Superfund Proposed Response Action
March 2011

Jewett White Lead Site

Port Richmond, Staten Island, New York

PURPOSE OF THIS DOCUMENT

This document describes the response actions considered for the 2000-2012 Richmond Terrace property portion of the Jewett White Lead Site and identifies the preferred response action with the rationale for this preference.

The document was developed by the U.S. Environmental Protection Agency (EPA) in consultation with the New York State Department of Environmental Conservation (NYSDEC). EPA is issuing this document as part of its public participation responsibilities under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, as amended, and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). The response actions summarized here are described in more detail in EPA's Engineering Evaluation/Cost Analysis (EE/CA). EPA and NYSDEC encourage the public to review the EE/CA to gain a more comprehensive understanding of the site and the proposed response action.

This document is being provided as a supplement to the EE/CA to inform the public of EPA's preferred response action and to solicit public comments pertaining to all the response actions evaluated, as well as the preferred response action.

EPA's preferred response action, which is formally referred to as a "non-time-critical removal action," consists of excavating and removing approximately 4,242-cubic yards of lead-contaminated soil from the 2000-2012 Richmond Terrace property for off-site treatment/disposal. The excavated areas would be backfilled with clean fill and re-vegetated.

The response action described in this document is the *preferred* response action for the site. Changes to the preferred response action or a change from the preferred response action to another response action may be made if public comments or additional data indicate that such a change will result in a more appropriate removal action. The final decision regarding the selected response action will be made after EPA has taken into consideration all public comments. EPA is soliciting public comment on all of the response actions considered in the detailed analysis of the EE/CA because EPA may select a response action other than the preferred response action.

MARK YOUR CALENDARS

March 4, 2011 – April 17, 2011: Public comment period related to this document.

Wednesday, March 16, 2011 from 7:00 p.m to 9:00 p.m.: Public meeting at the **CYO** located at 120 Anderson Avenue Staten Island, New York

COMMUNITY ROLE IN THE SELECTION PROCESS

EPA relies on public input to ensure that the concerns of the community are considered in selecting an effective response action for each Superfund site. To this end, the EE/CA and this document have been made available to the public for a public comment period which begins on March 4, 2011 and concludes on April 17, 2011.

A public meeting will be held during the public comment period at the **CYO** at 120 Anderson Avenue, on March 16, 2011 at 7:00 p.m. to present the conclusions of the EE/CA, further elaborate on the reasons for recommending the preferred response action, and to receive public comments.

Comments received at the public meeting, as well as written comments, will be taken into consideration in selecting the removal action, and will be documented as part of the decision document (called an Action Memorandum) which will formalize the selection of the response action.

INFORMATION REPOSITORIES

Copies of this document and supporting documentation are available at the following information repositories:

To review online, visit:
www.epa.gov/region02/superfund/removal/jewettwhitelead

To review a paper copy, please contact:

- **New York Public Library,**
  Port Richmond Branch located at
  75 Bennett Street
  Port Richmond
  Staten Island, NY 10302

Hours: Monday – Wednesday, 10:00 am - 6:00 pm
Thursday, 12:00 pm to 8:00 pm
Friday – Saturday, 10:00 am to 5:00 pm

- **Superfund Records Center US EPA Region 2**
  located at 2890 Woodbridge Avenue,
  Edison, NJ 08837
  (732) 906-6877

Hours: Monday – Friday, 9:00 am – 5:00 pm

Written comments on this document should be addressed to:

Kimberly Staiger, On-Scene Coordinator
U.S. Environmental Protection Agency
2890 Woodbridge Avenue, MS-211
Edison, NJ 08837

Fax: (732) 906-6182
E-mail: staiger.kimberly@epa.gov

SITE BACKGROUND

Site Description

The Jewett White Lead Site consists of the historic footprint of the former Jewett White Lead Company facility and the extent of contamination which includes the 1.07-acre parcel of land at 2000-2012 Richmond Terrace and the approximately 4.41-acre parcel of land at 2015 Richmond Terrace (of which, approximately 2.25-acres is not covered by the surface waters of the Kill Van Kull).

The site is situated within an urban mixed use residential neighborhood with concentrations of industrial and manufacturing facilities situated along the waterfront, within the Port Richmond section of the Borough of Staten Island, New York.

The Site is located on the North Shore of Staten Island in the Port Richmond section. The area around the Site is a mix of residential, light industrial, and commercial. A residential neighborhood commences just south of the elevated railroad line. The nearest residence is located approximately 100 feet south of the Site. Bus stops are present on both sides of Richmond Terrace in front of the Site and on Park Avenue across the street from the entrance to the 2000-2012 Richmond Terrace property.

The 2000-2012 Richmond Terrace portion of the Site is bordered to the south by an abandoned railroad line, to the west by Park Avenue, and to the north and east by Richmond Terrace. The 2015 Richmond Terrace portion of the Site is bordered to the east by a shipyard facility, to the west by Cable Queen, a New York submarine contracting company, to the north by the Kill Van Kull (a body of water which is a tributary of the New York Harbor), and to the south by Richmond Terrace. The two properties are separated by Richmond Terrace, the main roadway running east-west parallel to the Kill Van Kull.

