Record of Decision Amendment

Dover Gas Light Co. Superfund Site

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DECLARATION

Site Name and Location

Dover Gas Light Co. Superfund Site
Dover, Kent County, Delaware

Statement of Basis and Purpose

This decision document modifies the Record of Decision (ROD) signed on August 16, 1994, for the Dover Gas Light Site (Site), in Dover, Kent County, Delaware. The revised remedy was selected in accordance with the requirements of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended (CERCLA), 42 U.S.C. §§ 9601 et seq., and, to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 C.F.R. Part 300. This decision document explains the factual and legal basis for modifying the remedy for this Site. The information supporting this remedial action decision is contained in the Administrative Record file for this Site.

The Delaware Department of Natural Resources and Environmental Control, on behalf of the State of Delaware, concurs with the selected remedy.

Assessment of the Site

Pursuant to duly delegated authority, I hereby determine, pursuant to Section 106 of CERCLA, 42 U.S.C. § 9606, that actual or threatened releases of hazardous substances, pollutants or contaminants from this Site, if not addressed by implementing the response action selected in this Record of Decision Amendment, may present an imminent and substantial endangerment to public health, welfare, or the environment.

Description of the Selected Remedy

This ROD Amendment modifies the original selected remedy which addressed soil contamination at the location of a former coal gas plant and ground water contamination in the Columbia Aquifer associated with the former coal gas plant. This ROD Amendment specifically modifies the portion of the selected remedy which addresses the contaminated soil. The principal threats associated with this portion of the Site are the heavily contaminated soils that are in and around the remains of former gas holders which are buried on-site and the non-aqueous phase liquid (NAPL) coal gas waste that sits on top of a clay lens in the top several feet of the Columbia Aquifer underneath the former location of the coal gas plant (the contaminated material below the former coal gas holders was originally going to be excavated and is now being included in the ground water remedy).

The selected remedy includes the following major components:

Remedial actions selected in this ROD Amendment:

- Excavation and off-site thermal destruction of the contaminated soil inside the buried bottoms of the former gas holders
- Use of soil vapor extraction (SVE) to treat contaminated soil in several areas outside the former gas holders
- Paving the parking lot which is the location of the former coal gas plant
- Including the upper several feet of the Columbia Aquifer at the location of a former coal gas plant in the ground water remedy for this Site.

Remedial actions remaining from the original selected remedy:

- Testing for, and removal of, any pumpable NAPL and hydraulic containment of the area with residual NAPL
- Natural attenuation with monitoring of the portion of the ground water plume that only contains dissolved contamination.

Declaration of Statutory Determinations

The selected remedy is protective of human health and the environment, complies with Federal and State requirements that are legally applicable or relevant and appropriate to the remedial action and is cost-effective. This remedy utilizes permanent solutions and alternative treatment (or resource recovery) technologies to the maximum extent practicable, and it satisfies the statutory preference for remedies that employ treatment that reduces toxicity, mobility, or volume as a principal element.

Because this remedy will result in hazardous substances remaining on-site above health-based levels, a review will be conducted within five years after commencement of remedial action to ensure that the remedy continues to provide adequate protection of human health and the environment. Such reviews will be conducted every five years thereafter until EPA determines that the cleanup levels set forth in the amended ROD have been achieved, or that the hazardous substances remaining at the Site do not prevent unlimited use and unrestricted exposure at the Site.

Abraham Ferdas, Acting Director
Hazardous Site Cleanup Division
Region III

12/16/97
Date

DECISION SUMMARY

Introduction

The U.S. Environmental Protection Agency (EPA), following consultation with the Delaware Department of Natural Resources and Environmental Control (DNREC), is issuing this Record of Decision Amendment (ROD Amendment) to address contaminated soil at the Dover Gas Light Co. Site (Site) in Dover, Kent County, Delaware. EPA selected this remedial action in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended, 42 U.S.C. §§ 9601 et seq., and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 CFR Part 300. The decision for this Site is based on the Administrative Record which contains all of the supporting documentation for this ROD Amendment.

On August 16, 1994, the Environmental Protection Agency (EPA) issued a ROD for this Site formally outlining how EPA would address the Site contamination. The ROD discussed two areas of the Site: the location of the former coal gas plant containing soil contamination and ground water contamination resulting from the operation and disposal practices at the plant.

The ROD was based, in part, on a future land use assumption that permitted on-site construction. After the clean-up decision, EPA was made aware of a legally binding agreement between Chesapeake Utilities Corporation and the State of Delaware that restricted the future use of the Site because of the contamination. Because of this agreement, Chesapeake proposed modifying the soil cleanup to take the restricted future land use into account.

Based on its review of the submitted information and the views of the community gathered from several public meetings held on April 30, 1997 and September 9, 1997, EPA is issuing this ROD Amendment to change the way the soils from the former coal gas plant will be cleaned up. This ROD Amendment describes the revised selected remedy for the soils and explains why EPA is changing the selected remedy.

EPA is the lead agency for response activities at the Site. DNREC is the support agency for this response action.

Site Description and Background

The Dover Gas Light Site is in Kent County, Delaware, within the City of Dover. It occupies the western half of the city block bounded by New Street, Bank Lane, North Street, and Governor's Avenue (see Figure 1). From 1859 to 1948 the Site was used for the production of gas from coal through a process known as coal gasification. The gas was used primarily for lighting and cooking purposes. During this time, various buildings, gas holders, and storage areas used in the gasification process were located on the Site.

When the plant was closed in 1948, all the structures, except for one, were demolished. Much of the plant was removed, but sections of the tanks and other process equipment containing coal oil and/or coal tar were buried on-site. The remaining building was used by the Delaware State Museum for storage until it was destroyed by a fire in 1982. The Site is currently an unpaved parking area used by the Delaware State Museum and other nearby businesses. Site topography is generally flat.

The size of the former coal gas plant is approximately one acre while the size of the Superfund Site is approximately 23 acres due to the spread of contamination in the ground water. Only the plant area itself has contamination from the coal gas process in soil near the surface.

Contamination was first discovered at the Site in 1984 when the Delaware Development Office conducted studies in preparation for the construction of a Family Court building. Remains of the coal gasification plant were found buried on-site and oily soil samples yielded significant contamination levels. As a result, DNREC installed and sampled 16 monitoring wells on and near the Site at varying depths below the ground surface.

The shallow ground water beneath and to the southeast of the former plant location was contaminated with several volatile organic compounds (VOCS) including benzene, toluene, ethylbenzene, and xylenes, (collectively known as BTEX), and polynuclear aromatic hydrocarbons (PAHs) such as naphthalene and acenaphthylene. A portion of the ground water contained an oily layer of contamination called a non-aqueous phase liquid or NAPL.

EPA then proposed to put the Site on the National Priorities List (NPL) in January 1987. The Site was formally added to the NPL in October 1989.

For more information on the Site description, Site risks, and enforcement and community relations activities conducted prior to August 1994, refer to pages 1-10 of the Record of Decision issued on August 16, 1994.

Community Participation and Information Availability

The Focused Feasibility Study and Proposed Plan to modify the ROD were released to the public for comment on August 29, 1997. These two documents (and other relevant documents) were made available to the community in the information repositories maintained at the following locations:

U.S. EPA Region 3, Docket Room
Mrs. Anna Butch (3HW11)
841 Chestnut Building, 9th floor
Philadelphia, PA 19107
(215) 566-3157

Dover Public Library
45 South State Street
Dover, DE 19901
(302) 736-7030

The notice of availability for these documents was published in the Delaware State News on August 29, 1997 and the Dover Post on September 3, 1997. In addition, a public meeting was held on September 9, 1997. At this meeting representatives from EPA answered questions about conditions at the Site and the remedial alternatives under consideration. The public comment period on the Proposed Plan was held from August 29, 1997 to September 29, 1997. A response to the comments received during this period is included in the Responsiveness Summary, which is part of this ROD Amendment. These activities were undertaken by EPA as part of its public participation responsibilities under Section 117(a) of the CERCLA and Section 300.435(c)(2)(ii) of the NCP.

The Administrative Record includes all documents such as data analyses, public comments, meeting transcripts, and other relevant information upon which the selection of the response action was based. In accordance with Section 300.825(a)(2) of the NCP, this ROD Amendment has become part of the Administrative Record.

Summary of Original Remedy

EPA's original selected remedy for the Dover Gas Light Superfund Site addressed the former coal gas plant soils and the ground water. It involved installing one line of ground water recovery wells at the downgradient edge of the non-aqueous phase liquid (NAPL) contamination area and other recovery wells within the NAPL area to remove any mobile NAPLs; allowing the portion of the ground water plume that only contains dissolved contamination to attenuate naturally to the ground water clean-up levels; excavating contaminated soils at the location of the former coal gas plant and incinerating the soils off-site. The total estimated present worth cost of EPA's original selected remedy was $13,200,000. See the August 16, 1994 ROD for a complete description of the original selected remedy. Note that the cost estimate in the ROD was $6,000,000 ($3,300,000 for the soil cleanup and $2,700,000 for the ground water cleanup). This soil cost estimate was revised based on new soil volume calculations using soil boring and contaminant concentration information obtained since the ROD was issued (see the Administrative Record for more information).

