Former Kil-Tone Company Superfund Site
Operable Unit Two, Non-Residential Soil
Vineland, New Jersey

Superfund Proposed Plan July 2019

EPA ANNOUNCES PROPOSED PLAN

This Proposed Plan identifies the Preferred Alternative to remediate non-residential properties with contaminated soil related to the former Kil-Tone Company pesticide manufacturing plant located in Vineland, New Jersey. The Preferred Alternative calls for the excavation and off-site disposal of contaminated soil on non-residential properties and would be the final remedy for soil on non-residential properties.

The Environmental Protection Agency (EPA) has performed soil sampling at approximately 50 non-residential properties located in the vicinity of the former Kil-Tone Company pesticide manufacturing facility located at 527 East Chestnut Avenue, City of Vineland, Cumberland County, New Jersey ("Property"), as well as at the Property itself. The results of the soil sampling program identified approximately 40 of the approximately 50 non-residential properties where a remedial action is required. Additional sampling may be needed to further refine the extent of contamination at these properties.

This Proposed Plan includes a summary of the cleanup alternatives evaluated for use at the affected non-residential properties. This Proposed Plan was developed by EPA, the lead agency for the Former Kil-Tone Company Superfund Site (Site), in consultation with the New Jersey Department of Environmental Protection (NJDEP), the support agency. EPA, in consultation with NJDEP, will select a final remedy for contaminated soil at affected non-residential properties after reviewing and considering all information submitted during the 30-day public comment period. EPA, in consultation with NJDEP, may modify the Preferred Alternative or select another response action presented in this Plan based on new information or public comments. Therefore, the public is encouraged to review and comment on the alternatives presented in this Proposed Plan.

EPA is issuing this Proposed Plan as part of its community relations program under Section 117(a) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) 42 U.S.C. 9617(a), and Section 300.435(c) (2) (ii) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). This Proposed Plan summarizes information that can be found in greater detail in the Remedial Investigation (RI) and Focused Feasibility Study (FFS) reports for non-residential soil, as well as other related documents, which can be found in the Administrative Record file for this action. The location of the Administrative Record file is provided below.

MARK YOUR CALENDARS

Public Comment Period:
July 30 – August 28, 2019
EPA will accept written comments on the Proposed Plan during the public comment period. Written comments should be addressed to:

Sharon Hartzell, Project Manager
U.S. Environmental Protection Agency
290 Broadway, 18th Floor
New York, NY 10007
Email: hartzell.sharon@epa.gov

Written comments must be postmarked no later than August 28, 2019.

Public Meeting
August 13, 2019 at 7:00 P.M.
EPA will hold a public meeting to explain the Proposed Plan and all of the alternatives presented in the Feasibility Study. Oral and written comments will also be accepted at the meeting. The meeting will be held at:

Gloria M Sabater Elementary School.
301 So. East Blvd, Vineland, NJ 08360

In addition, select documents from the administrative record are available on-line at:
https://www.epa.gov/superfund/former-kil-tone

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EPA and NJDEP encourage the public to review these documents to gain a more comprehensive understanding of activities for the Site.

COMMUNITY ROLE IN SELECTION PROCESS

This Proposed Plan is being issued to inform the public of EPA's proposed alternative for non-residential properties and to solicit public comments pertaining to all of the remedial alternatives evaluated, including the Preferred Alternative. Changes to the proposed alternative, or a change to another alternative, may be made if public comments or additional data indicate that such a change would result in a more appropriate remedial action. The final decision regarding the selected remedy will be made after EPA, in consultation with NJDEP, has taken into consideration all public comments. EPA is soliciting public comments on all of the alternatives considered in the Proposed Plan, because EPA may select a remedy other than the proposed alternative. This Proposed Plan has been made available to the public for a public comment period that concludes on August 28, 2019.

A public meeting will be held during the public comment period to present the conclusions of the RI/FFS, to elaborate further on the reasons for proposing the Preferred Alternative, and to receive public comments. The public meeting will include a presentation by EPA of the Preferred Alternative and other cleanup options.

Information concerning the public meeting and on submitting written comments can be found in the "Mark Your Calendars" text box on Page 1. Comments received at the public meeting, as well as written comments received during the public comment period, will be documented in the Responsiveness Summary section of the Record of Decision (ROD). The ROD is the document that explains which alternative has been selected and the basis for the selection of the remedy.

SCOPE AND ROLE OF THE ACTION

Due to the large area, the different media affected by contamination, and varying land uses, EPA is addressing the cleanup of the Site in several phases, or operable units (OUs). A ROD for the first operable unit (OU1) was signed on September 12, 2016. It selected a remedy for residential properties in the vicinity of the former Kil-Tone Company manufacturing facility. This Proposed Plan is for the second operable unit associated with the Site and addresses contaminated soil at non-residential properties impacted by the former Kil-Tone Company operations, including at the former Kil-Tone property itself. Additional operable units for the Site include OU3, which addresses contaminated groundwater, and OU4, which addresses contaminated sediment and surface water. Additional OUs may be required.

The approximately 40 properties referenced in this Proposed Plan as requiring a remedial action is an estimate used to calculate the approximate costs of the cleanup alternatives. EPA thinks that the estimate is not likely to change significantly. The precise number of non-residential properties to be remediated will be determined upon completion of additional soil sampling during the remedial design and possibly refined during implementation of the remedial action.

SITE BACKGROUND

Site Description

The Site is located in a mixed-use area that has been identified as a community with environmental justice concerns. The Site consists of the location of the former Kil-Tone Company pesticide manufacturing facility, and the areal extent of contamination. Pesticides were manufactured at the Property from 1917 to on or about 1933. Lead and arsenic releases from the pesticide manufacturing operations contaminated the Property itself, and areas in the vicinity of the Property. Sampling has detected lead and arsenic contaminated soil in at least 57 residential and an estimated 40 non-residential properties in the vicinity of the former Kil-Tone Company pesticide manufacturing facility.

The former Kil-Tone Company facility is bordered to the north by East Chestnut Avenue; to the east by South Sixth Street; to the south by Paul Street; and to the west by South East Boulevard. Residential and non-residential properties are located throughout the area. The focus of this Proposed Plan is the non-residential properties impacted by the lead and arsenic releases from the Property.

The Property comprises approximately four acres and is currently occupied by a commercial enterprise involved in making and installing signs for businesses. The Property is developed and has a multi-section building on its western side. The remainder of the Property, formerly unpaved, was paved (asphalt cover) by EPA in

December 2016/January 2017 as part of a removal action performed by EPA on the Property. The paved area is used for vehicle parking, materials storage, and as a laydown area for unused equipment and larger steel fabrications.