The 2000-2012 Richmond Terrace property portion of the Site, which is the subject of this EE/CA, is presently owned by Perfetto Realty Corporation (PRC). The property is currently an unpaved vacant lot that had been utilized as a staging/storage area for construction-related materials. The 2015 Richmond Terrace property portion of the Site is presently owned by the Moran Towing Corporation, an active tug boat facility. Buildings, concrete, or asphalt cover most of the Moran Towing Corp. property, although there are several areas where the asphalt or concrete is in disrepair exposing bare soil.

In 2009, EPA selected Port Richmond, and the adjoining neighborhoods along the north shore of Staten Island, as a nationally-designated Environmental Justice Showcase Community. The Environmental Justice Showcase Communities effort seeks to bring together governmental and non-governmental organizations and pools their collective resources and expertise on the best ways to achieve real results in communities.

Site History

John Jewett & Sons White Lead Company operations originated at 2015 Richmond Terrace where they owned and operated the Site from 1839 until April 3, 1890 when National Lead acquired the Site property. When National Lead purchased the business, they extended the white lead operations across the street to include the property at 2000 Richmond Terrace. National Lead owned and operated at both properties until approximately 1943.

On December 31, 1943, Moran Towing Corporation acquired the 2015 Richmond Terrace portion of the Site from National Lead. The 2015 Richmond Terrace property portion of the Site is presently owned by the Moran Towing Corporation, an active tug boat facility.

On May 31, 1946 National Lead sold the portion of the Site located at 2000 Richmond Terrace. Between 1949 and 1990, various businesses operated at the 2000-2012 Richmond Terrace property including Sedutto's Ice Cream factory. The buildings on this portion of the Site were eventually razed and cleared after several fires occurred at the Sedutto's Ice Cream factory.

The 2000-2012 Richmond Terrace property was sold at auction on January 26, 2007 to Leewood Park Avenue LLC. PRC purchased the property from Leewood Park Avenue LLC on October 18, 2007, and currently owns the 2000-2012 Richmond Terrace portion of the Jewett White Lead Site. The property was utilized by PRC to store equipment and materials from local construction projects.

The 2000-2012 Richmond Terrace property portion of the Site is currently an unpaved vacant lot. The ground surface at this portion of the Site consists of mostly grassy soils with some stone near the entrance. The soils have been disturbed in the past due to the presence of heavy machinery and vehicular movement.

SUMMARY OF SITE INVESTIGATIONS AND EXTENT OF CONTAMINATION

In December 2008, EPA and contractor representatives from the Removal Support Team collected soil samples from test pits at the 2000-2012 Richmond Terrace property. Off-property samples were collected from four locations along Richmond Terrace in order to determine if contamination had migrated from the property. Elevated levels of lead are present throughout most of that property, both laterally and with depth. The average surface lead concentration was 5,081 milligrams/kilogram (mg/kg). The average lead concentration in the soil samples collected at depths of 1-foot, 2-foot, and 3-foot below grade were 28,245 mg/kg, 61,201 mg/kg, and 53,398 mg/kg, respectively. In addition, the four off-property sample locations were found to contain lead concentrations ranging from 383 mg/kg to 2,760 mg/kg.

On April 6, 2009, at EPA's request and oversight, the property owner of 2000-2012 Richmond Terrace initiated an interim removal action to stabilize conditions at the property. The interim removal action completed on April 20, 2009 established a grass cover on the lead-contaminated soils to limit the migration of wind-blown lead dusts from the property onto neighboring residential properties. In addition, a silt fence was installed along the property lines to prevent surface water runoff containing lead-contaminated soils/sediments from being transported off the property onto the adjacent sidewalks. While these measures temporarily limit the exposure threat, permanent measures are needed to eliminate the potential for human exposures to soils contaminated with high levels of lead on the property.

In June 2009, EPA collected off-site soil samples in the surrounding community, including in residential backyards of the properties immediately adjacent to the former Jewett White Lead Company facility property and in a background area located upwind of the Site. Elevated levels of lead were found in the residential backyards sampled and in the surrounding community with an average lead concentration of 549 mg/kg in the surface soils (0-2" depth) in the backyards, and an average concentration of lead in the surface soils in the background area of 788 mg/kg.

Attribution analysis indicates that environmental sources of lead other than from the Site are the primary contributors to lead contamination in this community. Other potential sources of lead include leaded gasoline emissions, exterior lead-based paint, elevated steel structures, and former industrial processes.

On June 15, 2009, EPA collected surficial soil samples from the 2015 Richmond Terrace property portion of the Jewett White Lead Site. The soil samples were collected from portions of the property where exposed soil was present or where the concrete and asphalt appeared to be in disrepair. Elevated levels of lead were found to be in the samples collected at concentrations that ranged from 145 mg/kg to 2,730 mg/kg.

