 2 REPORT. OPERABLE UNIT 2 REMEDIAL INVESTIGATION TASK 1, DATED 07/1993.
TO: DENNIS P ARUSSO, RHODE ISLAND SOLID WASTE MANAGEMENT CORP
AUTHOR: JAMES M BROWN, US EPA REGION 1
DOC ID: 3132 04/11/1995 4 PAGES
39. LETTER: EPA REVIEW COMMENTS, ECOLOGICAL CHARACTERIZATION, OPERABLE UNIT 2 TASK 2, DATED 06/1994.
TO: DENNIS P ARUSSO, RHODE ISLAND SOLID WASTE MANAGEMENT CORP
AUTHOR: JAMES M BROWN, US EPA REGION 1
DOC ID: 3133 04/14/1995 4 PAGES
40. LETTER: EPAS COMMENTS TO WORK PLAN RESPONSE SUMMARY, OPERABLE UNIT 2 REMEDIAL INVESTIGATION, GZA, 02/17/1995, DRAFT.
TO: DENNIS P ARUSSO, RHODE ISLAND SOLID WASTE MANAGEMENT CORP
AUTHOR: JAMES M BROWN, US EPA REGION 1
DOC ID: 3134 04/14/1995 5 PAGES
41. MISC : ATTACHMENT 3, POLICY MEMO, GUIDELINES FOR MANAGEMENT OF INVESTIGATION DERIVED WASTES, RI DEPARTMENT OF ENVIRONMENTAL MANAGEMENT, DIVISION OF SITE REMEDIATION.
AUTHOR: TERRENCE D GRAY, RI DEPT OF ENVIRONMENTAL MANAGEMENT
DOC ID: 3151 04/18/1995 6 PAGES
42. LETTER: EPA REVIEW OF WORK PLAN CENTRAL LANDFILL, OPERABLE UNIT 2 REMEDIAL INVESTIGATION TASK 3, STREAM FLOW MEASUREMENTS, 03/1995.
TO: DENNIS P ARUSSO, RHODE ISLAND SOLID WASTE MANAGEMENT CORP
AUTHOR: JAMES M BROWN, US EPA REGION 1
DOC ID: 3137 05/09/1995 3 PAGES
43. LETTER: PROGRESS REPORT 4, 04/10-05/09/1995.
TO: DENNIS P ARUSSO, RHODE ISLAND SOLID WASTE MANAGEMENT CORP
AUTHOR: EDWARD A SUMMERLY, GZA GEOENVIRONMENTAL INC
DOC ID: 3228 05/10/1995 17 PAGES
44. LETTER: TRANSMITTAL OF TWO FISH SAMPLING, TISSUE ANALYSIS REPORTS FOR SIMMONS RESERVOIR.
TO: F TIMOTHY PRIOR, US DOI/US FISH & WILDLIFE SERVICE
AUTHOR: JAMES M BROWN, US EPA REGION 1
DOC ID: 3203 05/31/1995 1 PAGE

CENTRAL LANDFILL
OFFSITE INVESTIGATIONS (OU 2)
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3. REMEDIAL INVESTIGATION (RI) (cont)

45. LETTER: EPA APPROVAL OF REVISED WORK PLAN, OPERABLE UNIT 2 REMEDIAL INVESTIGATION TASK 3. STREAM FLOW MEASUREMENT. DATED 05/1995.
TO: DENNIS P ARUSSO, RHODE ISLAND SOLID WASTE MANAGEMENT CORP
AUTHOR: JAMES M BROWN, US EPA REGION 1
DOC ID: 3140 06/14/1995 1 PAGE
46. LETTER: PROGRESS REPORT 5, 05/10-06/14/1995.
TO: DENNIS P ARUSSO, RHODE ISLAND SOLID WASTE MANAGEMENT CORP
AUTHOR: EDWARD A SUMMERLY, GZA GEOENVIRONMENTAL INC
DOC ID: 3229 06/15/1995 3 PAGES
47. LETTER: APPROVAL FOR FIELD SAMPLING PLAN, OPERABLE UNIT 2 TASK 7, HOT SPOT AREA TEST PITS, DATED 06/1995, DRAFT.
TO: DENNIS P ARUSSO, RHODE ISLAND SOLID WASTE MANAGEMENT CORP
AUTHOR: JAMES M BROWN, US EPA REGION 1
DOC ID: 3141 07/10/1995 2 PAGES
48. LETTER: PROGRESS REPORT 6, 06/15-07/10/1995.
TO: DENNIS P ARUSSO, RHODE ISLAND SOLID WASTE MANAGEMENT CORP
AUTHOR: EDWARD A SUMMERLY, GZA GEOENVIRONMENTAL INC
DOC ID: 3230 07/11/1995 4 PAGES
49. LETTER: COMMENTS ON WORK PLAN FOR BASELINE RISK ASSESSMENT OF OPERABLE UNIT 2, DRAFT.
TO: JAMES M BROWN, US EPA REGION 1
AUTHOR: GREG S FINE, RI DEPT OF ENVIRONMENTAL MANAGEMENT
DOC ID: 3073 07/28/1995 2 PAGES
50. LETTER: COMMENTS TO DRAFT WORK PLAN FOR BASELINE RISK ASSESSMENT OF OPERABLE UNIT 2.
TO: JAMES M BROWN, US EPA REGION 1
AUTHOR: GREG S FINE, RI DEPT OF ENVIRONMENTAL MANAGEMENT
DOC ID: 3144 07/28/1995 2 PAGES
51. LETTER: COMMENTS FROM US EPA & RIDEM TO DRAFT WORK PLAN FOR BASELINE RISK ASSESSMENTS OF OPERABLE UNIT 2, DATED 06/1995.
TO: DENNIS P ARUSSO, RHODE ISLAND SOLID WASTE MANAGEMENT CORP
AUTHOR: JAMES M BROWN, US EPA REGION 1
DOC ID: 3143 07/31/1995 11 PAGES
52. LETTER: COMMENTS TO GZA RESPONSE SUMMARY TO US EPA COMMENTS ON ECOLOGICAL CHARACTERIZATION REPORT, OPERABLE UNIT 2 REMEDIAL INVESTIGATION TASK 2, 07/12/1995.
TO: DENNIS P ARUSSO, RHODE ISLAND SOLID WASTE MANAGEMENT CORP
AUTHOR: JAMES M BROWN, US EPA REGION 1
DOC ID: 3145 08/04/1995 2 PAGES
53. LETTER: PROGRESS REPORT 7, 07/11-08/09/1995.
TO: DENNIS P ARUSSO, RHODE ISLAND SOLID WASTE MANAGEMENT CORP
AUTHOR: EDWARD A SUMMERLY, GZA GEOENVIRONMENTAL INC
DOC ID: 3231 08/09/1995 7 PAGES

CENTRAL LANDFILL
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3. REMEDIAL INVESTIGATION (RI) (cont)

54. LETTER: EPA REVIEW OF OPERABLE UNIT 2 TASK 5, RESIDENTIAL WELL SURVEY, DATA REPORT & FIELD SAMPLING PLAN, 07/1995, DRAFT.
TO: DENNIS P ARUSSO, RHODE ISLAND SOLID WASTE MANAGEMENT CORP
AUTHOR: JAMES M BROWN, US EPA REGION 1
DOC ID: 3147 08/17/1995 1 PAGE
55. LETTER: PROGRESS REPORT 8, 08/10-09/08/1995.
TO: DENNIS P ARUSSO, RHODE ISLAND SOLID WASTE MANAGEMENT CORP
AUTHOR: EDWARD A SUMMERLY, GZA GEOENVIRONMENTAL INC
DOC ID: 3232 09/08/1995 4 PAGES
56. LETTER: ATTACHMENT 1, REVIEW OF SAMPLING & ANALYSIS PLAN, VOLUME 1, OPERABLE UNIT 2, DRAFT.
TO: JAMES M BROWN, US EPA REGION 1
AUTHOR: GREG S FINE, RI DEPT OF ENVIRONMENTAL MANAGEMENT
DOC ID: 3149 09/22/1995 1 PAGE
57. LETTER: EPA REVIEW OF SAMPLING & ANALYSIS PLAN, VOLUME 1 & 2, OPERABLE UNIT 2 REMEDIAL INVESTIGATION, GZA, 09/1995, DRAFT.
TO: DENNIS P ARUSSO, RHODE ISLAND SOLID WASTE MANAGEMENT CORP
AUTHOR: JAMES M BROWN, US EPA REGION 1
DOC ID: 3148 10/05/1995 4 PAGES
58. MISC : ATTACHMENT 2, SPECIFIC COMMENTS, REVIEW SAMPLING & ANALYSIS PLAN, VOLUME 1 & 2, GZA, 09/1995, DRAFT.
TO: DENNIS P ARUSSO, RHODE ISLAND SOLID WASTE MANAGEMENT CORP
AUTHOR: JAMES M BROWN, US EPA REGION 1
DOC ID: 3150 10/05/1995 7 PAGES
59. LETTER: PROGRESS REPORT 9, 09/09-10/10/1995.
TO: DENNIS P ARUSSO, RHODE ISLAND SOLID WASTE MANAGEMENT CORP
AUTHOR: EDWARD A SUMMERLY, GZA GEOENVIRONMENTAL INC
DOC ID: 3233 10/10/1995 3 PAGES
60. MEMO : CANCER RISK NEWSLETTER, FIRST REVISION.
TO: JAMES M BROWN, US EPA REGION 1
AUTHOR: DANTE G IONATA, RHODE ISLAND SOLID WASTE MANAGEMENT CORP
DOC ID: 3153 10/12/1995 6 PAGES
61. LETTER: RISWMC SPECIAL NEWSLETTER, CANCER RISK.
TO: DANTE G IONATA, RHODE ISLAND SOLID WASTE MANAGEMENT CORP
AUTHOR: JAMES M BROWN, US EPA REGION 1
DOC ID: 3215 10/13/1995 2 PAGES
62. LETTER: COMMENTS ON RISWMC SPECIAL NEWSLETTER CANCER RISK.
TO: DANTE G IONATA, RHODE ISLAND SOLID WASTE MANAGEMENT CORP
AUTHOR: JAMES M BROWN, US EPA REGION 1
DOC ID: 3154 10/16/1995 2 PAGES

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3. REMEDIAL INVESTIGATION (RI) (cont)

