

**APPENDIX D**

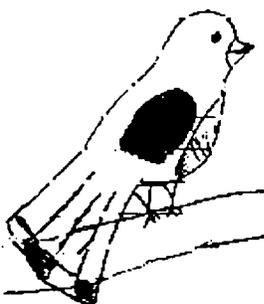
**RECORD OF DECISION  
Rose Hill Regional Landfill Superfund Site**

**RESPONSIVENESS SUMMARY**

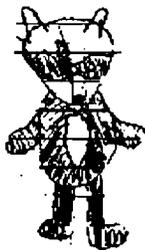
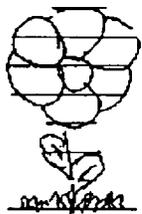
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# SUPERFUND

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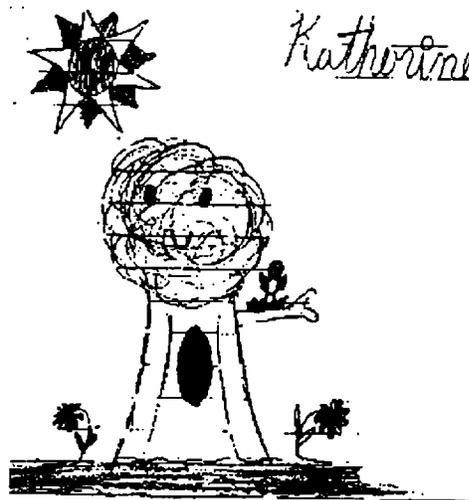
*Katie*



## Responsiveness Summary Rose Hill Regional Landfill

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December 1999



*Katherine*

## TABLE OF CONTENTS

INTRODUCTION .....	1
I. Overview of Remedial Alternatives Considered in the Feasibility Study Including the Selected Remedy .....	2
II. Background on Community Involvement .....	6
III. Summary of Comments Received During the Public Comment Period and EPA Responses .....	7
A. Citizen and Interested Party Comments .....	7
B. Town of South Kingstown and Narragansett Comments .....	21
C. State Comments .....	34
D. Other Federal Agencies Comments .....	43

### Appendix A

#### Public Hearing Transcript

**Acknowledgment:** The selected pencil drawings appearing on the Front Cover were sent in during the Public Comment Period by members of Girl Scout Troop 31, South Kingstown, Rhode Island.

## **INTRODUCTION**

The U.S. Environmental Protection Agency (EPA) held a 90-day public comment period from February 3, 1999 to May 3, 1999 to provide an opportunity for interested parties to comment on the Proposed Plan, the Remedial Investigation/Feasibility Study (RI/FS) and other documentation included in the Administrative Record developed to address a portion of the contamination at the Rose Hill Regional Landfill Superfund Site (the Site) in South Kingstown, Rhode Island. The proposed plan specifically addresses contamination and risks associated with two of three waste disposal areas, known as the Solid Waste Area and Bulky Waste Area of the Site. The third waste disposal area, known as the Sewage Sludge Area, was found to meet minimum State requirements for sewage sludge closure, and currently poses no significant health threat. The Sewage Sludge Area therefore does not require a source control response conducted under CERCLA authority at this time. Site-wide groundwater, including that which is beneath the Sewage Sludge Area, remains a human health threat that is addressed in this Record of Decision through institutional controls.

The FS examined and evaluated various options, called remedial alternatives, to address contaminants of concern and remedy options for the Site. EPA identified its preferred alternative for the Site in the Proposed Plan issued in January 1999. As described in the Proposed Plan, EPA's preferred alternative was Alternative 3A, Containment and Landfill Gas Treatment via Combustion. In response to public comment, however, EPA has re-evaluated its preferred alternative. As indicated in the Record of Decision, the selected alternative is Alternative 4B, the major components of which are: Consolidation (Bulky Waste Area), Containment (Solid Waste Area), Landfill Gas Treatment via Combustion, and Leachate Collection with On-site Treatment (during consolidation). The supporting documentation for the decision regarding the Site is placed in the Administrative Record for review. The Administrative Record is a collection of all the documents considered by EPA in choosing the remedy for the Site. It was made available at the EPA Records Center, at 90 Canal Street, in Boston, MA, and at the South Kingstown Public Library, located at 1057 Kingstown Road, Peace Dale, Rhode Island. An index to the Administrative Record for the Site is provided as Appendix E to the Record of Decision.

The Purpose of this Responsiveness Summary is to document EPA responses to the questions and comments raised during the public comment period on the RI/FS, Proposed Plan, and other documents in the Administrative Record. EPA reviewed and considered the comments prior to selecting the remedy for the Site. This remedy, and the basis for its selection, is further documented in the Record of Decision.

The Responsiveness Summary is organized into the following sections:

- I. ***Overview of Remedial Alternatives Considered in the Feasibility Study, Including the Selected Remedy*** - This section briefly outlines the remedial alternatives evaluated in the Feasibility Study (FS) and the Proposed Plan, including EPA's selected remedy.
- II. ***Background on Community Involvement*** - This section provides a brief history of community involvement and EPA initiatives in apprising the community of Site activities.
- III. ***Summary of Comments Received During the Public Comment Period and EPA Responses*** - This section summarizes the oral and written comments received from the public during the public comment period and sets forth EPA's responses to those comments. Part A contains the comments received from citizens and interested parties. Part B contains comments received from the Towns of South Kingstown and Narragansett. Part C summarizes comments received from the State of Rhode Island. Part D summarizes comments received from other Federal Agencies.

**I. Overview of Remedial Alternatives Considered in the Feasibility Study Including the Selected Remedy**

This Section summarizes each of the remedial alternatives evaluated in the FS and the Proposed Plan.

- **Alternative 1: No-Action**  
The Site would remain as is; there would be no remedial action of any of the contaminated media. However, long-term monitoring of existing ground water monitoring wells, landfill gas and surface water stations located throughout the Site would be monitored for at least thirty years to detect any change that would require intervention. Five-year statutory reviews to determine protectiveness would be conducted as required.

<i>Estimated Time for Design and Construction:</i>	<i>&lt;1 year</i>
<i>Estimated Time of Operation:</i>	<i>&gt; 30 years</i>
<i>Estimated Capital Cost:</i>	<i>\$100,000</i>
<i>Estimated Operations and Maintenance Costs (net present worth):</i>	<i>\$3,460,000</i>
<i>Estimated Total Cost (net present worth):</i>	<i>\$3,570,000</i>

- **Alternative 2: Limited Action**

This alternative would include the long-term environmental monitoring and statutory five-year reviews as described above, establish institutional controls for access and for use of groundwater in the form deed restrictions including land use easements and covenants to prevent access to restricted areas of the Site and to prevent the future use, direct contact and exposure to, or hydraulic alteration of contaminated groundwater. This alternative would also provide landfill gas control contingencies for the nearby residential dwellings which are, or may be, impacted by migrating landfill gas.

<i>Estimated Time for Design and Construction:</i>	<i>1 year</i>
<i>Estimated Time of Operation:</i>	<i>&gt;30 years</i>
<i>Estimated Capital Cost:</i>	<i>\$360,000</i>
<i>Estimated Operations and Maintenance Costs (net present worth):</i>	<i>\$3,480,000</i>
<i>Estimated Total Cost (net present worth):</i>	<i>\$3,840,000</i>

EPA's Preferred Alternative, as presented in the Proposed Plan, was Alternative 3A.

- **Alternative 3A: Containment and Landfill Gas Treatment via an Enclosed Flare**

This alternative would include the long-term environmental monitoring, statutory five-year reviews and establishment of institutional controls as described above, apply protective (Subtitle-C or its performance equivalent), multi-layer caps onto the Solid Waste and Bulky Waste Areas, install an active perimeter and internal gas collection system on the Solid Waste Area with treatment of the gases via combustion through an enclosed flare, and install a passive landfill gas venting system on the Bulky Waste Area. In addition, EPA would collect data to assess the need for conducting any further remedial responses concerning groundwater and surface water as a component of the long-term monitoring program.

<i>Estimated Time for Design and Construction:</i>	<i>2 years</i>
<i>Estimated Time of Operation:</i>	<i>&lt;15 years for LFG; &gt;30 years GW/Leachate</i>
<i>Estimated Capital Cost:</i>	<i>\$6,420,000</i>
<i>Estimated Operations and Maintenance Costs (net present worth):</i>	<i>\$7,000,000</i>
<i>Estimated Total Cost (net present worth):</i>	<i>\$13,420,000</i>

- **Alternative 3B: Containment and Landfill Gas Treatment via Photocatalytic Oxidation**

This alternative would include the long-term environmental monitoring, statutory five-year reviews, establishment of institutional controls, protective covers, installation of a passive landfill gas venting system on the Bulky Waste Area, an active perimeter and internal gas collection system on the Solid Waste Area as

described above, with treatment of the gases via photocatalytic oxidation. In addition, EPA would collect data to assess the need for conducting any additional remedial responses concerning groundwater and surface water as a component of the long-term monitoring program.

<i>Estimated Time for Design and Construction:</i>	<i>2 years</i>
<i>Estimated Time of Operation:</i>	<i>&lt;15 years for LFG; &gt;30 years GW/Leachate</i>
<i>Estimated Capital Cost:</i>	<i>\$6,560,000</i>
<i>Estimated Operations and Maintenance Costs (net present worth):</i>	<i>\$6,630,000</i>
<i>Estimated Total Cost (net present worth):</i>	<i>\$13,190,000</i>

- **Alternative 4A: Containment, Leachate Collection and On-site Treatment, and Landfill Gas Treatment**

This alternative would include the long-term environmental monitoring, statutory five-year reviews, establishment of institutional controls, protective covers, installation of a passive landfill gas venting system on the Bulky Waste Area, an active perimeter and internal gas collection system on the Solid Waste Area as described in 3A above. Additionally, added measures to collect and treat leachate in the Bulky Waste Area would be implemented and treated waters would be discharged on-site through injection wells.

<i>Estimated Time for Design and Construction:</i>	<i>2 years</i>
<i>Estimated Time of Operation:</i>	<i>&lt;15 years for LFG; &gt;30 years GW/Leachate</i>
<i>Estimated Capital Cost:</i>	<i>\$7,240,000</i>
<i>Estimated Operations and Maintenance Costs (net present worth):</i>	<i>\$8,830,000</i>
<i>Estimated Total Cost (net present worth):</i>	<i>\$16,070,000</i>

**EPA's Selected Remedy is Alternative 4B.** The NCP allows EPA to re-evaluate its remedy preference in response to new information and in consideration of comments received during the public comment period. In review of all information and comments received, EPA revised its preferred remedy to Alternative 4B.

- **Alternative 4B: Consolidation of the Bulky Waste Area onto the Solid Waste Area, Containment, Leachate Collection and Treatment (during consolidation), and Landfill Gas Treatment (Solid Waste Area)**

This alternative would include the long-term environmental monitoring, statutory five-year reviews and establishment of institutional controls as described above. Instead of capping the Bulky Waste Area, this disposal area would be excavated and consolidated onto the Solid Waste Area which would then be capped and an active perimeter and internal landfill gas collection system installed and treatment of the gases via combustion (enclosed flare) as required to achieve ARARs.

Leachate and waters collected from runoff and de-watering operations during the consolidation phase would be managed and discharged according to appropriate regulations. As with Alternative 3A, EPA would collect data to assess the need for conducting any additional remedial responses concerning groundwater and surface water as a component of the long-term monitoring program.

<i>Estimated Time for Design and Construction:</i>	<i>2 years</i>
<i>Estimated Time of Operation:</i>	<i>&lt;15 years for LFG; &gt;30 years GW/Leachate</i>
<i>Estimated Capital Cost:</i>	<i>\$11,360,000</i>
<i>Estimated Operations and Maintenance Costs (net present worth):</i>	<i>\$6,680,000</i>
<i>Estimated Total Cost (net present worth):</i>	<i>\$18,040,000</i>

The Proposed Plan also included two management of migration alternatives for groundwater. These options, while evaluated in the Feasibility Study and presented to the public, are not presented in the Record of Decision. Upon extensive review and consideration of new information and comments presented during the public comment, EPA believes that additional data is needed to properly assess and evaluate management of migration options for groundwater and its impact on surface water after the source control remedy is implemented. Instituting a well designed source control remedy at the present time will minimize the migration of contaminants to groundwater. Accordingly, a more cost effective and potentially less extensive management of migration remedy can be realized through a phased approach. Nonetheless, these two alternatives are presented herein as they relate to the comments received during the public comment period.

- **Alternative 5A: Containment, Gas Collection/Treatment, Leachate Collection/Treatment, Groundwater Collection/Treatment**

This Alternative is similar to 4A with the addition of a groundwater collection/depression system in the Solid Waste Area to further mitigate potential future migration of contaminated groundwater.

<i>Estimated Time for Design and Construction:</i>	<i>2 years</i>
<i>Estimated Time of Operation:</i>	<i>&lt;15 years for LFG; &gt;30 years GW/Leachate</i>
<i>Estimated Capital Cost:</i>	<i>\$8,430,000</i>
<i>Estimated Operations and Maintenance Costs (net present worth):</i>	<i>\$11,810,000</i>
<i>Estimated Total Cost (net present worth):</i>	<i>\$20,240,000</i>

- **Alternative 5B: Consolidation, Containment, Landfill Gas Collection/Treatment, Leachate Collection/Treatment, Groundwater Collection/Treatment**

This Alternative is similar to 4B with the addition of a groundwater collection/depression system in the Solid Waste Area to further mitigate potential future migration of contaminated groundwater.

