EPA Superfund
Record of Decision:

VEGA BAJA SOLID WASTE DISPOSAL
OPERABLE UNIT 2 SOILS
EPA ID: PRD980512669
RIO ABAJO WARD, PR
09/30/2010

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2

RECORD OF DECISION

VEGA BAJA SOLID WASTE DISPOSAL SITE
OPERABLE UNIT 2 - SOILS

VEGA BAJA, PUERTO RICO

SEPTEMBER 2010

PART 1: DECLARATION FOR THE RECORD OF DECISION

SITE NAME AND LOCATION

Vega Baja Solid Waste Disposal Site
Operable Unit 2 - Soils
Vega Baja, Puerto Rico

National Superfund Database Identification Number: PRD980512669

STATEMENT OF BASIS AND PURPOSE

This Record of Decision ("ROD") presents the selected remedial action for the Vega Baja Solid Waste Disposal Site, Operable Unit 2 - Soils (the "Site"), located in the Municipality of Vega Baja, Puerto Rico, which was chosen in accordance with the requirements of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended ("CERCLA"), 42 U.S.C. §§ 9601-9675, and the National Oil and Hazardous Substances Pollution Contingency Plan ("NCP"), 40 CFR Part 300. This decision document explains the factual and legal basis for selecting the remedy for the Site. The information supporting this remedial action decision is contained in the Administrative Record for the Site. The attached index (Appendix III) identifies the items that comprise the Administrative Record upon which the selection of the remedy is based.

The Puerto Rico Environmental Quality Board ("EQB") was consulted on the planned remedy, in accordance with CERCLA Section 121(f), 42 U.S.C. § 9621(f), and it concurs, on behalf of the Commonwealth of Puerto Rico, with the selected remedy (Appendix IV).

ASSESSMENT OF THE SITE

Actual or threatened releases of hazardous substances from the Site, if not addressed by implementing the response action selected in this ROD, may present an imminent and substantial endangerment to public health, welfare, or the environment.

DESCRIPTION OF THE SELECTED REMEDY – SOIL REMOVAL WITH ON-SITE CONSOLIDATION AND COVER IN THE NON-RESIDENTIAL AREA

The response action described in this document represents the second of two planned remedial phases or operable units (OUs) for the Vega Baja Solid Waste Disposal Site. It addresses soil contamination and has been designated OU-2. A previous record of decision dealt with the groundwater, designated OU-1.

The major components of the selected remedy include the following:

- Performance of a remedial design to provide the details necessary for the construction and monitoring of the remedial action;

- Pre-design investigation (PDI) to include detailed surveying of property features and topography, soil sampling at two properties where access could not be obtained during the OU-2 remedial investigation (RI), additional soil sampling at a minimum of eight properties where more lead concentration data are needed to support design, additional drainage ditch soil sampling for lead, and delineation and surveying of the horizontal extent and top elevations of the existing trash mounds based on visual observations and the basemap survey;
- Removal of lead-contaminated soils above the cleanup goal of 450 milligrams per kilogram (mg/kg) from residential yards, trash mounds, a drainage ditch, and a portion of an area referred to as the "Non Residential Area;"
- Consolidation of excavated materials/soils in an approximately 8.5-acre area of the Non-Residential Area that contains lead above screening criteria based on the delineation activities performed during the OU-2 RI;
- Installation of a cover system over the consolidated excavated materials in the approximately 8.5-acre contaminated area in the Non-Residential Area. The final design of the cover system will be determined during detailed design, but it is anticipated that it will include a non-woven geotextile overlain by 12 inches of clean soil consistent with the Superfund Lead-Contaminated Residential Sites Handbook. The soil cover will be vegetated to prevent erosion that could otherwise potentially result in unacceptable exposure to underlying materials;
- Placement of clean soil in the residential yards where excavation occurs and re-vegetation to restore pre-excavation conditions, to the extent practicable;
- Imposition of institutional controls (a) to protect the integrity of the cover system in the Non-Residential Area where a cover is used to contain contaminated materials; (b) restricting contact with soils beneath structures on properties where soil removal is undertaken; (c) restricting contact with soils under paved areas and/or buildings immediately adjoining an area where soil removal is undertaken; (d) restricting contact with soils in areas where final post-excavation sampling indicates lead concentrations remain above the cleanup goal; and (e) restricting contact with soils under roadways adjacent to properties where soil removal is undertaken;
- Indoor dust monitoring and management program to include engineering controls during remedial activities such that migration of lead in fugitive dust into homes is minimized, as well as post-remediation confirmation sampling three months after completion of the excavation activities associated with the selected remedy at the two properties where elevated levels of indoor dust lead were measured in the OU-2 RI;
- An off-site disposal option for large materials which may be encountered in the trash mounds or the Non-Residential Area (e.g., large/bulky debris, putrescent materials, etc.), as well as lead-contaminated soils which violate the land disposal restrictions, that may prove to be unsuitable for on-site consolidation;
- A surface water management and erosion control plan to provide for the effective control of surface water runoff during the implementation of the remedy and to minimize soil erosion from covered areas;
- Construction/performance monitoring to ensure the effectiveness of the remedy including post-excavation sampling, air monitoring to ensure protection of workers

and nearby residents, and performance monitoring including cover inspections and maintenance to confirm long-term effectiveness;
- Five-Year Reviews by EPA to ensure that the remedy continues to be protective of public health and the environment;
- Incorporation of applicable green remediation practices per EPA Region 2's Clean and Green Policy into the detailed design of the remedial action.

STATUTORY DETERMINATIONS

The selected remedy meets the requirements for remedial actions set forth in CERCLA Section 121. It is protective of human health and the environment, complies with Federal and State requirements that are legally applicable or relevant and appropriate to the remedial action, and is cost-effective. Although the remedy does not satisfy the statutory preference to reduce the toxicity, mobility, or volume of hazardous substances, pollutants, or contaminants through treatment, the reduction of exposure to lead-contaminated soil accomplishes the required end result of protection of human health and the environment.

Because this remedy will result in hazardous substances, pollutants, or contaminants remaining on-site in the Non-Residential Area and under structures and roadways in the Residential Area above levels that allow for unlimited use and unrestricted exposure, a review will be conducted no less often than once every five years after completion of construction of the remedial action to ensure that the remedy continues to be protective of human health and the environment.

ROD DATA CERTIFICATION CHECKLIST

The ROD contains the remedy selection information noted below. More details may be found in the Administrative Record file for this Site.

- Chemicals of concern and their respective concentrations (see ROD pages 14 and 15);
- Baseline risk represented by the chemicals of concern (see ROD pages 16 through 19, and Tables 1 and 2);
- Cleanup levels established for chemicals of concern and the basis for these levels (see ROD pages 17 and 18);
- Current and reasonably anticipated future land use assumptions used in the baseline risk assessment and ROD (see ROD page 15);
- Estimated capital, annual operation and maintenance, and total present worth costs, discount rate, and the number of years over which the selected remedy cost estimates are projected (see ROD page 35, and Tables 3 and 4); and
- Key factor (s) that led to selecting the remedy (i.e., how the selected remedy provides the best balance of tradeoffs with respect to the balancing and modifying criteria, highlighting criteria key to the decision)(see ROD pages 25 through 29).

AUTHORIZING SIGNATURE

On the basis of the remedial investigations and the risk assessments performed at the Vega Baja Solid Waste Disposal Site, the selected remedy for contaminated soils at the Site (designated OU-2) meets the requirements for remedial action set forth in CERCLA Section 121. EQB on behalf of the Commonwealth of Puerto Rico has concurred with the selected remedial action presented in this ROD.

Walter E. Mugdan, Director
Emergency and Remedial Response Division
EPA - Region 2

Sept. 30, 2010
Date

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2

DECISION SUMMARY

VEGA BAJA SOLID WASTE DISPOSAL SITE
VEGA BAJA, PUERTO RICO

OPERABLE UNIT 2 – SOILS

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PART 2: DECISION SUMMARY

SITE NAME, LOCATION, AND DESCRIPTION

The Vega Baja Solid Waste Disposal Site (Site) comprises approximately 72 acres and includes an unlined and uncapped solid waste disposal and open burning area. It is located in the Rio Abajo Ward of Vega Baja, Puerto Rico, approximately 1.2 miles south of the Vega Baja downtown area (Appendix I, Figure 1). The Site includes a 55-acre residential area currently known as "Brisas del Rosario" which contains an estimate of 213 dwellings and a 17-acre undeveloped, uninhabited area. The Site is situated on relatively flat terrain and is surrounded by other residential areas to the north, east and west and is bordered to the south by conical limestone hills, known as "mogotes" (Appendix I, Figure 2). Four "trash mounds," believed to contain trash associated with the former solid waste disposal operations, as well as native soils, rocks, and boulders, are present within the residential area of the Site, extending up to 10 feet in height.

The Rio Abajo Head Start is the nearest school and is located next to a baseball park about 0.21 of a mile from the Site. According to the Puerto Rico Environmental Quality Board's (EQB's) Expanded Site Investigation (ESI), the population within a four-mile radius of the Site is more than 40,000. The population within a one-mile radius of the Site is approximately 6,871, and 2,280 within one-quarter mile.

SITE HISTORY AND REMOVAL ACTIONS

Between approximately 1948 to 1979, the Municipality of Vega Baja operated the Site as an unlined solid waste disposal and open burning facility that received commercial, industrial, and domestic waste. It is estimated that more than 1.1 million cubic yards of waste were disposed of and/or burned at the facility. At the time of disposal and burning activities, the Site was owned by the Puerto Rico Land Authority (PRLA).

During the late 1970s, EQB, in response to complaints of neighboring residents, conducted several inspections at the active waste disposal facility. As a result of these inspections, EQB cited the Municipality of Vega Baja for ineffective environmental and management control of the Site's daily operations.

The waste disposal operations at the Site were discontinued in 1979, when the Municipality of Vega Baja opened a new landfill at Cibuco Ward, Vega Baja. Based upon historical aerial photographs, disposal activities were largely concentrated in the southwestern portion of the now developed area, and in the northern portion of the undeveloped area of the Site.

Local residents began constructing homes on portions of the uncapped waste disposal area beginning in the late 1970s. Many houses at the Site are built on and around the landfill trash.

In 1984, the PRLA apparently attempted to transfer some portion of the Site property to the Puerto Rico Housing Department (PRHD). The Puerto Rico Housing Department subsequently attempted to convey certain properties to several residents; however, it is not clear in the land records which residents, if any, hold valid deeds to their properties. The PRHD is believed to be the current owner of the17 undeveloped acres within the Site and of certain unconveyed or invalidly conveyed parcels within the residential area of the Site.

Beginning in 1994, EQB and EPA conducted the following investigations at the Site.

Site Inspection, May 1994. In May of 1994, EQB conducted a Site Inspection (SI) at the Site. During the SI, five surface soil samples, one background soil sample, five sediment samples, and two groundwater samples (from one upgradient and one downgradient well) were collected.

The surface soil samples were collected from the backyards of five residential properties that were located on the former waste disposal area at the Site. Analytical results indicated lead concentrations up to 3,410 parts per million (ppm), and copper concentrations up to 350 ppm, in the soil samples. Organics detected above background levels included bis(2-ethyhexyl) phthalate, fluoranthene, pyrene, and Aroclor 1260. Sediment samples were collected from two locations along a drainage ditch located at the Site and from three locations along a nearby river, the Rio Indio: one upstream of the Site; one at the drainage ditch's probable point of entry/discharge to the River; and one downstream of the Site. Acetone, 2-butanone, tetrachloroethene, and copper were detected at concentrations above background in the sediment samples.

Groundwater samples were collected from the upgradient Villa Pinares municipal well and from a downgradient Vega Baja municipal well, which is located approximately 0.9 mile north of the Site. Copper was detected in the downgradient well sample at 34 parts per billion (ppb). Analysis of the data indicate that the detected copper concentration in the public supply well did not represent a health threat to the community.

Expanded Site Inspection, August 1996. An ESI was conducted from June through August 1996 by EQB and EPA's Superfund Technical Assistance and Response Team (START). As part of the ESI, a limited number of samples from groundwater, surface water, sediment, and surface soil were collected to better characterize the extent of contamination within the waste disposal area at the Site and to determine if the Site represented a potential threat to human health. Data were also collected to provide information for an Agency for Toxic Substances and Disease Registry (ATSDR) health consultation.

The surface soil samples collected from residential properties were screened for lead with an X-Ray Fluorescence (XRF) instrument. The results of the XRF screening activities were used to determine sampling points for confirmatory laboratory analysis. A total of 153 soil samples were subsequently collected from locations throughout the former waste disposal area at the Site and submitted to an EPA Contract Laboratory Program (CLP) laboratory for Target Compound List (TCL) and Target Analyte List (TAL) analysis.

Copper, lead, cadmium, nickel, and several other inorganics were detected at concentrations above background. Organic compounds detected above background or the Contract Required Detection Limit (CRDL) included pyrene, benzo(a)pyrene, fluoranthene, phenanthrene, methoxychlor, and Aroclor 1254.

Six sediment and five surface water samples were collected from locations along the Site's drainage ditch and from upstream and downstream locations of the Rio Indio. The samples were submitted to CLP laboratories for TCL and TAL analysis. Analytical results indicated the presence of chromium, copper, lead, nickel, zinc, and several other inorganics in the sediment samples. No organic compounds, however, were detected in the sediment samples. In addition, no organic compounds or inorganic analytes were detected in the surface water samples.

Groundwater samples were collected from two public supply wells, one upgradient of the Site and one downgradient. No inorganic or organic chemicals were detected in either of the supply wells.

Based on a review of the ESI soil analytical results, ATSDR determined that the Site could be a public health hazard since long-term exposure to lead concentrations, detected in the soil at many properties, could have harmful effects on children.

Limited Groundwater Study, April - June, 1998. From April to June 1998, EPA START conducted a limited groundwater study at the Site. The study included the installation of monitoring wells and sampling of the newly installed wells and neighboring public supply wells.

START installed three water table wells (MW 01, MW 02, and MW 03) that ranged in depth from 195 feet below ground surface (bgs) to 215 feet bgs. MW 01 and MW 02 were installed downgradient of the Site, and MW 03 was installed upgradient. Public supply wells that were sampled included the nearby United States Geological Survey (USGS) observation well (Rosario 2), located 40 feet west of the Site, and three public supply wells: the upgradient Villa Pinares well and the two downgradient Vega Baja 1 and Vega Baja 3 wells. The samples were submitted to an EPA CLP laboratory for TCL organic compound and TAL inorganic analyte analyses.

Acetone and 1,1,1-trichloroethane were detected in the Rosario No. 2 well at levels up to 54 micrograms per liter (μg/L) and 61 μg/L, respectively. Bis (2-ethylhexyl) phthalate was detected in two of the public supply well samples but was also noted in associated quality control blanks. Estimated concentrations of heptachlor and endrin aldehyde were detected in both up and downgradient wells; the highest levels were detected in MW 01, at concentrations up to 0.019 μg/L and 0.053 μg/L, respectively. No other TCL organic compounds were detected in the groundwater samples.

Iron and manganese were detected in the samples collected from both up and downgradient wells at concentrations above their respective CLP CRDLs; iron was detected at levels up to 2,310 μg/L and manganese was detected at levels up to 144 μg/L. Several other

inorganics, including aluminum, arsenic, barium, copper, mercury, and selenium, were detected at estimated concentrations in both up and downgradient wells.

Soil Sampling Event, April - December 1998. EPA conducted a soil sampling event at the Site from April 1998 to December 1998. A total of 3,693 samples were collected and analyzed, primarily for lead.

The sampling event was divided into three phases:

Phase I - The sampling was conducted from April 14 to June 8, 1998. The primary contaminant of concern during this phase was lead. However, the samples were also analyzed for the presence of other inorganic and organic compounds. The sampling area consisted of the residential area south of Route 22 and east of Trio Vegabajeno Avenue, terminating on Progreso Street to the east and included the undeveloped wooded areas to the south. A total of 814 soil samples were collected and analyzed for lead using XRF methodology. Soil samples were also taken from the bottom and side walls of the drainage ditch.

Lead concentrations across the Site ranged up to 14,000 milligrams per kilogram (mg/kg) or ppm. The highest lead concentration found in the residential area was 2,600 mg/kg at 0.5 foot (ft) depth. In the residential area, lead concentrations generally decreased with depth (i.e., at 2 ft depth the lead concentrations were below 400 mg/kg). The area where the highest lead levels were found extends from the undeveloped area to the intersection of Trio Vegabajeno Avenue and Alturas Street.

Soil samples collected from the drainage ditch bottom had very low lead levels (not detectable to 42 mg/kg). However, samples collected from the sides of the ditch had lead levels ranging from 220 mg/kg to 1,100 mg/kg. EPA concluded that lead levels on the drainage ditch sides are similar to lead levels in the soil throughout the Site and are expected to remain constant.

However, those on the drain bottom are expected to change continuously with rainfall, soil erosion, and deposition. Ten percent of the soil samples were sent to the Response Engineering and Analytical Contract (REAC) laboratory in Edison, New Jersey for confirmation of XRF results or for further XRF analyses along with analysis for other TAL metals excluding mercury, selenium, and thallium. Unvalidated data revealed the following: lead concentrations up to 24,000 mg/kg; copper concentrations up to 24,000 mg/kg; arsenic concentrations up to 190 mg/kg; and chromium concentrations up to 390 mg/kg. Other metals detected included antimony, cadmium, iron, manganese, nickel, and zinc.

The XRF confirmation samples were also analyzed for volatile organic compounds (VOCs), base/neutral acids (BNAs) and pesticides/polychlorinated biphenyls (PCBs). Trace amounts of the following VOCs were found: toluene, xylenes, ethylbenzene, styrene, trichlorofluoromethane, acetone, and butanone. Traces of

BNAs, including bis (2-ethylhexyl) phthalate, butylbenzyl phthalate, di-n-octylphthalate, di-n-butylphthalate, and diethylphthalate were also found in a number of samples at concentrations up to 92,000 micrograms per kilogram (μg/kg). However, a phthalate compound was also found in a laboratory blank.

A total of 72 soil samples were analyzed for pesticides and PCBs. Dieldrin was the pesticide detected most frequently and with the highest concentrations. Dieldrin was detected in 20 samples at concentrations ranging up to 2,900 μg/kg. Other pesticides detected included dichlorodiphenyltrichloroethene (DDT), chlordane, and heptachlor epoxide. Of the PCBs, weathered Aroclor 1254 was detected in nine samples at concentrations up to 360 μg/kg, Aroclor 1248 was detected in two samples at a maximum concentration of 900 μg/kg, and Aroclor 1260 was detected in two samples at a maximum concentration of 600 μg/kg. The pesticide/PCB detections were found in the southern section of the Site and correlate with the location of the trash mounds.

Phase II - The sampling was conducted from August 3 to December 3, 1998. The majority of the sampling area consisted of the residential area south of Route 22 and east of Trio Vegabajeno Avenue. The sampling area terminated on Progreso Street to the east and the undeveloped wooded area to the south. No soil sampling was done in the undeveloped wooded area south of the residences.

During this phase, each residential lot was sampled as a discrete unit, and analysis focused on soil lead content. Two sampling protocols were followed. At properties where elevated lead levels (400 mg/kg or greater) were found during previous sampling activities, biased sampling locations were collected at ground surface, 1.0, and 2.0 feet bgs. At properties where lead levels less than 400 mg/kg were found during previous sampling activities, six surface soil samples were initially collected on a regular grid where feasible. However, later in the sampling event, soil samples were also collected at 1.0 foot bgs. Approximately 213 residential lots were sampled and 2,823 soil samples were collected and analyzed. During this phase, lead concentrations from XRF analytical methods at the residential area ranged from non-detect to 7,100 ppm at one foot bgs. An extensive area in the residential development with high lead concentrations was identified in the southwestern section of the Site.

Other areas with pockets of elevated lead concentrations were found in the northeast section of the Site. Sixty soil samples were sent to a CLP laboratory for lead analysis via the Toxicity Characteristic Leaching Procedure (TCLP). These samples were split from the XRF samples and were selected after XRF analysis to represent a range of lead concentrations above 400 mg/kg. Lead TCLP concentrations ranged from non-detect to 3.34 milligrams per liter (mg/L). However, the 3.34 mg/L concentration appears to be an anomaly, since the next highest TCLP result was 0.65 mg/L. The Resource Conservation and Recovery Act (RCRA) threshold for the characteristic of toxicity for lead is 5.0 mg/L. None of the samples analyzed exceeded the TCLP RCRA threshold limit.

Phase III - This phase was focused on sampling four trash mounds in the residential area. The sampling was conducted from December 5 to December 16, 1998. The objective of this phase was to estimate the area of the mounds, the thickness of the garbage, and the level of lead contamination within the mounds. A total of 56 samples were collected and analyzed using XRF methodology. During the sampling of the four trash mounds in the residential area, lead was detected at concentrations up to 2,900 mg/kg. The highest concentrations were found in Trash Mound 1 where the garbage was the thickest (over eight feet). Ten percent of the XRF samples were also analyzed using the inductively coupled argon plasma (ICAP) technique for confirmation of the XRF results.

Hazard Ranking System Evaluation, February 1999. Information gathered during the EQB and EPA investigations was used to perform the Site's Hazard Ranking System (HRS) Evaluation. The HRS score for the Site was based largely on the potential threat of a release of hazardous substances to groundwater. The soil exposure pathway also contributed to the HRS Site score since it evaluated the likelihood that residents and nearby populations would be exposed to contaminated soil associated with sources at the Site. The primary driver for the Vega Baja soil exposure pathway score was the detection of inorganics, including lead and arsenic, at concentrations significantly above background or health-based benchmarks, in residential surface soil samples.

NPL Listing. Based upon the results of the HRS, the Site was proposed for inclusion on the National Priorities List (NPL) on April 22, 1999, and subsequently it was listed on the NPL on July 22, 1999.

Removal Action, 1999. After evaluating the data from Phases I, II and III, the EPA Removal Program decided to evaluate the areas where the higher lead levels were found in residential lots. As a result of this evaluation, the EPA Removal Program recommended a time-critical removal action at three properties: 5571 Alturas Street, 5569 Alturas Street and 5460 Los Angeles Street (hereinafter, the Three Lots). On August 18, 1999, the Director of the EPA Region 2 Emergency and Remedial Response Division signed an action memorandum to conduct a CERCLA time-critical removal action at the Three Lots. The removal action included, among other things, excavation and off-site disposal of contaminated soil and the demolition and reconstruction of one residence which presented an obstruction and construction hazard to excavation activities.

Dioxin Sampling Event, June 2001. Because the Site had historically been used to burn a variety of garbage, in June 2001, an EPA contractor collected surface soil samples for analysis of dioxin. This sampling event was conducted to determine if dioxin is present at the Site in sufficient quantities to be considered a chemical of concern.

A total of 121 soil samples were collected and analyzed. Only one sampling point, located in the wooded area to the south, had dioxin concentrations above the recommended action level of 1 part per billion. A report was finalized in February 2002 (REAC 2002). The

report concluded that the residential and undeveloped areas do not warrant any removal or remedial action for dioxin and that dioxin is not considered a chemical of concern.

OU-1 Groundwater Investigation, 1999 to 2004. CDM Federal Programs initiated the Remedial Investigation and Feasibility Study (RI/FS) for Groundwater (OU-1) on behalf of EPA in September 1999. The OU-1 RI included an ecological survey, the installation of seven monitoring wells, and sampling of groundwater, surface water, sediment, soil, and springs/seeps. Based on the results of the investigation, EPA issued a Record of Decision on April 6, 2004 selecting no further action for groundwater.

Consent Order, 2003. In April 2003, EPA completed its negotiation with the identified Potentially Responsible Parties (PRPs) and signed a consent order in which the PRPs agreed to conduct a Remedial Investigation and Feasibility Study for OU2- Soils. EPA identified the following entities as PRPs: Municipality of Vega Baja, PRHD PRLA, Motorola Corporation, Pfizer Company, Puerto Rico Electric Power Authority , and Browning-Ferris Industries of Puerto Rico .

PRPs Removal Action, 2004. In March 2004, EPA advised the PRPs that an unauthorized disturbance had occurred at the Site involving the removal of a portion of one of the trash mounds on a residential property at 5782 Los Ortiz and a disturbance of soils on adjacent properties. Materials that had been removed had been placed in the adjoining non-residential portion of the Site. EPA and the PRPs conducted Site inspections, which indicated that the remainder of the trash mound (located at 5565 Alturas Street) had been left in a physically unstable condition. The PRPs also collected samples to assess lead concentrations in the disturbed soil and to determine whether the waste involved was characteristically hazardous. At EPA's request, the PRPs developed a plan to respond to the unauthorized disturbance. Following EPA approval, the PRPs implemented the plan in July 2004, including the removal of the unstable remaining portion of the trash mound at 5565 Alturas. Both areas were restored by placement of a geotextile barrier and one foot of clean soil, which was revegetated. Removed materials were consolidated with those that had been relocated as part of the unauthorized disturbance, and they were covered with a geotextile barrier and one foot of clean soil and revegetated. Waste testing confirmed that the materials involved were not hazardous waste regulated under RCRA.

HIGHLIGHTS OF COMMUNITY PARTICIPATION

EPA has maintained a close relationship with the community over the years. With regard to the subject action, the Proposed Plan for the OU-2 - Soils response action was released for public comment on July 29, 2010. These documents along with the Administrative Record for OU-1 and OU-2 were made available to the public in the EPA Docket Room in Region 2, New York, the Vega Baja City Hall, the Caribbean University Vega Baja Campus, EQB's Superfund File Room, and EPA's Caribbean Environmental Protection Division. A public notice announcing the availability of these documents and the date of the public meeting was published in the El Vocero and Primera Hora newspapers on July 28, 2010. The 30-day public comment period closed on August 29, 2010.

During the public comment period, EPA held the public meeting to present the RI, the risk assessments, the feasibility study and the Proposed Plan, to respond to questions regarding these items, and to receive both oral and written comments. EPA held the public meeting at the Catholic Chapel Rio Indio, located at Principal Street, Brisas del Rosario, Vega Baja, Puerto Rico on August 3, 2010. At this meeting, EPA answered questions about the Site and the Proposed Plan and received comments from interested persons. Comments and responses to those comments received at the public meeting and during the public comment period are included in the Responsiveness Summary (Appendix V).

SCOPE AND ROLE OF RESPONSE ACTION

As with many Superfund sites, the remedial investigation at the Vega Baja Solid Waste Disposal Site was divided into operable units:

- Operable Unit 1: Contamination of the groundwater
- Operable Unit 2: Contamination of on-site soils

A groundwater investigation was conducted at the Site as part of the OU-1 .RI. This investigation concluded that groundwater has not been impacted by Site-related contaminants. A No Action Record of Decision for OU-1 was signed on April 6, 2004. The information supporting that No Action decision is contained in the Administrative Record for the OU1 remedy for the Site.

The second operable unit, the subject of this ROD, addresses the contamination of on-site soils. Site-related risks from potential exposure to lead at the Site, based on modeling results (e.g., Integrated Exposure Uptake and Biokinetic, or IEUBK), were identified as having the potential to cause an increase in blood lead (i.e., greater than 5% of the population exceeding 10 micrograms per deciliter of lead in the blood) to residents living on the Site. Based on the potential for increased blood lead concentrations in such residents, it was determined that a remedial action was warranted to reduce potential lead exposures at the Site. In addition, risks to populations of ecological receptors, especially avian species represented in the risk assessment by the Red-legged thrush and Northern bobwhite, were determined to be associated with exposure to lead at the Site, therefore, warranting remedial action.

This second operable unit presents the final response action for the Site and addresses soil contaminants in both the residential (including trash mounds and the drainage ditch) and undeveloped areas (also known as Non-Residential Areas).

SITE CHARACTERISTICS

The following describes the regional and site-specific geography, geology, and hydrogeology as presented in published reports and the RI field program. Site characteristics are described more completely in the RI report, which was finalized in July 2008. The purpose of the RI was to define the nature and extent of contamination in on-site surface and subsurface soils. EPA's fieldwork for the RI began in 2004.

The majority of the residential area of the Site is covered by densely spaced residences, asphalt roadways and other paved areas. The Non-Residential Area of the Site (southwestern portion) is highly vegetated and is undeveloped.

Topography

The Site is situated within the North Coast Limestone Province on a flat plain of outcropping or very shallow Aymamon Limestone bedrock. East-west trending mogote hills border the southern and northern edges of the Site's flat topography. Most of the Site consists of closely spaced houses and large areas of concrete pavement. The Site slopes gently from an elevation of about 60 meters above sea level (masl) on the western side of the Site down to about 55 masl on its eastern flank. There are no surface water bodies or significant depressions identified on the Site, with the exception of an intermittent storm water drainage ditch that bisects the Site from west to east. To the east of the Site, beyond Route 22 (a multi-lane highway) the land slopes down towards the edge of the Rio Indio flood plain. Isolated small mogotes are found within this moderately sloping area between the Site and the river flood plain. The flood plain, about one-half kilometer east of the Site, is as much as 30 meters lower in elevation than the surrounding land. Its edge is marked by a well-defined northeast-southwest-trending scarp slope. Small ephemeral stream valleys punctuate the length of the scarp, one of which is fed by an on-site drainage channel.

The Site is located within the regional Rio Cibuco watershed system. Rio Indio, a tributary of Rio Cibuco, flows from the Site approximately 1.5 miles northeast to its confluence with the Rio Cibuco. The Rio Cibuco meanders northwards across the broad coastal plain for approximately five miles to the coast where it empties into the Atlantic Ocean. The Rio Cibuco at Vega Baja has a mean flow rate of 91 cubic feet per second (cfs). Similar flow rate data are not readily available for the Rio Indio. As with most karst limestone terrain, surface water flow in the region is largely confined to rivers (e.g., the Rio Indio and Rio Cibuco to the east of the Site). Based on regional water table potentiometric surface information, the Rio Indio is a gaining river, meaning that groundwater discharges to the river, contributing to its baseflow. At its closest position, the Rio Indio is located about 0.2 mile to the east of the Site boundary.

Heavy rainfall, coupled with dense, clayey surface deposits, tend to favor storm water surface runoff rather than downward percolation through surficial deposits or bedrock at the Site. On-site storm waters are directed from impermeable surfaces such as buildings and asphalt surfaces to the drainage channel which bisects the Site, directing surface water flow through a culvert under the elevated highway (PR Route 22), toward its discharge into the Rio Indio.

Geology

Puerto Rico is divided into three geologic provinces: an older Cretaceous-age central volcanic-plutonic province trending east to west, and two younger Tertiary limestone provinces along its northern and southern coastal margins. The Site lies within the Northern Limestone Province. The bedrock formations of the Northern Limestone Province are of late-middle Tertiary-age (early Miocene). These rocks consist of a

sequence of limestones and terrigenous sedimentary rocks of Oligocene to Pliocene age that strike east-west and normally dip 2 to 5 degrees to the north. The limestone succession unconformably overlies Cretaceous volcanic, volcaniclastic, and intrusive igneous basement rocks. Within the area of the Manati topographic quadrangle, the sequence is divided into five bedrock formations. In order of decreasing age, the formations are the San Sebastian Formation, Mucarabones Sand, Cibao Formation, Aguada Limestone, and Aymamon Limestone. These units are described briefly below:

San Sebastian Formation. The lowermost sedimentary unit is the San Sebastian Formation that unconformably overlies the volcanic basement. The San Sebastian crops out in two discontinuous bands of clayey, silty conglomerate and feldspathic sandstone along the southwestern and southeastern edges of the North Coast Limestone aquifer system. It extends into the subsurface where it is more laterally extensive but grades into glauconitic mudstone and marl. The San Sebastian interfingers with the Mucarabones Sand to the east but its exact relation with that unit is unknown. The San Sebastian ranges in thickness from a featheredge where it crops out to about 1,000 feet in the deep subsurface. It yields small quantities of water in outcrop areas but is poorly transmissive and functions mostly as a confining unit, especially in downdip areas.

Mucarabones Sand. The Mucarabones Sand consists predominantly of cross-bedded, fine to medium quartz sandstone that grades upward into sandy limestone near the top. The sandstone is moderately to poorly sorted and a clay matrix in the lowermost part is replaced by a calcite cement higher in the section. Local conglomerates in the formation contain volcanic-rock cobbles up to 1.5 inches in diameter. The formation overlies, in part, the San Sebastian Formation and, in part, volcanic rocks. The Mucarabones Sand ranges in thickness from about 33 feet at its western extent (near Ciales) to about 400 feet near Bayamon. The Mucarabones is a stratigraphic equivalent of both the Lares Limestone and the Cibao Formation.

Cibao Formation. The Cibao Formation is divided into a number of members that represent a variety of depositional environments. The Cibao Formation is a heterogeneous unit consisting of intergradational and interlensing beds of calcareous clay, limestone, sandy clay, sand, sandstone, and gravel. The total thickness of the Cibao Formation is approximately 490 feet (150 m in the study area).

Aguada Formation. The Aymamon Formation underlies the Aguada Formation. The Aguada Limestone is characterized by massive white or pink fossiliferous limestone and sandy limestone with extensive moldic secondary porosity and common clay interbeds. The Aguada Formation is up to 350 feet thick and has an overall finer-grained texture than the Aymamon Formation which is utop it. About 100 feet below the contact between the two limestone formations, a 30-foot-thick sandy limestone can be traced across the Site, and it dips gently towards the north, parallel to bedding. The sandy limestone may contain up to 50 percent sand and is also relatively more clay-rich than the rest of the formation.

Aymamon Formation. The uppermost bedrock unit comprises massive limestones of the

Aymamon Formation, which is up to 650 feet thick. The dolines or mogotes which surround the Site are outcrops of the Aymamon Formation. Small on-site sinkholes have developed in both the Aymamon and the underlying Aguada formations. The Aymamon Formation is overlain by soils within topographic degressions, and it is exposed on the crests of the steep-sided mogotes. Typically, the limestones are massive; pink, brown, or white; fossiliferous,- occasionally sandy; and may contain cavities or fractures, with the degree of weathering noted to decrease gradually with depth. Clay-rich beds or clay-filled solution cavities are likely present in the lower Aymamon Formation, immediately above the contact with the underlying Aguada Formation. The Site is underlain by an unconsolidated deposit that consists of clay and sandy clay that overlies the Aymamon Limestone. With the exception of surrounding mogotes, the Aymamon Limestone outcrops beneath the Site under a cover of Quaternary blanket deposits.

Hydrogeology

The North Coast Limestone aquifer system in Puerto Rico is one of the largest and most productive sources of groundwater on the Island of Puerto Rico. The North Coast Limestone aquifer system consists of a thick sequence of carbonate rocks of Miocene to Oligocene age that formed as platform deposits on the south flank of a broad depositional basin that extends from Puerto Rico about 100 miles northward to the southern slope of the Puerto Rico Trench. The aquifer system consists mostly of limestone; however, not all strata yield water. Maximum known onshore thickness of the limestones is about 5,600 feet, but their maximum estimated offshore thickness is 11,500 feet. These numerous geologic units have been combined into an upper and a lower aquifer, separated by a confining unit. The regional hydrogeology around Vega Baja is characterized by an upper unconfined aquifer composed of the permeable parts of the Cibao Formation, the Aguada Limestone, and the Aymamon Limestone. Vertical groundwater flow is limited by the relatively impermeable part of the Cibao Formation, which forms the lower boundary of the upper aquifer along the south of the study area. A lower artesian (confined) aquifer is present below the top of the Cibao Formation. The lower aquifer of the North Coast Limestone contains water under artesian pressure throughout the area where it is overlain by the confining unit. The San Sebastian Formation, the Lares Limestone, the Montebello Limestone, the Rio Indio Limestone, the Quebrada Arenas Members of the Cibao Formation, and the Mucarabones Sand that compose the lower aquifer are unconfined in their outcrop areas.

The Site is located in karst terrain where sinkholes are a common occurrence, and there are very few flowing streams. It is located in a principal recharge area for the upper aquifer. The rate of recharge to the water table aquifer at the Site is controlled partly by the thickness of clay-rich soils that overlie the limestone, retarding direct infiltration of precipitation. The path that storm water takes from the surface to the water table is often complex.

According to the regional water table map for 1995, groundwater generally is encountered at approximately 5 meters (15 feet) masl or approximately 200 feet bgs. Groundwater moves both horizontally and vertically from areas of high head to areas of low head, along flow lines whose trend is perpendicular to the contour lines of equipotential head that are

typically constructed to depict the water table elevation and groundwater flow direction. The regional direction of groundwater flow at the Site generally is north-northeast towards the regional discharge area along and beyond the Atlantic coastal plain. Cones of depression resulting from groundwater supply well withdrawals have been identified in Vega Baja and have caused local perturbations and reversals in the regional flow gradient.

Remedial Investigation
To determine if on-site soils contain contamination at levels of concern, the analytical data were compared to applicable or relevant and appropriate requirements (ARARs), or other relevant guidance. The results of these investigations are summarized below. The RI report contains a more complete examination of the analytical results. This information is available in the Administrative Record for this ROD (index attached as APPENDIX III).

Soil Investigations – OU-2 Sampling Program. The scope of the OU-2 RI Field Investigation was defined in the Final Quality Assurance Project Plan (QAPP) Addendum, and the results were presented in the Final RI Report. The RI included the following sampling programs:

- Residential sampling to determine the concentrations of lead in soil, indoor dust, and tap water, and the concentrations of TAL metals, TCL pesticides, and PCB Aroclors in soil, for baseline risk assessment purposes.

- Non-Residential Area sampling to delineate the extent of the lead-contaminated area and to collect further data on the levels of PCBs and pesticides in the soil for baseline risk assessment purposes.

- Trash Mound Area sampling to determine the concentrations of TAL metals, TCL pesticides, and PCB Aroclors in soil, for baseline risk assessment purposes.

- Background sampling to determine background levels of TAL metals and TCL pesticides.

Residential Lead
As described in the RI Report, lead sampling performed at the Site prior to the RI primarily consisted of collection of data based on XRF field testing. The residential lead sampling program in the RI included 55 areas spread across 35 properties where concentrations of lead in soil had been detected at levels greater than 400 mg/kg during previous sampling events (Figure 3). Five-point composite samples were collected at three depth intervals (0-1 inch, 1-12 inches, and from 12 inches to bedrock) in each of the areas (except at 5576 Alturas where bedrock was encountered at less than one foot). Access was not obtained at two properties, therefore, only 33 properties and 49 areas within those 33 properties were sampled. A total of 146 soil samples were collected for lead analysis. Of the 33 properties where soil samples were collected, household dust was analyzed for lead in 31 and tap water was analyzed for lead in 30.

Residential Blocks
Pre-RI soil sampling in the Residential Area (for compounds other than lead) included collection of surface soil samples at 16 locations that were analyzed for TAL metals (28 samples), TCL pesticides (26 samples), and PCB Aroclors (26 samples). The RI included the collection of 46 additional surface soil samples from the Residential Area for TAL metals, TCL pesticides, and PCBs analyses (Figure 4). The goal of the RI sampling event was to collect sufficient additional samples to calculate reliable 95% upper confidence limits on the mean soil concentrations. During the RI, 46 samples were collected from the 0- to 1-foot depth range (or bedrock, whichever was shallower) and analyzed for TAL metals and TCL pesticides. A total of 28 RI samples were also analyzed for PCB Aroclors. Additionally, one confirmatory PCB sample was collected to determine whether a previously detected "hot spot" of PCB contamination was actually present. This confirmatory sample indicated that PCBs were not elevated above screening levels at that location.

Non-Residential Area
Pre-RI sampling conducted in the wooded Non-Residential Area in the southern portion of the Site included the collection of 25 samples (from 10 locations) that were analyzed for TAL metals, and 16 samples (from 7 locations) that were analyzed for TCL pesticides and PCBs. Previous investigations also included extensive lead analyses using field XRF and showed lead contamination above screening levels across the majority of this area. Additional sampling was conducted in the Non-Residential Area during the RI to delineate the extent of elevated lead concentrations in soil (above 400 mg/kg) and to gather data for the baseline risk assessment. Soil lead concentrations were field-screened using a portable XRF. Screening samples were collected along transects extending outward from the boundaries of previous sampling until either a concentration less than 400 mg/kg was measured using the XRF instrument, or until the vertical rock face of the mogote physically limited the potential waste disposal area. A total of 13 samples, taken where the XRF instrument detected concentrations of lead below 400 mg/kg or a vertical rock outcrop was encountered, were sent for laboratory confirmation analysis. Three samples collected in the Non-Residential Area were also analyzed for TCL pesticides and PCB Aroclors.

Trash Mounds
Pre-RI sampling conducted in the trash mounds included the collection of 11 samples (from four locations) that were analyzed for TAL metals, TCL pesticides and PCBs. One of the trash mounds (Trash Mound #1) was subsequently removed, and six additional samples were collected in the three remaining trash mounds during the RI to support the development of the baseline risk assessment. Specifically, two RI samples were collected from within each of the existing trash mounds at a depth of 0 to 2 feet bgs (Figure 5). The samples were analyzed for TAL Metals, TCL pesticides, and PCB Aroclors.

Background
Ten off-site areas that were not affected by disposal activities were sampled during the RI to assess background conditions. Two samples were collected in each background area and analyzed for TAL metals, TCL pesticides, and PCB Aroclors. Samples were collected to a depth of 2 feet or bedrock, whichever was shallower. Nine of the ten areas did not appear

to have been disturbed by anthropogenic activities. The other area was located within a baseball field, and the soil samples were noticeably sandier, perhaps reflecting the import of fill for grading/vegetation growth.

Results of the Soils Investigations. The following metals were detected in soil at the Site at concentrations above EPA risk-based screening levels: lead, arsenic, chromium, copper (in three samples which were collected from a trash mound and from the Non-Residential Area), iron, manganese, thallium, and zinc (in one sample collected from a trash mound during the pre-RI study). As presented in the Final RI report, statistical and graphic comparisons of background arsenic, chromium, and manganese levels with Site concentrations show that potential risks from these contaminants at the Site are not significantly different than those presented by exposure to background concentrations. The only organic compound detected at concentrations above screening levels was the pesticide dieldrin (in four samples, two of which were in trash mounds). The reference dose associated with thallium was recently withdrawn by the EPA because of uncertainty in the development of the value; therefore, the non-cancer hazard that was associated with thallium exposure was removed from the risk assessment. If new information becomes available, the consideration of thallium as a COC could be re-evaluated either during the Remedial Design or Five-Year Review to ensure that concentrations of thallium in the soil are protective.

There were 16 surface soil samples above the 400 mg/kg lead screening level. All properties with sample results higher than 400 mg/kg within the surface soil were also above 400 mg/kg in the 1-inch to 12-inch samples. Additional properties had sample results higher than 400 mg/kg in the 1 to 12-inch interval but were below the screening value in the surface soil. There was one property where a sample deeper than one foot was above the screening value, but all shallower samples on that property were below the screening value. Overall, out of the 33 properties where RI soil samples were collected for lead analysis, 19 had sample results higher than 400 mg/kg within at least one sampling interval (Figures 6 through 8).

The extent of lead contamination above the screening level of 400 mg/kg in the Non-Residential Area of the Site was delineated during the RI and is bounded by the near-vertical rock face of the southern mogotes. Approximately 8.5 acres of the Non-Residential Area are above the lead screening value of 400 mg/kg with multiple locations where lead has been detected at concentrations above 1,000 mg/kg (Figure 9). Of the three samples analyzed for pesticides and PCBs, detections occurred in only one sample; this sample contained Aroclors 1248 and 1254 at 100 and 72 micrograms per kilogram (ug/kg), respectively, and dieldrin at 6.5 ug/kg. Each of these detections is below screening levels.

Similarly, the nature and extent of contamination within the existing trash mounds at the Site have been characterized. All six trash mound samples collected were above the screening levels for lead, arsenic, thallium, and iron. The only PCB detected was Aroclor 1260, which was detected in four of six samples at concentrations ranging from 27 to 47 ug/kg. Arsenic and dieldrin were detected in all samples at concentrations ranging from 23 to 33.7 mg/kg, and from 4.7 to 270 ug/kg, respectively. Arsenic concentrations exceeded

the screening value in all samples and two dieldrin sample concentrations exceeded the screening value. Lead concentrations in all samples exceeded the screening value with concentrations ranging from 586 to 1520 mg/kg. Other detections above screening values included copper (one of six samples), iron (six of six samples), and thallium (six of six samples). No other compounds were detected in the trash mounds above the screening values.

For this Site, there are two properties with elevated indoor dust concentrations of lead, located at 5570 Alturas (824 mg/kg lead in dust) and 5376 Santa Maria (624 mg/kg lead in dust). The average concentration was 122 mg/kg.

Thirty homes were tested for lead in both a "first draw" tap water sample and a 15-minute purged tap water sample. The maximum detection (five of 30 samples were non-detect) in a first draw sample was 8.6 ug/L and the average concentration was 1.74 ug/L (using half the detection limit for non-detect samples). The maximum detection (five of 30 samples were non-detect) in a purged sample was 1.8 ug/L and the average was 0.93 ug/L (using half the detection limits for non-detect samples). The significantly lower concentrations measured in purged samples may indicate that lead may be present as a result of plumbing systems. All measured values are below EPA's Action Level of 15 ug/L.

During EPA's OU1 investigation, two rounds of soil samples were collected from seven locations in the drainage ditch that runs through the Site parallel to Calle Alturas. Three of the ditch sample locations are located on-site and lead was detected above the Ontario Sediment Quality Criteria in these samples at concentrations up to 1,180 mg/kg (Figure 10).

CURRENT AND POTENTIAL FUTURE SITE AND RESOURCE USES

Land use at the Site is mostly residential. The 55-acre residential area, currently known as "Brisas del Rosario," contains 213 dwellings. The 17-acre Non-Residential Area is an undeveloped, uninhabited area. The continued residential use of property can be reasonably assumed for the 55-acre area. Since contaminated soil will be consolidated and covered at 8.5 of the 17 undeveloped acres, institutional controls will be established to restrict future use of this area.

Surface water (i.e., Rio Indio) and groundwater are not affected by lead-contaminated soils at the impacted residential area at the Site. Residential households located within the Site receive their drinking water from the municipal water supply and are not served by individual groundwater wells.

The majority of the surrounding land is residential with an estimated population within a ¼-mile radius of the Site of 2,280 people and an estimated population within one mile of 6,871 people.

A Stage IA Cultural Resource Survey was conducted at the Site as part of OU-1 RI. The study indicated that there is a high probability that the Site area contained prehistoric remains at some time, and there is a possibility that cultural remains may be present in deep caves within the mogotes. However, areas of the Site other than the mogotes have been the subject of major disturbance associated with landfilling and subsequent clearing and construction activities over the past 50 to 60 years, and so intact cultural resources are not reasonably expected to remain in these areas.

SUMMARY OF SITE RISKS

As part of the RI/FS, EPA conducted a baseline risk assessment to estimate the current and future effects of contaminants on human health and the environment. A baseline risk assessment is an analysis of the potential adverse human health and ecological effects of releases of hazardous substances from a site in the absence of any actions or controls to mitigate such releases, under current and future land uses. The baseline risk assessment includes a human health risk assessment and an ecological risk assessment. It provides the basis for taking action and identifies the contaminants and exposure pathways that need to be addressed by the remedial action. This section of the ROD summarizes the results of the baseline risk assessment for the Site.

Human Health Risk Assessment

A four-step process is utilized for assessing site-related human health risks for a reasonable maximum exposure scenario: *Hazard Identification* – uses the analytical data collected to identify the contaminants of potential concern at a site for each medium, with consideration of a number of factors explained below; *Exposure Assessment* - estimates the magnitude of actual and/or potential human exposures, the frequency and duration of these exposures, and the pathways (e.g., incidental ingestion of soil) by which humans are potentially exposed; *Toxicity Assessment* - determines the types of adverse health effects associated with chemical exposures, and the relationship between magnitude of exposure (dose) and severity of adverse effects (response); and *Risk Characterization* - summarizes and combines outputs of the exposure and toxicity assessments to provide a quantitative assessment of site-related risks. The risk characterization also identifies contamination with concentrations which exceed acceptable levels, defined by the National Contingency Plan (NCP) as an excess lifetime cancer risk greater than $1 \times 10^{-6} - 1 \times 10^{-4}$, an excess of lifetime cancer risk greater than 1×10^{-6} (i.e., point of departure) combined with site-specific circumstances, or a Hazard Index greater than 1.0; contaminants at these concentrations are considered chemicals of concern (COCs) and are typically those that will require remediation at a site. Exposure to contaminated soil at residential properties, trash mounds, the drainage ditch, and the Non-Residential Area were evaluated (Table 1) for cancer risks and non-cancer hazards. There were no chemicals that were considered to be COCs based on this process. The details associated with this determination can be found in the Human Health Risk Assessment.

Lead was detected on the Vega Baja Site at elevated concentrations (Table 2). Lead is evaluated using a different approach that was described above. The potential for exposure

to lead was evaluated using the IEUBK model as part of the human health risk assessment, and lead was identified as a COC. The evaluation of lead exposure, as well as a discussion of the uncertainties associated with the lead evaluation, is provided below.

The Human Health Risk Assessment was developed for the Site using site-specific information collected during the Vega Baja RI, where available. Lead was identified in the risk assessment as the primary contaminant of concern. The risk assessment for lead focused on young children under the age of seven (0 to 84 months) who are Site residents. Young children are most susceptible to lead exposure because they have higher contact rates with soil or dust, absorb lead more readily than adults, and are more sensitive to the adverse effects of lead than are older children and adults. The effect of greatest concern in children is impairment of the nervous system, including learning deficits, lowered intelligence, and adverse effects on behavior.

The IEUBK model for lead in children was used to evaluate the risks posed to young children (0 to 84 months) as a result of the lead contamination at the Site. Because lead does not have a nationally-approved reference dose (RfD), cancer slope factor, or other accepted toxicological factor which can be used to assess risk, standard risk assessment methods cannot be used to evaluate the health risks associated with lead contamination. The IEUBK model uses either site-specific inputs (if available) or default inputs to estimate the probability that a child's blood-lead level might exceed a health-based standard of 10 micrograms per deciliter (µg/dl), as recommended by the Centers for Disease Control and Prevention. EPA's health protection goal is that there should be no more than a 5 percent chance of exceeding a blood lead level of 10 µg/dl in a given child or group of similarly-exposed children. If only default values are used as inputs to the IEUBK model, the model predicts that a child would have less than a 5 percent probability of having a blood lead level at or above 10 µg/dl value if the soil in that child's environment does not exceed 400 ppm.

The IEUBK model was run using site-specific data (i.e., soil, indoor dust, and tap water) to evaluate the potential for blood lead impacts at individual areas, such as specific properties, trash mounds, the drainage ditch, and the Non-Residential Area. By using a range of soil-to-dust lead correlation coefficients (based on a regression of site-specific soil lead and indoor dust lead measurements collected during the RI), as well as site-specific tap water values, EPA's IEUBK model predicts that occupants at 13 properties have the potential to exceed the blood lead level of 10 µg/dl. In addition to the residential properties, the model predicted that exposure to the trash mounds, the drainage ditch, and Non-Residential Area would also have the potential to result in exceeding the blood lead level of 10 µg/dl. The model was also used to predict a lead soil level that would be protective of children and other residents. The model predicted that a young child residing at the Site will have more than a 5 percent chance of having a blood lead concentration of 10 µg/dl or greater if the soil lead concentrations are above a range of 566 ppm to 613 ppm.

Final cleanup levels for lead in residential soil at Superfund sites generally are based on the IEUBK model results and evaluation of the nine criteria analysis in accordance with the NCP. EPA typically selects a residential soil cleanup level for lead around 400 ppm. As

described above, the IEUBK modeling results for the Site suggest a soil lead concentration of about 550 ppm to achieve the Remedial Action Objective that a child has less than a 5 percent probability of having a blood lead level exceeding 10 µg/dl. The IEUBK model input parameter that significantly influenced this suggested cleanup level is the ratio of soil lead concentrations to indoor dust lead concentrations. However, because of uncertainties in some parameters used in the IEUBK modeling effort, as described in the HHRA, as well as EPA's mission to protect area residents, a lead cleanup level of 450 ppm has been established for residential soils at the Site. This cleanup level is near the 400 ppm concentration generally considered protective for residential cleanups. Removal of soils at or above 450 ppm is anticipated to meet the Remedial Action Objective of maintaining blood lead concentrations below 10 µg/dl and result in a protective remedy for the community. The response action selected in this ROD is necessary to protect public health or welfare or the environment from actual or threatened releases of hazardous substances into the environment.