63. MEMO : HEALTH EFFECTS NEWSLETTER, RED-LINED, STRIKE OUT VERSION FOR REVIEW.
TO: JAMES M BROWN, US EPA REGION 1
AUTHOR: DANTE G IONATA, RHODE ISLAND SOLID WASTE MANAGEMENT CORP
DOC ID: 3155 10/24/1995 6 PAGES
64. WORK PLAN: QUALITY ASSURANCE PROJECT PLAN, FINAL DRAFT.
TO: RHODE ISLAND SOLID WASTE MANAGEMENT CORP
AUTHOR: GZA GEOENVIRONMENTAL INC
MITKEM CORPORATION
DOC ID: 34743 11/01/1995 64 PAGES
65. LETTER: ECOLOGICAL RISK ASSESSMENT, OPERABLE UNIT 2. DETENTION PONDS 1, 2, 3, & 4.
TO: DENNIS P ARUSSO, RHODE ISLAND SOLID WASTE MANAGEMENT CORP
AUTHOR: JAMES M BROWN, US EPA REGION 1
DOC ID: 3156 11/02/1995 2 PAGES
66. LETTER: PROGRESS REPORT 10, 10/11-11/09/1995.
TO: DENNIS P ARUSSO, RHODE ISLAND SOLID WASTE MANAGEMENT CORP
AUTHOR: EDWARD A SUMMERLY, GZA GEOENVIRONMENTAL INC
DOC ID: 3234 11/10/1995 10 PAGES
67. LETTER: RIDEM HAS REVIEWED MONITORING WELL INSTALLATION, OPERABLE UNIT 2 TASK 4. DATA REPORT 09/1995, NO COMMENT.
TO: JAMES M BROWN, US EPA REGION 1
AUTHOR: LAURIE A SCLAMA, RI DEPT OF ENVIRONMENTAL MANAGEMENT
DOC ID: 3076 12/01/1995 1 PAGE
68. LETTER: RIDEM HAS REVIEWED QUALITY ASSURANCE PROJECT PLAN, OPERABLE UNIT 2, REMEDIAL INVESTIGATION 11/1995, FINAL DRAFT.
TO: JAMES M BROWN, US EPA REGION 1
AUTHOR: LAURIE A SCLAMA, RI DEPT OF ENVIRONMENTAL MANAGEMENT
DOC ID: 3078 12/01/1995 1 PAGE
69. LETTER: RIDEM HAS REVIEWED SAMPLING & ANALYSIS PLAN, OPERABLE UNIT 2, REMEDIAL INVESTIGATION 11/1995, FINAL DRAFT, NO COMMENT.
TO: JAMES M BROWN, US EPA REGION 1
AUTHOR: LAURIE A SCLAMA, RI DEPT OF ENVIRONMENTAL MANAGEMENT
DOC ID: 3077 12/01/1995 1 PAGE
70. LETTER: EPA APPROVAL OF SAMPLING & ANALYSIS PLAN, OPERABLE UNIT 2 REMEDIAL INVESTIGATION, 11/1995, FINAL DRAFT, AS AMENDED BY GZA RESPONSE SUMMARY LETTER 11/28/1995.
TO: DENNIS P ARUSSO, RHODE ISLAND SOLID WASTE MANAGEMENT CORP
AUTHOR: JAMES M BROWN, US EPA REGION 1
DOC ID: 3158 12/04/1995 2 PAGES
71. LETTER: PROGRESS REPORT 11, 11/10-12/14/1995.
TO: DENNIS P ARUSSO, RHODE ISLAND SOLID WASTE MANAGEMENT CORP
AUTHOR: EDWARD A SUMMERLY, GZA GEOENVIRONMENTAL INC
DOC ID: 3235 12/14/1995 4 PAGES

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3. REMEDIAL INVESTIGATION (RI) (cont)

72. LETTER: PROGRESS REPORT 12. 12/15/1995-01/10/1996.
TO: DENNIS P ARUSSO, RHODE ISLAND SOLID WASTE MANAGEMENT CORP
AUTHOR: EDWARD A SUMMERLY, GZA GEOENVIRONMENTAL INC
DOC ID: 3236 01/10/1996 4 PAGES
73. LETTER: PROGRESS REPORT 13. 01/11-02/14/1996.
TO: DENNIS P ARUSSO, RHODE ISLAND SOLID WASTE MANAGEMENT CORP
AUTHOR: EDWARD A SUMMERLY, GZA GEOENVIRONMENTAL INC
DOC ID: 3237 02/14/1996 5 PAGES
74. LETTER: PROGRESS REPORT 14. 02/15-03/11/1996.
TO: DENNIS P ARUSSO, RHODE ISLAND SOLID WASTE MANAGEMENT CORP
AUTHOR: EDWARD A SUMMERLY, GZA GEOENVIRONMENTAL INC
DOC ID: 3238 03/11/1996 3 PAGES
75. LETTER: EPA WILL NOT BE COMMENTING ON HOT SPOT PUMP TEST, 07/1994 &
PENTENNIAL WATER QUALITY REPORTS AT THIS TIME.
TO: DENNIS P ARUSSO, RHODE ISLAND SOLID WASTE MANAGEMENT CORP
AUTHOR: JOHN J COURCIER, US EPA REGION 1
DOC ID: 3208 04/01/1996 1 PAGE
76. LETTER: TRIP REPORT, TECHNICAL OVERSIGHT & SPLIT-SAMPLING, OPERABLE UNIT
2 REMEDIAL INVESTIGATION.
TO: JOHN J COURCIER, US EPA REGION 1
AUTHOR: REBECCA L CLEAVER, NUS/TETRA TECH INC
DOC ID: 3187 04/15/1996 6 PAGES
77. LETTER: PROGRESS REPORT 15. 03/11-04/16/1996.
TO: DENNIS P ARUSSO, RHODE ISLAND SOLID WASTE MANAGEMENT CORP
AUTHOR: EDWARD A SUMMERLY, GZA GEOENVIRONMENTAL INC
DOC ID: 3239 04/17/1996 4 PAGES
78. LETTER: PROGRESS REPORT 16. 04/17-05/14/1996.
TO: DENNIS P ARUSSO, RHODE ISLAND SOLID WASTE MANAGEMENT CORP
AUTHOR: EDWARD A SUMMERLY, GZA GEOENVIRONMENTAL INC
DOC ID: 3240 05/14/1996 5 PAGES
79. LETTER: RESPONSE TO COMMENTS ON WORK PLAN FOR BASELINE RISK ASSESSMENT OF
OPERABLE UNIT 2, DRAFT.
TO: JOHN J COURCIER, US EPA REGION 1
AUTHOR: LAURIE A SCLAMA, RI DEPT OF ENVIRONMENTAL MANAGEMENT
DOC ID: 3283 05/20/1996 1 PAGE
80. LETTER: RIDEM HAS REVIEWED OPERABLE UNIT 2 TASK 7, HOT SPOT TEST PITS, NO
COMMENT.
TO: DENNIS P ARUSSO, RHODE ISLAND SOLID WASTE MANAGEMENT CORP
AUTHOR: LAURIE A SCLAMA, RI DEPT OF ENVIRONMENTAL MANAGEMENT
DOC ID: 3080 05/31/1996 1 PAGE

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3.REMEDIAL INVESTIGATION (RI) (cont)

81. LETTER: REQUESTS THAT GZA COMPLETE DRILLING OF DEEP WELL BETWEEN UPPER & LOWER SIMMONS RESERVOIR.
TO: DENNIS P ARUSSO, RHODE ISLAND SOLID WASTE MANAGEMENT CORP
AUTHOR: JOHN J COURCIER, US EPA REGION 1
DOC ID: 3210 06/06/1996 1 PAGE
82. LETTER: PROGRESS REPORT 17, 05/15-06/25/1996.
TO: DENNIS P ARUSSO, RHODE ISLAND SOLID WASTE MANAGEMENT CORP
AUTHOR: EDWARD A SUMMERLY, GZA GEOENVIRONMENTAL INC
DOC ID: 3241 06/27/1996 6 PAGES
83. LETTER: PROGRESS REPORT 18, 06/26-07/30/1996.
TO: DENNIS P ARUSSO, RHODE ISLAND SOLID WASTE MANAGEMENT CORP
AUTHOR: EDWARD A SUMMERLY, GZA GEOENVIRONMENTAL INC
DOC ID: 3242 08/01/1996 4 PAGES
84. LETTER: SPLIT-SAMPLING POSITIVE DETECTIONS SUMMARY TABLES, OPERABLE UNIT 2 REMEDIAL INVESTIGATION.
TO: JOHN J COURCIER, US EPA REGION 1
AUTHOR: REBECCA L CLEAVER, NUS/TETRA TECH INC
DOC ID: 3189 08/06/1996 10 PAGES
85. LETTER: COMMENTS ON RISK SCREENING & RECOMMENDATION REPORT FOR OPERABLE UNIT 2 ROUND 1A REMEDIAL INVESTIGATION, DRAFT.
TO: JOHN J COURCIER, US EPA REGION 1
AUTHOR: LAURIE A SCLAMA, RI DEPT OF ENVIRONMENTAL MANAGEMENT
DOC ID: 3100 09/03/1996 2 PAGES
86. LETTER: PROGRESS REPORT 19, 08/01-09/11/1996.
TO: DENNIS P ARUSSO, RHODE ISLAND SOLID WASTE MANAGEMENT CORP
AUTHOR: EDWARD A SUMMERLY, GZA GEOENVIRONMENTAL INC
DOC ID: 3243 09/13/1996 4 PAGES
87. LETTER: ACKNOWLEDGEMENT OF COMPLETION OF ROUND 1A SAMPLING & ANALYSIS ACTIVITIES, APPROVAL OF RECOMMENDATION FOR ROUND 2 SAMPLING & ANALYSIS ACTIVITIES.
TO: DENNIS P ARUSSO, RHODE ISLAND SOLID WASTE MANAGEMENT CORP
AUTHOR: JOHN J COURCIER, US EPA REGION 1
DOC ID: 3159 09/25/1996 1 PAGE
88. LETTER: RESPONSE TO PRELIMINARY SCHEDULE FOR COMPLETION OF OPERABLE UNIT 2 REMEDIAL INVESTIGATION/FEASIBILITY STUDY.
TO: JOHN J COURCIER, US EPA REGION 1
AUTHOR: LAURIE A SCLAMA, RI DEPT OF ENVIRONMENTAL MANAGEMENT
DOC ID: 3101 10/10/1996 1 PAGE

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3. REMEDIAL INVESTIGATION (RI) (cont)

89. LETTER: ADDRESSES ISSUES BROUGHT UP AT 09/06 & 09/10/1996 MEETINGS, UPPER SIMMONS RESERVOIR SEDIMENT/DREDGING PROGRAM. SCOPE OF PROPOSED FEASIBILITY STUDY, DELETION OF TASK 5C FROM STUDY.
TO: DENNIS P ARUSSO, RHODE ISLAND RESOURCE RECOVERY CORP
DENNIS P ARUSSO, RHODE ISLAND SOLID WASTE MANAGEMENT CORP
AUTHOR: JOHN J COURCIER, US EPA REGION 1
DOC ID: 3161 10/16/1996 3 PAGES
90. LETTER: BASED ON RESPONSE SUMMARY FOR RIDEM COMMENTS TO DELINEATION OF GROUNDWATER CONTAMINATION EMANATING FROM OPERABLE UNIT 1 AREA, TECHNICAL MEMORANDUM, OFFICE OF WASTE REMEDIATION APPROVES PROPOSED METHOD.
TO: DENNIS P ARUSSO, RHODE ISLAND SOLID WASTE MANAGEMENT CORP
AUTHOR: LAURIE A SCLAMA, RI DEPT OF ENVIRONMENTAL MANAGEMENT
DOC ID: 3103 10/25/1996 1 PAGE
91. LETTER: PROGRESS REPORT 21, 10/17-11/14/1996.
TO: DENNIS P ARUSSO, RHODE ISLAND RESOURCE RECOVERY CORP
AUTHOR: EDWARD A SUMMERLY, GZA GEOENVIRONMENTAL INC
DOC ID: 3245 11/14/1996 4 PAGES
92. LETTER: REVIEW OF TECHNICAL MEMORANDUM, RECOMMENDATION FOR DRILLING LOCATION OF MW96-ML10, DATED 11/1996, DIVISION APPROVES LOCATION.
TO: DENNIS P ARUSSO, RHODE ISLAND SOLID WASTE MANAGEMENT CORP
AUTHOR: LAURIE A SCLAMA, RI DEPT OF ENVIRONMENTAL MANAGEMENT
DOC ID: 3104 11/22/1996 1 PAGE
93. LETTER: TECHNICAL MEMORANDUM, RECOMMENDATIONS FOR DRILLING LOCATIONS OF MW96-ML10.
TO: DENNIS P ARUSSO, RHODE ISLAND RESOURCE RECOVERY CORP
AUTHOR: JOHN J COURCIER, US EPA REGION 1
DOC ID: 3162 12/05/1996 1 PAGE
94. LETTER: PROGRESS REPORT 22, 11/14-12/13/1996.
TO: DENNIS P ARUSSO, RHODE ISLAND RESOURCE RECOVERY CORP
AUTHOR: EDWARD A SUMMERLY, GZA GEOENVIRONMENTAL INC
DOC ID: 3246 12/13/1996 4 PAGES
95. LETTER: PROGRESS REPORT 23, 12/14/1996-01/28/1997.
TO: DENNIS P ARUSSO, RHODE ISLAND RESOURCE RECOVERY CORP
AUTHOR: EDWARD A SUMMERLY, GZA GEOENVIRONMENTAL INC
MICHAEL A POWERS, GZA GEOENVIRONMENTAL INC
DOC ID: 3247 01/29/1997 18 PAGES
96. WORK PLAN: STATEMENT OF WORK FOR REMEDIAL INVESTIGATION/FEASIBILITY STUDY OVERSIGHT ACTIVITIES, OPERABLE UNIT 2.
DOC ID: 3260 02/01/1997 18 PAGES