From October 4 to October 28, 2010, EPA and its contractor representatives began collecting additional soil samples at both properties that comprise the Site to determine the extent of contamination. Monitoring wells were installed to determine the ground water impacts from the lead contaminated soils. In addition sediment and surface water samples were collected from storm sewer outfalls to the Kill Van Kull to determine if the lead contamination from the 2000-2012 Richmond Terrace property had impacted the waterway.

The field screening results from the sampling event in October 2010 at the 2000-2012 Richmond Terrace property indicates that the elevated levels of lead at the property are confined to the upper four feet of soil with the exception of a small well defined area located in the southwest corner of the property adjacent Park Ave.

Ground water samples were collected from two of the three monitoring wells installed at the 2000-2012 Richmond Terrace property on October 28, 2010. Lead was not detected in the ground water samples collected from the two monitoring wells installed at the 2000-2012 Richmond Terrace property.

Soil borings were installed to the water table at the 2015 Richmond Terrace property from October 11 to 15, 2010. Elevated levels of lead are present throughout the property beneath the asphalt paving. The average lead concentrations in the field screened soil samples collected at depths of 1-foot, 2-foot, 3-foot, and 4-foot below grade were 3,884 mg/kg, 6,473 mg/kg, 7,591 mg/kg, and 12,541 mg/kg.

SUMMARY OF HEALTH RISKS

Human Health Risk

Based upon the results of the investigations noted above, a streamlined human health risk assessment was conducted to estimate the risks associated with current and future site conditions at the 2000-2012 Richmond Terrace property portion of the Jewett White Lead Site.

The current land use is zoned commercial/industrial, and the future land use is not expected to change. However, this assessment included screening against the residential screening criteria, as a conservative measure to provide a range of the risks associated with each exposure scenario.

In soil, aluminum, antimony, arsenic, copper, iron, lead, manganese and mercury exceeded their respective residential screening criteria and were identified as contaminants of potential concern (COPCs). When compared to their respective screening criteria, a cancer risk or non-cancer hazard was generated for each chemical based upon the maximum detected concentration, whichever was the most sensitive health endpoint. This evaluation was conducted for all

WHAT IS RISK AND HOW IS IT CALCULATED?

A Superfund streamlined human health risk assessment is an analysis of the potential adverse health effects caused by hazardous substance releases from a site in the absence of any actions to control or mitigate these under current- and future-land uses.

When COPCs are compared to their respective screening criteria, a cancer risk or non-cancer hazard is generated for each chemical based upon the maximum detected concentration, whichever was the most sensitive health endpoint. For carcinogens, cancer risks are generally expressed as the incremental probability of an individual developing cancer over a lifetime as a result of exposure to the carcinogen.

The risks associated with exposure to lead are not expressed as a probability of developing cancer. But rather compared to a screening value which corresponds to a threshold of no more than 5% of children exposed would have a blood lead level greater than 10 µg/dL. The CDC has identified a blood lead concentration level of 10 µg/dL as the level of concern above which significant health risks occur. For lead, the toxicity assessment is based on exceeding the 10 µg/dL blood lead concentration.

constituents which exceeded their respective screening level.

The maximum detected concentrations of COPCs (individually) are below the HI = 1 or within the cancer risk range, with the exception of lead and manganese.

Three detected chemicals in groundwater samples exceeded their respective tap water screening criteria. The maximum detected concentration for Iron corresponds to 0.9 HI, which is below EPAs threshold of 1. The maximum detected concentration for manganese corresponds to a 5.6 HI, which slightly exceeds EPAs threshold of 1. The maximum detected concentration of arsenic corresponds to a cancer risk of 1.6×10^{-3}, which exceeds EPA cancer risk range. It should be noted that Arsenic was detected only in one of the three monitoring wells sampled at the site.

The samples collected and analyzed using the XRF indicate that the maximum detected concentration of lead (97,921 mg/kg) exceed its respective screening criteria for the child (400 mg/kg) and adult receptor (880 mg/kg). The average lead concentration at the surface (0-2ft) is 27,443 mg/kg and is much higher when compared to the total soil (surface and subsurface) lead concentration throughout the Site (11,245 mg/kg).

The lead results indicate that the average concentration on the Site (surface and subsurface) presents an unacceptable risk to the current industrial/commercial receptor and the potential future resident.

Ecological Risk

Concentrations of lead and other metals at the 2000-2012 Richmond Terrace portion of the Site are sufficiently high to present risk to ecological receptors. The fact that little viable habitat exists at the property may represent a mitigating factor by reducing the possibility of ecological exposure.

REMOVAL ACTION OBJECTIVES

There are potential exposure pathways, via incidental ingestion of soil and inhalation of fugitive dusts that may present an imminent and substantial endangerment to humans and the environment, and no other party, government or otherwise, is currently taking a timely response action to mitigate the threat. There is a threat of further releases at and from the Site. Without a response action, contaminants at the Site could migrate to area soils, sediment, surface water, and groundwater.