Rationale for Changing Remedy Selected in 1994 ROD

On August 16, 1994, EPA, with the concurrence of DNREC, issued a Record of Decision (ROD) which described the clean-up method for the Dover Gas Light Site. The cleanup method contained two major components. One component addressed soil contamination at the location of the former coal gas plant, the other addressed the ground water contamination

For the soil, the ROD required that the surface soil be cleaned up to protect the health of the museum workers and that the subsurface soil (including the first few feet of soil below the ground water table) be cleaned up to protect construction workers during a planned museum expansion.

Originally, as stated in the November 1993 Proposed Plan, EPA proposed cleaning the soil to a level such that no building restrictions would be required. In this way, any type of development allowed by the "Institution & Office" zoning designation could occur. In response to discussions with the State, in which the State indicated that it may expand the museum and that a school would not be built, EPA selected soil clean-up levels that would allow a museum expansion but not a school.

During negotiations with the parties which were financially responsible for the cleanup (which included the Chesapeake Utilities Corporation, State of Delaware, and General Public Utilities Corporation), Chesapeake and the State informed EPA of the 1986 agreement to limit future development of the property and allow it to be used only as a parking lot. Other aspects of the agreement included Chesapeake's purchase of another piece of property for the State and compensation to the State for environmental work the State had performed at the Site.

In light of the agreement, Chesapeake and the State claimed that EPA's mandated cleanup was overly protective and costly because the State could not build on the property.

In 1995, Chesapeake submitted a focused feasibility study proposing a different clean-up strategy for the soil which would require less soil removal and take into account a new future land use assumption. Data collected by Chesapeake in preparation for the soil excavation supports Chesapeake's view that a cleanup involving less soil removal could be protective of human health and the environment given that no further development will occur at the Site.[1]

Information obtained from the local citizens at a public meeting held on April 30, 1997 and from the local public officials indicated a lot of support for changing the future land use assumption at the Site. Following the meeting, Chesapeake revised its focused feasibility study adding soil vapor extraction (SVE) to the cleanup to address some of the soil contamination while using excavation to address only the soil contained inside the former gas holders. The NAPL material in the ground water at the location of the former coal gas plant (which would have been excavated under the original remedy) would be pumped, if possible, and disposed of off-site.

As a result of the support to change the future land use assumption and the new soil data that shows the soil to be less contaminated than originally thought, EPA is proposing to change the clean-up plan. Part of this change involves modifying the overall clean-up goals at the Site. Originally, EPA's goal was to clean the Site to a point where future subsurface construction could take place. Now EPA is proposing only to clean the Site to the extent that the ground water is protected and to use institutional controls to prevent subsurface construction in the future. EPA is also proposing to protect the museum workers, not by soil excavation as in the original clean-up plan, but by paving the parking lot to prevent contact with any contaminated soil.

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[1]In 1996, Chesapeake performed over 20 soil borings in a grid pattern throughout the location of the former coal gas plant to determine exactly what areas required excavation under the August 16, 1994 ROD. Samples were collected at four depths in each boring. The data showed that the NAPL material was not as wide-spread as originally thought based on the data collected during the Remedial Investigation.

EPA evaluates three alternatives in this ROD Amendment to address the soil contamination. The first alternative is the current clean-up plan that involves extensive excavation and allows future property development. The second alternative involves just excavating the gas holders and using SVE to address soil contamination outside of the gas holders, and the third alternative involves excavating the inside of the gas holders and, to a limited extent, the soil just outside of the gas holders. The second and third alternatives also include paving the Site for a parking lot and limiting future development.

EPA's review of the alternatives found Chesapeake's SVE proposal to offer the required protectiveness of human health and the environment at the Site at a substantially reduced cost, and with fewer impacts to the local community. As a result, EPA's selected remedy for this Site is to address the soil contamination with a combination of SVE and excavation. In the next section, each of the three alternatives considered by EPA to address the soil contamination is described in detail.

Remedial Action Objectives for the Soil

The August 16, 1994 ROD stated that:

> All remedial action shall be conducted in accordance with CERCLA, the NCP, the performance standards, including the remedial action objectives and clean-up goals set forth herein.

The ROD went on to list six remediation goals for the Site (pages 15-16). The sixth goal stated:

> [One remediation goal is] to return the soil at the former coal gas plant to a condition where (1) it can either be used consistently with its "Institutional & Office" zoning designation with no other restrictions or it can be used for the museum expansion, (2) construction can safely take place, and (3) it no longer is a continuing source of unacceptable levels of contamination to ground water.... Each soil alternative identifies the specific contaminant clean-up criteria that apply to that alternative.

This continues to be the goal for remedial Alternative #2 below. However, due to current land use restrictions, this remediation goal is being changed to:

> The remediation goal of the soil cleanup is to (1) prevent the soil contamination from being a continuing source of ground water contamination, (2) prevent unacceptable exposure to surface soil contamination by museum workers, and (3) ensure that current land use restrictions are kept in place.

This goal applies to the soil above the water table at the location of the former coal gas plant. In the August 16, 1994 ROD, the extent of soil remediation went down to the top of a clay lens that was two to four feet below the top of the water table. As a result of this change in extent of soil

remediation, the top portion of the ground water aquifer is being added to the ground water remediation described in the August 16, 1994 ROD. This area is considered part of the NAPL area and attempts will be made to remove any pumpable NAPL.

Description of the Alternatives

EPA evaluated three alternatives to address the soil contamination. The first alternative was the original clean-up plan that involved extensive excavation and allowed future property development. The second alternative involved just excavating the gas holders and using SVE to address soil contamination outside of the gas holders, and the third alternative involved excavating the inside of the gas holders and, to a limited extent, the soil just outside of the gas holders. The second and third alternatives also included paving the Site for a parking lot and limiting future development.

NOTE: Since EPA is only changing the cleanup for the contamination at the location of the former coal gas plant, only the portion of the clean-up plan for that area is described below. To address the complete Site, each alternative would be coupled with the ground water cleanup that is currently in the ROD and is not being changed.

Alternative # 1: The Original Remedy (Extensive Soil Excavation)

The goal of this alternative would be to return the former coal gas plant to a condition where it can be used for a museum expansion and/or a parking lot (or use with similar exposure to the soil subject to EPA approval) and to protect the museum workers from any contaminated soil. It would involve excavating soil that exceeds contaminant-specific soil clean-up goals which are listed in the ROD (see Figure 2 for the estimated area of excavation). Two sets of criteria were developed: one set for the surface soil to protect the museum workers and one set for the subsurface soil to protect future construction workers.

Besides being protective of people in direct contact with the soil, the soil clean-up levels would also be protective of ground water (the contaminated soils act as a continuing source of contamination to the ground water). The subsurface soil criteria would apply from the two-foot depth to a clay lens identified during the remedial investigation that is at various depths ranging from 14 to 18 feet below the ground surface. By removing contamination to this depth (which is several feet below the water table), a significant amount of NAPL material would be removed.

The total estimated capital cost of this alternative is $10,500,000. There are no operation and maintenance (O&M) costs associated with this alternative, so the present worth cost of this alternative is also $10,500,000. Combined with the estimated present worth cost of the ground water cleanup of $2,700,000, the overall estimated Site clean-up cost is $13,200,000.

Alternative #2: Gas Holder Excavation and Soil Vapor Extraction (SVE)

Since there is no longer a need to protect a future construction worker due to the limitations on future land use, the goal of this alternative would be to protect museum workers from surficial soil contamination and to prevent the soil contamination from being a potential and/or continuing source of ground water contamination. To protect the museum workers from exposure to soil contamination, the parking lot would be paved, thereby preventing contact with any contamination. As an added benefit, the pavement would also decrease the amount of infiltrating rain water, reducing the potential for contamination to migrate to the ground water.

Under this alternative, the tar-filled soil contained in the gas holders would be excavated[2] and shipped off-site for thermal treatment. Heavy contamination outside the gas holders would be addressed by SVE (see Figure 2). SVE would remove the more volatile contaminants (which are also the most mobile in ground water) and would increase the biodegradation of contaminants in the soil by pulling more oxygen below the surface. The SVE system would continue to operate until it was no longer removing contamination and was no longer aiding subsurface biodegradation.

The top several feet of the ground water aquifer which contains NAPL material would be addressed as part of the ground water cleanup rather than excavated as in the original clean-up plan. This alternative also includes institutional controls (for example, the existing agreement between the State of Delaware and Chesapeake) to prevent future development of the former coal gas plant location in a way that could harm the public.

The estimated capital cost of this alternative is $1,300,000. The present worth cost of the O&M portion of this alternative is $200,000.[3] The total estimated present worth cost of this alternative is $1,500,000. Combined with the estimated present worth cost of the ground water cleanup of $2,700,000, the overall estimated Site cleanup cost is $4,200,000.