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3. REMEDIAL INVESTIGATION (RI) (cont)

97. LETTER: PROGRESS REPORT 24, 01/29-02/18/1997.
TO: DENNIS P ARUSSO, RHODE ISLAND RESOURCE RECOVERY CORP
AUTHOR: EDWARD A SUMMERLY, GZA GEOENVIRONMENTAL INC
STEPHEN M KLINE, GZA GEOENVIRONMENTAL INC
DOC ID: 3248 02/19/1997 53 PAGES
98. LETTER: APPROVAL OF GZA RECOMMENDATION FOR DEEP WELL INSTALLATION ZONES.
TO: DENNIS P ARUSSO, RHODE ISLAND RESOURCE RECOVERY CORP
AUTHOR: JOHN J COURCIER, US EPA REGION 1
DOC ID: 3163 02/26/1997 1 PAGE
99. LETTER: OFFICE APPROVES OF PROPOSED WELL INSTALLATION ZONES, BASED ON
REVIEW OF RECOMMENDED WELL INSTALLATION ZONES FOR MW97-ML10,
OPERABLE UNIT 2.
TO: DENNIS P ARUSSO, RHODE ISLAND SOLID WASTE MANAGEMENT CORP
AUTHOR: LAURIE A SCLAMA, RI DEPT OF ENVIRONMENTAL MANAGEMENT
DOC ID: 3105 03/03/1997 1 PAGE
100. LETTER: PROGRESS REPORT 25, 02/19- 03/21/1997.
TO: DENNIS P ARUSSO, RHODE ISLAND RESOURCE RECOVERY CORP
AUTHOR: EDWARD A SUMMERLY, GZA GEOENVIRONMENTAL INC
DOC ID: 3249 03/21/1997 107 PAGES
101. LETTER: DECOMMISSIONING OF WELLS LOCATED IN HOT SPOT AREA.
TO: DENNIS P ARUSSO, RHODE ISLAND SOLID WASTE MANAGEMENT CORP
AUTHOR: LAURIE A SCLAMA, RI DEPT OF ENVIRONMENTAL MANAGEMENT
DOC ID: 3106 04/25/1997 1 PAGE
102. LETTER: PROGRESS REPORT 26, 03/22-04/30/1997.
TO: DENNIS P ARUSSO, RHODE ISLAND RESOURCE RECOVERY CORP
AUTHOR: EDWARD A SUMMERLY, GZA GEOENVIRONMENTAL INC
DOC ID: 3250 05/01/1997 17 PAGES
103. LETTER: REVISED SCHEDULE TO COMPLETE COMBINED REMEDIAL
INVESTIGATION/FEASIBILITY STUDY FOR OPERABLE UNIT 2.
TO: DENNIS P ARUSSO, RHODE ISLAND RESOURCE RECOVERY CORP
AUTHOR: RICHARD C BOYNTON, US EPA REGION 1
DOC ID: 3164 05/23/1997 2 PAGES
104. LETTER: PROGRESS REPORT 27, 05/01-06/10/1997.
TO: DENNIS P ARUSSO, RHODE ISLAND RESOURCE RECOVERY CORP
AUTHOR: EDWARD A SUMMERLY, GZA GEOENVIRONMENTAL INC
DOC ID: 3251 06/11/1997 4 PAGES
105. LETTER: PROGRESS REPORT 28, 06/11-07/10/1997.
TO: DENNIS P ARUSSO, RHODE ISLAND RESOURCE RECOVERY CORP
AUTHOR: EDWARD A SUMMERLY, GZA GEOENVIRONMENTAL INC
DOC ID: 3225 07/09/1997 56 PAGES

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3 REMEDIAL INVESTIGATION (RI) (cont)

106. LETTER: REVISED SCHEDULE TO COMPLETE COMBINED REMEDIAL INVESTIGATION/FEASIBILITY STUDY FOR OPERABLE UNIT 2. COMMENTS ON DOCUMENT ENTITLED SURFACE WATER FLOW MONITORING REPORT.
TO: DENNIS P ARUSSO, RHODE ISLAND RESOURCE RECOVERY CORP
AUTHOR: JOHN J COURCIER, US EPA REGION 1
DOC ID: 3165 07/21/1997 1 PAGE
107. LETTER: OFFICE OF WASTE MANAGEMENT HAS REVIEWED SURFACE WATER FLOW MONITORING PROGRAMS & PROPOSED REVISED SCHEDULE FOR COMPLETION OF REMEDIAL INVESTIGATION/FEASIBILITY STUDY, NO COMMENTS.
TO: DENNIS P ARUSSO, RHODE ISLAND SOLID WASTE MANAGEMENT CORP
AUTHOR: LAURIE A SCLAMA, RI DEPT OF ENVIRONMENTAL MANAGEMENT
DOC ID: 3107 08/15/1997 1 PAGE
108. LETTER: COMMENTS ON GZA DOCUMENT ENTITLED RESIDENTIAL WELL IDENTIFICATION SURVEY REPORT, OPERABLE UNIT 2 TASK 5.
TO: DENNIS P ARUSSO, RHODE ISLAND RESOURCE RECOVERY CORP
AUTHOR: JOHN J COURCIER, US EPA REGION 1
DOC ID: 3166 09/03/1997 2 PAGES
109. LETTER: COMMENTS ON REMEDIAL INVESTIGATION REPORT, 09/1997, DRAFT, INCLUDING COMMENTS ON OPERABLE UNIT 1 HUMAN HEALTH RISK ASSESSMENT, ECOLOGICAL RISK ASSESSMENT.
TO: JAMES M BROWN, US EPA REGION 1
AUTHOR: LAURIE A SCLAMA, RI DEPT OF ENVIRONMENTAL MANAGEMENT
DOC ID: 3024 12/24/1997 7 PAGES
110. FACT SHEET: PROPOSED PLAN.
AUTHOR: US EPA REGION 1
DOC ID: 21452 08/01/2001 9 PAGES
111. REPORT: FINAL REMEDIAL INVESTIGATION AND RISK ASSESSMENT REPORT, VOLUME 1 OF 5.
TO: US EPA REGION 1
AUTHOR: GZA GEOENVIRONMENTAL INC
DOC ID: 22134 08/01/2001 242 PAGES
112. REPORT: FINAL REMEDIAL INVESTIGATION AND RISK ASSESSMENT REPORT, VOLUME 2 OF 5 [PART 1 OF 2: TABLE 3-1 THROUGH TABLE 6-15].
TO: US EPA REGION 1
AUTHOR: GZA GEOENVIRONMENTAL INC
DOC ID: 22135 08/01/2001 211 PAGES
113. REPORT: FINAL REMEDIAL INVESTIGATION AND RISK ASSESSMENT REPORT, VOLUME 2 OF 5 [PART 2 OF 2: TABLE 6-16 THROUGH TABLE 6-26].
TO: US EPA REGION 1
AUTHOR: GZA GEOENVIRONMENTAL INC
DOC ID: 22136 08/01/2001 171 PAGES

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3. REMEDIAL INVESTIGATION (RI) (cont)

114. REPORT: FINAL REMEDIAL INVESTIGATION AND RISK ASSESSMENT REPORT, VOLUME
3 OF 5.

TO: US EPA REGION 1
AUTHOR: GZA GEOENVIRONMENTAL INC
DOC ID: 22137 08/01/2001 182 PAGES

115. REPORT: FINAL REMEDIAL INVESTIGATION AND RISK ASSESSMENT REPORT, VOLUME
4 OF 5.

TO: US EPA REGION 1
AUTHOR: GZA GEOENVIRONMENTAL INC
DOC ID: 22138 08/01/2001 289 PAGES

116. REPORT: FINAL REMEDIAL INVESTIGATION AND RISK ASSESSMENT REPORT, VOLUME
5 OF 5 [PART 1 OF 2: APPENDICES F THROUGH I].

TO: US EPA REGION 1
AUTHOR: GZA GEOENVIRONMENTAL INC
DOC ID: 22139 08/01/2001 288 PAGES

117. REPORT: FINAL REMEDIAL INVESTIGATION AND RISK ASSESSMENT REPORT, VOLUME
5 OF 5 [PART 2 OF 2: APPENDIX J].

TO: US EPA REGION 1
AUTHOR: GZA GEOENVIRONMENTAL INC
DOC ID: 22300 08/01/2001 123 PAGES

4. FEASIBILITY STUDY (FS)

1. LETTER: EPA COMMENTS TO FEASIBILITY STUDY WORK PLAN, OPERABLE UNIT 2,
03/1995, DRAFT.

TO: DENNIS P ARUSSO, RHODE ISLAND SOLID WASTE MANAGEMENT CORP
AUTHOR: JAMES M BROWN, US EPA REGION 1
DOC ID: 3135 04/17/1995 6 PAGES

2. LETTER: RESPONSE TO US EPA COMMENTS 04/17/1995 ON FEASIBILITY STUDY WORK
PLAN, DRAFT, WITH GZA LETTER 05/15/1995.

TO: DENNIS P ARUSSO, RHODE ISLAND SOLID WASTE MANAGEMENT CORP
AUTHOR: JAMES M BROWN, US EPA REGION 1
DOC ID: 3139 06/13/1995 3 PAGES

5. RECORD OF DECISION (ROD)

1. PUBLIC MEETING RECORD: PUBLIC NOTICE REGARDING THE PROPOSED PLAN,
AUTHOR: PROVIDENCE JOURNAL

US EPA REGION 1
DOC ID: 24122 08/13/2001 1 PAGE

2. PUBLIC MEETING RECORD: PUBLIC HEARING ON THE PROPOSED PLAN.

TO: RICHARD C BOYNTON, US EPA REGION 1
AUTHOR: CAPITOL COURT REPORTING
DOC ID: 24120 08/30/2001 83 PAGES

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5. RECORD OF DECISION (ROD) (cont)

3. LETTER: PUBLIC COMMENTS ON THE PROPOSED PLAN.
TO: BYRON MAH, US EPA REGION 1
AUTHOR: BETTE GUARINO, JOHNSTON (RI) RESIDENT
DOC ID: 24117 08/31/2001 3 PAGES

4. LETTER: PUBLIC COMMENTS ON THE PROPOSED PLAN.
TO: BYRON MAH, US EPA REGION 1
AUTHOR: THERESA PAPPAS, JOHNSTON (RI) RESIDENT
DOC ID: 24118 09/12/2001 2 PAGES

5. LETTER: PUBLIC COMMENTS ON THE PROPOSED PLAN.
TO: BYRON MAH, US EPA REGION 1
AUTHOR: PATRICIA MAJOR, JOHNSTON (RI) RESIDENT
ROBERT SENVILLE, ATTORNEY
WILLIAM MAJOR, JOHNSTON (RI) RESIDENT
DOC ID: 24121 09/17/2001 12 PAGES

6. MEMO : PUBLIC COMMENTS ON THE PROPOSED PLAN.
TO: BYRON MAH, US EPA REGION 1
SARAH WHITE, US EPA REGION 1
AUTHOR: JOSEPH MCCAULEY, JOHNSTON (RI) RESIDENT
DOC ID: 24119 09/17/2001 1 PAGE

7. REPORT: RECORD OF DECISION (ROD).
AUTHOR: US EPA REGION 1
DOC ID: 25346 09/26/2002

8. POST REMEDIAL ACTION

1. LETTER: PROPOSED JOHNSTON TOWN ORDINANCE.
TO: CYNTHIA CATRI, US EPA REGION 1
AUTHOR: GREGORY L BENIK, HOLLAND & KNIGHT LLP
DOC ID: 35284 05/30/2001 9 PAGES