<i>Estimated Time for Design and Construction:</i>	<i>2 years</i>
<i>Estimated Time of Operation:</i>	<i>&lt;15 years for LFG; 1 year for Leachate &gt;30 years GW</i>
<i>Estimated Capital Cost:</i>	<i>\$12,550,000</i>
<i>Estimated Operations and Maintenance Costs (net present worth):</i>	<i>\$11,390,000</i>
<i>Estimated Total Cost (net present worth):</i>	<i>\$23,940,000</i>

## **II. Background on Community Involvement**

Throughout the Site's history, community concern and involvement has been moderate. EPA has kept the community and other interested parties apprised of Site activities through informational meetings, fact sheets, press releases and public meetings.

In June 1991, EPA released a community relations plan which outlined a program to address community concerns and keep citizens informed and involved in the process during remedial activities. On June 18, 1991, EPA held an informational meeting at the South Kingstown Public Library to describe the plans for the Remedial Investigation and Feasibility Study.

During the removal activities, EPA held informational meetings with the residents of Rose Hill Road and other interested parties (January 20, 1993 and April 29, 1993) to inform residents of the monitoring results, ongoing work and proposed actions.

On June 23, 1994, EPA held an open house at the South Kingstown elementary school to discuss the results of the Remedial Investigation, Risk Assessment, and Ecological Assessment and opportunities for public involvement. A fact sheet was also issued to area residents and other interested parties.

EPA issued a public notice and brief analysis of the Proposed Plan in The Providence Journal on January 29, 1999 and made EPA's Proposed Plan available to the public at the South Kingstown public library. On February 1, 1999, EPA made the administrative record available for public review at EPA's offices in Boston and at the above-referenced local information repository.

Also on February 1, 1999, EPA held an informational meeting to discuss the results of the Remedial Investigation and the cleanup alternatives presented in the Feasibility Study and to present the Agency's Proposed Plan. The Agency answered questions from members of the public in attendance. In a joint letter from the Towns of South Kingstown and Narragansett received earlier in the week, a formal request was made to extend the thirty-day public comment period by an additional sixty days. EPA granted this request and allowed a ninety-day public comment period from February 2, 1999 to May 3, 1999 to accept comments on the alternatives presented in the Feasibility Study, the Proposed Plan, and any other documents presented in the administrative record.

On February 18, 1999, the Agency held a public hearing to discuss the Proposed Plan and accept oral comments. A transcript of the comments received at this hearing and EPA responses to the comments are included in this responsiveness summary. Tom Gibson, Deputy Staff Director for the Senate Committee on Environmental Public Works, from Senator Chaffee's Office, Warren Angell, Supervisory Engineer from the Rhode Island Department of Environmental Management Office of Waste Management, Stephen Alfred, Town Manager of the Town of South Kingstown, and five area residents offered oral comments at the public hearing. Numerous written comment was also submitted throughout the public comment period. EPA's responses to the comments received during the public comment period are set forth below.

### **III. Summary of Comments Received During the Public Comment Period and EPA Responses**

#### **A. Citizen and Interested Party Comments**

As many as twenty-one area residents attended the public hearing on February 18, 1999. Of these, five area residents presented their comments orally to EPA at the public hearing. Additionally, as many as eleven interested individuals responded in writing to EPA's Proposed Plan, including the four junior girl scouts from Troop 31 in South Kingstown. Below is a summary of the comments received and EPA's responses.

**Comment A-1:** A number of residents voiced their general opinion on observed problems with surface water and risks from air attributable to the landfill, and asked for appropriate monitoring and a quick response to Site-related risks.

**EPA Response:** EPA's selected remedy for this Site is alternative 4B, modified to allow for a phased clean up approach. The first operable unit is a source control remedy which will control the sources of contamination at the Site by limiting the extent to which precipitation will percolate and infiltrate through waste materials and minimizing the further migration of the contaminated groundwater plume. Management of the migration of contaminants from the Site that have impacted, or may continue to impact, local area ground water and the biological integrity of surface waters will be addressed after the source control measures are implemented and will rely on data obtained from monitoring conducted under the first operable unit and any additional studies that are deemed necessary to further assess Site impacts, characterize the extent of contamination, and assess the need to develop and evaluate alternatives for future actions.

The selected source control remedy includes excavation and consolidation of the Bulky Waste Area onto the Solid Waste Area to reduce contaminant migration via leachate to surface waters and sediments of Mitchell Brook, thereby improving water quality and state designated uses, including aquatic life support. The remedy also includes capping the consolidated waste and

installing landfill gas controls on the Solid Waste Area to reduce the potential exposure of area residents and Site visitors to uncontrolled releases in ambient and indoor air which present an unacceptable human health risk. Capping will also contain the wastes, limit the extent to which precipitation will percolate and infiltrate through waste materials and minimize the further migration of the contaminated groundwater plume. Risks posed by contaminated groundwater are addressed in this operable unit through the use of institutional controls. Comprehensive long-term monitoring will be implemented to collect data to assess the effectiveness of the source control remedy and assist the State with TMDL predictions for Site-related contaminant concentrations affecting local water bodies.

**Comment A-2:** A member of the public asked if any consideration has been given to relocating some of the nearby residents who are subject to some of the higher health risks, as opposed to implementing a gas collection combustion system.

**EPA Response:** Under the NCP (40 CFR section 300.430(a)), the national goal of the remedy selection process is to “select remedies that are protective of human health and the environment, that maintain protection over time, and that minimize untreated waste.” The NCP defines a process where nine criteria (40 CFR section 300.430(e)(9)(iii)(A)-(I)) are to be used to analyze remedial alternatives to ensure that selected remedies meet the program’s goals. EPA’s OSWER Directive: 9355.0-71P, “Interim Policy on the Use of Permanent Relocations as Part of Superfund Remedial Actions” (“the Relocation Policy”), reiterates that EPA’s preferred approach at Superfund sites is to address the risks posed by the contamination by using well-designed methods of cleanup so people can remain safely in their homes and businesses.

Because permanent relocation is considered a remedial action, it is selected for use at a Superfund site only when it has been evaluated through the RI/FS process and determined to be the best overall remedy for the Site. The Rose Hill Feasibility Study did not consider relocation of residents as an alternative to actively treating the air that poses a risk to those residents, since the alternatives proposed in the FS contained engineering technologies that were thought to be feasible and implementable for mitigating these risks at the source. Moreover, the selected remedy has been found to be both protective and implementable. Thus relocation was not evaluated and could not now be determined by the Agency to be the best overall remedy for the Site without further study.

The Relocation Policy sets out limited cases where permanent relocation may be a part of a remedial action. Generally, the primary reasons for conducting a permanent relocation would be to address an immediate risk to human health (where an engineering solution is not readily available) or where the structures (e.g., homes or businesses) are an impediment to implementing a protective cleanup. Examples from the Relocation Policy of how the NCP’s nine criteria could be applied and lead to consideration of permanent relocation as an appropriate option are:

- Permanent relocation may be considered in situations where EPA has determined that structures must be destroyed because they physically block or otherwise interfere with a cleanup, and methods for lifting or moving the structures safely or conducting cleanup around the structures are not implementable from an engineering perspective.
- Permanent relocation may be considered in situations where EPA has determined that structures cannot be decontaminated to levels that are protective of human health for their intended use, such that a decontamination alternative may not be implementable.
- Permanent relocation may be considered when EPA determines that potential treatment or other response options would require the imposition of unreasonable use restrictions to maintain protectiveness (e.g., typical activities, such as children playing in their yards, would have to be prohibited or severely limited). Such options may not be effective in the long-term, nor are those options likely to be acceptable to the community.
- Permanent relocation may be considered when an alternative under evaluation includes a temporary relocation expected to last longer than one year. A lengthy temporary relocation may not be acceptable to the community or cost-effective. Additionally, a shortage of available long-term rentals within the immediate area may make any potential temporary relocation extremely difficult to implement.

The circumstances at Rose Hill do not fall into any of the foregoing scenarios. First, the residences that might be relocated do not affect the implementability of the selected remedy. The residences will not physically interfere with implementation of the gas collection system, and the gas collection system is expected to remove the risk to the residents that is posed by contaminated air from the Landfill. In addition, the use restrictions to be imposed by the selected remedy are related only to use of the groundwater. Such use restrictions can be circumvented through connecting the homes to the municipal water supply, a not unreasonable, long-term solution.

Finally, it should be noted that EPA's relocation policy affects the Agency's decision-making process during alternative screening and remedy selection; it does not apply to compensatory actions that may be taken independently by potentially responsible parties (PRPs) at a Site. PRPs may agree independently with residents (or business owners) to relocate them, as long as the relocation neither compromises nor interferes with EPA's actions at the Site.

**Comment A-3:** A member of the public stated that, rather than waiting five years to assess groundwater contamination at the Site (as proposed in Alternative 3A), one may be able to establish what kind of clean up needs are required now and implement those using today's dollars.

**EPA Response:** Even with EPA's selection of Alternative 4B, there still remain a number of site-specific circumstances that compel the Agency to phase the clean up response at Rose Hill, with the latter phase addressing groundwater and surface water. By instituting a phased decision process, the gathering of groundwater and surface water data during and after the consolidation phase is complete will enable EPA to more accurately evaluate the future groundwater/surface water conditions at the Site. This monitoring and evaluation will provide a more accurate representation of the groundwater flow pattern, probable clean-up time frames, contaminant concentrations, and assessment for the need for future actions concerning the potential management of migration of contaminants from the Site.

Further, the State and the Town of South Kingstown expressed concern about actions that would result in long-term operation and maintenance costs which are not economically practical. The data gathering to be implemented under Alternative 4B, which includes evaluations to monitor the effectiveness of the source control remedy upon ground water and surface water, will help to determine if any additional remedial measures are necessary. If it is found that additional active remedial measures are necessary, the decision (based upon an evaluation of alternatives under a second OU) to implement these measures would be predicated upon the effectiveness of actions taken under OU 1 and the measure of improved Site conditions arising from those actions, resulting in a more defined and cost effective cleanup approach and reduced long-term operation and maintenance expenditures.

**Comment A-4:** A member of the public stated that for those living in close proximity to the landfill for many years, something should be done for immediately rather than waiting and seeing.

**EPA Response:** EPA believes that by phasing the cleanup approach (as discussed in Comment A-1 above), active measures will be taken to protect local area residents. Capping, gas control/treatment, and institutional controls for access and groundwater are measures that will be implemented to control Site risks under the first operable unit response.

**Comment A-5:** A member of the public stated that he believes the leachate is beyond the dump itself and just capping the dump does not seem to be all that is needed.

**EPA Response:** As stated above in Comment A-1, EPA will implement a phased cleanup approach. Management of the migration of contaminants from the Site that have impacted, or may continue to impact, local area groundwater and surface waters will be addressed in a future decision document.

**Comment A-6:** A member of the public asked how it is that EPA can make an informed decision for the local community and would wish to see the Agency follow the State's or Town's recommendations more closely.

**EPA Response:** The National Contingency Plan (40 C.F.R. Part 300), requires EPA to ensure public involvement throughout the Superfund process. EPA solicits and takes into consideration public input into all Superfund remedy decisions. EPA solicits public comment by notifying community members of the activities taking place at the Site, including the proposed remedy, through direct mail, local media and legal notice, holding a 30-day public comment period, and hosting a formal hearing so community members can provide oral comment.

For the Rose Hill Landfill Superfund Site remedy selection, EPA mailed out a proposed plan to the community in January 1999, held an informational public meeting on February 2, 1999 and a formal hearing on February 18, 1999. The purpose of the formal hearing was to provide an opportunity for community members to give oral comment. In addition, at the Towns' request, EPA extended the public comment an additional 60 days. EPA accepted comments from February 3, 1999 to May 3, 1999.

As with all Superfund site remedy selections, EPA has taken community comments, including those from the Towns and the State into consideration in selecting the Rose Hill remedy. In this particular case, EPA elected to revise its approach on the preferred cleanup alternative. To address the concerns expressed by RIDEM, the Towns, and local citizens about iron contamination of surface waters at the Site, EPA has selected Alternative 4B, which includes consolidation (Bulky Waste Area), along with containment (Solid Waste Area), landfill gas treatment with an enclosed flare, and leachate collection with on-site treatment (during consolidation). Further, EPA will phase its clean-up approach in order to assess and further evaluate future groundwater and surface water impacts and to ensure protectiveness of human health and the environment. Consolidation of the Bulky Waste Area was advocated in numerous comments as a means of providing protection to the Saugatucket River and Mitchell Brook, specifically with respect to future iron contamination caused by leachate from the Site.

**Comment A-7:** A member of the public asked if the cap will alter the course of groundwater, how much waste is in the water table, and whether the water table elevations will be lowered or depressed after installation of the cap.

**EPA Response:** A protective cap placed on the Solid Waste Area is not expected to alter the natural direction of groundwater flow. However, reduced infiltration to the waste is expected to ultimately eliminate any radial flow existing in the northern portion of the Solid Waste Area due to topography. The water table beneath the Site is also expected to decrease 0.5 to 1.0 feet due to placement of a cap (Appendix C-2 of the Final FS Report, November 1998). Figures 7 and 10 of Appendix C-2 present approximate existing conditions and future capped conditions. These figures show that waste exists one to two feet below groundwater in a small area of the Solid Waste Area. Placement of a cap was modeled and shown to remove a significant volume of the waste from within the groundwater. The model results will be confirmed following cap placement as part of routine monitoring incorporated into the selected remedy.