Therefore conditions at the site meet the criteria for a removal action under CERCLA, as documented in Section 300.415(b)(2)(i) of the NCP, namely the actual or potential exposure to nearby human populations from hazardous substances, and Section 300.415(b)(2)(iv) of the NCP, namely that high levels of hazardous substances are in soils largely at or near the surface, that may migrate.

The following removal action objectives were established for the site:

- Prevent or minimize the migration of hazardous substances released at the Site to the area's soils, sediment, surface water and groundwater;
- Abate, minimize, stabilize, mitigate, or remove the contaminants from the soil such that unacceptable risks to human and ecological receptors are eliminated; and
- Restore the property to its current use.

EPA has determined that a non-time-critical removal action is appropriate to abate, prevent, minimize, stabilize, mitigate, or eliminate these threats to public health, welfare, or the environment. The proposed response action is considered non-time-critical because interim removal actions implemented at the 2000-2012 Richmond Terrace property have temporarily limited the exposure threat; however, permanent measures are still needed to eliminate the potential for human exposures to soils contaminated with high levels of lead on the former Jewett White Lead property.

SUMMARY OF REMOVAL ACTION ALTERNATIVES

Five potential removal action alternatives were developed and are described below:

Alternative 1: No Action

Capital Cost: $0

Transportation and Disposal Cost: $0

Operation and Maintenance Cost[1]: $0

Present – Worth Cost: $10,500

Construction Time: 0 months

The Superfund program requires that the "no-action" removal alternative be considered as a baseline for comparison with the other removal alternatives. The no-action removal alternative for soil does not include any physical removal measures that address the problem of soil contamination at the property; however, it would include the implementation of a public awareness program (at a cost of $10,500) so that nearby residents are advised about the threats posed by the contamination located on the Site.

Alternative 2: Excavation and Off-Site Disposal/Treatment

Capital Cost: $171,146

Transportation and Disposal Cost: $626,787

Operation and Maintenance Cost[1]: $14,509

Present – Worth Cost: $924,153

Construction Time: 2-3 months

Under this removal alternative, approximately 4,242-cubic yards of soils would be excavated. The available soil analytical results will be used to determine initial excavation dimensions. Soil samples would be collected from the walls and base of the initial excavation and analyzed for metals. If analytical results of the post-excavation samples indicate that residual concentrations exceed the minimum action level, additional soil would be excavated, followed by additional confirmatory sampling. The process would be repeated until analytical results reveal that all the soils containing metals concentrations greater than 800 mg/kg for lead have been removed, or

[1]O&M costs include the present value of groundwater monitoring and cap maintenance for 30 years.

until a hard surface such as a roadway or sidewalk are encountered.

Once confirmatory sampling results indicate that excavation activities are completed, the excavated areas would be backfilled to restore the property to the existing grade. Backfill would consist of certified clean soil from an approved off-site source. The top 6 inches of backfill would be soil that would meet the needs of the property owner, either organic-rich loam capable of supporting vegetative growth, an inorganic travel layer (i.e., stone dust or crushed stone), or a combination of both. A vegetative cover would be planted immediately following placement of any topsoil layer.

Excavated soil will be sampled at the rate required by the proposed treatment, storage and disposal facility (TSDF), using TCLP analytical methods. As the final phase of this alternative, excavated soils will be transported and disposed of at an appropriate TSDF.

Alternative 3: Capping

Capital Cost:	$119,450
Transportation and Disposal Cost:	$354,618
Operation and Maintenance Cost[1]:	$112,860
Present – Worth Cost:	$644,076
Construction Time:	3 months

Under this removal alternative, an estimated 2,400 cubic yards of soil (the upper 2 feet) would be excavated to maintain the existing grade and accommodate the approximately 1-acre multi-layer cap that would be constructed over the contaminated soils. The cap layers, from bottom to top, would consist of the following:

Grading Layer: Common fill would be placed to create positive surface water run-off. Some on-site materials would be used for common fill.

Barrier Protection Layer: A 40-mil (0.040-inch) thick flexible membrane liner (FML) manufactured from high-density polyethylene (HDPE). The HDPE liner provides a low-permeability layer that would act as the primary liner in retarding infiltration. Common fill layer would be placed at a thickness of 20 inches to provide protection for the HDPE and drainage layer.

Geosynthetic Drainage Layer: The drainage layer would be used to remove surface water that infiltrates through the upper layers of the cap. The drainage layer would tie into a drainage system located within an anchor trench around the perimeter of the cap.

Clean Fill Layer: This layer would provide protection for the barrier and drainage layers, and would comprise approximately 1.5 ft of clean fill.