Alternative #3: Modified Soil Excavation

This alternative is the same as Alternative #2 except that the soil contamination just outside the gas holders would be excavated and incinerated off-site rather than addressed by SVE (see Figure 2).

The cost of this alternative is $3,000,000 (there are no O&M costs associated with this alternative). Combined with the estimated present worth cost of the ground water remedy of $2,700,000, the overall estimated Site clean-up cost is $5,700,000.

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[2]The gas holders are approximately 8-10 feet in depth.

[3]The O&M cost estimate is based on operating the SVE system for four years with NAPL being recovered from the SVE wells for two years.

Evaluation of Alternatives

The above alternatives were evaluated in detail to determine which would be the most effective in achieving the goals of Superfund. EPA uses nine criteria to evaluate alternatives. These criteria are summarized in Table 1. The first two criteria (overall protection of human health and the environment and compliance with ARARs [applicable and relevant and appropriate requirements]) are threshold criteria. The selected cleanup must meet both of these threshold criteria (unless an ARAR waiver is invoked). The next five criteria (long-term effectiveness and permanence; reduction of toxicity, mobility, or volume through treatment; short-term effectiveness; implementability; and cost) are the primary balancing criteria. The remaining two criteria (state and community acceptance) are referred to as modifying criteria.

The following is a brief comparative analysis of each alternative against the nine evaluation criteria.

Overall Protection of Human Health and the Environment

All three alternatives provide for the overall protection of human health and the environment. With the change in the future land use assumption from a museum expansion to a parking lot, there is no longer a concern about construction worker exposure to the deeper soil contamination. However, the deeper soil contamination continues to act and/or potentially could act as a significant source of ground water contamination.

Each of the alternatives addresses the deeper soil as a source of ground water contamination, but in varying degrees. Each alternative removes the worst contamination (that being in the gas holders). However, Alternative #1 removes significantly more contamination than the other two alternatives for several reasons: 1) since the goal of the original cleanup was to protect against construction worker exposure to the deeper soil contamination, the clean-up criteria were lower than required to protect the ground water at this Site, and 2) the required excavation extended into the top several feet of the water table to remove the NAPL material that is perched on top of a clay lens.

Alternatives #2 and #3 would address the NAPL material on the clay lens by adding it to the rest of the ground water cleanup which includes attempts to remove any mobile NAPL. EPA has determined that this would adequately protect the ground water because it would reduce and/or eliminate the possibility of the NAPL migrating to parts of the aquifer which currently are not heavily contaminated with NAPL material, and although the remaining residual NAPL would continue to contribute to ground water contamination, the dissolved ground water plume in the vicinity of the NAPL would be captured in the containment wells that are part of the ground water cleanup.

Alternative #3 addresses the vadose zone (the portion of soil between the ground surface and the water table) soil contamination in the same manner as Alternative #1 except the limits of excavation would be significantly reduced since the goal of Alternative #3 is to only protect ground water rather than future construction workers.

Alternative #2 addresses the vadose zone soil contamination that is outside the gas holders through SVE which would remove the most volatile and mobile contaminants that can most easily migrate, not only to the ground water, but in ground water.

Compliance with ARARs (Applicable and Relevant and Appropriate Requirements)

Each alternative meets this threshold criterium. The major ARARs associated with these alternatives are the National Historic Preservation Act (NHPA), the Resource Conservation and Recovery Act (RCRA), and Delaware's Hazardous Substance Cleanup Act (HSCA). Many requirements of the NHPA were met during the remedial investigation and feasibility study (RI/FS) through cultural resource surveys. As part of Alternatives #1 and #3, a data recovery operation would be done at the beginning of the excavation to gather archaeological information (the size of the recovery step would vary due to differences in the scope of the excavations). Alternative #2 may also require a data recovery step or may only require further work (but less intrusive) to mitigate impacts to cultural resources.

Some of the excavated soil may be RCRA-hazardous waste due to the leachability of benzene. If so, on-site treatment by stabilization would likely be necessary to render the waste non-hazardous. If any of the waste is considered a RCRA-hazardous waste, all on-site treatment, storage, and handling practices would be done according to RCRA regulations. Some additional stabilization might also be required in Alternative #1 because of the potential high water content of some of the soil. For Alternative #1, the main requirement of HSCA as it relates to this Site is that the clean-up criteria must be equal to or below the criteria provided by DNREC for compliance with HSCA. For Alternatives #2 and #3, the main requirement is that the land-use restrictions contained in these alternatives must be added to the deed of the property that is the location of the former coal gas plant.

Due to the SVE, Alternative #2 may require emission controls to meet State and Federal air regulations (for a complete list of the ARARs which apply to the soils portion of the selected remedy, see Table 2).

Long-Term Effectiveness and Permanence

Alternative #1 offers the greatest degree of long-term effectiveness and permanence because it removes and destroys the most contamination and allows a wider range of uses of the land than the other two alternatives. Most of the waste is also destroyed in Alternatives #2 and #3 because of the excavation of the gas holders coupled with the off-site thermal destruction of the waste.

Reduction of Toxicity, Mobility, or Volume Through Treatment

Each alternative offers significant reductions in toxicity, mobility, and volume through treatment. Under each alternative, the most contaminated soil, contained in the gas holders, would be removed and would undergo thermal treatment that would destroy the contamination.

Alternative #1 offers the largest reduction of toxicity, mobility, or volume through treatment because it has the largest volume of soil removal, followed by Alternative #3. In Alternative #2, SVE will remove the most mobile contaminants from the vadose zone soil. Alternatives #2 and #3 will remove any mobile NAPL below the water table by addressing this area along with the ground water remedy. Once any contamination is removed from the soil it would be disposed of properly according to State and Federal regulations.

Short-Term Effectiveness

Each alternative will create significant short-term impacts. The excavated soil will be hauled off-site, increasing truck traffic in Dover. The potential exists for adverse air emissions to come from the excavation pit. Precautions will be taken to minimize such emissions. The excavation will, at a minimum, use most of the parking area at the museum and may disrupt museum operations. Alternative #2 ranks best by far regarding short-term effectiveness because it involves the least amount of excavation.

Implementability

Each alternative is implementable, but Alternative #2 is much easier to implement than the other two because the excavation is confined to the gas holders. The walls of the gas holders provide the stability necessary to ensure there is not a cave-in. Alternatives #1 and #3 would require shoring of the sides of the excavation pit or sloped sides that would require significant increases in the amount of excavated soil.

Since Alternative #2 requires the least amount of excavation, more of the Site is available for equipment staging and soil stabilization (to treat RCRA-hazardous soils). In a small, confined site such as this one, available work space is an important consideration.

Cost

The costs for the Site are directly proportional to how much soil is excavated. As a result, Alternative #2 ($1,500,000) is the least costly followed by Alternative #3 ($3,000,000). Both of these alternatives are much less costly than Alternative #1 ($10,500,000). Note that the original estimate for Alternative #1 in the August 16, 1994 ROD was $3,300,000. The new estimate of $10,500,000 is based on data collected since that ROD was issued. To obtain the overall estimated Site clean-up cost for each alternative, add the estimated present worth cost of the ground water cleanup ($2,700,000) to each of the figures cited above.

State Acceptance

DNREC, on behalf of the State of Delaware, has concurred with EPA's selection of Alternative #2 to address the soil contamination at the Site (see attached letter).

Community Acceptance

From views expressed by the community at EPA's April 30, 1997 public meeting and by the City of Dover, there is considerable support for EPA to change the future land use assumption at the Site. Also, there were no negative comments received regarding EPA's preferred alternative (Alternative #2) at the September 9, 1997 public meeting. Alternative #2 does the most in limiting disruption near the Site, maximizing parking availability, and reducing cost which appear to be the major issues to the local community.

Comparison of Alternatives

Most of the comparison of alternatives hinges on how much soil will be excavated. Excavation of more soil does provide a higher degree of overall protection of human health and the environment, as well as better long-term effectiveness and permanence and greater reduction in toxicity, mobility, and volume through treatment. However, short-term impacts and the clean-up cost are directly proportional to the amount of soil excavation.

Each alternative provides for the overall protection of human health and the environment and complies with ARARS, yet Alternative #2 does so with the least cost and the least impact to the local community while still offering a significant degree of long-term effectiveness and permanence and reduction of toxicity, mobility, and volume through treatment. Therefore, EPA has determined the Alternative #2 is the selected remedy.

Selected Remedy: Performance Standards

Below are the performance standards for the selected remedy described in this ROD Amendment. In order to have a complete set of performance standards for the soil cleanup in this ROD Amendment, a number of performance standards from the original remedy are repeated here. Their inclusion here does not necessarily mean that they do not apply as well to the ground water remedy that is described in the August 16, 1994 ROD which is still in effect except as modified by this ROD Amendment. The performance standards included from the August 16, 1994 ROD are shown in *italics*. The performance standards from the August 16, 1994 ROD that are being eliminated or replaced are shown below in "~~strikeout~~". Also note that one performance standard (1.1.7) has been added to the ground water to further define the NAPL area based on the data collected during the remedial design and due to changes in the soil cleanup.