**Comment A-8:** A member of the public asked where the Rose Hill Landfill fits on the exponentially decreasing curve for leachate generation and where the human receptors to leachate were located.

**EPA Response:** While leachate at the Rose Hill Site contains contaminants which may be decreasing and do not pose a direct contact risk to human receptors, the metals currently leaching from the Bulky Waste Area are impacting the environment. The selected Alternative 4B involves excavating the waste from the Bulky Waste Area and consolidating this waste onto the Solid Waste Area. It is anticipated that leachate generation from the Bulky Waste Area will decrease substantially following the waste removal. It is anticipated that leachate collection will be necessary during the excavation and that this effort, while necessary for the excavation operation, may also provide additional benefit to the immediately adjacent wetland and shallow overburden aquifer in terms of contaminant reduction in this vicinity.

**Comment A-9:** A member of the public asked how long leachate collection and treatment would be necessary and how that compared to natural attenuation.

**EPA Response:** The selected remedy is Alternative 4B and involves excavation of the waste in the Bulky Waste Area and consolidation onto the Solid Waste Area. This remedy will only require leachate and de-watering fluids to be managed and discharged on-site through the conclusion of the excavation and consolidation process. The Site will be monitored over the long term to assure that the measures that are implemented remain effective and protective. Such periodic monitoring will include ground water, surface water/leachate and air and will also include cap integrity and operation and maintenance activities as required. A statutory five-year review process will be implemented to evaluate whether the response action remains protective of public health and the environment. Monitored natural attenuation and/or other cleanup processes will be among the options considered in future evaluations on the management of migration of Site contaminants in groundwater and surface water.

**Comment A-10:** A member of the public asked about the exponentially decreasing gas generation related to the Rose Hill Landfill and what contaminant levels would be acceptable to cease operation of the flare.

**EPA Response:** Projected gas generation rates have been presented in Appendix E-1 of the Final FS Report dated November 1998. Actual gas generation rates will be determined as part of system start-up after construction. Dispersion modeling will then be performed to calculate the maximum concentrations of contaminants in the feed gas that will be allowed to be released without treatment. This calculation involves use of the Preliminary Remediation Goals presented in Table 2-4 of the Final FS Report.

**Comment A-11:** A comment states: “Since this is a closed municipal landfill and wastes contained therein were placed prior to the passage of RCRA regulations, Subtitle C does not apply and the RI/FS has failed to demonstrate the relevancy and appropriateness of an impermeable cap at this landfill.”

**EPA Response:** EPA disagrees with the comment. The Rose Hill Landfill began operation in 1967 and ceased operation in 1983. The RI/FS identified hazardous substances that are posing environmental and health risks at the site. RCRA Subtitle C is “applicable” when there is RCRA listed or characteristic hazardous waste disposed in the facility after 1980. RCRA Subtitle C is “Relevant and Appropriate” to hazardous waste disposed of prior to 1980 or if there are wastes similar to RCRA waste disposed of after that date. Since hazardous waste has been identified in the Solid Waste Area, and some of that waste was disposed of after 1980, a cap meeting the performance standards of a “RCRA Subtitle C cap” is appropriate in order to be protective of human health and the environment. Notwithstanding the foregoing, RCRA is not listed as an ARAR at the Site because RI has a hazardous waste regulatory program that has been approved by EPA and is therefore applicable in lieu of the federal program. Thus the standards that apply to substances remaining in the landfill under RCRA are being implemented at Rose Hill through the RI Hazardous Waste Management Regulations. Therefore, the cap will be designed and constructed to meet state hazardous waste landfill closure requirements.

**Comment A-12:** Several comments noted that natural resource damage is not addressed by the Proposed Plan.

**EPA Response:** EPA’s full response to this comment appears below in Section B, comment B-1. Where comments suggest that the selected remedy is not sufficiently protective of the environment, EPA has addressed those comments through the public comment process and its re-evaluation and selection of Alternative 4B, based upon public comment and new information.

**Comment A-13:** A member of the public requests that consideration be made of the ecology in place currently at the Site and asks that as little as possible be done to disturb the natural setting.

**EPA Response:** Some short term disturbances to fauna and flora located at the Site are expected to occur in order to implement the remedy. Critical habitat (such as wetland and flood plain) would be protected throughout the implementation of the remedy. The consolidation and installation of the cap is expected to significantly reduce the impact to natural resources and aquatic organisms utilizing Mitchell Brook, the Saugatucket River, and Saugatucket Pond. The selected remedy will ensure that certain plant life and terrestrial species continue to flourish once the cap is in place by providing appropriate plantings and seed mixes that will both protect the cap and also attract and maintain those inhabiting species.

**Comment A-14:** A comment suggests that the fears generated by EPA, RIDEM and the media have been over-exaggerated considering the large acreage of land involved and the low number of

homes in the immediate vicinity of the Site.

**EPA Response:** EPA disagrees. Based upon its findings in the Baseline Human Health and Ecological Risk Assessments, EPA identified unacceptable risks posed by actual or threatened releases of hazardous substances from this Site which, if not addressed by implementing the response action selected in this ROD, may present an imminent and substantial endangerment to public health, welfare, or the environment. In making this finding, EPA, through its Site investigation and calculation of risks, took into account appropriate Site-specific facts enumerated in the comment.

**Comment A-15:** A comment notes that if the Bulky Waste Area is causing problems to the River, then a cover applied to that section with gas control and five year reviews may be adequate.

**EPA Response:** In light of the new information and comments presented to EPA during the public comment period, EPA believes that capping and passively venting the Bulky Waste Area landfill in place would not be effective in controlling the source because a portion of the Bulky Waste Area landfill is known to be in contact with groundwater. Capping, without the installation of leachate control and management systems operating over the long term, will do little to reduce the impact caused by leachate reaching the River. Leachate control and management systems installed at the base of the landfill may be effective in controlling the leachate over time, but the operation and maintenance of such a system over time may be cost prohibitive. In its re-assessment of the alternatives, EPA believes long-term risks to ecological receptors in wetland and aquatic habitats would be significantly reduced or eliminated under Alternative 4B. Alternative 4B utilizes landfill consolidation with leachate control and management (during excavation and consolidation) to remove source impacts from the Bulky Waste Area to the Saugatucket River. This remedy is more protective of the environment than the comment's suggested remedy since the Bulky Waste Area landfill will be excavated and consolidated onto the Solid Waste Area landfill and properly capped and controlled in an upland area further removed from the River. Thus, leachate production and subsequent discharge to the Saugatucket River would be prevented or substantially reduced through a more cost-efficient approach that may preclude costly long-term operation and maintenance for the Bulky Waste Area.

**Comment A-16:** A comment notes that the safety of a local resident's family has been jeopardized (with serious water problems and dangerous air) and that the Town should come up with a satisfactory solution (such as buying the house and property) to resolve the problem.

**EPA Response:** As discussed in more detail under Comment A-2, EPA has established an interim policy concerning relocation. EPA's OSWER Directive: 9355.0-71P, "Interim Policy on the Use of Permanent Relocations as Part of Superfund Remedial Actions" ("the Relocation Policy"), reiterates that EPA's preferred approach at Superfund sites is to address the risks posed by the contamination by using well-designed methods of cleanup so people can remain safely in

their homes and businesses. This policy affects the Agency's decision making process during alternative screening and remedy selection. However, this policy does not apply to the actions of a potentially responsible party (PRP), and PRPs may agree independently with residents or business owners to relocate them so long as the relocation neither compromises nor interferes with EPA's actions at a Site.

**Comment A-17:** A comment notes that the Site is now abundant with plant species and home to many species of animals. To the commenter's knowledge, there are no physical or observed signs of diminishment of terrestrial species. While in the past many trees along Rose Hill Road perished, plant life is improving.

**EPA Response:** EPA generally concurs with the comment. The Ecological Risk Assessment notes that baseline risks to terrestrial and semiaquatic organisms are not likely to be significant over most of the Site study area. Areas of soil associated with leachate seeps, and the leachate itself, may pose some risks to biota. Due to the small areas affected, however, this risk is not likely to be significant. Food chain effects are not of concern, although indirect effects from reduced prey abundance in aquatic areas may be occurring. The baseline risk to aquatic organisms may occur as a result of exposure to the chemicals of ecological concern in the surface water and leachate, however, and from the studies conducted in the RI, there does not appear to be an existing risk to aquatic organisms due to exposure to sediments.

Studies conducted by NOAA and others concluded that contamination from the Rose Hill Landfill may pose a threat to natural resources, including NOAA trust resources utilizing Mitchell Brook, the Saugatucket River, and Saugatucket Pond. The primary pathways of contaminant migration from the Site are groundwater discharge and surface water runoff. Iron and several trace elements were detected at elevated concentrations in surface water and sediment during the RI. The leachate seeps located on the perimeter of both the Bulky Waste and Solid Waste Areas appear to be a source of contamination to surface water bodies. A floc sample collected from Mitchell Brook contained substantial amounts of iron. In addition, iron was present at high concentrations in sediment collected as far downstream as Saugatucket Pond. Flocculent material that accumulates near the Site may be a source of iron in sediments of the pond. Results suggest a strong possibility that sediment and floc transported from the vicinity of the Site contain concentrations of iron and possibly other trace element contaminants that may adversely effect blueback herring and alewife inhabiting Saugatucket Pond during sensitive life stages.

Small areas of dead trees were observed during the RI. These areas, believed to be associated with high methane levels in soil gas, are also not considered significant due to the extremely limited areas at which these effects have been observed.

Some short term disturbances to fauna and flora located at the Site are expected to occur in order to implement the remedy. Critical habitat (such as wetland/flood plain and buffer areas) would be protected throughout the implementation of the remedy. The consolidation and installation of the

cap is expected to significantly reduce the impact to natural resources and aquatic organisms utilizing Mitchell Brook, the Saugatucket River, and Saugatucket Pond. The selected remedy will ensure that certain plant life and terrestrial species continue to flourish once the cap is in place by providing appropriate plantings and seed mixes that will both protect the cap and also attract and maintain those inhabiting species.

**Comment A-18:** A comment notes that there are written references in the EPA Proposed Plan about harm coming to children and adult visitors to the Site and that it was not understood why people would “trespass” onto this privately owned property.

**EPA Response:** For the development of risk scenarios, the term “trespasser” or “visitor” is viewed as having the same meaning. The Human Health Risk Assessment based its estimation of risk from exposures to ambient air at the Solid Waste Area, assuming an adult Site visitor frequenting the site 4 hr/day, 150 days/year, for 30 years. While most visitors (or trespassers) to the Site may choose to avoid the Solid Waste Area, there are no protective measures in place that would prevent an individual from gaining access to the Solid waste Area and possibly being exposed to contamination. The exposure assumptions were based upon known occurrences of land use at the Solid Waste Area when sampling for the RI was conducted. Hunting dog training and exercising, use of the connecting foot path between the Solid and Bulky Waste Areas, and motorized travel onto the Solid Waste Area prior to the recent washout of the Mitchell Brook culvert, took place frequently. The Site is only partially fenced, allowing for reasonably unobstructed access to take place.

**Comment A-19:** A member of the public states that Alternative 2–Limited Action/Institutional Controls is a preferred choice.

**EPA Response:** EPA disagrees. Alternative 2 does not provide any appreciable measure of source reduction. Considering the magnitude of risk posed at the Site, the geographic extent of the ground water exceedances of water quality standards, and extent of landfill gas emissions, institutional controls and the contingency measures, by themselves, are inadequate to provide protectiveness at the Site over the long term. For these reasons, alternative 2 is not effective nor protective.

**Comment A-20:** A comment outlines the following concerns to EPA: 1) groundwater contamination, 2) effects (from the Site) on the pond in the local neighborhood and others in the area, 3) contamination of the River which is not addressed, 4) a plan for monitoring private wells which fall with the Site boundary, and 5) a desire to see some removal of contaminants from the Site.

**EPA Response:** Under this first operable unit approach, the sources of contamination will be controlled by consolidating and placing a protective cap over the wastes, which will reduce the

percolation and infiltration of precipitation through the wastes thus limiting any future migration of contaminants to groundwater. Groundwater that is impacted by Site contaminants exceeding health-based standards will be addressed through institutional controls. By selecting Alternative 4B, impacts to the River are being addressed by excavating and consolidating the Bulky Waste Area onto the Solid Waste Area, thereby removing a primary source of contamination to the River. Landfill gas and treatment controls will be implemented to capture and destroy contaminants that are posing an unacceptable risk to human health. Comprehensive monitoring will be implemented to obtain data to assess the effectiveness of the source control remedy, support a future decision document addressing groundwater and surface water, and assist the State with TMDL predictions for Site-related contaminant concentrations affecting local water bodies. Finally, EPA and RI Department of Health (DOH) strongly recommend that any resident concerned about the quality of drinking water drawn from a privately owned well have the water tested periodically and keep a record of these tests for future reference (see Comment A-21 below).

**Comment A-21:** A member of the public expresses concern about the author's drinking water well located less than a quarter mile south of the Site.