A Vegetative Soil Layer: A uppermost cover layer that would meet the needs of the property owner, either organic-rich loam capable of supporting vegetative growth, an inorganic travel layer (i.e., stone dust or crushed stone), or a combination of both would be place at a thickness of 6 inches to accommodate the root system of the vegetation selected for the cap

After capping, the property would be landscaped, fenced, and posted. This removal alternative would also include implementing institutional controls necessary to protect the integrity of the cap. Such an approach may include the imposition of an institutional control in the form of an environmental easement granted to NYSDEC for the property, and a Site Management Plan to assure the institutional and engineering controls remain in place and effective.

Property maintenance activities, including maintaining the fence and signs, removal of trees and shrubs on the cap that can puncture the geomembrane with root growth, monitoring for invasion by burrowing animals, and repair of any erosion, would be necessary to maintain the integrity of the cap system.

Groundwater beneath the Site will be monitored at the three onsite wells semi-annually for a

period of up to 30 years, to verify the success of the removal.

Alternative 4: Paving

Capital Cost: $139,500

Transportation and Disposal Cost: $73,879

Operation and Maintenance Cost[1]: $112,860

Present – Worth Costs: $354,711

Construction Time: 2 months

This removal alternative would involve the construction of an approximately 1-acre asphalt pavement over the graded contaminated soils. In order to maintain the current grade at the Site, the top 6 inches of contaminated soil (500 cubic yards) would be removed, in order to accommodate the pavement.

After paving, the Site would be fenced and posted. This response action would also include implementing institutional controls necessary to protect the integrity of the cap. Such an approach may include the imposition of an institutional control in the form of an environmental easement granted to NYSDEC for the property, and a Site Management Plan to assure the institutional and engineering controls remain in place and effective.

Property maintenance activities, including maintaining the fence and signs, repair of any erosion and/or cracks, would be necessary to maintain the integrity of the paving system.

Groundwater beneath the Site will be monitored at the three onsite wells semi-annually for a period of up to 30 years, to verify the success of the removal.

Alternative 5: Immobilization

Capital Cost: $145,455

Transportation and Disposal Cost: $0

Operation and Maintenance Cost[1]: $112,860

Present – Worth Costs: $279,315

Construction Time: 2-3 months

Under this removal alternative, the top two feet of lead contaminated soil would be treated in-situ with a concrete additive which would immobilize the lead in the soil, preventing leaching to surface water and groundwater, as well as preventing contact with deeper, untreated, lead-impacted soils. The treatment would be accomplished by adding the concrete additive and water to the soil via an industrial tilling machine, in two, 1-ft lifts. The additive would not significantly increase the volume of treated soils, such that no soil removal will be required to maintain current grade. Once cured, the treated area will provide a surface that precludes vegetation growth and burrowing animals, and a suitable surface for the current site use, storage of construction equipment. No further cover will be required.

After immobilization, the three onsite monitoring wells would be replaced, and their surface completions would be sealed to the ground surface. Following monitoring well installation and development, the Site would be fenced, and posted. Such an approach may include the imposition of an institutional control in the form of an environmental easement granted to the NYSDEC for the property, and a Site Management Plan to assure the institutional and engineering controls remain in place and effective.

Groundwater beneath the Site will be monitored at the three onsite wells semi-annually for a period of up to 30 years, to verify the success of the removal.

EVALUATION OF REMOVAL ALTERNATIVES

To select a removal alternative for a site, EPA conducts a detailed analysis of the viable removal actions. The detailed analysis consists of an assessment of the individual removal actions against each of these evaluation criteria (effectiveness, implementability, and cost) and a comparative analysis focusing upon the relative performance of each removal action against those criteria.

Effectiveness

This criterion refers to a removal action's ability to meet the removal action objectives. The overall assessment of effectiveness is based on a combination of factors, including overall protection of public health and the environment, compliance with ARARs, long-term effectiveness and permanence, reduction of toxicity, mobility, and volume through treatment, and short-term effectiveness, as follows:

- Overall protection of human health and the environment assesses whether the response actions are protective of public health and the environment. The evaluation will focus on how each response action achieves adequate protection and describes how the response action will reduce, control, or eliminate risks at the site through the use of treatment, engineering, or institutional controls.

- Compliance with ARARs addresses whether or not a response action would meet all of the applicable or relevant and appropriate requirements of other federal and state environmental statutes. Other federal or state advisories, criteria, or guidance are "To-Be-Considered" (TBC) criteria. TBCs are not required by the NCP, but may be useful in determining what is protective of a site or how to carry out certain actions or requirements.

- Long-Term Effectiveness and Permanence involves the evaluation of the extent and effectiveness of the controls that may be required to manage the risk posed by treatment residuals and/or untreated wastes at the site. This criterion also considers the adequacy and reliability of controls and addresses the need for post-removal site control.

- Reduction of Toxicity, Mobility, and Volume through Treatment includes evaluating the anticipated performance of specific treatment technologies. This evaluation addresses the statutory preference for selecting response actions that employ treatment technologies to permanently and significantly reduce toxicity, mobility, or volume of wastes. Factors that will be considered, as appropriate, include: the treatment or recycling processes the response actions employ and the materials they would treat; the amount of hazardous materials to be destroyed or treated; the degree of reduction expected in toxicity, mobility, or volume; the degree to which the treatment would be irreversible; the type and quantity of residuals that would remain after treatment; and whether the response action would satisfy the preference for treatment.