2. CONTRACT: DECLARATION OF COVENANTS AND ENVIRONMENTAL PROTECTION
CONSERVATION EASEMENT.
DOC ID: 24115 08/16/2001 9 PAGES

10. ENFORCEMENT/NEGOTIATION

1. LETTER: SECOND AMENDMENT TO 04/1987 ADMINISTRATIVE ORDER BY CONSENT
BETWEEN US EPA & RI SWMC, DOCKET I-87-1016.
TO: DENNIS P ARUSSO, RHODE ISLAND SOLID WASTE MANAGEMENT CORP
AUTHOR: JAMES M BROWN, US EPA REGION 1
DOC ID: 3124 01/05/1995 2 PAGES

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10. ENFORCEMENT/NEGOTIATION (cont)

2. LETTER: SECOND AMENDMENT TO 04/1987 ADMINISTRATIVE ORDER BY CONSENT BETWEEN US EPA & RI SWMC. DOCKET I-87-1016, EFFECTIVE DATE THAT LETTER IS RECEIVED.
TO: THOMAS WRIGHT, RHODE ISLAND SOLID WASTE MANAGEMENT CORP
AUTHOR: RICHARD C BOYNTON, US EPA REGION 1
DOC ID: 3125 01/12/1995 2 PAGES

12. COST RECOVERY

1. COST DOCUMENTATION: IFMS RECONCILIATION PENDING, ITEMIZED COST SUMMARY REPORT, OVERSIGHT COSTS 10/1995-09/1996, FINAL.
AUTHOR: US ENVIRONMENTAL PROTECTION AGENCY
DOC ID: 3213 11/07/1996 11 PAGES

13. COMMUNITY RELATIONS

1. FACT SHEET: NOTICE OF A PUBLIC MEETING REGARDING THE PROPOSED PLAN ON 8/14/2001.
AUTHOR: US EPA REGION 1
DOC ID: 24116 08/01/2001 1 PAGE
2. PUBLIC MEETING RECORD: PUBLIC MEETING NOTICE.
AUTHOR: US EPA REGION 1
DOC ID: 21453 08/01/2001 1 PAGE

16. NATURAL RESOURCE TRUSTEE

1. LETTER: TRANSMITTAL OF UPPER SIMMONS RESERVOIR PHASE 2, REPORT FOR REVIEW, COMMENT.
TO: F TIMOTHY PRIOR, US DOI/US FISH & WILDLIFE SERVICE
AUTHOR: JAMES M BROWN, US EPA REGION 1
DOC ID: 3200 08/23/1993 1 PAGE

17. SITE MANAGEMENT RECORDS

1. MISC : DECREASED SENSITIVITY OF PHOTOIONIZATION DETECTOR TOTAL ORGANIC VAPOR DETECTORS IN PRESENCE OF METHANE.
AUTHOR: DAVID L WILSON, US DOE/OAK RIDGE NATIONAL LABORATORY
JONATHAN E NYQUIST, US DOE/OAK RIDGE NATIONAL LABORATORY
LORI A NORMAN, US DOE/OAK RIDGE NATIONAL LABORATORY
RICHARD B GAMMAGE, US DOE/OAK RIDGE NATIONAL LABORATORY
DOC ID: 3142 06/01/1990 3 PAGES
2. MEMO : TRANSFER OF ROLE, RESPONSIBILITY IN OVERSEEING REGIONAL REQUESTS TO ALLOW PRPS TO CONDUCT RISK ASSESSMENTS.
AUTHOR: BRUCE M DIAMOND, US EPA HEADQUARTERS
STEPHEN D LUFTIG, US EPA/OFFICE OF EMERGENCY & REMEDIAL RESPONSE
DOC ID: 3146 01/09/1995 12 PAGES

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17. SITE MANAGEMENT RECORDS (cont)

3. PHOTO, MICROFORM, VIDEO: PHOTO 1, DRAINAGE DITCH FLOWING TOWARD CEDAR SWAMP BROOK.
DOC ID: 3290 04/12/1995 1 PAGE
4. PHOTO, MICROFORM, VIDEO: PHOTO 2, DRAINAGE DITCH REAR MW91-41, DISCOLORED DISCHARGE FROM RIGHT BANK INTO DITCH.
DOC ID: 3291 04/12/1995 1 PAGE
5. PHOTO, MICROFORM, VIDEO: PHOTO 3, SAME AS PHOTO 2, DRAINAGE DITCH NEAR MW91-41, DISCOLORED DISCHARGE FROM RIGHT BANK INTO DITCH.
DOC ID: 3292 04/12/1995 1 PAGE
6. MISC : PEER REVIEW, OPERABLE UNIT 2.
DOC ID: 3296 08/31/1995 3 PAGES
7. REPORT: ECO UPDATE, ECOTOX THRESHOLDS.
AUTHOR: US EPA/OFFICE OF SOLID WASTE & EMERGENCY RESPONSE
DOC ID: 3285 01/01/1996 14 PAGES

20. RECORDS MANAGEMENT

1. LIST : LIST OF GUIDANCE DOCUMENTS FOR CENTRAL LANDFILL OU 2 RECORD OF DECISION.
AUTHOR: US EPA REGION 1
DOC ID: 35478 09/26/2002 1 PAGE

Record of Decision
Part 3: The Responsiveness Summary



Appendix D: Tables and Figures

TABLE - 1A

SUMMARY OF DETECTED ANALYTICAL RESULTS WELL ID RW43/275 Operable Unit 2 RI -Central Landfill

Parameters	Detection Limit	MCL/SMCL	SAMPLE Result 12/19/2000	Qualifier
ORGANICS				
<i>Volatile Organic Compounds: (µg/l)</i>				
ACETONE	5	NE	3*	J
<i>Wet Chemistry Parameters: (mg/l)</i>				
AMMONIA	0.2	NE	0.3	
CHLORIDE	5	NE	7	
HARDNESS	4	NE	49	
PHOSPHATE-TOTAL	0.05	NE	56	
TOTAL KJELDAHL NITROGEN	0.9	NE	1.2	
TOTAL ORGANIC CARBON	5	NE	7	
TOTAL DISSOLVED SOLIDS	10	500	110	
TOTAL SOLIDS	10	NE	120	
TOTAL SUSPENDED SOLIDS	10	NE	11	
INORGANICS				
<i>Total Metals: (mg/L)</i>				
BERYLLIUM	0.002	0.004	0.0052	J,B
CALCIUM	0.14	NE	16.9	
MAGNESIUM	0.01	NE	1.76	
MANGANESE	0.0005	0.05	0.299	
POTASSIUM	0.15	NE	2.18	B
SODIUM	0.23	NE	8.4	
TOTAL COLIFORM (MPN per 100ml)	2	0	13	J
B.O.D./5DAY (mg/l)	3	NE	5	J

Notes:

- 1) Results are for detected parameters only and are reported as the highest of either the primary sample or the blind duplicate sample. These results have been independently validated by Environmental Chemistry Consultants, Inc. Laboratory Certificates are attached.
- 2) MCL indicates the Maximum Contaminant Level permissible in water which is delivered to any user of a public water system (adopted here for private residential well water). SMCLs are secondary drinking water standards which are unenforceable federal guidelines regarding taste, odor, color and certain other non-aesthetic effects of drinking water.
- 3) Result qualifiers for Organics are defined as: J - the associated value is an estimated quantity, B - compound also detected in an associated blank. Result qualifiers for Inorganics are defined as: (Inorganics); B - reported value was obtained from a reading that was less than the Contract Required Detection Limit (CRDL) but greater than or equal to the Instrument Detection Limit (IDL), J- the associated value is an estimated quantity.
- 4) * indicates possible laboratory induced contaminant.

TABLE 8.13-1

SCREENING CRITERIA
Central Landfill - OU2
Johnston, Rhode Island

Analyte	EPA Region III Risk-Based Concentrations Soil Ingestion (ppm)		MMDL Soil/ Sediment		EPA Region III Risk-Based Concentrations Tap Water + (ppm)		RI Groundwater Quality Standards	EPA Maximum Contaminant Levels	Minimum of Groundwater (Standards) RI or EPA	AWQC Consumption (ppm)	EPA Region III Risk-Based Concentrations Fish Tissue (ppm)	
	HI=1	HI=0.1			HI=1	HI=0.1					HI=1	HI=0.1
<i>Volatile Organic Compounds</i>												
1,1,1-Trichloroethane	21900 N	2190	0.01	0.001	3.17 N	0.317	0.2	0.2	0.2	NA	379 N	37.9
1,1,2-Trichloroethane	11 C	11	0.01	0.001	0.00019 C	0.00019	0.005	0.005	0.005	0.042	0.055 C	0.055
1,1-Dichloroethane	7820 N	782	0.01	0.001	0.8 N	0.08	NA	NA	NA	NA	135 N	13.5
1,1-Dichloroethene	1.1 C	1.1	0.01	0.001	0.00004 C	0.00004	0.007	0.007	0.007	0.0032	0.0053 C	0.0053
1,2-Dichlorobenzene	7040 N	704	0.33	0.001	0.55 N	0.055	0.6	0.6	0.6	17	122 N	12.2
1,3-Dichlorobenzene	2350 N	235	0.33	0.001	0.18 N	0.018	0.6	0.6	0.6	2.6	41 N	4.1
1,4-Dichlorobenzene	27 C	27	0.33	0.001	0.00047 C	0.00047	0.075	0.075	0.075	2.6	0.13 C	0.13
cis-1,2-Dichloroethene	780 N	78	0.01	0.001	0.06 N	0.006	0.07	0.07	0.07	NA	14 N	1.4
1,2-Dichloropropane	9.4 C	9.4	0.01	0.001	0.00016 C	0.00016	0.005	0.005	0.005	0.039	0.046 C	0.046
2-Hexanone	3130 N	313	0.01	0.005	1.46 N	0.146	NA	NA	NA	NA	54 N	5.4
4-methyl-2-pentanone	6260 N	626	0.01	0.005	0.14 N	0.014	NA	NA	NA	NA	108 N	10.8
Acetone	7820 N	782	0.01	0.01	0.61 N	0.061	NA	NA	NA	NA	135 N	13.5
Benzene	12 C	12	0.01	0.001	0.00032 C	0.00032	0.005	0.005	0.005	0.071	0.057 C	0.057
Carbon Disulfide	7820 N	782	0.01	0.001	1.04 N	0.104	NA	NA	NA	NA	135 N	13.5
Carbon Tetrachloride	4.9 C	4.9	0.01	0.001	0.00016 C	0.00016	0.005	0.005	0.005	0.0044	0.024 C	0.024
Chlorobenzene	1560 N	156	0.01	0.001	0.11 N	0.011	0.1	NA	0.1	21	27 N	2.7
Chloroethane	220 C	220	0.01	0.001	0.0036 C	0.0036	NA	NA	NA	NA	1.09 C	1.09
Chloroform	105 C	105	0.01	0.001	0.00015 C	0.00015	NA	0.1	0.1	0.47	0.52 C	0.52
Chloromethane	49 C	49	0.01	0.001	0.0021 C	0.0021	NA	NA	NA	NA	0.24 C	0.24
Ethylbenzene	7820 N	782	0.01	0.001	1.34 N	0.134	0.7	0.7	0.7	29	135 N	13.5
Methyl Ethyl ketone	46930 N	4693	0.01	0.005	1.91 N	0.191	NA	NA	NA	NA	811 N	81
Methylene Chloride	85.0 C	85.0	0.01	0.01	0.0041 C	0.0041	0.005	NA	0.005	1.6	0.42 C	0.4
Tetrachloroethene	12 C	12	0.01	0.001	0.0011 C	0.0011	0.005	0.005	0.005	0.00885	0.061 C	0.061
Styrene	15,640 N	1564	0.01	0.001	1.62 N	0.162	0.1	0.1	0.1	NA	270 N	27
Toluene	15,640 N	1564	0.01	0.001	0.75 N	0.075	1	1	1	200	270 N	27
Trichloroethene	58 C	58	0.01	0.001	0.0016 C	0.0016	0.005	0.005	0.005	0.081	0.29 C	0.29
Vinyl Chloride	0.09 C	0.09	0.01	0.001	0.00002 C	0.00002	0.002	0.002	0.002	0.525	0.0044 C	0.0044
Xylenes	156430 N	15643	0.01	0.001	12 N	1.2	10	10	10	NA	2704 N	270