Uncertainties

The procedures and inputs used to assess risks in this evaluation, as in all such assessments, are subject to a wide variety of uncertainties. In general, the main sources of uncertainty include:

- environmental chemistry sampling and analysis
- environmental parameter measurement
- fate and transport modeling
- exposure parameter estimation
- toxicological data.

Although the use of site-specific data is recommended for the IEUBK model, there is some uncertainty involving the methods used to derive the site-specific dust correlations. According to EPA's 2008 "Guidance for the Sampling and Analysis of Lead in Indoor Residential Dust for Use in the Integrated Exposure Uptake Biokinetic Model," the current recommended method for dust sample collection is to use high-volume cyclonic vacuum samplers because they generally have greater precision and collection efficiency than the low-flow method that was favored at the time of the RI. However, EPA's research also indicated that although the precision and overall collection efficiency of the high-volume methods is greater, "The two low-flow vacuums had lead concentrations 10% higher than the actual concentrations." The reason for this is likely because low-flow samplers, such as the one used at the Site, are "specifically designed to collect only dust that would most likely stick to a child's hands, not total lead on a surface" (EPA 1995) and these smaller particles may be where the highest lead concentrations are present. This suggests that the low-flow method used for the Site was a conservative method for estimating the actual exposure to lead in indoor dust. In addition, the preliminary remedial goal range calculated using site-specific data includes using both the mean and the 95th percentile soil-to-dust correlation, which is a conservative approach (typically, IEUBK modeling is performed using average concentrations). Although the methods used for the Site are conservative, there is still some uncertainty regarding the precision and collection

efficiency of the dust samplers. More specific information concerning public health risks, including a quantitative evaluation of the degree of risk associated with various exposure pathways, is presented in the baseline human health risk assessment report.

Ecological Risk Assessment

A Screening Level Ecological Risk Assessment (SLERA) was conducted to evaluate potential risks to ecological receptors at the Site. The SLERA followed a two-step approach consisting of a problem formulation and ecological effects evaluation step and an exposure estimate and risk calculation step. The risk calculation consisted of calculating hazard quotients (HQs) for each compound by comparing the detected concentrations in the soil samples or by comparing modeled dietary intake of contaminants with appropriate toxicity reference values (TRVs) for representative ecological receptors. Food web risk was evaluated for Antillean fruit bat, Red-legged thrush, Northern bobwhite, and Red-tailed hawk. The HQ approach for estimating risk is based on the ratio of a selected exposure concentration to a selected ecological screening level (ESL) or effects concentration.

A HQ greater than 1.0 indicates that the potential exists for adverse ecological effects to occur as a result of Site-related exposures. Based on the first two steps, the SLERA identified 11 contaminants that could be related to adverse ecological effects in plants, invertebrates, mammals, or birds that inhabit the Site property. These contaminants include aluminum, antimony, arsenic, chromium, copper, lead, mercury, thallium, vanadium, zinc, and 4.4'-DDE Each of these compounds was associated with a HQ greater than 1.0.

The next step that was followed was to refine the selection of contaminants of potential concern at the Site, which is documented in the addendum to the SLERA referenced above. There were two basic modifications utilized:

- Refinement of exposure point concentrations (i.e., concentration in media) through the use 95% upper-confidence limits instead of maximum detected concentrations, and

- Consideration of background concentrations of metals detected in the soil and background samples.

Based on the results of the SLERA, there is a risk to populations of avian species represented by the Red-legged thrush and the Northern bobwhite from exposure to lead. Thus, protection of avian receptor populations from exposure to lead is identified as a remedial action objective.

REMEDIAL ACTION OBJECTIVES

Remedial action objectives (RAOs) are specific goals identified to protect human health and the environment. These objectives are based on available information and standards, such as ARARs, to-be-considered guidance, and site-specific risk-based levels.

Consistent with agency policy established in the EPA Residential Sites Handbook, a single Remedial Action Objective has been established for Operable Unit 2 at the Site. The RAO is to reduce the risk of exposure of young children to lead such that an individual child, or group of similarly exposed children, have no greater than a 5 percent chance of having a blood-lead concentration exceeding 10 μg/dl. To achieve this RAO, a soil cleanup goal of 450 ppm will be utilized during this remedial action.

The following RAOs have been identified for lead contaminated soils at the Site:

- RAO-1: Prevent or minimize human exposure in the Residential Area (including the drainage ditch) to soil lead concentrations greater than the cleanup goal.
- RAO-2: Eliminate potential exposure to the remaining trash mounds in the residential area.
- RAO-3: Mitigate human exposure to lead in the Non-Residential Area above the cleanup goal.
- RAO-4: Protect populations of avian receptors from unacceptable exposure to lead by using a cleanup value of 450 mg/kg, which has been determined to be protective of ecological receptors, including avian populations, at the Site.

DESCRIPTION OF ALTERNATIVES

Potential remedial technologies and process options were identified and screened using effectiveness, implementability, and cost as the criteria, with the most emphasis on the effectiveness of the remedial technology. Those technologies that passed this initial screening were then assembled into four remedial alternatives for the soil contamination.

The time frames presented below for construction do not include the time for pre-design investigations, remedial design, or contract procurements. Five-Year Reviews will be performed after the initiation of the remedial action, to ensure the integrity and effectiveness of the remedy.

Remedial Alternatives Common Elements
Each alternative, other than No Further Action, includes certain common elements that are discussed below.

Institutional Controls
All of the remedial alternatives, with the exception of the No Further Action Alternative (Alternative 1), would include institutional controls such as deed and land use restrictions to minimize the public's potential exposure to contaminated soils. However, consistent

with expectations set out in Superfund regulations, none of the alternatives rely exclusively on institutional controls to achieve protectiveness.

Institutional controls are a common element to each of the alternatives to address certain uncharacterized areas beneath buildings and pavements. In addition, institutional controls would be used to prevent the disturbance of soil covers (as well as/in conjunction with appropriate engineering controls).

Institutional controls will apply as follows:

(a) to protect the integrity of the cover system in the Non-Residential Area where a cover is used to contain contaminated materials;
(b) restricting contact with soils beneath structures on properties where soil removal is undertaken;
(c) restricting contact with soils under paved areas and/or buildings immediately adjoining an area where soil removal is undertaken;
(d) restricting contact with soils in areas where final post-excavation sampling indicates lead concentrations remain above the cleanup goal and field conditions would prevent removal of the contaminated media; and
(e) restricting contact with soils under roadways adjacent to properties where soil removal is undertaken, i.e. utilizing the existing "Call Before You Dig" program.

The specific mechanisms for establishing institutional controls will be addressed as part of the remedial design phase.

Pre-Design Investigation (PDI)
Additional investigation will be required prior to remedial design. The following activities will be included in a Pre-Design Investigation:

- Detailed surveying of property features and topography.
- Seek to obtain access for soil sampling at two properties where access could not be obtained during the OU-2 RI.
- Additional soil sampling at a minimum of eight properties where additional lead concentration data are needed to support design.
- Additional drainage ditch soil sampling for lead for comparison to the cleanup goal. Where bedrock is exposed at the base of the drainage ditch, no samples need be collected.
- Delineation and surveying of the horizontal extent and top elevations of existing Trash Mounds based on visual observations and the basemap survey.

Construction/Performance Monitoring
Each remedial alternative described below (except the No Further Action alternative) will include certain construction and/or performance monitoring activities to ensure the effectiveness of the remedy. For example, during remedial actions that involve removal (excavation) of soil, post-excavation sampling may be necessary to determine whether the excavation meets the remedial goals. Post-excavation sampling will be performed when

soil remains in place after excavation (i.e., sampling will not be performed if the excavation is advanced to bedrock). In addition, air monitoring will likely be required during construction to ensure protection of workers and nearby residents. Performance monitoring including cover inspections and maintenance will be required to confirm long-term effectiveness.

Indoor Dust Monitoring and Management Program
The management of risks related to lead in indoor dust will be the same for all remedial alternatives (other than No Further Action) and will consist of the following:

- Engineering controls during remedial activities such that migration of lead in fugitive dust into homes is minimized.
- Post-remediation confirmation sampling three months after completion of the selected remedy at the two properties where elevated levels of indoor dust lead were measured in the OU-2 RI.
- If confirmation sampling indicates that indoor dust lead concentrations are at or below acceptable concentrations (based on IEUBK modeling using post-remedial surface soil concentrations), then no further action is necessary.
- If confirmation sampling indicates that indoor dust lead concentrations are above acceptable concentrations (based on IEUBK modeling using post-remedial surface soil concentrations), indoor dust removal will be performed, unless a non-site-related source of lead is identified as the cause.

Off-Site Disposal Option
Some materials (e.g., large/bulky debris, putrescent materials, etc.) in the trash mounds or Non-Residential Area may prove to be unsuitable for on-Site treatment or consolidation, so each alternative includes the possibility of disposal of some portion of the contaminated materials off-site. It is anticipated that the trash mounds primarily contain large boulders, soil, and small inert debris items (e.g., broken glass, small pieces of metal, etc.). These materials can be consolidated and covered in the Non-Residential Area. Materials that are unsuitable for consolidation will be disposed of or recycled at an off-site facility. While not anticipated based on data collected at the Site, if soils are excavated which violate the land disposal restrictions, they would be treated prior to consolidation or disposed of off-site at a proper facility. Any materials to be sent off-site for disposal will be screened for possible off-site recycling where appropriate; such materials to be recycled would be decontaminated prior to recycling, as necessary. Materials sent off-site for disposal will be classified, based on hazardous characteristics, prior to disposal. The approach for implementing this option will be further detailed in the remedial design.

Surface Water Management and Erosion Control
The remediation of the Site will result in surface earthwork construction since the active alternatives involve soil disturbance. A surface water management plan will be developed during remedial design to provide for the effective control of surface water runoff and to minimize soil erosion from covered areas. The surface water management and erosion control system will consist of the following components:

- A grading plan that maintains existing grades where feasible and integrates final surface topography in the remediated areas with the surrounding areas.
- The use of slopes, berms, channels, and surface armoring using natural vegetation and/or synthetic materials (e.g., silt fence) to convey surface water runoff in the Non-Residential Area and to provide erosion protection.

Because the existing drainage ditch parallel to Alturas Street currently provides the primary drainage pathway for surface water runoff at the Site, the surface water management plan is likely to tie into the ditch; however, the specifics of the surface water management system will be developed during detailed design and will comply with Puerto Rico soil erosion and sedimentation control requirements.

Access Agreements
Access agreements will be sought from private property owners where remedial activities are planned. Access agreements may also be sought on properties located adjacent to areas where remedial activities will be conducted. For example, access may be needed to properties adjacent to trash mounds in the event that the disposal area is found to extend onto those properties during removal.

Access to the drainage ditch will also be needed for the PDI sampling and possibly for the implementation of the remedial action. Because the drainage ditch is associated with the roadway right-of-way, formal access agreements may not be needed from the residences that border the ditch. However, notification will be given to owners of properties along the ditch in advance of sampling and remediation activities.

EPA Region 2 Clean and Green Policy
Consistent with EPA Region 2's "Clean and Green" Policy, the utilization of applicable green remediation practices will be considered and, to the extent practical, will be incorporated into the detailed design of the remedial alternatives (except the No Further Action alternative). Some examples of operational practices that would be applicable are those that reduce emissions of air pollutants, minimize fresh water consumption, incorporate native vegetation into revegetation plans, and consider beneficial reuse and/or recycling of materials, among others.

Remedial Alternatives

Alternative 1 – No Further Action
The No Further Action Alternative was retained, as required by the NCP, and provides a baseline for comparison with other alternatives. No remedial actions would be implemented as part of the No Further Action Alternative. Although no direct action would be taken, there may be natural processes (e.g., erosion/dispersion, sequestration, etc.) that would reduce the bioavailable concentrations of contaminants over time. At this Site, the natural processes that would reduce bioavailable concentrations are not expected to achieve acceptable levels within a reasonable timeframe (i.e., >30 years).

Total Capital Cost	$0
Operation and Maintenance	$0
Total Present Net Worth	$0
Estimated Construction Time frame	0 years

Alternative No. 2 – Removal with On-Site Consolidation and Cover in the Non-Residential Area

This alternative involves the excavation and removal of contaminated soils from approximately 16 residential yards in the residential area, the drainage ditch, and the three trash mounds, and consolidating and covering these contaminated soils in the Non-Residential Area with a cover system, including clean top soil. Excavated/removed materials would be consolidated in the Non-Residential Area prior to installation of the cover system in that area. The final design of the cover system in the Non-Residential Area will be determined during detailed design, but it is anticipated that it will include a non-woven geotextile overlain by 12 inches of clean soil. The soil cover will be vegetated to prevent erosion that would cause exposure to underlying materials. All residential yards where excavation occurs would be backfilled and re-vegetated to restore pre-excavation conditions.

Total Capital Cost	$4,350,000
Operation and Maintenance	$20,000/yr
Total Present Net Worth	$4,680,000
Estimated Construction Time frame	< 1 year

Alternative No. 3 – Removal with Off-Site Disposal

Alternative 3 involves excavation and removal of contaminated soil from the Residential Area, the drainage ditch, the three trash mounds, and the Non-Residential Area and disposing of the removed materials off-site in an appropriate manner (presumably in a non-hazardous waste landfill). All excavated areas would be backfilled and revegetated to existing grade with the exception of the trash mounds and any elevated mounds within the Non-Residential Area, which will be restored to the grade of surrounding areas.

Total Capital Cost	$23,440,000
Operation and Maintenance	$0
Total Present Net Worth	$24,780,000
Estimated Construction Time frame	< 1 year

Alternative No. 4 – Removal with On-Site Ex-Situ Stabilization and Cover in the Non-Residential Area

Alternative 4 is similar to Alternative 2 in that it includes excavating contaminated soils from approximately the Residential Area (followed by backfilling with clean soil), the trash mounds, and the drainage ditch and relocating these in the Non-Residential Area. However, unlike Alternative 2, Alternative 4 includes treatment of the excavated soils using ex-situ Solidification/ Stabilization (S/S). Soils would be consolidated in the Non-Residential Area, treatment additives would be mixed into the consolidated materials, and then the mixture would be left to react. Following treatment, the stabilized materials would

resemble a weak concrete. Stabilized materials from the Residential Area, trash mounds, and the drainage ditch will be combined with stabilized Non-Residential Area materials and placed in the Non-Residential Area and covered using the same type of cover system described for Alternative 2. Prior to implementation of this alternative, both bench-scale (laboratory) studies and an on-Site pilot study would be required to confirm the effectiveness of the treatment and to determine appropriate amendments for effective ex-situ solidification and gather data to support the detailed design.

Total Capital Cost	$25,420,000
Operation and Maintenance	$20,000/yr
Total Present Net Worth	$25,860,000
Estimated Construction Time frame	<1 year

COMPARATIVE ANALYSIS OF REMEDIAL ALTERNATIVES

In selecting a remedy, EPA considered the factors set out in Section 121 of CERCLA, 42 U.S.C. §9621, by conducting a detailed analysis of the viable remedial alternatives pursuant to the NCP, 40 C.F.R. § 300.430 (e) (9), and OSWER Directive 9355.3-01 (Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA: Interim Final, October 1988). The detailed analysis consisted of an assessment of the individual alternatives against each of nine evaluation criteria and a comparative analysis focusing upon the relative performance of each alternative against those criteria.

The following "threshold" criteria are the most important and must be satisfied by any alternative in order to be eligible for selection:

1. *Overall protection of human health and the environment* addresses whether or not a remedy provides adequate protection and describes how risks posed through each exposure pathway (based on a reasonable maximum exposure scenario) are eliminated, reduced, or controlled through treatment, engineering controls, or institutional controls.
2. *Compliance with ARARs* addresses whether or not a remedy would meet all of the applicable or relevant and appropriate requirements of other federal and state environmental statutes and regulations or provide grounds for invoking a waiver. Other federal or state advisories, criteria, or guidance are standards to be considered. Such "to be considered" standards are not required to be adhered to under the NCP, but the NCP recognizes that they may be very useful in determining what is protective for a site or how to carry out certain actions or requirements.

The following "primary balancing" criteria are used to make comparisons and to identify the major tradeoffs between alternatives:

3. *Long-Term effectiveness and permanence* refers to the ability of a remedy to maintain reliable protection of human health and the environment over time, once cleanup goals have been met. It also addresses the magnitude and effectiveness of

the measures that may be required to manage the risk posed by treatment residuals and/or untreated wastes.

4. *Reduction of toxicity, mobility, or volume through treatment* is the anticipated performance of the treatment technologies with respect to these parameters that a remedy may employ.

5. *Short-term effectiveness* addresses the period of time needed to achieve protection and any adverse impacts on human health and the environment that may be posed during the construction and implementation period.

6. *Implementability* is the technical and administrative feasibility of a remedy, including the availability of materials and services needed to implement a particular option.

7. *Cost* includes estimated capital, O&M, and present worth costs.

The following "modifying" criteria are used in the final evaluation of the remedial alternatives after the formal comment period, and may prompt modification of the preferred remedy that was presented in the Proposed Plan:

8. *State acceptance* indicates whether, based on its review of the RI/FS report, Human Health and Ecological Risk Assessment, and Proposed Plan, the State concurs with, opposes, or has no comments on the selected remedy.

9. *Community acceptance* refers to the public's general response to the alternatives described in the RI/FS report, Human Health and Ecological Risk Assessment, and Proposed Plan.

A comparative analysis of the four remedial alternatives based upon the evaluation criteria noted above, follows.

Overall Protection of Human Health and the Environment

Lead-contaminated soil is prevalent at the Site. Alternative 1 does not provide for protection of human health and the environment since there are current and future risks that would not be addressed by that alternative. Since Alternative 1 does not achieve this threshold criterion, it will not be discussed further in the Comparative Evaluation.

The other three alternatives achieve protection of human health and the environment by eliminating, reducing, or controlling direct contact risks posed by current or potential pathways at the Site. Alternatives 2 and 3 provide for elimination of direct contact by removing exposure to contaminated soil and trash mounds. In Alternative 2, removed materials would be consolidated and a soil cover would be constructed in the Non-Residential Area to eliminate direct contact, and the soil cover will require inspection and maintenance activities to assure ongoing and overall protection. For Alternative 3, removed materials would be disposed at an off-site facility, and overall protection would be the responsibility of the operator at the off-site disposal location. Alternative 4 also eliminates the exposure to contaminated Site materials by removing and/or covering them, much like in Alternative 2, but this alternative also includes stabilizing the impacted materials prior to capping.

Compliance with Applicable or Relevant and Appropriate Requirements (ARARs)

Section 121(d) of CERCLA and the NCP at §300.430(f)(1)(ii)(B) require that remedial actions at CERCLA sites attain legally applicable or relevant and appropriate federal and state requirements, standards, criteria, and limitations unless such ARARs are waived under CERCLA §121(d)(4). An evaluation of ARARs for each alternative is presented in the feasibility study and in the Compliance of ARARs section of this ROD.

Alternatives 2, 3, and 4 meet all identified federal and state ARARs. While there are no chemical-specific ARARs for contaminated soil, a cleanup goal for lead of 450 mg/kg was established for the Site. Alternative 1 would not achieve the cleanup goal since no action would be taken. ARARs for the Site are presented further in this document.

Long-Term Effectiveness and Permanence

Since lead cannot be destroyed, the remedial alternatives are designed to mitigate risk by minimizing potential exposure. Alternative 3 eliminates risk by permanently removing accessible contaminants from the Site, and employs institutional and engineering controls for materials not currently exposed. Alternative 4 eliminates risk by consolidating, treating, and, then containing accessible contaminants, and it employs institutional and engineering controls for materials not currently exposed and the containment area. Alternative 2 eliminates risk solely by consolidating, capping, and containing accessible contaminants at the Site, and employs institutional and engineering controls for materials not currently exposed and for the containment area. For all alternatives, the institutional and engineering controls to be employed for the currently inaccessible areas are expected to be reliable in the long term, and five-year reviews will be performed. Alternative 3 achieves the highest level of long-term effectiveness and permanence since long-term operations and maintenance would not be required at the Site to mitigate risk for currently accessible soils. Although the inherent hazard of the lead remains under the cap for Alternatives 2 and 4, the cap is expected to eliminate the exposure pathway, effectively eliminating the associated risk. Since the potential for cap failure, however small, would exist, the long-term effectiveness of Alternatives 2 and 4 would not be as reliable as Alternative 3. Further, in the event of cap failure, Alternative 4 would pose less risk than Alternative 2 until the cap was replaced/repaired, as the contaminants would be less mobile.

Reduction of Toxicity, Mobility, or Volume Through Treatment

Only Alternative 4 provides treatment of lead-contaminated soils and, therefore, was ranked highest. S/S treatment of lead-contaminated materials will reduce the toxicity (by reducing bioavailability) and mobility of lead.

Short-Term Effectiveness

The two primary components considered in the evaluation of short-term effectiveness are: the remedial time frame (shorter time frame is considered higher short-term effectiveness)

and short-term adverse impacts (greater short-term impacts suggest lower short-term effectiveness). Alternatives 2 and 4 are expected to achieve the remedial goals within a similar remedial time frame (likely to be about one construction season, or less than one year); however, Alternative 2 is expected to have the shortest timeframe to achieve remedial goals because no materials will be treated prior to consolidation. Alternative 3 will have the longest timeframe and may extend into a second construction season.

Short-term adverse impacts associated with the retained Alternatives are caused primarily by operation of construction equipment during excavation, transportation, treatment, and other construction activities. Transportation of materials causes risk of exposure to Site materials (from inadvertent fugitive dust emissions during transport), emissions (such as particulates) from vehicular traffic, and general nuisance in neighboring communities. Alternative 2 will have the lowest level of short-term adverse impacts because it involves less transportation of contaminated materials compared to Alternative 3 and does not involve the addition of additives and mixing that are required by Alternative 4. Although Alternative 2 involves consolidating soil excavated from the Residential Area, trash mounds, and drainage ditch in the Non-Residential Area prior to construction of the soil cover, short-term impacts are not expected to be significant because it is a relatively short process, and access to the area can be easily controlled to minimize exposure. Alternative 3 is expected to have the most significant short-term impacts since numerous truck loads of contaminated soil will need to be transported through the neighboring community.

Implementability

In general, all three alternatives are implementable since the technologies and skills are readily available. Alternative 2 is considered the easiest to implement since it does not require additional pilot testing and is not anticipated to involve off-site transport of materials. Off-site disposal would be required for any hazardous materials determined to be inappropriate for consolidation at the Site, thus requiring disposal at a disposal facility that could accept such materials (there are apparently none which could accept such waste materials without pre-treatment to remove the hazardous characteristic). Treatment of such materials may render them appropriate for consolidation at the Site.

Cost

Alternative 2 is expected to have the lowest implementation cost since it does not involve off-site disposal or stabilization/solidification treatment. Alternative 3 will have a higher cost than Alternative 2 because of the need for off-site transportation and disposal. Alternative 4 is expected to have the highest cost because of the need for stabilization/solidification treatment of all excavated materials, including the impacted soil in the Non-Residential Area. Alternatives 2 and 4 include similar long-term O&M costs, but Alternative 3 does not require a long-term O&M component.

Activity	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Common Elements	$0	$260,000	$260,000	$460,000
Residential Area Soil	$0	$890,000	$1,340,000	$890,000
Drainage Ditch	$0	$40,000	$100,000	$40,000
Trash Mounds	$0	$810,000	$2,210,000	$800,000
Non-Residential Soil	$0	$1,180,000	$12,610,000	$15,110,000
Subtotal:	$0	$3,180,000	$16,520,000	$17,300,000
Engineering Design/CQA (25%)	$0	$720,000	$4,130,000	$4,250,000
Contingency (20%)	$0	$780,000	$4,130,000	$4,310,000
Total Net Present Worth Cost	**$0**	**$4,680,000**	**$24,780,000**	**$25,860,000**

Notes:
Values are rounded to the nearest $10,000
These estimates are based on conceptual plans and will be subject to change based upon actual detailed engineering design and competitive bidding of construction services.

State/Support Agency Acceptance

The Commonwealth of Puerto Rico agrees with the proposed remedy for the Site. A letter of concurrence is attached (Appendix IV).

Community Acceptance

Community acceptance of the proposed remedy was assessed during the public comment period. EPA believes that the community generally supports this approach. Specific responses to public comments are addressed in the Responsiveness Summary (Appendix V).

PRINCIPAL THREAT WASTES

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. Lead-contaminated soils are considered to be source material at the Site. Lead has been detected at concentrations which exceed acceptable risk based levels by over one order of magnitude at very few locations, and no average lead concentrations exceed 4,000 ppm in surface soils at any property. Therefore, no principal threat is considered to exist at the Site. Further, lead is not considered highly mobile.

SUMMARY OF THE SELECTED REMEDY

Alternative 2, Removal with On-Site Consolidation and Cover in the Non-Residential Area, is the selected remedial alternative for soil contamination at this Site (Figure 11).

This alternative provides for the excavation and removal of lead-contaminated soils in approximately 16 residential properties, the trash mound materials, and the drainage ditch

where lead concentrations are above the Site cleanup goal of 450 mg/kg. Excavated materials will be transported to the Non-Residential Area and consolidated. All residential yards where excavation is conducted will be backfilled and re-vegetated to restore pre-excavation conditions. These excavated materials will be consolidated in the approximately 8.5 acres of the Non-Residential Area, where soil lead concentrations are above the Site cleanup goal and/or trash mound materials are present. This area will then be covered with a membrane and soil cover system. Confirmation sampling will be conducted after removal of materials to confirm that the cleanup goal has been achieved at the target depth. Air monitoring will be required during construction to ensure the protection of workers and nearby residents.

Based on available data, it is not expected that the lead-contaminated soils to be removed would be classified as a characteristic hazardous waste under the Resource Conservation and Recovery Act. However, as those soils are excavated, if sampling indicates that some are hazardous waste, they will be treated prior to disposal in the Non-Residential Area or transported off-site to an appropriate landfill disposal authorized to accept such wastes.

The final design of the cover system in the Non-Residential Area will be determined during remedial design, but it is anticipated that it will include a non-woven geotextile overlain by 12 inches of clean soil consistent with the Superfund Lead-Contaminated Residential Sites Handbook. The soil cover will be vegetated to prevent erosion that would result in exposure to underlying materials. Although the future use of the Non-Residential Area has not yet been determined, institutional controls will be established to preclude residential use of the soil cover area to ensure the cover will remain protective. A routine inspection and maintenance program will specifically provide for identification of adverse impacts from severe weather events. The monitoring program will be designed to include both scheduled, routine inspections (e.g., annually), as well as periodic event-driven inspections during the initial establishment of a vegetative cover (e.g., inspections immediately following extreme rainfall events within the first year after cover installation). Performance monitoring will be performed to confirm long-term effectiveness.

- *Institutional Controls*

  (a) to protect the integrity of the cover system in the Non-Residential Area where a cover is used to contain contaminated materials;
  (b) restricting contact with soils beneath structures on properties where soil removal is undertaken;
  (c) restricting contact with soils under paved areas and/or buildings immediately adjoining an area where soil removal is undertaken;
  (d) restricting contact with soils in areas where final post-excavation sampling indicates lead concentrations remain above the cleanup goal and field conditions would prevent removal of the contaminated media; and
  (e) restricting contact with soils under roadways adjacent to properties where soil removal is undertaken, i.e. utilizing the existing "Call Before You Dig" program.

The specific mechanisms for establishing institutional controls will be addressed as part of the remedial design phase.

Pre-Design Investigation
Additional investigation will be required prior to remedial design. The following activities will be included in a PDI:

- Detailed surveying of property features and topography.
- Soil sampling at two properties where access could not be obtained during the OU-2 RI.
- Additional soil sampling at a minimum of eight properties where additional lead concentration data are needed to support design.
- Additional drainage ditch soil sampling for lead for comparison to the cleanup goal. Where bedrock is exposed at the base of the drainage ditch, no samples need be collected.
- Delineation and surveying of the horizontal extent and top elevations of existing trash mounds based on visual observations and the basemap survey.

Construction/Performance Monitoring
Construction and/or performance monitoring activities will be established to ensure the effectiveness of the remedy. For example, during remedial activities that involve removal (excavation) of soil, post-excavation sampling may be necessary to determine whether the excavation meets the remedial goals. Post-excavation sampling will be performed when soil remains in place after excavation (i.e., sampling will not be performed if the excavation is advanced to bedrock). In addition, air monitoring will likely be required during construction to ensure protection of workers and nearby residents. Performance monitoring including cover inspections and maintenance will be required to confirm long-term effectiveness.

Indoor Dust Monitoring and Management Program
The management of risks related to lead in indoor dust will consist of the following:

- Engineering controls during remedial activities such that migration of lead in fugitive dust into homes is minimized.
- Post-remediation confirmation sampling three months after completion of the selected remedy at the two properties where elevated levels of indoor dust lead were measured in the OU-2 RI.
- If confirmation sampling indicates that indoor dust lead concentrations are at or below acceptable concentrations (based on IEUBK modeling using post-remedial surface soil concentrations), then no further action is necessary.
- If confirmation sampling indicates that indoor dust lead concentrations are above acceptable concentrations (based on IEUBK modeling using post-remedial surface soil concentrations), indoor dust removal will be performed, unless a non-site-related source of lead is identified as the cause.

Off-Site Disposal, if Necessary
Some materials (e.g., large/bulky debris, putrescent materials, soils exceeding land disposal restriction levels, etc.) in the trash mounds or Non-Residential Area may prove to be unsuitable for on-Site consolidation, so the remedy may require the disposal of some portion of the contaminated materials off-site. It is anticipated that the trash mounds primarily contain large boulders, soil, and small inert debris items (e.g., broken glass, small pieces of metal, etc.). These materials can be consolidated and covered in the Non-Residential Area. Materials that are unsuitable for consolidation will be disposed of or recycled at an off-site facility. While not anticipated based on data collected at the Site, if soils are excavated which violate the land disposal restrictions, they would be treated prior to consolidation or disposed of off-site at a proper facility. Any materials to be sent off-site for disposal will be screened for possible off-site recycling where appropriate; such materials to be recycled would be decontaminated prior to recycling, as necessary. Materials sent off-site for disposal will be classified, based on hazardous characteristics, prior to disposal. The approach for implementing this option will be further detailed in the remedial design.

Surface Water Management and Erosion Control
The remediation of the Site will result in surface earthwork construction since the selected alternative involves soil disturbance. A surface water management plan will be developed during remedial design to provide for the effective control of surface water runoff and to minimize soil erosion from covered areas. The surface water management and erosion control system will consist of the following components:

- A grading plan that maintains existing grades where feasible and integrates final surface topography in the remediated areas with the surrounding areas.
- The use of slopes, berms, channels, and surface armoring using natural vegetation and/or synthetic materials (e.g., silt fence) to convey surface water runoff in the Non-Residential Area and to provide erosion protection.

Because the existing drainage ditch parallel to Alturas Street currently provides the primary drainage pathway for surface water runoff at the Site, the surface water management plan is likely to tie into the ditch; however, the specifics of the surface water management system will be developed during detailed design and will comply with Puerto Rico soil erosion and sedimentation control requirements.

Access Agreements
Access agreements will be sought from private property owners where remedial activities are planned so that the remedy can be implemented. Access agreements may also be sought on properties located adjacent to areas where remedial activities will be conducted. For example, access may be needed to properties adjacent to trash mounds in the event that the disposal area is found to extend onto those properties during removal.

Access to the drainage ditch will also be needed for the PDI sampling and possibly for the implementation of the remedial action. Because the drainage ditch is associated with the roadway right-of-way, formal access agreements may not be needed from the residences

that border the ditch. However, notification will be given to owners of properties along the ditch in advance of sampling and remediation activities.

EPA Region 2 Clean and Green Policy
Consistent with EPA Region 2's "Clean and Green" Policy, the utilization of applicable green remediation practices will be considered and, to the extent practical, will be incorporated into the detailed design of the selected remedy. Some examples of operational practices that would be applicable are those that reduce emissions of air pollutants, minimize fresh water consumption, incorporate native vegetation into revegetation plans, and consider beneficial reuse and/or recycling of materials, among others.

As is EPA's policy, Five-Year Reviews will be conducted to ensure the integrity and effectiveness of the selected remedy.

STATUTORY DETERMINATIONS

Under Section 121 of CERCLA and the NCP, EPA's primary responsibility at Superfund sites is to undertake remedial actions that are protective of human health and the environment. Section 121 of CERCLA also establishes several other statutory requirements and preferences. These specify that when complete, the selected remedial action for this Site must comply with applicable or relevant and appropriate environmental standards established under federal and state environmental laws unless a waiver from such standards is justified. The selected remedy also must be cost-effective and utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable. Finally, the statute includes a preference for remedies that employ treatment that permanently and significantly reduce the volume, toxicity, or mobility of hazardous substances, as available. The following sections discuss how the selected remedy meets these statutory requirements.

Protection of Human Health and the Environment
The selected remedy is protective of human health and the environment because it will eliminate human exposure to contaminated soil likely to be encountered based on reasonably anticipated future land use. It also employs institutional controls and provides a Site management plan to protect human health and the environment from contaminated soils left in place.

Compliance with ARARs
The NCP (§§ 300.430 (f) (5) (ii) (B) and (C)) requires that the selected remedy attain federal and state ARARs. There are currently no Federal or State-promulgated standards for contaminant levels of lead in soils.

The selected remedy will achieve the lead cleanup goal of 450 mg/kg by removing soil above this level in the affected residences in the residential area and consolidating the excavated material in the Non-Residential Area under a cover system.

Although some soils exceeding the cleanup goal likely will be left in-place, the contamination is not considered to be mobile and those soils are unlikely to be accessed through reasonably anticipated future land use. A Site management plan will be employed to ensure proper handling, treatment, and disposal, if necessary, of soils should excavations be required under structures or paved areas in the residential area.

The selected remedy will comply with the following ARARs identified for the Site and will be demonstrated through monitoring, as appropriate. ARARs in italics are applicable to off-site disposal requirements, should it be necessary.

Federal Action-Specific ARARs

- *Hazardous Materials Transportation Act (HMTA)*
- *Identification and Listing of Hazardous Wastes 40 CFR 261*
- *Hazardous Material Transportation Regulations 49 CFR 107, 171-177*
- National Ambient Air Quality Standards (NAAQC) (40 CFR 50)
- *RCRA Toxicity Characteristic Leaching Procedure (TCLP) and Land Ban Requirements for Landfilling (40 CFR 261)*
- Land Disposal Restrictions (LDRs) 40 CFR 268
- *RCRA Manifesting, Transport and Recordkeeping Requirements (40 CFR 262)*
- *Off-Site Transport of Hazardous Waste (EPA OSWER Directive 9834.11)*
- National Emission Standards for Hazardous Air Pollutants (NESHAPs) (40 CFR 61)
- Occupational Safety and Health Standards for Hazardous Responses and General Construction Activities (29 CFR 1904,1910, 1926)
- Federal Noise Control Act (42 USC 4901 et seq.)
- Proposed Requirements for Hybrid Closures (combined waste-in-place and clean closures) (52 Federal Register 8711)
- Fish and Wildlife Coordination Act Advisories
- RCRA Excavation and Fugitive Dust Requirements (40 CFR 264.251 and 264.254)
- *Subtitle D of the Resource Conservation and Recovery Act (RCRA), Section 1008, Section 4001, et seq., 42 U.S.C. §6941, et seq., State or Regional Solid Waste Plans and implementing federal and state regulations.*
- *Subtitle C of RCRA, 42 U.S.C. Section 6901, et seq., 40 C.F.R. Part 260, et seq. and implementing federal and state regulations for contaminated soils that exhibit the characteristic of toxicity and are considered RCRA hazardous waste.*

Puerto Rico Action-Specific ARARs

- Environmental Quality Board Regulation for the Control of Atmospheric Pollution
- PR 3418 Environmental Quality Board Regulation for the Control of Noise Pollution
- PR 5754 1200-1299: Erosion and Sediment Control
- *Environmental Quality Board Regulation for the Control of Hazardous Solid Waste, dated September 1998*
- *Environmental Quality Board Regulation No. 5717, Regulation for the Management of Non-Hazardous Solid Waste, dated November 14, 1997*

Federal Location-Specific ARARs

- Federal Clean Water Act Section 404
- Fish and Wildlife Coordination Act (16 USC 661-666c)
- Executive Orders on Floodplain Management and Wetlands Protection (CERCLA Floodplain and Wetlands Assessments)
- National Historic Preservation Act
- Endangered Species Act of 1973 (16 USC 1531)
- RCRA Location Requirements for 100-year Floodplains (40 CFR 264.18(b))

Puerto Rico Location-Specific ARARs

- Act August 21, 1999, No. 292, Act for the Protection and Preservation of Puerto Rico's Karst Region

Cost-Effectiveness

A cost-effective remedy is one whose costs are proportional to its overall effectiveness (NCP §§300.430(f)(1)(i)(B)). Overall effectiveness is based on the evaluations of: long-term effectiveness and permanence; reduction in toxicity, mobility, and volume through treatment; and short-term effectiveness. Based on the comparison of overall effectiveness to cost, the selected remedy meets the statutory requirement that Superfund remedies be cost-effective (NCP §§ 300.430(f)(1)(ii)(D)).

The selected remedy has undergone a detailed cost analysis. In that analysis, capital costs and O&M costs have been estimated and used to develop present-worth costs. In the present-worth cost analysis, annual costs were calculated for 30 years using a seven percent discount rate (consistent with the FS and Proposed Plan). For a detailed breakdown of costs associated with the selected remedy, see Tables 3 and 4.

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

The selected remedy represents the most appropriate solution at the Site because it provides the best balance of tradeoffs among the alternatives with respect to the evaluation criteria.

The selected remedy utilizes a well-demonstrated approach to remediation of contaminated soils that will provide a permanent remedy for contaminated soils. Removal of contaminated soils in the residential area (including from the trash mounds and the drainage ditch) and back filling with clean fill permanently removes Site contaminants from the residential areas as a potential source of exposure.

EPA has concluded that the selected remedy is protective, compliant with ARARs, cost-effective, and provides the best balance of trade-offs for utilizing permanent solutions and alternative treatment technologies to the extent practicable for the Site.

Preference for Treatment as a Principal Element

The statutory preference for remedies that employ treatment as a principal element is not satisfied through the implementation of the selected remedy. However, the reduction of

exposure to lead-contaminated soil accomplishes the required end result of protection of human health and the environment.

Five-Year Review Requirements
Because the selected remedy results in contaminants remaining on-site above levels that would allow for unlimited use and unrestricted exposure, a review of Site conditions will be conducted no less often than every five years after completion of the construction of the remedy. The Site reviews will include an evaluation of the remedy components to ensure that the remedy remains protective of human health and the environment.

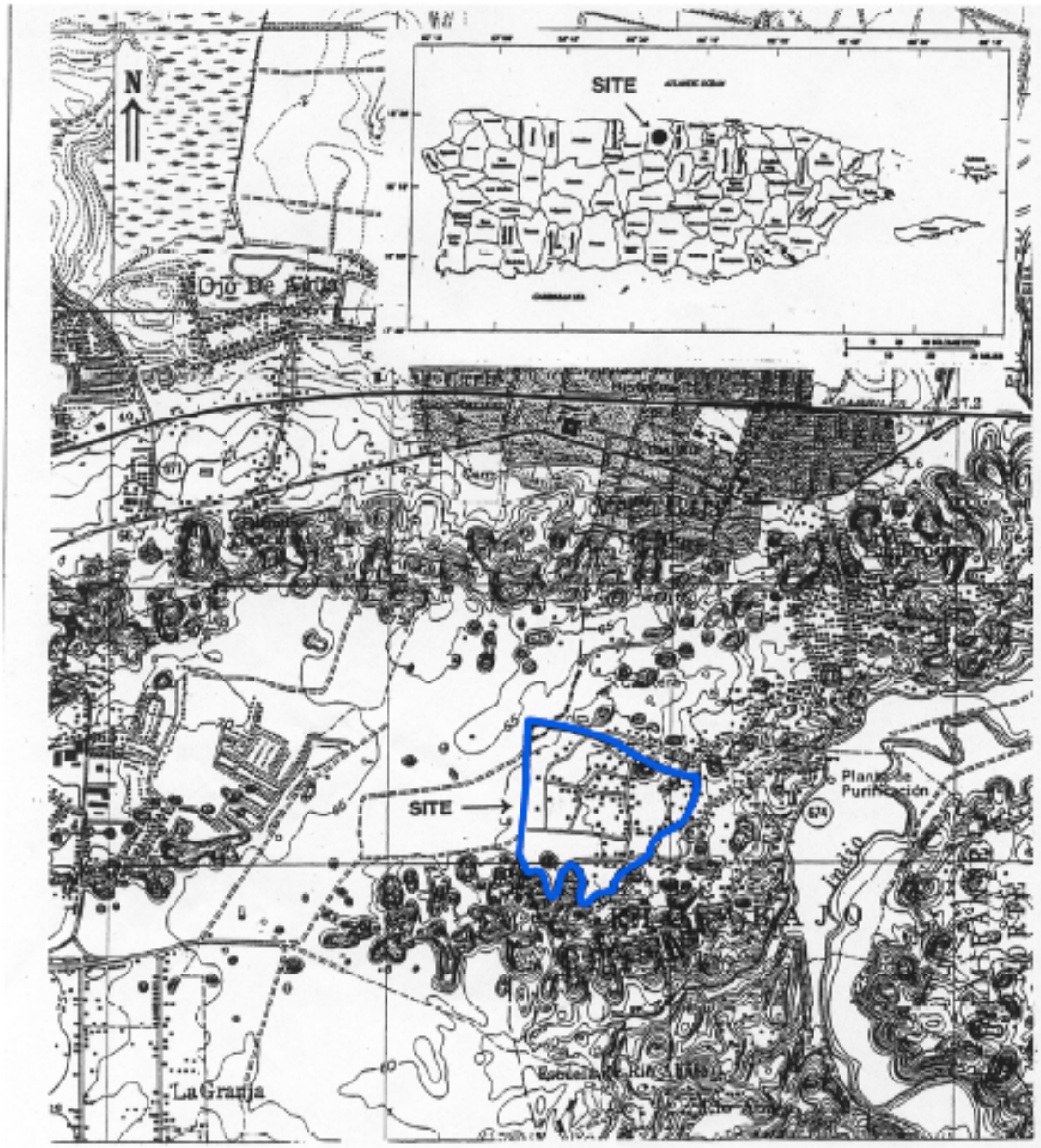
DOCUMENTATION OF SIGNIFICANT CHANGES

The Proposed Plan for the Vega Baja Solid Waste Site was released for public comment on July 29, 2010, and the public comment period ran from that date through August 29, 2010. The Proposed Plan identified the selected remedy as the Preferred Alternative.

All written and verbal comments submitted during the public comment period were reviewed by EPA. Upon review of these comments, EPA has determined that no significant changes to the remedy, as it was originally identified in the Proposed Plan, were necessary.

APPENDIX I- FIGURES

LIST OF FIGURES



Contour Interval = 5 meters Scale: 3 Inches = 5,000 feet

(adapted from USGS *Manati, P.R.* 1:20,000 Quadrangle, last revised 1982)

REFERENCE

1. FIGURE TAKEN FROM RI/FS OPERABLE UNIT 2 - SOILS INVESTIGATION FINAL WORK PLAN BY CDM FEDERAL PROGRAMS (2002)

SCALE	AS SHOWN		
DATE	2/26/2010		
DESIGN	APJ		
GIS	AM		
FILE No.	0336206Q001	CHECK	APJ
PROJECT No.	0336206	REV. 0	REVIEW PSF

SITE LOCATION MAP

VEGA BAJA SOLID WASTE SUPERFUND SITE FIGURE 1

Map Document: V:\Projects\0336206_Vega_Baja\REPORT_FILES\Feasibility Study\MXD\0336206Q001.mxd / Modified 2/19/2010 2:35:30 PM / Plotted 2/26/2010 9:52:22 AM by AMorales

N

LEGEND

- DRAINAGE DITCH
- RESIDENTIAL AREA
- PREVIOUS REMOVAL ACTION
- PROPERTY BOUNDARY
- HOUSE
- NON-RESIDENTIAL AREA
- TRASH MOUND

REFERENCE

1. PRIMARY GIS COVERAGES PROVIDED BY EPA AND MODIFIED BY GOLDER TO REPRESENT SITE CONDITIONS AT THE TIME OF THE OU-2 FIELD INVESTIGATION (DECEMBER 2004).

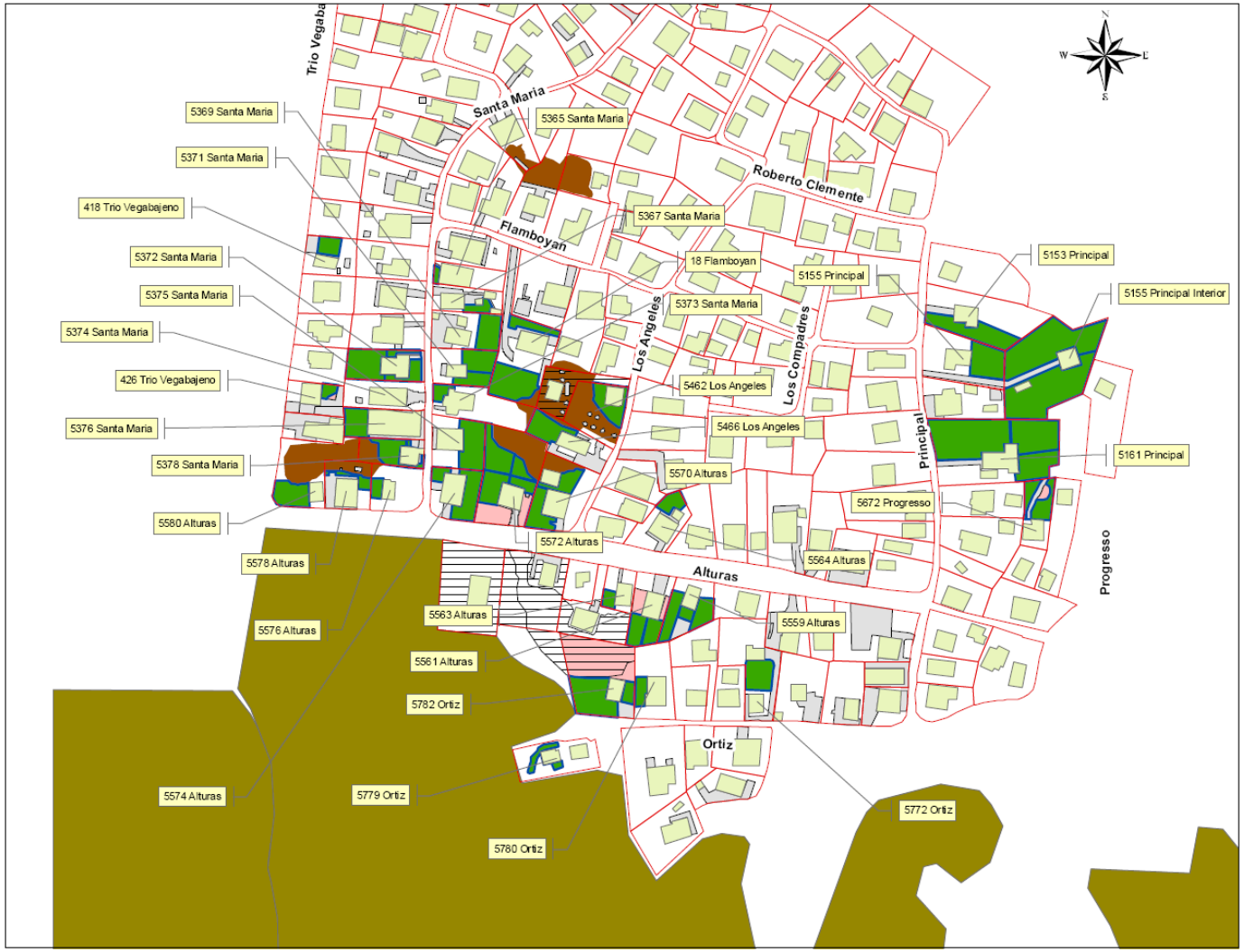
300 150 0 300
Feet

SCALE	AS SHOWN
DATE	2/25/2010
DESIGN	APJ
GIS	AM
CHECK	APJ
REVIEW	PSF

SITE LAYOUT

VEGA BAJA SOLID WASTE SUPERFUND SITE

FIGURE 2



LEGEND

- PROPERTY BOUNDARY
- NON-RESIDENTIAL AREA
- HOUSE
- COVERED AREA
- BACKFILLED AREA
- TRASH MOUND
- PREVIOUS REMOVAL ACTION
- COMPOSITE SOIL SAMPLE AREA FOR LEAD

NOTES

1. PRIMARY GIS COVERAGES PROVIDED BY EPA AND MODIFIED BY GOLDER TO REPRESENT SITE CONDITIONS AT THE TIME OF THE OU-2 FIELD INVESTIGATION (DECEMBER 2004).
2. SAMPLE LOCATIONS ARE APPROXIMATE AND WERE MANUALLY DRAWN ON MAPS IN THE FIELD BASED ON SITE FEATURES AND THEN TRANSFERRED TO GIS.
3. FOR SITE-SPECIFIC MAPS SHOWING SAMPLING RESULTS PLEASE SEE APPENDIX F.