- Short-Term Effectiveness examines the effectiveness of response actions in protecting public health and the environment during the construction and implementation period until the removal action objectives have been met. The following factors will be considered: potential for short-term risks to the affected community as a result of the response action; potential impacts on workers during the response action, and the effectiveness and reliability of protective measures that would be taken; potential adverse environmental impacts of the response action, and the effectiveness and reliability of protective measures that would be taken; and time until protection is achieved.

Implementability

Under this criterion, the ease of implementing the removal actions will be assessed by considering the following factors: technical feasibility, including technical difficulties and unknowns associated with the construction and operation of a technology, the reliability of the technology, ease of undertaking additional removal actions, the ability to monitor the effectiveness of the removal action, and the extent to which the removal action contributes to the efficient

performance of any long-term remedial action; administrative feasibility, including activities needed to coordinate with other offices and agencies, the ability to obtain necessary approvals and permits from other agencies (for off-site actions), and statutory limits on removal actions; availability of services and materials, including the availability of adequate on or off-site treatment, storage capacity, and disposal capacity and services; and the availability of necessary equipment and specialists, and provisions to ensure any necessary additional resources; and the availability of prospective technologies for full-scale application. This criterion will also assess state and community acceptance, as described below.

- State Acceptance indicates whether, based on the review of the EE/CA and this document, the State agrees with, opposes, or has no comment on the preferred removal action at the present time.

- Community Acceptance, which will be assessed in the Action Memorandum, refers to the public's general response to the removal actions described in the EE/CA and this document.

Cost

The costs that will be assessed include the capital costs, including both indirect and direct costs; transportation and disposal, operation and maintenance costs, which include annual groundwater monitoring and cap maintenance costs; and present-worth costs, which include the capital costs plus the present value of 30 years of post-removal site control costs (calculated at a 7 percent discount rate).

Comparative Analysis of Removal Actions

A comparative analysis of the removal actions based upon the evaluation criteria noted above follows:

Effectiveness

Overall Protection of Public Health and the Environment

Removal Alternative 1 (no action) would not be protective of human health and the environment since it does not actively address the potential human health and ecological risks posed by the contaminated soils.

Removal Alternative 2 (excavation and off-Site disposal) would be the most protective removal action, since the risk of incidental contact with waste by humans and ecological receptors and the potential for contaminant migration from the property would be eliminated by permanently removing the contaminated soils.

Removal Alternative 3 (capping) would be protective of human health and the environment. This removal action reduces the risk of incidental contact with waste by humans and ecological receptors by containing the contaminated soil beneath a 2' soil cap. Capping would also prevent surface contaminant migration from the property and reduce the potential migration to the groundwater.

Removal Alternative 4 (paving) would be protective of human health and the environment; however, it is less protective than Removal Alternative 2 or 3 because the depth of the cap is less and the potential is therefore greater for direct contact with principle threat wastes if the cap is disturbed or breached. This removal action reduces the risk of incidental contact with waste by humans and ecological receptors by containing the contaminated soil. The asphalt paving would also prevent surface contaminant migration from the property and reduce the potential migration to the groundwater.

Removal Alternative 5 (immobilization) would be protective of human health and the environment. Immobilization of contaminants in the top two feet of contaminated soil via in-situ treatment with a concrete additive would immobilize the lead in the soil, prevent surface contaminant migration from the property and reduce the potential migration to the groundwater, as well as preventing contact with deeper, untreated,

lead-impacted soils. This removal alternative reduces the risk of incidental contact with waste by humans and ecological receptors by treating the top two feet of contaminated soil.

Compliance with ARARs

Since the contaminated soils would not be addressed under Alternative 1 (no action), this removal alternative would not comply with the site specific Preliminary Remediation Goal (PRG) of 800 mg/kg lead. EPA in consultation with NYSDEC has established a site-specific PRG of 800 mg/kg for lead at the Site, based in part on the Regional Screening Levels for Contaminants at Superfund Sites (November, 2010), Streamlined Human Health Risk Assessment and NYSDEC Part 375 SCOs. The PRG was used to estimate the volume of contaminated soils and waste materials at the Site.

Removal Alternative 2 (excavation and off-Site treatment/disposal) will comply with the ARARS (e.g., the RCRA disposal regulations).

Removal Alternatives 3 (capping), 4 (paving), and 5 (immobilization) will not comply with ARARs, TBCs, and other criteria since soils will remain in place that exceed the site specific PRGs, however the threat of exposure to the contaminated soils would be greatly reduced by requiring the containment/capping of all those soils and waste material that exceed the PRGs.

Long-Term Effectiveness and Permanence

Removal Alternative 1 (no action) would involve no controls and, therefore, would not be effective in preventing exposure to contaminants on-Site or the migration of contaminants from the property.