Adjacent and north of the Property is the Lerco Fuel Co. Inc. (Lerco) industrial facility that consists of two lots. The Lerco property was formerly used as a fuel storage and distribution site but is now vacant.

A storm sewer catch basin located in the northwestern corner of the Property receives storm water from the entire Property and discharges into the head of the Tarkiln Branch, which is located across South East Boulevard and approximately 400 feet from the Property. Tarkiln Branch is a tributary to the Parvin Branch which flows into the Maurice River that is located approximately 3.5 miles from the Property.

The neighborhood to the northwest, north, and east of the Property consist of various residential properties with some commercial and industrial properties, as shown on Figure 1. Open spaces (neighborhood parks and vacant lots) are interspersed throughout this area as well. The non-residential properties to be addressed as part of OU2 may be adjacent to or near residential properties being addressed as part of OU1.

Farther away from the Property, land use is primarily a mix of residential and commercial development. The urban core of Vineland is centered near the intersection of Landis Avenue and County Route 615 (South East Boulevard). This area includes suburban housing and light commercial development that radiates in all directions, with development becoming lighter away from the urban center.

Site History

The former Kil-Tone Company began pesticide manufacturing operations at the Property in or about 1917. The company manufactured arsenic-based pesticides. Specific compounds manufactured by the company included lead arsenate, London purple, and Paris green.

In 1926, the Kil-Tone Company sold the Property to Lucas Kil-Tone Co., a New Jersey company, which continued to manufacture pesticides on the Property until on or about 1933 when pesticide manufacturing operations ceased at the Property. The Property is currently owned by Urban Manufacturing, LLC, which purchased the property in 2008, and leases the Property to Urban Sign & Crane, Inc., which operates a commercial sign fabrication and installation business at the Property.

There have been several investigations at the Site, including a site investigation by NJDEP which was initiated in August 2014. Site assessments have also been conducted by EPA's removal program. Samples collected during the NJDEP investigation found arsenic on the Property at concentrations as high as 740 milligrams per kilogram (mg/kg) in the top 6 inches of soil and at concentrations as high as 5,800 mg/kg in soil at depth of 3.5 to 4 feet below ground surface. Groundwater samples collected by NJDEP from temporary well points on the Property found arsenic concentrations as high as 8.1 micrograms per liter (µg/L) to 14,000 µg/L. This discovery prompted NJDEP to refer the Site to EPA on November 14, 2014. Note that this groundwater is not the source of drinking for the community; the City of Vineland Water Utility provides water to the community and this supply is tested regularly to assure it meets state and federal drinking water standards.

The Site was proposed to the National Priorities List (NPL) on September 30, 2015 and was added to the NPL on April 5, 2016.

Lead and arsenic associated with operations at the former Kil-Tone Company facility have been found in soil at residential and non-residential properties in the vicinity of the Property. These contaminants have also been found in sediment along the entire stretch of the Tarkiln Branch to the confluence with the Parvin Branch, as well as in associated floodplains. Lead and arsenic have also been identified in groundwater at or near the Property.

Site Geology and Hydrogeology

The Site is located in the Coastal Plain Province of unconsolidated fluvial and marine deposits. Soil at the Site typically includes coarse sands, coarse sandy loams, coarse loamy sands, course sandy clays and sand. Fill material was routinely encountered in soil borings. The hydrogeologic unit at the Site is Kirkwood-Cohansey aquifer. The depth to water at the Property is approximately 6 feet below ground surface, but ranges to at least 15 feet below ground surface across OU2.

The topography of the Site area is generally flat. Much of the area surrounding the Property is covered by impervious surfaces such as houses, streets, driveways, buildings, parking lots and urban construction.

EARLY RESPONSE ACTIONS AND OPERABLE UNIT ONE

Early Response Actions

From January 2015 through February 2016, EPA conducted several sampling events at the Site seeking to define the nature and extent of contamination in residential and non-residential soil, groundwater, surface water and sediment. Based on the results of EPA's 2015 and 2016 sampling events and the earlier sampling by NJDEP, EPA initiated a removal action in April 2016 to prevent exposure to lead and arsenic-contaminated surface soil at residential properties located in the vicinity of the Property.

EPA's removal action consisted of the placement of topsoil to support the growth of sod on portions of 26 residential properties with arsenic and/or lead concentrations in surface soil in excess of action levels. EPA also instructed property owners and/or residents of these residential properties to not disturb the new layer of clean topsoil and/or sod until a permanent remedy could be implemented. These preventative measures were completed in June 2016.

Later in 2016, an additional six residential properties located in the flood plain of the Tarkiln Branch were addressed to prevent exposure to and/or migration of contamination, and fencing was installed to restrict access to portions of two public housing developments along the Tarkiln. In addition, soil cover and paving were placed over a portion of the Property itself to prevent further migration of contamination from the Property until a permanent remedy can be implemented.

Operable Unit One

On September 12, 2016, EPA selected a remedy for OU1 of the Site, which addresses contaminated soil on residential properties in the vicinity of the Property. The OU1 remedy includes excavation of an estimated 21,000 cubic yards of soil contaminated primarily with arsenic and lead from approximately 57 residential properties; off-site disposal of contaminated soil; backfilling of excavated areas with clean fill; and restoration of the affected properties.

Remedial activities have been underway for OU1 residential properties since 2017. Remediation of an initial 6 properties was completed in 2018, and remediation of an additional 27 properties is ongoing. The design of a third phase of remedial activities for OU1 is currently being completed and remediation of those properties is expected to start in 2020.

SUMMARY OF OPERABLE UNIT TWO REMEDIAL INVESTIGATION

The RI report for OU2 was finalized in August 2018, and the Final FFS was completed in July 2019. Together, the RI/FFS form the basis for this Proposed Plan. The focus of the OU2 RI was on soil contamination on non-residential properties. Additional information regarding the depth to groundwater was also obtained and is described below.

Soil

Tier A Soil Sampling

An initial round of OU2 soil sampling (Tier A) was conducted in August 2017 at three properties, namely, the Property itself and two adjacent properties, the Lerco property to the north and a vacant property to the south. The purpose of conducting this initial round of sampling on the former Kil-Tone manufacturing facility and two other adjacent properties was to determine the nature and extent of contamination on those properties, as well as to determine the full list of contaminants present in soil that may be related to the operations of the former Kil-Tone Company, in addition to arsenic and lead.

Soil samples were collected from at least eight borings per property using direct-push drilling equipment. Shallow soil (0-2 feet below ground surface (ft bgs)) from four discrete six-inch intervals and composite samples from three deeper intervals (2-4, 4-6, and 6-10 ft bgs) were collected from each boring for laboratory analysis. One additional soil sample was collected from each boring just above the water table. Samples were analyzed for the full list of contaminants of potential concern (COPCs), including volatile organic compounds, semi-volatile organic compounds, polychlorinated biphenyls, pesticides and metals, including lead and arsenic.