**EPA Response:** Figure 2-2 of the Final Feasibility Study, which can be found in Section 4 of the Administrative Record, generally delineated impacted areas studied during the Remedial Investigation. The areal extent of the ground water Preliminary Remediation Goal (PRG) exceedance is also shown. Based on the findings of the RI, site-derived contaminants are not expected to be found beyond the area depicted on this map. However, the selected remedy (Alternative 4B) calls for long-term monitoring of ground water. Under this strategy, further delineation of the ground water plume will be conducted and an additional network of monitoring wells will be established and sampled periodically to monitor the progress of the clean up and verify the areas impacted by the Site. If the long-term monitoring program shows appreciable changes to the size and/or concentration of the plume, further response actions will be taken to ensure protectiveness.

The writer is correct to be concerned about his private drinking water supply, if not with regard to contaminants coming from the Site, then from other potential sources of contamination that may be found in proximity to the private drinking well. Wherever located, if the drinking water does come from a private well, the land owner has primary responsibility for making sure the water derived from the well is safe to drink. While not so required by law, EPA and RI Department of Health (DOH) strongly recommend that any party with a private water well have his water tested periodically and that a record of these tests be kept for future reference. The DOH can recommend certified, local, commercial water testing labs and also offers water testing services for a fee. Sample bottles are available from the DOH lab in Providence or from the Cooperative Extension Education Center located at the University of RI in Kingston, RI. All completed samples must be taken to the lab in Providence. For more information on this program you may

call the DOH's Division of Drinking Water Quality at (401) 222-3336 or (401) 222-3436. For additional information on health effects, you may contact the Rhode Island Department of Health (DOH) at (401) 222-4948. For additional information regarding the Site's ground water, proposed monitoring or other questions related to the Site's clean up, you may contact Cynthia Gianfrancesco of the DEM's Office of Waste Management at (401) 222-2797, extension 7126, or David Newton, RPM, US Environmental Protection Agency at (617) 918-1243.

**Comment A-22:** A member of the public suggests that EPA should select photocatalytic treatment, (Alternative 3B) rather than the "burning process" (enclosed flare) outlined in Alternative 4A. The Comment is concerned with the release of carbon dioxide, the emissions of toxic compounds, and increased costs associated with the selection of Alternative 4A.

**EPA Response:** Although the chief combustion products from the enclosed flare are carbon dioxide and water, EPA is concerned with the emission of large quantities of methane, which will not be destroyed by the photocatalytic treatment system. In addition, the destruction removal efficiencies of toxic compounds for the enclosed flare and the photocatalytic treatment process are expected to be similar. Methane, itself a fuel source, will be used to supplement the fuel necessary for combustion using the enclosed flare technology. Therefore, EPA believes that the removal "of all but a fraction-of-a-percent of toxic compounds," as well as using, not venting, the methane, are key factors that outweigh the increased costs for the enclosed flare. Thus, the enclosed flare is preferred over the photocatalytic treatment technology.

**Comment A-23:** The comment notes that the selection of Alternative 4A is inadequate for managing the migration of contaminants in the vicinity of the Saugatucket River near the Bulky Waste Area and suggests that Alternative 4B be selected for a more permanent solution to the release of "rust-colored" leachate to the river.

**EPA Response:** EPA agrees with the comment and has selected Alternative 4B, which includes excavation of the Bulky Waste Area. Thus, leachate production in the Bulky Waste Area and along the east bank of the Saugatucket River will be greatly diminished due to the removal of the wastes from the immediate vicinity of the River. However, it should be noted that the first operable unit does not address management of the migration of contaminants from the Site, only the control of the sources of that contamination.

**Comment A-24:** A member of the public is concerned with potential groundwater contamination migrating under the Saugatucket River to residential wells and suggests that Alternative 5B (active groundwater treatment) be selected as the preferred alternative.

**EPA Response:** EPA is implementing a phased approach to groundwater. Under the first operable unit, a comprehensive monitoring program, including periodic groundwater sampling, will be conducted. Also, the risks that are posed by contaminated groundwater exceeding health-

based standards will be addressed through institutional controls. Management of the migration of contaminants from the Site with respect to their impact on groundwater and surface water will be based on data obtained from monitoring conducted under the first operable unit and any additional studies that are deemed necessary to further assess Site impacts, characterize the extent of contamination, and assess the need to develop and evaluate alternatives for future actions.

**Comment A-25:** A member of the public asked how long it would take this landfill to complete the cleaning process (that nature has started) if left alone. The landfill is not a health hazard now, a health hazard may be created by working on it, and, if the cleaning process is not significantly shortened by a significant amount of time, it's money wasted.

**EPA Response:** EPA disagrees with the comment that there are no human health risks posed at the Site. Groundwater, at the three landfill areas and at nearby residences, and air, at the Solid Waste Area (i.e., landfill gas) and nearby residences, present a Reasonable Maximum Exposure (RME) cancer risk that exceeds EPA's acceptable risk range. Under this operable unit response approach, the selected remedy addresses ground water risks through the use of institutional controls.

For the air pathway, risks posed from inhalation exceed EPA's acceptable risk range. The cumulative excess RME cancer risks posed by the inhalation of measured outdoor air concentrations at the Solid Waste Area and measured ambient air concentrations at the nearby residences are  $4.4 \times 10^{-4}$  and  $5 \times 10^{-4}$ , respectively. Using modeled concentrations, the cumulative excess RME cancer risks posed by the inhalation of ambient air at the Solid Waste Area and ambient/indoor air at the nearby residences are  $4.4 \times 10^{-4}$  and  $4.6 \times 10^{-4}$ , respectively. Using measured indoor air concentrations at 220 Rose Hill Road, the cumulative excess RME cancer risk posed by the inhalation of air is  $1.9 \times 10^{-3}$ . The non-carcinogenic hazards posed by the inhalation of measured and modeled ambient air concentrations at the nearby residences are both 12 times the EPA safe level, indicating that adverse blood effects are possible as a result of chronic exposure to benzene.

While leachate at the Rose Hill Site contains contaminants which do not pose a direct contact risk to human receptors and may be decreasing, the metals currently leaching from the Bulky Waste Area are having an impact on the environment. The ecological risk assessment indicates that risk to aquatic organisms may occur as a result of exposure to the chemicals of ecological concern in the surface water and leachate. The selected Alternative 4B involves excavating the waste from the Bulky Waste Area and consolidating this waste onto the Solid Waste Area. It is anticipated that leachate generation from the Bulky Waste Area will decrease substantially following the waste removal. It is also anticipated that leachate collection will be necessary during the excavation and that this effort, while necessary for the excavation operation, may also provide additional benefit to the immediately adjacent wetland and shallow overburden aquifer in terms of contaminant reduction.

The human health and ecological risk assessments identified unacceptable risks and actual or threatened releases of hazardous substances from this Site which, if not addressed by implementing the response action selected in this ROD, may present an imminent and substantial endangerment to public health, welfare, or the environment.

The selected remedy (Alternative 4B) is the preferred approach by which to mitigate or reduce these risks. This remedy was determined by the feasibility study to be implementable, cost effective, and protective of human health and the environment. The remedy will reduce the risks posed to human health and the environment by controlling exposures to human and environmental receptors through treatment, engineering controls and institutional controls.

Short-term risks during construction have also been evaluated in the Feasibility Study and summarized for each alternative in the ROD. For the selected remedy, short-term risks are posed by invasive work required for the excavation/consolidation work and remedial components such as the landfill gas controls, the protective cap, and leachate collection and management systems. These short-term risks can be mitigated by a variety of measures. Air sampling and monitoring will be used to evaluate any potential risks to the community. Engineering controls will be used to minimize invasive work and thereby mitigate potential risks from this exposure pathway. Workers will also wear appropriate Personnel Protective Equipment (PPE) to mitigate any potential risks from increased exposures at the Site.

**Comment A-27:** A junior girl scout leader who discussed the clean up plan with her scouts submitted a comment. A number of the scouts also passed along comments and submitted drawings depicting their concerns and thoughts. These are addressed immediately below. The leader's comment notes that the EPA plan seems adequate for the Site but that it may be limited insofar as it does not comprise surrounding areas. She hopes that the monitoring is adequate to determine if more needs to be done. The comment urges EPA to make certain that the cleanup goes far enough in protecting the lands and water bodies surrounding the landfill.

**EPA Response:** The Agency expresses its appreciation for the time spent and commitment shown by discussing this cleanup plan with the junior girl scouts and encourages continuation of this practice. Upon request, EPA can make available certain educational materials which may help with your endeavors. You may contact the Remedial Project Manager for this Site directly or call Sarah White, the EPA Community Involvement Coordinator at (617) 918-1026 for more information on what materials may be available.

After reviewing the information and comments received during the public comment period, EPA elected to revise its preference from alternative 3A to that of alternative 4B. The National Oil and Hazardous Substances Pollution Contingency Plan, 40 C.F.R. Part 300, allows EPA to re-evaluate its preferred remedy in response to new information and comments received during the public comment period. With the selection of Alternative 4B, EPA has initiated a phased approach to remediating the Site. As discussed in responses to comment A-1 and others above, a phased clean

up approach will be implemented to first control sources of contamination at the Site. Once the source control remedy is implemented, the management of the migration of contaminants from the Site with respect to their impact on groundwater and surface water will be based on data obtained from monitoring conducted under the first clean up phase and any additional studies that are deemed necessary to further assess Site impacts, characterize the extent of contamination, and assess the need to develop and evaluate alternatives for future actions.

**Comment A-28:** Four junior girl scouts from Troop 31 in South Kingstown, RI expressed their concerns for the Site in writing and in pictures. In sum, they each stress the need for a quick response due to chemical releases to the environment.

**EPA Response:** EPA concurs with their comments. With the writing of this Record of Decision, EPA is prepared to seek a binding agreement and obligation with those responsible and initiate the design and construction of the remedy. Once the agreements with the parties are reached, EPA anticipates approximately one year to design and two years to construct the remedy. Once constructed, the remedy will be monitored over time to ensure that the remedy is protective of human health and environment.

EPA is appreciative of the junior girl scouts' art work and has chosen two examples for the cover of this Responsiveness Summary note the Site's ecological setting and future outcomes. As with all comments received, these are included in EPA's Administrative Record for the Site. A copy is located at the designated Site Repository in the South Kingstown Public Library.

**Comment A-29:** A meteorologist and air monitoring professional requested that EPA consider use of open-path fourier transform infra-red technology (op-FTIR) for purposes of monitoring air emissions to protect workers and the community during implementation or construction of the preferred alternative.

**EPA Response:** The preferred alternative includes a generalized approach for air monitoring but leaves the specifics of its means and methods to be determined during the remedial design phase. Air monitoring work plans will be developed by the Potentially Responsible Parties and reviewed and approved by EPA/RIDEM prior to the start of work. In initiating the design for the first operable unit, EPA will encourage the design engineer to consider and evaluate appropriate air monitoring technologies, which may include op-FTIR technology.

## **B. Towns of South Kingstown and Narragansett Comments**

The Towns of South Kingstown and Narragansett (the Towns) are identified as Potentially Responsible Parties (PRPs) based on the Towns' having co-operated the Site as a regional municipal solid waste facility. Because the Site is located within South Kingstown, the Town of South Kingstown also has certain jurisdictional and community service powers. The Towns have

worked cooperatively with one another and with EPA and RIDEM throughout the RI/FS process. Stephen Alfred, Town Manager for South Kingstown, offered oral comments on behalf of the two Towns at the public hearing and, on April 30, 1999, EPA received a joint letter of comment from the Towns. Mr. Alfred's remarks and the Towns' comments are summarized and a response to each is provided below.

**Comment B-1:** In his oral remarks at the public meeting, Mr. Alfred requested that Natural Resource Damage claims be resolved as a component of the remedy selected by EPA.

**EPA Response:** Since EPA is not a natural resource damage trustee, resolving natural resource damage claims is not within its authority, and the Feasibility Study and Record of Decision are not the appropriate vehicles for addressing those claims. Resolution of natural resource damage claims is pursued through enforcement actions. Where comments suggest that the selected remedy is not sufficiently protective of the environment, EPA responded to those comments through modification of the selected remedy, as discussed above. Some of the remediation activities, specifically, the excavation and consolidation of the Bulky Waste Area, will address a portion of the natural resource damage that has occurred by removing materials that may have contributed to the damage.

**Comment B-2:** In his oral comments at the public meeting, Mr. Alfred asked that EPA consider the inclusion of institutional controls, including groundwater reclassification and implementation of the Environmental Land Usage Restrictions, in the drafting of the Record of Decision. In a letter dated April 30, 1999, Mr. Alfred stated that all property designated a "Superfund Site" in the Town will have been re-zoned as of May 10, 1999 as "Governmental/Institutional" property, where residential uses are prohibited. Based on this zoning classification and other possible institutional controls, Mr. Alfred requested that EPA's Human Health Risk Assessment be modified in accordance with EPA's guidance document, "Land Use in the CERCLA Remedy Selection Process," Directive No. 9355.7-04 (May 1995).