200 100 0 200 400 Feet

SCALE	AS SHOWN
DATE	07/21/08
DESIGN	APJ
GIS	APJ
CHECK	SLS
REVIEW	PSF

RI RESIDENTIAL LEAD SOIL SAMPLE LOCATIONS

VEGA BAJA SOLID WASTE SUPERFUND SITE
REMEDIAL INVESTIGATION REPORT

FIGURE 3

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500049

LEGEND

- PROPERTY BOUNDARY
- A — RESIDENTIAL BLOCKS
- NON-RESIDENTIAL AREA
- HOUSE
- COVERED AREA
- BACKFILLED AREA
- 3 — TRASH MOUND AND NUMBER
- PREVIOUS REMOVAL ACTION
- RESIDENTIAL BLOCK SAMPLE LOCATION
- PCB CONFIRMATORY SAMPLE LOCATION

NOTES

1. PRIMARY GIS COVERAGES PROVIDED BY EPA AND MODIFIED BY GOLDER TO REPRESENT SITE CONDITIONS AT THE TIME OF THE OU-2 FIELD INVESTIGATION (DECEMBER 2004).
2. SAMPLE LOCATIONS ARE APPROXIMATE AND WERE MANUALLY DRAWN ON MAPS IN THE FIELD BASED ON SITE FEATURES AND THEN TRANSFERRED TO GIS

300 150 0 300 600 Feet

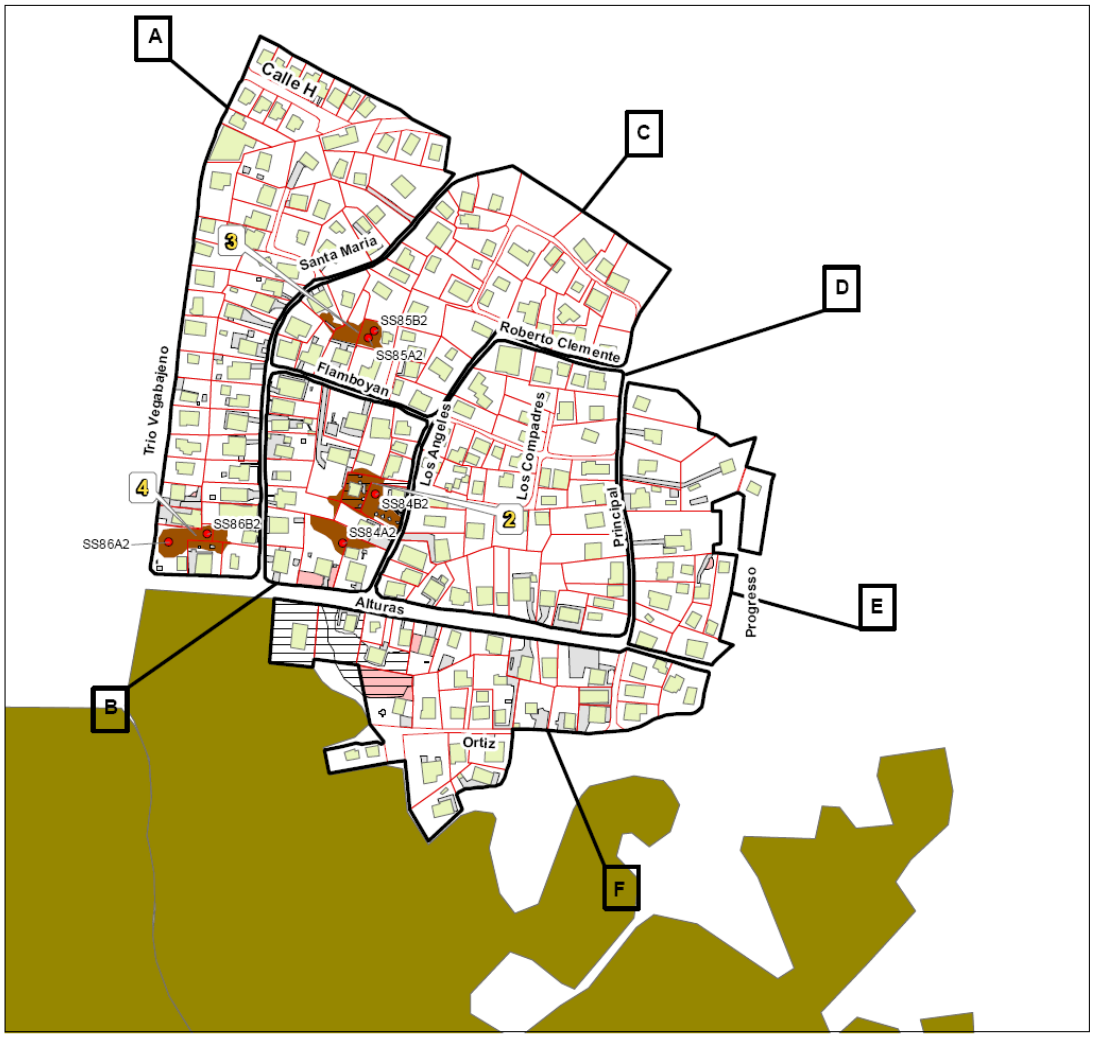
SCALE	AS SHOWN
DATE	07/21/08
DESIGN	APJ
GIS	APJ
CHECK	SLS
REVIEW	PSF

RI RESIDENTIAL BLOCK SOIL SAMPLE LOCATIONS

VEGA BAJA SOLID WASTE SUPERFUND SITE
REMEDIAL INVESTIGATION REPORT

FIGURE 4

500050



LEGEND

- PROPERTY BOUNDARY
- A — RESIDENTIAL BLOCKS
- NON-RESIDENTIAL AREA
- HOUSE
- COVERED AREA
- BACKFILLED AREA
- 3 — TRASH MOUND AND NUMBER
- PREVIOUS REMOVAL ACTION
- TRASH MOUND SAMPLE LOCATION

NOTES

1. PRIMARY GIS COVERAGES PROVIDED BY EPA AND MODIFIED BY GOLDER TO REPRESENT SITE CONDITIONS AT THE TIME OF THE OU-2 FIELD INVESTIGATION (DECEMBER 2004).
2. SAMPLE LOCATIONS ARE APPROXIMATE AND WERE MANUALLY DRAWN ON MAPS IN THE FIELD BASED ON SITE FEATURES AND THEN TRANSFERRED TO GIS

300 150 0 300 600 Feet

SCALE	AS SHOWN
DATE	07/21/08
DESIGN	APJ
GIS	APJ
CHECK	SLS
REVIEW	PSF

RI TRASH MOUND SOIL SAMPLE LOCATIONS

VEGA BAJA SOLID WASTE SUPERFUND SITE
REMEDIAL INVESTIGATION REPORT

FIGURE 5

Map Document: (V:\Projects\200\3.03.3\6206_Vega_Baja\MXD\G_...DRAFT_Remedial_Investigation_Report_Signed_05-31-06\Active_Drawing\40333620\3(11).mxd)
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LEGEND

- PROPERTY BOUNDARY
- NON-RESIDENTIAL AREA
- HOUSE
- COVERED AREA
- BACKFILLED AREA
- TRASH MOUND
- PREVIOUS REMOVAL ACTION
- LEAD CONCENTRATION UP TO 400 MG/KG
- LEAD CONCENTRATION 401 TO 600 MG/KG
- LEAD CONCENTRATION 601 TO 1000 MG/KG
- LEAD CONCENTRATION GREATER THAN 1000 MG/KG

Address	Sample ID	Depth (ft)	Lead (mg/kg)
18 Flamboyan	SS01A0.1	0.1	90.8 J
18 Flamboyan	SS01B0.1	0.1	257 J
5153 Principal	SS02A0.1	0.1	307 J
5155 Principal	SS03A0.1	0.1	328 J
5155 Principal Interior	SS04A0.1	0.1	560 J
5155 Principal Interior	SS04B0.1	0.1	168 J
5161 Principal	SS05A0.1	0.1	247 J
5161 Principal	SS05B0.1	0.1	149 J
5161 Principal	SS05C0.1	0.1	91.8 J
418 Trio Vegabajeño	SS06A0.1	0.1	244 J
426 Trio Vegabajeño	SS07B0.1	0.1	754 J
5365 Santa Maria	SS09A0.1	0.1	179 J
5367 Santa Maria	SS10A0.1	0.1	95.1 J
5369 Santa Maria	SS11A0.1	0.1	320 J
5371 Santa Maria	SS13A0.1	0.1	774 J
5371 Santa Maria	SS13B0.1	0.1	1130 J
5372 Santa Maria	SS14A0.1	0.1	224 J
5372 Santa Maria	SS14B0.1	0.1	226 J
5373 Santa Maria	SS15A0.1	0.1	79.7 J
5375 Santa Maria	SS16A0.1	0.1	310 J
5376 Santa Maria	SS17A0.1	0.1	775 J
5378 Santa Maria	SS18A0.1	0.1	150 J
5378 Santa Maria	SS18B0.1	0.1	336 J
5462 Los Angeles	SS19A0.1	0.1	449 J
5466 Los Angeles	SS20A0.1	0.1	154 J
5559 Alturas	SS21A0.1	0.1	868 J
5559 Alturas	SS21B0.1	0.1	729 J
5559 Alturas	SS21C0.1	0.1	545 J
5561 Alturas	SS22A0.1	0.1	378 J
5561 Alturas	SS22B0.1	0.1	310 J
5563 Alturas	SS23A0.1	0.1	359 J
5564 Alturas	SS24A0.1	0.1	295 J
5570 Alturas	SS25A0.1	0.1	454 J
5570 Alturas	SS25B0.1	0.1	235 J
5572 Alturas	SS26A0.1	0.1	615 J
5572 Alturas	SS26B0.1	0.1	506 J
5572 Alturas	SS26C0.1	0.1	437 J
5572 Alturas	SS26D0.1	0.1	545 J
5574 Alturas	SS27A0.1	0.1	329 J
5574 Alturas	SS27B0.1	0.1	381 J
5576 Alturas	SS28A0.1	0.1	347 J
5578 Alturas	SS29A0.1	0.1	343 J
5580 Alturas	SS30A0.1	0.1	213 J
5672 Progresso	SS31A0.1	0.1	329 J
5772 Ortiz	SS32A0.1	0.1	297 J
5779 Ortiz	SS33A0.1	0.1	993 J
5780 Ortiz	SS34A0.1	0.1	307 J
5782 Ortiz	SS35A0.1	0.1	88.2 J
5782 Ortiz	SS35B0.1	0.1	702 J

NOTES

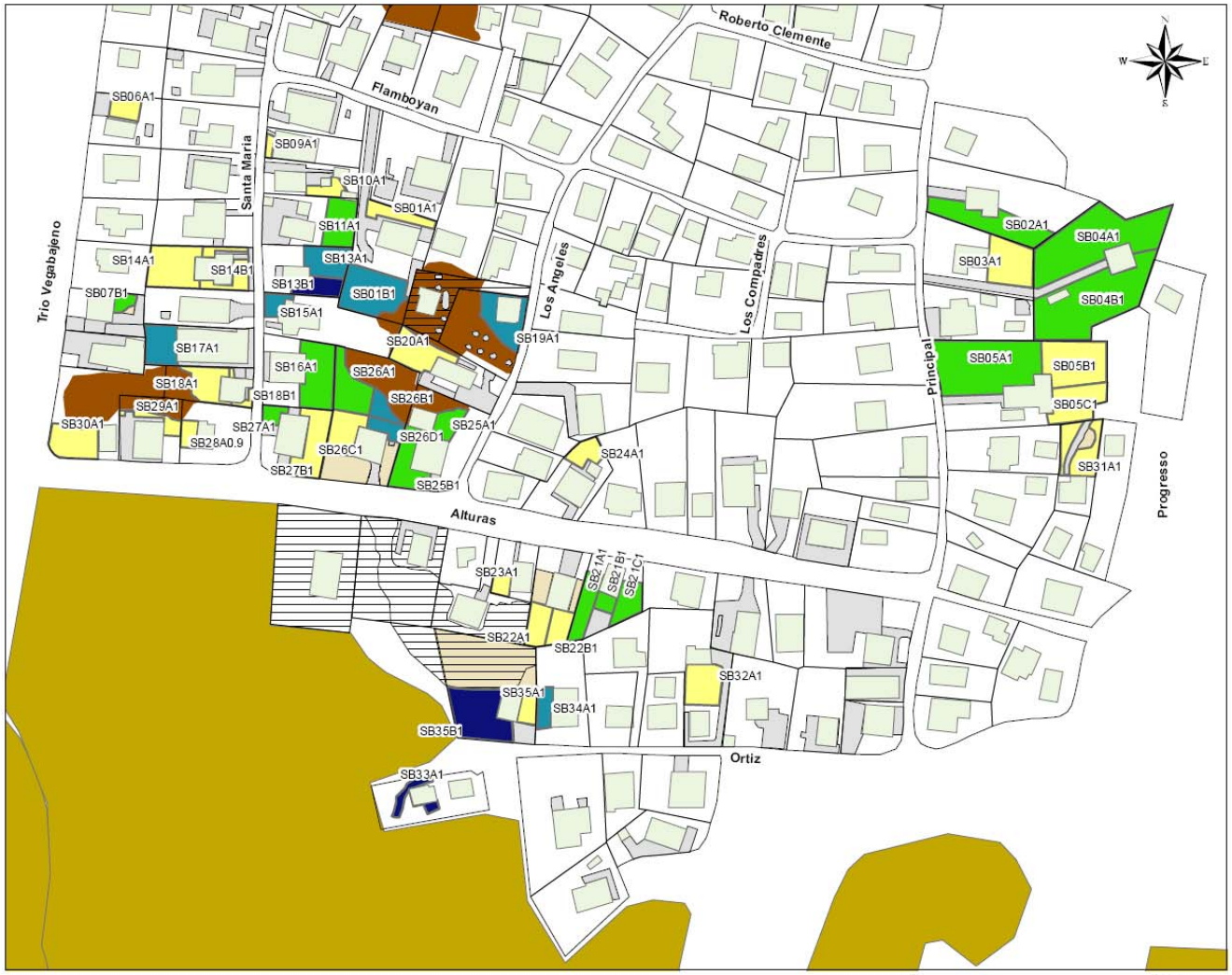
1. PRIMARY GIS COVERAGES PROVIDED BY EPA AND MODIFIED BY GOLDER TO REPRESENT SITE CONDITIONS AT THE TIME OF THE OU-2 FIELD INVESTIGATION (DECEMBER 2004).

SCALE	1":150'
DATE	07/21/08
DESIGN	APJ
GIS	APJ
CHECK	SLS
REVIEW	PSF

RI LEAD IN SOIL RESULTS 0 - 0.1 FT

VEGA BAJA SOLID WASTE SUPERFUND SITE
REMEDIAL INVESTIGATION REPORT

FIGURE 6



LEGEND

- PROPERTY BOUNDARY
- NON-RESIDENTIAL AREA
- HOUSE
- COVERED AREA
- BACKFILLED AREA
- TRASH MOUND
- PREVIOUS REMOVAL ACTION
- LEAD CONCENTRATION UP TO 400 MG/KG
- LEAD CONCENTRATION 401 TO 600 MG/KG
- LEAD CONCENTRATION 601 TO 1000 MG/KG
- LEAD CONCENTRATION GREATER THAN 1000 MG/KG

Address	Sample ID	Depth (ft)	Lead (mg/kg)
18 Flamboyan	SB01A1	1	263 J
18 Flamboyan	SB01B1	1	881 J
5153 Principal	SB02A1	1	412 J
5155 Principal	SB03A1	1	235 J
5155 Principal	SB04A1	1	431 J
5155 Principal Interior	SB04B1	1	525 J
5161 Principal	SB05A1	1	457 J
5161 Principal	SB05B1	1	30.1 J
5161 Principal	SB05C1	1	41.3 J
418 Trio Vegabajeño	SB06A1	1	174 J
426 Trio Vegabajeño	SB07B1	1	551 J
5365 Santa Maria	SB09A1	1	93.9 J
5367 Santa Maria	SB10A1	1	30.5 J
5369 Santa Maria	SB11A1	1	486 J
5371 Santa Maria	SB13A1	1	834 J
5371 Santa Maria	SB13B1	1	1530 J
5372 Santa Maria	SB14A1	1	175 J
5372 Santa Maria	SB14B1	1	224 J
5373 Santa Maria	SB15A1	1	991 J
5375 Santa Maria	SB16A1	1	420 J
5376 Santa Maria	SB17A1	1	821 J
5378 Santa Maria	SB18A1	1	254 J
5378 Santa Maria	SB18B1	1	170 J
5462 Los Angeles	SB19A1	1	784 J
5466 Los Angeles	SB20A1	1	115 J
5559 Alturas	SB21A1	1	508 J
5559 Alturas	SB21B1	1	519 J
5559 Alturas	SB21C1	1	497 J
5561 Alturas	SB22A1	1	311 J
5561 Alturas	SB22B1	1	283 J
5563 Alturas	SB23A1	1	202 J
5564 Alturas	SB24A1	1	165 J
5570 Alturas	SB25A1	1	494 J
5570 Alturas	SB25B1	1	529 J
5572 Alturas	SB26A1	1	544 J
5572 Alturas	SB26B1	1	618 J
5572 Alturas	SB26C1	1	294 J
5572 Alturas	SB26D1	1	848 J
5574 Alturas	SB27A1	1	437 J
5574 Alturas	SB27B1	1	267 J
5576 Alturas	SB28A0.9	0.9	277 J
5578 Alturas	SB29A1	1	365 J
5580 Alturas	SB30A1	1	387 J
5672 Progresso	SB31A1	1	348 J
5772 Ortiz	SB32A1	1	218 J
5779 Ortiz	SB33A1	1	1780 J
5780 Ortiz	SB34A1	1	852 J
5782 Ortiz	SB35A1	1	395 J
5782 Ortiz	SB35B1	1	1120 J

NOTES

1. PRIMARY GIS COVERAGES PROVIDED BY EPA AND MODIFIED BY GOLDER TO REPRESENT SITE CONDITIONS AT THE TIME OF THE OU-2 FIELD INVESTIGATION (DECEMBER 2004).

SCALE	1":150'
DATE	07/21/08
DESIGN	APJ
GIS	APJ
CHECK	SLS
REVIEW	PSF

RI LEAD IN SOIL RESULTS 0.1 - 1 FT

VEGA BAJA SOLID WASTE SUPERFUND SITE
REMEDIAL INVESTIGATION REPORT

FIGURE 7

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LEGEND

- PROPERTY BOUNDARY
- NON-RESIDENTIAL AREA
- HOUSE
- COVERED AREA
- BACKFILLED AREA
- TRASH MOUND
- PREVIOUS REMOVAL ACTION
- LEAD CONCENTRATION UP TO 400 MG/KG
- LEAD CONCENTRATION 401 TO 600 MG/KG
- LEAD CONCENTRATION 601 TO 1000 MG/KG
- LEAD CONCENTRATION GREATER THAN 1000 MG/KG

Address	Sample ID	Depth (ft)	Lead (mg/kg)
18 Flamboyan	SB01A2	2	86.8 J
18 Flamboyan	SB01B2	2	955 J
5153 Principal	SB02A2	2	49.2 J
5155 Principal	SB03A1.2	1.2	229 J
5155 Principal	SB04A2	2	67.9 J
5155 Principal Interior	SB04B2.2	2.2	287 J
5161 Principal	SB05A2	2	35.4 J
5161 Principal	SB05B2.1	2.1	13.4 J
5161 Principal	SB05C2	2	12.3 J
418 Trio Vegabajeño	SB06A2	2	18.9 J
426 Trio Vegabajeño	SB07B2	2	109 J
5365 Santa Maria	SB09A2	2	65.4 J
5367 Santa Maria	SB10A2.2	2.2	7.8 J
5369 Santa Maria	SB11A2.3	2.3	55 J
5371 Santa Maria	SB13A1.8	1.8	279 J
5371 Santa Maria	SB13B2	2	1040 J
5372 Santa Maria	SB14A1.4	1.4	67.6 J
5372 Santa Maria	SB14B2	2	63.9 J
5373 Santa Maria	SB15A2	2	447 J
5375 Santa Maria	SB16A2.3	2.3	97.4 J
5376 Santa Maria	SB17A2.3	2.3	683 J
5378 Santa Maria	SB18A2	2	188 J
5378 Santa Maria	SB18B2	2	284 J
5462 Los Angeles	SB19A2.2	2.2	883 J
5466 Los Angeles	SB20A2	2	191 J
5559 Alturas	SB21A2	2	67.4 J
5559 Alturas	SB21B1.6	1.6	191 J
5559 Alturas	SB21C2.3	2.3	88.3 J
5561 Alturas	SB22A1.3	1.3	24.6 J
5561 Alturas	SB22B2.2	2.2	28.7 J
5563 Alturas	SB23A1.7	1.7	17.9 J
5564 Alturas	SB24A1.5	1.5	74 J
5570 Alturas	SB25A2	2	393 J
5570 Alturas	SB25B1.3	1.3	451 J
5572 Alturas	SB26A2.7	2.7	49.1 J
5572 Alturas	SB26B1.8	1.8	237 J
5572 Alturas	SB26C1.5	1.5	29.4 J
5572 Alturas	SB26D2.3	2.3	411 J
5574 Alturas	SB27A2	2	127 J
5574 Alturas	SB27B2	2	128 J
5578 Alturas	SB29A2	2	151 J
5580 Alturas	SB30A2.3	2.3	947 J
5672 Progresso	SB31A2	2	86.5 J
5772 Ortiz	SB32A1.8	1.8	60.8 J
5779 Ortiz	SB33A2	2	26200 J
5780 Ortiz	SB34A2	2	105 J
5782 Ortiz	SB35A2	2	456 J
5782 Ortiz	SB35B2.3	2.3	1290 J

NOTES

1. PRIMARY GIS COVERAGES PROVIDED BY EPA AND MODIFIED BY GOLDER TO REPRESENT SITE CONDITIONS AT THE TIME OF THE OU-2 FIELD INVESTIGATION (DECEMBER 2004).

SCALE	1":150'
DATE	07/21/08
DESIGN	APJ
GIS	APJ
CHECK	SLS
REVIEW	PSF

RI LEAD IN SOIL RESULTS > 1 FT

VEGA BAJA SOLID WASTE SUPERFUND SITE
REMEDIAL INVESTIGATION REPORT

FIGURE 8

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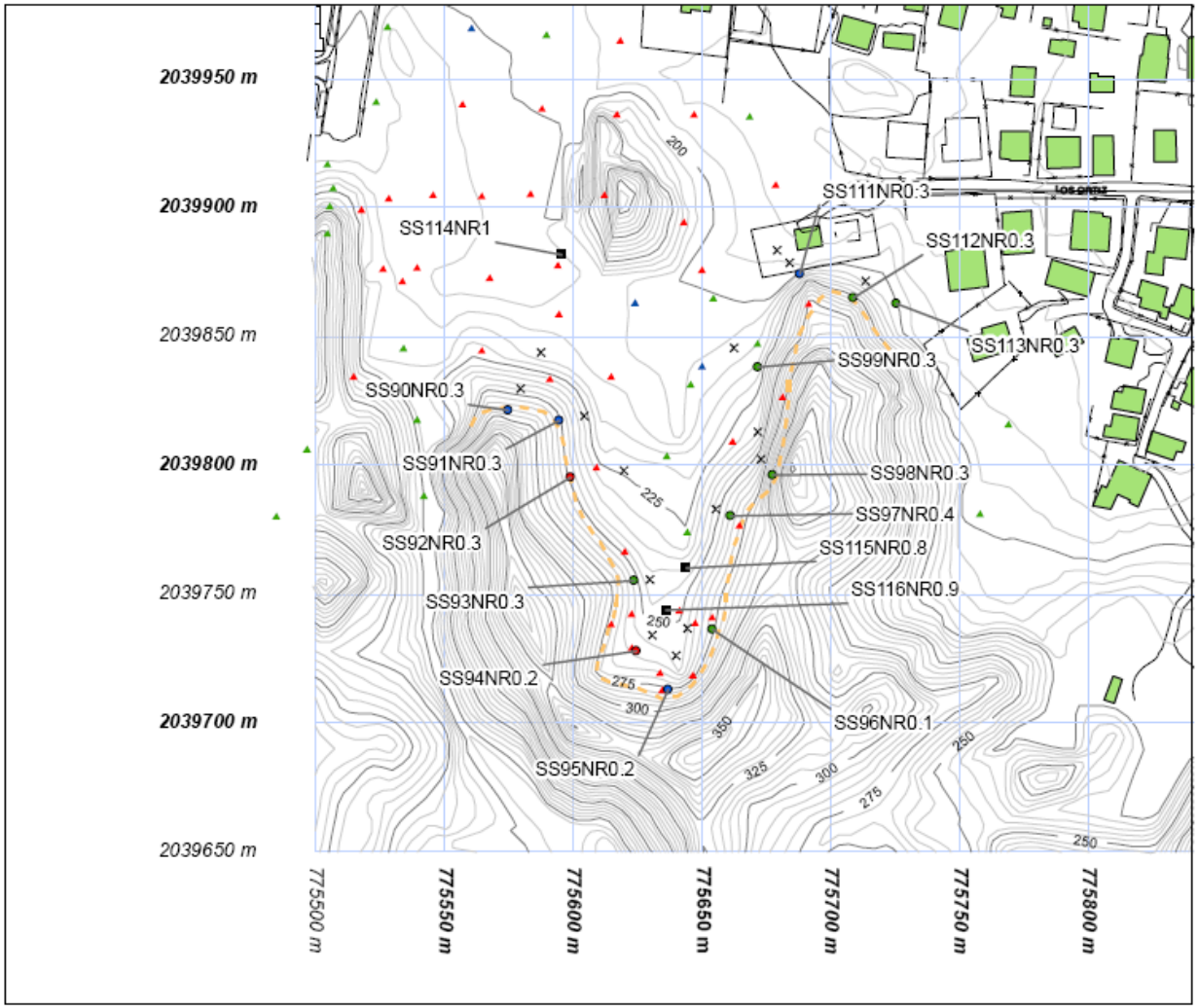


LEGEND

- APPROXIMATE LOCATION OF SUBVERTICAL ROCK FACE
- HOUSE
- LABORATORY LEAD SAMPLE: >1000 mg/kg
- LABORATORY LEAD SAMPLE: 400 TO 999 MG/KG
- LABORATORY LEAD SAMPLE: 0 TO 399 MG/KG
- PREVIOUS LEAD SAMPLE: >1000 MG/KG
- PREVIOUS LEAD SAMPLE: 400 TO 999 MG/KG
- PREVIOUS LEAD SAMPLE: 0 TO 399 MG/KG
- PEST/PCB SAMPLE
- XRF LEAD ANALYSIS LOCATION

NOTES

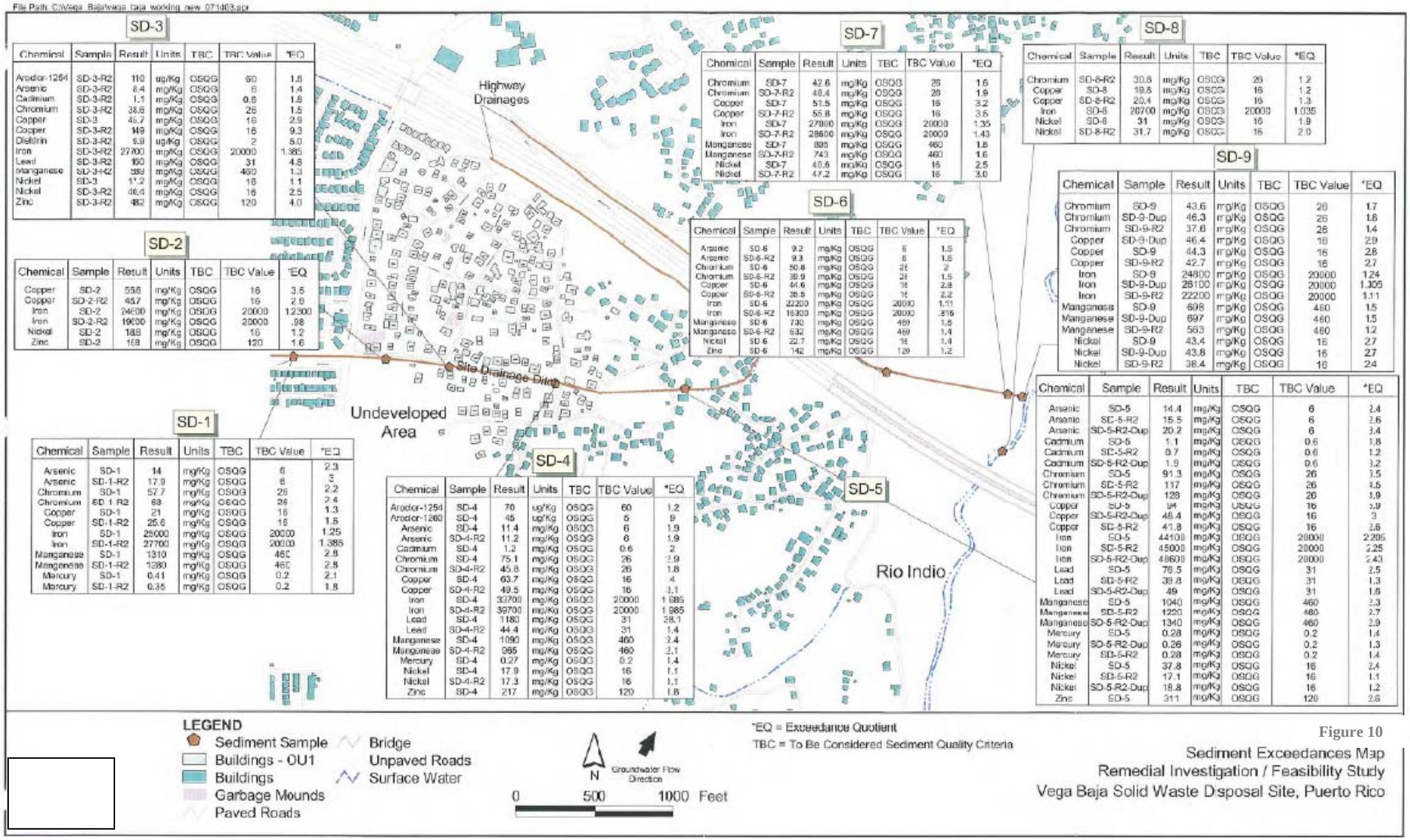
1. PREVIOUS SAMPLING LOCATIONS TAKEN FROM COMPACT DISK SUPPLIED BY USEPA, 1998
2. TOPOGRAPHIC BASE MAP TAKEN FROM CADD FILE PREPARED BY CDM FEDERAL PROGRAMS CORPORATION, TITLED "2003-FINAL2", DATED 07/10/02
3. SAMPLING LOCATIONS ARE APPROXIMATE AND WERE DETERMINED USING A BACKPACK GPS DEVICE AND BY MAPS DRAWN DURING FIELD WORK

SCALE	AS SHOWN
DATE	07/21/08
DESIGN	RI
GIS	APJ
CHECK	SLS
REVIEW	PSF

RI NON-RESIDENTIAL SAMPLE LOCATIONS

VEGA BAJA SOLID WASTE SUPERFUND SITE
REMEDIAL INVESTIGATION REPORT

FIGU 9



Chemical	Sample	Result	Units	TBC	TBC Value	*EQ
Aroclor-1254	SD-3-R2	110	ug/Kg	OSQG	60	1.8
Arsenic	SD-3-R2	8.4	mg/Kg	OSQG	6	1.4
Cadmium	SD-3-R2	1.1	mg/Kg	OSQG	0.6	1.8
Chromium	SD-3-R2	38.6	mg/Kg	OSQG	26	1.5
Copper	SD-3	46.7	mg/Kg	OSQG	16	2.9
Copper	SD-3-R2	149	mg/Kg	OSQG	16	9.3
Dieldrin	SD-3-R2	9.9	ug/Kg	OSQG	2	5.0
Iron	SD-3-R2	27700	mg/Kg	OSQG	20000	1.385
Lead	SD-3-R2	150	mg/Kg	OSQG	31	4.8
Manganese	SD-3-R2	559	mg/Kg	OSQG	460	1.3
Nickel	SD-3	17.2	mg/Kg	OSQG	16	1.1
Nickel	SD-3-R2	40.4	mg/Kg	OSQG	16	2.5
Zinc	SD-3-R2	482	mg/Kg	OSQG	120	4.0

Chemical	Sample	Result	Units	TBC	TBC Value	*EQ
Copper	SD-2	556	mg/Kg	OSQG	16	3.5
Copper	SD-2-R2	457	mg/Kg	OSQG	16	2.9
Iron	SD-2	24600	mg/Kg	OSQG	20000	1.2300
Iron	SD-2-R2	19600	mg/Kg	OSQG	20000	.98
Nickel	SD-2	188	mg/Kg	OSQG	16	1.2
Zinc	SD-2	168	mg/Kg	OSQG	120	1.6

Chemical	Sample	Result	Units	TBC	TBC Value	*EQ
Arsenic	SD-1	14	mg/Kg	OSQG	6	2.3
Arsenic	SD-1-R2	17.9	mg/Kg	OSQG	6	3
Chromium	SD-1	57.7	mg/Kg	OSQG	26	2.2
Chromium	SD-1-R2	63	mg/Kg	OSQG	26	2.4
Copper	SD-1	21	mg/Kg	OSQG	16	1.3
Copper	SD-1-R2	25.6	mg/Kg	OSQG	16	1.5
Iron	SD-1	25000	mg/Kg	OSQG	20000	1.25
Iron	SD-1-R2	27700	mg/Kg	OSQG	20000	1.385
Manganese	SD-1	1310	mg/Kg	OSQG	460	2.8
Manganese	SD-1-R2	1280	mg/Kg	OSQG	460	2.8
Mercury	SD-1	0.41	mg/Kg	OSQG	0.2	2.1
Mercury	SD-1-R2	0.35	mg/Kg	OSQG	0.2	1.8

Chemical	Sample	Result	Units	TBC	TBC Value	*EQ
Aroclor-1254	SD-4	70	ug/Kg	OSQG	60	1.2
Aroclor-1260	SD-4	45	ug/Kg	OSQG	5	9
Arsenic	SD-4	11.4	mg/Kg	OSQG	6	1.9
Arsenic	SD-4-R2	11.2	mg/Kg	OSQG	6	1.9
Cadmium	SD-4	1.2	mg/Kg	OSQG	0.6	2
Chromium	SD-4	75.1	mg/Kg	OSQG	26	2.9
Chromium	SD-4-R2	45.8	mg/Kg	OSQG	26	1.8
Copper	SD-4	63.7	mg/Kg	OSQG	16	4
Copper	SD-4-R2	49.5	mg/Kg	OSQG	16	3.1
Iron	SD-4	33700	mg/Kg	OSQG	20000	1.685
Iron	SD-4-R2	39700	mg/Kg	OSQG	20000	1.985
Lead	SD-4	1180	mg/Kg	OSQG	31	38.1
Lead	SD-4-R2	44.4	mg/Kg	OSQG	31	1.4
Manganese	SD-4	1090	mg/Kg	OSQG	460	2.4
Manganese	SD-4-R2	965	mg/Kg	OSQG	460	2.1
Mercury	SD-4	0.27	mg/Kg	OSQG	0.2	1.4
Nickel	SD-4	17.9	mg/Kg	OSQG	16	1.1
Nickel	SD-4-R2	17.3	mg/Kg	OSQG	16	1.1
Zinc	SD-4	217	mg/Kg	OSQG	120	1.8

Chemical	Sample	Result	Units	TBC	TBC Value	*EQ
Chromium	SD-7	42.6	mg/Kg	OSQG	26	1.6
Chromium	SD-7-R2	48.4	mg/Kg	OSQG	26	1.9
Copper	SD-7	51.5	mg/Kg	OSQG	16	3.2
Copper	SD-7-R2	55.8	mg/Kg	OSQG	16	3.5
Iron	SD-7	27000	mg/Kg	OSQG	20000	1.35
Iron	SD-7-R2	28600	mg/Kg	OSQG	20000	1.43
Manganese	SD-7	806	mg/Kg	OSQG	460	1.8
Manganese	SD-7-R2	743	mg/Kg	OSQG	460	1.6
Nickel	SD-7	40.6	mg/Kg	OSQG	16	2.5
Nickel	SD-7-R2	47.2	mg/Kg	OSQG	16	3.0

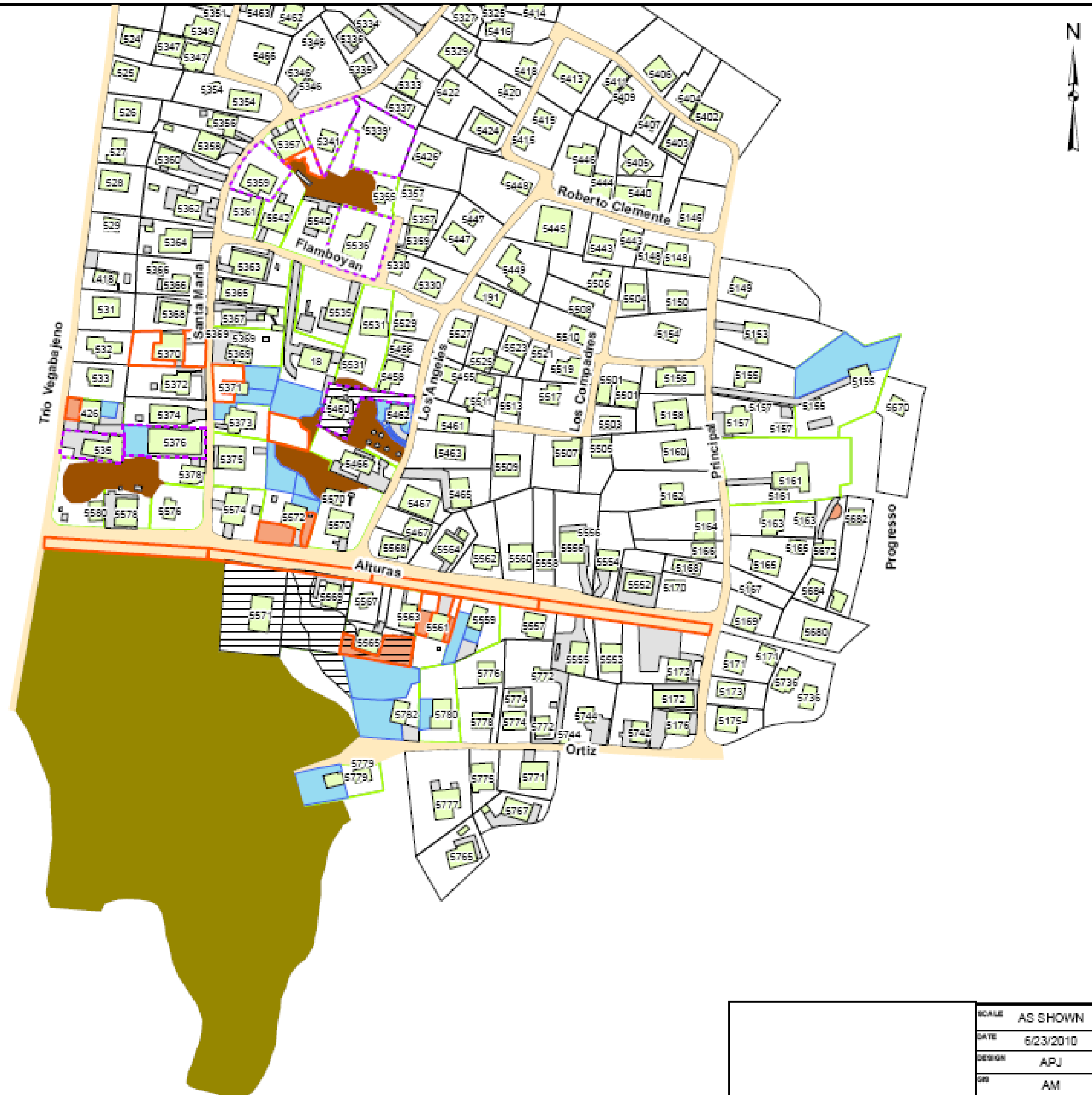
Chemical	Sample	Result	Units	TBC	TBC Value	*EQ
Chromium	SD-8-R2	30.8	mg/Kg	OSQG	26	1.2
Copper	SD-8	19.8	mg/Kg	OSQG	16	1.2
Copper	SD-8-R2	20.4	mg/Kg	OSQG	16	1.3
Iron	SD-8	20700	mg/Kg	OSQG	20000	1.035
Nickel	SD-8	31	mg/Kg	OSQG	16	1.9
Nickel	SD-8-R2	31.7	mg/Kg	OSQG	16	2.0

Chemical	Sample	Result	Units	TBC	TBC Value	*EQ
Arsenic	SD-6	9.2	mg/Kg	OSQG	6	1.5
Arsenic	SD-6-R2	9.8	mg/Kg	OSQG	6	1.6
Chromium	SD-6	50.8	mg/Kg	OSQG	26	2
Chromium	SD-6-R2	39.9	mg/Kg	OSQG	26	1.5
Copper	SD-6	44.6	mg/Kg	OSQG	16	2.8
Copper	SD-6-R2	35.5	mg/Kg	OSQG	16	2.2
Iron	SD-6	22200	mg/Kg	OSQG	20000	1.11
Iron	SD-6-R2	16300	mg/Kg	OSQG	20000	.815
Manganese	SD-6	730	mg/Kg	OSQG	460	1.6
Manganese	SD-6-R2	632	mg/Kg	OSQG	460	1.4
Nickel	SD-6	22.7	mg/Kg	OSQG	16	1.4
Zinc	SD-6	142	mg/Kg	OSQG	120	1.2

Chemical	Sample	Result	Units	TBC	TBC Value	*EQ
Chromium	SD-9	43.6	mg/Kg	OSQG	26	1.7
Chromium	SD-9-Dup	46.3	mg/Kg	OSQG	26	1.8
Chromium	SD-9-R2	37.6	mg/Kg	OSQG	26	1.4
Copper	SD-9-Dup	46.4	mg/Kg	OSQG	16	2.9
Copper	SD-9	44.3	mg/Kg	OSQG	16	2.8
Copper	SD-9-R2	42.7	mg/Kg	OSQG	16	2.7
Iron	SD-9	24800	mg/Kg	OSQG	20000	1.24
Iron	SD-9-Dup	26100	mg/Kg	OSQG	20000	1.305
Iron	SD-9-R2	22200	mg/Kg	OSQG	20000	1.11
Manganese	SD-9	608	mg/Kg	OSQG	460	1.5
Manganese	SD-9-Dup	697	mg/Kg	OSQG	460	1.5
Manganese	SD-9-R2	563	mg/Kg	OSQG	460	1.2
Nickel	SD-9	43.4	mg/Kg	OSQG	16	2.7
Nickel	SD-9-Dup	43.8	mg/Kg	OSQG	16	2.7
Nickel	SD-9-R2	38.4	mg/Kg	OSQG	16	2.4

Chemical	Sample	Result	Units	TBC	TBC Value	*EQ
Arsenic	SD-5	14.4	mg/Kg	OSQG	6	2.4
Arsenic	SD-5-R2	15.5	mg/Kg	OSQG	6	2.6
Arsenic	SD-5-R2-Dup	20.2	mg/Kg	OSQG	6	3.4
Cadmium	SD-5	1.1	mg/Kg	OSQG	0.6	1.8
Cadmium	SD-5-R2	0.7	mg/Kg	OSQG	0.6	1.2
Cadmium	SD-5-R2-Dup	1.9	mg/Kg	OSQG	0.6	3.2
Chromium	SD-5	91.3	mg/Kg	OSQG	26	3.5
Chromium	SD-5-R2	117	mg/Kg	OSQG	26	4.5
Chromium	SD-5-R2-Dup	128	mg/Kg	OSQG	26	4.9
Copper	SD-5	94	mg/Kg	OSQG	16	5.9
Copper	SD-5-R2-Dup	48.4	mg/Kg	OSQG	16	3
Copper	SD-5-R2	41.8	mg/Kg	OSQG	16	2.6
Iron	SD-5	44100	mg/Kg	OSQG	20000	2.205
Iron	SD-5-R2	45000	mg/Kg	OSQG	20000	2.25
Iron	SD-5-R2-Dup	48600	mg/Kg	OSQG	20000	2.43
Lead	SD-5	78.5	mg/Kg	OSQG	31	2.5
Lead	SD-5-R2	38.8	mg/Kg	OSQG	31	1.3
Lead	SD-5-R2-Dup	49	mg/Kg	OSQG	31	1.6
Manganese	SD-5	1040	mg/Kg	OSQG	460	2.3
Manganese	SD-5-R2	1220	mg/Kg	OSQG	460	2.7
Manganese	SD-5-R2-Dup	1340	mg/Kg	OSQG	460	2.9
Mercury	SD-5	0.28	mg/Kg	OSQG	0.2	1.4
Mercury	SD-5-R2-Dup	0.26	mg/Kg	OSQG	0.2	1.3
Mercury	SD-5-R2	0.28	mg/Kg	OSQG	0.2	1.4
Nickel	SD-5	37.8	mg/Kg	OSQG	16	2.4
Nickel	SD-5-R2	17.1	mg/Kg	OSQG	16	1.1
Nickel	SD-5-R2-Dup	18.8	mg/Kg	OSQG	16	1.2
Zinc	SD-5	311	mg/Kg	OSQG	120	2.6

Figure 10
Sediment Exceedances Map
Remedial Investigation / Feasibility Study
Vega Baja Solid Waste Disposal Site, Puerto Rico



LEGEND

- ACCESS AGREEMENT REQUIRED (NO REMEDIATION PLANNED)
- PROPOSED PDI SAMPLE LOCATION
- APPROXIMATE EXTENT OF NON-RESIDENTIAL AREA COVER OR REMOVAL
- BUILDING
- PROPOSED RESIDENTIAL YARD REMOVAL AREA
- COVERED AREA
- PREVIOUS REMOVAL ACTION
- PROPERTY BOUNDARY
- BACKFILLED AREA
- TRASH MOUND

INSTITUTIONAL CONTROLS REQUIRED

- RESIDENTIAL PROPERTY
- ROAD

NOTES

1. ALL PROPERTIES THAT REQUIRE PDI SAMPLING OR REMOVAL (TRASH MOUNDS AND RESIDENTIAL YARDS) WILL ALSO NEED ACCESS AGREEMENTS.

2. UNDER ALTERNATIVES 2, 4, AND 5 THE NON-RESIDENTIAL AREA SHOWN WOULD ALSO REQUIRE INSTITUTIONAL CONTROLS.

REFERENCES

1. PRIMARY GIS COVERAGES PROVIDED BY EPA AND MODIFIED BY GOLDER TO REPRESENT SITE CONDITIONS AT THE TIME OF THE OU-2 FIELD INVESTIGATION (DECEMBER 2004).

SCALE	AS SHOWN
DATE	6/23/2010
DESIGN	APJ
GIS	AM
CHECK	APJ
REVIEW	PSF

PRELIMINARY EXTENTS OF REMEDIATION AND PDI

VEGA BAJA SOLID WASTE SUPERFUND SITE

FIGURE 11

APPENDIX II - TABLES

LIST OF TABLES

Table 1
Selection of Exposure Pathways
Vega Baja Solid Waste Disposal Site
Vega Baja, Puerto Rico

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	On-Site/ Off-Site	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Current	Surface soil	Surface soil	Residential surface soil	Residents	Adult	Ingestion/Dermal	On-site	Quant	Known current use of residential area.
					Child	Ingestion/Dermal	On-site	Quant	Known current use of residential area.
			Non-residential and trash mound surface soil	Intermittent visitor	Adolescent	Ingestion/Dermal	On-site	Quant	Suspected use of non-residential area and trash mound areas.
			Drainage ditch	Resident	Adult	Ingestion/Dermal	On-site	Quant	Suspected current use of drainage ditch.
					Child	Ingestion/Dermal	On-site	Quant	Suspected current use of drainage ditch.
		Airborne dust	Airborne dust from residential soil	Resident	Adult	Inhalation	On-site	Quant	Known current use of residential area.
					Child	Inhalation	On-site	Quant	Known current use of residential area.
			Airborne dust from drainage ditch	Resident	Adult	Inhalation	On-site	Quant	Suspected current use of drainage ditch.
					Child	Inhalation	On-site	Quant	Suspected current use of drainage ditch.
			Airborne dust from non-residential and trash mound	Intermittent visitor	Adolescent	Inhalation	On-site	Quant	Suspected use of non-residential area and trash mound areas.
		Aboveground exposed vegetables	Vegetables grown in soil	Resident	Adult	Ingestion	On-site	Quant	Suspected current use of residential area.
					Child	Ingestion	On-site	Quant	Suspected current use of residential area.
		Aboveground protected vegetables			Adult	Ingestion	On-site	Quant	Suspected current use of residential area.
					Child	Ingestion	On-site	Quant	Suspected current use of residential area.
		Belowground root vegetables			Adult	Ingestion	On-site	Quant	Suspected current use of residential area.
					Child	Ingestion	On-site	Quant	Suspected current use of residential area.

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	On-Site/ Off-Site	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Future	Surface soil	Surface soil	Residential, non-residential, and trash mound surface soil	Resident	Adult	Ingestion/Dermal	On-site	Quant	Entire site zoned for residential use.
					Child	Ingestion/Dermal	On-site	Quant	Entire site zoned for residential use.
				Intermittent visitor	Adolescent	Ingestion/Dermal	On-site	Quant	Same as current use scenario, but includes residential area.
				Construction Worker	Adult	Ingestion/Dermal	On-site	Quant	Hypothetical future use scenario.
				Industrial Worker	Adult	Ingestion/Dermal	On-site	Quant	Hypothetical future use scenario.
			Drainage ditch surface soil	Resident	Adult	Ingestion/Dermal	On-site	Quant	Entire site zoned for residential use.
					Child	Ingestion/Dermal	On-site	Quant	Entire site zoned for residential use.
		Airborne dust	Airborne dust wind erosion of residential, non-residential, and trash mounds	Construction Worker	Adult	Inhalation	On-site	Qual	Expected to be minimal compared to inhalation of dust associated with vehicular traffic and other construction activities, so not calculated.
				Industrial Worker	Adult	Inhalation	On-site	Quant	Hypothetical future use scenario.
				Resident	Adult	Inhalation	On-site	Quant	Entire site zoned for residential use
					Child	Inhalation	On-site	Quant	Entire site zoned for residential use
				Intermittent visitor	Adolescent	Inhalation	On-site	Quant	Same as current use scenario, but includes residential area.
			Airborne dust from drainage ditch	Resident	Adult	Inhalation	On-site	Quant	Entire site zoned for residential use.
					Child	Inhalation	On-site	Quant	Entire site zoned for residential use.
			Fugitive dust from vehicles	Construction Worker	Adult	Inhalation	On-site	Quant	Hypothetical future use scenario.
			Airborne dust from construction activities	Construction Worker	Adult	Inhalation	On-site	Quant	Hypothetical future use scenario.
		Aboveground exposed vegetables	Vegetables grown in soil	Resident	Adult	Ingestion	On-site	Quant	Entire site zoned for residential use.
					Child	Ingestion	On-site	Quant	Entire site zoned for residential use.
		Aboveground protected vegetables	Vegetables grown in soil	Resident	Adult	Ingestion	On-site	Quant	Entire site zoned for residential use.
					Child	Ingestion	On-site	Quant	Entire site zoned for residential use.
		Belowground root vegetables	Vegetables grown in soil	Resident	Adult	Ingestion	On-site	Quant	Entire site zoned for residential use.
					Child	Ingestion	On-site	Quant	Entire site zoned for residential use.

Quant = Quantitative risk analysis performed.

Summary of Selection of Exposure Pathways

The table describes the exposure pathways associated with the surface soil that were evaluated for the risk assessment, and the rationale for the inclusion of each pathway. Exposure media, exposure points, and characteristics of receptor populations are included.

Table 2
Summary of Chemicals of Concern and Medium-Specific Exposure Point Concentrations
Vega Baja Solid Waste Disposal Site
Vega Baja, Puerto Rico

Scenario Timeframe: Current/Future
Medium: Surface soil
Exposure Medium: Surface soil

Exposure Point	Chemical of Concern	Concentration Detected		Concentration Units	Frequency of Detection	Exposure Point Concentration (EPC)	EPC Units	Statistical Measure
		Min	Max					
Surface soil – Residential Yards	Lead	6.9	1800	mg/kg	74/74	Property specific – range from 20.6 to 1400 (see Table 8.1 in HHRA)	mg/kg	Average
Surface Soil – Non-residential Area and Trash Mounds	Lead	17.6	24000	mg/kg	66/66	24000	mg/kg	Max
Surface Soil – Drainage Ditch	Lead	7.4	1180	mg/kg	9/9	1180	mg/kg	Max

Min. – Minimum Detected Concentration
Max. – Maximum Detected Concentration

Summary of Chemicals of Concern and Medium-Specific Exposure Point Concentrations

This table presents the chemicals of concern (COCs) and exposure point concentrations (EPCs) for each of the COCs detected surface soil (i.e., the concentration that will be used to estimate the exposure and risk from each COC). The table includes the range of concentrations detected for each COC, as well as the frequency of detection (i.e., the number of times the chemical was detected in the samples collected at the site), the EPC and how it was derived.

Table 3
Properties that Require Access Agreements and/or Institutional Controls for Investigation/Remediation
Vega Baja Solid Waste Superfund Site
Vega Baja, Puerto Rico

Properties Requiring Remediation, Institutional Controls, and Access Agreements		Additional Properties Requiring Access Agreements		Additional Properties Expected to Require Institutional Controls
Residential Yard Exceeds Cleanup Goal	Trash Mound Potentially Present	Properties Proposed for Potential PDI Sampling	Properties Adjacent to Trash Mounds	
18 Flamboyan	18 Flamboyan	*426 Trio Vegabajeño**	5339 Santa Maria	5155 Principal
426 Trio Vegabajeño	5355 Flamboyan	*5357 Santa Maria**	5341 Santa Maria	535 Trio Vegabajeño
5155 Principal Interior	5357 Santa Maria	5370 Santa Maria	535 Trio Vegabajeño	5369 Santa Maria
5161 Principal	5373 Santa Maria	*5371 Santa Maria**	5359 Santa Maria	5375 Santa Maria
5369 Santa Maria	5378 Santa Maria	*5373 Santa Maria**	5376 Santa Maria	5565 Alturas
5371 Santa Maria	5458 Los Angeles	5561 Alturas	*5460 Los Angeles***	5569 Alturas
5373 Santa Maria	5462 Los Angeles	5565 Alturas	5536 Flamboyan	5571 Alturas
5376 Santa Maria	5466 Los Angeles	*5572 Alturas**		
5462 Los Angeles	5531 Flamboyan			
5559 Alturas	5540 Flamboyan			
5570 Alturas	5542 Flamboyan			
5572 Alturas	5570 Alturas			
5580 Alturas	5572 Alturas			
5779 Ortiz	5576 Alturas			
5780 Ortiz	5578 Alturas			
5782 Ortiz	5580 Alturas			

* This property already requires remediation, so it is included in the column titled "Residential Yard Exceeds Cleanup Goal". A separate access agreement may not be needed for the PDI work; however, it is included in this list for completeness.
** Note that this property was remediated during USEPA's time-critical removal action, so garbage mound materials are not likely to be present on this property. However, it is included in this list because trash mound materials still exist in adjacent properties, so access may be needed.