Removal Alternative 2 (excavation and off-Site treatment/disposal) would provide a high degree of long-term protection of human health and the environment by eliminating the possibility of exposure to contaminants on-Site and the potential for contaminants migrating from the property. The removal of the contaminated soils under Removal Alternative 2 would be effective and permanent.

Removal Alternatives 3 (capping) and 5 (immobilization) would both provide a high degree of long-term protection of human health and the environment in that they would eliminate the possibility of exposure to contaminants on-site and the potential for contaminants migrating from the property. The effectiveness and permanence of both of these removal alternatives would be dependent upon the effective maintenance of the cap and the proper enforcement of the institutional controls.

Removal Alternative 4 (paving) would provide a high degree of long-term protection of human health and the environment; however, the potential exists for direct contact with contaminants if the asphalt cap is disturbed or breached. The depth of the protective cap in this removal alternative, as opposed to Removal Alternatives 2 and 3, is significantly less and thus less protective.

Reduction of Toxicity, Mobility, or Volume Through Treatment

Removal Alternative 1 (no action) would provide no reduction in toxicity, mobility or volume.

Under Removal Alternative 2 (excavation and off-site treatment/disposal), contaminants above the PRG would be removed from the property for treatment/disposal, thereby reducing their toxicity, mobility, and volume. It is not known, however, to what extent the excavated soils would require treatment prior to disposal under this alternative.

Removal Alternatives 3 (capping) and 4 (paving) include the reduction of toxicity through treatment for that portion of soil removed from the property and treated as a result of TCLP failure (estimated at 2,400 and 500 cubic yards, respectively). The mobility or volume of contaminated soil that would be left on-site would not be reduced through treatment. These Alternatives would reduce the migration of and potential exposure to contaminated soils and waste materials.

Removal Alternative 5 (immobilization) would not result in the reduction of the toxicity or volume of contaminants in Site soils through treatment. The mobility of the contaminants would be greatly reduced, preventing the migration of contamination to the ground water and/or surface water.

Short-Term Effectiveness

Since Removal Alternative 1 (no action) does not include any physical construction measures in any areas of contamination, it would not present a risk to the community as a result of its implementation.

Removal Alternative 2 (excavation and off-site treatment/disposal), Alternative 3 (capping), Alternative 4 (paving), and Alternative 5 (immobilization) would involve excavating, moving, placing, and, in the case of Alternatives 3 and 4, re-grading waste. While all of these four removal action alternatives present some risk to on-site workers through dermal contact and inhalation, these exposures can be minimized by utilizing proper protective equipment and engineering controls. The vehicle traffic associated with cap construction and the off-site transport of contaminated soils could impact the local roadway system and nearby residents through increased noise level. Alternative 2 would require the off-site transport of a considerable amount of contaminated soil. Alternative 3 and 4 would require the delivery of cap construction materials, and off-site transport of a much lower volume of contaminated soil removed to re-grade the property. Alternative 5 would require the delivery of a concrete additive.

Under all of the removal action alternatives except the no action alternative, disturbance of the land during excavation and/or construction activities could affect the surface water hydrology of the property. There is a potential for increased stormwater runoff and erosion during excavation and construction activities that would have to be properly managed to prevent excessive water and waste material loading. Appropriate measures would have to be taken during excavation activities to prevent transport of fugitive dust and exposure of workers and downgradient receptors to contaminants.

Implementability

There are no implementability issues for the No Action, Removal Alternative 1.

Removal Alternative 2 (excavation and off-Site treatment/disposal) would use proven earthmoving equipment and techniques and established administrative procedures, and sufficient facilities are available for treatment and disposal of the excavated soils. Therefore, this alternative would be easily implemented.

Removal Alternatives 3 (capping), 4 (paving) and 5 (immobilization) can be accomplished using technologies known to be reliable and can be readily implemented. Equipment, services and materials for this work are readily available. The actions under these alternatives may be administratively difficult since the property owner would have to agree to the granting of an institutional control such as an environmental easement for the controlled property. In addition, the property owner may be required to maintain a Site Management Plan in perpetuity to ensure the institutional and engineering controls remain in place and are effective.

State Acceptance

The State of New York provided input on the EE/CA during its preparation and agrees with the preferred removal action.

Community Acceptance

Community acceptance of the preferred removal action will be assessed in the Action Memorandum following review of the public comments received on the EE/CA and this document.

Cost

The estimated capital, transportation and disposal costs, operation and maintenance costs[1], and present-worth costs for each of the response

actions are presented below.

Response Alt.	Capital Cost	T&D[2] Cost	O&M Cost	Present-Worth Costs
1	$0	$0	$0	$10,050
2	$171,146	$626,787	$14,509	$924,153
3	$119,450	$354,618	$112,860	$644,076
4	$139,500	$73,879	$112,860	$354,711
5	$145,455	$0	$112,860	$279,315

Alternative 2 has the highest present worth cost ($924,153) of the alternatives considered, but it has no operation and maintenance costs. Alternative 5 has low capital cost, no transportation and disposal costs, but it is not a permanent solution and has on-going operation and maintenance costs.