The results were compared against New Jersey Residential Direct Contact Soil Remediation Standards (RDCSRS), New Jersey Non-Residential Direct Contact Soil Remediation Standards (NRDCSRS) and the New Jersey Impact to Groundwater Soil Screening Levels (IGWSSL). Arsenic and lead were found to be the only contaminants that regularly exceeded the RDCSRS and/or NRDCSRS of 19 mg/kg for arsenic and 400 ppm or 800 ppm for lead, depending on future use. The New Jersey default IGWSSL is 19 mg/kg for arsenic and 90 mg/kg for lead. Sporadic elevated concentrations of contaminants other than arsenic and lead were also found, particularly polycyclic aromatic hydrocarbons (PAHs), but the data did not suggest any other site-related COPCs exist.

Tier B Soil Sampling

Between September 2017 and March 2018, a second round of OU2 soil sampling (Tier B) was conducted at approximately 50 non-residential properties in the vicinity of the Property. The sampling approach was similar to the Tier A event; samples were collected from four discrete six-inch intervals at 0-2 ft bgs, and composite samples were collected from two intervals at 2-4 and 4-6 ft bgs. Based on the results of the Tier A sampling, the Tier B soil samples were analyzed for metals and two intervals, 0.5-1 and 2-4 ft bgs, were also analyzed for PAHs to supplement the Tier A sampling results.

Summary of Soil Investigation

The Tier B results verified that arsenic and lead are the primary COPCs at the Site. The highest concentrations of arsenic and lead found during OU2 sampling were on the Property itself. These concentrations range from 0.93 to 45,900 mg/kg for arsenic and 2.1 to 91,700 mg/kg for lead. Soil samples from adjacent and nearby properties to the north, south, and near the headwater of the Tarkiln Branch to the southwest also show elevated concentrations of arsenic (up to 15,900 mg/kg) and lead (up to 16,100 mg/kg). Arsenic and lead impacts on the OU2 properties decrease laterally with distance away from the Property (see Figure 2).

With some exceptions (mainly in Tier A properties), the arsenic and lead impacts were typically found in shallow soil above 4 ft bgs. This is consistent with the conceptual site model (CSM) for the Site, which suggests that overland flow (runoff) and air dispersion (dust) were the main contaminant transport mechanisms from the Property. Deeper soil impacts found on some nearby properties may be due to the use of fill material, storage or disposal of manufactured products and/or waste materials from the Property.

Groundwater

While the OU2 RI focused on soil contamination, the depth to the water table was recorded during installation of OU2 soil borings. The average depth to groundwater at the Property is approximately 6 ft bgs. The depth to groundwater may be encountered at shallower locations on the Property, specifically in the area where the Tarkiln Branch originates. The average depth to groundwater is approximately 7 ft bgs at properties directly north of the Property and is approximately 8 ft bgs at properties directly south of the Property. The depth to groundwater increases with distance away from the Property, and away from the Tarkiln Branch, and averages approximately 13.5 ft bgs north of Cherry Street.

Elevated concentrations of lead and/or arsenic were encountered at some properties below the depth of the groundwater table, including at the Property and at Lerco.

PRINCIPAL THREATS

The Kil-Tone property itself has acted as a source of lead and arsenic contamination to other properties, groundwater and surface water, and the cancer risks associated with contamination at this property exceed 10^{-3}. Therefore, the soil contamination at this property would be considered PTW.

SUMMARY OF SITE RISKS

As part of the RI/FFS, a human health risk assessment (HHRA) was conducted to estimate current and potential future effects of contaminants on human health. A HHRA is an analysis of the potential adverse human health effects caused by hazardous-substance exposure in the absence of any actions to control or mitigate these exposures under current and future site uses.

The cancer risk and noncancer health hazard estimates in the HHRA are based on current and potential future reasonable maximum exposure scenarios and were developed by taking into account various health protective estimates about the concentrations,

WHAT IS A "PRINCIPAL THREAT?"

The NCP establishes an expectation that EPA will use treatment to address the principal threats posed by a Site wherever practicable (NCP Section 300.430(a)(1)(iii)(A)). The "principal threat" concept is applied to the characterization of "source materials" at a Superfund site. A source material is material that includes or contains hazardous substances, pollutants or contaminants that act as a reservoir for migration of contamination to ground water, surface water or air, or acts as a source for direct exposure. Contaminated ground water generally is not considered to be a source material; however, Non-Aqueous Phase Liquids (NAPLs) in groundwater may be viewed as source material. Principal threat wastes are those source materials considered to be highly toxic or highly mobile that generally cannot be reliably contained or would present a significant risk to human health or the environment should exposure occur. The decision to treat these wastes is made on a site-specific basis through a detailed analysis of the alternatives using the nine remedy selection criteria. This analysis provides a basis for making a statutory finding that the remedy employs treatment as a principal element.

frequency and duration of an individual's exposure to chemicals selected as COPCs, as well as the toxicity of these contaminants.

A Screening Level Ecological Risk Assessment (SLERA) for OU2 was also conducted.

Human Health Risk Assessment

A four-step human health risk assessment process was used for assessing site-related cancer risks and noncancer health hazards. The four-step process is comprised of: Hazard Identification, Exposure Assessment, Toxicity Assessment, and Risk Characterization (see adjoining box "What is Risk and How is it Calculated" for more details on the risk assessment process).

Consistent with the OU1 approach, three OU2 properties were selected for a streamlined risk assessment. These three properties are considered representative of the range of properties included in the OU2 RI. Two of the selected properties are representative of properties with relatively deep (below the water table) contamination likely due to the use of fill material including manufactured products and/or waste material from the former Kil- Tone Company facility. The third property is representative of properties impacted by the operations of the former Kil-Tone facility through overland flow and/or air dispersion of contamination, and properties with relatively shallow (above the water table) impacts. In addition, two of the properties have a reasonably anticipated future use as residential while one (with deep contamination) is reasonably anticipated to remain non-residential. As such, the results of the risk assessment on these properties are applicable to all OU2 properties.

Based on current and reasonably anticipated future land use, the receptors assessed in the HHRA included a future child and adult resident, industrial worker, utility worker, and construction worker. Although the properties are zoned non-residential, many are adjacent to residential areas and, based on conversations with the Township of Vineland planning committee, could be rezoned as such in the future. Potential exposures to COPCs in surface and combined surface and subsurface soil pathways were evaluated for each scenario.