Table 4
Residential, Trash Mound, and Drainage Ditch Soil Lead Concentrations Compared to 450 mg/kg
Vega Baja Solid Waste Superfund Site, Vega Baja, Puerto Rico

		RI Sample Results			Initial Removal Volume Estimates for FS Cost Estimating		
Address	Yard Area	Surface Soil (0 - 1") Lead Concentration (mg/kg)	1 - 12" Soil Lead Concentration (mg/kg)	12" to Refusal Soil Lead Concentration (mg/kg)	Proposed Initial Excavation Depth (ft)	Impacted Area Estimate (sq ft)	Volume (cy)
18 Flamboyan	A	90.6	263	86.8	0	N/A	N/A
	B	257	881	955	2	4,875	361
5153 Principal	A	307	412	49.2	0	N/A	N/A
5155 Principal	A	328	235	229	0	N/A	N/A
5155 Principal Interior	A	560	431	67.9	0.5	10,825	200
	B	168	525	287	1	10,994	407
5161 Principal	A	247	457	35.4	1	10,131	375
	B	149	30.1	13.4	0	N/A	N/A
	C	91.6	41.3	12.3	0	N/A	N/A
418 Trio Vegabajeño	A	244	174	18.9	0	N/A	N/A
426 Trio Vegabajeño	B	754	551	109	1	815	30
5365 Santa Maria	A	179	93.9	65.4	0	N/A	N/A
5367 Santa Maria	A	95.1	30.5	7.8	0	N/A	N/A
5369 Santa Maria	A	320	486	55	1	2,842	105
5371 Santa Maria	A	774	834	279	1	2,511	93
	B	1130	1530	1040	2	1,578	117
5372 Santa Maria	A	224	175	67.6	0	N/A	N/A
	B	225	224	63.9	0	N/A	N/A
5373 Santa Maria	A	79.7	991	447	1	922	34
5375 Santa Maria	A	310	420	97.4	0	N/A	N/A
5376 Santa Maria	A	775	821	683	2.3	2,417	206
5378 Santa Maria	A	150	254	188	0	N/A	N/A
	B	336	170	284	0	N/A	N/A
5462 Los Angeles	A	449	764	883	2	1,598	118
5466 Los Angeles	A	154	115	191	0	N/A	N/A
5559 Alturas	A	868	508	67.4	1	2,181	81
	B	729	519	191	1	666	25
	C	545	497	88.3	1	1,790	66
5561 Alturas	A	378	311	24.6	0	N/A	N/A
	B	310	283	28.7	0	N/A	N/A
5563 Alturas	A	359	202	17.9	0	N/A	N/A
5564 Alturas	A	295	165	74	0	N/A	N/A

Table 4
Residential, Trash Mound, and Drainage Ditch Soil Lead Concentrations Compared to 450 mg/kg
Vega Baja Solid Waste Superfund Site
Vega Baja, Puerto Rico

		RI Sample Results			Initial Removal Volume Estimates for FS Cost Estimating		
Address	Yard Area	Surface Soil (0 - 1") Lead Concentration (mg/kg)	1 - 12" Soil Lead Concentration (mg/kg)	12" to Refusal Soil Lead Concentration (mg/kg)	Proposed Initial Excavation Depth (ft)	Impacted Area Estimate (sq ft)	Volume (cy)
5570 Alturas	A	**454**	**494**	393	1	1,713	63
	B	235	**529**	**451**	2	2,564	190
5572 Alturas	A	**615**	**544**	49.1	1	3,027	112
	B	**506**	**618**	237	1	1,029	38
	C	437	294	29.4	0	N/A	N/A
	D	**545**	**848**	411	1	1,032	38
5574 Alturas	A	329	437	127	0	N/A	N/A
	B	381	267	128	0	N/A	N/A
5576 Alturas	A	347	277	N/A	0	N/A	N/A
5578 Alturas	A	343	365	151	0	N/A	N/A
5580 Alturas	A	213	387	**947**	2.3	2,923	249
5672 Progresso	A	329	348	88.5	0	N/A	N/A
5772 Ortiz	A	297	218	60.8	0	N/A	N/A
5779 Ortiz	A	**993**	**1780**	**26200**	2	4,463	331
5780 Ortiz	A	307	**852**	105	1	1,191	44
5782 Ortiz	A	88.2	395	**456**	2	924	68
	B	**702**	**1120**	**1290**	2.3	5,199	443
	UNAUTH[1]	**919**	**1320**	N/A	1	8,408	311
RESIDENTIAL AREA TOTAL						***86,617***	***4,108***
Trash Mound #2	N/A	**851**	**851**	**851**	10	15,407	5,706
Trash Mound #3	N/A	**634**	**634**	**634**	10	11,023	4,083
Trash Mound #4	N/A	**1620**	**1620**	**1620**	10	8,176	3,028
TRASH MOUNDS TOTAL						***34,606***	***12,817***
Drainage Ditch	N/A	**1180**	**1180**	N/A	1	14,000	519

Notes:
N/A indicates Not Applicable
Bold and highlighted cells indicate an exceedance of 450 mg/kg.
For individual trash mounds, the soil concentration used is the average (mean) concentration, consistent with use of IEUBK model to assess residential risk (duplicate samples were averaged and for each pre-RI sampling location the samples from various depths were combined into a single depth-weighted average at each location). For the Drainage Ditch, because there were fewer than 10 drainage ditch samples, the maximum detection is shown.
Specific Footnotes:
1. UNAUTH indicates that this sample was collected in March, 2004 as part of the response to the Unauthorized Disturbance. The data were reported to USEPA in a letter dated April 9, 2004.

Table 5
Cost Estimate Summary - Alternative 2
Vega Baja Solid Waste Superfund Site, Vega Baja, Puerto Rico

ACTIVITY	Initial Cost	PW of O&M
Alternative 2		
Common Elements	$260,000	$0
Residential Area Soil	$890,000	$0
Drainage Ditch	$40,000	$0
Trash Mounds	$810,000	$0
Non-Residential Area Soil	$850,000	$330,000
Subtotal	**$2,850,000**	**$330,000**
INITIAL COST TOTAL		**$2,850,000**
ENGINEERING/CQA[1] (25%)		**$720,000**
TOTAL PW OF O&M COST		**$330,000**
SUBTOTAL		**$3,900,000**
CONTINGENCY (20%)		**$780,000**
TOTAL NET PRESENT WORTH COST		**$4,680,000**

Notes:
Values are rounded to the nearest $10,000
These estimates are based on conceptual plans and will be subject to change based upon actual detailed engineering design and competitive bidding of construction services.
1.) Engineering costs refer to preparation of detailed design documents, coordination of the contractor bidding process, and preparation of construction completion reports, as needed. CQA refers to on-Site oversight and compliance testing throughout construction activities.

Table 6
Cost Estimate Details for Alternative 2
Vega Baja Solid Waste Superfund Site
Vega Baja, Puerto Rico

Common Elements

Activity	Unit Costs	Units	Quantity	Estimated Cost
Pre-Design Investigation	$200,000	Lump Sum	1	$200,000
Secure Access Agreements (Legal)	$60,000	Lump Sum	1	$60,000
COMMON ELEMENTS TOTAL INITIAL COST				**$260,000**

Remedial Action Components to Address Residential Area Soils

Activity	Unit Costs	Units	Quantity	Estimated Cost
Initial Cost - Soil Removal				
Clearing (ground preparation)	$0.30	sf	86,617	$25,850
Non-woven geotextile (assume 25% of removed area needs geotextile)	$3.00	sy	2,406	$7,218
Excavation and loading of soil	$21.00	cy	4,108	$86,261
Backfill (common earth) - purchase, haul, place, and compact	$21.00	cy	3,038	$63,805
Topsoil (4")	$70.00	cy	1,069	$74,854
Revegetate yards with sod	$3.00	sf	86,617	$259,850
Restore property to pre-excavation conditions (replace trees, etc.)	$3,000	Property	16	$48,000
Replace fencing/cinder block walls	$24	lf	1,600	$38,400
Haul Soil to Non-Residential Area for Consolidation and Place	$6.50	cy	4,108	$26,700
Construction Costs Subtotal				*$630,937*
Mobilization / Demobilization (10% of Construction Costs)	10%	$	630,937	$63,094
Surveying and Field Engineering (6% of Construction Costs)	6%	$	630,937	$37,856
Liability Insurance, Payment and Performance Bonds (5% of Construction Costs)	5%	$	630,937	$31,547
On-Site E&S Controls (4% of Construction Costs)	4%	$	630,937	$25,237
Health and Safety (4% of Construction Costs)	4%	$	630,937	$25,237
XRF Confirmation Sampling	$1,500	Day	45	$67,500
20% Laboratory Confirmation Analysis of XRF Samples	$200	Sample	25	$5,000
RESIDENTIAL AREA TOTAL INITIAL COST				**$886,409**

Table 6
Cost Estimate Details for Alternative 2
Vega Baja Solid Waste Superfund Site, Vega Baja, Puerto Rico

Remedial Action Components to Address the Drainage Ditch				
Activity	**Unit Costs**	**Units**	**Quantity**	**Estimated Cost**
Initial Cost - Soil Removal				
Excavation and loading of soil	$35.00	cy	519	$18,148
Haul Soil to Non-Residential Area for Consolidation and Place	$6.50	cy	519	$3,370
Construction Costs Subtotal				*$21,519*
Mobilization / Demobilization (10% of Construction Costs)	10%	$	21,519	$2,152
Surveying and Field Engineering (6% of Construction Costs)	6%	$	21,519	$1,291
Liability Insurance, Payment and Performance Bonds (5% of Construction Costs)	5%	$	21,519	$1,076
On-Site E&S Controls (4% of Construction Costs)	4%	$	21,519	$861
Health and Safety (4% of Construction Costs)	4%	$	21,519	$861
XRF Confirmation Sampling	$1,500	Day	5	$7,500
Laboratory Confirmation Analysis of XRF Samples	$200	Sample	4	$800
DRAINAGE DITCH TOTAL INITIAL COST				**$36,059**

Remedial Action Components to Address the Trash Mounds				
Activity	**Unit Costs**	**Units**	**Quantity**	**Estimated Cost**
Initial Cost - Trash Mound Removal				
Clearing (ground preparation)	$0.20	sf	34,606	$6,921
Non-woven geotextile (assume 25% of removed area needs geotextile)	$3.00	sy	961	$2,884
Excavation and loading of trash and soil	$21.00	cy	12,817	$269,158
Backfill (common earth) (assume 20% of removed material needs to be replaced)	$21.00	cy	2,136	$44,860
Topsoil (4")	$70.00	cy	427	$29,906
Revegetate yards with sod	$3.00	sf	34,606	$103,818
Restore property to pre-excavation conditions (replace trees, etc.)	$3,000	Property	11	$33,000
Replace fencing/cinder block walls	$24	lf	1,000	$24,000
Haul Trash and Soil to Non-Residential Area for Consolidation and Place	$6.50	cy	12,817	$83,311
Construction Costs Subtotal				*$597,858*
Mobilization / Demobilization (10% of Construction Costs)	10%	$	597,858	$59,786
Surveying and Field Engineering (6% of Construction Costs)	6%	$	597,858	$35,871
Liability Insurance, Payment and Performance Bonds (5% of Construction Costs)	5%	$	597,858	$29,893
On-Site E&S Controls (4% of Construction Costs)	4%	$	597,858	$23,914
Health and Safety (4% of Construction Costs)	4%	$	597,858	$23,914
XRF Confirmation Sampling	$1,500	Day	20	$30,000
20% Laboratory Confirmation Analysis of XRF Samples	$200	Sample	18	$3,600
TRASH MOUNDS TOTAL INITIAL COST				**$804,836**

Table 6
Cost Estimate Details for Alternative 2
Vega Baja Solid Waste Superfund Site
Vega Baja, Puerto Rico

Remedial Action Components to Address Non-Residential Area				
Activity	Unit Costs	Units	Quantity	Estimated Cost
Initial Cost - Soil Cover				
Clearing and Grubbing	$6,500	acre	8.5	$55,250
Base Preparation/Grading	$0.88	sy	41,140	$36,203
Non-woven geotextile	$3.00	sy	41,140	$123,420
Borrow material (common earth) for soil cover	$21.00	cy	13,713	$287,980
Hydroseeding (grass)	$4,500	acre	9	$38,250
Fencing around covered area	$35	lf	2,000	$70,000
Construction Costs Subtotal				*$611,103*
Mobilization / Demobilization (10% of Construction Costs)	10%	$	611,103	$61,110
Surveying and Field Engineering (6% of Construction Costs)	6%	$	611,103	$36,666
Liability Insurance, Payment and Performance Bonds (5% of Construction Costs)	5%	$	611,103	$30,555
On-Site E&S Controls (4% of Construction Costs)	4%	$	611,103	$24,444
Health and Safety (4% of Construction Costs)	4%	$	611,103	$24,444
Surface Water Management (10% of Construction Costs)	10%	$	611,103	$61,110
NON-RESIDENTIAL AREA TOTAL INITIAL COST				**$849,433**
Operation & Maintenance (O&M)				
Site Inspections and Maintenance	$10,000	Lump Sum	1	$10,000
Reporting	$10,000	Lump Sum	1	$10,000
NON-RESIDENTIAL AREA TOTAL ANNUAL O&M COST				**$20,000**
Years of O&M, 5% Discount Rate	30	Years		
Discount Rate	5	%		
NON-RESIDENTIAL AREA PRESENT WORTH OF ANNUAL O&M COST				**$322,821**
NON-RESIDENTIAL AREA TOTAL PRESENT WORTH				**$1,172,255**

Table 6
Cost Estimate Details for Alternative 2
Vega Baja Solid Waste Superfund Site
Vega Baja, Puerto Rico

Notes:
These estimates are based on conceptual plans and will be subject to change based upon actual detailed engineering design and competitive bidding of construction services.

Unit Cost Sources:
Costs presented as a percentage of construction costs (e.g., mobilization/demobilization, etc.), PDI costs, Access Agreement costs, and O&M costs are based on professional experience.

Unit costs for clearing/grubbing, excavation, geotextile, backfill/topsoil, transportation, base preparation/grading, disposal, revegetation, consolidation, soil cover, and fencing/walls provided by a local (in Puerto Rico) contractor.

Unit costs for XRF and laboratory sampling based on previous experience at the Site.

Assumptions:
Volumes to be removed are from the above Table. See Figures for the approximate area within the Non-Residential Area that requires a cover.

25% of the residential excavation area will require geotextile (i.e., 75% will be excavated to clean soil).

Excavations in residential areas will be backfilled with common earth with 4" of topsoil placed at the surface and the areas will be revegetated with sod.

The Non-Residential Area soil cover will be constructed of common earth and will be hydroseeded.

The Residential Area excavations will require 45 days, the Drainage Ditch 5 days, and the Trash Mounds 20 days to complete and an XRF will be used throughout for confirmation sampling. Post-excavation confirmation sampling (laboratory analysis) will consist of one 5-point composite sample per Residential yard area removed, six 5-point composites per trash mound, and four 5-point composites for the Drainage Ditch.

Each residential property will require $3,000 to replace landscaping.

Each residential property will require 100 linear feet of either fencing or cinder block wall to be removed and replaced after remediation.

APPENDIX III – ADMINISTRATIVE RECORD INDEX
Operable Unit 2
Operable Unit 1

VEGA BAJA SOLID WASTE DISPOSAL SUPERFUND SITE
OPERABLE UNIT TWO
ADMINISTRATIVE RECORD FILE
INDEX OF DOCUMENTS

3.0 REMEDIAL INVESTIGATION

3.3 Work Plans

P. 300001 – 300131 Report: Quality Assurance Project Plan Addendum, Vega Baja Solid Waste Superfund Site, Operable Unit 2: Soils, Revision #1, prepared by Golder Associates Inc., prepared for Vega Baja Cooperating PRP Group, August 2004.
DOC ID #108446

3.4 Remedial Investigation Reports

P. 300132 – 300250 Report: Vega Baja Solid Waste Superfund Site, Operable Unit 2: Soils, Vega Baja, Puerto Rico, Technical Memorandum: Data Evaluation Report, prepared by Golder Associates Inc., prepared for Vega Baja Cooperating PRP Group, March 2005.
DOC ID #108447

P. 300251 – 300300 Report: Vega Baja Solid Waste Superfund Site, Operable Unit 2, Pathway Analysis Report, prepared by Golder Associates Inc., prepared for Vega Baja Cooperating PRP Group, May 2005.
DOC ID #108448

P. 300301 – 300592 Report: Remedial Investigation Report, Operable Unit 2: Soils, Vega Baja Solid Waste Superfund Site, Vega Baja, Puerto Rico, Revision 1, prepared by Golder Associates Inc., prepared for Vega Baja Cooperating PRP Group, July 2008.
DOC ID #108449

P. 300593 – 301282 Report: Final Baseline Human Health Risk Assessment, Vega Baja Solid Waste Superfund Site, Operable Unit 2, prepared by Golder Associates Inc., prepared for Vega Baja Cooperating PRP Group, July 2009.
DOC ID #108450

P. 301283 – 301461 Report: Final Screening Level Ecological Risk Assessment, Vega Baja Solid Waste Superfund Site, Vega Baja, Puerto Rico, prepared by Golder Associates Inc., prepared for Vega Baja Cooperating PRP Group, December 2009.

DOC ID #108451

4.0 FEASIBILITY STUDY

4.3 Feasibility Study Reports

P. 400001 – 400039 Report: Remedial Alternatives Screening Memorandum, Vega Baja Solid Waste Superfund Site, Operable Unit 2, Vega Baja, Puerto Rico, prepared by Golder Associates Inc., prepared for Vega Baja Cooperating PRP Group, December 2009.

DOC ID #108452

4.6 Correspondence

P. 400040 – 400040 Letter to Ms. Nancy Rodriguez, P.E., Remedial Project Manager, Chief, Enforcement & Superfund Branch, Caribbean Environmental Protection Division, U.S. Environmental Protection Agency, Region 2, from Mr. Andrew P. Joslyn, EIT, Project Environmental Engineer, and Mr. P. Stephen Finn, C. Eng., Principal and Project Coordinator, Golder Associates Inc., re: Remedial Alternatives Screening Memorandum – Operable Unit 2, Vega Baja Solid Waste Disposal Superfund Site, December 15, 2009.

DOC ID #108453

P. 400041 – 400045 Memorandum to Ms. Nancy Rodriguez, from Mr. Steve Finn, Golder Associates, re: Meeting Minutes January 14, 2010 Technical Meeting, Vega Baja Disposal Superfund Site, Project No.: 033-6208, February 23, 2010.

DOC ID #108454

Note: The Vega Baja Solid Waste Disposal OU1 Administrative Record is incorporated into the OU2 Administrative Record by reference.

DRAFT 07-26-10

VEGA BAJA SOLID WASTE DISPOSAL SUPERFUND SITE
OPERABLE UNIT TWO
ADMINISTRATIVE RECORD FILE UPDATE
INDEX OF DOCUMENTS

4.0 FEASIBILITY STUDY

4.3 Feasibility Study Reports

P. 400046 – 400147 Report: Final Feasibility Study, Vega Baja Solid Waste Superfund Site, Operable Unit 2, Vega Baja, Puerto Rico, prepared by Golder Associates Inc., prepared for Vega Baja Cooperating PRP Group, July 2010.

DOC ID # 108457

10.0 PUBLIC PARTICIPATION

10.9 Proposed Plan

P. 100001 – 100001 Letter to Eng. Nancy Rodriguez, P.E., Remedial Project Manager, Enforcement & Superfund Branch, Caribbean Environmental Protection Division, U.S. Environmental Protection Agency, Region 2, from Mr. Genaro Torres León, Acting Director, Emergency Response Program, Government of Puerto Rico, Office of the Governor, Environmental Quality Board, re: Vega Baja Solid Waste Disposal Site Proposed Plan Concurrence Letter, July 14, 2010.

DOC ID # 108458

VEGA BAJA SOLID WASTE DISPOSAL SUPERFUND SITE
OPERABLE UNIT TWO
ADMINISTRATIVE RECORD FILE UPDATE #2
INDEX OF DOCUMENTS

10.0 PUBLIC PARTICIPATION

10.9 Proposed Plan

P. 1000002 – 1000017 Report: Superfund Program Proposed Plan, Vega Baja Solid Waste Disposal Superfund Site, Operable Unit 2: Soils, prepared by U.S. Environmental Protection Agency, Region 2, July 2010.

VEGA BAJA SOLID WASTE DISPOSAL SUPERFUND SITE
ADMINISTRATIVE RECORD FILE
INDEX OF DOCUMENTS

1.0 SITE IDENTIFICATION

1.1 Background - RCRA and Other Information

P. 100001 - 100031
DocID 107237
Aerial Photographic Analysis, Vega Baja Solid Waste Disposal Site, Vega Baja, Puerto Rico, Report 1 - Solid Waste Disposal Site Characterization, prepared by D.R. Williams, Environmental Services Division, Lockheed Environmental Systems & Technologies Co., prepared for U.S. EPA, July 1998.

1.4 Site Investigation Reports

P. 100032 - 100183
DocID 107238
Report: Final Report, Assessment of Soil Dioxin Contamination, Vega Baja Solid Waste Disposal Site, prepared by Lockheed Martin/REAC, prepared for U.S. EPA/ERTC, February 2002.

1.4 Site Investigation Reports

Assessment of Soil Lead Contamination

P. 100184 - 100240
DocID 107239
Report: Final Report, Assessment of Soil Lead Contamination, Vega Baja Landfill Site, Vega Baja, Puerto Rico, prepared by Lockheed Martin/REAC, prepared for U.S. EPA/ERTC, January 2000.

P. 100241 - 100784
DocID 107240
Report: Final Report, Assessment of Soil Lead Contamination, Vega Baja Landfill Site, Vega Baja, Puerto Rico, Appendix 1A, Phase I XRF and Confirmation Results, prepared by Lockheed Martin/REAC, prepared for U.S. EPA/ERTC, January 2000.

P. 100785 - 101384
DocID 107241
Report: Final Report, Assessment of Soil Lead Contamination, Vega Baja Landfill Site, Vega Baja, Puerto Rico, Appendix 2A, Phase II XRF and Confirmation Results, prepared by Lockheed Martin/REAC, prepared for U.S. EPA/ERTC, January 2000.

P. 101385
101531

DocID 107242

Report: Final Report, Assessment of Soil Lead Contamination, Vega Baja Landfill Site, Vega Baja, Puerto Rico, Appendix 4, Individual Property Maps of 43 Homes Identified for Removal Action, prepared by Lockheed Martin/REAC, prepared for U.S. EPA/ERTC, January 2000.

1.4 Site Investigation Reports

Sampling Trip Reports

P. 101532 - 101559

DocID 107243

Report: Sampling Trip Report, Vega Baja Landfill, prepared by Mr. John Szalkowski, START PM, Roy F. Weston, Inc., prepared for U.S. EPA, February 12, 1998.

P. 101560 - 101579

DocID 107244

Report: Sampling Trip Report, Vega Baja Landfill, prepared by Mr. Hector M. Santana, Region II START Sampler and Mr. Miguel A. Maldonado, Region II START Site Project Manager (Alternate) & Sampler, Roy F. Weston, Inc. prepared for U.S. EPA, April 27, 1999, (cover letter attached.)

P. 101580 - 101604

DocID 107245

Report: Sampling Trip Report, Vega Baja Landfill, prepared by Mr. Hector M. Santana, Region II START Sampler and Mr. Miguel A. Maldonado, Region II START Site Project Manager (Alternate) & Sampler, Roy F. Weston, Inc. prepared for U.S. EPA, July 2, 1999, (cover letter attached.)

P. 101605 - 101621

DocID 107246

Report: Sampling Trip Report, Vega Baja Landfill, prepared by Mr. Doel A. Miranda, Region II START Site Project Manager & Sample Collection, Roy F. Weston, Inc., prepared for U.S. EPA, December 9, 1999, (cover letter attached.)

P. 101622 - 101700

DocID 107247

Report: Sampling Trip Report, Vega Baja Landfill, prepared by Mr. Doel A. Miranda, Site Project Manager, Roy F. Weston, Inc., prepared for U.S. EPA, December 28, 1999, (cover letter and transmittal memorandum attached.)

2.0 REMOVAL RESPONSE

2.1 Sampling and Analysis Plans

P. 200001 - 200311
DocID 107248
Report: Vega Baja Site, Disposal Alternatives Study, Vega Baja, Puerto Rico, prepared by Roy F. Weston, Inc., prepared for U.S. EPA, Region 2, November 1998.

P. 200312 - 200491
DocID 107249
Report: Health and Safety Plan for Vega Baja Solid Waste Disposal Site Removal Actions Activities, prepared by Roy F. Weston, Inc. and Sarriera & Associates, prepared for U.S. EPA, Region 2, October 1999.

2.2 Sampling and Analysis Data/Chain of Custody Forms

P. 200492 - 200888
DocID 107250
Report: Monitoring Well Installation and Groundwater Sampling Report Vega Baja Solid Waste Disposal, Rio Abajo Ward, Vega Baja, Puerto Rico, prepared by Region II Superfund Technical Assessment and Response Team, Roy F. Weston, Inc., prepared for U.S. EPA, Region 2, October 1998.

P. 200889 - 201067
DocID 107251
Memorandum to Mr. Terrence Johnson, REAC Task Leader, through Mr. Vinod Kansal, REAC Analytical Section Leader, Roy F. Weston, Inc., from Mr. Jay Patel, REAC Inorganic Group Leader, Roy F. Weston, Inc. re: FPXRF Analyses, Vega Baja Landfill Site, Vega Baja, Puerto Rico, Work Assignment #3-356 - Phase II FPXRF Activities Report, December 4, 1998.

P. 201068 - 201290
DocID 107252
Report: Data Package for Total Metals, Part I, prepared by Chemtech, prepared for Roy F. Weston, Inc., July 15, 1999.

P. 201291 - 201467
DocID 107253
Report: Data Package for TCLP Metals, Part II, prepared by Chemtech, prepared for Roy F. Weston, Inc., July 15, 1999.

P. 201468 - 202452
DocID 107254
Letter to Weston from CompuChem re: attached Report of Data, Account Number 705026 Order# 34667 December 8, 1999.

2.2 Sampling and Analysis Data/Chain of Custody Forms

Data Validation Assessments

P. 202453 - 202488

DocID 107255

Memorandum (with attachments) to Mr. Angel Rodriguez, OSC, Removal Action Branch, U.S. EPA Region 2, from Ms. Smita Sumbaly, Data Reviewer, START Region II, Roy F. Weston, Inc., re: Vega Baja Landfill Data Validation Assessment, July 16, 1999.

P. 202489 - 202545

DocID 107256

Memorandum (with attachments) to Mr. Angel Rodriguez, OSC, Removal Action Branch, U.S. EPA Region 2, from Ms. Smita Sumbaly, Data Reviewer, START Region II, Roy F. Weston, Inc., re: Vega Baja Landfill Data Validation Assessment, August 4, 1999.

P. 202546 - 202598

DocID 107257

Memorandum (with attachments) to Mr. Angel Rodriguez, OSC, Removal Action Branch, U.S. EPA Region 2, from Ms. Smita Sumbaly, Data Reviewer, START Region II, Roy F. Weston, Inc., re: Vega Baja Landfill Data Validation Assessment, August 4, 1999.

P. 202599 - 202689

DocID 107258

Memorandum (with attachments) to Mr. Tom Budroe, OSC, Removal Action Branch, U.S. EPA, Region 2, from Ms. Adly A. Michael, Data Reviewer, and Mr. Doel Miranda, PM, START Region II, Roy F. Weston, Inc., re: Vega Baja Landfill Data Validation Assessment, October 27, 1999.

P. 202690 - 202784

DocID 107259

Memorandum (with attachments) to Mr. Angel Rodriguez, U.S. EPA, Region 2, from Mr. Doel Miranda, Roy F. Weston, Inc., re: Vega Baja Landfill Data Validation Assessment, October 29, 1999.

P. 202785 - 202877

DocID 107260

Memorandum (with attachments) to Mr. Tom Budroe, OSC, Removal Action Branch, U.S. EPA, Region 2, from Ms. Adly A. Michael, Data Reviewer, and Mr. Doel Miranda, PM, START Region II, Roy F. Weston, Inc., re: Vega Baja Landfill Data Validation Assessment, November 12, 1999.

P. 202878 - 202933
DocID 107261
Memorandum (with attachments) to Mr. Angel Rodriguez, OSC, Removal Action Branch, U.S. EPA, Region 2, from Ms. Smita Sumbaly, Data Reviewer, START Region II, Roy F. Weston, Inc., re: Vega Baja Landfill Data Validation Assessment, January 14, 2000.

P. 202934 - 202998
DocID 107262
Memorandum (with attachments) to Mr. Angel Rodriguez, OSC, Removal Action Branch, U.S. EPA, Region 2, from Mr. David Rosenberg, Data Reviewer, START Region II, Roy F. Weston, Inc., re: Vega Baja Landfill Data Validation Assessment, January 20, 2000.

P. 202999 - 203223
DocID 107263
Memorandum (with attachments) to Mr. Angel Rodriguez, OSC, Removal Action Branch, U.S. EPA, Region 2, from Ms. Smita Sumbaly, Inorganic Data Reviewer, START Region II, Roy F. Weston, Inc., re: Vega Baja Solid Waste Disposal Site Data Validation Assessment, January 24, 2000.

P. 203224 - 203281
DocID 107264
Memorandum (with attachments) to Mr. Angel Rodriguez, OSC, Removal Action Branch, U.S. EPA, Region 2, from Ms. Smita Sumbaly, Inorganic Data Reviewer, START Region II, Roy F. Weston, Inc., re: Vega Baja Landfill Data Validation Assessment, March 29, 2000.

2.2 Sampling and Analysis Data/Chain of Custody Forms

DataChem Analytical Results

P. 203282 - 203398
DocID 107265
Report: DataChem Analytical Results DCL Set ID No. 99C-0155-01, prepared by Mr. Michael J. Schwendiman, DataChem Laboratories, prepared for Roy F. Weston, July 28, 1999.

P. 203399 - 203521
DocID 107266
Report: DataChem Analytical Results DCL Set ID No. 99C-0155-02, prepared by Mr. Michael J. Schwendiman, DataChem Laboratories, prepared for Roy F. Weston, July 28, 1999.

P. 203522 - 203638
DocID 107267
Report: DataChem Analytical Results DCL Set ID No. 99C-0155-03, prepared by Mr. Michael J. Schwendiman, DataChem Laboratories, prepared for Roy F. Weston, August 2, 1999.

P. 203639 - 203754
DocID 107268
Report: DataChem Analytical Results DCL Set ID No. 99C-0155-04, prepared by Mr. Michael J. Schwendiman, DataChem Laboratories, prepared for Roy F. Weston, August 2, 1999.

P. 203755 - 203873
DocID 107269
Report: DataChem Analytical Results DCL Set ID No. 99C-0155-05, prepared by Mr. Michael J. Schwendiman, DataChem Laboratories, prepared for Roy F. Weston, August 2, 1999.

P. 203874 - 203983
DocID 107270
Report: DataChem Analytical Results DCL Set ID No. 99C-0155-07, prepared by Mr. Michael J. Schwendiman, DataChem Laboratories, prepared for Roy F. Weston, August 2, 1999.

P. 203984 - 204008
DocID 107271
Report: DataChem Analytical Results DCL Set ID No. 99C-0309-03, prepared by Young W. Han, DataChem Laboratories, prepared for Roy F. Weston, December 12, 1999.

2.3 EE/CA Approval Memorandum (for non-time-critical removals)

P. 204009 - 204019
DocID 107272
Memorandum to Mr. Richard L. Caspe, Director, Emergency and Remedial Response Division, Through Mr. Richard C. Salkie, Chief, Removal Action Branch, from Mr. Thomas Budroe, On-Scene Coordinator, Removal Action Branch, U.S. EPA, Region 2, re: Engineering Evaluation/Cost Analysis Approval Memorandum, June 28, 1999.

2.5 Action Memorandum

P. 204020 - 204041
DocID 107273
Memorandum to Mr. Richard L. Caspe, Director, Emergency and Remedial Response Division, Through Mr. Richard C. Salkie, Chief, Removal Action Branch, from Mr. Thomas Budroe, On-Scene Coordinator, Removal Action Branch, and Mr. Angel Rodriguez, On-Scene Coordinator, Enforcement and Superfund Branch, U.S. EPA, Region 2, re: Request for a Removal Action at the Vega Baja Solid Waste Disposal Site, Rio Abajo Ward, Vega Baja, Puerto Rico, August 18, 1999.

2.7 Correspondence

P. 204042 - 204062
DocID 107274
Memorandum to File from Mr. Thomas Budroe, On-Scene Coordinator, Enforcement Management Team, U.S. EPA, Region 2, re: Removal Site Evaluation for the Vega Baja Solid Waste Disposal Site, Rio Abajo Ward, Vega Baja, Puerto Rico, June 25, 1999.

P. 204063 - 204084
DocID 107275
Letter to Mr. Hector Russe, Chairman, Puerto Rico Environmental Quality Board, from Mr. Richard Caspe, Director, Emergency and Remedial Response Division, U.S. EPA, Region 2, re: the attached Removal Site Evaluation for the Vega Baja Solid Waste Disposal Site, Rio Abajo Ward, Vega Baja, Puerto Rico, July 6, 1999.

P. 204085 - 204085
DocID 107276
Letter to Mrs. Norma Santana, Librarian, Municipal Public Library (City Hall), from Mr. Angel C. Rodriguez, On-Scene Coordinator, Enforcement and Superfund Branch, U.S. EPA, Region 2, re: transmittal of record files for the Brisas del Rosario Site to the Vega Baja Municipal Public Library, the designated administrative record facility, November 4, 1999.

2.7 Correspondence

Pollution Reports (POLREPs)

P. 204086 - 204092
DocID 107277
U.S. EPA Initial Pollution Report, POLREP No. 1, Vega Baja Solid Waste Disposal Site, October 19, 1999.

P. 204093 - 204095
DocID 107278
U.S. EPA Pollution Report, POLREP No. 2, Vega Baja Solid Waste Disposal Site, November 5, 1999.

P. 204096 - 204097
DocID 107279
U.S. EPA Pollution Report, POLREP No. 3, Vega Baja Solid Waste Disposal Site, November 8, 1999.

P. 204098 - 204101
DocID 107280
U.S. EPA Pollution Report, POLREP No. 4, Vega Baja Solid Waste Disposal Site, November 26, 1999.

P. 204102 - 204105
DocID 107281
U.S. EPA Pollution Report, POLREP No. 5, Vega Baja Solid Waste Disposal Site, December 6, 1999.

P. 204106 - 204109
DocID 107282
U.S. EPA Pollution Report, POLREP No. 6, Vega Baja Solid Waste Disposal Site, December 11, 1999.

P. 204110 - 204113 U.S. EPA Pollution Report, POLREP No. 7, Vega Baja Solid Waste Disposal Site, December 21, 1999.
DocID 107283

P. 204114 - 204117 U.S. EPA Pollution Report, POLREP No. 8, Vega Baja Solid Waste Disposal Site, January 17, 2000.
DocID 107284

P. 204118 - 204122 U.S. EPA Pollution Report, POLREP No. 9, Vega Baja Solid Waste Disposal Site, January 22, 2000.
DocID 107285

P. 204123 - 204127 U.S. EPA Pollution Report, POLREP No. 10, Vega Baja Solid Waste Disposal Site, January 29, 2000.
DocID 107286

P. 204128 - 204131 U.S. EPA Pollution Report, POLREP No. 11, Vega Baja Solid Waste Disposal Site, February 7, 2000.
DocID 107287

P. 204132 - 204135 U.S. EPA Pollution Report, POLREP No. 12, Vega Baja Solid Waste Disposal Site, February 14, 2000.
DocID 107288

3.0 REMEDIAL INVESTIGATION

3.3 Work Plans

P. 300001 - 300143 Report: Final Work Plan, Volume I, Vega Baja Solid Waste Disposal Site, Remedial Investigation/Feasibility Study, Vega Baja, Puerto Rico, prepared by CDM Federal Programs Corporation, prepared for U.S. EPA, Region 2, October 27, 2000.
DocID 107289

P. 300144 - 300641 Report: Final Quality Assurance Project Plan, Vega Baja Solid Waste Disposal Site Remedial Investigation/Feasibility Study, Vega Baja, Puerto Rico, prepared by CDM Federal Programs Corporation, prepared for U.S. EPA, Region 2, June 11, 2001.
DocID 107290

P. 300642 - 300744 Report: Final Work Plan, Volume I, Vega Baja Solid Waste Disposal Site Remedial Investigation/Feasibility Study, Operable Unit 2 - Soils Investigation, Vega Baja, Puerto Rico, prepared by CDM Federal Programs Corporation, prepared for U.S. EPA, Region 2, June 28, 2002.
DocID 107291

3.4 Remedial Investigation Reports

P. 300745 - 300846
DocID 107292
Report: Drilling Incident Report, Vega Baja Solid Waste Disposal Site Remedial Investigation/ Feasibility Study, Vega Baja, Puerto Rico, prepared by CDM Federal Programs Corporation, prepared for U.S. EPA, Region 2, February 22, 2002. (NOTE: This document is **CONFIDENTIAL.** It is located at the U.S. EPA, Superfund Records Center, 290 Broadway, 18th Floor, N.Y., N.Y. 10007-1866.)

7.0 ENFORCEMENT

7.3 Administrative Orders

P. 700001 - 700026
DocID 107293
Administrative Order In the Matter of the Vega Baja Solid Waste Disposal Superfund Site, Puerto Rico Land Authority; Puerto Rico Housing Department; Municipality of Vega Baja; Motorola Electronica de Puerto Rico, Inc., Respondents, Proceeding Under Section 106(a) of the Comprehensive Environmental Response, Compensation, and Liability Act, as amended, 42 U.S.C. §9606(a), September 16, 1999.

7.7 Notice Letters and Responses - 104e's

P. 700027 - 700027
DocID 107294
Letter to Mr. Richard I. Caspe, Director, Emergency and Remedial Response Division, U.S. EPA, Region 2, from Mr. Patricio Martinez-Lorenzo, re: Vega Baja Solid Waste Disposal Superfund Site, Vega Baja, Puerto Rico, Notice of Potential for Information Pursuant to the Comprehensive Environmental Response, Compensation and Liability Act, 42 U.S.C. §9601 et. seq., June 21, 1999.

P. 700028 - 700029
DocID 108320
Letter to Mr. Richard I. Caspe, Director, Emergency and Remedial Response Division, U.S. EPA, Region 2, from Alberto L. Ramos, Esq., re: Vega Baja Solid Waste Disposal Superfund Site - Vega Baja PR, Request of Additional Time to Submit Information Requested, June 21, 1999.

P. 700030 - 700030
Letter to Ms. Liliana Villatora, New York/ Caribbean Superfund Branch, Office of Regional

DocID 108321 Counsel, U.S. EPA, Region 2, from Patricio Martinez-Lorenzo, Esq., by Ms. Amanda I. Figueroa-Torres, Legal Assistant, re: Vega Baja Solid Waste Disposal Superfund Site, Vega Baja, Puerto Rico, July 13, 1999.

P. 700031 - 700031
DocID 108322 Letter to Ms. Liliana Villatora, New York/ Caribbean Superfund Branch, Office of Regional Counsel, U.S. EPA, Region 2, from Mr. Alberto L. Ramos, re: Request of Extension of Time, Vega Baja Solid Waste Disposal Superfund Site, Vega Baja, Puerto Rico, Notice of Potential Liability Pursuant to CERCLA, July 22, 1999.

P. 700032 - 700033
DocID 108323 Letter to Liliana Villatora, Esq., Assistant Regional Counsel, U.S. EPA, Region 2, re: Vega Baja Solid Waste Disposal Superfund Site, Vega Baja, Puerto Rico, Notice of Potential Liability and Request for Information Pursuant to the Comprehensive Environmental Response, Compensation and Liability Act, 42 U.S.C. §9601 et. seq., from Mr. Patricio Martinez-Lorenzo, July 23, 1999.

7.8 Correspondence

P. 700034 - 700038
DocID 108324 Letter to Mr. Fernando Machado, Executive Director, Puerto Rico Land Authority; Puerto Rico Housing Department, c/o Patricio Martinez-Lorenzo, Esq.; Motorola Semimetales, Inc., c/o Carlos Humberto Dobal, Esq.; Mayor Luis E. Melendez-Cano, Municipality of Vega Baja; Motorola Electronica de Puerto Rico, Inc., c/o Carlos Humberto Dobal, Esq.; and Motorala de Puerto Rico, Inc., c/o Carlos Humberto Dobal, Esq., re: Vega Baja Solid Waste Disposal Superfund Site, Vega Baja, Puerto Rico, Notice of Potential Liability Pursuant to the Comprehensive Environmental Response, Compensation and Liability Act, 42 U.S.C. §9601 et. seq., from Mr. Richard Caspe, Director, Emergency and Remedial Response Division, U.S. EPA, Region 2, July 6, 1999.

P. 700039 - 700043
DocID 108325 Letter to Attached List of Addressees, re: Special Notice Concerning Remedial Investigation/ Feasibility Study for Soil at the Vega Baja Solid Waste Disposal Superfund Site, Vega Baja, Puerto Rico, from Mr. George Pavlou, Director, Emergency and Remedial Response Division, U.S. EPA, Region 2, June 26, 2002.

8.0 HEALTH ASSESSMENTS

8.1 ATSDR Health Assessments

P. 800001 - 800075

DocID 108326

Report: Public Health Assessment for Vega Baja Solid Waste Disposal, Rio Abajo Ward/La Trocha, Vega Baja County, Puerto Rico, prepared by Superfund Site Assessment Branch, Division of Health Assessment and Consultation, Agency for Toxic Substances and Disease Registry, November 30, 1998.

10.0 PUBLIC PARTICIPATION

10.4 Public Meeting Transcripts

P. 10.00001 - 10.00003

DocID 108327

-Public Availability Session Sign In Sheets, Public Availability Session, November 9, 1999.

NOTE: The following volumes of the Vega Baja Administrative Record for the Removal Program are incorporated into this Remedial Administrative Record by reference:

DocID 108335 **Volume 1, May 1999**
DocID 108336 **Volume 2, May 1999**
DocID 108337 **Volume 3, May 1999**
DocID 108338 **Volume 4, September 1999**
DocID 108339 **Volume 5, November 1999**

VEGA BAJA SOLID WASTE DISPOSAL SITE
ADMINISTRATIVE RECORD FILE UPDATE
INDEX OF DOCUMENTS

10.0 PUBLIC PARTICIPATION

10.2 Community Relations Plans

P. 10.0004 - 10.0044 Plan: Community Involvement Plan, Vega Baja Solid Waste Disposal Site, Vega Baja, Puerto Rico, Work Assignment No.: 131-RICO-02HJ, prepared by CDM Federal Programs Corporation, prepared for U.S. EPA, Region II, October 31, 2003.

DocID 108328

VEGA BAJA SOLID WASTE DISPOSAL SITE
ADMINISTRATIVE RECORD FILE UPDATE #2
INDEX OF DOCUMENTS

3.0 REMEDIAL INVESTIGATION

3.4 Remedial Investigation Reports

P. 300847 - 300942
DocID 108329
Report: Final Human Health Risk Assessment for Groundwater, Vega Baja Solid Waste Disposal Site, Remedial Investigation/Feasibility Study, Vega Baja, Puerto Rico, prepared by CDM Federal Programs Corporation, prepared for U. S. EPA Region 2, July 16, 2003.

P. 300943 - 301449
DocID 108330
Report: Final Remedial Investigation Report, Vega Baja Solid Waste Disposal Site, Remedial Investigation/Feasibility Study, Vega Baja, Puerto Rico, prepared by CDM Federal Programs Corporation, prepared for U. S. EPA Region 2, July 18, 2003.

10.0 PUBLIC PARTICIPATION

10.9 Proposed Plan

P. 10.00045- 10.00052
DocID 108331
Superfund Proposed Plan, Vega Baja Solid Waste Disposal, Vega Baja Solid Waste Disposal Superfund Site, Operable Unit One: Groundwater, Vega Baja, Puerto Rico, prepared by U. S. EPA Region 2, November 2003.

P. 10.00053- 10.00061
DocID 108332
Hoja Informativa, Lugar de Superfondo de Vega Baja, Unidad Operacional Uno: Agua Subterránea, Hoja Informativa, Vega Baja, Puerto Rico, prepared by U. S. EPA Region 2, Noviembre 2003.

VEGA BAJA SOLID WASTE DISPOSAL SITE
ADMINISTRATIVE RECORD FILE UPDATE #3
INDEX OF DOCUMENTS

10.0 PUBLIC PARTICIPATION

10.4 Public Meeting Transcripts

P. 10.00062-10.00108
DocID 108333
Transcripcion *Ad Verbatim* de Vista Publica, Celebrada El Dia 4 De Diciembre De 2003 A Las 7:30 De La Noche En La Capilla Del Sector Alturas Brisas del Rosario, Vega Baja, Puerto Rico, prepared by CDM Federal Programs.

P. 10.00109-10.00150
DocID 108334
[Translation] *Ad Verbatim* Transcription of Public Hearing Held On December 4, 2003, At 7:30 P.M. In the Chapel Of Alturas Brisas Del Rosario Sector, Vega Baja, Puerto Rico, prepared by CDM Federal Programs.

VEGA BAJA SOLID WASTE DISPOSAL SITE
ADMINISTRATIVE RECORD FILE UPDATE #4
INDEX OF DOCUMENTS

5.0 RECORD OF DECISION

5.1 Record of Decision

P. 500001 - 500059
DocID 86522

Record of Decision, Vega Baja Solid Waste Disposal Site, Vega Baja, Puerto Rico, Operable Unit 1 - Groundwater, prepared by U. S. EPA, Region 2, April 6, 2004.

APPENDIX IV - STATE LETTER OF CONCURRENCE

GOVERNMENT OF PUERTO RICO
OFFICE OF THE GOVERNOR
ENVIRONMENTAL QUALITY BOARD

Environmental Emergencies Response Area

PUERTO RICO VERDE

July 14, 2010

Eng. Nancy Rodríguez, P.E., Remedial Project Manager
Enforcement & Superfund Branch
Caribbean Environmental Protection Division
US Environmental Protection Agency
Centro Europa Building, Suite 417
San Juan, PR 00907-4127

RE: Vega Baja Solid Waste Disposal Site Proposed Plan Concurrence Letter

Dear Ms. Rodríguez:

The Puerto Rico Environmental Quality Board (PREQB) has completed its review of the aforementioned document. Basically, the Proposed Plan (PP) presents the USEPA preferred remedial alternative to address lead contamination at the site and also includes summaries of all the cleanup alternatives evaluated throughout the Feasibility Study (FS) process. After reviewing the PP and considering all the issues and concerns addressed during the Final Feasibility Study production, the PREQB concurs with the USEPA selection of Alternative 2 (On-Site Consolidation and Cover in the Non-Residential Area with Institutional Controls) as the preferred alternative presented in the PP.

If you have any questions, please feel free to contact Mrs. Enid Y. Villegas-Henríquez, Remedial Project and Support Chief or Mr. Pascual E. Velázquez, Environmental Compliance and Inspection Officer, at (787) 767-8181 extensions 3209 or 3213, respectively, or by e-mail to enidvillegas@jca.gobierno.pr or pascualvelazquez@jca.gobierno.pr.

Cordially,

Genaro Torres León
Acting Director
Emergency Response Program

PV/EYVH

Edificio Agencias Ambientales Cruz A. Matos
Ave. Ponce de León 1375, San Juan, PR 00926-2604
Apartado 11488, Santurce, PR 00910
Tel. 787-767-8181 Fax 787-756-5906

APPENDIX V - RESPONSIVENESS SUMMARY

RESPONSIVENESS SUMMARY
Record of Decision
Vega Baja Solid Waste Disposal Site
Operable Unit 2

INTRODUCTION

A responsiveness summary is required by the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) promulgated under the Superfund statute. It provides a summary of citizens' comments and concerns received during the public comment period, as well as the response of the United States Environmental Protection Agency (EPA), to those comments and concerns. All comments summarized in this document have been considered by EPA in making its decision as embodied in the Record of Decision for the Vega Baja Solid Waste Disposal Site (the Site).

SUMMARY OF COMMUNITY RELATIONS ACTIVITIES

The Community Involvement Plan (CIP) was prepared for the Site in October 2003. The CIP included a community profile and contact list, and has also been used by EPA for its community outreach efforts at the Site. The complete Administrative Record (AR) has been made available for public review at the following information repositories:

Caribbean University Vega Baja Campus
Carr 661, Sector El Criollo,
Vega Baja , Puerto Rico 00964

Vega Baja City Hall (*OU2 AR only*)
No, 1 Francisco Nater Street
Vega Baja, Puerto Rico

US EPA Caribbean Environmental Protection Division
Centro Europa Building
1492 Ponce de Leon Avenue, Suite 417
San Juan, Puerto Rico 00908

Puerto Rico Environmental Quality Board
Emergency Response and Superfund Program
Edificio de Agencias Ambientales Cruz A. Matos
Urbanización San José Industrial Park
1375 Avenida Ponce de León
San Juan, Puerto Rico 00926-2604

U.S. EPA Records Center, Region 2
290 Broadway, 18th Floor
New York, New York 10007-1866

The Proposed Plan was prepared by EPA, in consultation with the Puerto Rico Environmental Quality Board (PREQB), and released to the public in July 2010. A notice of the Proposed Plan and public comment period was placed in the Primera Hora and El Vocero newspapers on July 28, 2010 consistent with the requirements of the NCP. Flyers were also distributed to residents of Brisas del Rosario, and left at various commercial stores to announce the date and location of the public meeting. The Proposed Plan was made available for review at the information repositories for the Site. The public comment period was scheduled from July 29, 2010 to August 29, 2010. EPA hosted a public meeting on August 3, 2010 to discuss the Proposed Plan. At this meeting, representatives from EPA and PREQB answered questions about the contamination at the Site and the remedial alternatives.

OVERVIEW

Alternative 2, Removal with On-Site Consolidation and Cover in the Non-Residential Area, provides for removal of lead-contaminated soils in the Residential Area yards and the Drainage Ditch where lead concentrations are above the cleanup goal of 450 milligrams per kilogram (mg/kg), and removal of Trash Mound materials. Removed materials will be transported to the Non-Residential Area and consolidated. Approximately 8.5 acres of the Non-Residential Area where soil lead concentrations are above the Site cleanup goal and/or trash mound materials are present would then be covered with a soil cover system. Institutional controls will be established to address uncharacterized areas beneath buildings and pavements and to prevent the disturbance of soil covers.

A summary of comments and EPA's responses involving the remedial investigation and feasibility study (RI/FS), Proposed Plan, and Superfund process with respect to the Vega Baja Solid Waste Disposal Site (OU 2) are provided below. Comments received and responses provided during the public meeting held on August 3, 2010 appear in Section I. Written comments received by EPA during the public comments period, and EPA's responses, appear in Section II.

Attached to this Responsiveness Summary are the following Appendices:

Attachment A - Proposed Plan
Attachment B - Public Notice, Flyer, Proposed Plan Fact Sheet
Attachment C - Letters Submitted During the Public Comment Period
Attachment D - Transcript of the August 3, 2010 Public Meeting, English Translation of the Public Meeting Transcript

SUMMARY OF COMMENTS AND EPA'S RESPONSES

I. ORAL COMMENTS FROM THE PUBLIC MEETING

Risk Assessment

Establishment of Cleanup Criteria

Comment # 1: During the presentation, it was mentioned that work was going to be carried out in areas with 450 ppm (parts per million) or more of lead contamination. If the maximum level of exposure recommended is 400 ppm, what is going to happen in areas that have 401 to 449 ppm?