1.1. **NAPL Area**

1.1.7. The NAPL area is approximately defined by the area shown in Figure 1.

2.1 **Soil Excavation**

~~2.1.1. All soil in the area shown in Figure 4 that contains contaminant levels above those listed in Performance Standard 2.4 shall be excavated.~~

~~2.1.2. The depth of the excavation shall not exceed the top of the clay lens located at an average depth of 14 to 20 feet below ground surface. In areas of the former coal gas plant that do not have this clay lens, the excavation shall not go below the depth the lens would have been expected to be found (i.e., the depth of lowest adjacent lens in the 14 to 20 foot range).~~

2.1.3. The excavation shall be performed in such a manner as to minimize the release of contaminants to the atmosphere.

2.1.4. Steps shall be taken to avoid structural or other damage to the museum, the streets, the cemetery, or the church property during excavation.

~~2.1.5. A statistically significant number of confirmatory soil samples shall be collected to indicate that the soil remaining in the bottom (unless the excavation has already extended to the clay lens located at a depth of 14 to 20 feet) and sides of the excavation is below the contaminant levels in Performance Standard 2.4.~~

~~2.1.6. Any trees or scrubs that are removed or destroyed as a result of the excavation shall be replaced with a similar type.~~

~~2.1.7. The area that is currently used as a parking lot shall be returned to use as a parking lot. Gravel shall be placed on the top of any backfilled areas of the original parking lot. Areas of grass that were destroyed by the remedial action shall be resodded.~~

2.1.8. The soil inside the three buried gas holder bottoms (see Figure 2) shall be excavated. The gas holder bottoms themselves shall remain in the ground. The gas holders shall be considered "clean" when use of a garden shovel (with a 3-6 foot handle, as opposed to a trowel), or equivalent, can no longer be used to remove contaminated soil or debris from the bricks that make up the gas holder bottoms. The top two feet of soil from the holders may be stockpiled at the Site and used as backfill in the holders.

2.2. **Soil Handling and Disposal**

~~2.2.1. Any soil that is excavated but has contaminant levels below the clean-up criteria listed in Performance Standard 2.4 can be used as backfill material. However, any soil used to backfill the top two feet must meet the criteria listed in Performance Standard 2.4.2.~~

~~2.2.2. Any excavated soil that can be used as backfill may be stockpiled at or near the Site.~~

~~2.2.3. Excavated soil that contains contaminant levels above the levels listed in Performance Standard 2.4 shall be treated off-site by thermal destruction. Thermal destruction includes, but is not limited to, incineration at a hazardous waste incinerator, destruction at a resource recovery unit such as a cement kiln or utility boiler, and low temperature thermal desorption with off-gas incineration. The choice of treatment facility is subject to EPA approval. Soil that must be excavated but is not a RCRA-hazardous waste and is only slightly contaminated, may be landfilled at an acceptable disposal facility subject to EPA approval. The contaminant levels below which soil may be landfill shall be determined during remedial design and subject to EPA approval.~~

2.2.4. Contaminated debris shall either be cleaned at the Site or treated in the same manner as the soil. Decontaminated debris may be backfilled at the Site. Any on-site debris cleaning shall be performed in such a way as to prevent unacceptable discharge of contaminants from the Superfund Site. Residue or waste from any debris cleaning operation shall be disposed of off-site in accordance with all appropriate Federal and State regulations.

2.2.5 Excavated soil shall be treated off-site by thermal destruction. Thermal destruction includes, but is not limited to, incineration at a hazardous waste incinerator, destruction at a resource recovery unit such as a cement kiln or utility boiler, and low temperature thermal desorption with off-gas incineration. The choice of treatment facility is subject to EPA approval. Soil that must be excavated but is not a RCRA-hazardous waste and is only slightly contaminated, may be landfilled at an acceptable disposal facility subject to EPA approval. The contaminant levels below which soil may be landfilled shall be determined during remedial design and subject to EPA approval.

2.3. **Cultural Resource Recovery**

~~2.3.1. Prior to any excavation and removal of contaminated soil, a cultural resource data recovery operation shall be performed. This operation shall be performed in accordance with substantive requirements of the National Historic Preservation Act, as amended.~~

2.3.2 Prior to any excavation and removal of contaminated soil and installation of the SVE system, steps shall be taken to ensure compliance with the substantive requirements of the National Historic Preservation Act, as amended. The steps may include, but not be limited to, a data recovery step at the gas holders, consideration of piping locations to avoid adverse impacts to cultural resources, consideration of the aesthetics of the SVE treatment equipment, and consideration of cultural resources in the design of the parking lot.

2.4. **Soil Clean-up Criteria**

~~2.4.1. Below are the soil clean-up criteria that apply to the soil from a depth of two feet below ground surface to the clay lens that is located at an approximate depth of 14 to 20 feet:~~

~~a. benzene~~	~~1,750~~	~~ppm~~
~~b. toluene~~	~~28,000~~	~~ppm~~

~~c. ethylbenzene~~	~~14,000~~	~~ppm~~
~~d. styrene~~	~~28,000~~	~~ppm~~
~~e. benzo(a)anthracene~~	~~70~~	~~ppm~~
~~f. benzo(b)fluoranthene~~	~~70~~	~~ppm~~
~~g. benzo(k)fluoranthene~~	~~695~~	~~ppm~~
~~h. benzo(a)pyrene~~	~~7~~	~~ppm~~
~~I. benzo(g,h,i)perylene~~	~~315~~	~~ppm~~
~~j. indeno(1,2,3-c,d)pyrene~~	~~70~~	~~ppm~~
~~k. naphthalene~~	~~5,600~~	~~ppm~~

~~2.4.2. Below are the soil clean-up criteria that apply to the soil from the ground surface to a depth of two feet below ground surface:~~

~~a. benzene~~	~~28~~	~~ppm~~
~~b. toluene~~	~~56,000~~	~~ppm~~
~~c. ethylbenzene~~	~~28,000~~	~~ppm~~
~~d. styrene~~	~~56,000~~	~~ppm~~
~~e. benzo(a)anthracene~~	~~1.1~~	~~ppm~~
~~f. benzo(b)fluoranthene~~	~~1.1~~	~~ppm~~
~~g. benzo(k)fluoranthene~~	~~11~~	~~ppm~~
~~h. benzo(a)pyrene~~	~~0.11~~	~~ppm~~
~~I. benzo(g,h,i)perylene~~	~~5~~	~~ppm~~
~~j. indeno(1,2,3-c,d)pyrene~~	~~1.1~~	~~ppm~~
~~k. naphthalene~~	~~11,200~~	~~ppm~~

2.5. **Institutional Controls**

~~2.5.3. The deed(s) of property that requires excavation as part of this ROD shall be modified to give notice to the public of past land disposal and of the fact that releases and threats of releases of hazardous substances have affected the respective parcels. Notice shall also be placed on the deed(s) that states that the soil clean-up criteria were not developed to allow unrestricted use of the land, but that they were developed to safely allow expansion of the museum and use as a parking area, as long as unexcavated, yet contaminated, subsurface soil does not become surface soil.~~

2.5.4. The deed(s) of property that requires excavation as part of this ROD Amendment shall be modified to give notice to the public of past land disposal and of the fact that releases and threats of releases of hazardous substances have affected the respective parcel(s). Notice shall also be placed on the deed(s) that states that there exists a contract between the current owner (State of Delaware) and Chesapeake Utilities Corporation that prohibits development of the parking area of the Delaware State Museum. If uses of the location of the former coal gas plant other than as a parking lot are contemplated in the future, a human health risk assessment must be submitted by the Site owner. The risk assessment, subject to EPA's approval, must show that the planned uses provide for the overall protection of human health and the environment or

state additional remedial actions which shall be undertaken prior to a change in land use which would provide for the overall protection of human health and the environment.

2.6. **Soil Vapor Extraction System**

2.6.1. Soil vapor extraction shall be applied to the areas of the location of the former coal gas plant shown in Figure 2, Alternative #2. Note that six SVE wells for the largest area have already been installed.

2.6.2. The SVE system shall be operated in such a manner as to ensure that there are no untreated zones within the areas depicted in Figure 2, Alternative #2.

2.6.3. The SVE wells and any piping (between the wells or between the emissions control equipment and the wells) shall be installed underground in such a manner as to allow a parking lot to be constructed on top. Vaults shall be installed around the wells, flush with the ground or pavement surface, to protect the wells and any piping and instrumentation from vehicular traffic.

2.6.4. The emissions from the SVE systems shall be treated with granulated activated carbon (GAC) to prevent, to the maximum extent practicable, the transfer of contaminants to the air. The design and operation of the system shall include monitoring, and/or other features, to demonstrate the successful control of the SVE emissions.