For COPCs other than lead, two types of toxic health effects were evaluated in the risk assessment: cancer risk and noncancer hazard. Calculated cancer risk estimates for each receptor were compared to EPA's target risk range of $1x10^{-6}$ (one-in-one million) to $1 x 10^{-4}$ (one-in-ten thousand). The calculated noncancer hazard index (HI) estimates were compared to EPA's target threshold value of 1.

The result of the risk assessment indicated that, out of the three properties evaluated, the former Kil-tone Company facility had cancer risks of $3x10^{-3}$ for future residents, $8x10^{-4}$ for industrial workers, and $2x10^{-4}$ for utility workers, all exceeding EPA's target cancer risk range. The second property was within the cancer risk range for all receptors, though at the upper bounds of the range for utility workers and child residents at $1x10^{-4}$. The third property was within the cancer risk range for all receptors. Elevated cancer risks were primarily driven by exposure to arsenic in surface soil.

Total noncancer hazards for future child residents at all three properties exceeded EPA's target threshold of one, with values ranging from 3 to 69. The total noncancer hazard index (HI) also exceeded EPA's target threshold for construction workers at both properties with deeper contamination. The noncancer hazard threshold was exceeded for all potential

receptors at the former Kil-tone Company facility. The HI exceedances at these properties were driven by exposure to arsenic in soil.

Blood lead modeling was also performed utilizing soil lead concentrations at the three properties. The Adult Lead Methodology (ALM) model was used for adult receptors, and the Integrated Exposure Uptake Biokinetic Model (IEUBK) predicted blood lead levels in children in a future residential scenario. Soil lead concentrations at the former Kil-tone Company facility resulted in blood lead levels exceeding EPA's regional target (no more than 5% exceeding 5 µg/dl) for industrial workers, construction workers, and future residents. Target blood lead levels were not exceeded for any receptors using soil lead concentrations from the second or third property.

Contamination levels found at the three properties are generally similar to those found at other non-residential properties in the vicinity of the Former Kil-tone Company facility and are above background concentrations. The results of the risk assessment are considered to be representative of all affected non-residential properties in the vicinity of the former Kil-tone Company facility and are therefore applicable to OU2 as a whole.

Screening Level Ecological Risk Assessment

A SLERA for OU2 was conducted in 2017 to evaluate the potential for risk to ecological receptors at the Site. Properties in OU2 are primarily developed, and do not contain suitable ecological habitat, but a few properties were identified as having potentially ecologically suitable upland habitat. Three distinct exposure units (EUs) were evaluated in the SLERA, two of which (EU-1 and EU-2) consisted of OU2 properties and the third of which (EU-3) included the Tarkiln Branch and its floodplain down its confluence with the Parvin Branch.

The SLERA concluded that the potential for adverse ecological effects exists for each EU due to metals, primarily arsenic, and some PAHs. Given the results of the SLERA, a full Baseline Ecological Risk Assessment for EU-3 will be conducted as part of OU4 of the Site.

For EU-1 and EU-2, additional ecological risk analysis was conducted to further refine the findings of the SLERA. This additional analysis also found that arsenic

WHAT IS RISK AND HOW IS IT CALCULATED?

A Superfund baseline 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. A four-step process is utilized for assessing site-related human health risks for reasonable maximum exposure scenarios.

Hazard Identification: In this step, the contaminants of concern (COPCs) at the site in various media (*i.e.*, soil, groundwater, surface water, and air) are identified based on such factors as toxicity, frequency of occurrence, and fate and transport of the contaminants in the environment, concentrations of the contaminants in specific media, mobility, persistence, and bioaccumulation.

Exposure Assessment: In this step, the different exposure pathways through which people might be exposed to the contaminants identified in the previous step are evaluated. Examples of exposure pathways include incidental ingestion of and dermal contact with contaminated soil and ingestion of and dermal contact with contaminated groundwater. Factors relating to the exposure assessment include, but are not limited to, the concentrations in specific media that people might be exposed to and the frequency and duration of that exposure. Using these factors, a "reasonable maximum exposure" scenario, which portrays the highest level of human exposure that could reasonably be expected to occur, is calculated.

Toxicity Assessment: In this step, the types of adverse health effects associated with chemical exposures, and the relationship between magnitude of exposure and severity of adverse effects are determined. Potential health effects are chemical-specific and may include the risk of developing cancer over a lifetime or other non-cancer health hazards, such as changes in the normal functions of organs within the body (*e.g.*, changes in the effectiveness of the immune system). Some chemicals are capable of causing both cancer and non-cancer health hazards.

Risk Characterization: This step summarizes and combines outputs of the exposure and toxicity assessments to provide a quantitative assessment of site risks for all COPCs. Exposures are evaluated based on the potential risk of developing cancer and the potential for non-cancer health hazards. The likelihood of an individual developing cancer is expressed as a probability. For example, a 10^{-4} cancer risk means a "one in ten thousand excess cancer risk;" or one additional cancer may be seen in a population of 10,000 people as a result of exposure to site contaminants under the conditions identified in the Exposure Assessment. Current Superfund regulations for exposures identify the range for determining whether remedial action is necessary as an individual excess lifetime cancer risk of 10^{-4} to 10^{-6}, corresponding to a one in ten thousand to a one in a million excess cancer risk.

For non-cancer health effects, a "hazard index" (HI) is calculated. The key concept for a non-cancer HI is that a "threshold" (measured as an HI of less than or equal to 1) exists below which non-cancer health hazards are not expected to occur. The goal of protection is 10^{-6} for cancer risk and an HI of 1 for a non-cancer health hazard. Chemicals that exceed a 10^{-4} cancer risk or an HI of 1 are typically those that will require remedial action at the site.

and lead are the primary contaminants of concern for ecological receptors. It indicated that arsenic presents a potential for adverse effects to terrestrial plant and soil invertebrate communities and lead presents a potential for adverse effects to terrestrial plants. It also found that there is minimal potential for adverse effects to wildlife receptor populations.

Summary

It is EPA's judgment that the Preferred Alternative summarized in this Proposed Plan or one of the other active measures considered in the Proposed Plan, is necessary to protect public health or welfare and the environment from actual or threatened releases of hazardous substances into the environment.

REMEDIAL ACTION OBJECTIVES

Soil contamination on non-residential properties is present in surface and/or subsurface soil. The following remedial action objectives (RAOs) for contaminated soil attain a degree of cleanup that ensures the protection of human health and the environment:

- Prevent current and potential future unacceptable risks to human receptors resulting from direct contact with contaminated soil;
- Prevent migration of contaminants of concern (COCs) from the OU2 properties to other areas via overland flow and air dispersion;
- Prevent or reduce the migration of COCs from soil to groundwater; and
- Prevent current and potential future unacceptable risks to ecological receptors resulting from direct contact with contaminated soil.