PREFERRED RESPONSE ACTION

Both Alternatives 3 and 5 use two feet of soil in combination with engineering and institutional controls to prevent exposure to contaminated soils (below the two-foot depth of excavation and at the surface, respectively). The actions under these removal alternatives address the principle threat, but may be challenging since the property owner would have to agree to the granting of an institutional control such as an environmental easement for the controlled property. In addition, the property owner may be required to maintain a Site Management Plan in perpetuity to ensure the institutional and engineering controls remain in place and are effective.

Alternative 4 (paving) would only remove the top six inches of contaminated soil, leaving principle threat wastes at or near the surface, and the potential exists for direct contact with the contaminants if the asphalt cap is disturbed or breached. While this alternative may provide long-term protection of human health and the environment; since the depth of the protective cap is only six inches, as opposed to the two feet in Alternatives 3 and 5, this alternative is less protective and not a viable removal alternative.

While Alternative 2 has a substantially higher cost ($924,153) than the other removal alternatives, it compares favorably to the remaining removal actions and provides a proportionately higher level of protection of human health and the environment. In addition, the excavation and disposal of the lead contaminated soils would result in a permanent removal action that requires no additional long-term oversight, operation and maintenance, and monitoring.

Based upon an evaluation of the various response actions, EPA recommends the following as a non-time critical removal action at the 2000-2012 Richmond Terrace property portion of the Jewett White Lead site. This preference is based on the proven effectiveness of the response action, the ease of implementation, and the relative cost.

Removal Alternative 2: Excavation and Off-Site Treatment/Disposal

Capital Cost:	$171,146
Transportation and Disposal:	$626,787
Operation and Maintenance:	$14,509
Present – Worth Cost:	$924,153
Construction Time:	2-3 months

Under this removal action, approximately 4,242-cubic yards of soils would be excavated. The available soil analytical results will be used to determine initial excavation dimensions. Soil samples would be collected from the walls and base of the initial excavation and analyzed for metals. If analytical results of the post-excavation samples indicate that residual

[1]O&M costs include the present value of groundwater monitoring and cap maintenance for 30 years.
[2]T&D includes all transportation and disposal costs.

concentrations exceed the minimum action level, additional soil would be excavated, followed by additional confirmatory sampling. The process would be repeated until analytical results reveal that all the soils containing metals concentrations greater than 800 mg/kg for lead have been removed, or until a hard surface such as a roadway or sidewalk are encountered.

Once confirmatory sampling results indicate that excavation activities are completed, the excavated areas would be backfilled to restore the property to the existing grade. Backfill would consist of certified clean soil from an approved off-site source. The top 6 inches of backfill would be soil that would meet the needs of the property owner, either organic-rich loam capable of supporting vegetative growth, an inorganic travel layer (i.e., stone dust or crushed stone), or a combination of both. A vegetative cover would be planted immediately following placement of any topsoil layer.

As the final phase of this action, excavated soils will be transported and disposed of at an appropriate TSDF.

EPA believes that the preferred response action would provide the best balance of tradeoffs among the response actions with respect to the evaluating criteria. EPA also believes that the preferred response action would be protective of human health and the environment, would comply with ARARs, would be cost-effective, and would utilize permanent solutions and response action treatment technologies or resource recovery technologies to the maximum extent practicable.

Where can I review the EE/CA?

The EE/CA for the 2000-2012 Richmond Terrace property portion of the Jewett White Lead Site is available for public review at the locations below.

To review online, visit:
www.epa.gov/region02/superfund/removal/jewettwhitelead

To review a paper copy, please contact:

- **New York Public Library, Port Richmond Branch** located at
  75 Bennett Street
  Port Richmond
  Staten Island, NY 10302

- **Superfund Records Center**
  US EPA Region 2 located at
  2890 Woodbridge Avenue
  Edison, NJ 08837

How can I submit comments about the EE/CA?

The public comment period for the EE/CA is open from March 4, 2011 until April 17, 2011. EPA asks that the public submit comments on or before the comment period closes on April 17, 2011.

Comments can be submitted by:

- Postal Mail - Mail comments to:
  Kimberly Staiger, OSC
  U.S. EPA, Region 2
  2890 Woodbridge Avenue
  Edison, NJ 08837

- E-mail
  E-mail comments to:
  Staiger.kimberly@epa.gov or

- In-person at the Public Meeting
  Wednesday, March 16, 2011
  from 7:00 pm to 9:00 pm
  Location: CYO
  120 Anderson Avenue
  Staten Island, New York

EPA relies on public input to ensure that the concerns of the community are considered in selecting an effective removal action. Comments will be taken into consideration in selecting the removal action and documented in an Action Memorandum which will formalize the selection of the removal action. EPA encourages the public's input on the EE/CA.