2.6.5. The SVE system shall continue to operate until NAPL recovery operations are completed and until the monitoring of extracted vapors (both contaminants and carbon dioxide) indicate that the SVE system is both removing only insignificant amounts of contaminants and no longer aiding in subsurface biodegradation. The remedial design, subject to EPA approval, shall outline the specific compounds to be monitored to determine when the SVE system can be turned off and shall specifically outline the vapor levels at which the system can be turned off. Due to the fact that vapor levels typically increase if the system is not operated for a period of time, the system must be restarted after sitting idle for one winter. If the system continues to meet the criteria established during the remedial design to allow the system to be turned off, the system can be taken out of service. If the vapor levels rebound, the system must again be operated (until the vapors meet the criteria established during the remedial design to allow the system to be turned off) and then allowed to sit through one winter. This process will continue until such a time as the vapors due not exceed the criteria after restarting the system.

2.6.6. Once the SVE system has been shut down for the last time, the SVE wells shall be abandoned according to DNREC regulations to prevent them from being a conduit of contamination to the subsurface.

2.7. **Parking Lot**

2.7.1. A parking lot, paved with asphalt, shall be constructed at the location of the former coal gas manufacturing plant. The parking lot shall cover the approximate area shown in Figure 2, Alternative #2.

2.7.2. The parking lot shall be designed in accordance with local regulations and standard design parameters for paving and traffic control. The parking lot shall also be designed in compliance, as necessary, with the National Historic Preservation Act. The parking lot designer shall discuss the design parameters with the property owner prior to initiation of the design. The property owner shall be allowed to review and comment on the design at appropriate times as determined by EPA. The design is subject to EPA's approval. Since the City of Dover has expressed a desire to potentially lease a portion of this parking lot from the property owner, efforts shall be made during the design to reach agreement on this issue with the City of Dover and the property owner. However, these efforts shall not result in increased parking lot construction costs (unless mutually agreed to by all parties involved in the design) and shall not cause a delay in the construction schedule.

3.1. **Operations and Maintenance Plan**

3.1.1. An operations and maintenance plan shall be developed and implemented for the ground-water recovery system. The plan shall include a list of all vendor-required maintenance activities.

3.1.2. The plan shall include a list of potential operations and maintenance problems and their proposed solution.

3.1.3. The plan shall include a list of all required inspections and general guidelines for the inspections.

3.1.4. The plan shall include operating instructions.

3.1.5. The plan shall include reporting requirements and forms.

3.1.6. The plan shall include health and safety requirements.

3.1.7. The plan shall include a monitoring plan for the emissions from the ground-water treatment system.

3.1.8. The plan shall include a waste management plan describing how treatment wastes and/or recovered NAPLs will be disposed of.

3.1.9. Performance standards 3.1.1 to 3.1.8 are the minimum requirements of the operation and maintenance plan. The plan, including all of the appropriate information, shall be submitted to EPA for approval.

3.1.10. All requirements of the approved plan shall be carried out.

3.2. **Erosion Control Plan**

3.2.1. An erosion control plan shall be developed and implemented which outlines procedures to be used to control transport of soil and sediment due to erosion, to the maximum extent practicable and in accordance with the ARARs in Table 2, *for all activities which present the potential for transporting soils or sediments. This plan shall also include procedures to be used to properly control and discharge stormwater from the construction areas.*

3.2.2. This plan shall be developed in accordance with State and local regulations and shall be submitted to EPA for approval.

3.3. **Particulate Air Emissions**

3.3.1. All remedial work shall be done in such a manner as to minimize transport of airborne particulate emissions.

3.3.2. As part of the remedial action health and safety plan, levels of particulate considered to pose an unacceptable health risk shall be developed along with monitoring requirements to measure particulate counts.

3.3.3. Air monitoring shall be done at appropriate times to ensure protectiveness of human health.

3.3.4. If the air monitoring results indicate that particulate counts are high enough that EPA concludes that unacceptable health risks are posed to people on-site or off-site, appropriate measures shall be taken to reduce the particulate count to safe levels off-site, and either to reduce the particulate count to safe levels on-site or to protect the workers through personal protective equipment.

3.4. **Waste Management Plan**

3.4.1. A waste management plan shall be developed, submitted to EPA for approval, and implemented to handle any other wastes generated during remedial design or remedial action that have not previously had waste management performance standards set. The plan shall outline how all Federal, State, and local regulations will be complied with.

3.5. **ARARs**

3.5.1. The selected remedy shall attain, at a minimum, all chemical, location, and action specific ARARs listed in Table 2 *unless a statutory waiver is invoked by EPA.*

3.6. **Utility Worker Risk Assessment**

3.6.1. A risk assessment shall be prepared to determine if utility workers would be at risk from installation and/or repair work to underground utilities at the location of the former coal gas

plant in areas where the soil contamination is not being addressed by other parts of the selected remedy. The risk assessment in the remedial investigation shall be used as a guide for this risk assessment. The risk assessment shall be submitted to EPA for approval.

3.6.2. If the above risk assessment shows that the workers would be at risk, the proper utility companies shall be notified to take additional precautions to ensure the safety of their workers. EPA shall also determine at that time if other remedial measures are necessary to protect any utility workers. This could involve extra SVE wells or excavation.

Statutory Determinations

EPA's primary responsibility at Superfund sites is to undertake remedial actions that are protective of human health and the environment. In addition, Section 121 of CERCLA, 42 U.S.C. § 9621, establishes several other statutory requirements and preferences. These requirements specify that when complete, the selected remedial action for each site must comply with applicable or relevant and appropriate environmental standards established under Federal and state environmental laws (ARARs) unless a statutory waiver is invoked. The selected remedy must also be cost effective and utilize treatment technologies or resource recovery technologies to the maximum extent practicable. Finally, the statute includes a preference for remedies that permanently and significantly reduce the volume, toxicity or mobility of hazardous substances. The following sections discuss how the selected remedy for this portion of the Site meets these statutory requirements.

Protection of Human Health and the Environment

The selected remedy provides overall protection of human health and the environment. It protects human health by:

- Paving the parking lot to prevent contact with contaminated surface soils which may pose a threat to museum workers after long-term exposure.
- Removing highly concentrated levels of contamination from the soil to help reduce the possibility of the Frederica aquifer becoming contaminated and thereby unusable as a drinking water source.
- Ensuring that there is no future construction at the Site which would pose a health threat to construction workers.

The selected remedy will protect the environment by removing most of the soil contamination that can be a continuing source of contamination to ground water, a natural resource.

Compliance with Applicable or Relevant and Appropriate Requirements

The selected remedy, Alternative #2, shall attain all action, location, and chemical specific applicable or relevant and appropriate requirements for the Site which are listed in Table 2. Also included in the table are criteria, advisories, or guidance to be considered (TBCs) for the implementation of this remedy. Compliance with the air emission regulations for the SVE system will ensure that cross media transfers of contaminants that are harmful to the public do not occur.

The substantive requirements of the National Historic Preservation Act, as amended, (NHPA) shall be met. Measures shall be taken to mitigate any adverse impacts to cultural resources that are included or eligible for inclusion on the National Register of Historic Places. Also, consideration will be given to the design of the SVE equipment housing and the parking lot to ensure compliance with the NHPA. The soil excavation, piping installation, and the treatment plant construction are examples of portions of the remedial action that have the potential to impact cultural resources. Measures will be taken to minimize and/or mitigate any adverse impacts.

Cost-Effectiveness

Cost was a major factor in selecting the new remedy for the soil contamination at the Site. Alternative #2 meets each of the threshold criteria, as do the other alternatives, but meets them at a substantially reduced cost. Alternative #2 represents a $9.2 million savings from the original remedy (Alternative #1). As a result, Alternative #2 affords overall effectiveness proportionate to the cost and is the most cost effective alternative.

Utilization of Permanent Solutions and Alternative Treatment Technologies to the Maximum Extent Practicable

EPA has determined that the selected remedy (Alternative #2) provides the best trade-off in terms of long-term effectiveness and permanence; reduction in toxicity, mobility, or volume achieved through treatment; short-term effectiveness; implementability; and cost; as well as considering the statutory preference for treatment as a principal element and considering State and community acceptance.

Alternative #2 provides for destruction of the vast majority of the contamination in the soil through thermal destruction. If an industrial boiler is used to destroy the waste, the energy value of the contamination will be recovered. If a commercial thermal desorption company is used to treat the soil, the soil can be reused. The contamination removed by the SVE system will also likely be destroyed thermally (through regeneration of carbon used to absorb the contamination in the off-gas from the SVE system).

Preference for Treatment as a Principal Element

EPA has determined that the heavy deposits of coal tar and any NAPLs are principal threat wastes meaning that the material includes or contains hazardous substances, pollutants, or contaminants that act as a reservoir for migration of contamination to, for example, ground water. These principal threats are being treated as part of the selected remedy. The heavy deposits of coal tar will be excavated and incinerated off-site. Any mobile NAPLs that exist in the upper portion of the water table, below the location of a former coal gas plant, will be extracted from the ground water and undergo treatment.