Response # 1: The 400 ppm lead level represents a default value when using the IEUBK model to develop health risk-based cleanup levels. The model does allow for the use of site-specific data to develop cleanup levels. In the case of the Vega Alta Site, data was collected involving lead concentrations in household dust and tap water and this data was used in the model to calculate acceptable lead levels in Site soil. This exercise resulted in a potentially acceptable range for lead of 566 to 605 ppm. However, because of other factors including IEUBK model uncertainties (e.g., household dust data collection), community concerns, and technical issues

(e.g., potential ecological risks), EPA adopted a more conservative cleanup level of 450 ppm. EPA believes that removing lead-contaminated soil above this concentration will result in a remedy that protects both human health and the environment. Consequently, no action is anticipated on properties with lead levels below 450 ppm.

Long-Term Risk

Comment # 2: What does long-term risk mean to people who live here? How many years is considered long term?

Response # 2: An imminent risk to the public health is considered immediate. That is why in the Brisas del Rosario neighborhood, EPA removed contaminated soil at concentrations that were sufficiently high to represent an immediate risk. When considering long-term risk, the time period is 30 years. It is the risk that could potentially exist if a person is exposed to a certain concentration of lead over a 30-year period. The concentration of lead derived from the risk assessment is believed to be conservative enough to ensure that no adverse effect on human health or the environment will occur from lead exposure at the Site.

The cleanup process is not expected to take 30 years. The remedial design and actual cleanup action will begin after the federal court has entered a Consent Decree, negotiated between the U.S. Department of Justice (DOJ) acting on behalf of EPA, and the responsible parties, which provides for implementation of the selected remedy or in the case that the parties are not able to negotiate an agreement, EPA issues a Unilateral Order to the parties to perform the cleanup and/or provides the funding for it.

Comment # 3: Contaminated properties are going to be cleaned up as presented on the map. What is the impact on the people who have been living on these properties, some of them for as long as 50 years?

Response # 3: Conservative hypothetical scenarios are used in the risk assessment process to assess long-term exposure. Risk assessments tend to assume the worst, most conservative exposure situations for all residents and then make cleanup decisions to ensure that human health is protected. Also, as indicated in a later response to a comment in this document, EPA can refer this health impact issue to the Agency for Toxic Substances and Disease Registry.

Evaluation of Remedial Alternatives

Protection of Human Health

Comment # 4: I live in Villa Pinares and am concerned that the alternative chosen be the one that is most beneficial to the residents' health. I have observed in my neighborhood that when it rains, water percolates down into the subsoil. If the chosen alternative is to leave the contamination in place, will there be cement or other material to cover the contaminated soil so water won't percolate down into the subsoil and possibly contaminate a well in my neighborhood? I wanted to state that the alternative chosen be the one that will be most beneficial to the health of the residents here.

Response # 4: There are nine criteria that alternatives are screened against. The first criterion is that the alternative provides for the protection of human health and the environment. EPA would not choose an alternative based only on cost that would put the residents' health at risk. Also, it is a collaborative effort. EPA seeks input from the public and other stakeholders and considers community preferences before selecting a remedial alternative for a site. It is only after the comment period that a final decision is made as to the chosen alternative. The preferred remedial action includes the removal of lead-contaminated soil from residential properties and consolidation of that material in a non-residential area. A soil cover will be placed over the consolidated material to prevent direct human contact. An impermeable cover is not planned since the lead has not been found to leach from the contaminated soil to the groundwater. Excavated soil will be tested and any material determined to be not suitable for consolidation will be either treated prior to placement or transported to an appropriate disposal facility.

Comment # 5: My neighbor brought a machine and then started to gather up the waste and it affected my lot. Then, half of my lot was cleaned up. I was told they would return to clean the rest of my lot but they never returned.

Response # 5: If possible, it is recommended that you stay after the meeting to identify your property on the map and discuss your particular situation.

Schedule

Comment # 6: How long will it take, from the start of the process until its conclusion, for the Site to be cleaned up since this will affect my ability to obtain title to my property from the Puerto Rico Housing Authority?

Response # 6: Once the public comment period concludes and the Record of Decision (ROD) is issued, negotiations will be held between DOJ (on behalf of EPA) and the responsible parties to negotiate the terms of a Consent Decree that must be entered in federal court under which the responsible parties agree to perform the selected remedial design and remedial construction. If no Consent Decree is entered, EPA will have to make the decision to either issue a UAO to the parties requiring them to implement the remedy or provide the federal fundind for it. At this point, the actual preparation for remediation can begin. EPA will keep the public apprised on the status of this effort and provide the public with schedules for the design and construction activities once they become available.

Comment # 7: When are you going to start the cleanup and how long will it take? What happens with the houses that do not have all of their land contaminated with lead but still have patches contaminated with lead?

Response # 7: As indicated above, once detailed schedules become available in connection with the design and subsequent cleanup work, EPA will provide that information to the public and particularly to the affected residents. This information is expected to identify the areas to be excavated, truck entry and exit routes, etc. EPA will inform the community in advance of the work by handing out flyers, contacting the community leaders, and conducting another public meeting. In regard to the question about sections or patches of properties with contaminated soil above the 450 ppm cleanup goal, that material will be removed.

Groundwater Issues

Comment # 8: A concerned citizen brought up the importance of protecting the karst areas of the North Coast of Puerto Rico especially related to aquifer recharge.

Response # 8: Comment was noted. A groundwater remedial investigation was conducted at the Vega Baja Site under OU1. The documents generated during the investigation are included in the administrative record for the Site.

II. WRITTEN COMMENTS RECEIVED DURING THE PUBLIC COMMENT PERIOD (JULY 29, 2010 – AUGUST 29, 2010)

Comment from Brisas del Rosario Residents

Site Characterization

Residential Soil Screening

Comment # 1: After analyzing what EPA tells us, I don't understand how is it possible that my property is not contaminated when a test performed showed lead. In addition, the property on the east will be cleaned up, the property on the south, on the west and the drainage ditch to the north are all on the list for being cleaned up.

Response # 1: X-ray fluorescence (XRF) analysis, a screening tool, was initially used to choose properties for further investigation in the OU2 RI. Those properties identified for further investigation were then sampled for lead using the method outlined in EPA's Lead Guidance. Based on these results, a property was included in the feasibility study if a property sector composite sample was above the 450 ppm screening criteria. The results of your property were below the screening criteria at all sample depths. Two areas of your property that were backfilled were not sampled during the OU2 RI but will be included in the pre-design investigation to determine if lead contamination is present.

Comment # 2: I'm not in agreement with the results since the more I dig, the more landfill soil comes out. In the last test, they took soil from an area that I backfilled.

Response # 2: As indicated above, the lead concentrations at your property were below screening criteria. Properties included in the feasibility study had contamination above risk levels (screening criteria). The existence of landfill materials on a property without lead contamination above screening criteria would not warrant cleanup at that property under CERCLA as per EPA's Lead Guidance.

Risk Assessment

Establishment of Cleanup Criteria

Comment # 3: Another thing is that Mr. Ramon Torres said that the standard was 400 mg/kg. Now, it is 450 mg/kg. Was this done to avoid cleaning up some properties?

Response # 3: The difference in the two cleanup values you reference is due to the data that was used to calculate a soil lead concentration that is protective of human health. The value of 400 mg/kg was calculated using default values for tap water and indoor dust that were obtained from a nationwide database. Additional data was collected from homes within Vega Baja to obtain more specific information for tap water and indoor dust lead concentrations in the community. The results of the data collected at Vega Baja show that there is less lead in the tap water and indoor dust compared to other areas of the United States. By using this localized data in the IEUBK model, a higher lead concentration in soil was determined to be protective of human health.

Comment # 4: I'm concerned about the long term since some of us have been here for a long time. And I would say that time is up.

Response # 4: In performing the risk assessments, EPA evaluated 30 years of exposure which is standard time period, and the risks and hazards were within acceptable values. Our analysis indicated that lead was the chemical of greatest concern, and we will be remediating the Site for lead which will eliminate or reduce exposure to lead in the future.

Comment # 5: There has not been any importance given to health here. There are many people with conditions involving their skin, kidneys, and even cancer. I know that happens everywhere but when there is a cause like here. Many people stay quiet because they are afraid they will be forced to leave since they have no titles, and to many, the titles are more valuable than health.

Response # 5: EPA followed standard procedures for evaluating the nature and extent of contamination in the Vega Baja area and identified sources of lead that require remediation. Although there were other compounds detected in the soil samples, their concentrations were not elevated above human health values. EPA is concerned about the health of the residents. We do not have the authority or expertise to undertake health studies. However, we will refer your concern to the Agency of Toxic Substances and Disease Registry, which is a federal government agency that works closely with EPA to evaluate health concerns in communities, so that they can determine if a health study should be undertaken.

Evaluation of Remedial Alternatives

Cost

Comment # 6: Supposedly, over $3 million were spent on three properties. With $4 million, will the rest be cleaned up?

Response # 6: Yes, the cost estimate presented in the feasibility study was developed using appropriate RI/FS guidelines. The amount is expected to be sufficient to implement the preferred remedy and is designed to meet the remedial action objectives.

Comment Letter from the PRP Group

Comment # 1: The Group supports EPA's Preferred Alternative (Alternative 2) as the most appropriate alternative based on the criteria established in the National Contingency Plan (NCP).

Furthermore, the effectiveness of the Alternative 2 approach has already been demonstrated at the Site by the Group. In 2004, some trash mound materials in the residential area were the subject of an unauthorized disturbance, creating a physical hazard. At EPA's request, the Group responded by removing the rest of the materials, consolidating them in the Non-Residential Area, and covering them consistent with Alternative 2. This action has been effective in protecting human health and the environment. EPA's Preferred Alternative adopts the same approach for impacted soils and remaining trash mounds in the Residential Area, as well as the Drainage Ditch. The associated engineered barrier cover in the Non-Residential Area will be subject to regular inspection and maintenance to ensure its proper performance into the future.

Response # 1: Comment noted.

Comment # 2: Page 12 of the Proposed Plan (as well as EPA's presentation at the August 3, 2010 public meeting) indicates that a different alternative (Alternative 3) would have higher long-term effectiveness and permanence than the Preferred Alternative. However, it should be noted that under Alternative 3, impacted materials would simply be moved to another location where they would need to be managed in the same way as under Alternative 2 to maintain long-term effectiveness and permanence. In addition, given the large volume of materials (approximately 90,000 cubic yards) that would be transported through the Site under Alternative 3, the impacts to the community would be much greater than for Alternative 2. Transportation of contaminated materials over substantial distances would be necessary to reach a suitable disposal site, increasing the risk involved in implementing the remedy (both to the wider community and to remediation workers). Alternative 3 would also involve a much higher level of resource consumption (primarily fuel) and air emissions compared to EPA's preferred alternative (Alternative 2).

Response # 2: Comment noted.

Comment # 3: As indicated in the Proposed Plan (page 12), Alternative 2 is the most implementable alternative; however, EPA's presentation during the public meeting on August 3, 2010 did not indicate that this alternative was ranked highest for implementability. It should be noted that Alternative 3, in particular, has significant implementation challenges. As discussed in the Feasibility Study, in a February 18, 2010 presentation entitled "Solid Waste Management in Puerto Rico: Realities, Facts and Figures," the Puerto Rico Solid Waste Authority stated that "Puerto Rico's situation regarding waste management is critical" and it indicated that by the year 2014, ten of the existing 24 landfills in Puerto Rico will likely be closed, and by 2020, only four landfills will still be in operation at the current rate of waste disposal. This suggests that finding an appropriate disposal facility able to accept nearly 90,000 cubic yards (about 135,000 tons) of lead-contaminated soil will be difficult and the soils may need to be transported a significant distance to an appropriate and available landfill. Indeed, in connection with the removal action performed at this Site several years ago when landfill space was more readily available, EPA stated that "The number of landfills on Puerto Rico capable of accepting the contaminated soils generated at the Site is very limited."

Response # 3: Comment noted.

Comment # 4: The cleanup goal of 450 mg/kg for lead that is presented in the approved Feasibility Study and in the proposed plan was selected by EPA, despite scientific evidence that

a higher value would be appropriate. For example, blood lead testing of child residents at the Site conducted in 1998 by the Agency for Toxic Substances and Disease Registry (ATSDR) did not exceed the health-based criterion established by the Centers for Disease Control. Furthermore, EPA's IEUBK model was used by the Group to develop a site-specific preliminary remedial goal range of 566 to 613 mg/kg. The Group recommended a cleanup level of 550 mg/kg based on the IEUBK-calculated range. This cleanup level would also be protective of populations of ecological receptors. EPA stated on page 8 of the Proposed Plan that "Final cleanup level selection for Superfund sites generally is based on the IEUBK model results and the nine criteria analysis per the National Contingency Plan (NCP), which includes an analysis of ARARs." However, EPA's selection of the cleanup level in this case does not appear to have been based on this approach – rather, it is a more conservative value close to EPA's generic residential screening level of 400 mg/kg. The Group maintains that a cleanup level of 550 mg/kg would be consistent with EPA's practice and would be equally protective at the Site.

Response # 4: The PRP Group should recognize that the IEUBK model is not the only factor considered by EPA in establishing appropriate cleanup levels for Superfund sites. As indicated, the nine criteria analysis under the NCP, which includes community preferences and acceptance, also is an important consideration.

The Superfund Lead-Contaminated Residential Sites Handbook (EPA 2003) states "Final cleanup level selection for Superfund sites generally is based on the IEUBK model results and the nine criteria analysis per the National Contingency Plan (NCP), which includes an analysis of ARARs." There are a variety of lead screening levels and cleanup goals that have been referenced, used, or calculated for the Vega Baja Site. These are briefly outlined below.

For the protection of human health, EPA's Regional Screening Levels for Chemical Contaminants at Superfund Sites (December 2009 version) identifies the generic screening level for lead in residential soil as 400 mg/kg, a value that has been used by EPA for many years. This generic screening level was developed utilizing the default assumptions in the IEUBK model and setting the soil concentration to a level that achieves less than a 5% likelihood that blood lead levels would exceed 10 ug/dL in children exposed to lead at home. The actual soil concentration determined in this way using the IEUBK model is 418 mg/kg, which EPA rounded down to 400 mg/kg. EPA used 400 mg/kg as the cleanup level for an earlier action on residential properties at the Site under its Removal Program.

The initial calculation of a site-specific Preliminary Remediation Goal (PRG) or lead cleanup goal using the IEUBK model and site-specific parameters resulted in a soil concentration range of 466 to 505 mg/kg. Based on this range of values, EPA recommended a lead cleanup level of 450 mg/kg for the Site. It was later discovered that the IEUBK model software had been updated. The updated version of the model (IEUBKwin Version 1.1, Build 11) produced a site-specific PRG range of 566 to 613 mg/kg when utilizing tap water lead data and a range of soil-to-dust lead correlation coefficients (based on a regression of soil lead and indoor dust lead measurements collected during the RI).

The protection of ecological receptors was considered through the Screening Level Ecological Risk Assessment ("SLERA") process. Based on the results of the SLERA, avian receptors (represented by the Red-legged thrush and the Northern bobwhite) were found to have the potential for unacceptable risk, with the thrush being the most sensitive receptor. Using the

SLERA results, EPA recommended an ecological-based PRG of 174 mg/kg for lead to protect individuals within the avian community, while recognizing that the goal of ecological risk management is to protect ecological populations (as distinct from individuals). A population-level evaluation was undertaken using the initial human health PRG of 450 mg/kg. It indicated that a cleanup based on 450 mg/kg would be protective of ecological populations.

This information is summarized in the table below as presented in the Feasibility Study.

PRG Description	Value (mg/kg)	Comment
Generic EPA Regional Screening Level for Superfund	400	Used as the default screening and cleanup goal within the agency. Developed using default parameters in the IEUBK model with rounding applied to the result. Cleanup level used for three properties at Vega Baja cleaned up under EPA Removal Program.
Site-specific IEUBK cleanup value using site-specific tap water and indoor dust data	566 – 613	This range of cleanup values was determined using the current version of the IEUBK model and a range of soil-to-dust lead correlation coefficients based on site-specific sampling data and using the average (mean) tap water lead concentrations measured during the Remedial Investigation.
Ecological protective value using "Rule of Five"	174	
Site-specific concentration that is protective of ecological populations	>450	An evaluation performed for the Site indicated that a human health-based cleanup level of 450 mg/kg would also be protective of ecological populations; higher concentrations were not evaluated.

In addition to the above information, EPA considered other factors in establishing a cleanup goal for lead at the Site. These include:

- EPA's 2008 "Guidance for the Sampling and Analysis of Lead in Indoor Residential Dust for Use in the Integrated Exposure Uptake Biokinetic

(IEUBK) Model" recommends the use of high-volume cyclonic vacuum samplers for dust sample collection because they generally have greater precision and collection efficiency than the low-flow method used at the time of the RI.

- EPA determined that a lead concentration of 174 mg/kg would achieve acceptable risk levels for ecological receptors when evaluated on the basis of individuals (as opposed to populations). The protection goal for ecological receptors is focused on protecting populations instead of individuals. Although a higher cleanup goal (i.e., 450 mg/kg) was also found to be protective of ecological receptors, a comprehensive evaluation to determine the maximum lead concentration (i.e., greater than 450 mg/kg) that is still protective of ecological populations has not been conducted.
- There are very few areas of the Site where lead concentrations are within the range of potential cleanup values (i.e., most of the measured lead concentrations are either less than 450 mg/kg or greater than 550 mg/kg). Thus, the total cleanup cost may not vary significantly within the range of cleanup values. EPA believes that the additional protectiveness associated with lead remediation based on a more conservative cleanup level (i.e., lower than the values calculated from EPA's current IEUBK model using site-specific data) is sufficient to warrant the additional cost.
- EPA also is concerned that the use of significantly different cleanup levels at the Site may create confusion on the part of the community. EPA's previous time-critical removal action employed a cleanup level of 400 mg/kg. Comments from the public have questioned the use of 450 mg/kg for the upcoming remedial action.

Based on the above considerations, a cleanup level of 450 mg/kg has been established for the Site (residential area, trash mounds, drainage ditch and undeveloped area). EPA believes a cleanup to this level is entirely appropriate and consistent with its mission to protect human health and the environment

Comment # 5: Page 7: The Proposed Plan states that arsenic and manganese concentrations are "similar to background;" however, the analyses performed as part of the Remedial Investigation indicate no statistical difference between concentrations of these compounds in background and on the Site.

Response # 5: As part of the Remedial Investigation, samples were collected from on-site areas and from off-site areas (i.e., background locations). Samples were analyzed for inorganic compounds that were found in both on-site and off-site areas, with arsenic and manganese being included in the analyses. There are two possible outcomes from this type of statistical analyses - concentrations detected in both areas are found to be statistically different or concentrations are found to have no statistical difference. Concentrations that are found to be statistically different indicate that the detected concentrations are different (i.e., on-site concentrations are significantly higher or lower than the backgound concentrations) and concentrations that are found to have no statistical difference indicate that on-site and off-site concentrations are not

different, or said another way, similar to each other. Therefore, since the statistical analyses reported in the Remedial Investigation for arsenic and manganese found no statistical differences, the conclusion that the on-site concentrations are similar to background is accurate.

Comment # 6: Page 7: The Proposed Plan states that risks associated with thallium could be re-evaluated during the Remedial Design. However, the NCP requires that the cleanup approach be unambiguously determined in EPA's Record of Decision. Re-evaluation of remedies thereafter may occur only via EPA's Five-Year Review process.

Response # 6: If new information becomes available indicating a concern about the presence of a contaminant, EPA has the authority under CERCLA to address that contaminant at anytime during the process. Waiting for a five-year review to do so would be irresponsible and inconsistent with EPA's mission to protect public health and the environment.

Comment # 7: Page 7: The Proposed Plan states that the results of IEUBK and ALM modeling indicated a potential to cause "an increase in blood lead" defined as "greater than 5% of the population exceeding 10 ug/dL of lead in the blood." This description of the results of IEUBK and ALM modeling is not accurate. These models predict whether lead concentrations in soil are likely to result in a 5% probability that any single individual's blood lead level will exceed 10 ug/dL. Furthermore, blood sampling performed on all pre-school aged children at the Site in 1998 indicated no detections of lead in blood at concentrations greater than 10 ug/dL.

Response # 7: EPA acknowledges that the general description of the IEUBK and ALM model is not presented clearly. As noted above, the IEUBK does predict the probability of an individual (in the population experiencing the modeled exposures) exceeding the level of concern (10 µg/dL). This is different than 5% of the population exceeding the level of concern. Determining whether the population is above or below the predicted probability would require knowing the actual exposures for the population and having a blood lead study (not a survey) of a statistical sample of the children that is representative for the exposures. The second point regarding blood lead monitoring results is immaterial to the discussion of risk, and for the exact reason stated above. For any exposure scenario, one would expect the population of children exposed to the same concentrations in the contaminated media to have a variety of lead concentrations (which vary depending on inter-individual variability in media intakes [e.g., daily average intakes of soil-derived dust, drinking water, or food], absorption, and biokinetics). The model simulates the combined impact of these sources of variability as a lognormal distribution of blood lead concentration (for children exposed to the same media lead concentrations). This lognormal distribution of lead concentrations is used to predict the probability of exceeding the level of concern within a population of similarly exposed children.

Comment # 8: Page 7: The Proposed Plan states that "A cleanup value of 450 mg/kg was determined to be protective of avian populations that use the Site." It should be noted that, because avian receptors are the most sensitive to lead, protection of avian populations ensures protection of all ecological receptors evaluated for the Site. In addition, 450 mg/kg was evaluated because it was selected by EPA as the cleanup level for protection of human health; however, higher concentrations of lead are also protective of ecological receptor populations.

Response # 8: As indicated above, cleanup levels above 450 mg/kg were not evaluated for protection to ecological receptors. Therefore, no conclusions about higher concentrations can be reasonably drawn.

Comment # 9: Page 12: The short-term effectiveness criterion also includes consideration of the time to achieve remedial goals. It should be noted that Alternative 2 is expected to achieve remedial goals in a shorter time frame than Alternatives 3 and 4.

Response # 9: The comment is noted.

RESPONSIVENESS SUMMARY
Appendix A –Proposed Plan

Superfund Program
Proposed Plan

U.S. Environmental Protection Agency, Region 2

Vega Baja Solid Waste Disposal Superfund Site
Operable Unit 2: Soils
July 2010

EPA ANNOUNCES PROPOSED PLAN

This Proposed Plan identifies the Preferred Alternative to address soil contamination at the Vega Baja Solid Waste Disposal Superfund Site in Vega Baja, Puerto Rico, and provides the rationale for this preference. Alternatives have been developed to address contaminated soils.

The U.S. Environmental Protection Agency's (EPA's) Preferred Alternative to address soil contamination is Alternative 2, Removal with On-Site Consolidation and Cover in the Non-Residential Area. This remedy will also include Institutional Controls to address certain uncharacterized areas beneath buildings and pavements and to prevent the disturbance of soil covers. A groundwater investigation was conducted at the site as part of the Operable Unit 1 (OU-1) Remedial Investigation (RI). This investigation concluded that groundwater has not been impacted by site-related contaminants. A No Action Record of Decision (ROD) for OU-1 was signed in April 2004.

This Proposed Plan includes summaries of all the cleanup alternatives evaluated for the site. This document is issued by EPA, the lead agency for site activities, and the Puerto Rico Environmental Quality Board (PREQB), the support agency. EPA, in consultation with PREQB, will select the final remedy for lead-contaminated soils after reviewing and considering all information submitted during a 30-day public comment period. EPA, in consultation with PREQB, may modify the preferred alternative or select another response action presented in this Proposed Plan based on new information or public comments. Therefore, the public is encouraged to review and comment on all the alternatives presented in this document.

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, commonly known as Superfund). This Proposed Plan summarizes information that can be found in greater detail in the Remedial Investigation and Feasibility Study (RI/FS) reports and other documents contained in the Administrative Record (AR) for the site.

MARK YOUR CALENDAR

PUBLIC COMMENT PERIOD:
July 29, 2010 – August 29, 2010
EPA will accept written comments on the Proposed Plan during the public comment period.

Written comments should be addressed to:

Nancy Rodriguez, PE,
Remedial Project Manager
United States Environmental Protection Agency
Caribbean Environmental Protection Division
1492 Ponce de Leon Avenue - Suite 417
San Juan, PR 00908
Telephone: (787) 977-5887
Fax: (787) 289-7104
Internet: rodriguez.nancy@epa.gov

PUBLIC MEETING: August 3, 2010 at 6:00 pm
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 the Catholic Chapel located at Principal Street, Brisas del Rosario Community, Río Abajo Ward, Vega Baja, PR.

The administrative record file, which contains the information upon which the selection of the response action will be based, is available at the following locations:

Caribbean University Vega Baja Campus
Carr 661, Sector El Criollo,
Vega Baja , PR 00964
Attn: Lydia Ponce
(787) 858-3668 Ext. 3315
Hours: Monday – Friday 9:00am to 5:00pm

Vega Baja City Hall
No, 1 Francisco Nater Street
Vega Baja, PR
(787) 855-2500
Hours: Monday – Friday 9:00am to 3:00 pm
* ***Note: AR for OU-1 not available at this location***

US EPA Caribbean Environmental Protection Division
Centro Europa Building
1492 Ponce de Leon Avenue, Suite 417
San Juan, Puerto Rico 00908
(787) 977-5865
Hours: Monday – Friday 9:00am to 5:00pm
By Appointment

Puerto Rico Environmental Quality Board
Emergency Response and Superfund Program
Edificio de Agencias Ambientales Cruz A. Matos
Urbanización San José Industrial Park
1375 Avenida Ponce de León
San Juan, PR 00926-2604
(787)767-8181 ext 3207
Hours: Monday – Friday 9:00am to 3:00 pm
By appointment

U.S. EPA Records Center, Region 2
290 Broadway, 18th Floor.
New York, New York 10007-1866
(212) 637-4308
Hours: Monday-Friday - 9 am to 5 pm
By appointment.

SITE DESCRIPTION

The 72-acre Vega Baja Solid Waste Disposal Site is located in the Rio Abajo Ward of Vega Baja, Puerto Rico. The site includes a 55-acre residential area known as Comunidad Brisas del Rosario, containing 213 dwellings and a 17-acre undeveloped, uninhabited area. The Vega Baja Site is situated on relatively flat terrain and is surrounded by residential areas to the north, east and west. To the south, the site is bordered by conical limestone hills known as mogotes. Four "trash mounds," believed to contain trash associated with the former solid waste disposal operations as well as native soils, rocks and boulders, were present within the residential area of the site and were up to 10 feet in height.

SITE HISTORY

From 1948 to 1979, the municipality of Vega Baja offered and used the site as an unlined solid waste disposal and open burning facility for commercial, industrial and domestic wastes. An estimated 1.1 million cubic yards of waste were either disposed of or burned at the facility. In the late 1970s, local residents began constructing homes on sections of the uncapped waste disposal area. Two hundred and thirteen houses were built on top of the landfill and soil contaminated with lead, arsenic and pesticides.

Based upon historical aerial photographs, disposal activities were largely concentrated in the southwestern portion of the now developed area, and in the northern portion of the undeveloped area of the site. During the period of disposal, the site was owned by the Puerto Rico Land Authority. In 1984, the Puerto Rico Land Authority attempted to transfer approximately 55 acres of the property to the Puerto Rico Housing Department. The Puerto Rico Housing Department has subsequently attempted to give deeds to several residents; however, it is not clear in the records which residents hold deeds to their properties, if any. The other portions of the site remain under the ownership of the Puerto Rico Housing Department or the Puerto Rico Land Authority.

Previous Environmental Investigations

Various environmental investigations and removal actions have been conducted at the site since 1994 under the direction of the EPA and the PREQB. These activities are summarized below.

1994 – Site Inspection

The EQB conducted a Site Inspection in May 1994 that consisted of the collection of five surface soil samples from five residential properties, one background soil sample, five sediment samples from the site drainage ditch and the Rio Indio, and two groundwater samples from upgradient and downgradient municipal wells.

1996 – Expanded Site Inspection

The EQB and EPA's Superfund Technical Assistance and Response Team (START) conducted an expanded Site Inspection between June and August 1996 that consisted of the collection of surface soil, sediment, surface water and groundwater samples. Surface soil samples were collected from residences and analyzed for lead using on-site X-Ray Fluorescence (XRF) and confirmatory laboratory analysis of 153 samples for Target Compound List (TCL) and Target Analyte List (TAL) parameters. A total of six sediment and five surface water samples were collected from the drainage ditch and the Rio Indio and

analyzed for TCL and TAL parameters. Groundwater samples were collected from upgradient and downgradient water supply wells.

1998 – Limited Groundwater Study
START conducted a groundwater investigation between April and June 1998 that included the installation and sampling of three groundwater monitoring wells (depths ranged from 195 to 215 feet below ground surface) and seven water supply wells. Samples were analyzed for TCL and TAL parameters.

1998 – Phase I, II and III Soil Sampling
The EPA conducted three phases of soil sampling activities between April and December 1998 that included the collection of 3,693 surface soil samples. Phase I samples were collected throughout the residential area, the undeveloped area in the southern area of the site and along the drainage ditch. A total of 814 samples were analyzed for lead using XRF, and ten percent of the samples were sent to a laboratory for confirmatory analysis. The confirmatory samples were also analyzed for volatile organic compounds (VOCs), base-neutral acids (BNAs), pesticides and polychlorinated biphenyls (PCBs). Phase II included the collection of 2,823 soil samples from 213 residences, which were analyzed for lead using XRF. A total of 283 samples were sent to a laboratory for confirmatory lead analysis. At residences where lead concentrations were equal to or greater than 400 milligrams per kilogram (mg/kg), biased sampling was conducted based on previous sampling results, and samples were taken at the ground surface, and 1- and 2-foot depths. At residences where previous lead concentrations were found to be below 400 mg/kg, either surface soil samples were taken on a regular grid or samples were taken at 1-foot depths. Phase III consisted of the collection of 56 soil samples from the trash mounds, which were analyzed for lead using XRF techniques. Ten percent of these samples were also sent to a laboratory for confirmatory analysis.

1998 ATSDR Blood Lead Testing
The Agency of Toxic Substances and Disease Registry (ATSDR) and Puerto Rico Department of Health conducted a blood lead study of children who lived at the site. None of the blood lead levels in the children (blood was analyzed from all preschool-aged children at the site) exceeded the Center for Disease Control and Prevention action level of 10 micrograms per deciliter (ug/dL - the maximum measured concentration was 8.4 ug/dL).

1999 – NPL Listing
The site was included on the National Priorities List (NPL) in July 1999 based on a Hazard Ranking System (HRS) Evaluation conducted in February 1999. The main contaminants identified were lead and arsenic in residential surface soil samples.

2001 – Dioxin Sampling
EPA's Response Engineering and Analytical Contract (REAC) Team collected 10 surface soil samples for dioxin analysis. Based on the results, it was concluded by EPA that dioxins were not a contaminant of concern.

1999 to 2001 – EPA Removal Action
EPA conducted removal actions at two residential properties, 5569 Alturas Street and 5460 Los Angeles Street, and at 5571 Alturas Street where a church building is located. Lead-contaminated soils and trash were removed and disposed off-site between October 1999 and September 2001.

1999 to 2004 – OU-1 Groundwater Investigation
CDM Federal Programs initiated the Remedial Investigation and Feasibility Study (RI/FS) for Groundwater (OU-1) on behalf of EPA in September 1999. The OU-1 RI included an ecological survey, the installation of seven monitoring wells, and sampling of groundwater, surface water, sediment, soil, and springs/seeps. Based on the results of the investigation, EPA issued a Record of Decision in April 2004 selecting no further action for groundwater.

2003 Consent Order
In April 2003, EPA completed its negotiation with the identified Potentially Responsible Parties (PRPs) and signed a Consent Order in which the PRP agreed to conduct a Remedial Investigation and Feasibility Study for Operable Unit 2 (OU2) Soils. EPA identified as PRPs the following entities: Municipality of Vega Baja (operator), Puerto Rico Housing Department (owner), Puerto Rico Land Authority (owner), Motorola (generator), Pfizer (generator), Puerto Rico Electric Power Authority (generator), and Browning-Ferris Industries of Puerto Rico (transporter).

2004 PRPs Removal Action
In March 2004, EPA advised the PRPs that an unauthorized disturbance had occurred at the site involving the removal of a portion of one of the Trash Mounds on a residential property at 5782 Los Ortiz and disturbance of soils on adjacent properties. Materials that had been removed had been placed in the adjoining non-residential portion of the site. EPA and the PRPs conducted site inspections, which indicated that the remainder of the Trash Mound (located at 5565 Alturas Street) had been left in a physically unstable condition. The PRPs also collected samples to assess lead concentrations in the disturbed soil and to determine whether the waste involved was characteristically hazardous. At EPA's request, the PRPs developed a plan

to respond to the unauthorized disturbance. Following EPA approval, the PRPs implemented the plan in July 2004, including the removal of the unstable remaining portion of the Trash Mound at 5565 Alturas. Both areas were restored by placement of a geotextile barrier and one foot of clean soil, which was revegetated. Removed materials were consolidated with those that had been relocated as part of the unauthorized disturbance, and also covered with a geotextile barrier and one foot of clean soil and revegetated. Waste testing confirmed that the materials involved were non-hazardous.

SITE CHARACTERISTICS

The majority of the residential area of the site is covered by densely spaced residences, asphalt roadways and other paved areas. The non-residential area of the site (southwestern portion) is highly vegetated and is undeveloped. The southern boundary of the site is characterized by the presence of limestone mogotes that reach elevations of approximately 120 feet and feature near-vertical rock faces and caves. A multi-lane highway, Route 22, is located to the north.

There are no surface water features on the site other than a drainage ditch that runs west-east through the site parallel to Alturas Street and discharges to the Rio Indio located approximately two-thirds of a mile to the east. Based on field observations, the ditch is dry except during storm events or when manmade discharges occur (such as a sewer overflow experienced during the OU-2 field investigation). The Rio Indio flows into the Rio Cibuco which flows north to the coast of the island eventually draining into the Atlantic Ocean.

The unconsolidated materials at the site represent only a thin layer (generally two to four feet thick) which is underlain by Aymamón Limestone bedrock. The soils include mostly dark grayish-brown clay or silt and reddish- and yellowish-brown clay. Soils in historic disposal areas sometimes contain waste such as broken glass and rusted metal. The mogotes located in the southern portion of the site are outcroppings of the Aymamón formation; the Aymamón formation is approximately 200 feet thick below the site. Groundwater is not encountered until 200 feet below the ground surface.

The majority of the surrounding land is residential with an estimated population within a ¼-mile radius of the site of 2,280 people and an estimated population within one mile of 6,871 people. The U.S. Census 2000 website reported an average persons per household of 3.07 for Vega Baja. If applicable to households at the site, this average would result in an estimated population of 657 people living in homes on the site. Some of the residents grow small quantities of edible food crops such as avocados, coconuts, lemons, oranges, and plantains.

Soil Investigations- OU2 Sampling Program

The scope of the OU-2 RI Field Investigation was defined in the Final Quality Assurance Project Plan (QAPP) Addendum and the results were presented in the Final RI Report. The RI included the following sampling programs:

- Residential sampling: to determine the concentrations of lead in soil, indoor dust, and tap water, and the concentrations of target analyte list (TAL) metals, target compound list (TCL) pesticides, and polychlorinated biphenyl (PCB) Aroclors in soil, for baseline risk assessment purposes.

- Non-Residential Area sampling: to delineate the extent of the lead-contaminated area and to collect further data on the levels of PCBs and pesticides in the soil for baseline risk assessment purposes.

- Trash Mound Area sampling: to determine the concentrations of TAL metals, TCL pesticides, and PCB Aroclors in soil, for baseline risk assessment purposes.

- Background sampling: to determine background levels of TAL metals and TCL pesticides.

Residential Lead

As described in the RI Report, lead sampling performed at the site prior to the RI primarily consisted of collection of data based on XRF field testing. The residential lead sampling program in the RI included 55 areas spread across 35 properties where concentrations of lead in soil greater than 400 mg/kg had been detected during previous sampling events. Five-point composite samples were collected at three depth intervals (0-1 inch, 1-12 inches, and from 12 inches to bedrock) in each of the areas (except at 5576 Alturas where bedrock was encountered at less than one foot). Access was not obtained at two properties, therefore, only 33 properties and 49 areas were sampled. A total of 146 soil samples were collected for lead analysis and submitted, under chain-of-custody, to the laboratory for analysis. Of the 33 properties sampled for lead in soil, 31 were also sampled for household dust and 30 for tap water.

Residential Blocks

Pre-RI soil sampling in the Residential Area (for compounds other than lead) included collection of surface soil samples at 16 locations that were analyzed for TAL metals (28 samples), TCL pesticides (26 samples), and

PCB Aroclors (26 samples). The RI included the collection of 46 additional surface soil samples from the Residential Area for TAL metals, TCL pesticides, and PCBs analyses. The goal of the RI sampling event was to collect sufficient additional samples to calculate reliable 95% upper confidence limits on the mean soil concentrations. During the RI, 46 samples were collected from the 0- to 1-foot depth range (or bedrock, whichever was shallower) and analyzed for TAL metals and TCL pesticides. A total of 28 RI samples were also analyzed for PCB Aroclors. Additionally, one confirmatory PCB sample was collected to determine whether a previously detected "hot spot" of PCB contamination was actually present. This confirmatory sample indicated that PCBs were not elevated above screening levels at that location.

Non-Residential Area

Pre-RI sampling conducted in the Non-Residential, wooded area in the southern portion of the site included the collection of 25 samples (from 10 locations) that were analyzed for TAL metals, and 16 samples (from 7 locations) that were analyzed for TCL pesticides and PCBs. Previous investigations also included extensive lead analyses using field XRF and showed lead contamination above screening levels across the majority of this area. Additional sampling was conducted in the Non-Residential Area during the RI to delineate the extent of elevated lead concentrations in soil (above 400 mg/kg) and to gather data for the baseline risk assessment. Soil lead concentrations were field screened using a portable XRF. Screening samples were collected along transects extending outward from the boundaries of previous sampling until either a concentration less than 400 mg/kg was measured using the XRF instrument, or until the vertical rock face of the mogote physically limited the potential waste disposal area. A total of 13 samples, taken where the XRF instrument detected concentrations of lead below 400 mg/kg or a vertical rock outcrop was encountered, were sent for laboratory confirmation analysis. Three samples collected in the Non-Residential Area were also analyzed for TCL pesticides and PCB Aroclors.

Trash Mounds

Pre-RI sampling conducted in the Trash Mounds included the collection of 11 samples (from four locations) that were analyzed for TAL metals, TCL pesticides and PCBs. One of the Trash Mounds (Trash Mound #1) was subsequently removed and six additional samples were collected in the three remaining Trash Mounds during the RI to support the development of the baseline risk assessment. Specifically, two RI samples were collected from within each of the existing Trash Mounds at a depth of 0 to 2 feet below ground surface (bgs). The samples were analyzed for TAL Metals, TCL pesticides, and PCB Aroclors.

Background

Ten off-site areas that were not affected by site disposal activities were sampled during the RI to assess background conditions. Two samples were collected in each background area and analyzed for TAL metals, TCL pesticides and PCB Aroclors. Samples were collected to a depth of 2 feet or bedrock, whichever was shallower. Nine of the ten areas did not appear to have been disturbed by anthropogenic activities. The other area was located within a baseball field, and the soil samples were noticeably sandier, perhaps reflecting the import of fill for grading/vegetation growth**.**

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 ground water 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.

Results of the Soils Investigations

The following metals were detected in soil at the site at concentrations above EPA risk-based screening levels: lead, arsenic, chromium, copper (in three samples which were collected from a Trash Mound and from the Non-Residential Area), iron, manganese, thallium, and zinc (in one sample collected from a Trash Mound during the pre-RI study). As presented in the Final RI report, statistical and graphical comparisons of background arsenic, chromium, and manganese levels with site concentrations show that potential risks from these contaminants at the site are not significantly different than those presented by exposure to background concentrations. The only organic compound detected at concentrations above screening levels was the pesticide dieldrin (in four samples, two of which were in Trash Mounds).

There were 16 surface soil samples above the 400 mg/kg lead screening level, representing 10 separate properties. All 10 properties with sample results higher than 400

mg/kg within the surface soil were also above 400 mg/kg in the 1-inch to 12-inch samples. An additional 8 properties had sample results higher than 400 mg/kg in the 1 to 12- inch interval but were below the screening value in the surface soil. There was one property where a sample deeper than one foot was above the screening value, but all shallower samples on that property were below the screening value. Overall, out of the 33 properties where RI soil samples were collected for lead analysis, 19 had sample results higher than 400 mg/kg within at least one sampling interval.

The extent of lead contamination above the screening level of 400 mg/kg in the Non-Residential Area of the site was delineated during the RI and is bounded by the near-vertical rock face of the southern mogotes. Approximately 8.5 acres of the Non-Residential Area are above the lead screening value of 400 mg/kg with multiple locations where lead has been detected at concentrations above 1,000 mg/kg. Similarly, the nature and extent of contamination within the existing Trash Mounds at the site have been characterized. All six Trash Mound samples collected were above the screening levels for lead, arsenic, thallium, and iron.

For this site, there are two properties with elevated indoor dust concentrations of lead: 5570 Alturas (824 mg/kg lead in dust) and 5376 Santa Maria (624 mg/kg lead in dust). Potential remedial technologies were evaluated to address indoor dust.

During EPA's OU-1 investigation, two rounds of soil samples were collected from seven locations in the drainage ditch that runs through the Site parallel to Calle Alturas. Three of the ditch sample locations are located on-site and lead was detected in these samples at concentrations up to 1,180 mg/kg.

SCOPE AND ROLE OF THE ACTION

EPA is addressing the cleanup of this site by implementing remedial actions to address soil contamination. The cleanup of the site, which is the subject of this Proposed Plan, will provide for implementation of a remedy to address soil contaminants in both the residential (including trash mounds and the drainage ditch) and undeveloped (also known as non-residential) areas.

SUMMARY OF SITE RISKS

RISK SUMMARY

The purpose of the risk assessment is to identify potential cancer risks and non-cancer health hazards at the site assuming that no further remedial action is taken. This Proposed Plan presents the results of the baseline human health risk assessment and screening-level ecological risk assessment for exposure to soil.

As part of the RI/FS, EPA conducted a baseline risk assessment to estimate the current and future effects of contaminants on human health and the environment. A baseline risk assessment is an analysis of the potential adverse human health and ecological effects of releases of hazardous substances from a site in the absence of any actions or controls to mitigate such releases, under current and future land uses. The baseline risk assessment includes a human health risk assessment (HHRA) and an ecological risk assessment. These reports can be found in the Administrative Record.

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 of Chemicals of Potential Concern (COPCs), Exposure Assessment, Toxicity Assessment, and Risk Characterization (see adjoining box "What is Risk and How is it Calculated").

The baseline risk assessment began by selecting COPCs in the soil which could potentially cause adverse health effects in exposure populations. These populations included current and future residents and intermittent adolescent visitors to the site who may be exposed to contaminants through incidental ingestion of soil, dermal contact with soil and inhalation of airborne dust for current residents of the site. In addition, potential current exposures to contaminants of potential concern (COPCs) from the ingestion of homegrown vegetables were also considered for current residents at the site. Future exposure scenarios expanded the scope to include incidental ingestion of soil, dermal contact with soil, and inhalation of airborne dust by future construction and industrial workers at the site. Standard EPA exposure modeling and risk calculation procedures were used to estimate potential risk from exposure to all analytes other than lead. For lead, the EPA's Integrated Exposure Uptake Biokinetic Model for Lead in Children (IEUBK) and Adult Lead Model (ALM) were used to evaluate the potential risk from exposure to lead.

Potential risks were estimated for the various areas of the site (Residential, Non-Residential, Trash Mounds, and Drainage Ditch) based on the analytical data collected during both RI and pre-RI studies. Site-specific parameters were utilized in the assessment where available (e.g., site-specific dust and tap water sampling results were used in the IEUBK model) to reduce the uncertainty that results from using generic, default assumptions.

Based on current reasonable maximum exposure (RME) assumptions, the excess lifetime cancer risk estimated for adult residents is 4.4 x 10-5 and for child residents is 7.5 x 10-5. For future RME assumptions, the comparable estimated risks for adult and child residents are 5.2 x 10-5 and 9.5 x 10-5, respectively. Non-cancer hazard indices exceeding EPA's threshold value of 1.0 were also calculated for child residents under current and future RME and central tendency (CT) exposure assumptions, due primarily to arsenic and thallium. In addition, the non-cancer hazard index was above EPA's non-cancer threshold of 1.0 for future construction worker exposure via inhalation of dust contaminated with manganese. Two of the three metals that were identified as posing potential increases in cancer risk or non-cancer hazards, arsenic and manganese, were identified as being at concentrations that are similar to background concentrations (Golder, 2008 and 2009a). Based upon the determination of concentrations being similar to background, these compounds do not warrant a remedial action. The reference dose associated with thallium was recently withdrawn by the EPA due to uncertainty in the development of the value; therefore, the non-cancer hazard that was associated with thallium exposure was removed from the risk assessment. If new information becomes available, the consideration of thallium as a COC could be re-evaluated either during the Remedial Design or Five-Year Review to ensure that concentrations of thallium in the soil are protective.

Site-related risks from potential exposure to lead at the site were also estimated in the HHRA. Based on modeling results (IEUBK and ALM), several residential properties, the Drainage Ditch, the Trash Mounds, and the Non-Residential Area were identified as having the potential to cause an increase in blood lead (i.e., greater than 5% of the population exceeding 10 ug/dL of lead in the blood) to residents living on the site. Based on the potential for increased blood lead concentrations in residents at the site, it was determined that a remedial action was warranted to reduce the potential exposures from lead at the site.

Screening Level Ecological Risk Assessment

A Screening Level Ecological Risk Assessment (SLERA) was conducted to evaluate potential risks to ecological receptors at the site. The SLERA followed a two-step approach consisting of a problem formulation and ecological effects evaluation step and an exposure estimate and risk calculation step. The risk calculation consisted of calculating a hazard quotient (HQ) for each compound by comparing the detected concentrations in the soil samples or modeled dietary intake of contaminants with appropriate toxicity reference values (TRVs) for representative ecological receptors. Food web risk was evaluated for Antillean fruit bat, Red-legged thrush, Northern bobwhite, and Red-tailed hawk. The HQ approach for estimating risk is based on the ratio of a selected exposure concentration to a selected ecological screening level (ESL) or effects concentration.

A HQ greater than 1.0 indicates that the potential exists for adverse ecological effects to occur as a result of site-related exposures. Based on the first two steps, the SLERA identified 11 contaminants that could be related to adverse ecological effects in plants, invertebrates, mammals or birds that inhabit the site property. These contaminants include aluminum, antimony, arsenic, chromium, copper, lead, mercury, thallium, vanadium, zinc, and 4.4'-DDE Each of these compounds was associated with a HQ greater than 1.0.

The next step that was followed was to refine the selection of contaminants of potential concern at the site, which is documented in the addendum to the SLERA referenced above. There were two basic modifications utilized:

- Refinement of exposure point concentrations (i.e., concentration in media) through the use 95% upper-confidence limits instead of maximum detected concentrations, and

- Consideration of background concentrations of metals detected in the soil and background samples.

Based on the results of the SLERA, risks to populations of ecological receptors, especially avian species represented in the risk assessment by the Red-legged thrush and Northern bobwhite, at the site were determined to be associated with exposure to lead at the site. Exposure to other compounds detected at the site were determined not to pose an unacceptable risk to ecological receptors, and the compounds do not warrant a remedial action. Thus, protection of avian receptor populations from exposure to lead is identified as a remedial action objective. A cleanup value of 450 mg/kg was determined to be protective of avian populations that use the site.

Summary

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

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 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. Factors relating to the exposure assessment include, but are not limited to, the concentrations that people might be exposed to and the potential frequency and duration of 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 (dose) and severity of adverse effects (response) are determined. Potential health effects are chemical-specific and may include the risk of developing cancer over a lifetime or other non-cancer health effects, 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 effects.

Risk Characterization: This step summarizes and combines exposure information and toxicity assessments to provide a quantitative assessment of site risks. 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 explained in the Exposure Assessment. Current Superfund guidelines for acceptable exposures are an individual lifetime excess cancer risk in the range 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. An HI represents the sum of the individual exposure levels compared to their corresponding reference doses. The key concept for a non-cancer HI is that a "threshold level" (measured as an HI of less than 1) exists below which non-cancer health effects are not expected to occur.

REMEDIAL ACTION OBJECTIVES

Remedial action objectives (RAOs) are specific goals to protect human health and the environment. These objectives are based on available information and standards, such as applicable or relevant and appropriate requirements (ARARs), to-be-considered guidance, and site-specific risk-based levels.

The following RAOs have been identified for lead contaminated soils at the site:

- RAO-1: Prevent or minimize human exposure in the Residential Area (including the Drainage Ditch) to soil lead concentrations greater than the cleanup goal.
- RAO-2: Eliminate potential exposure to the remaining Trash Mounds in the Residential Area.
- RAO-3: Mitigate human exposure to lead in the Non-Residential Area above the cleanup goal.
- RAO-4: Protect populations of avian receptors from unacceptable exposure to lead by using a cleanup value of 450 mg/kg, which has been determined to be protective of ecological receptors, including avian populations, at the site.

To achieve these RAOs, a cleanup goal for soils at the site was identified. The results of the risk assessment (both Human Health and Ecological) indicated that the only contaminant for which a cleanup goal is necessary is lead. The Superfund Lead-Contaminated Residential Sites Handbook (EPA 2003) states "Final cleanup level selection for Superfund sites generally is based on the IEUBK model results and the nine criteria analysis per the National Contingency Plan (NCP), which includes an analysis of ARARs." Based on these considerations, EPA has established a lead cleanup value of 450 mg/kg to be applied to all areas where removal is undertaken, including Residential Yards, Trash Mounds, the Drainage Ditch, and the Non-Residential Area.

SUMMARY OF REMEDIAL ALTERNATIVES

Potential remedial technologies and process options were identified and screened using effectiveness, implementability and cost as the criteria, with the most emphasis on the effectiveness of the remedial technology. Those technologies that passed this initial screening were then assembled into five remedial alternatives for soil contamination.

The time frames presented below for construction do not include the time for pre-design investigations, remedial design, or contract procurements. Five-Year Reviews will be performed after the initiation of the remedial action, to ensure the integrity and effectiveness of the remedy.

Remedial Alternatives Common Elements

Each alternative, other than No Further Action, includes certain common elements that are discussed below.

Institutional Controls

All of the remedial alternatives, with the exception of the No Further Action Alternative (Alternative 1) would include institutional controls such as deed and land use restrictions to minimize the public's potential exposure to contaminated soils. However, consistent with expectations set out in Superfund regulations, none of the alternatives rely exclusively on institutional controls to achieve protectiveness.

Institutional controls are a common element to each of the alternatives to address certain uncharacterized areas beneath buildings and pavements. In addition, institutional controls would be used to prevent the disturbance of soil covers (other than in accordance with appropriate engineering controls).

Institutional controls will apply as follows:

- Areas within Non-Residential Area where cover is used to contain contaminated materials will be subject to institutional controls.
- For properties where soil removal is undertaken or has already been undertaken, institutional controls will apply to areas beneath buildings and pavement.
- Paved areas and/or buildings immediately adjoining an area where soil removal is being undertaken will be subject to institutional controls.
- Any area where final post-excavation sampling indicates lead concentrations above the cleanup goal will be subject to institutional controls.
- Roadways adjacent to properties where soil removal is being undertaken or has already been undertaken will be subject to institutional controls, likely via the existing "Call Before You Dig" program.

The specific mechanisms for establishing institutional controls will be addressed as part of the remedial design phase.

More information about Institutional Controls can be found at:

http://www.epa.gov/fedfac/pdf/ic_ctzns_guide.pdf

Pre-Design Investigation (PDI)

Additional investigation will be required prior to Remedial Design. The following activities will be included in a Pre-Design Investigation:

- Detailed surveying of property features and topography.
- Soil sampling at two properties where access could not be obtained during the OU-2 RI.
- Additional soil sampling at eight properties where additional lead concentration data are needed to support design.
- Additional Drainage Ditch soil sampling for lead for comparison to the cleanup goal. Where bedrock is exposed at the base of the Drainage Ditch, no samples will be collected.
- Delineation and surveying of the horizontal extent and top elevations of existing Trash Mounds based on visual observations and the basemap survey.