**EPA Response:** The proposed plan included the possible future utilization of such institutional controls as easements and covenants to restrict access to the Site and to prevent the future use, contact or exposure to, or hydraulic alteration of, contaminated groundwater. The selected remedy uses a combination of consolidation, capping of wastes, collecting and treating of landfill gases, and institutional controls to prevent or minimize the continued release of hazardous substances from the Site. Groundwater and the risks posed by contaminants in groundwater will be further assessed and addressed in a future decision document. Based on the findings of the RI, EPA acknowledges that the cumulative excess RME cancer risk posed by present and potential future ingestion of groundwater as a drinking water source is outside EPA's acceptable risk range for Site related exposures. Institutional controls will be used as part of the first operable unit remedy to supplement engineering controls, as appropriate, to prevent exposure to hazardous substances. This broad category of institutional controls may include the Town's recommendations of

implementing ELURs, such as changes in zoning. However, considering the magnitude of risk posed at the Site and the geographic extent of the ground water exceedances of water quality standards, institutional controls by themselves are inadequate to provide protectiveness at the Site over the long term. As part of the work to be implemented at the Site during Remedial Design, EPA will review and consider these and other such controls to be implemented at the Site to ensure protectiveness over the long term.

**Comment B-3:** In both his letter dated April 30, 1999 and oral comments at the public meeting, Mr. Alfred requested that EPA consider the liability of other PRPs at the Site and settle municipal liability under the Municipal Settlement Policy.

**EPA Response:** Discussion of how the liability of a potentially liable party will be resolved at this Site is not a proper subject for this response to public comments, which address only the appropriateness of the remedy selected by EPA for the Site. Issues relating to the municipalities' and other parties' liability for cleaning up the Site will be addressed in the context of private negotiations between those parties and EPA.

**Comment B-4:** The Town of South Kingstown is concerned that the computer models, exposure assumptions, and limited field measurements used in the risk assessment may be overestimating human health and environmental risk.

**EPA Response:** EPA does not believe that the risks presented for the Rose Hill Site are overestimations. It should be noted that the human health risk assessment conducted for the Site was a baseline evaluation. This means that the risk assessment evaluated all current and potential future exposure pathways, assuming no measures to clean up the Site are taken. Due to uncertainties inherent in the risk assessment process, health risks calculated in a risk assessment should be viewed as estimates that may over- or under-predict actual human health risk. The selection of certain exposure assumptions may tend to result in an overestimate of risk while the use of non-representative or limited data may result in an underestimate of risk.

The exposure assumptions used in the risk assessment were selected to represent then-current (1994) exposures and best predict potential future exposures. Even though, in general, our society may be increasingly mobile and transient, the sub-population living in the vicinity of the Site does not appear to follow the national trend. Therefore, the exposure assumptions used may be more appropriate than they appear.

The measured indoor air concentrations at the former 220 Rose Hill Road residence were evaluated in the risk assessment to assess worst-case future residential risks in the vicinity of the Site. Newer construction may include a concrete foundation or slab-on-grade construction. However, the presence of features allowing preferential migration pathways (e.g., sump pumps, foundation cracks, sub-grade utility and conduit connections) could result in elevated migration of

volatile compounds to indoor air at nearby residences. The evaluation of the 220 Rose Hill Road indoor air data allowed for the estimation of an upper bound risk for the residential indoor air pathway.

In general, it is EPA's policy to evaluate all groundwater as a potential source of potable water. At the time the risk assessment was performed, many private drinking water wells existed in the vicinity of the Site. To date, not all private wells in the vicinity of the Site have been decommissioned. The risk estimates in the risk assessment were developed assuming use of groundwater as a future drinking water source in the absence of remediation.

Not all of the bulleted uncertainties should be considered conservative, resulting in an overestimate of risk. The limited availability of sampling data may, in fact, have resulted in an underestimate of risk. The use of ambient air data to represent indoor air concentrations also likely underestimates risk since volatiles tend to concentrate in indoor air due to limited dilution and dispersion. The air transport model did not include the subsurface vapor migration pathway which, if significant, would result in an underestimate of risk. No risk assessment methodology allows for the determination of actual risks at a site. Risk assessment should be viewed as a tool, in conjunction with site characterization and risk management, to assist in making remedial decisions at a site.

**Comment B-5:** The Towns are concerned that there is historical evidence that a stump dump existed on the west side of Rose Hill Road and that this has never been factored into EPA's studies. The Town of South Kingstown is also concerned that EPA never responded to the Town's request to investigate the stump dump as a possible source of methane.

**EPA Response:** It is EPA's position that certain investigations relating to the stump dump and the concern for methane found across Rose Hill Road to the west did indeed take place as part of the combined Removal and RI field work conducted at the Site. Temporary and permanent soil gas points were measured for VOCs and methane in the vicinity of the stump dump area monthly from December 1991 through the spring of 1992. This information, presented in Figures 4-38, 4-39, 4-40, 4-41 and 4-42 of the Remedial Investigation, illustrates that the highest VOC and methane concentrations in the vicinity of the stump dump are closest to the Solid Waste Area and decrease to zero as one proceeds west of Rose Hill Road. Therefore, it was concluded that the stump dump only provides a better pathway for methane and volatile contaminants to migrate due to the loosely compacted materials such as rock, soil, and bituminous concrete aggregate observed at this location. The Remedial Investigation did not document the presence of sufficient volumes of carbon-based material to have significantly contributed to the methane concentrations measured during the RI.

Starting in the fall of 1998, the Town of South Kingstown employed Goldberg, Zoino and Associates, Inc. (GZA) to provide technical assistance and limited environmental field work and

assessments to the Town regarding the Rose Hill Regional Landfill. GZA produced a report entitled, "Rose Hill Landfill Feasibility Study" (April 1999)(the GZA Report), which is referenced in Mr. Alfred's letter comment letter to EPA. The following provides responses to specific technical information provided in the GZA report.

**Comment B-5: (referring to the GZA Report, 4/99, Page 2 of 29, bullet 2)** This comment describes results of the Rose Hill Site Investigation Report of February 1999, also prepared by GZA for the Town of South Kingstown, relating to decreased methane generation rates in the Solid Waste Landfill.

**EPA Response:** The conclusion that there has been a decrease in landfill gas (LFG) generation in one area of the landfill should be reevaluated. In general, this conclusion can only be reached after reviewing operating data from an active landfill gas extraction system rather than static grab sample data. All but one of the GZA locations presented in the February 1999 report showed similar results to those of the Final Remedial Investigation Report of May 1994. Four out of the remaining five actually had increases in methane concentrations. The fifth was lower by only 6.7% (48% versus 41.3%). One single sampling location apparently went from 50.7% to 0.0% when the others either stayed similar or increased. The reported oxygen concentration of 19.8% (up from 1.1% in the RI) suggests that the sample analyzed may have been only air and not representative of the actual LFG in that area.

**Comment B-6: (referring to the GZA Report, 4/99, Page 2 of 29, last paragraph)** The author suggests that the human health risk may be overestimated based upon current EPA guidance.

**EPA Response:** The human health risk assessment for the Site was completed in 1994 using EPA guidance current at the time. The intent of the supplemental risk assessment (M&E, 1998) was to update the 1994 risk assessment to include more recent air data and toxicity value information. Neither the approach nor the assumptions used in the 1994 evaluation were altered, as clearly stated in the supplemental human health risk assessment. The more recent EPA guidance (August 1994) was released after the finalization of the Final RI Report in May 1994. However, it is unlikely that the use of the August 1994 guidance would have significantly altered the conclusions of the risk assessment since, for most exposure scenarios, the maximum detected concentration would have been used for the RME scenario rather than the 95% UCL due to the small size of the data set. For small data sets, the 95% UCL typically exceeds the maximum detected concentration. Inherent in the risk assessment process are a number of uncertainties, some of which underestimate risk and some of which overestimate risk, and these are described in further detail in the risk assessment documentation. It is impossible to state with certainty whether, overall, human health risk has been over- or under-estimated.

**Comment B-7: (referring to the GZA Report 4/99, Page 3 of 29, paragraph 3)** It is stated that the Final FS Report of November 1998 is "too prescriptive." It is suggested that the Record of Decision "establish performance criteria rather than mandating specifics of a technology" to allow for "advances in technologies" during design.

**EPA Response:** EPA agrees that establishing performance criteria in the ROD is a good method to allow flexibility with design options. However, the FS is designed to screen and evaluate a wide variety of technologies in accordance with CERCLA FS guidance. Of the options available during report preparation, those determined to be the most feasible are evaluated. EPA notes that an appropriate mix of technologies was evaluated during the FS. While new technology options may be developed following the FS release and prior to remedy implementation, these too must undergo evaluation in a manner equal to what was performed in the FS to show that they are equivalent to or better than the technologies evaluated in the FS. If such a technology were identified during the course of design which was 1) appropriately screened and evaluated in accordance with CERCLA FS guidance and the nine criteria, and 2) shown to be equally preferable to or more beneficial than the technologies outlined in the FS, the Superfund process allows the ROD to be modified, subject to public review and comment, to accommodate such a circumstance.

**Comment B-8: (referring to the GZA Report 4/99, Page 4 of 29, paragraphs 1 & 2)** The comment states the belief that unreasonable exposure assumptions were used in the human health risk assessment for the Site in May 1994 as part of the Final RI Report and suggests the use of updated EPA August 1994 risk guidance to evaluate human health risk at the Site.

**EPA Response:** See response to Comment B-6.

**Comment B-9: (referring to the GZA Report 4/99, Page 5 of 29, paragraphs 1 & 2)** The comment expresses concern that the selection of exposure factors for the Solid Waste Area may be too conservative.

**EPA Response:** While most visitors are unlikely to travel beyond the perimeter of the Solid Waste Area, there is no protective measure in place to prevent anyone from going further. The exposure assumptions were based upon known occurrences of land use at the Solid Waste Area. This was not an overestimation when sampling for the RI was conducted. Hunting dog training and exercising, use of the connecting foot path between the Solid and Bulky Waste Areas, and motorized travel onto the Solid Waste Area took place frequently. The Site is only partially fenced, allowing reasonably unobstructed access to take place. Therefore, exposure assumptions are based on reasonable factors supporting this risk scenario and were selected to evaluate exposures known to occur at the time of the risk assessment. EPA is not convinced that those factors have changed appreciably since the writing of the risk assessment.

**Comment B-10: (referring to the GZA Report 4/99, Page 5 of 29, paragraph 3)** The author was concerned that conservative assumptions were used to calculate air risk to human health.

**EPA Response:** Not all of the bulleted uncertainties should be considered conservative, i.e., resulting in an overestimate of risk. The limited availability of sampling data may, in fact, have resulted in an underestimate of risk. In addition, the use of ambient air data to represent indoor air concentrations likely underestimates risk since volatiles tend to concentrate in indoor air due to limited dilution and dispersion. The air transport model did not include the subsurface vapor migration pathway which, if significant, would result in higher off-site ambient concentrations than predicted and also would have resulted in an underestimate of risk. (See also response to Comment B-4.)

**Comment B-11: (referring to the GZA Report 4/99, Page 6 of 29, bullet 1)** Since the modeled ambient air concentrations and associated risks were 10 times lower than measured data, the author suspects a problem with the model or the ambient air testing.

**EPA Response:** M&E used modeled data beginning with soil gas data rather than actual samples at receptor locations. The air transport model used included only overland migration pathways. The contribution of any subsurface volatile migration pathways was not included. If the subsurface migration pathway is significant at the Site, measured off-site concentrations would be expected to be higher than modeled concentrations.

**Comment B-12: (referring to the GZA Report 4/99, Page 6 of 29, bullet 2)** The author suggests that the inhalation exposure assumptions for a resident be revised in accordance with EPA's Revised Exposure Factors Handbook (EPA, August 1997).

**EPA Response:** The human health risk assessment was completed in May 1994 using current EPA guidance. The approach and assumptions used in the risk assessment have not been updated to reflect EPA guidance published more recently than May 1994. However, based on information provided by local residents near the Site, the exposure assumptions are representative of actual inhalation exposures occurring near the Site.

**Comment B-13: (referring to the GZA Report 4/99, Page 6 of 29, paragraph 2)** The author is concerned with the use of the former (demolished) residence at 220 Rose Hill Road for the evaluation of "potential future" residential risks associated with inhalation of contaminants in indoor air.

**EPA Response:** The measured indoor air concentrations at the former 220 Rose Hill Road residence were utilized in the risk assessment to assess worst-case future residential risks. Even though it is likely that new construction would include a concrete foundation or slab-on-grade construction, the presence of features allowing for preferential migration pathways (e.g., sump

pumps, sub-slab utilities and conduit connections, and foundation cracks) may result in elevated migration of volatile compounds to indoor air.

**Comment B-14: (referring to the GZA Report 4/99, Page 6 of 29, paragraph 3)** The author is concerned that the groundwater beneath the Site was evaluated for drinking purposes, although “use of on-site groundwater is unlikely.”

**EPA Response:** In general, it is the policy of EPA to evaluate all groundwater as a potential source of potable water. At the present time, and at the time the risk assessment was performed, private drinking water wells exist in the vicinity of the Site. To date, not all private wells in the vicinity of the Site have been decommissioned. The drinking water ingestion pathway was evaluated using EPA guidance which rely on current designations of groundwater. Contaminant concentrations in groundwater exceeding primary drinking water standards are known to exist beyond the footprint of the disposal areas. Information was gathered on the current and future potential use of groundwater in the vicinity of the Site. (See Section VI of the ROD for further detail.) EPA notes that its remediation plans for this Site are consistent with both the federal and state classifications for use and value of the groundwater aquifer.