To achieve the RAOs, property-specific Preliminary Remediation Goals (PRGs) will be used based on the reasonably anticipated future use of the property (residential or non-residential[1]), the depth of contamination for impact to groundwater, and the potential for adverse ecological effects. Based on the results of the RI, the BHHRA and the ecological analyses, the COCs for OU2 of the Site are arsenic and lead. The following PRGs are proposed:

	Arsenic (mg/kg)	Lead (mg/kg)
Residential Soil	19	400
Non-Residential Soil	19	800
Impact to Groundwater	19	90
Ecological (Plants)	69	500
Ecological (Soil Invertebrates)	93.7	3,162

The residential, non-residential and impact to groundwater PRGs are based on New Jersey Remediation Standards (N.J.A.C. 7:26d). Consistent with New Jersey Remediation Standards, EPA is developing a site-specific impact to groundwater value for lead that will be incorporated into the Record of Decision for OU2. The plant and soil invertebrate PRGs listed above are based on the results of the ecological analyses conducted for OU2. In addition to the numerical values above, the overall remediation goal for lead on properties with a reasonably anticipated future use as residential will be a property-wide average surficial lead concentration of less than 200 mg/kg. That cleanup level is based on recently updated blood lead level guidance from USEPA's Office of Land and Emergency Management (Directive 9200.2-167).

SUMMARY OF REMEDIAL ALTERNATIVES

CERCLA requires that each selected remedy be protective of human health and the environment, be cost effective, and utilize permanent solutions and alternative treatment technologies and resource recovery alternatives to the maximum extent practical. In addition, if any hazardous substance, pollutant or contaminant will remain on-site, any federal and promulgated state standard, requirement, criteria, or limitation that is legally applicable or relevant and appropriate must be attained. CERCLA also includes a preference for the use of treatment as a principal element for the reduction of toxicity, mobility, or volume of the hazardous substances.

Potential technologies applicable to soil remediation were identified and screened by effectiveness, implementability, and cost criteria, with emphasis on effectiveness. Those technologies that passed the initial

[1] Note that while OU2 addresses non-residential properties, based on discussions with the City of Vineland, the reasonably anticipated future use of majority of the OU2 properties is residential.

screening were then assembled into remedial alternatives.

Of the approximately 50 non-residential properties sampled as part of the OU2 RI, EPA estimates that approximately 40 require remediation. Additional sampling will be needed during the design of the OU2 remedy to refine the extent of contamination on each property, and additional properties could be identified during this process.

The time frames below for construction do not include the time for designing a remedy, reaching agreement with responsible parties if they are identified, or the time to procure necessary contracts. All costs were calculated using the seven percent discount factor.

Alternative 1 - No Action

The NCP requires that a "No Action" alternative be evaluated to establish a baseline for comparison with other remedial alternatives. Under this alternative, no action would be taken to remediate the contaminated soil at non-residential properties.

Total Capital Cost:	*$0*
Annual O&M:	*$0*
Total Present Net Worth:	*$0*
Timeframe:	*0 years*

Alternative 2 – Engineering Controls (Capping/Access Control) and Institutional Controls

This alternative consists of the following major components:

- Installation and/or maintenance of engineered covers
- Off-site disposal of soil excavated prior to cap installation
- Institutional controls in the form of deed notices
- Long-term monitoring

Under this alternative, an estimated 8,650 cubic yards of contaminated soil would need to be excavated to accommodate caps on individual OU2 properties. Some properties have existing paved areas that could already act as engineered covers and thus would require only maintenance. It is estimated that the active components of this remedial action would take approximately 15 months to implement. The estimated present-worth cost is $8.1 million. Institutional controls in the form of deed notices would be needed to prevent disturbance of the engineered covers. In addition, long-term monitoring in the form of visual inspections of the affected properties would be needed to assure the engineering controls remain effective.

Because this alternative would result in contaminants remaining on-site above levels that allow for unrestricted use and unlimited exposure, CERCLA requires that the Site be reviewed at least once every five years.

Total Capital Cost:	*$7,961,000*
Annual O&M:	*$10,000*
Total Present Worth:	*$8,091,000*
Construction Time Frame:	*15 months*

Alternative 3 – Excavation to Depth of Contamination (not to exceed depth of groundwater table), Engineering Controls and Institutional Controls

This alternative consists of the following major components:

- Excavation of soil in exceedance of the appropriate property-specific soil remediation standard, not to exceed the depth of the groundwater table
- Off-site disposal of excavated soil
- Institutional controls
- Engineering controls, if necessary
- Long-term monitoring, if necessary

Under this alternative, an estimated 57,800 cubic yards of soil would be excavated for off-site disposal. It is estimated that the active component of the remedial action would take about 35 months to implement. This would be inclusive of mobilization/demobilization, sheeting/building, excavation and backfill/restoration.

The estimated present-worth cost of this alternative is $36 million. The cost estimate assumes that for the Kil-Tone and Lerco properties 75% of excavated material could be disposed of as non-hazardous waste and 25% would require disposal as hazardous waste at an appropriately permitted facility. For the remainder of the properties within OU2, disposal cost assumptions were split 90% non-hazardous and 10% hazardous.

Institutional controls would be needed on properties not addressed to residential standards. While the goal would be full excavation of all impacted soil above the water table, due to engineering and/or access considerations, it may be necessary in some instances to use engineering controls to fully achieve RAOs. If this is the case, long-term monitoring in the form of visual inspections would be needed to assure the engineering controls remain effective.

Because this alternative would result in contaminants remaining on-site above levels that allow for unrestricted use and unlimited exposure, CERCLA requires that the Site be reviewed at least once every five years.

Note that existing data indicate elevated concentrations of COCs are present in soil beneath the water table at 3 of the approximately 40 OU2 properties. Under Alternative 3, this contaminated soil would be left in place and addressed as part of OU3 of the Site, which relates to groundwater. Sampling for the OU3 RI has recently been initiated and a more complete understanding of site-related groundwater contamination obtained during the OU3 RI will be valuable in determining the best remedy for soil below the water table. In any case, by removing impacted soil above the water table, Alternative 3 would reduce the migration of contamination below the water table.

For this reason, under this alternative, remediation of any properties with contamination beneath or near the water table will be deferred at least until after the OU3 RI/FS is further along, and it is determined whether any active remediation is needed for OU3. Remedial activities on the properties with impacts below the water table could then be conducted concurrently with, or in accordance with, the remedial action selected for OU3 of the Site in order to avoid the potential need to return to a property previously cleaned up under OU2.