Construction/Performance Monitoring

Each remedial alternative described below will include certain construction and/or performance monitoring activities to ensure the effectiveness of the remedy. For example, during remedial actions that involve removal (excavation) of soil, post-excavation sampling may be necessary to determine whether the excavation meets the remedial goals. Post-excavation sampling will be performed when soil remains in place after excavation (i.e., sampling will not be performed if the excavation is advanced to bedrock). In addition, air monitoring will likely be required during construction to ensure protection of workers and nearby residents. Performance monitoring including cover inspections and maintenance will be required to confirm long-term effectiveness.

Indoor Dust Monitoring and Management Program

The management of risks related to lead in indoor dust will be the same for all remedial alternatives (other than No Further Action) and will consist of the following:

- Engineering controls during remedial activities such that migration of lead in fugitive dust into homes is minimized.
- Post-remediation confirmation sampling three months after completion of the selected remedy at the two properties where elevated levels of indoor dust lead were measured in the OU2 RI.
- If confirmation sampling indicates that indoor dust lead concentrations are at or below acceptable concentrations (based on IEUBK modeling using post-remedial surface soil concentrations), then no further action is necessary.
- If confirmation sampling indicates that indoor dust lead concentrations are above acceptable concentrations (based on IEUBK modeling using post-remedial surface soil concentrations), indoor dust removal will be performed, unless a non-site-related source of lead is identified as the cause.

Off-Site Disposal Option

Some materials (e.g., large/bulky debris, putrescent materials, etc.) in the Trash Mounds or Non-Residential Area may prove to be unsuitable for on-site treatment or consolidation, so each alternative includes an option to

dispose of some portion of the contaminated materials off-site. It is anticipated that the Trash Mounds primarily contain large boulders, soil, and small inert debris items (e.g., broken glass, small pieces of metal, etc.). These materials can be consolidated and covered in the Non-Residential Area. Materials that are unsuitable for consolidation will be disposed of or recycled at an off-site facility. Any materials to be sent off-site for disposal will be screened for possible off-site recycling (as opposed to landfill disposal) where appropriate; such materials would be decontaminated prior to recycling as necessary. Materials sent off-site for disposal will be classified, based on hazardous characteristics, prior to disposal. The approach for implementing this option will be further detailed in the Remedial Design.

Surface Water Management and Erosion Control

The remediation of the site will result in surface earthwork construction since the active alternatives involve soil disturbance. A surface water management plan will be developed during remedial design to provide for the effective control of surface water runoff and to minimize soil erosion from covered areas. The surface water management and erosion control system will consist of the following components:

- A grading plan that maintains existing grades where feasible and integrates final surface topography in the remediated areas with the surrounding areas.
- The use of slopes, berms, channels, and surface armoring using natural vegetation and/or synthetic materials (e.g., silt fence) to convey surface water runoff in the Non-Residential Area and to provide erosion protection.

Because the existing drainage ditch parallel to Alturas Street currently provides the primary drainage pathway for surface water runoff at the site, the surface water management plan is likely to tie into the ditch; however, the specifics of the surface water management system will be developed during detailed design and will comply with Puerto Rico soil erosion and sedimentation control requirements.

Access Agreements

Access agreement will be obtained from private property owners where remedial activities are planned. Access agreements may also be sought on properties located adjacent to areas where remedial activities will be conducted. For example, access may be needed to properties adjacent to Trash Mounds in the event that the disposal area is found to extend onto those properties during removal.

Access to the Drainage Ditch will also be needed for the PDI sampling, and possibly for the remedial action. Because the Drainage Ditch is associated with the roadway right-of-way, formal access agreements may not be needed from all residences that border the ditch. However, notification will be given to owners of properties along the ditch in advance of sampling and remediation activities.

EPA Region 2 Clean and Green Policy

Consistent with EPA Region II's "Clean and Green" Policy, the utilization of applicable green remediation practices will be considered and, to the extent practical, will be incorporated into the detailed design of the remedial alternative. Some examples of operational practices that would be applicable are those that reduce emissions of air pollutants, minimize fresh water consumption, incorporate native vegetation into revegetation plans, and consider beneficial reuse and/or recycling of materials, among others.

Remedial Alternatives

Alternative 1 – No Further Action

The No Further Action Alternative was retained, as required by the National Contingency Plan (NCP), and provides a baseline for comparison with other alternatives. No remedial actions would be implemented as part of the No Further Action Alternative. Although no direct action would be taken, there may be natural processes (e.g., erosion/dispersion, sequestration, etc.) that would reduce the bioavailable concentrations of contaminants over time. At this site, the natural processes that would reduce bioavailable concentrations are not expected to achieve acceptable levels within a reasonable timeframe (i.e., >30 years).

Total Capital Cost		$0
Operation and Maintenance		$0
Total Present Net Worth	$0	
Estimated Construction Time frame		0 years

Alternative No. 2 – Removal with On-Site Consolidation and Cover in the Non-Residential Area

This alternative involves the removal of contaminated soils located in the Residential Area, Drainage Ditch, and three Trash Mounds, and covering of the contaminated soils with clean soil in the Non-Residential Area. Excavated/removed materials would be consolidated in the Non-Residential Area prior to installation of the cover system in that area. The final design of the cover system in the Non-Residential Area will be determined during detailed design, but it is anticipated that it will include a non-woven geotextile overlain by 12 inches of clean soil. The soil cover will be vegetated to prevent erosion that would cause exposure to underlying materials. All residential yards where excavation occurs would be backfilled and re-vegetated to restore pre-excavation conditions.

Total Capital Cost	$4,350,000
Operation and Maintenance	$20,000/yr
Total Present Net Worth	$4,680,000
Estimated Construction Time frame	< 1 year

Alternative No. 3 – Removal with Off-Site Disposal
Alternative 3 involves removing contaminated soil from the Residential Area, the Drainage Ditch, the three Trash Mounds, the Non-Residential Area and disposing of the removed materials off-site in a non-hazardous waste landfill. All excavated areas would be backfilled and revegetated to existing grade with the exception of the Trash Mounds and any elevated mounds within the Non-Residential Area, which will be restored to the grade of surrounding areas.

Total Capital Cost	$23,440,000
Operation and Maintenance	$0
Total Present Net Worth	$23,440,000
Estimated Construction Time frame	< 1 year

Alternative No. 4 – Removal with On-Site Ex-Situ Stabilization and Cover in the Non-Residential Area
Alternative 4 is similar to Alternative 2 in that it includes excavating contaminated soils from the Residential Area (followed by backfilling with clean soil), Trash Mounds, Drainage Ditch and relocating these in the Non-Residential Area. However, unlike Alternative 2, Alternative 4 includes treatment of soil using ex-situ Solidification/Stabilization (S/S). Soils would be consolidated in the Non-Residential Area, treatment additives would be mixed into the consolidated materials, and then the mixture would be left to react. Following treatment, the stabilized materials would resemble a weak concrete. Stabilized materials from the Residential Area, Trash Mounds, and Drainage Ditch will be combined with stabilized Non-Residential Area materials and placed in the Non-Residential Area and covered using the same cover system described for Alternatives 2. Prior to implementation of this alternative, both bench-scale (laboratory) studies and an on-site pilot study would be required to confirm the effectiveness of the treatment and to determine appropriate amendments and gather data to support the detailed design.

Total Capital Cost	$25,420,000
Operation and Maintenance	$20,000/yr
Total Present Net Worth	$25,820,000
Estimated Construction Time frame	<1 year

EVALUATION OF REMEDIAL ALTERNATIVES

Nine criteria are used to evaluate the different remedial alternatives individually and against each other in order to select the best alternative. This section of the Proposed Plan profiles the relative performance of each alternative against the nine criteria, noting how it compares to the other options under consideration. The evaluation of the alternatives in relation to the nine criteria are discussed below. A more detailed analysis of the presented alternatives can be found in the Feasibility Study report.

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.

Overall Protection of Human Health and the Environment

Alternative 1 does not provide for protection of human health and the environment since there are current and future risks that would not be addressed by that alternative. Since Alternative 1 does not achieve this threshold criterion, it will not be discussed further in the Comparative Evaluation.

The other three alternatives can all achieve protection of human health and the environment.

Compliance with Applicable or Relevant and Appropriate Requirements (ARARs)

All four alternatives are expected to be able to comply with applicable action, and location-specific ARARs.

Long-Term Effectiveness and Permanence

Since lead cannot be destroyed, the remedial alternatives are designed to mitigate risk by minimizing potential exposure. Alternative 3 eliminates risk by permanently removing accessible contaminants from the site, and employs institutional and engineering controls for materials not currently exposed. Alternative 4 eliminates risk by relocating, fixating, then containing accessible contaminants, and employs institutional and engineering controls for materials not currently exposed and the containment area. Alternative 2 eliminates risk solely by relocating and containing accessible contaminants at the site, and employs institutional and engineering controls for materials not currently exposed and the containment area. For all alternatives, the institutional and engineering controls to be employed for the currently inaccessible areas are expected to be reliable in the long term, and five-year reviews will be performed. Alternative 3 achieves the highest level of long-term effectiveness and permanence since long-term operations and maintenance would not be required at the site to mitigate risk for currently accessible soils. Although the inherent hazard of the lead remains under the cap for Alternatives 2 and 4, the cap is expected to effectively eliminate the exposure pathway, effectively eliminating the associated risk. Since the potential for cap failure, however small, would exist, the long-term effectiveness of Alternatives 2 and 4 would not be as reliable as Alternative 3. Further, in the event of cap failure, Alternative 4 would pose less risk than Alternative 2 until the cap was replaced/repaired, as the contaminants would be less mobile.

Reduction of Toxicity, Mobility, or Volume Through Treatment

Only Alternative 4 provides treatment of lead-contaminated soils and, therefore, was ranked highest. S/S treatment of lead-contaminated materials will reduce the toxicity (by reducing bioavailability) and mobility of lead.

Short-Term Effectiveness

Short-term adverse impacts associated with the alternatives are caused primarily by operation of construction equipment during excavation, transportation, treatment, and other construction activities. Alternative 2 will have the lowest level of short-term impacts since it involves less transportation of impacted materials compared to Alternative 3 and it does not involve the addition of additives and mixing that are required by Alternative 4. Alternative 3 is expected to have the most significant short-term impacts since numerous truck loads of impacted soil will need to be transported for off-site disposal through the neighboring community.

Implementability

In general, all three alternatives are implementable since the technologies and skills are readily available. Alternative 2 is considered the easiest to implement since it does not require additional testing and does not involve off-site transport of materials. Off-site disposal involves issues associated to materials determined to be hazardous because there are no disposal facilities in Puerto Rico that could accept such materials without pre-treatment to remove the hazardous characteristic.

Cost

Alternative 2 is expected to have the lowest implementation cost since it does not involve off-site disposal or stabilization/solidification treatment. Alternative 3 will have a higher cost than Alternative 2 due to the need for off-site transportation and disposal. Alternative 4 is expected to have the highest cost due to the need for stabilization/solidification treatment of all excavated materials, including the impacted soil in the Non-Residential Area. Alternatives 2 and 4 include similar long-term O&M costs, but Alternative 3 does not require a long-term O&M component.

State/Support Agency Acceptance

The Commonwealth of Puerto Rico agrees with the preferred alternative 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 Responsiveness Summary section of the Record of Decision for this site. The Record of Decision is the document that formalizes the selection of

the remedy for a site.

SUMMARY OF THE PREFERRED ALTERNATIVE

Alternative 2, Removal with On-Site Consolidation and Cover in the Non-Residential Area, is the preferred remedial alternative for soil contamination at this site.

This alternative provides for removal of lead-contaminated soils in the Residential Area yards and the Drainage Ditch where lead concentrations are above the site cleanup goal of 450 mg/kg, and removal of Trash Mound materials. Removed materials would be transported to the Non-Residential Area and consolidated. All residential yards where excavation is conducted would be backfilled and re-vegetated to restore pre-excavation conditions. Approximately 8.5 acres of the Non-Residential Area where soil lead concentrations are above the site cleanup goal and/or trash mound materials are present would then be covered with a soil cover system. Confirmation sampling would be conducted after removal of materials to confirm that the cleanup goal has been achieved at the target depth. Air monitoring will be required during construction to ensure the protection of workers and nearby residents. An option is included for materials that are not conducive to consolidation and cover (i.e., large debris) to be sent off-site for disposal or recycling. Any materials to be sent off-site for disposal will be screened for possible recycling (as opposed to landfill disposal) where appropriate; such materials would be decontaminated prior to recycling as necessary. Materials sent off-site for disposal will be classified, based on hazardous characteristics, prior to disposal. The approach for implementing this option will be further detailed in the Remedial Design.

The final design of the cover system in the Non-Residential Area will be determined during detailed design, but it is anticipated that it will include a non-woven geotextile overlain by 12 inches of clean soil. The soil cover will be vegetated to prevent erosion that would cause exposure to underlying materials. Although the future use of the Non-Residential Area has not yet been determined, institutional controls will be established to preclude residential use of the soil cover area to ensure the cover will be protective. A routine inspection and maintenance program will specifically provide for identification of adverse impacts from severe weather events. The monitoring program would be designed to include both scheduled, routine inspections (e.g., annually), as well as periodic event-driven inspections during the initial establishment of a vegetative cover (e.g., inspections immediately following extreme rainfall events within the first year after cover installation). Performance monitoring will be performed to confirm long-term effectiveness.

This alternative will include institutional controls to address certain uncharacterized areas beneath buildings and pavements. In addition, institutional controls would be established to prevent the disturbance of soil covers.

The management of risks related to lead in indoor dust will include engineering controls during remedial activities such that migration of lead in fugitive dust into homes is minimized, post-remediation confirmation sampling three months after completion of the selected remedy at the two properties where elevated levels of indoor dust lead were measured in the OU-2 RI.

Additional investigation will be required prior to Remedial Design including detailed surveying of property features and topography, soil sampling at two properties where access could not be obtained during the OU-2 RI, additional soil sampling at eight properties where further lead concentration data are needed to support design, and additional Drainage Ditch soil sampling for lead for comparison to the cleanup goal.

The remediation of the site will result in surface earthwork construction since the selected alternative involves soil disturbance. A surface water management plan will be developed during remedial design to provide for the effective control of surface water runoff and to minimize soil erosion from covered areas. The surface water management and erosion control system will consist of the following components:

- A grading plan that maintains existing grades where feasible and integrates final surface topography in the remediated areas with the surrounding areas.
- The use of slopes, berms, channels, and surface armoring using natural vegetation and/or synthetic materials (e.g., silt fence) to convey surface water runoff in the Non-Residential Area and to provide erosion protection.

Because the existing drainage ditch parallel to Alturas Street currently provides the primary drainage pathway for surface water runoff at the site, the surface water management plan is likely to tie into the ditch; however, the specifics of the surface water management system will be developed during detailed design and will comply with Puerto Rico soil erosion and sedimentation control requirements.

Access agreements will be obtained from private property owners. In addition, access agreements will also be sought on properties located adjacent to areas where remedial activities will be conducted.

Access to the Drainage Ditch will also be needed for the PDI sampling, and possibly for the remedial action. Because the Drainage Ditch is associated with the roadway right-of-way, formal access agreements may not be needed from all residences that border the ditch. However, notification will be given to those residents who live along the ditch in advance of sampling and remediation activities.

Consistent with EPA Region 2's Clean and Green policy, EPA will evaluate and seek to employ sustainable technologies and practices with respect to this alternative.

As is EPA's policy, Five-Year Reviews will be conducted to ensure the integrity and effectiveness of the selected remedy.

COMMUNITY PARTICIPATION

EPA provided information regarding the cleanup of the Vega Baja Solid Waste Disposal Superfund Site to the public through public meetings, the Administrative Record file for the site and announcements published in the Primera Hora and Vocero newspapers. EPA encourages the public to gain a more comprehensive understanding of the site and the Superfund activities that have been conducted there.

For further information on the site including EPA's preferred alternative for the Vega Baja Solid Waste Disposal Superfund Site, contact:

Nancy Rodriguez	Brenda Reyes
Remedial Project Manager	Community Relations
(787) 977-5887	(787) 977-5869

US EPA Caribbean Environmental Protection Division
Centro Europa Building
1492 Ponce de Leon Avenue, Suite 417
San Juan, Puerto Rico 00908
(787) 977-5865

Or access EPA web page at:
http://www.epa.gov/region02/superfund/npl/vegabaja

The dates for the public comment period; the date, the location and time of the public meeting; and the locations of the Administrative Record files are provided on the front page of this Proposed Plan.

GLOSSARY

ARARs: Applicable or Relevant and Appropriate Requirements. These are Federal or State environmental rules and regulations that may pertain to the site or a particular alternative.

Carcinogenic Risk: Cancer risks are expressed as a number reflecting the increased chance that a person will develop cancer if exposed to chemicals or substances. For example, EPA's acceptable risk range for Superfund hazardous waste sites is 1×10^{-4} to 1×10^{-6}, meaning there is 1 additional chance in 10,000 (1×10^{-4}) to 1 additional chance in 1 million (1×10^{-6}) that a person will develop cancer if exposed to a Site contaminant that is not remediated.

CERCLA: Comprehensive Environmental Response, Compensation and Liability Act. A Federal law, commonly referred to as the "Superfund" Program, passed in 1980 that provides for response actions at sites found to be contaminated with hazardous substances, pollutants or contaminants that endanger public health and safety or the environment.

COPC: Chemical of Potential Concern.

SLERA: Screening Level Ecological Risk Assessment. An evaluation of the potential risk posed to the environment if remedial activities are not performed at the site.

FS: Feasibility Study. Analysis of the practicability of multiple remedial action options for the site.

Groundwater: Subsurface water that occurs in soils and geologic formations that are fully saturated.

HHRA: Human Health Risk Assessment. An evaluation of the risk posed to human health should remedial activities not be implemented.

HI: Hazard Index. A number indicative of non-carcinogenic health effects that is the ratio of the existing level of exposure to an acceptable level of exposure. A value equal to or less than one indicates that the human population is not likely to experience adverse effects.

HQ: Hazard Quotient. HQs are used to evaluate non-carcinogenic health effects and ecological risks. A value equal to or less than one indicates that the human or ecological population is not likely to experience adverse effects.

ICs: Institutional Controls. Administrative methods to prevent human exposure to contaminants, such as by restricting the use of groundwater for drinking water purposes.

IEUBK: The Integrated Exposure Uptake Biokinetic Model is a mathmatical model that predicts the blood lead concentration in humans due to exposure to lead in air, food, water, dust, and soil. The model can also be used to develop cleanup goals for lead that are protective of public health.

Nine Evaluation Criteria: See text box on Page 7.

Non-carcinogenic Risk: Non-cancer Hazards (or risk) are expressed as a quotient that compares the existing level of exposure to the acceptable level of exposure. There is a level of exposure (the reference dose) below which it is unlikely for even a sensitive population to experience adverse health effects. EPA's threshold level for non-carcinogenic risk at Superfund sites is 1.0, meaning that if the exposure exceeds the threshold; there may be a concern for potential non-cancer effects.

NPL: National Priorities List. A list developed by EPA of uncontrolled hazardous substance release sites in the United States that are considered priorities for long-term remedial evaluation and response.

Operable Unit (OU): a discrete action that comprises an incremental step toward comprehensively addressing site problems. This discrete portion of a remedial response manages migration, or eliminates or mitigates a release, threat of a release, or pathway of exposure. The cleanup of a site can be divided into a number of operable units, depending on the complexity of the problems associated with the site.

Practical Quantitation Level (PQL): means the lowest concentration of a constituent that can be reliably achieved among laboratories within specified limits of precision and accuracy during routine laboratory operating conditions.

Present-Worth Cost: Total cost, in current dollars, of the remedial action. The present-worth cost includes capital costs required to implement the remedial action, as well as the cost of long-term operation, maintenance, and monitoring.

PRG: Preliminary Remediation Goal.

PRPs: Potentially Responsible Parties.

Proposed Plan: A document that presents the preferred remedial alternative and requests public input regarding the proposed cleanup alternative.

Public Comment Period: The time allowed for the members of a potentially affected community to express views and concerns regarding EPA's preferred remedial alternative.

RAOs: Remedial Action Objectives. Objectives of remedial actions that are developed based on contaminated media, contaminants of concern, potential receptors and exposure scenarios, human health and ecological risk assessment, and attainment of regulatory cleanup levels.

Record of Decision (ROD): A legal document that describes the cleanup action or remedy selected for a site, the basis for choosing that remedy, and public comments on the selected remedy.

Remedial Action: A cleanup to address hazardous substances at a site.

RI: Remedial Investigation. A study of a facility that supports the selection of a remedy where hazardous substances have been disposed or released. The RI identifies the nature and extent of contamination at the facility and analyzes risk associated with COPCs.

Saturated Soils: Soils that are found below the Water Table. These soils stay wet.

TBCs: "To-be-considereds," consists of non-promulgated advisories and/or guidance that were developed by EPA, other federal agencies, or states that may be useful in developing CERCLA remedies.

Unsaturated Soils: Soils that are found above the Water Table. Rain or surface water passes through these soils. These soils remain dry:

EPA: United States Environmental Protection Agency. The Federal agency responsible for administration and enforcement of CERCLA (and other environmental statutes and regulations), and final approval authority for the selected ROD.

VOC: Volatile Organic Compound. Type of chemical that readily vaporizes, often producing a distinguishable odor.

Water Table: The water table is an imaginary line marking the top of the water-saturated area within a rock column.

N

LEGEND

- ACCESS AGREEMENT REQUIRED (NO REMEDIATION PLANNED)
- PROPOSED PDI SAMPLE LOCATION
- APPROXIMATE EXTENT OF NON-RESIDENTIAL AREA COVER OR REMOVAL
- BUILDING
- PROPOSED RESIDENTIAL YARD REMOVAL AREA
- COVERED AREA
- PREVIOUS REMOVAL ACTION
- PROPERTY BOUNDARY
- BACKFILLED AREA
- TRASH MOUND

INSTITUTIONAL CONTROLS REQUIRED

- RESIDENTIAL PROPERTY
- ROAD

NOTES

1. ALL PROPERTIES THAT REQUIRE PDI SAMPLING OR REMOVAL (TRASH MOUNDS AND RESIDENTIAL YARDS) WILL ALSO NEED ACCESS AGREEMENTS.

2. UNDER ALTERNATIVES 2, 4, AND 5 THE NON-RESIDENTIAL AREA SHOWN WOULD ALSO REQUIRE INSTITUTIONAL CONTROLS.

REFERENCES

1. PRIMARY GIS COVERAGES PROVIDED BY EPA AND MODIFIED BY GOLDER TO REPRESENT SITE CONDITIONS AT THE TIME OF THE OU-2 FIELD INVESTIGATION (DECEMBER 2004).

200 100 0 200 Feet

Golder Associates
Philadelphia USA

SCALE	AS SHOWN
DATE	6/23/2010
DESIGN	APJ
GIS	AM
CHECK	APJ
REVIEW	PSF
FILE No.	0336208Q003-Rev1
PROJECT No.	033-6208 REV. 1

PRELIMINARY EXTENTS OF REMEDIATION AND PDI

VEGA BAJA SOLID WASTE SUPERFUND SITE — FIGURE 3

500122

RESPONSIVENESS SUMMARY
Appendix B – Public Notice, Flyer and Proposed Plan Fact Sheet

La Agencia Federal de Protección Ambiental
Anuncia el Plan Propuesto y Periodo de Comentarios
Para el Lugar de Superfondo Antiguo Crematorio de Vega Baja
Unidad Operacional 2 –Suelos
Vega Baja, Puerto Rico

La Agencia Federal de Protección Ambiental (EPA por sus siglas en inglés) en colaboración con la Junta de Calidad Ambiental anuncian el Plan Propuesto para el Antiguo Crematorio de Vega Baja el cual describe la alternativa recomendada de Remoción y Consolidación de Suelos Contaminados y las razones para esta recomendación. Antes de seleccionar un remedio final, la EPA va a considerar comentarios escritos y verbales recibidos sobre la alternativa recomendada en el Plan Propuesto. Todos los comentarios deben ser recibidos en o antes del 29 de Agosto de 2010. El Récord de Decisión incluirá un resumen de los comentarios recibidos del público y las respuestas de la EPA a estos comentarios.

La EPA llevará a cabo una vista pública el martes 3 de agosto de 2010, de 6:00 pm a 7:00 pm en la Capilla de la Iglesia Católica localizada en la Calle Principal de la comunidad Brisas del Rosario, Barrio Río Abajo, Vega Baja, PR. Representantes de la EPA presentarán la conclusión de la investigación remedial, el Plan Propuesto, y las razones por la cual se recomienda la alternativa de Remoción y Consolidación de Suelos Contaminados. Durante la vista pública, la EPA contestará preguntas o comentarios que los participantes tengan con relación a la investigación realizada.

Copias del Plan Propuesto y otros documentos relacionados al lugar de Superfondo Antiguo Crematorio de Vega Baja están disponibles en los siguientes repositorios de información:

Caribbean University - Vega Baja
Carr 661, Sector El Criollo,
Vega Baja , PR 00964
(787) 858-3668 Ext. 3315
Horario: Lunes.-Viernes, 9:00 a.m. a 5:00 p.m.

Casa Alcaldia de Vega Baja **(Record Administrativo de Unidad de Suelos Solamente)**
Calle Jose Francisco Nater No. 1
Vega Baja, PR
(787) 855-2500
Horario: Lunes.-Viernes, 9:00 a.m. a 3:30 p.m.

Junta de Calidad Ambiental
Edificio de Agencias Ambientales Cruz A. Matos
Urbanización San José Industrial Park
1375 Avenida Ponce de León
San Juan, PR 00926-2604
(787) 767-8181 Ext 3213
Horario: Lunes.-Viernes, 9:00 a.m. a 3:30 p.m. por cita

Agencia Federal de Protección Ambiental, Región 2
División de Protección Ambiental del Caribe
Edificio Centro Europa,
Avenida Ponce de León 1492 – Suite 417
San Juan, Puerto Rico 00907
(787) 977-5865
Horario: Lunes.-Viernes, 9:00 a.m. a 5:00 p.m. por cita

U.S. Environmental Protection Agency, Region 2
290 Broadway, 18th floor
New York, New York 10007-1866
(212) 637-4308
Horario: Lunes.-Viernes, 9:00 a.m a 3:30 p.m. por cita

Para más información, favor llamar a Nancy Rodriguez al (787) 977-5887. Comentarios escritos del Plan Propuesto deben ser enviados a:

Nancy Rodriguez, PE, Gerente de Proyectos
Agencia Federal de Protección Ambiental, Región 2
División de Protección Ambiental del Caribe
Edificio Centro Europa, Avenida Ponce de León 1492 – Suite 417
San Juan, Puerto Rico 00908
Fax: (787) 289-7104,
Internet: rodriguez.nancy@epa.gov

La Agencia Federal de Protección Ambiental Anuncia Reunión Pública para presentar el Plan Propuesto y Periodo de Comentarios Para el Lugar de Superfondo Antiguo Crematorio de Vega Baja Unidad Operacional 2 –Suelos, Vega Baja, Puerto Rico

La Agencia Federal de Protección Ambiental (EPA por sus siglas en inglés) llevará a cabo reunión pública en la para anunciar el Plan Propuesto para la Unidad Operacional 2 que corresponde al estudio de suelos en el Lugar de Superfondo Antiguo Crematorio de Vega Baja.

Fecha: Agosto 3, 2010
Lugar: Capilla de la Iglesia Católica que ubica en la comunidad Brisas del Rosario en Vega Baja
Hora: 6:00 pm

Representantes de la EPA estarán disponibles de 5:00 pm a 8:00 pm para contestar preguntas o comentarios que los participantes tengan con relación a la investigación ambiental realizada en este Lugar. Durante la reunión pública, EPA presentará la conclusión de la investigación remedial, el Plan Propuesto, y las razones por la cual se recomienda la alternativa de Remoción y Consolidación de Suelos Contaminados.

Copias del Plan Propuesto y otros documentos relacionados al lugar de Superfondo Antiguo Crematorio de Vega Baja están disponibles en los siguientes repositorios de información:

Caribbean University - Vega Baja
Carr 661, Sector El Criollo,
Vega Baja , PR 00964
(787) 858-3668 Ext. 3315
Horario: Lunes.-Viernes, 9:00 a.m. a 5:00 p.m.

Casa Alcaldía de Vega Baja
Calle Francisco Nater No. 1
Vega Baja, PR
(787) 855-2500
Horario: Lunes.-Viernes, 9:00 a.m. a 3:30 p.m.

Junta de Calidad Ambiental
Edificio de Agencias Ambientales Cruz A. Matos
Urbanización San José Industrial Park
1375 Avenida Ponce de León
San Juan, PR 00926-2604
(787) 767-8181 Ext. 3213
Horario: Lunes.-Viernes, 9:00 a.m. a 3:30 p.m. por cita

Agencia Federal de Protección Ambiental, Región 2
División de Protección Ambiental del Caribe
Edificio Centro Europa,
Avenida Ponce de León 1492 – Suite 417
San Juan, Puerto Rico 00907
(787) 977-5865
Horario: Lunes.-Viernes, 9:00 a.m. a 5:00 p.m. por cita

Para más información sobre esta reunión pública puede comunicarse con Nancy Rodríguez, Gerente de Proyectos al (787) 977-5887 o con Brenda Reyes, Oficial de Asuntos Públicos y Relaciones con la Comunidad al 787-671-8216.

HOJA INFOMATIVA SOBRE EL PLAN PROPUESTO

Lugar de Superfondo Antiguo Crematorio de Vega Baja
Unidad Operacional 2: Suelos
Agosto 2010

EPA ANUNCIA PLAN PROPUESTO

El Plan Propuesto desarrollado por la Agencia Federal de Protección Ambiental (EPA) identifica la Alternativa Preferida para la limpieza de suelos contaminados en el Lugar de Superfondo Antiguo Crematorio de Vega Baja, localizado en Vega Baja, Puerto Rico, y proporciona las razones para esta preferencia.

La alternativa preferida de la EPA, para la limpieza de contaminación de suelo es la alternativa 2, Remoción con Consolidación y Cubierta de Suelo en la Zona No-Residencial. Este remedio también incluirá Controles Institucionales para responder a determinadas zonas no caracterizadas bajo estructuras y pavimento.

Una investigación de aguas subterráneas se llevó a cabo en el Lugar como parte de la Investigación Remedial (RI) en la Unidad Operacional 1 (OU-1). Esta investigación concluyó que las aguas subterráneas no se han visto afectada por los contaminantes relacionados con el Lugar. En abril de 2004 se firmó un Documento de Decisión (ROD) de No Acción para OU-1.

El Plan Propuesto incluye resúmenes de todas las alternativas de limpieza evaluadas para el Lugar. La EPA, agencia principal para las actividades del Lugar y la Junta de Calidad Ambiental (JCA), la agencia de apoyo, emitieron este documento. La EPA, en consulta con la JCA, seleccionará el remedio final para los suelos contaminados con plomo después de revisar y considerar toda la información presentada durante el período de comentarios público. La EPA, en consulta con JCA, podrá modificar la alternativa preferida o seleccionar otra respuesta de acción presentada en este Plan Propuesto basado en nueva información obtenida o comentarios del público. Por lo tanto, se recomienda al público revisar y comentar sobre todas las alternativas presentadas en este documento.

La EPA emite el Plan Propuesto como parte de sus programas comunitarios bajo la sección 117 (a), de la Ley de Responsabilidad, Compensación y Recuperación Ambiental (CERCLA, conocida comúnmente como el programa de Superfondo). El Plan Propuesto resume la información que se puede encontrar con mayor detalle en la Investigación Remedial y Estudio de Viabilidad (RI/FS) y demás documentos contenidos en el Récord Administrativo para el Lugar.

MARQUE SU CALENDARIO

PERÍODO DE COMENTARIOS PÚBLICOS:
29 de julio de 2010 – 29 de agosto de 2010
EPA aceptará comentarios por escrito sobre el Plan de Propuesta durante este período de comentarios públicos.

Comentarios escritos deben ser dirigidos a:

Nancy Rodriguez, PE,
Gerente de Proyectos
Agencia Federal de Proteccion Ambiental
Division de Proteccion Ambiental del Caribe
1492 Avenida Ponce de Leon - Oficina 417
San Juan, PR 00908
Telefono: (787) 977-5887
Fax: (787) 289-7104
Internet: rodriguez.nancy@epa.gov

REUNIÓN PÚBLICA: 3 de agosto de 2010, 6:00pm
EPA sostendrá una reunión pública para explicar el Plan Propuesto y todas las alternativas presentadas en el Estudio de Viabilidad. También se aceptarán comentarios por escrito y orales en la reunión. La reunión se llevará a cabo en la Capilla Católica localizada en la Calle Principal, Comunidad Brisas del Rosario, Barrio Río Abajo, Vega Baja, PR.

Para más información, vea el Récord Administrativo en las siguientes localizaciones:

Caribbean University Recinto de Vega Baja
Carr 661, Sector El Criollo,
Vega Baja, PR 00964
Atención: Lydia Ponce
(787) 858-3668 Ext. 3315
Horario: Lunes – Viernes 9:00am a 5:00 pm

Alcaldía de Vega Baja (Sólo para Suelo s AR OU-2)
Calle Francisco Nater Número 1
Vega Baja, PR
(787) 855-2500
Horario: Lunes – Viernes 9:00am a 3:00pm

EPA - División de Protección Ambiental del Caribe
Edificio Centro Europa
Avenida Ponce de León Núm. 1492
Oficina 417
San Juan, Puerto Rico 00908
(787) 977-5865

Junta de Calidad Ambiental de Puerto Rico
Programa de Respuesta de Emergencia y Programa del Superfondo
Edificio Ambiental Gubernamental
PR - 8838, Sector El Cinco,
Avenida Ponce de León Núm. 1308
Río Piedras, Puerto Rico 00907
(787)767-8181 Ext 3207
Horario: Lunes – Viernes 9:00am a 3:00 pm
Por cita

U.S. EPA Records Center, Region 2
290 Broadway, 18th Floor.
New York, New York 10007-1866
(212) 637-4308
Horario: Lunes – Viernes 9:00am a 5:00pm
Por cita

DESCRIPCIÓN DEL LUGAR

Los 72 acres del Antiguo Crematorio de Vega Baja están localizados en el Barrio Río Abajo de Vega Baja, Puerto Rico. El Lugar incluye una zona residencial de 55 acres conocida como Comunidad Brisas del Rosario, con 213 viviendas y un área de 17 hectáreas sin desarrollar y deshabitada. El Lugar de Vega Baja se encuentra en un terreno relativamente plano y está rodeado por zonas residenciales al norte, este y oeste. Al sur, el Lugar está rodeado por colinas de piedra caliza conocida como mogotes cónicos. Cuatro "montículos de basura," que se cree que contienen la basura asociada a la antigua operación del Lugar, así como los suelos nativos, rocas y grandes piedras, se encontraban en la zona residencial del Lugar con hasta 10 pies de altura.

TRASFONDO DEL LUGAR

Desde 1948 a 1979, el municipio de Vega Baja ofrecía y utilizaba el Lugar como deposito de desperdicios sólidos y quema al aire libre de desperdicios comerciales, industriales y domésticos. Se eliminaba o quemaba un estimado de 1.1 millones de yardas cúbicas de desperdicios sólidos en el Lugar. A finales de 1970, residentes locales comenzaron a construir casas en las secciones de la zona de de disposición de desperdicios. Se construyeron doscientos trece casas en la parte superior del relleno sanitario y tierra contaminada con plomo, arsénico y pesticidas.

Basado en fotografías aéreas históricas, la disposición de desperdicios sólidos se concentraba principalmente en la porción suroeste del área ahora desarrollada, y en la porción norte del área subdesarrollada del Lugar. Durante el período de disposición, el Lugar era propiedad de la Autoridad de Tierras de Puerto Rico. En 1984, la Autoridad de Tierras de Puerto Rico intentó transferir aproximadamente 55 acres de la propiedad al Departamento de Vivienda de Puerto Rico. El Departamento de Vivienda de Puerto Rico posteriormente ha intentado otorgar títulos de propiedad a los residentes; sin embargo, no está claro en los registros que residentes tienen títulos de propiedad, si alguno. Las otras partes del Lugar permanecen bajo la propiedad del Departamento de Vivienda de Puerto Rico o de la Autoridad de Tierras de Puerto Rico.

INVESTIGACIONES AMBIENTALES PREVIAS

Se han llevado a cabo diversas investigaciones ambientales y acciones de remoción en el Lugar desde 1994, bajo la dirección de la EPA y la JCA. Estas actividades están explicadas en detalle en el Récord Administrativo del Lugar.

PROGRAMA DE MUESTREO DURANTE LAS INVESTIGACIÓN DEL SUELO-OU2

El ámbito de la OU-2 de RI Investigación de Campo se definió en el documento Final del Plan Propuesto de Calidad (QAPP) y los resultados se presentaron en el Informe Final de RI. El mismo incluyó los programas de muestreo siguientes:

- Muestreo Residencial: para determinar las concentraciones de plomo en el suelo, polvo doméstico, y el agua de la pluma, y las concentraciones de la lista de analitos (TAL) de metales, lista de compuestos (TCL) pesticidas y bifenilos policlorados (PCB) o Aroclors en el suelo, para fines de referencia de evaluación de riesgos.

- Muestreo de áreas no residenciales: para delinear la

extensión del área contaminada con plomo y para recoger más datos sobre los niveles de PCB y plaguicidas en el suelo con fines de referencia de evaluación de riesgos.

 Muestreo del área de Montículos de Basura: para determinar las concentraciones de metales TAL, pesticidas TCL, y Aroclors PCB en el suelo, con fines de referencia de evaluación de riesgos.

 Muestreo de Trasfondo: para determinar los niveles de trasfondo de metales y plaguicidas TAL y TCL.

Los resultados de las investigaciones de Suelos

Los siguientes metales se detectaron en el suelo del Lugar en concentraciones por encima de los niveles de detección de la EPA basados en el riesgo: plomo, arsénico, cromo, cobre (en tres muestras que se recogieron de un montículo de basura y del área no residencial), hierro manganeso, talio y zinc (en una muestra recogida de un montículo de basura durante el estudio de Pre-RI). Como se indica en el Informe Final de RI, comparaciones estadísticas y gráficas de trasfondo de arsénico, cromo, manganeso y los niveles con las concentraciones del Lugar muestran que los riesgos potenciales de estos contaminantes en el Lugar no son significativamente diferentes a las presentadas por la exposición a concentraciones de trasfondo. El único compuesto orgánico detectado con concentraciones superiores a los niveles de evaluación fue el plaguicidas dieldrín (en cuatro muestras, dos de los cuales se encontraban en los montículos de basura).

En las propiedades residenciales hubo muestras de suelo con resultados por encima de los 400 mg/kg del nivel de detección de plomo.

El grado de contaminación por plomo por encima del nivel de detección de 400 mg/kg en la zona no residencial del Lugar fue delineado durante el RI y está delimitada por la pared de roca casi vertical de los mogotes del sur. Aproximadamente 8.5 cuerdas de la zona no residencial están por encima del valor de un examen de plomo de 400 mg/kg, con múltiples lugares donde el plomo ha sido detectado en concentraciones superiores a 1,000 mg/kg. Del mismo modo, se han caracterizado la naturaleza y el alcance de la contaminación dentro de los montículos de basura presentes en el lugar. Todas las seis muestras de montículo de basura recolectadas fueron superiores a los niveles de detección de plomo, arsénico, talio, y hierro.

Para esta Lugar, hay dos propiedades con elevadas concentraciones de polvo de plomo doméstico. Como parte del proceso se evaluó el potencial de las tecnologías correctivas para atender las concentraciones elevadas en el polvo doméstico.

Durante la investigación EPA OU-1, dos rondas de muestras de suelo fueron recolectadas en siete localidades de la Zanja de Drenaje que corre paralela a la Calle Alturas del Lugar. Tres de los puntos de muestreo de la zanja se encuentran en el Lugar y se detectó plomo en las muestras en concentraciones de hasta 1,180 mg/kg.

RESUMEN DE LOS RIESGOS DE EL LUGAR

El propósito de la evaluación de riesgos es identificar los riesgos potenciales de cáncer y no cancerígenos en el Lugar, presumiendo que no se tome ninguna otra medida correctiva. El Plan Propuesto presenta los resultados de la evaluación de riesgo para la salud humana y la evaluación de riesgo ecológico.

Como parte de la RI/FS, la EPA llevó a cabo una evaluación de riesgos de referencia para estimar los efectos actuales y futuros de los contaminantes sobre la salud humana y el medio ambiente. Una evaluación del riesgo inicial es un análisis del potencial nocivo para la salud humana y los efectos ecológicos de las emisiones de sustancias peligrosas en un lugar a falta de acciones o controles para mitigar dichas emisiones, en virtud de los usos actuales y futuros del lugar. La evaluación de riesgo inicial incluye una evaluación de riesgos para la salud humana (HHRA) y una evaluación de riesgo ecológico. Estos informes se pueden encontrar en el Record Administrativo.

DESARROLLO DE LA ACCION CORRECTIVA

EPA esta atendiendo la contaminación de suelo existente en el Lugar mediante la selección de una alternativa de limpieza que sirve de acción correctiva para solucionar la contaminación del suelo. La limpieza de el Lugar incluye la aplicación de un remedio que atenderá los contaminantes del suelo, tanto en la zona residencial (incluidos los montículos de basura y la Zanja de Drenaje) como en el área no desarrollada (también conocido como área no residencial).

OBJETIVOS DE ACCIÓN CORRECTIVA

Los objetivos de acción correctiva (RAOS) son las metas específicas para proteger la salud humana y el medio ambiente. Estos objetivos se basan en la información disponible y las normas, tales como requisitos apropiados aplicables o relevantes (ARAR), orientación a ser consideradas, y los niveles en función de los riesgos específicos del Lugar.

Los siguientes RAOS se han definido para los suelos contaminados de plomo en el Lugar:

- RAO-1: Prevenir o reducir al mínimo la exposición humana en la Zona Residencial (incluyendo la Zanja de Drenaje) para concentraciones de plomo del suelo mayor que la meta de limpieza.
- RAO-2: Eliminar la exposición potencial al resto de los Montículos de Basura en la zona residencial.
- RAO-3: Mitigar la exposición humana al plomo en la Zona no Residencial por encima de la meta de limpieza.
- RAO-4: Proteger los receptores de población aviar de una exposición inaceptable al plomo usando un valor de limpieza de 450 mg/kg que se determino es protector de los receptores ecológicos, incluyendo la población aviar en el Lugar.

Para alcanzar estos RAO, se identificó un objetivo de limpieza para suelos en el Lugar. Los resultados de la evaluación de riesgos (tanto la salud humana como la ecológica) indicaron que el único contaminante para el cual se necesita limpieza es plomo. El Folleto de Superfondo de Contaminación de Lugares Residenciales (EPA 2003) establece que "El nivel final de limpieza de los lugares de Superfondo en general se basa en los resultados del modelo IEUBK y los nueve criterios de análisis del Plan Nacional de Contingencia (NCP), que incluye un análisis de los ARAR". Basado en estas consideraciones, la EPA ha establecido un nivel de limpieza de plomo de 450 mg/kg que se aplicará a todas las áreas, cuando la remoción se lleve a cabo, incluyendo Patios o Areas Residenciales, los Montículos de Basura, la Zanja de Drenaje, y la Zona No Residencial.

RESUMEN DE LA ALTERNATIVA PREFERIDA

La Alternativa 2, Remoción con Consolidación en el Lugar y Cubierta en la Zona No Residencial, es la alternativa de limpieza preferida para la contaminación del suelo en este Lugar.

Esta alternativa contempla la excavación de suelos contaminados con plomo en el Área de Residencias y la Zanja de Drenaje donde las concentraciones de plomo están por encima de la meta de limpieza del Lugar de 450 mg/kg, y la remoción del material de los Montículos de Basura. Los materiales extraídos se transportarán a la zona no residencial y se consolidaran. Todos los patios residenciales donde se lleva a cabo la excavación se rellenarán y volverán a sembrar para restablecer la condición anterior a la excavación. Aproximadamente 8.5 cuerdas de la zona no residencial del suelo donde las concentraciones de plomo están por encima de la meta de limpieza del Lugar y/o están presentes materiales de los montículos de basura se cubrirán con un sistema de cubierta del suelo. Se llevará a cabo el muestreo de confirmación después de la remoción de los materiales para confirmar que la meta de limpieza se ha alcanzado a la profundidad deseada. El monitoreo del aire será necesario durante la construcción para garantizar la protección de los trabajadores y residentes cercanos. Se incluye una opción para los materiales que no son conducentes a la consolidación y la cubierta (es decir, residuos de grandes dimensiones) para ser enviadas fuera del Lugar para disposición o reciclaje. Cualquier material que se envíe fuera del Lugar para su disposición se analizará para un posible reciclaje según sea apropiado; dichos materiales se descontaminarán antes de su reciclaje cuando sea necesario. Los materiales enviados fuera del Lugar se clasificarán, basados en las características de peligro, antes de su remoción. El enfoque para la aplicación de esta opción se mostrará con mayor detalle en el Diseño de la Acción Correctiva.

El diseño final del sistema de cubierta en la Zona No Residencial se determinará durante el diseño detallado, pero se anticipa que va a incluir una capa de geotextil no-tejido debajo de 12 pulgadas de tierra limpia. El suelo se cubrirá de vegetación para evitar la erosión que causaría la exposición a los materiales subyacentes. Aunque el uso futuro de la zona no residencial aún no ha sido determinado, se establecerán controles institucionales para evitar el uso residencial sobre la cubierta del suelo en el área para asegurar que la cubierta dará protección. Una inspección de rutina y programa de mantenimiento específico proporcionarán para la identificación de los impactos negativos de fenómenos meteorológicos severos. El programa de monitoreo se diseñará para incluir tanto, las inspecciones de rutina ya señaladas (por ejemplo, anuales), y las periódicas movidas por los eventos por ejemplo, inspecciones que procedan inmediatamente después de lluvias extremas dentro del primer año de la instalación de la cubierta). La supervisión del rendimiento se llevará a cabo para confirmar la eficacia a largo plazo.

Esta alternativa incluirá controles institucionales para atender ciertas áreas no caracterizadas debajo de estructuras y pavimentos. Además, se establecerán los controles institucionales para evitar que ocurran disturbios en la cubierta del suelo.

El manejo de los riesgos relacionados con plomo en el polvo doméstico incluirá controles de ingeniería durante las actividades remediativas para minimizar la migración del plomo en el polvo fugitivo hacia los hogares, muestreo de confirmación tres meses después de completar el remedio seleccionado en las dos propiedades donde se midieron los niveles elevados de plomo en el polvo doméstico en el OU-2 RI.

Se requerirá una investigación adicional antes del Diseño de Acción Correctiva incluyendo la medición detallada de características y la topografía de la propiedad, el muestreo de suelos a dos propiedades donde el acceso no se pudo obtener durante el RI de OU-2, muestreo adicional en ocho propiedades donde se necesita más datos sobre la concentración de plomo para el diseño de apoyo y de suelo, muestreo de la Zanja de Drenaje para plomo para la comparación con el objetivo de limpieza.

Dado que la alternativa seleccionada envuelve la alteración de suelo, se desarrollará un plan de manejo de las aguas superficiales durante el diseño correctivo para establecer el control efectivo de la escorrentía superficial del agua y reducir al mínimo la erosión del suelo de las zonas cubiertas. El manejo del agua superficial y el sistema de control de la erosión consistirá de los siguientes componentes:

- Un plan de nivelación que mantenga los grados existentes siempre que sea viable y se integre la topografía de la superficie final en las áreas remediadas con las áreas circundantes.
- El uso de las pistas, bermas, canales, y la superficie usando vegetación natural y/o de materiales sintéticos (por ejemplo, cerca de limo) para transmitir el escurrimiento superficial del agua en la zona no residencial y para proporcionar protección contra la erosión.

Debido a que la Zanja de Drenaje paralela a la Calle Alturas en la actualidad proporciona la vía de drenaje principal para la escorrentía de las aguas superficiales en el Lugar, es probable que el plan de manejo del agua superficial esté relacionados con la zanja, sin embargo, los detalles del sistema de manejo del agua de superficie, se desarrollarán en el diseño detallado y cumplirá con la requisitos de erosión del suelo y los de sedimentación en Puerto Rico.

Los acuerdos de acceso se obtendrán de los dueños de las propiedades privadas. Además, también se buscarán los acuerdos de acceso en las propiedades adyacentes a las zonas donde las actividades de recuperación se llevarán a cabo.

El acceso a la Zanja de Drenaje también será necesario para la toma de muestras PDI, y posiblemente para las medidas correctivas. Debido a que la Zanja de Drenaje se asocia con el derecho de paso, quizás no se necesiten los acuerdos formales de acceso de todas las residencias que bordean la zanja. Sin embargo, la notificación se le dará a los residentes que viven a lo largo de la zanja antes de la toma de muestras y actividades correctivas.

De acuerdo con la política de Limpieza Verde de la EPA Región 2, la EPA evaluará y tratará de aplicar tecnologías y prácticas sostenibles con respecto a esta alternativa.

Como es la política de la EPA, la Revisión a los 5 años se llevará a cabo para garantizar la integridad y eficacia del remedio seleccionado.

PARTICIPACIÓN DE LA COMUNIDAD

La EPA invita al público a revisar los documentos que actualmente están disponible en le Récord Administrativo del Lugar donde se detalla las actividades realizadas en el Lugar.

Para más información sobre el Lugar de Superfondo Antiguo Crematorio de Vega Baja incluyendo la alternativa preferida, favor comunicarse con:

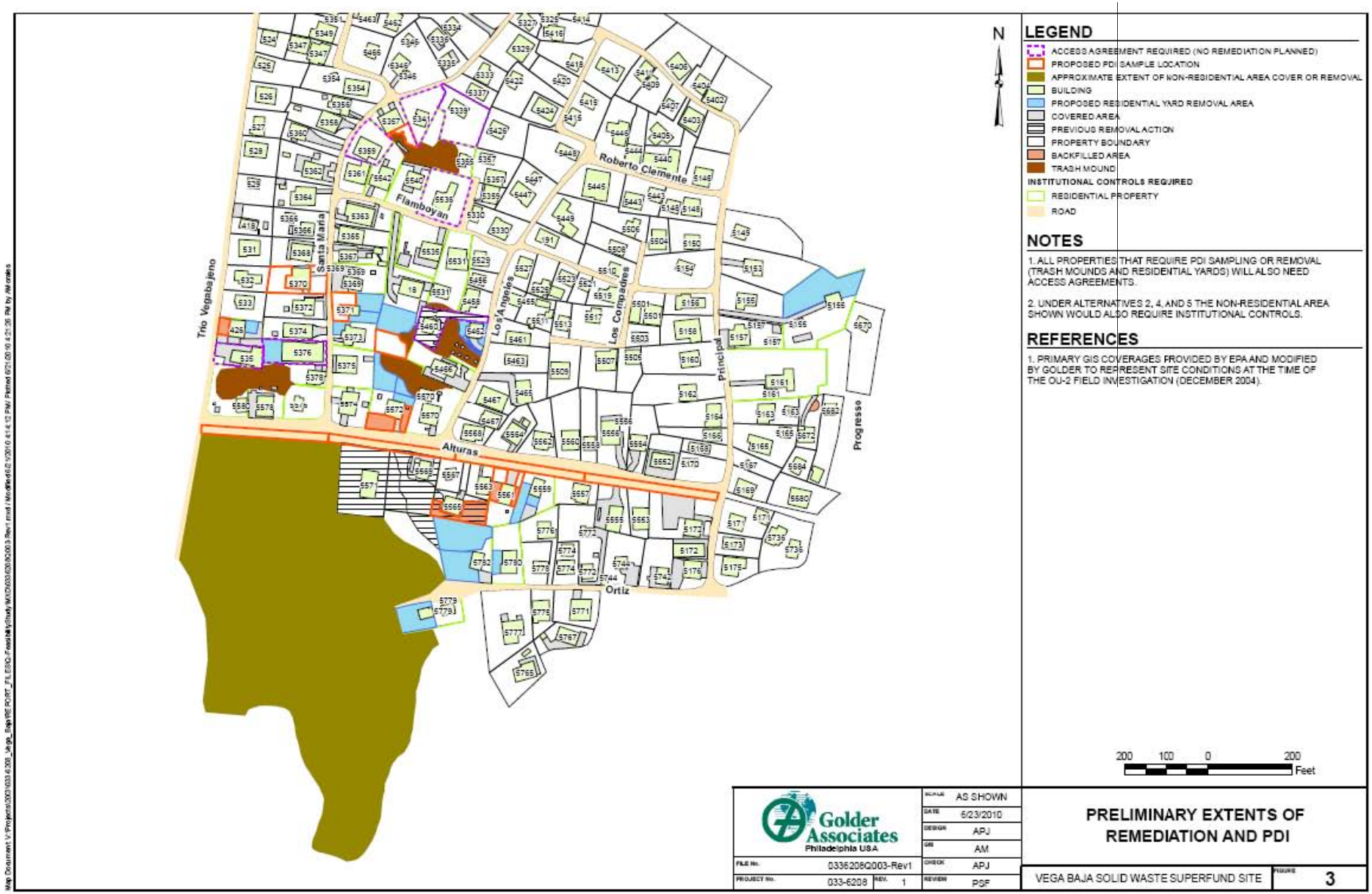
Nancy Rodríguez Gerente de Proyecto (787) 977-5887	Brenda Reyes Relaciones con la Comunidad (787) 977-5869

EPA – División de Protección Ambienta del Caribe
Edificio Centro Europa
Avenida Ponce de León Núm. 1492, Oficina 417
San Juan, Puerto Rico 00908
(787) 977-5865

O accesar la pagina de Internet de la EPA a:

http://www.epa.gov/region2/superfund/npl/vegabaja/

Las fechas para el período de comentarios públicos; la fecha, el lugar y hora de la reunión pública, y el Lugar del Récord Administrativo se proporcionan en la página principal de esta hoja informativa.