**Comment B-15: (referring to the GZA Report 4/99, Page 6 of 29, last paragraph)** The author believes that a new risk assessment should be prepared which evaluates both central tendency and RME exposures for key scenarios. The author also believes that this new risk assessment would permit better evaluation of the appropriate remedial actions for the Site.

**EPA Response:** Remedial decisions are based on RME risk estimates. It is unlikely that reevaluation of site risks would result in a significant reduction in the RME risk estimates since RME exposure assumptions and exposure point concentrations for the air pathway would be similar to those used in the 1994 risk assessment. If a central tendency scenario were to be included, a decrease in risk estimates would be likely. However, the central tendency risk estimates are not used by EPA for remedial decision making.

**Comment B-16: (referring to the GZA Report 4/99, Page 8 of 29, paragraph 2)** The author is concerned that combining the perimeter gas with the internal gas stream will contribute to the need for supplemental fuel.

**EPA Response:** EPA acknowledges the potential cost impact mentioned by the author. However, contaminants of concern (volatile organics) in the migrating perimeter gas dictate treatment to address human health risks and to address remedial action objectives. An in-depth analysis of this issue is warranted as part of the remedial design phase in order to minimize treatment costs. In the Final FS Report of November 1998, the perimeter gas stream was to be kept separate and used as "combustion air" in the enclosed flare. The interior gas stream requires supplemental fuel due to the low volume of LFG being generated.

**Comment B-17: (referring to the GZA Report 4/99, Page 8 of 29, paragraph 5)** The author questions the stump dump east of Rose Hill Road as a source of methane.

**EPA Response:** Temporary and permanent soil gas points were measured for VOCs and methane in the vicinity of the stump dump area monthly from December 1991 through the spring of 1992. This information, presented in Figures 4-38, 4-39, 4-40, 4-41 and 4-42 of the RI, illustrates that the highest VOC and methane concentrations in the vicinity of the stump dump are closest to the Solid Waste landfill and decrease to zero as one proceeds east of Rose Hill Road. Therefore, it was concluded that the stump dump only provides a better pathway for methane and volatile contaminants to migrate due to the loosely compacted materials such as rock, soil, and bituminous concrete aggregate present at this location. The Remedial Investigation did not document the presence of sufficient volumes of carbon-based material to have significantly contributed to the methane concentrations measured during the RI.

**Comment B-18: (referring to the GZA Report 4/99, Page 8 of 29, paragraph 6)** The author did not find the groundwater contour maps of the Site and suggested the preparation of such maps during long-term monitoring.

**EPA Response:** The Final RI Report of May 1994, Volume III contains large maps for the shallow overburden, deep overburden and bedrock aquifers (Plates 2, 3, and 4). The RI also discusses wet and dry weather conditions. The Administrative Record contains the RI report in its entirety. For further assistance, the author may contact the EPA-NE Record Center (phone number: 1-617-918-1440) located at 1 Congress Street, Suite 1100, Boston MA, 02114-2023. As a component of the long-term monitoring plan and implementation of this plan, contaminant concentration maps and ground water contour maps would be expected to be drafted, refined, and used as one of the many presentation and reporting tools required for demonstrating cleanup progress and compliance.

**Comment B-19: (referring to the GZA Report 4/99, Page 8 of 29, paragraph 7)** The author is concerned that detailed topographic data was not presented in the Final FS Report, which may affect cap design and construction.

**EPA Response:** Comment noted. The RI/FS does not require the topographic detail that is required for design and construction. A detailed topographic survey of the Site will be required as part of the remedial design phase and would be performed by the Site design engineer. Final "as-built" surveys will also be required. The estimated costs in the FS are based on many assumptions regarding topography and, in accordance with EPA guidance, have an accuracy of +50% to -30%. These costs are for relative comparison purposes only. More accurate design cost information and topographic detail will be developed during the design and construction phase of the remedial action.

**Comment B-20: (referring to the GZA Report 4/99, Page 9 of 29, paragraph 1)** The author notes that a perimeter landfill gas collection system may not be necessary since perched water within the Solid Waste Area may be acting like a horizontal containment, thereby causing lateral landfill gas migration.

**EPA Response.** Elimination of the perimeter landfill gas migration control component of the preferred alternative is not possible at this point in the process. Data in the Final RI Report of May 1994 documented elevated levels of methane in offsite soil gas from migrating landfill gas. While we acknowledge that the presence of perched water could exacerbate the existing gas migration problem, there is a lack of data to support the author's theory that elimination of the perched water problem alone would solve the migration problem. The landfill gas migration measured during the RI exceeds ARAR standards and poses a human health risk. The preferred alternative appropriately provides for a direct remedial action (e.g. installation of an active perimeter system) as a means to mitigate this situation and to meet the required objectives.

**Comment B-21: (referring to the GZA Report 4/99, Page 9 of 29, paragraph 3)** The author stated that MCLs and MCLGs will not be relevant and appropriate for the GB buffer area.

**EPA Response:** While establishment of a GB buffer zone around the waste areas would affect the need for and extent of future groundwater remediation, there has been no apparent progress in establishing this buffer zone. Further, it is not known if such a buffer zone would cover the entire extent of impacted groundwater as identified in the RI/FS and depicted on Figure 2-2 of the FS. However, such determinations could be made after the issuance of the ROD and finalized as a part of the overall institutional control implementation process for the first operable unit. Groundwater monitoring and the assessment of monitoring data with respect to MCLs and MCLGs will be used to determine the need for establishing a buffer zone under State regulations, and/or further actions concerning groundwater.

**Comment B-22: (referring to the GZA Report 4/99, Page 11 of 29, paragraph 4)** The author stated that since there is no documentation the Solid Waste Area or Bulky Waste Area received hazardous waste, only a RCRA Subtitle D or RIDEM cap will be required.

**EPA Response:** EPA disagrees that there is no documentation which indicates the disposal of hazardous waste at the Rose Hill Site. The term "hazardous waste" is defined by Section 1004(5) of RCRA as a solid waste or combination of solid wastes which, because of its quantity, concentration, or physical, chemical, or infectious characteristics, may (a) cause or significantly contribute to an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; or (b) pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, disposed of, or otherwise managed. The RI determined that conditions at the Site support a finding that hazardous waste was disposed of at the Site. Sampling conducted at the Site indicated that RCRA characteristic hazardous waste

exists at the Site. Further, in accordance with Section 103(c) of CERCLA, Peacedale Processing notified EPA of a known waste handling problem concerning the disposal of certain liquid waste, specifically, a urethane adhesive, from the Peacedale Processing Company. This adhesive was investigated and found to contain hazardous substances including, but not limited to, trichloroethylene, toluene, dimethyl formamide and tetrachloroethylene. Other hazardous substances which are contaminants of concern were also found at the Site. Therefore, EPA believes that there is sufficient evidence to support a finding that hazardous wastes and wastes containing hazardous substances were co-disposed with municipal solid waste at the Site. These wastes contain contaminants of concern that have been found to pose a significant present and potential future threat to human health and the environment. As discussed in our response to Comment A-11, the standards set forth in the RI Hazardous Waste Management Regulations apply to hazardous wastes and hazardous substances remaining at the Site after the remedial action is completed. Therefore, the cap will be designed and constructed to meet state hazardous waste landfill closure requirements.

**Comment B-23: (referring to the GZA Report 4/99, Page 12 of 29, paragraph 5 and Page 13 of 29, paragraph 1)** The author asked why the slope stability analysis in Appendix B-4 and the HELP model evaluation presented in Appendix C-1 of the Final FS Report of November 1998 do not match the composition of the cap as presented in the text on page 3-7 of the Final FS Report .

**EPA Response:** Comment noted. The slope stability analysis included in Appendix B-4 of the Final FS was drawn from an earlier capping scenario presented in the Draft FS (1994). Future capping scenarios did not contain assumptions which varied significantly from the earlier scenario, so further slope stability evaluations were not performed. It is expected that slope stability analysis will be performed during the actual design phase.

While much of the HELP model evaluation presented in Appendix C-1 of the Final FS Report, November 1998 is based on older capping scenarios (from earlier versions of the FS), the first four pages cover evaluation of the most current protective capping scenario.

**Comment B-24: (referring to the GZA Report 4/99, Page 13 of 29, paragraph 4)** The author questions the need for a fence around the Solid Waste and Bulky Waste Areas.

**EPA Response:** A fence around the waste cells is included in order to comply with ARARs. Institutional control strategies, when fully implemented in accordance with the ROD and in combination with other remedy components, may allow for a modification or revision to the amount of fence required to comply with ARARs. For costing purposes, it was simply assumed to be the cumulative diameter of the two waste areas.

**Comment B-25: (referring to the GZA Report 4/99, Page 15 of 29, paragraph 3)** The author asks for the basis of the statement, "Active perimeter systems were found to be the most feasible

based in M&E's prior evaluation of landfill gas migration barrier systems."

**EPA Response:** Use of a perimeter barrier to control LFG migration was previously evaluated in *Evaluation of Landfill Gas Migration Barrier Systems For Removal Action, Rose Hill Regional Landfill Superfund Site, South Kingstown, Rhode Island, May 1993*. The active perimeter system was found to be the better option at the Rose Hill Site. This report is part of the Site Administrative Record. In general, EPA agrees that additional design testing is required before any appropriate LFG collection and treatment system can be constructed. Systems presented in the Final FS Report of November 1998 were used for comparative analysis and should not be considered as complete and final for the purpose of RD/RA.

**Comment B-26: (referring to the GZA Report 4/99, Pages 14 through 17 of 29)** The author has made several technical comments related to conceptual sizing and other design criteria with respect to a wide range of remedial technologies/process options described in the Final FS report of November 1998.

**EPA Response.** EPA acknowledges the value of the specific, technical comments by GZA, which will be considered during the remedial design phase for the selected remedy. None of the comments, however, affects the ultimate feasibility of remedial technologies/process options included as part of the preferred alternative.

**Comment B-27: (referring to the GZA Report 4/99, Page 18 of 29, Bullet #1)** The author discusses the potential to control off-site landfill gas migration using a combination of passive perimeter barriers in conjunction with the active internal gas collection system. The passive perimeter barriers would be utilized in place of the active, perimeter gas control system included in the preferred alternative.

**EPA Response.** EPA acknowledges the potential for cost savings with the author's alternative approach. However, protection of human health from immediate explosion hazards associated with subsurface methane and compliance with regulatory requirements for minimizing off-site landfill gas migration is a necessity for the selected remedy. Substantial off-site migration of subsurface methane was clearly demonstrated in the Final RI Report of May 1994. In addition, it is expected that excavation and consolidation of Bulky Waste Area refuse at the Solid Waste Area will increase landfill gas production from current levels and exacerbate the off-site landfill gas migration problem. EPA will continue to require an active perimeter gas control system as the best demonstrated remedial technology to control and minimize the gas migration hazards to off-Site residents. As landfill gas production declines over time, the operation of the perimeter system may be modified if engineering studies and field testing demonstrate continued protectiveness and effectiveness.

**Comment B-28: (referring to the GZA Report 4/99, Page 18 of 29, Bullet #2, Appendix E-1)**

The author discusses the use of alternative parameter values other than the regulatory default values for calculating landfill gas production rates from the Solid Waste Area. The author discusses using more appropriate "regional" parameter values for calculating landfill gas production rates from the Solid Waste Area, which would result in lower rates than those used in the Final FS Report of November 1998.

**EPA Response.** Deviation from the regulatory "default" values for landfill gas production should be supported by comprehensive regional or site-specific field studies. Such studies or field investigations may be undertaken as part of the remedial design phase. In the absence of such studies, the regulatory "default" values were used to estimate landfill gas production in the Final FS Report of November 1998. EPA notes that the author did not discuss the potential for increased landfill gas production from the Solid Waste Area as a result of excavation and placement of refuse from the Bulky Waste Area. Recent investigations have determined that refuse from the Bulky Waste Area includes a significant portion of putrescible wastes that would generate landfill gas. Consolidation of Bulky Waste Area refuse at the Solid Waste Area may cause more landfill gas production than calculated in the Final FS Report of November 1998. EPA's preferred alternative includes an active landfill gas collection and treatment system to address this possibility.

**Comment B-29: (referring to the GZA Report 4/99, Pages 18 through 21 of 29, 3.32.2 Cost Issues)** The author has provided an assessment and check of costs associated with various remedial technologies /process options presented in the Final FS Report of November 1998.

**EPA Response.** The author has provided an estimate of costs for the various remedial technologies on a preliminary, remedial design level-of-accuracy. EPA acknowledges the value of these comments in calculating accurate cost estimates for future remedial design and remedial action phases. In general, however, the cost checks discussed by the author confirm the accuracy (+50% to -30%) required by EPA guidance of the costs contained in the Final FS Report of November 1998.

**Comment B-30: (referring to the GZA Report 4/99, Pages 21 through 25 of 29, 3.33 Bulky Waste Area Landfill Mining/Consolidation)** The author has provided a critique of technical and cost issues discussed in the final FS Report of November 1998 with regard to the feasibility of Bulky Waste Area landfill mining/consolidation.

**EPA Response.** The new preferred alternative includes excavation and consolidation of the Bulky Waste Area refuse at the Solid Waste Area. This addresses the author's overall concerns to consider this remedial technology/process option as a feasible part of the preferred alternative.