TABLE 8.13-1

SCREENING CRITERIA
Central Landfill - OU2
Johnston, Rhode Island

Analyte	EPA Region III Risk-Based Concentrations Soil Ingestion (ppm)		MDEQ Soil Groundwater Surface Water		EPA Region III Risk-Based Concentrations Tap Water (ppm)		RI Groundwater Quality Standards	EPA Maximum Contaminant Levels	Minimum of Groundwater (Standards) RI or EPA	AWQC Consumption (ppm)	EPA Region III Risk-Based Concentrations Fish Ingestion (ppm)	
	HI=10 ⁻⁶	HI=0.1	Soil Ingestion	Groundwater Surface Water	HI=10 ⁻⁶	HI=0.1					HI=10 ⁻⁶	HI=0.1
<i>Semi-volatile Organic Compounds</i>												
1,2,4-Trichlorobenzene	782 N	78.2	0.33	0.001	0.19 N	0.019	0.07	0.07	0.07	0.94	14 N	1.4
2,4-Dichlorophenol	235 N	23.5	0.33	0.005	0.11 N	0.011	NA	NA	NA	0.79	4.06 N	0.41
2,4-Dimethylphenol	1560 N	156	0.33	0.005	0.73 N	0.073	NA	NA	NA	2.3	27 N	2.7
2-Chlorophenol	391 N	39.1	0.33	0.005	0.03 N	0.003	NA	NA	NA	0.4	6.76 N	0.68
2-Methylnaphthalene	1560 N	156	0.33	0.005	0.12 N	0.012	NA	NA	NA	NA	27 N	2.7
2-Methylphenol	3910 N	391	0.33	0.005	1.8 N	0.18	NA	NA	NA	NA	68 N	6.8
4-Chloro-3-methylphenol	NA	NA	0.33	0.005	NA	NA	NA	NA	NA	NA	NA	NA
4-Methylphenol	391 N	39.1	0.33	0.005	0.18 N	0.018	NA	NA	NA	NA	6.76 N	0.68
Acenaphthene	4690 N	469	0.33	0.005	0.37 N	0.037	NA	NA	NA	2.7	81 N	8.1
Acenaphthylene	NA	NA	0.33	0.005	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	23460 N	2346	0.33	0.005	1.83 N	0.183	NA	NA	NA	110	406 N	40.6
Benzo[a]anthracene	0.87 c	0.87	0.33	0.005	0.000092 c	0.000092	NA	NA	NA	0.000049	0.0043 c	0.0043
Benzo[a]pyrene	0.087 c	0.087	0.33	0.005	0.00009 c	0.00009	0.0002	0.0002	0.0002	0.000049	0.0004 c	0.0004
Benzo[b]fluoranthene	0.87 c	0.87	0.33	0.005	0.000092 c	0.000092	NA	NA	NA	0.000049	0.0043 c	0.0043
Benzo[g,h,i]perylene	NA	NA	0.33	0.005	NA	NA	NA	NA	NA	NA	NA	NA
Benzo[k]fluoranthene	8.7 c	8.7	0.33	0.005	0.00092 c	0.00092	NA	NA	NA	0.000049	0.043 c	0.043
bia(2-Ethylhexyl)phthalate	46 c	46	0.33	0.005	0.0048 c	0.0048	NA	0.006	0.006	0.0059	0.23 c	0.23
Butylbenzylphthalate	15640 N	1564	0.33	0.005	7.3 N	0.73	NA	NA	NA	5.2	270 N	27
Carbazole	32 c	32	0.33	0.005	0.0033 c	0.0033	NA	NA	NA	NA	0.16 c	0.16
Chrysene	87 c	87	0.33	0.005	0.0092 c	0.0092	NA	NA	NA	0.000049	0.43 c	0.43
Di-n-butylphthalate	7820 N	782	0.33	0.005	3.7 N	0.37	NA	NA	NA	12	135 N	13.5
Di-n-octylphthalate	1560 N	156	0.33	0.005	0.73 N	0.073	NA	NA	NA	NA	27 N	2.7
Dibenzo[a,h]anthracene	0.087 c	0.087	0.33	0.005	0.00009 c	0.00009	NA	NA	NA	0.000049	0.00043 c	0.00043
Dibenzofuran	310 N	31	0.33	0.005	0.024 N	0.0024	NA	NA	NA	NA	5.41 N	0.5
Diethylphthalate	62570 N	6257	0.33	0.005	29.2 N	2.92	NA	NA	NA	120	1081 N	108
Dimethylphthalate	782140 N	78,214	0.33	0.005	365 N	36.5	NA	NA	NA	2900	13519 N	1,352
Fluoranthene	3130 N	313	0.33	0.005	1.5 N	0.15	NA	NA	NA	0.37	54 N	5.4
Fluorene	3130 N	313	0.33	0.005	0.24 N	0.024	NA	NA	NA	14	54 N	5.4
Indeno[1,2,3-c,d]pyrene	0.87 c	0.87	0.33	0.005	0.00009 c	0.00009	NA	NA	NA	0.000049	0.0043 c	0.0043
N-Nitrosodiphenylamines	130 c	130	0.33	0.005	0.014 c	0.014	NA	NA	NA	0.016	0.64 c	0.64
Naphthalene	1560 N	156	0.33	0.005	0.0065 N	0.00065	0.02	NA	0.02	NA	27 N	2.7
Phenanthrene	NA	NA	0.33	0.005	NA	NA	NA	NA	NA	NA	NA	NA
Phenol	46930 N	4693	0.33	0.005	22 N	2.2	NA	NA	NA	4600	811 N	81.1
Pyrene	2350 N	235	0.33	0.005	0.18 N	0.018	NA	NA	NA	11	41 N	4.1

TABLE B.13-1

SCREENING CRITERIA
Central Landfill - OU2
Johnston, Rhode Island

Analyte	RI-Based Concentration Soil Concentration (ppm)		RI-Based Concentration Groundwater Concentration (ppm)		EPA Region III RI-Based Concentration Groundwater Concentration (ppm)		RI Groundwater Quality Standards	EPA Maximum Contaminant Levels	Minimum of Groundwater (Standards) RI or EPA	AWQC Consumption (ppm)	EPA Region III RI-Based Concentration Soil Concentration (ppm)	
	RI-III	RI-III	RI-III	RI-III	RI-III	RI-III						
	RI-III	RI-III	RI-III	RI-III	RI-III	RI-III						
<i>Pesticides/PCBs</i>												
4,4'-DDD	2.7 c	2.7	0.0033	0.00002	0.00028 c	0.00028	NA	NA	NA	0.0000084	0.013 c	0.013
4,4'-DDE	1.9 c	1.9	0.0033	0.00002	0.0002 c	0.0002	NA	NA	NA	0.0000059	0.0093 c	0.0093
4,4'-DDT	1.9 c	1.9	0.0033	0.00002	0.0002 c	0.0002	NA	NA	NA	0.0000059	0.0093 c	0.0093
Aldrin	0.038 c	0.038	0.0017	0.00001	0.000004 c	0.000004	NA	NA	NA	0.0000014	0.00019 c	0.00019
alpha-Chlordane	1.82 c	1.82	0.0017	0.00001	0.000191 c	0.000191	NA	NA	NA	0.0000022	0.0090 c	0.0090
delta-BHC	0.1 c	0.1	0.0017	0.00001	0.00011 c	0.00011	NA	NA	NA	0.000013	0.00050 c	0.0005
Dieldrin	0.04 c	0.04	0.0033	0.00002	0.000004 c	0.000004	NA	NA	NA	0.0000014	0.00020 c	0.0002
Endosulfan-sulfate	470 N	47	0.0033	0.00002	0.22 N	0.022	NA	NA	NA	0.24	8.11 N	0.811
Endosulfan I	470 N	47	0.0017	0.00001	0.22 N	0.022	NA	NA	NA	0.24	8.11 N	0.811
Endosulfan II	470 N	47	0.0033	0.00002	0.22 N	0.022	NA	NA	NA	0.24	8.11 N	0.811
gamma-BHC	0.49 c	0.49	0.0017	0.00001	0.000052 c	0.000052	NA	0.0002	0.0002	0.000063	0.0024 c	0.0024
gamma-Chlordane	1.82 c	1.82	0.0017	0.00001	0.000191 c	0.000191	NA	0.002	0.002	0.0000022	0.0090 c	0.0090
Methoxychlor	391 N	39.1	0.017	0.0001	0.18 N	0.018	NA	NA	NA	NA	6.76 N	0.68
PCB 1232	0.32 c	0.32	0.033	0.0002	0.000033 c	0.000033	0.0005	0.0005	0.0005	0.0000017	0.0016 c	0.0016
PCB 1242	0.32 c	0.32	0.033	0.0002	0.000033 c	0.000033	0.0005	0.0005	0.0005	0.0000017	0.0016 c	0.0016
PCB 1254	0.32 c	0.32	0.033	0.0002	0.000033 c	0.000033	0.0005	0.0005	0.0005	0.0000017	0.0016 c	0.0016

TABLE B.13-1

SCREENING CRITERIA
Central Landfill - OU2
Johnston, Rhode Island

Contaminant	RI State Groundwater Quality Standards (ppm)		RI State Groundwater Quality Standards (ppm)		RI State Groundwater Quality Standards (ppm)		RI State Groundwater Quality Standards	EPA Maximum Contaminant Levels	Minimum of Groundwater (Standards) RI or EPA	AWQC Consumption (ppm)	RI State Groundwater Quality Standards (ppm)	
	RI State Groundwater Quality Standards (ppm)											
Metals												
Aluminum, total	78210 N	7821	4	0.022	36.5 N	3.65	NA	0.13 **	0.125	NA	1352 N	135
Antimony, total	31 N	3.1	1.2	0.003	0.015 N	0.0015	0.006	0.006	0.006	4.3	0.54 N	0.054
Arsenic, total	0.4 C	0.4	0.2	0.004	0.00004 C	0.00004	NA	0.05	0.05	0.00014	0.0021 C	0.0021
Barium, total	5480 N	548	4	0.002	2.6 N	0.26	2	2	2	NA	95 N	9.5
Beryllium, total	156 N	15.6	0.1	0.0001	0.073 N	0.0073	0.004	0.004	0.004	NA	2.70 N	0.27
Cadmium, total	39 N	3.9	0.1	0.0003	0.018 N	0.0018	0.005	0.005	0.005	NA	0.68 N	0.068
Calcium, total	NA	NA	100	0.014	NA	NA	NA	NA	NA	NA	NA	NA
Chromium, total	117320 N	11732	0.2	0.0003	55 N	5.5	0.1	0.1	0.1	NA	2028 N	203
Cobalt, total	1560 N	156	1	0.0006	0.73 N	0.073	NA	NA	NA	NA	27 N	2.7
Copper, total	3130 N	313	0.5	0.001	1.5 N	0.15	NA	1.3	1.3	NA	54 N	5.4
Cyanide, total	1560 N	156	0.1	0.001	0.73 N	0.073	0.2	0.2	0.2	220	27 N	2.7
Iron, total	23460 N	2346	2	0.003	11 N	1.1	NA	0.3 *	0.3	NA	406 N	40.6
Lead, total	150	150	0.06	0.0015	NA	NA	0.015	0.015	0.015	NA	NA	NA
Magnesium, total	NA	NA	100	0.011	NA	NA	NA	NA	NA	NA	NA	NA
Manganese, total	1560 N	156	0.3	0.0004	0.73 N	0.073	NA	0.05 *	0.05	NA	27 N	2.70
Mercury, total	23 N	2.3	0.01	0.00007	0.011 N	0.0011	0.002	0.002	0.002	0.000051	0.41 N	0.041
Nickel, total	1560 N	156	0.8	0.001	0.73 N	0.073	0.1	NA	0.1	4.6	27 N	2.70
Potassium, total	NA	NA	100	0.556	NA	NA	NA	NA	NA	NA	NA	NA
Selenium, total	391 N	39.1	0.1	0.004	0.18 N	0.018	0.05	0.05	0.05	11	6.76 N	0.68
Silver, total	391 N	39.1	0.2	0.00015	0.18 N	0.018	NA	0.1 *	0.1	NA	6.76 N	0.68
Sodium, total	NA	NA	100	0.176	NA	NA	NA	NA	NA	NA	NA	N
Thallium, total	5.5 N	0.55	0.2	0.002	0.0026 N	0.00026	0.002	0.002	0.002	0.0063	0.095 N	0.0095
Vanadium, total	550 N	55	1	0.0004	0.26 N	0.026	NA	NA	NA	NA	9.46 N	0.95
Zinc, total	23460 N	2346	0.4	0.002	11 N	1.1	NA	5 *	5	69	406 N	40.6

* = Secondary MCL; ** = Average of Secondary MCL range (0.05 - 0.2 ppm) used.