Documentation of Significant Changes

The only significant change to the selected remedy in comparison to EPA's preferred alternative described in the August 29, 1997 Proposed Plan is the addition of the utility worker risk assessment. This addition is in response to a question EPA received at the Proposed Plan public meeting. During the remedial investigation, EPA evaluated potential risks to utility workers away from the location of the former coal gas plant, but not at or near the location of the former coal gas plant. EPA anticipated at the time the original ROD was issued, that information gained from the extensive excavation of Site soils would provide information as to the contaminant levels at or near the streets adjacent to the location of the former coal gas plant. Since extensive excavation is no longer occurring, there remains the need to evaluate potential risks to utility workers digging into soil at and immediately adjacent to the location of the former coal gas plant.

RESPONSIVENESS SUMMARY

This Responsiveness Summary for the Dover Gas Light Co. Site has been prepared to respond to comments received by EPA, both oral and written, regarding changes to the selected remedy which EPA originally proposed on August 29, 1997 in a Proposed Remedial Action Plan (Proposed Plan). A number of the comments addressed below where received at a public meeting which EPA held on September 9, 1997 to discuss the proposed changes. Other comments received at the public meeting, but which did not relate to the proposed changes, are not addressed in the Responsiveness Summary. However, they were addressed at the public meeting, a transcript of which can be found in the Administrative Record.

The responses are divided into two groups: those that were received at the public meeting and those that were received in writing.

Comments from the Public Meeting

1. A question was asked about the nature of the contaminants and the potential harm to humans that the contaminants could cause.

EPA's RESPONSE: The soil contamination can be divided into two major classes of chemicals: BTEX (benzene, toluene, ethylbenzene, and xylenes) which is a component of gasoline and PAHs (polynuclear aromatic hydrocarbons) which can be found in coal tar, roofing tar, and asphalt. Both of these classes of chemicals can cause carcinogenic and non-carcinogenic impacts to humans. See pages 5-10 of the August 16, 1994 ROD for a detailed description of the risks posed by the Site contamination.

2. A question was asked about whether construction such as road repair work to streets adjacent to the Site would present a hazard.

EPA's RESPONSE: The Site does not present a hazard to workers performing road repair work. However, workers installing and/or repairing utilities underground at the location of the former coal gas plant may need to take extra safety precautions while performing their work. In response to this issue, a performance standard has been added to the ROD Amendment which addresses this potential. A risk assessment shall be performed during the remedial design to determine if utility workers would be at risk, and if so, either further remedial actions shall be required or the proper utility companies shall be notified to take additional precautions to ensure the safety of their workers.

3. A question was asked about whether there would be air emissions from the soil vapor extraction (SVE) system and how they would be treated.

EPA's RESPONSE: The emissions from the SVE system will be treated by passing the vapor stream through granulated activated charcoal (GAC) which will absorb the contaminants.

A two-stage system will be employed to ensure that contaminants are not released to the environment.

4. A question was asked about whether the SVE system would require an air permit.

EPA's RESPONSE: A permit will not be required for the SVE system because permits are not required for work performed entirely at a Superfund site. However, the technical requirements of the laws and regulations governing air pollution will be met to ensure the overall protection of human health and the environment.

5. A question was asked about the length of operation of the SVE system.

EPA's RESPONSE: EPA estimates that the SVE system will operate no longer than five years. However, it will operate until the performance standards identified in this ROD Amendment have been achieved.

6. A question was asked about what the SVE system would look like and if it would cause any obstructions in the parking lot.

EPA's RESPONSE: The SVE system consists of wells and equipment to extract air from the ground through these wells, as well as air treatment equipment. The system will also include piping to connect the wells and the extraction equipment. The wells and the piping will be underground, but the extraction and treatment equipment will occupy a small area of the parking lot.

7. A question was asked about whether the contaminants have an odor.

EPA's RESPONSE: The contaminants do have an odor. For example, one of the contaminants is naphthalene which is an ingredient in moth balls.

8. A question was asked about whether EPA is assured that someone will accept the waste after it is excavated, and in particular whether Clean Earth of New Castle (a thermal treatment facility for soils) has been approved to treat the waste.

EPA's RESPONSE: The contaminated soil that will be excavated is not an unusual waste stream. There are many disposal facilities in the United States that could handle this waste. EPA's review and approval of a plan to dispose of the waste at a particular facility will take place during the remedial design. The selected remedy does allow for the on-site treatment of the soil (for example, the stirring in of charcoal to absorb benzene) to ensure the soil is not a hazardous waste as define by RCRA (the Resource Conservation and Recovery Act) which may allow Clean Earth to treat the soil.

9. A question was asked about what contaminants would be left at the Site after the cleanup.

EPA's RESPONSE: The same type of contaminants present at the Site today will be present at the Site once the cleanup is complete. However, the volume and levels of contamination will be significantly reduced by the cleanup. The contamination remaining at the Site will not pose a threat to human health or the environment once the cleanup is complete as long as the land is used in accordance the Performance Standards outlined in this ROD Amendment.

Written Comments

10. One commentor stated that it was not necessary to treat the small areas at the north and south ends of the Site using SVE. Information was provided to support the commentor's claim that these areas were not sufficiently contaminated to warrant SVE.

EPA's RESPONSE: EPA has reviewed the submitted information which includes boring logs for soil borings that were done during the remedial design (after the August 16, 1994 ROD). EPA continues to believe that the two small areas at the north and south ends of the Site (near B-19 at the north end and near the east entrance to the museum at the south end [see Figure 2]) warrant remediation using SVE.

At the north end, the presence of contamination is indicated by the HNu readings (showing the presence of organic vapors) and the coal tar odor at boring B-19. While this boring may be close to or within the influence of other SVE wells, it is at best near the outer edge. EPA's experience with SVE, especially when there are variations in the geology as at this Site, is that zones of influence of SVE wells are anything but symmetrical. By placing an SVE well at the location of B-19, there will be no question that this area will undergo treatment.

At the south end, the presence of contamination is indicated by the very high HNu readings (showing the presence of organic vapors) and the strong coal tar odor at boring B-7 (data collected during the remedial investigation). Although other nearby borings did not show these same types of readings, the contamination indicated by boring B-7 warrants remediation.

Both of these areas are closer to potential exposure points than the large middle area of the Site. The south end is near the museum which has a basement and the north end is near the street where underground utility work may take place.

TABLE 1
EPA Criteria For Evaluating Alternatives

Threshold Criteria

- **Overall Protection of Human Health and the Environment:** Describes how an alternative achieves and maintains protection of human health and the environment, and how risks to human health and the environment are eliminated, reduced, or controlled through treatment, engineering controls, or institutional controls.

- **Compliance with ARARs:** Addresses whether an alternative will meet all of the applicable or relevant and appropriate requirements (ARARS) of Federal and State environmental laws and/or justifies invoking a waiver.

Primary Balancing Criteria

- **Long-Term Effectiveness and Permanence:** Considers the ability of the cleanup to maintain reliable protection of human health and the environment over time once clean-up goals have been met.

- **Reduction of Toxicity, Mobility, or Volume Through Treatment:** Describes the performance of the treatment technologies that may be employed in an alternative.

- **Short-Term Effectiveness:** Examines the effectiveness of an alternative in protecting human health and the environment during the construction and implementation of the cleanup, until the desired clean-up levels are achieved.

- **Implementability:** Evaluates the technical and administrative feasibility of an alternative and the availability of required materials and services.

- **Cost:** Considers the capital, as well as operation and maintenance (O&M) costs of an alternative.

Modifying Criteria

- **State Acceptance:** Indicates whether the state agency, based on its review of the proposed remedy, concurs with, opposes, or has no comment regarding the clean-up plan.

- **Community Acceptance:** A measure of the community's general acceptance of the clean-up plan.