**Comment B-31: (referring to the GZA Report 4/99, Pages 25 through 29 of 29, 4.00 Remedial Alternative Evaluation)** The author has provided a critique of the preferred alternative with regard to technical effectiveness, implementability and cost.

**EPA Response.** Comments with regard to the alternatives evaluation are noted. It should be emphasized that the new preferred alternative is Alternative 4B, which addresses the author's overall concerns with regard to the selected remedy.

### **C. State Comments**

Warren Angell, Supervisory Engineer for the Office of Waste Management, Rhode Island Department of Environmental Management (RIDEM), provided oral and written comments at the public hearing on behalf of the Department. RIDEM later submitted more detailed comments in correspondence dated February 18, 1999 and April 5, 1999. RIDEM's comments and EPA's responses are summarized below.

**Comment C-1:** In its February 18, 1999 letter, RIDEM states that the proposed remedy is not protective of the environment and fails to adequately address ongoing damage to natural resources, specifically, the Saugatucket River, caused by the Site.

**EPA Response:** To address the concern, expressed by RIDEM and others, about iron contamination of surface waters at the Site, EPA has selected alternative 4B, including a phased clean up approach. This source control remedy includes excavation and consolidation of the Bulky Waste Area onto the Solid waste Area to reduce contaminant migration via leachate to surface waters and sediments of Mitchell Brook in order to improve State water quality and designated uses, including aquatic life support. A future decision document will address the management of migration of Site contaminants to groundwater and surface water. Instituting a well designed source control remedy at the present time will minimize the migration of contaminants to groundwater, thereby leading to a more cost effective and potentially less extensive management of migration remedy in the future.

**Comment C-2:** RIDEM states that the future use scenario described in the FS should include the ELURs and groundwater reclassification that will prevent any future use of site groundwater as a drinking water source.

**EPA Response:** EPA generally concurs. The selected remedy requires the use of institutional controls, including those for groundwater. As stated in comment response B-2 above, EPA will review and consider these and other such controls to be implemented at the Site to ensure protectiveness over the long term.

**Comment C-3:** RIDEM states that RI Air Pollution Control Regulation No. 17–Odors (“Odor Regulation”) should be included as an ARAR because it has been included at other sites in RI.

**EPA Response:** EPA’s position on the regulation governing odors is that it does not constitute a “promulgated standard, requirement, criteria or limitation under a State environmental or facility siting law,” that would thereby apply to any hazardous substance, pollutant or contaminant remaining on Site, as required by CERCLA § 121(d)(2)(A)(ii). However, although not an ARAR pursuant to CERCLA § 121(d)(2)(A)(ii), the RI Odor regulation would nonetheless be applicable to any work performed at the Site, as with other construction sites in the State.

**Comment C-4:** RIDEM states that the RI Rules and Regulations for the Investigation and Remediation of Hazardous Material Releases (“Remediation Regulations”) are ARARs and should be complied with at Superfund sites, despite Rule 4.02 which states, “Sites listed on the National Priorities List shall comply with the requirements of the National Contingency Plan (40 C.F.R. Part 300) in lieu of these regulations.”

**EPA Response:** Since the Remediation Regulations are primarily procedural, not substantive, in nature, they do not meet the definition of ARARs set out in Section 121(d)(2)(A)(ii) of CERCLA. The Site will comply with the requirements of the National Contingency Plan. Furthermore, since the remedial action is a source control remedy, the clean up standards set forth in the substantive portions of the Remediation Regulations are not relevant. Instead, the remedy will meet the performance standards set out in the ROD.

**Comment C-5:** RIDEM does not consider active treatment of the landfill gas to be necessary to protect human health. A phased approach is suggested to collect the gas and test it to determine the need for landfill gas treatment.

**EPA Response:** The human health risk assessment shows that there is risk from the Solid Waste Area landfill gas. Appendix F of the Final FS Report of November 1998 contains area source modeling from this assessment showing impacts above Preliminary Risk Goals (PRGs) between 0.9 and 2.5 miles from a point just east of the Solid Waste Area. The remedial action objectives (RAOs - Table 2-7) are to prevent inhalation of Site-related contaminants. The screening of technologies (Table 2-15) resulted in treatment as the effective general response method to meet the RAOs.

Section 4.3b.1.1 of the Final Feasibility Report discusses results of dispersion modeling for treatment of landfill gas using a non-combustion technology. This method of treatment provides minimal lift out of a stack since heat is not being added to the gas. The exiting gas would perform (disperse) similar to gas which is simply vented without treatment. Results presented in both Section 4.3.b.1.1 and Appendix F show that PRGs are met in this case through use of a 30-foot stack and a vinyl chloride destruction removal efficiency of 98%. Without treatment of the landfill gas, human health cancer risk would still exist.

**Comment C-6:** The comment noted, based on information provided in the RI/FS report, that placement of a cap over the Solid Waste Area will prevent infiltration of precipitation but will also lower the water table to a level below the vertical limits of waste. The comment further stated that the cap, combined with landfill gas treatment, is expected to improve water quality of Mitchell Brook and the Saugatucket River and adequately address ecological impacts.

**EPA Response.** Placement of the cap over the Solid Waste Area will reduce infiltration of precipitation and is ultimately expected to lower the water table to some degree. However, at this point in the remediation process, it is not clear if the water table will be lowered to a point below the vertical extent of waste. In the absence of direct investigative work on this issue (e.g. no borings, wells or piezometers were installed directly within the Solid Waste Area for water level purposes), the Final FS Report of November 1998 has incorporated theoretical estimates with regard to current water table elevations. These elevations are expected to be confirmed during the remedial design process. Because of uncertainty as to how fast the landfill will be dewatered, changes in water levels after the cap is installed can best be determined by post-cap investigations and periodic monitoring rather than by current projections. The selected remedy includes a monitoring program which incorporates water level measurements over time in the Solid Waste Area. This monitoring program will also measure changes in water quality in Mitchell Brook and the Saugatucket River and confirm progress toward meeting the remedial action objectives set forth in the ROD.

**Comment C-7:** The Department is concerned that capping the Bulky Waste Area will not effectively reduce the amount of leachate discharge to the Saugatucket River.

**EPA Response :** Comment noted. However, EPA's preferred alternative has been changed to Alternative 4B. The Bulky Waste Area will be excavated and consolidated in the Solid Waste Area.

**Comment C-8:** The Department is concerned that the proposed alternative for the Bulky Waste Area will result in continued leachate generation and ecological impacts upon the Saugatucket River.

**EPA Response:** EPA's preferred alternative has been changed to Alternative 4B, including excavation and consolidation of the Bulky Waste Area at the Solid Waste Area. Alternative 4B is therefore expected to significantly reduce the generation of leachate produced from the Bulky Waste Area landfill.

**Comment C-9:** The Department is concerned that the proposed alternative (Alternative 3A, as presented in the Proposed Plan) will result in higher costs for future remedial actions and long term operation and maintenance, as well as Natural Resource Damage restoration and compensation.

**EPA Response:** As previously stated above, EPA has revised its preference to that of Alternative 4B as a source control response, with a future decision document to address management of migration. Under 3A, two separate landfills would be capped. The integrity and performance of the two caps would be monitored and further study of the groundwater and surface water would be made to assess the need for any additional response actions as required. Under 4B, the Bulky Waste Area will be excavated and consolidated onto the Solid Waste Area. The added cost of consolidation and leachate control during excavation under 4B may be equal to or greater than that of the capping under Alternative 3A. In both cases, Institutional Controls (in the form of easements and covenants) will be placed on properties where groundwater contaminant levels pose a unacceptable risk to human health or the environment. In both cases, evaluations of the long-term monitoring will dictate whether any further actions concerning groundwater and surface water impacts are necessary. Future evaluations based on monitoring data from OU1 will determine the need to conduct any future actions, and the nature of those actions, in order to achieve and assure protectiveness under CERCLA and State authorities over the long term. EPA concurs with the State that, under this selected remedy, the decision to take any additional actions will be based upon improved conditions resulting from OU1, which may result in an overall reduction in long-term operation and maintenance costs.

**Comment C-10:** The Department requests that consolidation be considered, assuming that little material will be separated out for recycling and that the volume of material in the Bulky Waste Area is substantially greater than assumed in the Final FS Report.

**EPA Response:** A technical memorandum has been prepared to provide an estimate of the costs for the new preferred alternative based on current information from the GZA field investigation conducted in early 1999. No recycling of metals and the higher volume of waste (190,000 cu yds) was assumed in this recent technical memorandum. This information is included in the Responsiveness Summary at section 4.1.

**Comment C-11:** The comment states that some dewatering will be necessary to remove all the waste from the Bulky Waste Area before consolidation onto the Solid Waste Area.

**EPA Response:** A technical memorandum (July 1999) updating the costs includes the assumption that all of the Bulky Waste Area will be removed and consolidated onto the Solid Waste Area. The amount of dewatering necessary is still questionable, as the GZA report of February 1999 only confirms an area with perched water and a small amount of waste below the water table. However, some de-watering of the excavation is expected and the extent of de-watering will be determined during the design phase.

**Comment C-12:** The comment notes that the cost benefit of the elimination of long-term operations and maintenance far outweigh the increased costs for capping.

**EPA Response:** EPA agrees that reduction of long-term operations and maintenance is desirable. However, with any of the alternatives evaluated, there will remain an appreciable component of operation and maintenance and the costs associated with this component. Again, this comment has been addressed with the selection of Alternative 4B.

**Comment C-13:** The Department recommends that a non-specific alternative for the landfill gas treatment be included in the ROD and that a phased approach be implemented, such as collecting and monitoring the gas emissions prior to determining the need and method of treatment.

**EPA Response:** EPA is not in full agreement with this approach. Landfill gas is noted as a principal threat for this Site. The ROD provides the basis for the remedial action that will be taken. When possible, the ROD should adequately and clearly address those measures that will be taken to address the principal threat(s) present at the Site. For landfill gas treatment, there are well-known technologies available which EPA has evaluated in applications in Rhode Island and throughout the Region. In keeping with usual practice, the FS evaluated the enclosed flare technology against other treatment options and, based on the research conducted in the FS, found it to be an appropriate means of addressing the threat posed by the landfill gas. EPA's experience has been that where a ROD fails to specify a treatment technology, treatment pilot studies are subsequently necessary to evaluate each of the suggested technologies in the field, thereby increasing the cost of implementation. In the case of landfill gas treatment, actual performance data collected at other Superfund sites shows that the enclosed flare is the most efficient technology to control landfill gas emissions at the Site and meet ARARs, including the RI Air Pollution Control Regulation # 22-Air Toxics. Thus EPA has selected the enclosed flare technology as a primary component of the remedy. Sampling and analyzing the landfill gas during the remedial design will prove useful in determining the design specifications, materials, fuel needs and other requirements for constructing the flare.

**Comment C-14:** The Department is concerned that the proposed alternative must address the continued ecological impacts to the Bulky Waste Area and failure to do so now will result in continued damages to a valuable resource and increase the potential for natural resource damage (NRD) claims against Responsible Parties in the future. Therefore, consolidation of the Bulky Waste Area should be reconsidered.

**EPA Response:** As stated in comment response A-1 and elsewhere, EPA has selected alternative 4B as a phased clean-up approach for this Site. Also, comment response B-1 discusses EPA's position concerning NRD.

**Comment C-15 :** The Department requests that EPA remain flexible with respect to the use of innovative technologies and alternative cap component materials in ROD.

**EPA Response:** EPA concurs with this comment. EPA has specified a design for a protective cap that meets state hazardous waste closure requirements. Alternative 4B calls for the use of innovative technology in excavating, de-watering and consolidating the bulky waste materials onto the solid waste unit. This consolidation approach will require certain strategies and material usage that must be further evaluated and developed during the design phase. Moreover, certain alternative cap component materials may be identified in design that will be more cost-effective and preferable to those material(s) commonly described for closure requirements. In these cases, the alternative cap component materials will be evaluated on a case by case by the design engineer for their performance in meeting the overall equivalency of the state's hazardous waste closure requirements.

**Comment C-16:** The Department is concerned that results of the *Rose Hill Landfill Superfund Site Field Investigation Report* (GZA, 1999) contradict information provided in the Final FS Report of November 1998. The GZA report indicated that "no white goods" were disposed of and the thickness and volume of waste in the Bulky Waste Area was underestimated in the FS.

**EPA Response:** FS waste assumptions were based on the two C.E. Maguire reports, *Phase I Preliminary Design and Hydrogeological Investigations* and *Phase II Site Evaluation and Operational Plan for Municipal Sanitary Landfill Rose Hill Road*, which were prepared for the Town of South Kingstown in 1977. The cost estimate for landfill excavation and consolidation has been updated based on the latest field information provided in the GZA Report of February 1999.

**Comment C-17:** The Department is concerned that the landfill gas (LFG) generation rate for the Bulky Waste Area may have been underestimated due to the underestimation of the volume of waste in the Final FS Report and suggests the need for additional modeling.

**EPA Response:** EPA agrees that a larger volume of municipal waste in the Bulky Waste Area would likely result in a higher LFG generation rate than originally estimated. However, the selected Alternative 4B eliminates the need for further modeling of LFG generation rates in this area, since landfill excavation and consolidation is expected to eliminate the Bulky Waste area as a source for landfill gas. Consolidation of this Bulky Waste material onto the Solid Waste Area is expected to incrementally increase the amount of landfill gas generated at the Solid Waste Area. Active landfill gas mitigation as identified in Alternative 4B will control this expected increase in total landfill gas production at the Site.