NA = Not Available; + C = Carcinogen; N = Non-carcinogen; Lead = RBC from Providence.

Lead = RBC from Providence.

TABLE 8.13-2

COMPARISON OF MAXIMUM DETECTED CONCENTRATION IN SOIL TO SCREENING CRITERIA

Central Landfill - OU2

Johnston, Rhode Island

Contaminant	Maximum Concentration (ppm)	Number of Samples	Method Detection Limit (ppm)	RBC Soil Ingestion Residential (ppm)	Retain	Comments
<i>Volatile Organic Compounds</i>						
1,1,1-Trichloroethane	0.092	9 / 11	0.01	2190	No	Max. < guideline conc.
1,1-Dichloroethane	0.022	8 / 11	0.01	782	No	Max. < guideline conc.
Methyl Ethyl ketone	0.002	1 / 10	0.01	4693	No	Max. < guideline conc.
Toluene	0.002	3 / 10	0.01	1564	No	Max. < guideline conc.
Xylenes	0.003	2 / 9	0.01	15643	No	Max. < guideline conc.
<i>Semivolatile Organic Compounds</i>						
2-Methylphenol	0.13	1 / 11	0.33	391	No	Max. < guideline conc.
Anthracene	0.073	1 / 11	0.33	2346	No	Max. < guideline conc.
Benzo[a]anthracene	0.29	7 / 11	0.33	0.87	No	Max. < guideline conc.
Benzo[a]pyrene	0.28	6 / 11	0.33	0.087	Yes	
Benzo[b]fluoranthene	0.59	10 / 11	0.33	0.87	No	Max. < guideline conc.
Benzo[g,h,i]perylene	0.15	2 / 11	0.33	NA	Yes	
Benzo[k]fluoranthene	0.18	4 / 11	0.33	8.7	No	Max. < guideline conc.
bis(2-Ethylhexyl)phthalate	24	11 / 11	0.33	46	No	Max. < guideline conc.
Carbazole	0.075	1 / 11	0.33	32	No	Max. < guideline conc.
Chrysene	0.35	10 / 11	0.33	87	No	Max. < guideline conc.
Di-n-butylphthalate	0.17	3 / 11	0.33	782	No	Max. < guideline conc.
Fluoranthene	0.63	11 / 11	0.33	313	No	Max. < guideline conc.
Indeno[1,2,3-c,d]pyrene	0.11	3 / 11	0.33	0.87	No	Max. < guideline conc.
Phenanthrene	0.42	9 / 11	0.33	NA	Yes	
Pyrene	0.77	10 / 11	0.33	235	No	Max. < guideline conc.
<i>Pesticides/PCBs</i>						
4,4'-DDD	0.010	3 / 11	0.0033	2.7	No	Max. < guideline conc.
4,4'-DDE	0.037	6 / 11	0.0033	1.9	No	Max. < guideline conc.
4,4'-DDT	0.11	9 / 11	0.0033	1.9	No	Max. < guideline conc.
Aldrin	0.004	1 / 11	0.0017	0.038	No	Max. < guideline conc.
alpha-Chlordane	0.004	2 / 11	0.0017	1.82	No	Max. < guideline conc.
Endosulfan-sulfate	0.006	1 / 11	0.0033	47	No	Max. < guideline conc.

TABLE 8.13-2

COMPARISON OF MAXIMUM DETECTED CONCENTRATION IN SOIL TO SCREENING CRITERIA

Central Landfill - OU2

Johnston, Rhode Island

Compound	Maximum Detected Concentration (ppm)	FOD (%)	Method of Detection (ppm)	RBC Soil Ingestion Residence Time (ppm)	Retention	Comments
<i>Metals</i>						
Aluminum, total	12,900	15 / 15	4	7821	Yes	
Arsenic, total	9.8	3 / 15	0.2	0.4	Yes	
Barium, total	69	15 / 15	4	548	Yes	
Beryllium, total	2.9	15 / 15	0.1	15.6	No	Max. < guideline conc.
Cadmium, total	0.52	9 / 15	0.1	3.9	No	Max. < guideline conc.
Calcium, total	3,150	15 / 15	100	NA	No	Essential Nutrient ⁵
Chromium, total	12	15 / 15	0.2	11732	No	Max. < guideline conc.
Cobalt, total	5.8	15 / 15	1	156	No	Max. < guideline conc.
Copper, total	22	13 / 15	0.5	313	No	Max. < guideline conc.
Cyanide, total	2.5	1 / 15	0.1	156	No	Max. < guideline conc.
Iron, total	20,600	15 / 15	2	2346	No	Essential Nutrient ⁵
Lead, total ⁶	145	15 / 15	0.06	150	No	Max. < standard
Magnesium, total	1,468	15 / 15	100	NA	No	Essential Nutrient ⁵
Manganese, total	556	15 / 15	0.3	156	Yes	
Nickel, total	8.6	6 / 15	0.8	156	No	Max. < guideline conc.
Potassium, total	2,620	15 / 15	100	NA	No	Essential Nutrient ⁵
Selenium, total	1.4	1 / 15	0.1	39.1	No	Max. < guideline conc.
Sodium, total	405	2 / 15	100	NA	No	Essential Nutrient ⁵
Vanadium, total	39	15 / 15	1	55	No	Max. < guideline conc.
Zinc, total	3,393	15 / 15	0.4	2346	Yes	

Notes:

1. Compounds in Bold are COC.
2. FOD = Frequency of Detection.
3. MDLs reflect detection limits specified as Data Quality Objectives.
4. Values are 10% of RBC for non-carcinogens.
5. Essential Nutrient = no standards or toxicity information available.
6. Lead Criteria based on Rhode Island DEM Standard.

TABLE 8.13-5

COMPARISON OF MAXIMUM DETECTED CONCENTRATION IN SURFACE WATER TO SCREENING CRITERIA
Central Landfill - OU2
Johnston, Rhode Island

Compound	Maximum Detected Concentration (ppm)	FOD	Method Detection Limit (ppm)	Incidental Ingestion Adjusted RBC (ppm)	AWQC Fish Consumption (ppm)	Retain	Comments
<i>Total Metals</i>							
Aluminum, total	1.6	30 / 38	0.022	73	NA	No	Max. < guideline conc.
Arsenic, total	0.0035	17 / 37	0.004	0.0008	0.00014	Yes	
Barium, total	0.19	36 / 38	0.002	5.2	NA	No	Max. < guideline conc.
Beryllium, total	0.0036	34 / 38	0.0001	0.146	NA	No	Max. < guideline conc.
Cadmium, total	0.00095	8 / 36	0.0003	0.036	NA	No	Max. < guideline conc.
Calcium, total	78	38 / 38	0.014	NA	NA	No	Essential Nutrient ⁶
Chromium, total	0.012	22 / 38	0.0003	110	NA	No	Max. < guideline conc.
Cobalt, total	0.0067	20 / 38	0.0006	1.46	NA	No	Max. < guideline conc.
Copper, total	0.0092	14 / 38	0.001	3	NA	No	Max. < guideline conc.
Cyanide, total	0.012	4 / 41	0.001	1.46	220	No	Max. < guideline conc.
Iron, total	48	36 / 38	0.003	22	NA	No	Essential Nutrient ⁶
Lead, total	0.0092	6 / 37	0.0015	NA	NA	Yes	
Magnesium, total	45	38 / 38	0.011	NA	NA	No	Essential Nutrient ⁶
Manganese, total	30	37 / 38	0.0004	1.46	NA	Yes	
Mercury, total	0.00098	15 / 38	0.00007	0.022	0.000051	Yes	
Nickel, total	0.018	15 / 38	0.001	1.46	4.6	No	Max. < guideline conc.
Potassium, total	43	37 / 38	0.556	NA	NA	No	Essential Nutrient ⁶
Selenium, total	0.015	5 / 38	0.004	0.36	11	No	Max. < guideline conc.
Silver, total	0.0055	2 / 38	0.00015	0.36	NA	No	Max. < guideline conc.
Sodium, total	181	38 / 38	0.176	NA	NA	No	Essential Nutrient ⁶
Thallium, total	0.029	4 / 36	0.002	0.00026	0.0063	Yes	
Vanadium, total	0.0058	27 / 38	0.0004	0.52	NA	No	Max. < guideline conc.
Zinc, total	0.39	26 / 38	0.002	22	69	No	Max. < guideline conc.

Notes:

1. Compounds in Bold are COC.
2. FOD = Frequency of Detection
3. MDLs reflect Detection Limits specified as Data Quality Objectives (DQOs).
4. The tap water RBC was adjusted to reflect the amount of water incidentally ingested while swimming relative to the upper percentile of tap water ingested by a child. The resultant ratio is: 1 liter (per day) / 0.04 liter (per swimming event) = 20.
The tap water RBCs were therefore adjusted upwards by a factor of 20.
5. AWQC is EPA's Ambient Water Quality Criteria for Ingestion of Fish.
6. Essential Nutrient = no standards or toxicity information available or present at maximum concentrations resulting in intakes lower than required daily allowances (RDA).

TABLE 8.13-4

COMPARISON OF MAXIMUM DETECTED CONCENTRATION IN SEDIMENT TO SOIL SCREENING CRITERIA

Central Landfill - OU2

Johnston, Rhode Island

Analyte	Maximum Detected Concentration (ppm)	Number of Samples	Method of Detection	Soil Screening Criteria (ppm)	Retention	Comments
<i>Volatile Organic Compounds</i>						
1,1,1-Trichloroethane	0.002	1 / 34	0.01	2190	No	Max. < guideline conc.
1,4-Dichlorobenzene	0.046	1 / 34	0.33	27	No	Max. < guideline conc.
1,1-Dichloroethane	0.004	1 / 45	0.01	782	No	Max. < guideline conc.
2-Hexanone	0.057	1 / 45	0.01	313	No	Low FOD
Acetone	0.335	21 / 45	0.01	782	No	Max. < guideline conc.
Benzene	0.021	3 / 45	0.01	12	No	Max. < guideline conc.
Carbon Disulfide	0.1135	3 / 45	0.01	782	No	Max. < guideline conc.
Chlorobenzene	0.076	13 / 45	0.01	156	No	Max. < guideline conc.
Chloromethane	0.004	2 / 34	0.01	49	No	Max. < guideline conc.
Methyl ethyl Ketone	0.1185	16 / 45	0.01	4693	No	Max. < guideline conc.
Methylene Chloride	0.046	10 / 45	0.01	85	No	Max. < guideline conc.
Styrene	0.005	1 / 45	0.01	1564	No	Max. < guideline conc.
Tetrachloroethene	0.23	2 / 45	0.01	12	No	Max. < guideline conc.
Toluene	0.016	5 / 45	0.01	1564	No	Max. < guideline conc.
Trichloroethene	0.003	1 / 45	0.01	58	No	Max. < guideline conc.
Xylenes	0.02	1 / 45	0.01	15643	No	Max. < guideline conc.