TABLE 2

Applicable or Relevant and Appropriate Requirements (ARARs) And To Be Considered Material (TBCs) for the Soil Portion of the Selected Remedy Dover Gas Light Co. Superfund Site

ARAR or TBC	Legal Citation	ARAR Class	Requirement Synopsis	Applicability to Selected Remedy
I. CHEMICAL SPECIFIC - Air				
Delaware Ambient Air Quality Standards	Title 7, Delaware Code, Ch 60, Regulation 3, Section 6003	Applicable	Establishes ambient air quality standards.	Applicable for potential releases from SVE, excavation work, or other remedial actions.
II. LOCATION SPECIFIC				
National Historic Preservation Act of 1966, as amended	36 C.F.R. §§ 800.4(b-c), 800.4(e), 800.5(e), 800.9	Applicable	Requires remedial action to take into account effects on properties included on or eligible for the National Register of Historic Places.	Steps must be taken (including possible data recovery step prior to soil excavation) to mitigate adverse impacts to cultural resources eligible for the National Register of Historic Places from the soil excavation or the installation of the SVE system. Only substantive requirements must be met.
Delaware Regulations Governing Hazardous Substance Cleanup	Delaware Regulations Governing Hazardous Substance Cleanup, Section 8.10	Relevant and Appropriate	Institutional Controls must be recorded on the deed.	The land-use restrictions contained in this ROD Amendment must be added to the deed of the property that is the location of the former coal gas plant.
III. ACTION SPECIFIC				
A. Water				
State of Delaware Regulations Governing the Construction of Water Wells, January 20, 1987	State of Delaware Regulations Governing the Construction of Water Wells, January 20, 1987 Sections 3, 4, 5, 6, 7, 8, 9, 10	Applicable	Contain requirements governing the location, design, installation, use, disinfection, modification, repair, and abandonment of all wells and associated pumping equipment.	Installation of any monitoring and recovery wells and the abandonment of wells shall meet all substantive requirements.
General Pretreatment Regulations	40 C.F.R. §§ 403.5, 403.6(c-e)	Applicable	Standards for discharge to POTW	Applicable should any extracted ground water and/or condensed water vapor from the SVE system be discharged to a POTW.

ARAR or TBC	Legal Citation	ARAR Class	Requirement Synopsis	Applicability to Selected Remedy
B. Air				
Control of Air Emissions from Air Strippers at Superfund Ground Water Sites, June 15, 1989 (EPA OSWER Directive 9355.0-28)	No Legal Citation	To be Considered	Policy to guide the selection of controls for air strippers at ground-water sites according to the air quality status of the site's location (i.e., ozone attainment or non-attainment area).	To be considered in determining if air emissions controls are necessary for the SVE system because Kent County is an ozone non-attainment area. Sources most in need of controls are those with emissions rates in excess of 3 lbs./hour or 15 lbs./day or a potential rate of 10 tons/year of total VOCs.
Delaware Regulations Governing the Control of Air Pollution	Delaware Regulations Governing the Control of Air Pollution Regulations Numbers 2, 19, and 24	Applicable	Sets forth the requirement that a permit is necessary to operate an air stripper if emissions will exceed 2.5 lbs/day. Section 2 describes general conditions. Section 19 deals with odor. Section 24 deals with volatile organic compounds.	If emissions exceed 2.5 lbs/day then the substantive requirements of the regulation must be met. In addition, the emissions from the air stripper must meet the Ambient Air Quality Standards set forth in Regulation 3 of 7 Delaware Code, Chapter 60, Section 6003.
C. Sediments/Solids				
Delaware Sediment and Stormwater Regulations January 23, 1991	Delaware Sediment and Stormwater Regulations January 23, 1991 Sections 3, 6, 9, 10, 11, and 15	Applicable	Establishes a statewide sediment and stormwater management program.	A stormwater and sediment management plan consistent with Delaware requirements must be developed and approved by EPA before construction disturbing over 5,000 square feet of land can begin.
D. Waste Handling and Disposal				
Standards Applicable to Generators of Hazardous Waste	Delaware Regulations Governing Hazardous Waste, §§ 262.10(b), 262.11, 262.34, 262.41	Applicable	Establishes standards for generators of hazardous wastes including waste determination and accumulation times.	Applicable during soil excavation and to operator(s) of the wastewater treatment plant if the wastes generated are RCRA-hazardous wastes.
Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities (TSDF)	Delaware Regulations Governing Hazardous Waste, §§ 264.13-18, 264.30-37, 264.50-56	Applicable	Regulations for owners and operators of TSDFs which define acceptable management of hazardous wastes.	Applies to onsite recovery and treatment systems which handle hazardous waste including SVE, soil excavation, and debris cleaning.
RCRA Requirements for Use and Management of Containers	Delaware Regulations Governing Hazardous Waste, §§ 264.170-177	Applicable	Requirements for storage of hazardous waste in storage containers.	Applicable for temporary storage containers and on-site treatment systems.
RCRA Requirements for Tank Systems	Delaware Regulations Governing Hazardous Waste, §§ 264.191-199	Applicable	Requirements for storage or treatment of hazardous waste in tank systems.	Applicable for on-site treatment systems and temporary storage tanks containing hazardous wastes.

ARAR or TBC	Legal Citation	ARAR Class	Requirement Synopsis	Applicability to Selected Remedy
RCRA Requirements for Tank Systems	EPA Regulations, 40 C.F.R. §§ 264.190-196, 264.198-199	Applicable	Requirements for storage or treatment of hazardous waste in tank systems.	Applicable for onsite treatment systems and temporary storage tanks containing hazardous wastes.
RCRA Requirements for Waste Piles	Delaware Regulations Governing Hazardous Waste, §§ 264.251, 264.254, 264.256-257, 264.258(a)	Applicable	Requirements for storage or treatment of hazardous waste in waste piles.	Applicable for on-site storage and/or treatment of excavated soil if the soil is a hazardous waste.
RCRA Requirements for Waste Piles	EPA Regulations, 40 C.F.R. §§ 264.251-254	Applicable	Requirements for storage or treatment of hazardous waste in waste piles.	Applicable for on-site storage and/or treatment of excavated soil if the soil is a hazardous waste.
Identification and Listing of Hazardous Wastes	Delaware Regulations Governing Hazardous Wastes, §§ 261.20-24, 264.31, 261.33	Applicable	Identifies solid wastes which are regulated as hazardous wastes.	Use to determine which materials to be disposed of are hazardous wastes.

FIGURE 1
Dover Gas Light Superfund Site
Record of Decision Amendment - December 1997