**Comment C-18:** The comment noted that the cap design for the Solid Waste Area should consider minimizing the manageable unit to the practical extent possible.

**EPA Response.** Section 3.1.2.1, page 3-7, paragraph 3 of the Final FS Report contains statements about using cut and fill methods to reduce capping costs. The FS presents a

generalized design concept for the cap only and the comment applies to the remedial design phase. By selecting Alternative 4B, EPA recognizes that the Solid Waste Area cap will be extended to meet the needs for the additional placement of Bulky Waste Area materials. A thorough evaluation of the required extent of the cap and its associated costs will be conducted as part of the remedial design process with the goal of meeting the remedial action objectives in a cost-effective manner.

**Comment C-19:** The Department is concerned that information presented in the GZA Report of February 1999 regarding the Bulky Waste Area, such as composition, thickness and volume of the waste as well as depth to groundwater, are in contrast to information presented in the Final FS Report of November 1998. In light of this new information, the comment inquired whether the affected criteria such as leachate generation, landfill gas generation, or cap size could be adequately addressed during the design phase.

**EPA Response:** With the selection of Alternative 4B, the calculations discussed in the comment will not be necessary.

**Comment C-20:** The Department requested that EPA reduce the size of the manageable unit to the extent practicable utilizing cut and fill methods to reduce leachate generation, comply with the 100-year flood plain ARAR, and reduce impacts to the wetland buffer zone.

**EPA Response:** The horizontal containment option for the Bulky Waste Area is no longer being considered since Alternative 4B is now the selected remedy. However, in the unlikely event that a considerable amount of waste is found encroaching into the wetland buffer zone, protective measures will need to be implemented during the remedial design and remedial action phases regarding excavation operations.

**Comment C-21:** The comment states that information provided in the GZA Report of February 1999 regarding the Bulky Waste Area indicated only a small percentage of recyclable material and that some waste was below the water table. However, the comment would like landfill mining to be reconsidered as a feasible option for the Bulky Waste Area.

**EPA Response:** Based on the findings presented in the GZA Report, it is unlikely that sufficient amounts of recyclables are available for cost-effective "mining" from the excavated materials. However, the cost estimate for Alternative 4B does include certain materials-handling contingencies which can be further refined in the design phase.

**Comment C-22:** The Department requested that EPA consider upgradient reinjection or off-Site treatment of leachate during the excavation of the Bulky Waste Area rather than construction of an on-site treatment facility, for economic reasons. Also, the comment stated that it may be necessary to continue leachate collection for a period of time after removal of the Bulky Waste

Area, until the area is stabilized.

**EPA Response:** Previous discussions with RIDEM Underground Injection Control personnel indicated that treatment may be needed. Therefore, a temporary treatment system was included in Alternative 4B as a conservative assumption. If RIDEM determines that upgradient reinjection without treatment is allowed, EPA agrees that this would be economically superior to treatment prior to discharge. However, some filtering may be required to remove the products of metal oxidation. Off-Site treatment may also be considered during the design phase if it is found to be more practical or economical. EPA has estimated leachate collection for one year for costing purposes in the FS. Therefore, cost estimates in the Final FS Report of November 1998 included operation of leachate collection and treatment for a time period that may be slightly longer than the actual time needed for excavation and consolidation of the Bulky Waste Area but allows for contingency.

**Comment C-23:** The Department asked for a comparison using the HELP model between the composite and single barrier cap in lowering the groundwater table after the first few years and whether the composite cap was more protective.

**EPA Response:** The impact of a cap to groundwater levels after a few years will be determined through future water level monitoring. HELP model results in Appendix C of the FS show that the protective composite cap will reduce precipitation infiltration 100%. A single barrier cap on the Solid Waste Area was shown to reduce infiltration 90%. Other considerations include the fact that a composite cap can accommodate construction imperfections and severe weather to a larger degree than a single barrier cap. The selected remedy calls for a multi-layer cap as a best available technology for containment of the source while limiting to the greatest extent practical future impacts to groundwater.

**Comment C- 24:** The Department requested that the HELP model be rerun based on new information introduced in the GZA Report of February 1999 regarding waste thickness and submerged waste to determine the effect of capping the Bulky Waste Area on the water table.

**EPA Response:** Capping of the Bulky Waste Area is no longer a consideration as the selected remedy calls for excavation and consolidation of the Bulky Waste Area onto the Solid Waste Area. Therefore, it will be unnecessary to rerun the HELP model using the new information presented in the GZA Report.

**Comment C-25:** The Department would like the number of piezometers in the Solid Waste and Bulky Waste Areas to be reconsidered and suggested that additional technologies be evaluated to control leachate generation.

**EPA Response:** EPA agrees that the number of piezometers installed in the Solid Waste Area should be re-evaluated during the remedial design phase to determine the most appropriate numbers and locations. Capping of the Bulky Waste Area is not included in the selected remedy. Therefore, piezometers for the purpose of monitoring cap performance will not be necessary in this area. The evaluation of additional technologies to control leachate will be unnecessary, since the Bulky Waste Area will be excavated and consolidated onto the Solid Waste Area.

**Comment C-26:** The Department inquired whether the selected treatment option will remove ammonia to acceptable limits prior to discharge. If groundwater/leachate collection and treatment is implemented, RIDEM proposes passive remedial technologies such as passive Reactive Barrier/Trench System, Constructed Wetlands, and Upgradient Hydraulic Control.

**EPA Response:** Statements in Section 3.1.6.4 (page 3-22) of the Final FS Report of November 1998 indicate that all discharge limitations must be met. The design will incorporate necessary treatment options to meet these discharge standards.

Since the removal of the Bulky Waste Area is included in Alternative 4B, there will no longer be the need for long-term, active leachate treatment. However, selection of the most effective short-term leachate treatment system will be evaluated as part of the design phase.

**Comment C-27:** The Department requested that the potential for increased leachate generation and the need for leachate collection during capping or excavation of the Bulky Waste landfill be addressed.

**EPA Response:** Capping of the Bulky Waste Area is not included in the selected remedy, which is now Alternative 4B. There is potential for increased leachate generation during excavation and consolidation due to disturbance of waste materials and removal of cover soils. Both of these improve the contact between waste and water (precipitation and /or groundwater). Under Alternative 4B, leachate collection and treatment will be conducted during excavation in the Bulky Waste Area until the excavation and consolidation is complete. The actual length of time for leachate collection and treatment will be determined in the design phase and will be modified accordingly during the excavation phase of the cleanup.

**Comment C-28:** The Department requested that EPA reevaluate the costs based upon the new information presented in the GZA Report of February 1999 related to the thickness and volume of the waste, waste present in groundwater, and increased LFG generation.

**EPA Response:** Costs for Alternative 4B have been reevaluated based on current information from the GZA investigation. A technical memorandum has been prepared to provide a revised estimate of the costs for Alternative 4B. This technical memorandum is included in the Administrative Record under section 4.1 and presented in summary in the ROD.

**Comment C-29:** The Department questioned why the ambient air and soil gas monitoring costs for Alternatives 4A, 4B, 5A, and 5B are the same, since the Bulky Waste Area will be excavated in Alternatives 4B and 5B.

**EPA Response:** The ambient air and soil gas monitoring costs were the same for the alternatives with landfill mining 4B and 5B versus Alternatives 4A and 5A (without landfill mining) due to the assumptions presented in Table 4-3 and Appendix G. Quarterly sampling of all locations, including the Bulky Waste Area, Solid Waste Area and perimeter/offsite locations, would occur during the first year of the remedy, with or without landfill excavation. If excavation and consolidation were occurring during the first year of the remedy, this monitoring would provide information regarding any migration of air contaminants. After the first year, the number of locations requiring sampling was assumed to be reduced by a percentage. The actual locations were not selected. Sampling results, as well as remedy needs, should be used to determine which locations would no longer require sampling.

**Comment C-30:** The Department states that Alternative 4B should be the preferred alternative, the cap design for the Solid Waste Area should remain flexible, a phased approach should be used in determining the need for landfill gas treatment of the Solid Waste Area, and landfill excavation of the Bulky Waste Area and consolidation onto the Solid Waste Area be considered.

**EPA Response:** EPA concurs with the comment and EPA has concluded that Alternative 4B is the selected remedy. This addresses concerns set forth by the comment regarding the landfill excavation of the Bulky Waste Area. The capping approach for the Solid Waste Area is outlined in general in the ROD and will be finalized during the design phase. A phased approach for the landfill gas (e.g. passive discharge without treatment) is not feasible due to the human health risk from volatile organic compounds in the landfill gas and the increased methane production anticipated from the consolidation.

#### **D. Other Federal Agencies**

In a letter dated February 4, 1999, Dr. Kenneth Finkelstein of the National Oceanic and Atmospheric Administration of the Department of Commerce (NOAA) presented a number of comments regarding the Agency's Proposed Plan. EPA also received a letter from Dr. Finkelstein on March 26, 1999 concerning EPA's decision to change its preferred alternative based on new information and public comments received during the Public Comment Period. Below are EPA's summation of the comments received from NOAA and EPA's response to those comments.

**Comment D-1:** The comment stated that the Ambient Water Quality Criteria (AWQC) for iron must be met "because it is a State of Rhode Island water quality criteria." The comment states further that iron, although not a hazardous substance as defined in CERCLA, must be addressed

by the selected remedy because, under CERCLA § 104(a)(1)(B), iron is a “pollutant/contaminant that presents an imminent and substantial danger to the public health or welfare,” where welfare as defined in the Federal Water Pollution Control Act (FWPCA) § 304(a)(1)(A) includes “plankton, fish, shellfish, wildlife, plant life, shorelines, beaches, esthetics, and recreation.”

**EPA Response:** The selected remedy is a source control remedy which does not address migration of contamination, nor does it include treatment of surface water. Therefore, since cleanup goals for surface water will not be set, achievement of those standards is not required, and AWQC are not ARARs at the Site. AWQC standards will, however, be used to measure the effectiveness of OU1, with monitoring data used to assess the need for conducting additional remedial responses regarding groundwater and surface water.

**Comment D-2:** NOAA is concerned that capping of the landfills will not appreciably slow leachate discharge to surface water and no leachate treatment is planned.

**EPA Response:** The preferred alternative has been changed such that the Bulky Waste Area will be excavated and consolidated onto the Solid Waste Area. Leachate collection will be performed until such time as the landfill excavation and consolidation processes are complete.

**Comment D-3:** NOAA requests that EPA show consistency in its remedies for sites in Rhode Island. For NETC Site in Newport, RI, RIDEM has suggested that they will require that the sediment pore waters meet AWQC. If approved for use at NETC, then this clean up requirement should be implemented at Rose Hill.

**EPA Response:** EPA will take this comment under advisement when developing a long-term monitoring plan for the Site. Pore water, as a specific environmental medium, is not presently regulated. As stated above in Comment A-1, Rose Hill’s remedy is a source control remedy whereby the treatment of surface water (or pore water from sediments in contact with the River) is not addressed. Therefore, since cleanup goals for surface water will not be set, achievement of those standards is not required, and AWQC standards will be used to measure the effectiveness of the remedy with respect to leachate outbreaks to streams and other discharges to on-site surface water.

**Comment D-4:** The comment expresses uncertainty as to whether Alternative 4B includes leachate collection during and after excavation of the Bulky Waste Area to mitigate impacts to surface water.

**EPA Response:** Section 4.4b.1 of the Final FS Report of November 1998 discusses that leachate control is implemented during the excavation and consolidation process. Cost assumptions (Appendix G) included operation for one year, assuming that the excavation and consolidation of the Bulky Waste Area could be performed within that time frame. Actual length of operation

should be determined during design and modified as necessary during the implementation of the excavation and consolidation.

**Comment D-5 :** The comment asks if leachate collection is included in Alternative 4B. Ground water that has moved past the Bulky Waste Area is presently carrying contaminants. How would this issue be addressed through this remedy and how will EPA monitor the success of the clean up?

**EPA Response:** The selected remedy is the first operable unit of a phased clean up approach to remediate the environmental contamination caused by the Site. The first operable unit is a source control remedy which is intended to prevent or minimize the continued release of hazardous substances, pollutants or contaminants to the environment. Under this remedy, leachate controls will be implemented during the excavation and consolidation of the Bulky Waste Area landfill onto the Solid Waste Area landfill. The extent to which the Bulky Waste Area is excavated will be based on past data, design assessments, repetitive visual inspection of the excavation base and side walls, bucket observations, and other methodologies developed in the design phase to assure, to the greatest practical extent, that all physical evidence of waste deposits is removed from the Bulky Waste Area, irrespective of the level of groundwater within the excavation.

A goal for this source control component is to effectively remove and contain the contaminant mass so as to significantly reduce contaminant migration through leachate production to surface waters and sediments of Mitchell Brook and the Saugatucket River. A comprehensive Site monitoring program will be implemented under the first operable unit to collect data to assess the effectiveness of the source control remedy, assess the need for taking any further response actions, and assist the State with TMDL predictions for Site-related contaminant concentrations affecting local water bodies. Management of the migration of contaminants to ground water and surface water will rely on data obtained from the first operable unit's monitoring and any additional studies that are deemed necessary in order to further assess Site impacts, characterize the extent of contamination, and assess the need to develop and evaluate alternatives for any future actions concerning groundwater and surface water.