TABLE 8.13-4

COMPARISON OF MAXIMUM DETECTED CONCENTRATION IN SEDIMENT TO SOIL SCREENING CRITERIA
 Central Landfill - OU2
 Johnston, Rhode Island

Analyte	Maximum Detected Concentration (ppm)	OU2 CCL (ppm)	Method Detection Limit (ppm)	RBC Soil Ingestion Residential (ppm)	Retain	Comments
<i>Pesticides/PCBs</i>						
4,4'-DDD	0.036	8 / 36	0.0033	2.7	No	Max. < guideline conc.
4,4'-DDE	0.065	7 / 36	0.0033	1.9	No	Max. < guideline conc.
4,4'-DDT	0.047	5 / 36	0.0033	1.9	No	Max. < guideline conc.
Aldrin	0.012	6 / 36	0.0017	0.038	No	Max. < guideline conc.
alpha-Chlordane	0.0081	5 / 36	0.0017	1.82	No	Max. < guideline conc.
delta-BHC	0.0093	5 / 34	0.0017	0.1 ⁶	No	Max. < guideline conc.
Endosulfan-sulfate	0.0051	2 / 34	0.0033	47	No	Max. < guideline conc.
Endosulfan II	0.036	2 / 34	0.0033	47	No	Max. < guideline conc.
gamma-Chlordane	0.0062	5 / 36	0.0017	1.82	No	Max. < guideline conc.
Methoxychlor	0.01	1 / 34	0.017	39.1	No	Max. < guideline conc.
PCB 1232	0.064	2 / 34	0.033	0.32	No	Max. < guideline conc.
PCB 1242	0.06	1 / 36	0.033	0.32	No	Max. < guideline conc.
PCB 1254	0.087	2 / 36	0.033	0.32	No	Max. < guideline conc.

TABLE 8.13-4

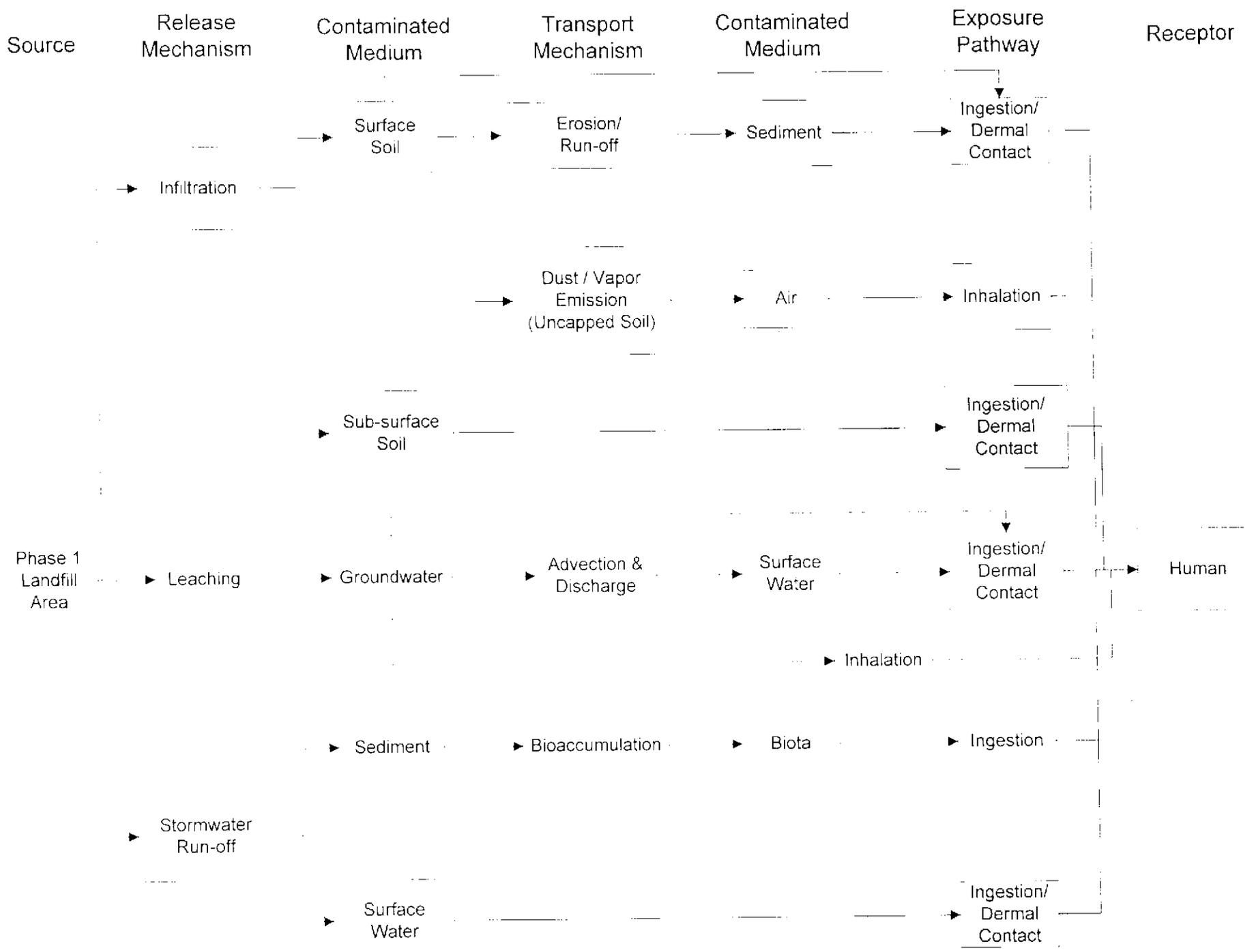
COMPARISON OF MAXIMUM DETECTED CONCENTRATION IN SEDIMENT TO SOIL SCREENING CRITERIA
 Central Landfill - OU2
 Johnston, Rhode Island

Analyte	Maximum Detected Concentration (ppm)	FOD	MDL - Detection Limit (ppm)	RBC - Soil Ingestion - Residential Site (ppm)	Retain	Comments
<i>Metals</i>						
Aluminum, total	22400	45 / 45	4	7821	Yes	
Antimony, total	1.3	6 / 19	1.2	3.1	No	Max. < guideline conc.
Arsenic, total	16.3	31 / 39	0.2	0.4	Yes	
Barium, total	287	45 / 45	4	548	No	Max. < guideline conc.
Beryllium, total	34.3	38 / 39	0.1	15.6	Yes	
Cadmium, total	6.9	28 / 35	0.1	3.9	Yes	
Calcium, total	12700	45 / 45	100	NA	No	Essential Nutrient ⁵
Chromium, total	76.2	32 / 39	0.2	11732	No	Max. < guideline conc.
Cobalt, total	24.5	37 / 45	1	156	No	Max. < guideline conc.
Copper, total	81.8	31 / 39	0.5	313	No	Max. < guideline conc.
Iron, total	37100	44 / 45	2	2346	No	Essential Nutrient ⁵
Lead, total	262	43 / 45	0.06	150	Yes	
Magnesium, total	9310	42 / 45	100	NA	No	Essential Nutrient ⁵
Manganese, total	13900	44 / 45	0.3	156	Yes	
Mercury, total	0.6	25 / 41	0.01	2.3	No	Max. < guideline conc.
Nickel, total	24.7	28 / 43	0.8	156	No	Max. < guideline conc.
Potassium, total	10100	40 / 45	100	NA	No	Essential Nutrient ⁵
Selenium, total	5.4	6 / 39	0.1	39.1	No	Max. < guideline conc.
Silver, total	0.92	1 / 34	0.2	39.1	No	Max. < guideline conc., Low FOD
Sodium, total	1010	24 / 45	100	NA	No	Essential Nutrient ⁵
Thallium, total	26.4	6 / 34	0.2	0.55	Yes	
Vanadium, total	70	44 / 45	1	55	Yes	
Zinc, total	754	44 / 45	0.4	2346	No	Max. < guideline conc.

Notes:

1. Compounds in Bold are COC.
2. FOD = Frequency of Detection
3. Values are 10% of RBC for non-carcinogens.
4. MDLs reflect Detection Limits specified as Data Quality Objectives (DQOs).
5. Essential Nutrient = no standards or toxicity information available or present at maximum concentrations resulting in intakes lower than required daily allowances (RDA).
6. The lowest available RBC for hexachlorocyclohexane(HCH) e.g. for alpha was conservatively used as a surrogate for delta-HCH also known as delta-"BHC."

Central Landfill Conceptual Site Model - CS-1



Central Landfill Site Map

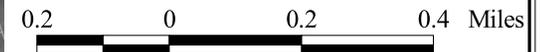
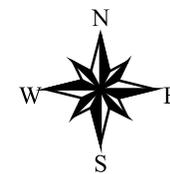
Johnston, RI

Figure 1

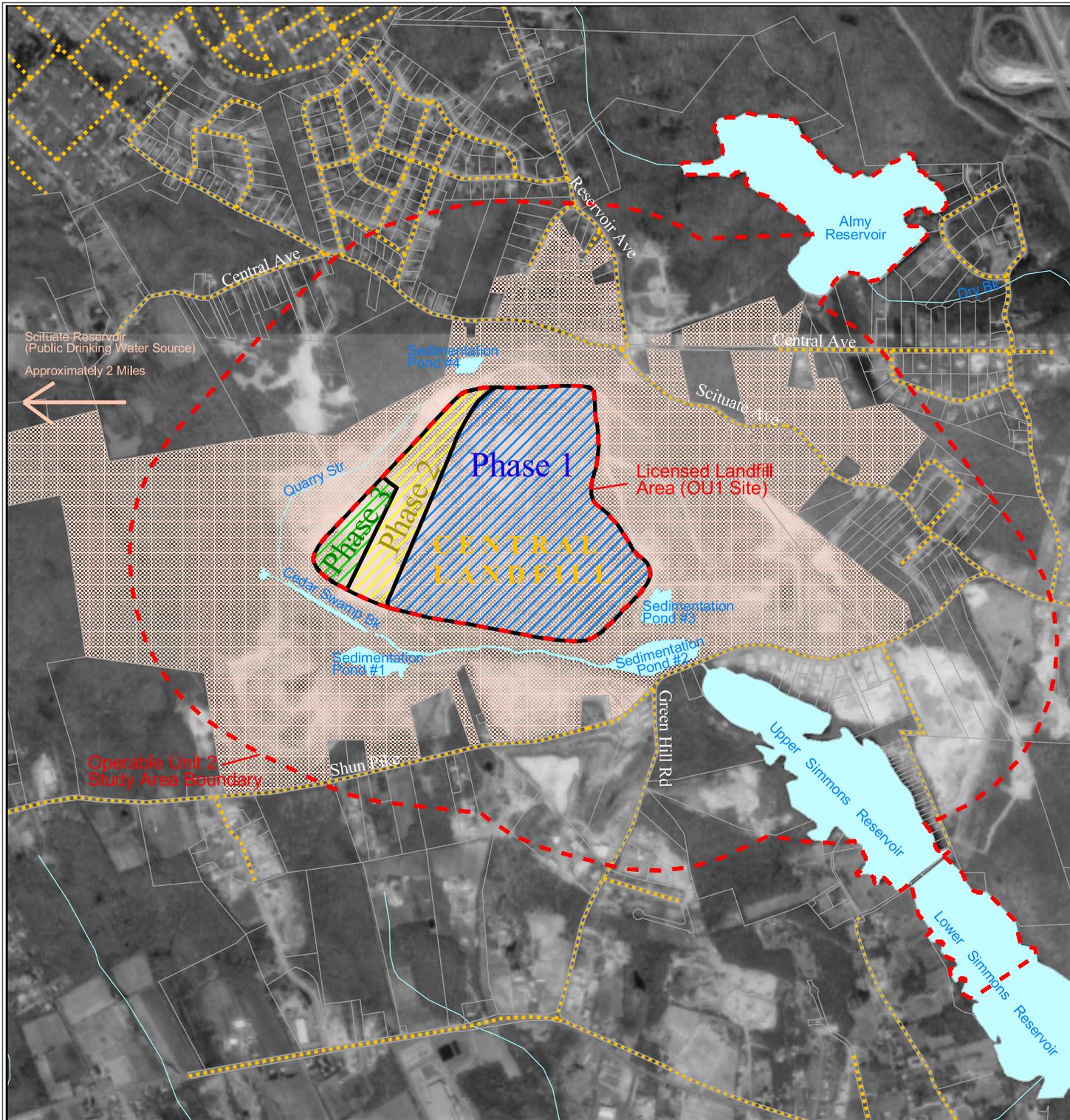
Central Landfill Phases

-  Phase 1: Superfund Area
-  Phase 2: Solid Waste Expansion Area
-  Phase 3: Solid Waste Expansion Area