Total Capital Cost:	*$35,941,000*
Annual O&M:	*$7,500*
Present Worth Cost:	*$36,039,000*
Construction Time Frame:	*35 months*

Alternative 4 – Excavation to Depth of Contamination, Engineering Controls and Institutional Controls

This alternative consists of the following major components:

- Excavation of all soil in exceedance of the appropriate parcel-specific soil remediation standard
- Off-site disposal of excavated soil
- Institutional controls
- Engineering controls, if necessary
- Long-term monitoring, if necessary

Under this alternative, an estimated 86,600 cubic yards of soil would be excavated for off-site disposal. The volume is higher than it is under Alternative 3 because Alternative 4 includes excavation of soil below the water table. It is estimated that the active component of the remedial action would take about 50 months to implement including mobilization/demobilization, sheeting/building, excavation and backfill/restoration.

The estimated present-worth cost is $58.4 million. As noted in Alternative 3, the cost estimate assumes a 75% non-hazardous and 25% hazardous disposal cost split for the Former Kil-Tone and Lerco properties. For the remainder of the properties within OU2, disposal cost assumptions were split 90% non-hazardous and 10% hazardous.

Institutional controls would be needed on properties not addressed to residential standards. While the goal would be full excavation of all impacted soil, due to engineering and/or access considerations, it may be necessary in some instances to use engineering controls to fully achieve RAOs. If this is the case, long-term monitoring of the engineering controls would be needed to assure they remain effective.

Because this alternative may result in contaminants remaining on-site above levels that allow for unrestricted use and unlimited exposure, five-year reviews may be required, as per CERCLA.

Total Capital Cost:	*$58,311,000*
Annual O&M:	*$7,500*
Total Present Worth:	*$58,409,000*
Construction Time Frame:	*50 months*

EVALUATION OF ALTERNATIVES

EPA uses nine criteria to evaluate the remedial alternatives individually and against each other to select a remedy. This section of the Proposed Plan profiles the relative performance of each alternative against the nine criteria and notes how it compares to the other

options under consideration. The nine evaluation criteria are discussed below. A detailed analysis of each of the alternatives is in the FFS.

Overall Protection of Human Health and the Environment

Since Alternative 1 would not address the risks posed by soil contaminants, it would not be protective of human health and the environment. Therefore, it was eliminated from further consideration under the remaining eight criteria.

Alternative 2 would provide adequate protection of human health and the environment by eliminating, reducing, or controlling risk through containment, soil cover, or removal of contaminated soil. Engineering controls (i.e., soil covers) and deed notices would prevent exposure to risk-based levels of contaminants.

Alternatives 3 and 4 would provide protection of human health and the environment by removing the contaminated soil, thereby preventing exposure. Alternative 4 would provide protection by removing contamination below the water table, thereby more fully addressing the RAO to prevent or reduce the migration of COCs from soil to groundwater.

Compliance with ARARs

Alternatives 2, 3 and 4 would address potential chemical-specific ARARs. Placement of engineered soil cover/targeted soil removal, and soil removal included in Alternative 2, would address potential chemical-specific ARARs for soil. The soil removal prescribed in Alternatives 3 and 4 would meet soil chemical-specific ARARs for residential or non-residential use. Each active alternative would also achieve potential location-specific and action-specific ARARs.

Long-Term Effectiveness and Permanence

Alternative 2 provides long-term effectiveness and permanence through maintenance of the soil covers and the institutional controls. Periodic inspection and maintenance, as required by the institutional controls, would ensure the remedy remains effective in preventing exposure to contaminants. However, the continued effectiveness of the Alternative 2 containment system would depend on how well the soil cover is maintained.

THE NINE SUPERFUND EVALUATION CRITERIA

1. Overall Protectiveness of Human Health and the Environment evaluates whether and how an alternative eliminates, reduces, or controls threats to public health and the environment through institutional controls, engineering controls, or treatment.

2. Compliance with Applicable or Relevant and Appropriate Requirements (ARARs) evaluates whether the alternative meets federal and state environmental statutes, regulations, and other requirements that pertain to the site, or whether a waiver is justified.

3. Long-term Effectiveness and Permanence considers the ability of an alternative to maintain protection of human health and the environment over time.

4. Reduction of Toxicity, Mobility, or Volume (TMV) of Contaminants through Treatment evaluates an alternative's use of treatment to reduce the harmful effects of principal contaminants, their ability to move in the environment, and the amount of contamination present.

5. Short-term Effectiveness considers the length of time needed to implement an alternative and the risks the alternative poses to workers, the community, and the environment during implementation.

6. Implementability considers the technical and administrative feasibility of implementing the alternative, including factors such as the relative availability of goods and services.

7. Cost includes estimated capital and annual operations and maintenance costs, as well as present worth cost. Present worth cost is the total cost of an alternative over time in terms of today's dollar value. Cost estimates are expected to be accurate within a range of +50 to -30 percent.

8. State/Support Agency Acceptance considers whether the State agrees with the EPA's analyses and recommendations, as described in the RI/FS and Proposed Plan.

***9*. Community Acceptance** considers whether the local community agrees with EPA's analyses and preferred alternative. Comments received on the Proposed Plan are an important indicator of community acceptance.

Alternative 3 would provide long-term effectiveness and permanence by removing contaminants from the OU2 non-residential properties and providing secure disposal of excavated soil at appropriate permitted facilities. Long-term monitoring and maintenance of the affected properties and five-year reviews would be required since contaminated soil could remain below the water table on some properties.

Alternative 4 would provide the greatest long-term effectiveness and permanence since all site-related soil

contamination exceeding the PRGs would be excavated and disposed of at an approved off-site facility. If necessary, long-term monitoring in the form of visual inspections and maintenance, as well as CERCLA five-year reviews, would be required for any property that could not be remediated to unlimited use and unrestricted exposure conditions.

Reduction of Toxicity, Mobility, or Volume through Treatment

None of the alternatives would provide reduction of toxicity, mobility, or volume of contamination through treatment, since treatment is not included as an option. The use of treatment was evaluated as part of the FFS process, but no effective means of treating arsenic and lead contamination, including PTW, in soil were identified. Excavated soil for off-site disposition may require treatment prior to disposal.

Alternative 2 would reduce the mobility of contamination somewhat through the placement of caps over some impacted areas. Alternative 3 would provide better reduction of mobility through the excavation and removal of COC-contaminated soil from the Site. At a select group of properties contamination would remain below the water table, but this remaining contamination would be addressed as part of OU3 of the Site.

Alternative 4 would provide the highest reduction of mobility and volume through the excavation and off-site disposal of all identified properties with COCs above the PRGs. It would also prevent the potential migration of COCs from soil to groundwater.