N
LEGEND
ACCESS AGREEMENT REQUIRED (NO REMEDIATION PLANNED)
PROPOSED PDI SAMPLE LOCATION
APPROXIMATE EXTENT OF NON-RESIDENTIAL AREA COVER OR REMOVAL
BUILDING
PROPOSED RESIDENTIAL YARD REMOVAL AREA
COVERED AREA
PREVIOUS REMOVAL ACTION
PROPERTY BOUNDARY
BACKFILLED AREA
TRASH MOUND
INSTITUTIONAL CONTROLS REQUIRED
RESIDENTIAL PROPERTY
ROAD
NOTES
1. ALL PROPERTIES THAT REQUIRE PDI SAMPLING OR REMOVAL (TRASH MOUNDS AND RESIDENTIAL YARDS) WILL ALSO NEED ACCESS AGREEMENTS.
2. UNDER ALTERNATIVES 2, 4, AND 5 THE NON-RESIDENTIAL AREA SHOWN WOULD ALSO REQUIRE INSTITUTIONAL CONTROLS.
REFERENCES
1. PRIMARY GIS COVERAGES PROVIDED BY EPA AND MODIFIED BY GOLDER TO REPRESENT SITE CONDITIONS AT THE TIME OF THE OU-2 FIELD INVESTIGATION (DECEMBER 2004).
Tno Vegabajeno
Santa Maria
Flamboyan
Roberto Clemente
Los Angeles
Los Compadres
Principal
Progresso
Alturas
Ortiz
200 100 0 200
Feet
Golder Associates
Philadelphia USA
FILE No. 0336208Q003-Rev1
PROJECT No. 033-6208 REV. 1
SCALE AS SHOWN
DATE 6/23/2010
DESIGN APJ
GIS AM
CHECK APJ
REVIEW PSF
PRELIMINARY EXTENTS OF REMEDIATION AND PDI
VEGA BAJA SOLID WASTE SUPERFUND SITE
FIGURE 3

500131

RESPONSIVENESS SUMMARY
Appendix C – Public Meeting Attendance Sheet

VEGA BAJA SOLID WASTE DISPOSAL SUPERFUND SITE
PUBLIC MEETING

SIGN-IN SHEET

Meeting Date: August 3, 2010

Meeting Place: Comunidad Brisas del Rosario, Vega Baja, PR

Name/Nombre	Teléfono/Phone	Direccion Residencial /Address	Agencia/Agency		E-Mail
Anria Cardona					
Nidia Garcia					
Carmelo Vega					
Samuel Martinez					
Luis E Ortiz					
~~José Luis Acosta~~					
Mario Gomez					
Aida Reynoso	787-531 5320	Calle alturas #5565 Brisas del			
Marta Perez	787-345 6533	Calle alturas #5565			
Carmen Ramirez	544-4555	Calle Alturas #5559			
Margarita Perez	787-207-7316	Calle Principal #5155 int.			
Anibal Reyes		Calle L/Angeles 5466			

VEGA BAJA SOLID WASTE DISPOSAL SUPERFUND SITE
PUBLIC MEETING

SIGN-IN SHEET

Meeting Date: August 3, 2010

Meeting Place: Comunidad Brisas del Rosario, Vega Baja, PR

Name/Nombre	Teléfono/Phone	Direccion Residencial /Address	Agencia/Agency	E-Mail
Laura Lamoutt	(787) 460-9041	Calle Cultura Bzn 5560 Brisas del Rosario		
José A Rivera	9049852	Calle Las Olas 5235 Brisas del Rosario		
Jose Santiago	787-346-6343	Calle Santa María 5371		
Amadeo Santiago	787-855-6712	Calle altura #5569		
Yolanda Reyes	787-858-7845	Calle Principal #5158		
Wilma Garcia	787-322-0839	#5562		
José M. Garcia	787-208-9780	"		
Karlo Malavé Llamas				
María del C Cotto				
Pascual E. Velázquez	787-767-8181 xt 3209		JCA	
Carlos Rivera				
Reagan Zon Lt				

VEGA BAJA SOLID WASTE DISPOSAL SUPERFUND SITE
PUBLIC MEETING

SIGN-IN SHEET

Meeting Date: August 3, 2010

Meeting Place: Comunidad Brisas del Rosario, Vega Baja, PR

Name/Nombre	Teléfono/Phone	Direccion Residencial /Address	Agencia/Agency	E-Mail
JULIO ARROYO		366 CALLE ORTIZ RIO ABAJO V.B.		
JOSE VARGAS	787-904-7377	c/ Flamboyan Rio Abajo		
[illegible]	787.855.3541			
Santa Morales [illegible]	(787) 346-1845 247-4898	[illegible] Ave Dominga 13-A con. 686 Playa VB	VIDAS	grupo.vidas@gmail.com
Carmen Arce		Calle Los Angeles 5462		
RAMÓN NAVEDO	667-4188	CALLE LOS ORTIZ PARC. 1051 B215765		
Hna. María Cecilia Molina B				
MARÍA B. Cerón	717-2880	Apdo. 8243 BAYA. PR 00960	VIDAS	bosquemar_rio@yahoo.com
David Rodríguez Sobrino	787-554-8273	ext. Cayuna Buena E-15 Villa Pinares (Guaynabo)	VIDAS	zeusolo@gmail.com
Disraelly Gutierrez Jaime	787-376-6101	Paseo Claro 448 Vega Baja		gutidisra@yahoo.com
Roberto [illegible]				

VEGA BAJA SOLID WASTE DISPOSAL SUPERFUND SITE
PUBLIC MEETING

SIGN-IN SHEET

Meeting Date: August 3, 2010

Meeting Place: Comunidad Brisas del Rosario, Vega Baja, PR

Name/Nombre	Teléfono/Phone	Direccion Residencial /Address	Agencia/Agency	E-Mail
Juan I. Rojas Reyes	723-9090		A.T.P.R.	jrojas@atpr.gobierno.pr
Vicente Maldonado	939-218-6874	calle Los Angeles 5465 Brisas del Rosario		
Doris Gaetán Natal	460-8846	HC 05 Box 46650 VB	Legislador Municipal	dorisgaetan@hotmail.com

RESPONSIVENESS SUMMARY
Appendix D - Letters Submitted During the Public Comment Period

Comentario: A Nancy Rodriquez

DE: Carmelo Vega Vaderrama y
Nidia Garcia Olivero
Calle alturas 5561 Brisas del Rosario
Vega Baja P.R.

Despues de analizar lo que la EpA nos diee
No Entiendo como es posible que mi tereno no Este
Contaminado Cuando en unas prueba que se hicieron
salia con plomo. Ademas el solar del Este entra en
liempieza, El Solar del Sur, el del oeste y por el norte
el Zanjón. todos Estan en la lista de liempieza.
No estoy de acuerdo con sus Resultado pues aqui
Mientras mas se escarva mas tierra de Vertedero Sale
En las ultima prueba se llevaron tierra de una que yo
Rellene en alguno lado.
Otra cosa el Sr Ramontorres nos informo que el
Estanda era 400 Mg/kg ahora es de 450 porque
para no liempiar alguno Lugar?
me precupa eso de a largo plazo pues para la
mayoria ya llego a corto o Es que 40 año o 30
no es a largo plazo? yo diria time-up.
aqui no se le adado importancia a la salud. aqui hay
muchas persona con condicion de piel, Rinon, hasta
Cancer. yo se que esto pasa dondequiera pero cuando
hay una Causa como aqui No Se....
aqui mucha person callan por miedo que los saquen
pues no tienen titulo, pa mucho el titulo vale mas que
la salud.
Supuestamente se gastaron 3 millones y algo mas
En 3 Solares. Con 4 millones se Liempiaran los
Restante?

Entregado A:

500138

Golder Associates

August 26, 2010 Project No. 033-6208

Nancy Rodriguez, PE
Remedial Project Manager
U.S. Environmental Protection Agency
Caribbean Environmental Protection Division
1492 Ponce de Leon Avenue, Suite 417
San Juan, Puerto Rico 00908

RE: COMMENTS ON EPA'S PROPOSED PLAN FOR OPERABLE UNIT 2 VEGA BAJA SOLID WASTE DISPOSAL SUPERFUND SITE

Dear Nancy:

The following comments on the United States Environmental Protection Agency's (EPA) Proposed Plan for Operable Unit 2 (OU-2) of the Vega Baja Solid Waste Disposal Superfund Site (Site) are submitted on behalf of the Vega Baja Cooperating PRP Group[1] (the Group).

- The Group supports EPA's Preferred Alternative (Alternative 2) as the most appropriate alternative based on the criteria established in the National Contingency Plan (NCP).[2] Furthermore, the effectiveness of the Alternative 2 approach has already been demonstrated at the Site by the Group. In 2004 some trash mound materials in the residential area were the subject of an unauthorized disturbance, creating a physical hazard. At EPA's request, the Group responded by removing the rest of the materials, consolidating them in the Non-Residential Area, and covering consistent with Alternative 2. This action has been effective in protecting human health and the environment. EPA's Preferred Alternative adopts the same approach for impacted soils and remaining trash mounds in the Residential Area, as well as the Drainage Ditch. The associated engineered barrier cover in the Non-Residential Area will be subject to regular inspection and maintenance to ensure its proper performance into the future.
- Page 12 of the Proposed Plan (as well as EPA's presentation at the August 3, 2010 public meeting) indicates that a different alternative (Alternative 3) would have higher long-term effectiveness and permanence than the Preferred Alternative. However, it should be noted that under Alternative 3, impacted materials would simply be moved to another location where they would need to be managed in the same way as under Alternative 2 to maintain long-term effectiveness and permanence. In addition, given the large volume of materials (approximately 90,000 cubic yards) that would be transported through the Site under Alternative 3, the impacts to the community would be much greater than for Alternative 2. Transportation of contaminated materials over substantial distances would be necessary to reach a suitable disposal site, increasing the risk involved in implementing the remedy (both to the wider community and to remediation workers). Alternative 3 would also involve a much higher level of resource consumption (primarily fuel) and air emissions compared to EPA's preferred alternative (Alternative 2).

[1] The participating Group members are: Browning-Ferris Industries of Puerto Rico, Inc., Pfizer, Inc. Motorola Electronica de Puerto Rico, Inc., Puerto Rico Electric Power Authority, Puerto Rico Housing Department, and Puerto Rico Land Authority.

[2] The Group is submitting these comments solely to express its view of the relative technical merits of the remedial alternatives being considered by EPA. The Group's expression of support for Alternative 2 does not represent any commitment by the Group to perform or fund the remedial action to be selected by EPA for OU-2.

Golder Associates Inc.
200 Century Parkway, Suite C
Mt. Laurel, NJ 08054 USA
Tel: (856) 793-2005 Fax: (856) 793-2006 www.golder.com

- As indicated in the Proposed Plan (page 12), Alternative 2 is the most implementable alternative; however, EPA's presentation during the public meeting on August 3, 2010 did not indicate that this Alternative was ranked highest for implementability. It should be noted that Alternative 3, in particular, has significant implementation challenges. As discussed in the Feasibility Study, in a February 18, 2010 presentation entitled "Solid Waste Management in Puerto Rico: Realities, Facts and Figures," the Puerto Rico Solid Waste Authority stated that "Puerto Rico's situation regarding waste management is critical" and it indicated that by the year 2014, 10 of the existing 24 landfills in Puerto Rico will likely be closed, and by 2020, only 4 landfills will still be in operation at the current rate of waste disposal. This suggests that finding an appropriate disposal facility that will be able to accept nearly 90,000 cubic yards (about 135,000 tons) of lead-contaminated soil will be difficult and the soils may need to be transported a significant distance to an appropriate and available landfill. Indeed, in connection with the removal action performed at this Site several years ago when landfill space was more readily available, EPA stated that "The number of landfills on Puerto Rico capable of accepting the contaminated soils generated at the Site is very limited."
- The cleanup goal of 450 mg/kg for lead that is presented in the approved Feasibility Study and in the proposed plan was selected by EPA, despite scientific evidence that a higher value would be appropriate. For example, blood lead testing of child residents at the Site conducted in 1998 by the Agency for Toxic Substances and Disease Registry (ATSDR) did not exceed the health-based criterion established by the Center for Disease Control. Furthermore, EPA's IEUBK model was used by the Group to develop a Site-specific preliminary remedial goal range of 566 to 613 mg/kg. The Group recommended a cleanup level of 550 mg/kg based on the IEUBK-calculated range. This cleanup level would also be protective of populations of ecological receptors. EPA stated on page 8 of the Proposed Plan that "Final cleanup level selection for Superfund sites generally is based on the IEUBK model results and the nine criteria analysis per the National Contingency Plan (NCP), which includes an analysis of ARARs." However, EPA's selection of the cleanup level in this case does not appear to have been based on this approach – rather, it is a more conservative value close to EPA's generic residential screening level of 400 mg/kg. The Group maintains that a cleanup level of 550 mg/kg would be consistent with EPA's practice and would be equally protective at the Site.
- Specific Comments on the Proposed Plan text
  - Page 7: The Proposed plan states that arsenic and manganese concentrations are "similar to background"; however, the analyses performed as part of the Remedial Investigation indicate no statistical difference between concentrations of these compounds in background and on the Site.
  - Page 7: The Proposed Plan states that risks associated with thallium could be re-evaluated during the Remedial Design. However, the NCP requires that the cleanup approach be unambiguously determined in EPA's Record of Decision. Re-evaluation of remedies thereafter may occur only via EPA's Five-Year Review process.
  - Page 7: The Proposed Plan states that the results of IEUBK and ALM modeling indicated a potential to cause "an increase in blood lead" defined as "greater than 5% of the population exceeding 10 ug/dL of lead in the blood." This description of the results of IEUBK and ALM modeling is not accurate. These models predict whether lead concentrations in soil are likely to result in a 5% probability that any single individual's blood lead level will exceed 10 ug/dL, which is significantly less severe than 5% of the population exceeding that level. Furthermore, blood sampling performed on all pre-school aged children at the Site in 1998 indicated *no* detections of lead in blood at concentrations greater than 10 ug/dL.

- Page 7: The Proposed Plan states that "A cleanup value of 450 mg/kg was determined to be protective of avian populations that use the site." It should be noted that, because avian receptors are the most sensitive to lead, protection of avian populations ensures protection of all ecological receptors evaluated for the Site. In addition, 450 mg/kg was evaluated because it was selected by EPA as the cleanup level for protection of human health, however, higher concentrations of lead are also protective of ecological receptor populations.
- Page 12: The Short-term effectiveness criterion also includes consideration of the time to achieve remedial goals. It should be noted that Alternative 2 is expected to achieve remedial goals in a shorter time frame than Alternatives 3 and 4.

We appreciate the opportunity to provide comments on this important matter.

Very truly yours,

GOLDER ASSOCIATES INC.

for P. Stephen Finn, C.Eng.
Project Coordinator

PSF:lrl

cc: Vega Baja Cooperating PRP Group

RESPONSIVENESS SUMMARY
Appendix E - Transcript of the August 3, 2010 Public Meeting, English Translation of the Public Meeting Transcript

AGENCIA FEDERAL DE PROTECCION AMBIENTAL

DIVISION DE PROTECCION AMBIENTAL DEL CARIBE

VISTA PUBLICA SOBRE

LUGAR DE SUPERFONDO; ANTIGUO CREMATORIO DE VEGA BAJA

Unidad operacional 2: suelos

Fecha: **3 de agosto de 2010, 6:00 P.M.**

Lugar: **Capilla de Santa Rosa de Lima**

Calle Principal, Brisas del Rosario

Barrio Río Abajo

Vega Baja, Puerto Rico

Moderadora: **BRENDA REYES**

****

FASYO REPORTERS - English and Spanish
510 Octavio Marcano Street Urb. Roosevelt
San Juan, PR 00918 (787)767-5593 447-8858

PROCEDIMIENTOS

SA. REYES: ...Luis Santos; Luis trabaja en la división de superfondo. Tenemos a Mike Valentino, de CDM, que es contratista para este lugar de superfondo... y les queremos dar las gracias por sacar de su tiempo y estar aquí.

Estuvimos repartiendo hojas informativas en la comunidad para)-¿verdad?)- invitarlos a que participaran en la reunión de hoy, donde vamos a estar hablando del plan propuesto para la segunda unidad operacional, que es de los suelos, aquí, en la comunidad de Brisas del Rosario.

Me avisan si voy muy rápido o no entienden algo.

Tengo aquí la hoja informativa sobre el plan propuesto. Aquí tienes un poco de más información, la voy a estar pasando, para aquellos de ustedes que gusten leerla antes de comenzar.

De seis a siete, vamos a estar haciendo una serie de presentaciones. Aquí, esto es, como pueden ver, estamos improvisando una pantalla y tenemos unos mapas. Chuck, que está aquí, con nosotros, Chuck Nays (fonético), va a estar dando una presentación y la van a estar grabando aquí, los jóvenes, como parte del proceso, para tenerla en el récord.

Me gustaría que, si van a hacer alguna pregunta...

Tengo problemas con el sonido, el... de parte.

Me gustaría que, si tienen alguna pregunta, la hagan diciendo su nombre. Tenemos los micrófonos. Espero que

funcionen un poquito mejor durante el transcurso de la noche. Y si no quisieran hacer la pregunta ustedes, yo tengo aquí unas hojitas, tarjetitas y tengo bolígrafos. Las voy a dejar aquí, por si ustedes gustan escribirlas o si tienen alguna duda en el transcurso de la presentación, que las puedan escribir para que, entonces, no se les haga difícil volver...

A veces, es un tanto difícil, cuando estamos viendo presentaciones que incluyen aspectos un poco técnicos, referirnos o acordarnos de todo, así que voy a tener esto aquí. Si ustedes gustan, los pueden tomar.

Tenemos compañeros de la Junta de Calidad Ambiental, que van a estar viniendo en la noche de hoy. Uno de ellos ya vino y se fue, un segundito, Pascual, fue a buscar un café.

Así que, cualquier cosa, saben, mi nombre es Brenda y ya mismito vamos a estar comenzando con la presentación.

(Fuera del récord.)

(De vuelta al récord.)

SA. REYES: Para los que llegaron más recientemente, mi nombre es Brenda Reyes, yo soy oficial de prensa de la EPA, de la Agencia Federal de Protección Ambiental. En la tarde de hoy, estamos aquí con ustedes para hablarles sobre el plan propuesto de la unidad operacional 2 del lugar de superfondo del antiguo crematorio de Vega Baja, también conocido como Brisas. Les agradecemos a la gente de la parroquia por habernos facilitado el lugar para llevar a cabo la reunión.

En la noche de hoy, están aquí varios compañeros de la EPA: Rubén Alayón; está Luis Santos; está el ingeniero José Font subdirector de la oficina; está el compañero Chuck Nays, que es el asesor de riesgo que va a estar dando una presentación; Ariel Iglesias, director de la división de emergencias y superfondo; y Nancy Rodríguez, gerente de proyecto.

Aparte de eso, tenemos aquí a Mike Valentino, de CDM (sic.), que es el contratista. Y allá atrás, tenemos a Pascual, de la Junta de Calidad Ambiental.

Así que, con eso, pues, vamos dar inicio a la presentación que tenemos en la noche de hoy. Tenemos aquí grabación)-¿verdad?)-, pues, para el récord, de la reunión.

También, para los que llegaron más recientemente, indiqué que va a haber un período de preguntas y respuestas, al final. Se les repartió el plan propuesto, tienen una hoja informativa sobre el plan propuesto. También, en el segundo banco, dejé unos "index cards" o unas hojitas. Hay bolígrafos para que, pues, aquel que quiera hacer preguntas o, pues, anotar algo sobre la presentación que está aquí, sabemos que, pues, muchas veces hay algunos detalles y nos perdemos cuando tenemos que recapitular un poquito la presentación, así, pues, que si algo les levanta alguna duda o tienen alguna pregunta, pues, están bienvenidos de tomarla.

Se me olvidó mencionarles que hay un baño aquí, en el

costado, por si necesitan utilizar el servicio sanitario. Hay que salir por la puerta principal...

¿Se me queda algo más?

Sí, las preguntas. Va a haber un micrófono para las preguntas, pero yo me encargo de esto. Así que nada, les dejo aquí con Nancy, que es la... ¿Ah? ¿Con Ariel?

Ariel, ¿tú vas a estar haciendo la presentación? Pues, les dejo aquí con Ariel Iglesias y ya saben, cualquier duda o pregunta, pues, creo que aquí estamos muchos de la EPA para contestar sus preguntas. Gracias.

SR. IGLESIAS: Buenas noches a todos. Quiero agradecerles la presencia de todos ustedes esta noche. Muchas gracias por sacar de su tiempo para compartir con nosotros.

¿No se escucha atrás?

¿Mejor?

Bueno. Nuevamente, muchas gracias a todos por sacar de su tiempo y compartir con nosotros esta noche.

Nosotros vamos a estar esta noche hablando un poco sobre el estatus de la investigación de la contaminación en el "superfund site" aquí, en la comunidad de Brisas del Rosario, dándoles un "update" y explicando los próximos pasos y el plan propuesto para atender la remediación.

Una excelente oportunidad para aclarar preguntas. Habemos bastantes compañeros aquí, esta noche, para ayudarnos a entender en qué estatus nos encontramos, cuáles son los

próximos pasos y en qué consiste el plan propuesto.

Si me ayudas por aquí, Rubén...

La agenda de esta noche, vamos a tener la bienvenida, pues, que nos la dio Brenda. Vamos a hablar un poco sobre el proceso de superfondo. Nancy nos va a estar hablando sobre la historia del lugar, en dónde nos encontramos actualmente con respecto a la investigación remedial y la evaluación de riesgo, cuáles son los resultados y las conclusiones de estos estudios que se han estado llevando acabo aquí por unos cuantos años, el estudio de viabilidad y las alternativas que se han evaluado para atender la contaminación que se encontró en el sitio y los próximos pasos. En resumen, nos va a estar hablando sobre el plan propuesto de cómo se propone atender la contaminación que se ha encontrado en el área.

Yo les voy a hablar un poco sobre el proceso de superfondo. Como ustedes saben, esto pro... nosotros hemos estado involucrados en un proceso de investigación de la situación presente aquí, en el lugar de Brisas del Rosario por unos cuantos años.

El proceso de superfondo de un lugar genérico comienza con el descubrimiento del lugar. El descubrimiento del lugar, pues, normalmente, se da a cabo... se lleva a cabo de varias maneras, ya sea porque recibimos querellas ciudadanas, porque hay un referido por parte de alguna agencia estatal, porque personal de nosotros visitó un lugar y encontró algunas

cosas que pudiesen ser de preocupación sobre la presencia de materiales peligrosos y, una vez uno descubre este lugar, pues, evalúa la información que tiene a la mano para determinar si, bajo el proceso de superfondo, el lugar amerita ser considerado.

Si la información que tenemos a la mano nos lleva a que el lugar sí puede presentar un problema, se hace un estudio preliminar, una evaluación preliminar y una inspección del lugar y lo que básicamente se utiliza es información existente para determinar si el lugar debe ser considerado para ser incluido en lo que se conoce como la lista nacional de prioridades.

La lista nacional de prioridades es el "hit parade" de lugares contaminados. O sea, es un lugar en donde, pues, se encuentra una contaminación. Esto es un proceso riguroso, una vez uno consigue información que sugiere que un lugar pueda estar contaminado, bajo un proceso de evaluación y va a un panel, el cual considera la información y determina si, de hecho, este lugar debe ser incluido en la lista nacional de prioridades.

Estos pasos ya nosotros los hemos andado para el lugar de superfondo aquí, en Brisas del Rosario, se los estoy discutiendo a modo de trasfondo para que entiendan qué se ha hecho a través de los años en este lugar.

Una vez el lugar es incluido en la lista nacional de

prioridades, nosotros procedemos a hacer una investigación remedial y un estudio de viabilidad. Estos son los dos pasos que se completaron para el lugar de superfondo de Vega Baja. Este estudio está dirigido a evaluar la naturaleza y la extensión de la contaminación: qué tipo de contaminantes están presentes. Es dónde se encuentran estos contaminantes. Y se utiliza esta información para establecer si existe contaminación y si esa contaminación presenta un riesgo a la salud pública y al medioambiente. Y nosotros, a base del riesgo que puede presentar a la salud pública y el medio ambiente, tomamos una decisión si, de hecho, existe la necesidad de llevar a cabo algún tipo de limpieza o alguna actividad remedial para atender esta contaminación.

De ser necesario, comenzamos a desarrollar alternativas para poder trabajar con esta contaminación que está presente en el lugar. Estas alternativas se evalúan, se evalúa la viabilidad de poder implementar estas diferentes alternativas y eso es lo que, en bloque, se conoce como el estudio de viabilidad.

Estos dos pasos se acaban de completar para este lugar. Se evaluó la naturaleza y la extensión o se definió la naturaleza y la extensión de la contaminación, se evaluó el riesgo y se evaluaron las alternativas para atender la contaminación que se encuentra presente.

Nancy, más adelante, lo que va a hacer es que va a ir

por encima de las conclusiones de estos estudios, para que ustedes puedan entender el tipo de contaminación que se encontró y las alternativas que se están proponiendo, que la agencia está proponiendo llevar a cabo para atender esta contaminación.

Próximo paso. La agencia provee esta información a la comunidad y al público, para que ustedes tengan una oportunidad no tan sólo de conocerla, sino de poder expresar cualquier comentario que ustedes puedan tener antes de tomar una decisión aquí. Y eso es lo que estamos haciendo en este período de comentarios públicos, que termina en el mes de agosto. Y esta reunión pública es una oportunidad que nosotros tenemos para poder sentarnos con ustedes, compartir la información que nosotros hemos recopilado y que ustedes puedan entender qué es esta información, qué quiere decir esta información y cuáles son los planes que se están proponiendo hacer.

Una vez nosotros culminemos este proceso de comentarios públicos, nosotros entonces tomamos una decisión sobre qué hacer en el lugar y eso se plasma en un récord de decisión.

Una vez se plasma en un récord de decisión, pasamos al próximo paso, que consiste en diseñar el remedio. Ya definimos la naturaleza y la contaminación, decidimos que hay que tomar una acción remedial o hacer una limpieza, evaluamos las alternativas, el próximo paso es diseñar cómo se van a

implementar esas alternativas.

Ya estos pasos, a partir del récord de decisión en adelante son pasos prospectivos. O sea, son pasos futuros. Ahora mismo, nosotros estamos en el punto de tomar una decisión final sobre qué vamos a hacer.

Una vez se diseñe el remedio, se construye dicho remedio.

Luego que se construye el remedio, pues, este remedio se va evaluando a través del tiempo)-Rubén, si puedes darle para alante)- para asegurarnos que el remedio está cumpliendo su cometido, que el remedio se está desempeñando como se había diseñado. Y esto es lo que se conoce como el monitoreo de post construcción.

Una vez se termina la acción remedial y, por lo tanto, se concluye que está funcionando el remedio, pues, pasamos por el proceso de "delistar" el lugar. Quiere decir que se acabó el trabajo en ese lugar, el lugar ha sido devuelto a uso beneficioso y pasamos para el proceso de "delisting".

Es importante recalcar que, en todo momento, en el proceso de superfondo, nosotros estamos trabajando con contaminación y con receptores, salud pública y medioambiente. Y ésos son los dos elementos que, en todo momento, nosotros estamos pendientes y considerando en nuestro proceso de toma de decisiones. Y el fin del proceso de superfondo es devolver el lugar a uso beneficioso.

Así que, con esto, yo culmino este proceso... bueno, esta parte del trasfondo del proceso de superfondo. Ahora, voy a dejar a Nancy, para que les hable un poco sobre la historia del lugar y los lleve sobre los trabajos que se han estado haciendo y cuáles son las conclusiones de estos trabajos y cuál es el plan propuesto y la acción que se está proponiendo llevar a cabo para atender la contaminación.

SA. RODRIGUEZ: Hola, bienvenido a todos. Quiero también agradecerle el tiempo en que ustedes de estar aquí con nosotros esta noche.

Ariel nos dio una buena introducción del proceso que estamos pasando aquí, en el lugar del antiguo crematorio de Vega Baja ---- un poquito los...

Como conocemos, aquí se traía, por treinta y un años, desde el 48 al 79, se traía...

Se escucha ahora mejor.

Se traía material, desperdicios comerciales, industriales y domésticos y se practicaba también la quema de desperdicios en este lugar. Se estima que uno punto uno yardas... millones de yardas fueron traídas al lugar.

En esa figura, se le está enseñando...

Básicamente, éste es el área residencial y ésta es el área que es no residencial, hacia los mogotes, para que tengan más o menos una idea de dónde estamos en la figura. Y aquí estamos mostrando cómo se comenzó a cubrir área de los

desperdicios que se estaban depositando.

Con esta gráfica, lo que le quiero enseñar, básicamente, aquí tenemos un resumen de la cantidad de muestras que se tomaron inicial. Son muestras de campo que, básicamente, son la base para que la EPA haya comenzado una investigación, pues, más formal.

Como muchos conocen, desde la década de los 70, se comenzó la construcción de residencias en el lugar. La primera inspección fue en el 94 y, de ahí, dados los resultados, fue evolucionando a que hay una necesidad de más "data", de más recolección de "data", de conocer mejor, porque estábamos encontrando contaminantes en el lugar.

Esto nos llevó a que el lugar fue listado en la lista nacional de prioridades en el 99 y, luego de eso, con relación a la unidad de suelos, en el 2003, las partes responsables firmaron una orden de consentimiento con la EPA, que fueron, como conocen, el municipio de Vega Baja, PREPA, Autoridad de Tierras, Departamento de Vivienda, Pfeizer, por comprar a Warner Lambert, que fue quien depositaba, BFI y Motorola.

Una vez vemos toda esa "data" que le presenté anteriormente, nos daba una base para decir: "Mira, entendemos que hay una contaminación en el lugar y deseamos hacer una investigación más profunda. La EPA, entonces, divide el lugar en dos unidades operacionales. Una es el agua subterránea y la otra es el suelo.

En el momento, comenzamos con la unidad operacional de agua subterránea que, hace un tiempo atrás, le estuvimos presentando los resultados y, básicamente, después de la instalación de los pozos, los resultados que se obtuvieron de muestras de agua, también el canal, la zanja de drenaje, Río Indio, ojos de agua también que se muestreó, encontramos que no había, en el agua subterránea, ninguna contaminante que se relacionara al lugar.

Por lo tanto, se firmó un récord de decisión, recomendando no acción para el lugar en el 2004. Es entonces cuando nos movemos a la unidad operacional de suelos y comenzamos una investigación ambiental.

¿Cuál es mi objetivo? ¿Qué es lo que yo quiero lograr? ¿Hacia dónde voy? Esta evaluación, basado en la "data" que habíamos recolectado inicialmente, decidimos delinear, decidimos caracterizar cuál es la contaminación que hay en el lugar.

Buscamos, con estudio también, determinar hasta dónde llega; cuál es la extensión de esta contaminación y, luego, evaluar los riesgos; qué riesgo presenta los contaminantes presentes a la salud humana y al ambiente.

La investigación de suelos, básicamente, lo que incluyó fueron unas muestras en la zona residencial, muestras en áreas, muestras en propiedades donde la "data" antigua, la "data" original nos mostraba que había una necesidad de tener

una "data" más de laboratorio, una "data" más definitiva, una investigación más profunda.

Como en estas residencias se tomaron muestras para plomo, tanto en el suelo como dentro de los hogares, en las plumas, en el agua de pluma y, también, en el polvo que hay dentro de los hogares.

También en el área residencial, completo, lo que es Brisas del Rosario, lo que es el lugar completo, que es lo que estoy mostrando aquí, en la figura, se tomaron muestras alrededor de toda el área para otros contaminantes, para saber si estaba presente y si me presentaban algún preocupación en el lugar.

También se tomaron muestras en el área no residencial, que es el área verde, abajo, que es la área que está hacia los mogotes, que no está desarrollada, para delinear cuál es la extensión de plomo en esta área y si había otro contaminante de preocupación. Esta área abajo me incluye diecisiete acres de terreno, que todo ello fue muestreado.

Antes de que pase, le añadí esta nota aquí, abajo, porque la EPA tiene lo que se llama la guía... "superfund lead contaminated residential site sample", es un "handbook", es una guía que ayuda a estudiar lugares como Brisas del Rosario, que tienen contaminación de plomo y es en área residencial.

Básicamente, la guía te da idea o te da unas direcciones, unas recomendaciones para cómo vas a tomar las

muestras, dónde tomarlas, cómo entender la "data", cómo... qué hacer con la "data", te lleva todo ese proceso de identificar y de evaluar en lugares que son residenciales y contienen plomo. La usamos de guía, que nos asistió en el proceso.

En adición, durante la investigación de suelos, tomamos muestras en los montículos, en las montañitas ésas de basura, que tenemos cuatro, que las podemos ver en color marrón, tenemos una, dos, la de arriba, tres y una por donde está la otra iglesia. Esa, pues, como ustedes conocen, hubo... se comenzó a hacer una remoción no autorizada y ya, pues, nos adelantamos y ésa se removió y se acomodó en el área no desarrollada. Por eso, ahora nos quedan básicamente tres montículos de basura o montañitas de basura.

En estos lugares, aquí, en la basura, se tomó muestras de plomo, pero también para otros análisis o compuestos para determinar qué contaminantes eran una preocupación en esa área.

Y por último, se tomó muestras de trasfondo, que es lo que conocemos en inglés como "background". Son áreas que buscamos cerca del lugar, pero que no hayan sido impactadas por ninguna actividad. Lo que buscamos es ver una referencia de cuáles son las concentraciones digamos que natural de estos contaminantes o de estos metales, por ejemplo, en estas áreas que no han sido alteradas por ninguna construcción o por ninguna... trabajo que se haya realizado que haya impactado

estos suelos.

Ahora les voy a mostrar unas figuras y, en estas figuras, básicamente, pueden ver dónde fue que se tomaron las muestras. Aquí estoy enfatizando el área residencial y, como podemos, ver la mayoría está concentrada entre la Calle Santa María Alturas y Los Angeles Ortiz y esta área aquí, en progreso.

Una vez les recalco que estas áreas surgen de los resultados que ya previamente se habían tomado en el área completa, en las doscientas trece casas, que es lo que incluye los cincuenta y cinco acres de propiedad en el área residencial.

Lo que le había explica'o anteriormente, de que para otros contaminantes que no fuera plomo, se separaron toda esta parte residencial, se separaron en bloque. Y lo que buscábamos aquí era tener una representación de las distintas áreas, pero lo que estamos buscando era recolectar muestras, basado en lo que necesitamos para hacer una evaluación de riesgo. Eso es lo que nos llevó a hacer esta... digamos que estas distintas figuras aquí, para separar los bloques y lo que buscábamos era satisfacer la necesidad de "data" que nos pide la evaluación de riesgo, para saber para otros contaminantes que no son plomo, si hay un riesgo a la salud humana o a ecológica.

Esta es el área que no residencial. Son los diecisiete acres en verde, abajo, en la figura. Básicamente,

también se mostró toda el área y, como podemos ver, fueron muestras suficientes como para saber hasta dónde llega mi contaminación.

Y por ul... La próxima.

Y por último, esto es lo que me refería con las áreas de trasfondo. Si ven, se tomaron en áreas que son abiertas, que no han tenido ninguna construcción, ninguna edificación. Básicamente, son áreas que nos puede dar una idea de cuáles son las concentraciones naturales de estos contaminantes o de estos metales en el lugar.

Le añadí esta figura, pero básicamente, esto es parte de lo que se hizo en la investigación del agua subterránea. Cuando le comenté que se instalaron pozos, también ese entonces, la idea era tomar muestras en la zanja de drenaje que tienen ustedes, que corre por Alturas y llega hasta Río Indio, pero como ustedes bien sabe, mayormente está seco. No se pudo tomar aguas... muestras de agua, pero sí se tomaron muestras de sedimento. En algunas áreas, sí nos dio unas concentraciones de plomo y es por eso que lo estamos... Dentro de la acción que estamos recomendando para el lugar, estamos incluyendo la zanja de drenaje para limpieza.

Luego que tomo esa... toda esa "data", que se analiza toda esa "data", en esta caja, le puedo... básicamente, tenemos todos los documentos aquí, disponibles, se generan unos documentos, que son revisados por distintos expertos de la

agencia y se llega a la conclusión de que el plomo, definitivamente, es un problema para el lugar y, aquí, le estoy dando un poco los valores que encontramos.

El suelo residencial, en la parte superficial, le estoy dando un rango de setenta y nueve a mil ciento treinta miligramos por kilogramo. Eso fue lo que encontramos en la... en el... en la "data" recolectada. El suelo a profundidad, hubo un área que llegó hasta veintiséis mil miligramos por kilogramos de plomo.

Como podemos ver en los montículos de basura, tenemos unos valores un poquito más altos. Nos hemos dado cuenta que lo que es en los montículos de basura y el área no residencial, es donde tengo unos valores más elevados de plomo en el lugar.

En el polvo residencial...

Esta "data", básicamente, yo la utilicé para correr los modelos de análisis de riesgo que me pedía, básicamente, una información del lugar, una información más específica. Básicamente, queríamos ver cuál es la concentración de polvo dentro de las residencias. Nos dio un máximo de ochocientos veinticuatro, pero el promedio fueron unos valores más bajos. Por eso queda un promedio de ciento veintidós.

Lo mismo con el agua de pluma. Esta "data" yo la utilizó, básicamente, para correr el modelo de riesgo y ver, entonces, cuál es mi situación en cuanto riesgo a la salud humana en el lugar.

Durante la investigación y los... la "data" que se recolectó, encontramos también algunas excedencias esporádicas de antimonio, cromio, cobre, talio, zinc y de hierro, también, que fueron más orientadas hacia las... montículos de basura y hacia el área no residencial.

Luego de una excelente evaluación y muchos aspectos, muchas perspectivas que se toman en cuanto a la "data" recolectada y evaluar lo que se interpreta, se concluyó que ya entendíamos o ya teníamos definido cuál era la naturaleza de la contaminación)-que se resume a plomo)- y cuál es la remediación; dónde está y hasta donde llega.

En los mogotes, que se investigó diecisiete acres, pudimos ver que solamente ocho punto cinco acres son los que están impactados por plomo y, por tanto, pues, necesita que se atienda ese problema. Y los valores, como arsénico, cromio y manganeso, se encontraron... aunque fueron por encima de los valores de residencia, se compara con los análisis de trasfondo que habíamos hecho. Por esas muestras que le expliqué, que estaban en lugares que no han sido impactados, cerca del área, al compararlos, son unos niveles que están en promedio bastante cercano, por lo tanto, se concluye que no es relacionado al lugar, sino que es particularidad del suelo.

Una vez tenemos toda esa "data", ¿qué hacemos con ella? Aquí tenemos a Chuck Nays, que es nuestro toxicólogo y él, básicamente, es el líder al evaluar los documentos que se

miran con relación a la salud humana, al riesgo de la salud humana, en un proceso complicado, que voy a resumir. Es básicamente... Lo que tú estás buscando es ver la exposición a este químico, en el caso de nosotros, la exposición al químico, qué significa, qué representa, para los residentes, ya sean adultos o niños, para el visitantes intermitentes, que es la persona que viene, juega, visita, se va, por lo tanto, no está expuesto día a día, pero puede venir frecuentemente y el trabajador de construcción, que tiene una exposición menor, pero puede venir al lugar.

Cuál es la exposición para ese tipo de personas cuando hay químicos en el suelo, en polvo y en vegetales. La conclusión fue que no hay... El riesgo de cáncer, presente por los contaminantes del lugar, no es elevado. Está dentro de los rango de la EPA. Por lo tanto, entendemos que no hay problema de riesgo de cáncer.

La peligrosidad, que son los compuestos que no son carcinógenos. Se determinó que es principalmente asociado con los compuestos que le dije, que aunque excedían los valores de referencia de la EPA, estaban en unos valores que eran similares a las condiciones del lugar, a las muestras de "background", las muestras de trasfondo, a lo que vemos en esta región.

Y, básicamente, se concluyó que plomo sabemos que es un problema y, para los niveles que puedes encontrar en la

sangre, pudiera crear un potencial de niveles elevados en la sangre. Por lo tanto, me lleva a que tenemos que hacer y tomar una acción en el lugar.

El riesgo al ambiente; el riesgo ecológico. ¿Qué hicimos aquí? Básicamente, primero hay una evaluación, una inspección de cuáles son las especies que podemos ver en esta área, en esta región en Puerto Rico. Y basado a las especies que pueden estar presentes, los receptores ecológicos que puedan estar presentes, se escogieron aves, murciélagos, me parece que está el "Puerto Rican boa", que son especies que pueden estar presentes en el lugar.

Se evalúa cuál es el riesgo a estos receptores con respecto a plomo. Se concluyó que el contaminante presenta un nivel no aceptable para las aves. ¿Qué me quiere decir eso? Que, obviamente, plomo también para las aves es un problema que tenemos que, entonces, "postar" una limpieza o una remediación.

Para los otros contaminantes. En las otras concentraciones que se vieron en el lugar, el riesgo a los receptores ecológicos es mínimo. Por lo tanto, volvemos a concluir tenemos que hacer algo con plomo.

Aquí, entonces, nos movemos a un estudio diferente que es un estudio... OK., ya sabemos que tenemos una contaminación de plomo. ¿Qué vamos a hacer? ¿Cómo vamos a resolver este problema? ¿Qué alternativas yo tengo? ¿Qué tecnología existe para yo hacer una limpieza que, básicamente,

me resuelve el problema de plomo en el lugar?

El estudio de viabilidad es un mecanismo que se utiliza para una evaluación detallada de las alternativas de remediación o limpieza. ¿Qué me quiere decir eso? Yo busco cuál es mi objetivo. Mi objetivo que yo quiero hacer en el lugar. Qué yo voy a limpiar. A cuánto yo voy a limpiar. Y entonces, evalúo qué hay disponible en el mercado para yo resolver este problema.

Mis objetivos aquí, básicamente, es prevenir o minimizar el contacto de las personas... el contacto humano, el contacto de los... de las aves, que ya vimos que era un problema con relación a plomo, en áreas como el área residencial, en las propiedades donde se identificó que había un problema, en los montículos de basura y en el área no residencial.

Mi objetivo aquí es yo tengo que resolver o minimizar el contacto directo a estas áreas con concentraciones altas de plomo. Y también queremos, para resolver el problema ecológico, eliminar el contacto de plomo para proteger los receptores.

La EPA, entonces, hace... De toda esta información que hemos recolectado, de lo que me ha dicho la evaluación de riesgo, de los valores de referencia que tenemos en cuanto a plomo, buscamos un análisis y llegamos a la conclusión de que, de cuatrocientos cincuenta miligramos de kilogramos, va a ser mi valor, va a ser mi meta de limpieza en el lugar. Eso es un

valor bien conservador que atiende el problema, me... y entendemos que limpiando sobre cuatrocie... limpiando las áreas de cuatrocientos cincuenta miligramos kilogramo, todo lo que tenga un valor por encima de eso sería nuestra alternativa de resolver el problema en el lugar.

Y le recuerdo que esto incluye el área no residencial, el área residencial, la zanja de drenaje que, en la unidad operacional 1, habíamos indicado que habían unos valores similares a lo que encontramos en el área residencial, en la zanja y los montículos de basura.

Ya yo sé lo que quiero hacer. Conozco mi problema, conozco qué yo quiero lograr, mi objetivo, mi meta, conozco a qué valor yo quiero llegar, ¿cómo lo voy a hacer? ¿Qué tecnologías hay para yo, entonces, poder llegar y cumplir mi meta?

Tenemos estas tecnologías, bastante simples y que son viables para el lugar de Vega Baja. La primera es excavar suelo. Llegar, remover, excavar el suelo, sacarlo del lugar. ¿Qué podemos hacer con este suelo excavado? O se lleva a fuera del lugar, a algún vertedero o se puede consolidar en una área... En el caso de Vega Baja, sería el área no residencial. Se puede consolidar allí y se pone una cubierta de suelo que, básicamente, me minimiza mi exposición al suelo contaminado.

Contención. Eso es poner una cubierta de suelo. Puedes poner una cubierta de suelo y, básicamente, estás...

tienes una cubierta de suelo, que te sirve de barrera con el suelo que contiene contaminación de plomo.

Solidificación o estabilización. Ya esto envuelve tratamiento. Básicamente, aquí estaríamos trayendo cemento o cal y se estaría mezclando con el suelo contaminado. Todo lo que tenga niveles de plomo y no aceptables se estaría mezclando para solidificarlo; para que ese plomo pierda su movilidad y evitar el contacto directo y que, en algún futuro, pues, pudiera afectar o contaminar otro tipo de suelo o llegar al agua subterránea.

Otra tecnología para el polvo en las residencias es remoción.

Y por último institucio... controles institucionales. ¿Que son los controles institucionales? Básicamente, son unas restricciones de uso, restricciones que, básicamente, limitan el uso del área contaminada, como también, limita excavación donde hay el terreno contaminado.

¿Qué podemos hacer en Brisas del Rosario con relación a la alternativa de excavación de suelo? Cuando yo digo de llegar, excavar, remover suelo, ¿a qué me estoy refiriendo? Me estoy refiriendo a las "trash mounts", a los montículos de basura. Voy y remuevo toda la basura, toda la montaña de basura que tenemos... en este momento, tenemos tres existentes en el área residencial.

Una vez remuevo, traigo relleno, traigo suelo limpio,

uso una membrana, simplemente, pues, para identificar hasta dónde llegó la concentración y, encima, cubro con relleno para restaurar el nivel de tierra y no dejar el hueco abierto.

En las áreas propie... en las propiedades residenciales o en las áreas que, pues, se entiende que tiene que haber una remoción, básicamente, lo que esté por encima de cuatro cincuenta, entramos, excavamos y removemos, sacamos el suelo contaminado de la residencia, del área de la propiedad, del patio es en la mayoría de los casos. Y con el suelo que está contaminado o se envía a un vertedero, como les había mencionado anteriormente o se lleva a un área donde se pueda consolidar y cubrir.

La alternativa de contensión... Aquí le añadí lo que... cuando hablamos de una membrana geotextil, es lo que pueden ver en la foto abajo, es... simplemente, es una barrera física para, una vez se coloca, si hubiese, en el futuro, alguna excavación, pueden notar: "Mira, hasta ahí llegó la remoción anterior, de ahí en abajo, hay... puede haber suelo contaminado o basura".

Entonces, como pueden ver en esta figura, se tira primero la capa de la membrana y, luego, se pone un pies, doce pulgadas de terreno por encima y esto sería lo que es la cobertura. Para evitar, entonces, la erosión del lugar, también se le añade una capa vegetativa, luego de terminar la capa de suelo. Esta tecnología requiere un mantenimiento, porque

obviamente, una vez la instalas, necesitas asegurarte de que no haya ningún tipo de excavación futura y que la capa se mantenga, para que, entonces, el remedio continúe siendo efectivo.

En esta figurita, aquí podemos ver lo que les había explicado de cómo es la tecnología en solidificación y estabilización. Extraes agua y extraes el material, ya puede ser cemento o puede ser cal y, básicamente, lo que estás es mezclándolo con el suelo contaminado, para que, entonces, el suelo contaminado se mezcle y cree, entonces... Se ve como cemento débil, como "weak cement" una vez tú tienes todo esto mezclado, para solidificarlo en suelo contaminado.

Tengo estas tecnologías: puedo excavar; puedo poner una cobertura de suelo; puedo solificar. Estas tecnologías, ¿qué hago yo con ellas ahora? Pues, las agrupo en alternativas. CERCLA me requiere que una de mis alternativas sea no acción. Y es más bien para tener un punto de comparación. En no acción, yo lo que estoy diciendo es: "No voy a hacer nada. Voy a dejar las cosas como están". Y éste... y en el caso del reporte que hemos desarrollado, es nuestra alternativa número 1.

La alternativa número 2, lo que agrupa es remover todo el suelo contaminado que esté por encima de los cuatrocientos cincuenta miligramos por kilogramo, según la "data" que ya hemos recolectado del área residencial, de las propiedades, obviamente, que pues, tenemos esa información de

que esté por encima de los cuatro cincuenta, de la zanja y también de la "trash mounds", de la... de los montículos de basura. Remuevo todo ese suelo contaminado, lo llevo al área no desarrollada y ahí lo consolido. Tengo todo consolidado junto con los ocho punto cinco acres de terreno que habíamos comentado de que tenían plomo a un nivel excedente y pongo una cubierta de suelo. Pongo la cubierta de membrana, como le enseñé anteriormente y le pongo una cubierta de un pies de terreno. Y luego, una capa vegetativa para que, básicamente, la vegetación me cubra que mi capa de terreno no se altere, no se pierda, no minimice y me provoque una exposición de basura. Lo que estoy buscando es que esta barrera de... esta capa de suelo me permita, me minimice, me sirva de barrera para el suelo contaminado y la basura.

La alternativa 3 sería que, para todas las áreas, las cuatro áreas)-residenciales, zanja, basura y no residencial)- se excave todo el terreno y se envía a algún vertedero.

Y la alternativa 4 es la... básicamente, remover... igual que la alternativa 2, remover el suelo del área residencial, de la zanja, del montículo, llevarlo a mi área no desarrollada y allí es que yo hago mi sistema de tratamiento, donde voy mezclando el suelo contaminado con ya sea cemento o cal, que es lo que voy a estar añadiendo.

Cualquiera de estas alternativas va a llevar institule... controles institucionales, porque cualquiera de

estas alternativas me va a prevenir, según la alternativa, el uso futuro del lugar o que áreas, como por ejemplo, bajo pavimento o bajo estructuras donde no haya el alcance de remover el suelo o de remover la basura, que no sean alteradas en un futuro.

Ya yo tengo estas alternativas. Todas estas alternativas tienen unos elementos comunes y estos elementos son los controles institucionales que ya le había mencionado. Obviamente, excepto la alternativa de no acción. Lleva una investigación prediseño. En el diseño es donde nosotros, detalladamente, discutimos toda la logística, todo el... cómo se va la implementación de esta alternativa, del diseño, de la remediación, de la limpieza. Y siempre, antes del diseño, pues, hay veces que hay que venir y tomar algún dato adicional para poder completar... definir cuál va a ser el trabajo, ya en una precisión más detallada.