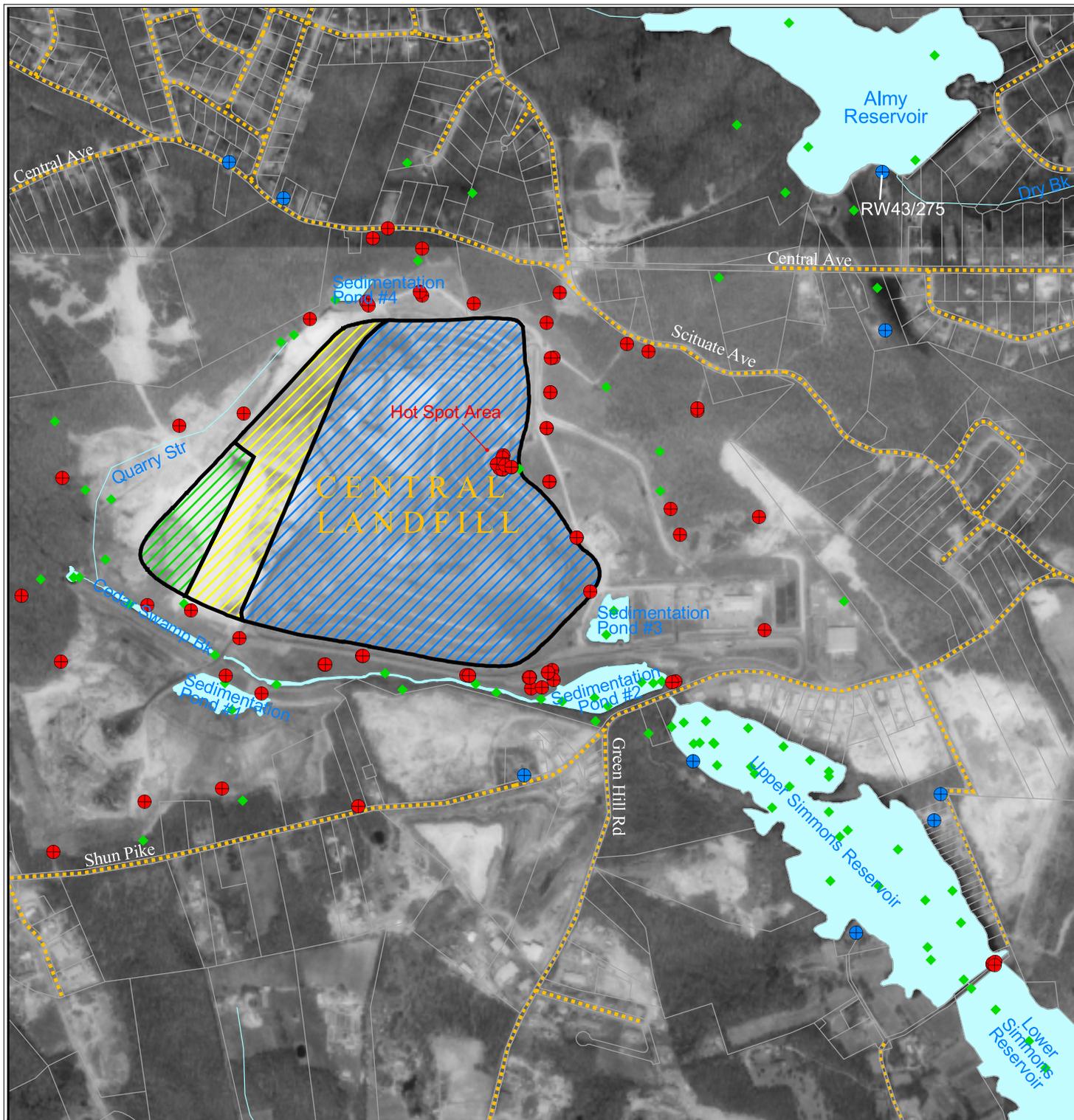
-  RIRRC Facility (612 acres)
-  Surface Water
-  Rivers
-  Parcel Boundary
-  Public Water Supply Line



Data Sources: Landfill phases, parcel boundaries, watershed boundary from GZA GeoEnvironmental, Inc (1997). Digital Orthophoto from 1995.
 Map Created: September 16, 2002;
 I:/projects/sites/centrallandfill/groundwater.apr

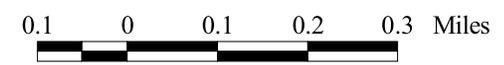
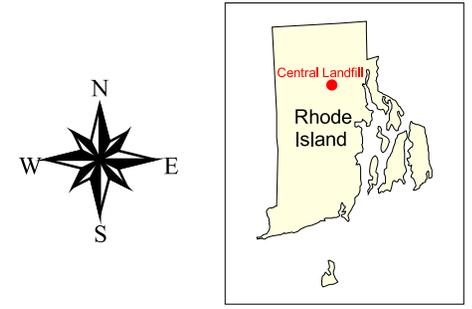


Central Landfill Observation and Residential Wells Johnston, RI Figure 2



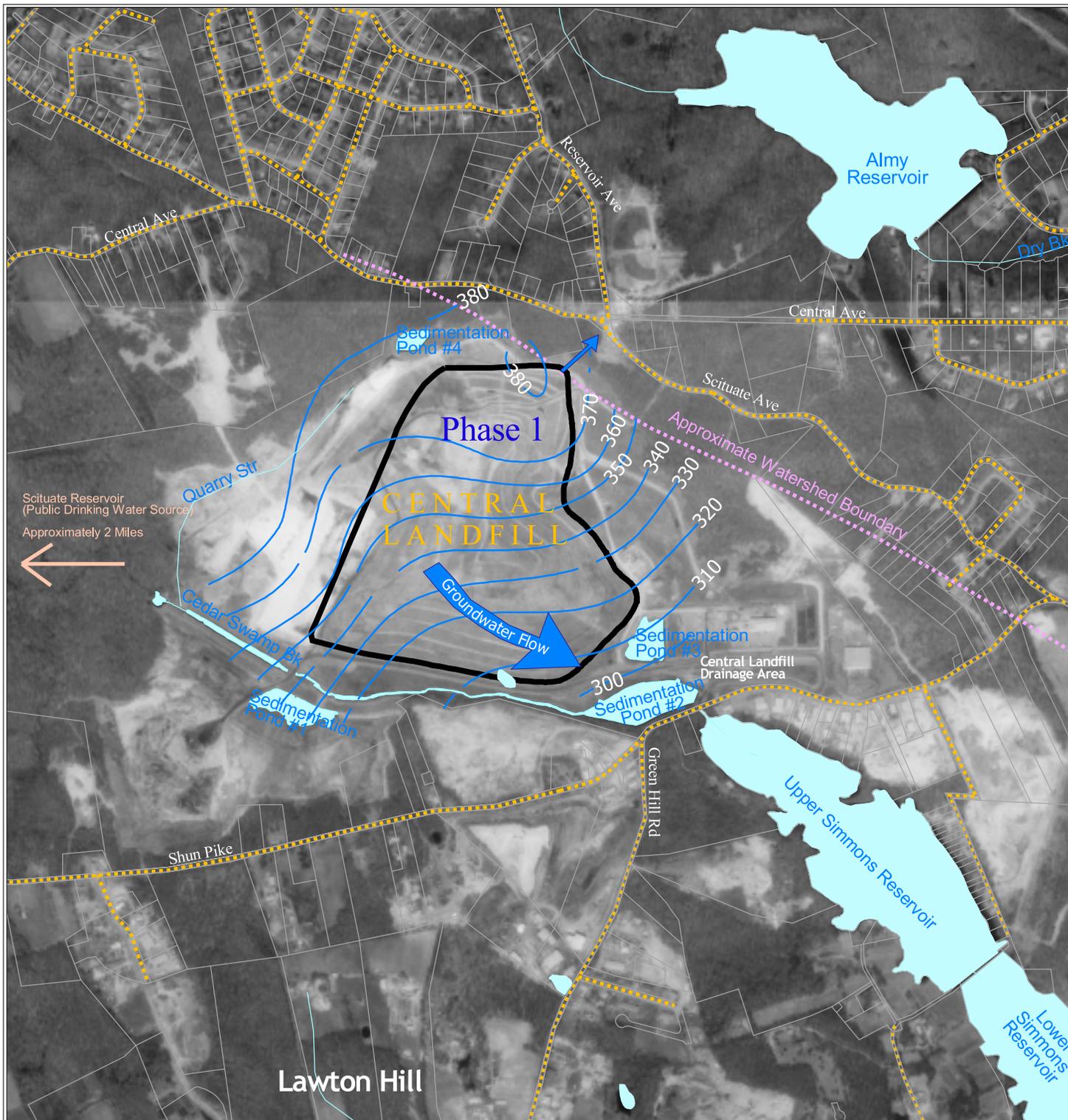
- Central Landfill Phases**
-  Phase 1: Superfund Area
 -  Phase 2: Solid Waste Expansion Area
 -  Phase 3: Solid Waste Expansion Area

-  Surface Water
-  Rivers
-  Parcel Boundary
-  Public Water Supply Line
-  Observation Well
-  Residential Well
-  Sampling Point

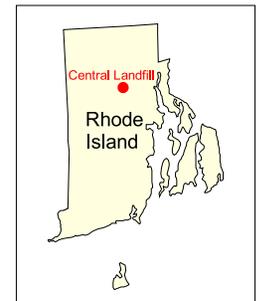


Data Sources: Landfill phases, parcel boundaries, watershed boundary from GZA GeoEnvironmental, Inc. (1997). Digital Orthophoto from 1995.
Map Created: September 16, 2002;
l:/projects/sites/centrallandfill/groundwater.apr

Central Landfill Groundwater Flow Johnston, RI Figure 3



-  Phase 1: Superfund Area
-  Groundwater Flow Direction
-  Groundwater Gradient
-  Surface Water
-  Rivers
-  Parcel Boundary
-  Public Water Supply Line
-  Approximate Watershed Boundary



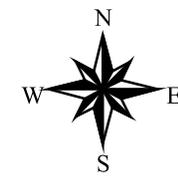
Data Sources: Landfill phases, parcel boundaries, watershed boundary from GZA GeoEnvironmental, Inc. (1997). Digital Orthophoto from 1995.
Map Created: September 16, 2002;
l:/projects/sites/centrallandfill/groundwater.apr

Central Landfill Site Map Johnston, RI Figure 4

Central Landfill Phases

-  Phase 1: Superfund Area
-  Phase 2: Solid Waste Expansion Area
-  Phase 3: Solid Waste Expansion Area

-  Other Potential Sources of Contamination
-  Surface Water
-  Rivers
-  Parcel Boundary
-  Public Water Supply Line



Data Sources: Landfill phases, parcel boundaries, watershed boundary from GZA GeoEnvironmental, Inc. (1997). Digital Orthophoto from 1995.
Map Created: September 16, 2002;
l:/projects/sites/centrallandfill/groundwater.apr