Short-Term Effectiveness

Alternative 2 would be effective in the short term since contaminated soil would not be significantly disturbed during construction activities. It is estimated that caps could be placed and deed notices established in approximately 15 months.

Alternatives 3 and 4 involve excavation of contaminated soil and would present a potential for short-term exposure. Under these alternatives, any potential environmental impacts associated with the excavation of soil would be minimized with the proper installation and implementation of dust and erosion control measures, by performing excavation with appropriate health and safety measures, and by using a lined temporary staging area. Appropriate transportation safety measures would be required during the shipping of the contaminated soil to approved off-site disposal facilities. Completion of the remediation for most individual properties could be conducted in approximately 1 year or less, though it is expected that Alternative 3 would take 35 months to implement fully and Alternative 4 would take 50 months.

Implementability

Alternative 2 can be implemented; however, the development of protective engineering and institutional controls that would be both enforceable and acceptable to all property owners is uncertain.

Alternatives 3 and 4 are also implementable, although implementation of those alternatives is complicated to some extent by the need to perform excavation and backfilling on individual properties, the majority of which are developed with primary structures (such as stores or buildings) as well as secondary structures such as garages and sheds. Alternative 4 would be significantly more difficult to implement on properties where contamination extends below the water table. In some cases, the depth of contamination extends greater than 12 feet below ground surface, which would require the use of either braced or sloped excavation and would likely require at least some dewatering to occur.

All alternatives would result in some short-term impacts to the community, in the form of truck traffic and noise and dust from construction/excavation activities, although Alternative 2 (bringing soil in to construct a soil cover) would generate less truck traffic than Alternatives 3 and Alternative 4 (both would involve removing contaminated soil from properties and bringing soil in to fill excavated areas). Traffic, noise, and dust impacts would be mitigated by limiting the construction schedule to daytime hours on weekdays or other timing as specified by local ordinance. Perimeter air monitoring and dust control measures would be required to address concerns over potential exposure to dust during activities.

Administrative implementation of Alternative 2 may be significantly impacted by the need to impose deed notices on non-residential properties to limit human exposure by restricting the future use of contaminated areas within the properties. These notices would restrict the owner's use of the property and may not be acceptable to some of the property owners. Since

Alternatives 3 and 4 result in the removal of contaminated soil but may not address all contamination to achieve unlimited use conditions, institutional controls on a limited number of properties would be required.

Cost

The total estimated cost for Alternative 2 is $8,091,000. Capital costs include the cost for placement of the caps, the excavation of soil needed to accommodate the caps, and administrative cost for establishment of the deed notices. Annual O&M costs include maintenance of the containment systems.

The total estimated cost for Alternative 3 is $36,039,000. Capital costs include the cost for the excavation and disposal of soil and site restoration. No annual maintenance is anticipated, though limited monitoring in the form of visual inspections will be required for those properties not addressed to the residential standards, or if any engineering controls are needed.

The total estimated cost for Alternative 4 is $58,409,000. Like Alternative 3, capital costs include the cost for the excavation and disposal of soil and Site restoration. Costs are higher due to the greater depth of excavation needed, and the associated additional engineering efforts that requires. As with Alternative 3, no annual maintenance is anticipated, though limited monitoring in the form of visual inspections will be required for those properties not addressed to the residential standards, or if any engineering controls are needed.

State Acceptance

The State of New Jersey concurs with the Preferred Alternative as presented in this Proposed Plan.

Community Acceptance

Community acceptance of the Preferred Alternative will be evaluated after the public comment period ends and will be described in the ROD. Based on public comment, the Preferred Alternative could be modified from the version presented in this proposed plan. The Record of Decision is the document that formalizes the selection of the remedy for a site.

PREFERRED ALTERNATIVE

The Preferred Alternative for achieving remedial action objectives for the non-residential properties with soil impacted by site-related contamination is Alternative 3, excavation to depth of contamination (not to exceed depth of groundwater table), engineering controls and institutional controls.

Alternative 3 consists of excavation of an estimated 57,800 cubic yards of soil for off-site disposal that exceeds the appropriate property-specific soil remediation standard, not to exceed the depth of the groundwater table.

It is estimated that the active component of the remedial action would take about 35 months to implement. This would be inclusive of mobilization/demobilization, sheeting/building, excavation and backfill/restoration. Institutional controls would be required on properties not addressed to residential standards and long-term monitoring in the form of visual inspection of these properties would be needed. In addition, inspection and maintenance of any necessary engineering controls may be needed.

Alternative 2 relies heavily on the ability to ensure that the institutional controls, in the form of deed notices and restrictions, remain in place and are complied with. Alternative 3 relies less heavily on institutional controls and Alternative 4 may not require the use of institutional controls at all, and as such both are more effective in the long-term than Alternative 2. Alternative 3 would achieve the RAOs, is more easily implementable, has greater effectiveness in the short-term and is less costly than Alternative 4. While Alternative 2 is approximately $28 million less costly than Alternative 3, there would be significant resource requirements over time associated with long-term inspection and maintenance of the caps. For these reasons, EPA prefers Alternative 3 over Alternatives 2 and 4.

EPA anticipates that a more complete understanding of groundwater contamination, obtained during the OU3 RI, will be valuable in determining the best remedy for soil below the water table. Existing data indicates soil contamination beneath the water table to be a concern at 3 of 40 OU2 properties. For this reason, EPA will address contamination in below-water-table soil after the OU3 RI/FS is further along. However, under Alternative 3, excavation at properties where soil

contamination is present below the water table will be deferred at least until it is determined whether any active remediation is needed for OU3. Remedial activities on the properties with impacts below the water table could then be conducted concurrently with, or in accordance with, the OU3 remedy, to avoid the potential need to return to a property post-action.

The implementation of Alternative 3 may require excavation work adjacent to and/or underneath structures. In general, every attempt will be made to remove all soil contamination so that deed restrictions are not determined to be necessary. All impacted properties will be restored to their original condition.

Based on the information available at this time, EPA has concluded and NJDEP concurs that the Preferred Alternative meets the threshold criteria and provides the best balance of tradeoffs among the other alternatives with respect to the balancing criteria.

The Preferred Alternative satisfies the threshold criteria and achieves the best combination of the five balancing criteria of the comparative analysis. This alternative is preferred because it will achieve the RAOs and cleanup goals in the shortest amount of time and is a permanent remedy. EPA expects the Preferred Alternative to satisfy the following statutory requirements of CERCLA Section 121: 1) be protective of human health and the environment; 2) comply with ARARs; 3) be cost effective; 4) utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable; and 5) satisfy the preference for treatment as a principal element or explain why the preference for treatment will not be met. EPA will assess the modifying criteria of community acceptance in the ROD following the close of the public comment period.