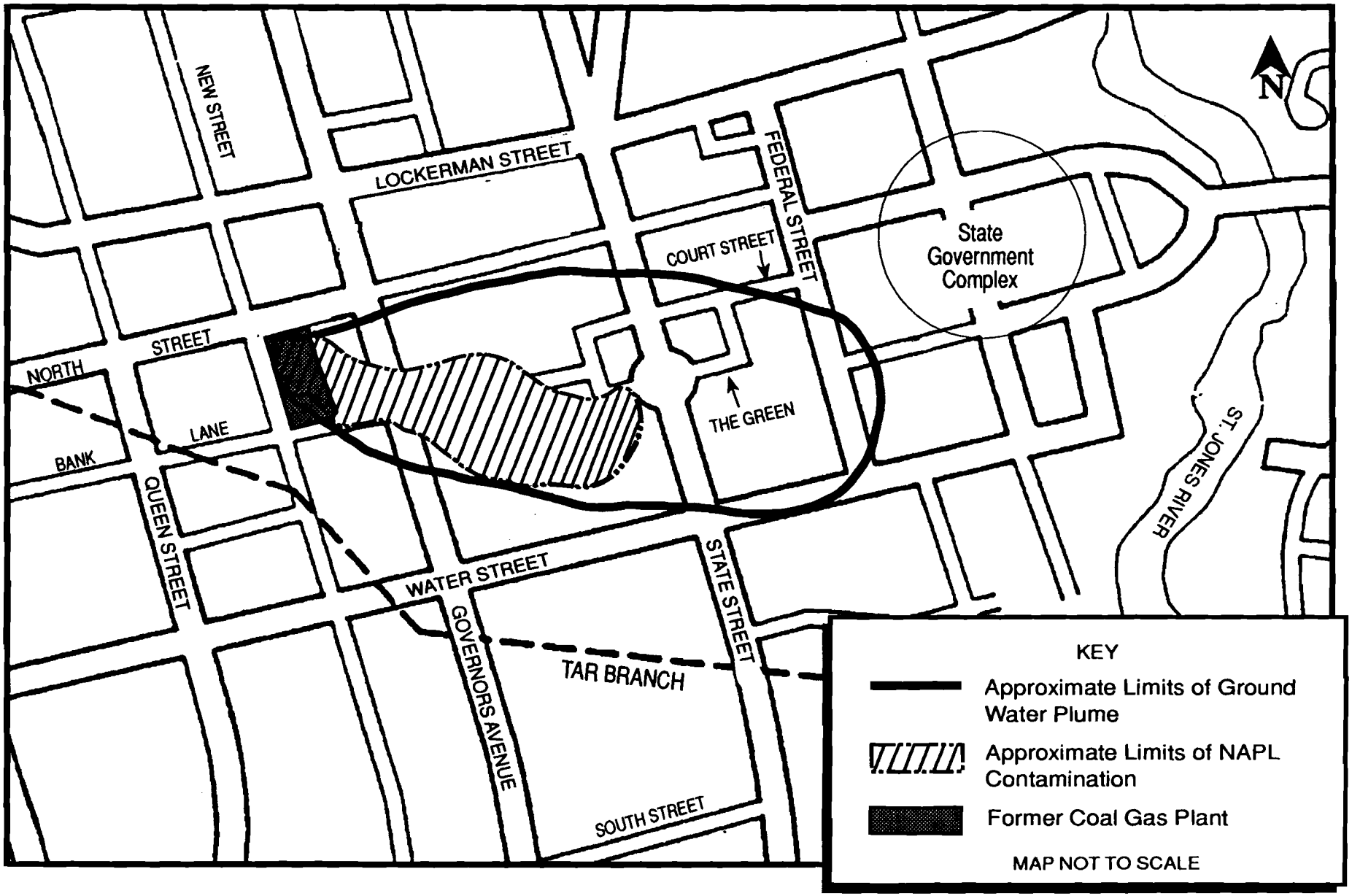
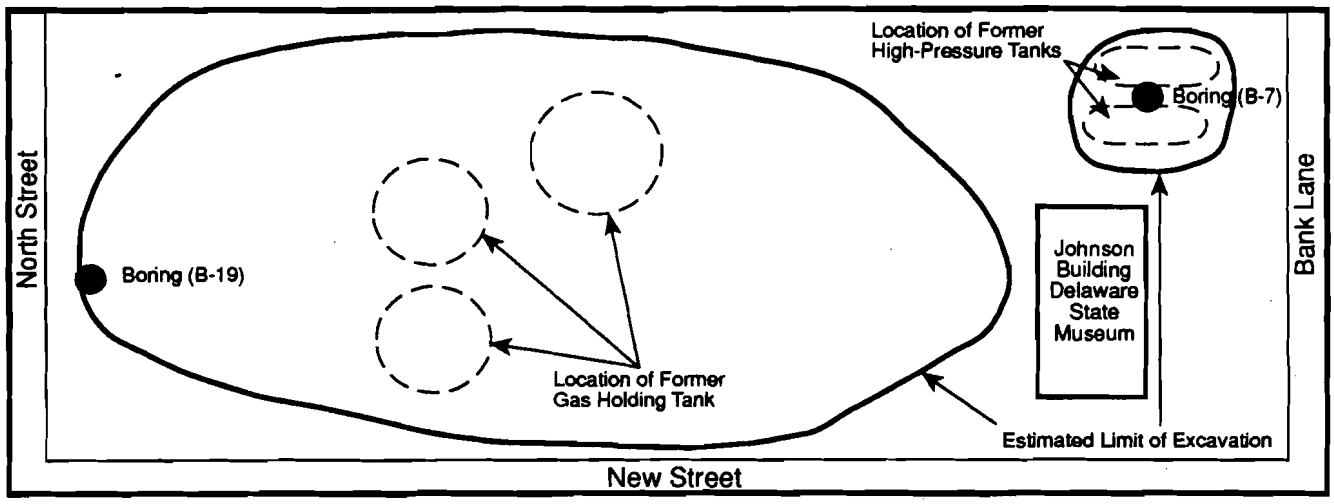
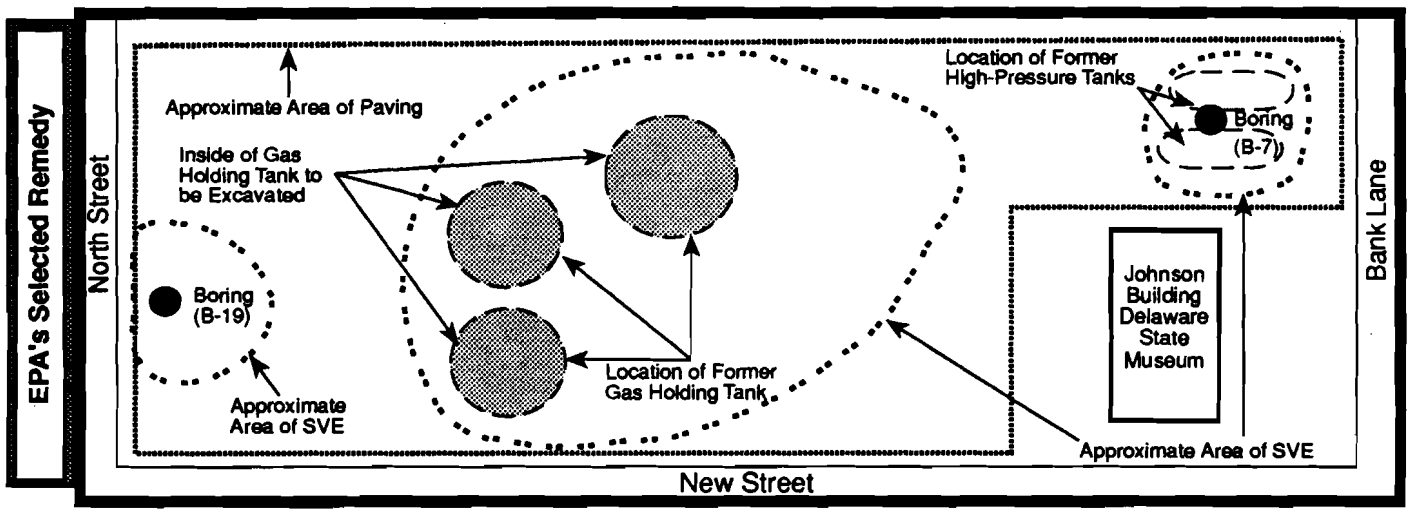


Figure 2
Soil Cleanup Areas
Record of Decision Amendment - December 1997

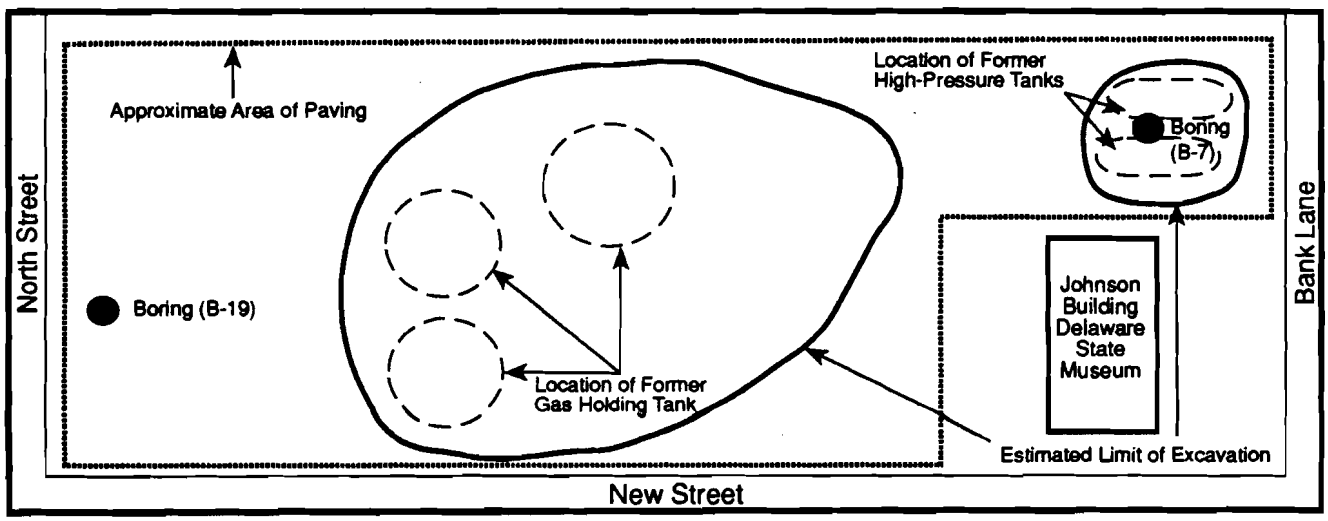
ALTERNATIVE #1: Soil Excavation



ALTERNATIVE #2: Soil Excavation and Soil Vapor Extraction (SVE)



ALTERNATIVE #3: Modified Soil Excavation



STATE OF DELAWARE
DEPARTMENT OF NATURAL RESOURCES
& ENVIRONMENTAL CONTROL
DIVISION OF AIR & WASTE MANAGEMENT

OFFICE OF THE DIRECTOR

89 Kings Highway
Dover, Delaware 19901

TELEPHONE: 302 739 4784
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October 8, 1997

Abraham Ferdas, Acting Director (3HW00)
Hazardous Waste Management Division
Environmental Protection Agency Region III
841 Chestnut Street
Philadelphia, Pennsylvania 19107

RE: Dover Gas Light Site
Proposed Plan

Dear Mr.Ferdas:

The State of Delaware concurs with EPA's revised Proposed Plan for the Dover Gas Light Site dated August 1997. The plan calls for the following:

- Limited excavations of on-site contaminated soils.
- On site soil vapor extraction.
- Containment of non-aqueous phase liquids in ground water.
- Monitoring of dissolved contaminants in groundwater.

If you have any questions, please do not hesitate to call me.

Sincerely,

Nicholas A. Di Pasquale
Director

NAD:SFJ:rjm
sfj97061
DE 057 I 5

cc: Christophe A.G. Tulou, Secretary, DNREC
N.V. Raman, Manager, DNREC
Jamie H. Rutherford, Program Manager, DNREC
Stephen F. Johnson, Project Manager, DNREC
Peter Ludzia, EPA
Randy Sturgeon, EPA

Delaware's good nature depends on you!