FOR FURTHER INFORMATION

The administrative record file, which contains copies of the Proposed Plan and supporting documentation is available at the following locations:

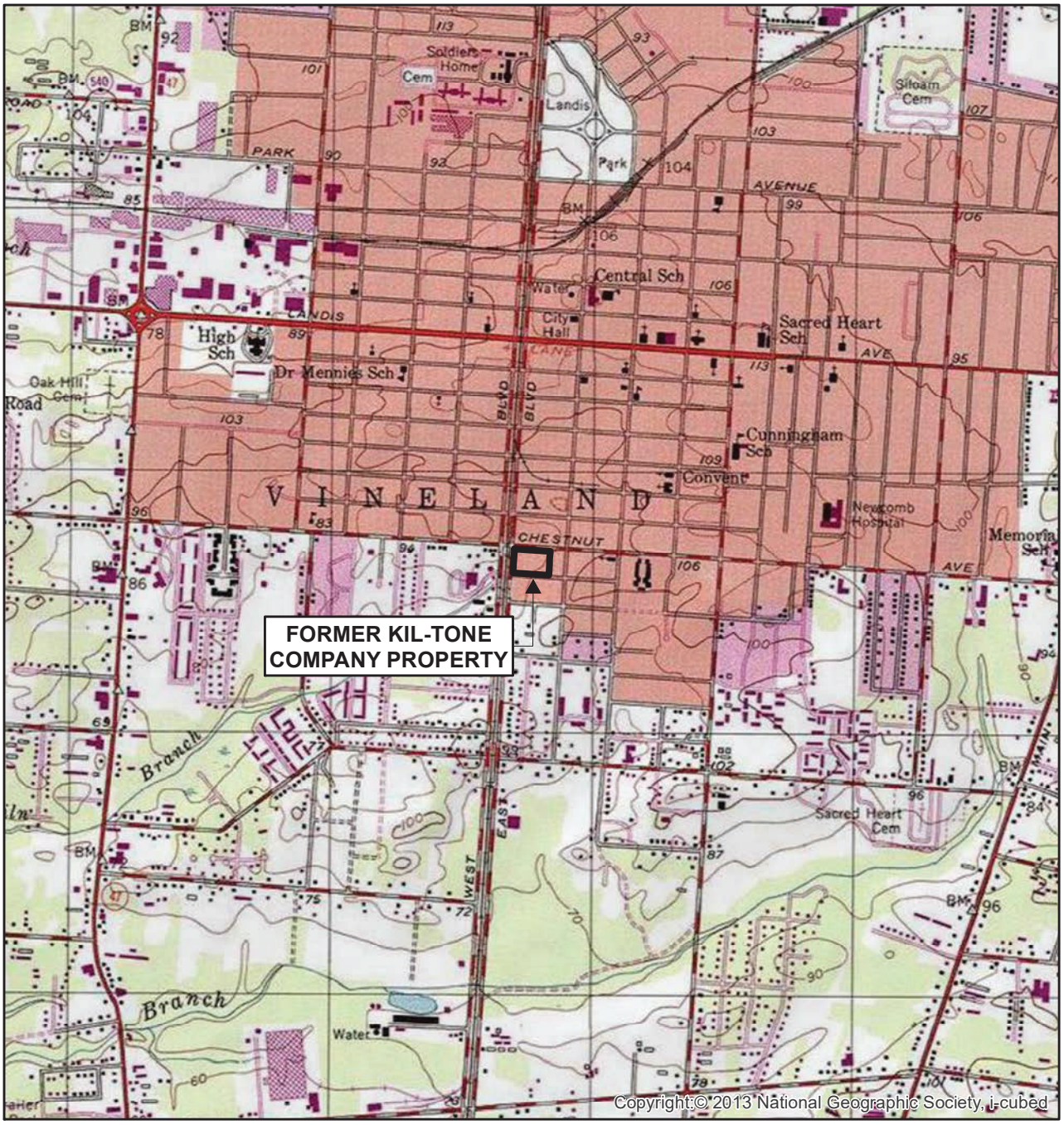
EPA Region 2 Superfund Records Center
290 Broadway, 18th Floor
New York, New York 10007-1866
(212) 637-4308
Hours: Monday-Friday – 9 A.M. to 5 P.M.

Vineland City Library
1058 East Landis Ave.
Vineland, New Jersey 08360
For Library Hours:
http://www.vinelandlibrary.org/

In addition, select documents from the administrative record are available on-line at:

www.epa.gov/superfund/former-kil-tone

FIGURE 1



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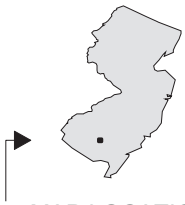

MAP LOCATION

FORMER KIL-TONE COMPANY
SUPERFUND SITE
OU2 RI REPORT
VINELAND, NEW JERSEY

SITE LOCATION

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Feet

1:24,000

14426/66305
JULY 2018

HDR OBG a joint venture

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GRAPE STREET
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MONTROSE STREET
LA FRANCE STREET
S SEVENTH STREET
ALMOND STREET
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223
QUINCE STREET
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69
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228
226
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CHERRY STREET
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S WEST BOULEVARD
S EAST BOULEVARD
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LERCO
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SIXTH STREET
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CHESTNUT AVENUE
THIRD STREET TERRACE
286
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FORMER KIL-TONE
289
290
291
PAUL STREET
511 PAUL ST
302
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304
303
296
297
295
WASHINGTON AVENUE
124
BELLAIR STREET
SUMMER AVENUE
FLORENCE AVENUE
LUCIANO AVENUE
DIFALCO AVENUE

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

LEGEND

- OU2 PROPERTY - NO ACTION REQUIRED
- OU2 PROPERTY - ACTION REQUIRED (NJDEP NON-RESIDENTIAL SRS)
- OU2 PROPERTY - ACTION REQUIRED (NJDEP RESIDENTIAL SRS)
- OU1 PROPERTY
- APPROXIMATE OU1/OU2 STUDY AREA

PROPERTY BOUNDARY: STATE OF NEW JERSEY COMPOSITE OF PARCELS DATA, NEW JERSEY OFFICE OF INFORMATION TECHNOLOGY (NJOIT), OFFICE OF GEOGRAPHIC INFORMATION SYSTEMS (OGIS).

0 60 120 240 360 480
Feet

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FORMER KIL-TONE COMPANY SUPERFUND SITE
OU2 FFS REPORT
VINELAND, NEW JERSEY

OU2 AREAS REQUIRING REMEDIATION

14426/66305
JULY 2019

HDR OBG a joint venture

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