También nosotros... los... El agua de escorrentía es algo también que se toma en consideración. No queremos alterar o crear un problema de agua escorrentía. Por lo tanto, tiene que haber un manejo, tiene que haber unos controles y, en el diseño, tiene que tomar en cuenta qué va a suceder con el agua de escorrentía. En el caso... Como tenemos la zanja de drenaje, se estaría divirtiendo, para que las aguas de lluvia vayan por el canal, no se queden en residencia, por ahí llegan al Río Indio. "So", se estarían conectando los dos dentro del diseño.

Los acuerdos de acceso. No podemos entrar a sus hogares sin que nos den el permiso, la autorización de entrar. "So", antes de hacer cualquiera de las alternativas, tenemos que solicitar de las personas, donde tenemos que entrar a sus propiedades, accesos a las propiedades. Y entonces, ahora todo es verde, ahora todo es "green".

"So", la región, la EPA región 2 ha desarrollado una política de limpieza verde para los lugares de superfondo que vamos a estar tomando en consideración y esto incluye, pues, reciclaje de materiales, todo lo que pueda hacer que pueda ahorrar energía... Un sistema de tratamiento pudiera ser utilizando energía solar... Cualquier aspecto que se pudiera implementar, eso se va a tomar en consideración en el diseño.

Tenemos las alternativas. Sabemos qué queremos hacer en el lugar. Sabemos a cuánto queremos limpiar. ¿Pero cómo yo escojo? Escojo la alternativa 1, la 2, la 3, la 4. No es así, no es tan azar, no es tan fácil.

El programa de superfondo tiene nueve criterios que nos ayuda a evaluarlas. A evaluarlas de una manera detallada, para hacer una decisión correcta en cuanto a resolver el problema de contaminación en el lugar.

Estos criterios son cómo la alternativa protege, obviamente, la misión de nosotros, la salud humana y el medioambiente. Cómo cumple con los requisitos aplicables, regulaciones relevantes y apropiados en el lugar. Cuál es mi

eficiencia a largo plazo. A largo plazo, qué significa, qué representa esa alternativa para mí. Lo mismo que a corto plazo; qué significa esa alternativa a corto plazo. Cuál es la reducción de toxicidad, movilidad o volumen de contaminantes. Y eso es cuando hay tratamiento. Esto es a través del tratamiento. Cómo me reduce, cuán tóxico es el contaminante o cuán móvil es el contaminante.

La implementabilidad. A lo mejor hay una alternativa fabulosa, pero no es algo que es viable en Puerto Rico. Y se evalúa también si es una alternativa que se puede implementar.

Se evalúa costo, la aceptación de la agencia estatal que, en este caso, es la Junta de Calidad Ambiental y la aceptación de la comunidad, que por eso estamos aquí esta noche y por eso abrimos un período de comentarios, porque ustedes también tienen una participación dentro de la evaluación de estas alternativas.

Aquí les quiero mostrar, básicamente, cómo las alternativas compara una con la otra con relación a mis nueve criterios. Y básicamente, lo que les quiero enseñar es que la alternativa de no acción, si ve, no me protege la salud humana y no me protege... no me cumple con los requisitos aplicables, ¿por qué? Porque es hacer nada; es dejar la contaminación tal como está. Por lo tanto, es algo que no me cumple mi criterio. Las otras alternativas sí lo cumplen.

La eficiencia a largo plazo. El removerlo todo del

lugar, obviamente, pues, la contaminación, el suelo contaminado no estar presente en Brisas del Rosario, pues, a largo plazo me crea una mayor eficiencia y permanencia del remedio. Pero básicamente, estamos moviendo la contaminación de punto A a punto B y, en punto B, pues, sí habría que, entonces, tomar unas medidas a largo plazo de asegurarnos que no sea una exposición en otro lugar.

La reducción de toxicidad, movilidad o volumen a través de tratamiento, lo que le estoy indicando aquí es que no es que las otras alternativas... Ellas sí presentan una minimisión o una prevención de exposición directa al contaminante. Pero como este criterio es solamente a través de tratamiento y excavar no es un tratamiento, solamente cuando se mezcla con lo que le comenté de cemento o cal, es lo único que se considera tratamiento, es por eso que la alternativa 4 es la única que sí me puede reducir la toxicidad o movilidad o volumen. En este caso, no reduce el volumen, porque el volumen se queda igual, pero sí me reduce la movilidad de plomo.

Y me queda costos. Como ven, tenemos... Perdón, implementabilidad, todas son implementables. Todas son alternativas que sí se pueden llevar a cabo aquí. Unas más fáciles y una más difícil. Por ejemplo, el tener que hacer una estabilización y traer cemento y cal, eso conlleva unos estudios adicionales, porque hay que hacer unos... Es una alternativa, pues, que no se ha practicado aquí y se buscaría,

entonces, hacer como un... a una escala menor, básicamente, buscar cuál es el... si... la fórmula mágica, digamos. Y eso llevaría ese estudio adicional. Por lo tanto, es implementable, pero da un poquito más trabajo.

Lo mismo, pues, con la alternativa 3; es implementable, pero entonces, ya entramos en la problemática de escoger el vertedero y cuál es la capacidad del vertedero para recibir una cantidad, un volumen que es bastante grande de terreno que se estaría removiendo del lugar.

Por la aceptación de la agencia estatal, la Junta de Calidad Ambiental, pues, que ha estado con nosotros trabajando desde un principio, ellos han estado también siendo partícipe de la revisión de los documentos y presentando comentarios. Ellos ya revisaron el plan propuesto que tenemos para el lugar de superfondo aquí, en Vega Baja. Ellos ya emitieron su carta de apoyo para la alternativa que vamos a estar presentando como la alternativa preferida, que es la alternativa 2, la alternativa de remoción, excavación de suelo en el área residencial, en montículos de basura, en la zanja de drenaje y consolidarlos en el área que ustedes tienen no residencial y ahí cubrirlos con suelo. Ya ellos emitieron la carta de apoyo.

La aceptación de la comunidad, ese criterio todavía está abierto, porque estamos en el proceso de comentarios públicos y es ahora cuando estamos evaluando cuál es la aceptación de ustedes en cuanto a la alternativa 2, que es la

alternativa que estamos presentando esta noche como la preferida.

Abundando un poco más, como les comenté, queremos presentar esta noche la alternativa de remover todo suelo que esté por encima de los cuatrocientos miligramos por kilogramo, que entendemos que es un valor bien conservador para niveles de plomo, removerlos del área residencial, de la zanja de drenaje, de los montículos de basura, transportar todo ese material al área no residencial que, como les había explicado, ya tenemos ocho punto cinco acres de terreno que están ya impactados, que es por eso que los costos...

No le discutí costos, pero no sé si pudieron ver que la alternativa 2 me representa cuatro millones, cuando la alternativa 3 y 4 me representa veinticuatro millones y veinticinco millones y es porque, básicamente, en esas dos alternativas, estoy entrando a ya sea excavar o a dar un tratamiento a ocho punto cinco terrenos de... ocho punto cinco acres de terreno y eso es mucho volumen, a una profundidad ya sea de cuatro o seis pies.

El volumen mayor de contaminación está en el área no residencial y eso es lo que me impacta mucho los costos.

VOZ SIN IDENTIFICAR: ---- (habla sin micrófono).

SA. RODRIGUEZ: No residencial. Que es el área ésta verde que está abajo, que es donde está mi mayor concentración, en términos de volumen, de la contaminación de plomo en el

lugar.

En esta área se estaría consolidando el material y, luego, se estaría haciendo una cubierta, primero con una membrana geotextil y, luego, con doce pulgada o un pies de una capa de suelo, que va a ser cubierta también, luego, con una capa vegetativa.

Esto es similar a lo que ya se hizo en el montículo de basura 1, que le había comentado al principio que se comenzó a hacer una remoción ahí de la basura del montículo, que no fue autorizada, básicamente, en ese entonces, eso fue lo que se hizo allí. Se removió el área donde presentaba un riesgo, se consolidó, se puso una membrana geotextil y se puso doce pulgadas de terreno. Básicamente, estamos haciendo lo que... similar a este proceso.

En las áreas que sean excavadas, en el área residencial, van a ser, obviamente, traídas otra vez a nivel con suelo limpio que se traería para restaurar la propiedad, según las condiciones estaban anterior a la excavación.

Esta alternativa ya le había explicado sobre la cubierta de suelo en el área no residencial y para todas las áreas donde haya excavación, se van a tomar unas muestras de confirmación que, básicamente, es para nosotros asegurarnos que todo suelo por encima de los cuatrocientos cincuenta fue removido. Y comenzar... entonces, entender que alcanzamos nuestra meta de limpieza.

Esta figura es básicamente el mismo mapa que tengo aquí mayor. Los invito a que, una vez terminemos la presentación, si tienen dudas, pueden pasar y ver más de cerca. Pero aquí, yo lo estoy mostrando, cuál es el área de acción de remediación. Las áreas que ven azules son las áreas que están siendo propuestas para residenciales, los patios de las residencias, que fueron encontradas con valores mayores de cuatrocientos cincuenta, a llevar a cabo una excavación.

Tenemos los montículos de basura, que son las áreas "brown", el área no residencial... Ah, todo este suelo se va a estar removiendo, se va a estar llevando al área no residencial y también estoy mostrando las áreas donde se van a pedir acceso, las residencias que van a ser impactadas para pedirle acceso y poder entrar a hacer algún trabajo.

También se muestra en esta figura áreas como, por ejemplo, eses... lugares. Aquí, anteriormente, no se pudo accesar durante la remediación. Entonces, queremos volver para completar esa parte de tomar muestras en esas residencias y todo eso está mostrado en esta figura, que pues, los invito a que pasen, al final de la presentación, más de cerca, para que, entonces, vean con mejor claridad.

Pero también lo tienen en la hoja de plan propuesto. Es la misma figura que está al final del "handout" que pasamos de plan propuesto.

¿Qué continúa? Ariel hizo un excelente trabajo

explicando el proceso, pero quería recordarle dónde estamos.

Ya hicimos la investigación de suelo, ya hicimos el estudio de viabilidad, nos estamos moviendo aquí, al récord de decisión. Básicamente, ahora tenemos un período de comentarios, que termina el 29 de agosto. Una vez se termina, los comentarios que se reciban escrito, se prepara un resumen y eso es parte del récord de decisión.

Una vez completa el período de comentarios y tenemos unas respuestas a las preocupaciones que pueda traer la comunidad, sale el récord de decisión, donde detalla cuál fue la alternativa seleccionada y detalles sobre la decisión, las bases para tomar esta decisión y cuál fue la decisión.

Y ahí, nos movemos al diseño de remedio. Aquí, como este lugar, ahora, básicamente, las partes responsables son las que estarían, pues, también trabajando en lo que es el diseño del remedio y la acción, la implementación de la acción, entre el récord de decisión y el documento de diseño, hay un proceso, digamos que legal, donde se firma otra vez un acuerdo de consentimiento que detalla, básicamente, lo que deben cubrir, cuál va a ser el plan de trabajo y los requisitos para poder, entonces, movernos al diseño de remedio y, obviamente, que las partes responsables, pues, estén de acuerdo con la implementación. Incluye también el diseño y la implementación.

Una vez completado este proceso, ya tenemos revisado el diseño, ha pasado por la EPA, distintos expertos lo han

evaluado, se han sometido comentarios, se han incorporado los comentarios, ya tenemos el diseño final)-posiblemente, nos verán de nuevo, porque compartiremos entonces con ustedes todo lo que es la logística, todo lo que es detalles de cómo va a suceder este evento)- viene la construcción. Viene ya entonces movernos a hacer... La construcción, en este caso, pues, sería la excavación y la capa de terreno en el área no residencial.

Luego terminado, siempre hay una serie de evaluaciones, de inspecciones, para asegurarnos que todo vaya de acuerdo al diseño, que todo sea de acuerdo como planeado. Viene una revisión también a los cinco años. Básicamente, lo que se busca es darle un seguimiento y asegurarnos que los controles institucionales... que el remedio que se implementó continúe siendo efectivo y protectivo a los residentes.

Luego de eso, una vez se entienda que los objetivos de limpieza se han logrado y el lugar esté, entonces, listo para ser propuesto para eliminación de lista nacional de propiedades... de prioridades, se hace también otra reunión pública, donde se les envuelve a ustedes para dejarles saber que hay una intención de remover el lugar de la lista nacional de prioridades.

Y una vez completado, pues, obviamente, hay otros potenciales reúsos para... en especial, pues, para el área... Ya, obviamente, ya en la parte residencial, está utilizado como residencial, el área... o que haya un remedio en el área no

residencial, si es candidato para algunos tipos de reúso. Y eso pudiera ser el final.

Aquí les estoy dando una información sobre los lugares de la EPA en el ínternet, donde pueden buscar información adicional, si tienen dudas, con respecto al programa de superfondo. Este "link" que tengo aquí los lleva a una página donde es en español y hay una información adicional sobre programa de superfondo, sobre las oportunidades de participación comunitaria, que los invito, pues, a que pasen y visiten, para que conozcan más.

También dentro de la EPA, que es el "link" que tengo aquí, abajo, pueden accesar la información según se va encontrando y se va incluyendo en una página que hay dedicada al lugar de Vega Baja. Los invito para que, entonces, si necesitan alguna información adicional... Claro está, yo estoy aquí a la orden, en las oficinas de la EPA, en San Juan, para alguna pregunta.

Los voy a dejar aquí, en este momento, con Brenda.

(Pausa.)

SA. RODRIGUEZ: Ahora los voy a dejar con José Font, nuestro subdirector de la oficina.

SR. FONT: Gracias, Nancy.

Luego de la presentación de Nancy, yo quería enfatizar unos puntos, antes de entrar en la sección más importante, de preguntas y respuestas.

Para nosotros es de suma importancia el proceso de participación pública y por eso es que estamos aquí. Todos los comentarios serán tomados en consideración. Se está grabando lo que se está discutiendo aquí hoy y todos y cada uno de sus comentarios serán atendidos. Esto se atiende por escrito. Hoy aquí estaremos contestando preguntas.

Pero para enfatizar ciertos puntos. La limpieza. La limpieza sería propuesta; hoy aquí, lugares que exceden cuatrocientos cincuenta. Cuatrocientos cincuenta miligramos por kilogramo.

Aparte de eso, no se selecciona una alternativa sin haber escuchado a todos ustedes. "So", hoy estamos aquí para que ustedes nos dejen saber sus preocupaciones, nos hagan preguntas... Y podemos estar todo el tiempo que ustedes quieran, ciertamente.

En términos del proceso, la Junta de Calidad Ambiental participa activamente, la EPA tratará y buscará la manera de tener una comunicación efectiva con ustedes. Los documentos están disponibles, ciertamente, hemos estado trabajando en este lugar por muchos años, se han llevado a cabo varias acciones. Recordarán ustedes cuando se removieron suelos contaminados, porque había un riesgo inmediato a la salud pública. Hoy estamos trabajando con riesgo a largo plazo.

Aparte del riesgo a largo plazo, se estudió el agua subterránea. No tiene problemas. No preocupen por eso. No hay

problema. En este momento, a largo plazo, suelos contaminados con plomo en exceso de cuatrocientos cincuenta. Eso es lo que ustedes tienen que tener en mente hoy y me imagino yo que muchas preguntas serán: dónde; dónde excede esa concentración.

Pues, nosotros estaremos aquí, señalándole dónde son estos lugares y tratando de aclarar preocupaciones específicas de aquellas personas que pudieran ser afectadas por esta limpieza propuesta en este momento. Y esta limpieza no será final hasta tanto el proceso culmine. Y el proceso culmina después de haber recibido comentarios de ustedes y evaluarlo nuevamente todos y cada uno de ellos. Que esto sean parte de un reto administrativo que será anejado a la decisión final.

Con eso, quizás podemos dar paso a las preguntas. O Brenda, tú...

SA. REYES: Bueno, ya vieron la presentación y escucharon unos puntos finales adicionales que dijo aquí José Font, subdirector de la oficina.

En términos de preguntas y respuestas, cómo vamos a hacer. El micrófono está aquí. Necesito)-es bien importante)- que digan su nombre y apellido, ya que están aquí los jóvenes grabando la transcripción de esta reunión. Necesito que digan su nombre y apellido. Traten, por favor, de hacerlo de la forma más organizada posible. Nos gusta evitar un poco las distracciones y las conversaciones, "Fulano preguntó, pero Sutanito y yo estamos añadiendo al lado". Se lo digo. Es mucho

más fácil. Ustedes quieren llegar a su casa, nosotros queremos llegar a nuestra casa. Queremos contestar todas sus preguntas y que ustedes salgan de aquí, esta noche, con todas sus preguntas contestadas y una idea clara)-¿verdad?)- en términos de esas respuestas.

Así que le voy a pedir, entonces, que se organicen en términos de hacer las preguntas. Nosotros tenemos un micrófono aquí y tenemos un micrófono acá, para que la persona de EPA o de la Junta que tenga que contestar su pregunta, pues, lo haga así.

¿Podemos dar inicio? ¿Sí?

¿Quién desea comenzar?

Acuérdense, tienen que decir nombre y apellido. Si pueden venir un momentito hasta donde más llegue aquí el micrófono.

SR. MALAVE: Buenas, saludos. Gracias por la información. Yo tengo una pregunta y es referente a la información que estaba dando Nancy. Usted mencionó que se iban a estar trabajando con las áreas que tuvieran cuatrocientos cincuenta PPM o más de contaminación. Si el nivel máximo de exposición recomendado es cuatrocientos, ¿qué va a pasar con esas unidades que tengan de cuatrocientos uno a cuatrocientos cuarenta y nueve? Esa es mi pregunta. Carlos Malavé.

SA. RODRIGUEZ: Y esa pregunta es excelente. Como le había comentado anteriormente, que habíamos tomado unos valores

específicos de polvo doméstico dentro del lugar, el agua de grifo, el agua de pluma del lugar, estos valores, básicamente, lo que se hace es que se entra en un modelo de riesgo, que es similar al que la EPA utiliza, para desarrollar el valor de cuatrocientos.

Qué sucede. Cuando la EPA utiliza este modelo y llega a... te da el número, digamos, mágico de cuatrocientos, es usando unos valores que se le llaman "default values", unos valores que son general. Una vez yo reemplazo esos valores con los valores específicos del lugar, me da que, en el caso de Brisas del Rosario, el valor de el polvo residencial, también como el valor de agua de pluma, son mucho más bajos que los de "default", que los que corre el modelo, que me resulta cuatrocientos.

Qué sucede. Para el caso de Brisas, me dio un rango entre quinientos sesenta y seis a seiscientos cinco, que es un valor conservador. Es lo que el modelo, similar a la manera, con los valores nacionales que usa la EPA, para derivar el cuatrocientos con los valores específicos del lugar, me indica que un valor protectivo es dejando... teniendo un valor de plomo de entre un rango de quinientos sesenta y seis a seiscientos cinco.

Qué sucede. La EPA... Por eso es que dije anteriormente que el valor de cuatrocientos cincuenta es un valor bien conservador y es porque decidimos no irnos

exactamente al valor que me resultó el modelo. Decidimos ir un poco por debajo, para atender algunas preocupaciones o algunas áreas que podían traer un nivel de incertidumbre y determinamos, entonces, que cuatrocientos cincuenta es un valor bien conservador.

Es un proceso un poquito complicado, un poquito largo, que está... yo diría que es bien explicado en los documentos, que inclusive, en el estudio de viabilidad, abre una sección que te habla de todos estos valores que tomamos en consideración y cómo llegamos a la conclusión de cuatrocientos cincuenta.

Pero básicamente, estamos diciendo que hasta un valor un poquito mayor de cuatro cincuenta es tan protectivo a la salud humana y, en el caso de ecológicos aquí, a los receptores, tanto como lo es el valor de referencia de la EPA.

Quiero... ¿Te contesté la pregunta?

Qué bueno.

Quiero recordarles que olvidé decir en la presentación que tenemos unos depositorios de información y, básicamente, todos esos documentos, que están en esa caja, van desde el plan de trabajo inicial hasta el plan propuesto que estamos presentando hoy, están disponibles en el Caribbean University, aquí, pero lamentablemente, esta semana están de receso. "So", ellos estarían abriendo... me parece que es el próximo lunes. Van a estar allí, disponibles. En el momento,

están en la oficina de la alcaldía, en el segundo piso, en la alcaldía, allí hay una copia también de todo el récord administrativo, de todos estos documentos. En la universidad, van a estar de manera electrónica. En la alcaldía, están en "hard copy". Pero también en la EPA, aquí, en Puerto Rico, tenemos una copia y la Junta de Calidad ambiental, pues, esos documentos estan bien disponibles para revisión de ustedes, en New York. Los que quieran, en New York, revisar esos documentos, también tenemos una copiadora disponible. Eso está en la hoja informativa que les di, están todos estos lugares, los horarios, para que puedan... los que tengan el tiempo y quieran conocer más detalle de todos estos reportes están disponibles para la revisión.

SA. REYES: El caballero de la guayabera azul tenía aquí una pregunta.

SR. PEREZ: Sí, buenas noches a esta distinguida comunidad. Acudimos... Mi nombre es Mario B. Pérez, acudo con varios amigos, residentes del área, del grupo VIDAS, Vegabajeños Impulsando Desarrollo Ambiental Sustentable. Una de las áreas que hemos trabajado es en Villa Pinares con un proyecto. Vamos a presentar una imagen, queremos compartirla con los oficiales que nos presentan aquí. Este es un trabajo científico, publicado en el 1999. No sé si se puede poner más grande.

Esa imagen ha sido "escaneada" de la publicación

científica, así que lo... Está escrito a mano, pero lo que está así, la imagen "per se" son los plumachos de un contaminante de un sitio de superfondo en la Carretera 2, en el área... en la esquina con la 686 y la Carretera 2, el área industrial, el científico es Sepúlveda, quien lo publica. Eso que parecen...

¿Me puedo acercar?

SA. RODRIGUEZ: Cuidado, que no se vaya a caer.

SR. PEREZ: Esto que está aquí... esto que está aquí son concentraciones similares de un contaminante cancerígeno, que es un compuesto orgánico volátil, VOCS, como lo resumen los de la EPA. Se llama tricloroetileno, TCE. Es cancerígeno.

Cuando publican este estudio, las concentraciones que calificó pa'l superfondo, según Sepúlveda, tardaría veinte años)-y pone el 99)- en seguir corriendo en dirección al mar, por debajo del agua. Si a eso le hubieran puesto un "lining", pa' que la lluvia no lo haga percolar por abajo, como quiera, el agua subterránea corre en dirección al mar, como quiera. Como un río, que va corriendo al mar, es así. Lo único, que está subterráneo.

Eso es un... ese trabajo aparece en la página 81, como escribo a mano, en un documento que resume diferentes estudios, que se llama "Karst Region, a Vital Resource", la zona del cársico... del carso, un recurso vital. Por el agua.

Aquí, en Villa Pinares, hay una toma de agua de Acueductos, pero no es la única. Al terminar Villa Pinares,

inmediatamente. Cien metros alrededor es la área de influencia, según los trabajos de los que trabajan con el uso del agua para Acueductos y los especialistas en este campo. Le voy a decir que yo soy especialista en recursos naturales, que trabajé en esa área de investigaciones científicas.

Eso quiere decir que el agua, alrededor de cien metros de donde succiona para uso de todos ustedes y todos nosotros, estará influenciado por los contaminantes que están ahí, tengan "lining" o no, porque va a estar succionando y las moléculas del agua son como imancitos, que se atraen unos a otros, porque tienen cargas como imanes. Es una molécula bipolar.

Me preocupa, en términos de la población, si algo tan sencillo como la pintura con plomo)-que estaba prohibida)- y a penas se va a despegar muy poquito. Ahora imagínese cuatrocientos cincuenta partes... ¿Por millón es? ¿O por mil?

VOZ SIN IDENTIFICAR: Millón.

SR. PEREZ: Por millón. Bueno. Pues, eso va a estar en una área y se va a ir concentrando por la succión. Usted puede medir en un punto particular, pero si tú vas al pozo que chupa Acueductos, que son muchos galones al día, se va a ir concentrando lo que ya concentró la tierra y ésa es una gran preocupación.

En términos de los millones, el costo, qué metodología utilizar, yo preguntaría cuánto cuesta más gente

con cáncer)-como la causa el plomo)- o problemas de aprendizaje que le causa a los niños, entre cinco y veinticinco millones, que es la diferencia.

Y además, aprovecho a aplaudir el hecho que, aunque sea en una manera remedial, se tome la... empiece a tomar precauciones para parar el proceso dañino de este punto en adelante y que sirva como una lección para no seguir otorgando permisos de actividades muy contaminantes a la población humana.

Ahora mismo, en Villa Pinares Sur, se aca... después de haber sido detenido por vistas públicas del grupo VIDA, el grupo OCUPA, que es parte de nosotros, un proyecto al sur de Villa Pinares, se ha aprobado mil quinientas viviendas con... en un área de subsidencia, de hundimientos. Es la zona 3 en el plan de manejo de la Laguna... de la cuenca de la Laguna Tortugueros, queda ahí, la zona 3, el área de Piñas, está así también en el área de planificación especial de Laguna Tortugueros, área subsidencia, área que sirve para cultivo, sembrarán casas, se pueden hundir, como pasó en Monte Verde, con la misma formación geológica, como pasó... Ricardo, si me acuerdas, lo tengo ahí impreso, una casa que se cayó...

VOZ SIN IDENTIFICAR: Parcelas Márquez.

SR. PEREZ: Parcelas Márquez. Por cuestión de tiempo, no lo pudimos pasar a esa imagen que ustedes están viendo. También lo imprimí. Son parcelas colindantes con los terrenos

de Villa Pinares, pues, después se lo muestro, pa' no cogerle más tiempo. Que ésta es la foto de una casa que también se hundió. Y los mogotes que van a picar también, por los estudios científicos, han habido desprendimientos del tamaño de dos carros encima del otro, cincuenta metros p'abajo, que también en Manatí y Vega Baja, hemos visto que han pasa'o por encim'e casas y las han demolido.

Entonces, que sirva de lección, que tomemos conciencia y que las agencias reguladoras)-¿verdad?)- regulen a favor de la gente de a pie, del pueblo, de la misma manera que ahora estamos teniendo que remediar, que es más costoso que prevenir. Muchas gracias.

SA. REYES: Gracias a usted por el comentario.

(Pausa.)

SR. FONT: Sí, muchas gracias por el comentario bien amplio. Trataremos de manejarlo paso a paso. Si aquí, en Puerto Rico, precisamente en el área norte, es zona cársica, mencionó, existen muchos lugares que hemos pasado por los contaminantes, compuestos orgánicos volátiles, carcinógenos, pero por otro lado, muchos de ellos ya se encuentran en remediación. A través de los años de estar trabajando en estos lugares, nos hemos dado cuenta que mientras más rápido se movilice al lugar y se trabaje en la fuente de contaminación, menos tiempo tardaríamos en remediarlo, pero como quiera, una vez estos contaminantes llegan al agua subterránea, estamos hablando de treinta años en

remediación.

Pero ése no es el caso aquí. El caso aquí, lo que tenemos es plomo en suelo. Y no estamos hablando de riesgos carcinógenos, sino no carcinógenos. Y debemos mantenernos enfocados en plomo en suelo y la remediación que estamos discutiendo al día de hoy.

En términos generales, pudiera añadir también que esta formación cársica del norte provee para flujo rápido, a alta velocidad, de contaminantes en agua subterránea. Todos descargan al mar. Lo mejor sería interceptarlos lo más rápido posible, previo a que esto llegue. La situación pudiera exacerbarse con la extracción de agua subterránea excesiva en esa área. Han ocurrido varias cosas que han aliviado esto; limpieza, supertubo, varias cosas que han ocurrido, pero ciertamente, la inmensa mayoría de estos lugares están siendo atendidos. Y se han extraído cantidades significativas a través de los años, a través del program'e superfondo de compuestos orgánicos volátiles del agua subterránea.

SR. REYES: Muy respetuosamente, el flujo del agua subterránea, en el caso que plantea Sepúlveda, sin intervención por el flujo superfondo, tardaría veinte años en correr y salir de ahí. Veinte años da tiempo para uno bioconcentrar un contaminante cancerígeno. Uno.

Tengo que también diferir de que el hierro en suelo no es cancerígeno. En Vieques)-que yo fui parte del grupo de

apoyo técnico y profesional a Vieques, con investigaciones en agua, suelo, sedimentos, plantas y animales y personas)-, esa cadena... esa cadena alimentaria, a través del alimento, del polvo fugitivo, como por el agua subterránea, fueron conductos a encontrar cinco metales pesados cancerígenos en el pelo, uñas y, algunos casos, sangre y orina.

El índice de cáncer en Vieques era veintisiete porciento por encima de cualquier comunidad, municipio comparable. Pero en Vieques no había este tipo de empresas de ningún tipo, excepto el que había allí, que era las bombas de la Marina. Pero poniendo ese punto aparte, la ciencia misma demostró que, por esas tres vías, polvo fugitivo, el agua subterránea del este de Vieques, que en Esperanza hay un acuífero de dos porciento a cuatro, sí se pasa, porque el hierro pasa a férrico, mediante cambios de ionización, pérdida de electrones y sí se hace disponible. Y sí es cancerígeno. El plomo, igual. Me discrepa, pero esto es parte de la ciencia.

SR. FONT: Pero podemos seguir discutiéndolo y, ciertamente, hay muchos lugares con sus características individuales y comportamiento de los contaminantes.

SR. PEREZ: No, perdóneme. El hierro es un átomo, el plomo es un átomo y se comporta igual donde quiera. Lo que lo hace formarse en hierro férrico... O sea, los estados del hierro versus valencia depende de la acidez del terreno. Y en un suelo cársico, donde tú tienes una combinación de agua y

materia orgánica, se forma el ácido que crea las cuevas y las cavernas. Por eso es que corre el agua por debajo, porque lo acidificó. Y ahí es que se forma y se hace disponible el hierro. Y esto es ciencia. Y no es "case by case story". Así es que se comporta la naturaleza.

SR. FONT: Caramba, no estamos debatiendo su planteamiento ni es el interés nuestro eso. Solamente hablábamos por experiencias específicas en otros lugares, no necesariamente que sea aquí. Pero podemos seguir dialogando.

Pero volviendo al caso que tenemos aquí, ¿alguna otra pregunta?

SA. RODRIGUEZ: Le agradecemos su planteamiento, ¿verdad? Todo planteamiento tiene validez. Y entiendo su preocupación. Y luego le voy a pedir que me deje su correo electrónico para ponerlo en nuestro "mailing list" de la agencia, porque pues, para nosotros es muy importante mantenernos en comunicación con las comunidades y, sobre todo, pues, ya, cuando hay una serie de grupos)-¿verdad?)- formados.

Les voy a pedir que, si tienen alguna otra pregunta...

Sí, por favor, pase adelante y díganos su nombre, que no se olvide, para el récord. Nombre y, pues, su planteamiento.

Creo que está apagado.

SA. MORALES OTERO: OK. Perdón.

SA. REYES: Sí, buenas noches.

SA. MORALES OTERO: Buenas noches. Dios me los bendiga. Verdaderamente, pues, la información que ha estado trayendo es muy buena para todos, pero a lo que vinimos.

SA. REYES: Sí.

SA. MORALES OTERO: Este... a lo mejor, la pregunta mía, pues, prácticamente sería la conclusión de la charlas que vamos a tener aquí... hemos tenido. La pregunta es... Más bien, dos. Cuando... Porque fue que llegué aquí un poquito tarde. Se estaban hablando de diferentes alternativas que tenían para corregir el problema que tenemos los residentes de Río Abajo.

Creo que se dijo... se mencionaron cuatro y, de ésas cuatro, creo que hay una ya prácticamente que no cuenta...

SA. REYES: La alternativa propuesta.

SA. MORALES OTERO: Amén, perdón, sí, exacto. Alternativas, exacto. Pero creo que hay una... Ah, no. Creo que es la número 2, que es la que es más viable para todos, ya sea en cuanto a costo y la manera de cómo manejarlo.

La pregunta es, conforme a las experiencias anteriores, ¿cuánto tiempo ustedes piensan que se va a tomar... este... pues, desde el comienzo del proceso hasta terminar, que puedan decir: "OK., ya Río Abajo está libre de toda contaminación"? Pregunto, porque aunque no sé si venga al caso, pero como es de saber de muchos de los que vivimos en esta comunidad, muchos... este... estamos con la problemática de que no tenemos los títulos de propiedad y, entonces, una de las

trabas que nos pone la... esa agencia en específico son ustedes. Que yo entiendo que no, porque ya, pues, por experiencias anteriores, yo sé que la EPA no tiene que ver nada con lo de los títulos de propiedad y que no... no ponen ninguna traba, pero ésa es la información que nos dan ellos, pienso yo que una manera de como curarse en salud.

SA. REYES: ¿Eso sería el Departamento de la Vivienda?

SA. MORALES OTERO: Departamento de la Vivienda. Se escuda de que la EPA son los que no... los que no quieren. Y yo entiendo que no... la EPA, nada que ver con eso, pero como ésta es la información que ellos nos dan.

La última información que yo tuve con ellos, cuando me reuní, fue que hasta tanto la EPA)-ustedes)- terminen el procedimiento completo de limpieza, etcétera, pues, ellos no proceden. Entonces, pregunto yo, ¿más o menos cuánto ustedes piensan que esto estaría "ready"?

SA. REYES: ¿Quién contesta?

SA. MORALES OTERO: Santa Morales Otero.

SR. FONT: Reconozco, por lo que usted dice, que no estuvo al principio de la charla. Sólo a modo de repaso, una vez nosotros seleccionemos la alternativa finalmente, luego de pasar por este proceso de comentarios públicos y se emita el récord de decisión...

No se... ¿Me escuchan al...?

OK. Muchas gracias. OK.

Una vez nosotros completemos este proceso de seleccionar la alternativa finalmente, una vez concluya el proceso de comentarios públicos y de participación pública y se emita el récord de decisión, pasamos a un proceso de diseñar el remedio, diseñar cómo es que se va a implantar este remedio. Parte de lo que Nancy nos estuvo explicando es que, durante este proceso de diseño, se van a estar tomando muestras adicionales en algunas áreas que incluyen propiedades en donde, anteriormente, no se obtuvo acceso para... o no se pudo obtener acceso para poder tomar estas muestras.

Luego que se diseñe este remedio, entonces es que pasamos a la implementación del remedio y la construcción de este remedio. Nosotros, ahora mismo, no tenemos un tiempo establecido para... de cuánto se va a tardar esto, pero ciertamente es un proceso que toma un par de años antes de tener la construcción física del remedio.

Ahora bien. Con relación a los títulos de propiedad, quiero, pues, sólo recalcar que el proceso de títulos de propiedad no es parte del proceso de la EPA. EPA no está involucrada en ese título de propiedad. Eso son otras ----, pues, que le pertenece al Departamento de la Familia y que son externas a este proceso que nosotros estamos conduciendo ahora mismo.

(Pausa.)

SA. REYES: Sí, ella, permiso. Con permiso. Nancy le

va a decir algo.

SA. RODRIGUEZ: Yo quería añadirle que... Sí, el próximo paso es el diseño detallado, obviamente, de la alternativa que se seleccione, de la alternativa final, que eso lo va a tener el récord de decisión.

Una vez se publique el récord de decisión, si es correcto, nos movemos al diseño. Pero antes de que eso pase, hay una parte legal, que es la que, a veces, trae un poquito de incertidumbre cuánto tome, entre la EPA y las partes responsables de negociar cómo va a suceder, cómo nos vamos a mover la participación de las partes responsables en la parte del diseño y de implementación. Y esto pudiera atrasar un poco el proceso, porque ahí puede ser una negociación corta, como tal vez no. Y una vez se negocea, una vez se firma ese documento legal, entonces es que las partes responsables comienzan el diseño. Y ahí, entonces, estaremos ultimando los detalles y tendremos una... digamos que mejor estimado de cuándo, entonces, estaríamos comenzando las labores.

SA. REYES: El caballero nos había pedido ya turno.

Recuerde decir su nombre y apellido.

SR. GUTIERREZ JAIME: Mi nombre es Disraeli Gutiérrez Jaime y yo vivo en Villa Pinares y lamento haber llegado un poco tarde a la exposición. No pude oírla completa, pero leí las cuatro alternativas que tengo aquí, en... en... aquí presentes. Y yo tengo una preocupación. Porque oí primero, en

parte de las ponencias de... sobre las alternativas y sé que ustedes van a decidir, pero yo voy a tratar de, como residente aquí, que la alternativa que se escoja sea la que sea en costobeneficio de salud. O sea, la más segura para los residentes que se van a quedar aquí.

Y estaba mirando así, por encima y de mi experiencia en Villa Pinares, cuando llueve, este subsuelo... Yo no soy... Mi preparación es en filosofía. Pero he visto que el subsuelo, el agua se la chupa para abajo. Y yo estaba mirando en algunas de las alternativas, que si remueven el área contaminada, para dejarla en el mismo... "in situ", como dicen en el mismo sitio, pues, yo sé que... que si... Eso no sé si lo van a cubrir con cemento o algo, en algún momento, con el agua, ese... eso puede percolar y afectar el pozo que... mío, donde yo tomo agua es en Villa Pinares, en el... en el fondo y... y solamente, pues, quería exponer eso, que la alternativa que se escoja sea la... en el costobeneficio de salud para los residentes aquí.

SA. REYES: Muchas gracias.

SA. RODRIGUEZ: Lo voy a dejar aquí.

SA. REYES: Nancy, tú le vas a responder.

SA. RODRIGUEZ: Sí, queríamos... quería, pues, indicarle que nosotros estamos, básicamente, con usted y nosotros... uno de los criterios... y básicamente, el primer criterio es que la alternativa sea... cumpla con la protección a la salud humana y al ambiente. Nosotros no escogeríamos una

alternativa solamente basado en costos, poniendo en riesgo la salud.

Como les había comentado, hay nueve criterios. Costo es uno de ellos. Pero al igual que usted, nosotros no escogeríamos una alternativa que no fuera protectiva.

Además, es un esfuerzo colaborativo. La EPA no impone la alternativa. Simplemente, nosotros exponemos cuál es la preferida y ustedes, la comunidad, son parte del proceso de selección. Es por eso que es después del período de comentarios que se toma la decisión final en cuanto al lugar. Al igual que la agencia del estado, que también es parte de este proceso de selección y de aprobación de la alternativa.

SA. REYES: ¿Sí?

SR. PEREZ: Sí, buenas. Es que se me olvidó un punto importante. ¿Cuántos de ustedes se le va el agua con alguna frecuencia en Vega Baja?

VOZ SIN IDENTIFICAR: Todo el tiempo.

SR. PEREZ: Sin embargo usted... entre el Río Indio, según Moe Nimelly (fonético) Freytes, entre Río Indio y el Río Grand'e Manatí, hay la mayor recarga del acuífero de la costa norte. O sea, ustedes están sobre el agua y se le va el agua. Eso, con relación a un ge... un codiferendo que se me olvidó traer, cuando en el... entre el 2003 y 2005, fuimos a unas vistas públicas para una construcción que iba a hacer en área que no se puede, según Recursos Naturales, encontramos en los

documentos que... No me acuerdo el orden, pero Vega Baja y Manatí, se estaba extrayendo de este acuífero entre el sesenta, en un la'o, en un municipio y ochenta porciento en el otro de este solo acuífero.

Recientemente, en otro lugar que VIDAS intervino para un proyecto que... por... hecho y derecho, no debió dársele permiso, tenemos cartas certificadas de la Autoridad de Acueductos diciendo que ya está, no se puede sacar más de lo que se está sacando, en millones galones diarios, de este... de este acuífero, sobre el cual ustedes viven, sobre el cual todos nosotros aquí vivimos y, precisamente, en los terrenos al sur de Villa Pinares, Vega Sereno, el proyecto propuesto que acaban de aprobar su ubicación, a pesar de haber traído detenido dos años por nuestra oposición fundamentada científicamente, son terrenos que se hunden, eso que señaló Disraeli, que es parte del grupo OCUPA y VIDAS, es científicamente correcto.

O sea, por eso es que se recarga el acuífero, porque... y tenemos imágenes ahí, científico sobre eso y observaciones sobre el terreno, es porque los terrenos son mantos de arena. Usted sabe que la arena, cuando viene la ola, se va to'a p'abajo y parte regresa. Eso es lo que tenemos aquí. Son terrenos elásticos, que expanden y contraen y, debajo, tienen mantos de arena riquísimos de sílice, al sur de Villa Pinares.

¿Qué pasa si impermeabilizamos esos terrenos? No se

recarga el acuífero por esa vía y hay siete sumideros ahí, junto a Las Bolinas, que piensan sellar.

A la misma vez, son mil quinientas casas extrayendo ochenta galones diarios por persona, que es lo que estima Acueductos.

SA. RODRIGUEZ: ¿Ese es el desarrollo nuevo?

SR. PEREZ: Sí. Lo que quiere decir es que, si ya está saturado, no se pue' suplir más agua, se cumplen uno de los planteamientos que dice el señor, que contaminaría más el agua.

Y segundo, perderíamos la capacidad de recarga del acuífero, que ya está... habría menos que la disponible, pero con más casas.

Y tercero, ¿sabe lo que pasa cuando tú... extraemos más agua del acuífero que la que fluye? Es como un río. Si le sacamos el agua, entra el agua de mar. Y tenemos imágenes aquí también mostrando el punto como se encuentra debajo del acuífero, la intrusión salina que, en Barceloneta, en el 84, pasaba al sur de la Carretera 2 y lo que sacábamos era agua salada.

¿Qué pasa si se saliniza el acuífero por todo esto? Además de que están las condiciones para contaminar en forma de crear cáncer, estaría de que, por más de veinte años, si to... si se recargara el acuífero, tardaría en expulsar hacia afuera la intrusión salina y no tendríamos agua. No a veces, sino cuando la sacaran, iba a ser salada. Esa es la importancia de

la agencia reguladora de prevenir los daños al ambiente.

Si los recursos son buenos y nos dan servicio, como el agua, pues, entonces el dañarlos para el beneficio de alguna empresa o algún desarrollo no beneficia al común de a pie, como dice la Constitución, artículo 6, sección 19. Que a la luz de esa... mandato constitucional es que se crean las leyes orgánicas de agencias reguladoras en Puerto Rico. Y a eso es que estamos apelando.

O sea, están las condiciones, sí, con el plomo, para ser cancerígeno y tóxico. Las otras condiciones, de seguirse aprobando proyectos en esta área, para que haya el riesgo a la seguridad pública, ese otro tema, no lo voy a seguir elaborando por tiempo, pero yo quiero votar también, como lo plantea Disraeli Gutiérrez, que si la empresa pudo generar sus ingresos privados a costa de dañar el ambiente, hay una ley federal RCRA, el que ensucia, que limpie. Y si se pudo ser bueno, su empresa, pa' generarle ingreso, debe ser buena pa' limpiar lo que ensució. Muchas gracias.

SA. REYES: Gracias por su planteamiento.

Precisamente, el programa de superfondo está diseñado para el que ensucia limpia y la agencia está facultada para recuperar los costos de la limpieza hasta tres veces, de ser necesario. Y le agradezco, pues, los planteamientos. Sé que algunos)-¿verdad?)- son de jurisdicción del estado; permisología que tiene que ver con jurisdicción del Estado

Libre Asociado y sus agencias reguladoras, pero creo que en muchos de sus planteamientos, creo que... que tienen que ser llevados, tal vez, a Recursos Naturales.

SR. PEREZ: Sí, pero también yo hablé con...

SA. REYES: Sí.

SR. PEREZ: ...Carl Soderberg y da la casualidad...

SA. REYES: Sí.

SR. PEREZ: Como esto está graba'o, ¿verdad? Saludo al doctor Carl Soderberg. Le recuerdo que, cuando fuimos al encuentro de Coral Reef Task Force federal, que se dio ahora, en el 2009, en el Caribe Hilton, hablamos sobre este asunto. Otra persona le hablaba de este tipo de cosa, de permisología, "yo no tengo jurisdicción", con... correctamente le contestó, desde la EPA, para el uso de tierra. Pero resulta que, para el agua, sí. Y en la medida que una acción impacta el agua de consumo humano, que es lo que estamos planteando aquí, se nos saliniza el acuífero, un recurso vital, nada más importante que el agua)-olvídate de la luz)-, no hay vida sin agua.

Señor Carl Soderberg, aquí hay material para tener jurisdicción de que no nos impermeabilicen la zona de recarga del acuífero y que no... y ahí no tiene que entrar en jurisdicción de uso de terreno. Simplemente, ya todos los estudios señalan, desde los 80. Por eso es que se creó la Ley de protección del carso de 1999, la ley 292, en 1984, 85, la protección de cuevas, cavernas y sumideros y nos los están

planteando rellenar y nos va a impactar el agua. Son leyes de Puerto Rico, pero nos van a impactar el agua.

Pues, la Junta de Calidad que tome jurisdicción y EPA, que podría tomar jurisdicción, porque si me salinizan el agua, no hay agua disponible. Esa es el reto. Muchas gracias.

SA. RODRIGUEZ: Traeremos su planteamiento a la atención del señor Soderberg.

Ah y que el comentario ha sido anotado para el proceso, pero traeremos su planteamiento al ingeniero Soderberg.

¿Alguien tiene alguna pregunta adicional sobre la presentación del día de hoy?

SA. CALDER: Mi nombre es Avia Calder. ¿Cuándo van a empezar?

VOZ SIN IDENTIFICAR: No se oye.

SA. CALDER: ¿Cuándo van a empezar?

OK. Cuándo van a empezar la limpieza... este... y qué tiempo... Y qué pasa con las casas que no están contaminadas con ---- (no se escucha; habla sin micrófono).

SA. REYES: Ella desea saber qué pasa con las residencias que no tienen todo el terreno contaminado, pero hay parchos que están contaminados. Nancy, tú contestas.

SA. RODRIGUEZ: Sí, básicamente, pues, nos toma un tiempo, porque ahora, pues, nos movemos al récord de decisión y de la negociación con las partes responsables al diseño del

lugar, que una vez tengamos el diseño y tengamos toda... los detalles de la... en el... alternativa que resulte ser elegida, nos estaremos dirigiendo otra vez a ustedes para dejarles saber los detalles de... específicos, tanto la entrada, salida de camiones, todos esos detalles, tanto como las áreas específicas donde vamos a estar excavando. Pero estas áreas que tienen básicamente parchos dentro de residencias, básicamente, se va excluir... se va a incluir en la parte del diseño.

VOZ SIN IDENTIFICAR: ---- (no se escucha; habla sin micrófono).

SA. REYES: Bueno, le informo que, siempre que nosotros tenemos un lugar de superfondo como éste)-y yo he trabajado con Nancy en otros casos también)-, nosotros informamos a la comunidad cuándo vamos a empezar y hacemos visitas puerta por puerta, repartimos una hoja informativa, siempre nos comunicamos con los líderes de la comunidad y se le deja saber, con anticipación, cuál va a ser el modo a proceder para la limpieza o la acción que se esté llevando a cabo en la comunidad. Pero nosotros siempre lo dejamos saber con anticipación.

Así que tendrán... verá una hojita suelta o le tocaremos su puerta.

¿Alguna pregunta? ¿Sí?

Recuerda decir tu nombre.

SA. GARCIA: Sí, mi nombre es Nydia García, la señora

Nydia García. Mi pregunta es para ustedes qué significa riesgo a largo plazo. Cuando ustedes dicen riesgo a largo plazo a las personas que viven aquí, ¿cuántos años significa eso para ustedes? A largo plazo.

SR. FONT: Sí, veo que esto, este término siempre trae muchas dudas y ésta no es la excepción. Yo le mencioné, cuando hice una introducción breve, antes de las preguntas y respuestas, que existe riesgo inminente a la salud pública. Esto es inmediato. Por eso fue que, en estos luga... en este vecindario, se removió suelo contaminado a unas concentraciones que nosotros entendíamos era lo suficientemente elevadas como para representar un riesgo inmediato.

Ahora, cuando nosotros miramos a largo plazo, miramos a treinta años. Normalmente, es cuál es el riesgo que pudiera haber si una persona es expuesta... Permítame, permítame explicarle. Si una persona es expuesta, a través de los años, a estas concentraciones. Y de ahí se saca unos valores de riesgo y se trabaja hacia atrás para eliminarlos y llevarlos a unos niveles que son aceptables.

O sea, que cuando estamos hablando a largo plazo es que si usted reside en su casa, nosotros estamos asegurando que, de aquí en adelante y en lo sucesivo, usted no debe sufrir efectos adversos a la salud pública, porque estamos mirando a largo plazo. A largo plazo.

A corto plazo sería si yo determino que la

concentración es excesivamente alta, quizás yo tengo que removerlo, ya, es demasiado alta. O tengo que llevar un acciones o remover suelo. Pero aquí estamos hablando asegurándonos prospectivamente; que de usted residir ahí por un período largo, asegurarnos que usted no va a recibir ningún efecto adverso. Y eso es lo que estamos... eso es lo que nos referimos.

Y la limpieza no es a treinta años, acaban de... aquí de decir. La limpieza se lleva a cabo inmediatamente. Estos son trabajos de ingeniería, remoción de suelo, consolidación... Esto no toma mucho tiempo. Quizás, una negociación. Pero estas acciones se llevan a cabo con... con cierta inmediatez, que no creo que vaya a tardar mucho.

(Pausa.)

SA. GARCIA: Esos terrenos que ustedes piensan limpiar ahora...

SA. REYES: ¿Cómo se llama?

SA. GARCIA: Nydia García. Los terrenos que ustedes piensan limpiar ahora, porque aparecen en el mapa como que están contaminados, hay personas que ya viven ahí, sobre más de cincuenta años, más o menos, por ahí, porque aquí hay muchas personas... O sea, esas personas que ya llevan ahí, vamos a decir, bregando esas tierras desde entonces, ¿qué pasaría con esa gente que ya llevan tanto tiempo con esa contaminación? Porque de poquito a poquito se llena el vaso.

SR. FONT: Sí, ella pregu... la... el planteamiento de la vecina es que hay personas que llevan viviendo ahí tiempo y a ella le preocupa, legítimamente, qué es lo que pudiera estar pasando con ellos, que ya llevan un tiempo viviendo aquí.

Pues mire, este asunto de los estudios de riesgo establece unos escenarios hipotéticos. Por ejemplo, cuando se está evaluando el riesgo, uno va y busca la concentración más alta que se encontró en todo el vecindario y uno asume que toda persona que viva allí va a estar expuesta a esto. Entonces, mira eso prospectivamente hacia el futuro.

Por lo tanto, lo que le estoy diciendo es que son unos escenarios hipotéticos conservadores. Asumen la peor de las situaciones para todos y cada uno de ustedes y, basado en eso, es que se toman decisiones. Y esas decisiones son así para asegurarnos que se protege la salud.

Vamos entrando en esta ciencia de estudios de riesgo, que es bastante complicada. No se entiende, pero yo estoy haciendo aquí lo posible por tratar de llevar esto de una manera clara y precisa, de manera que nos podamos ubicar efectivamente.

¿Alguna otra pregunta?

SA. REYES: Venga hacia adelante y nos dice su nombre y apellido para el récord.

SA. PEREZ: Aquí me conoce to'l mundo.

SA. REYES: Pero para grabarlo, lo necesitamos.

SA. PEREZ: Mi nombre es Marta Pérez. Tengo una preocupación... Tengo una preocupación, porque mi solar, lo limpiaron, pero por partes, porque el vecino, pues, se puso a limpiar con una máquina y me afectó mi... mi solar. Entonces, hubo obligación de limpiar mi... mi solar, pero no fue completamente... completamente limpio.

SA. RODRIGUEZ: Déjeme ver si entiendo bien. El vecino remueve terreno y lo deposita en su solar.

SA. PEREZ: No, no, no, no. No, no, no. El se puso a limpiar el solar pa' la parte de atrás. ¿Qué pasa? El trae una maquinaria y, entonces, él pegó a amontonar la basura. Me afectó mi solar. Fue obligatorio limpiar, porque hubo una montaña muy alta. Entonces, limpiaron una parte. La otra, la mitad, no la limpiaron. Y siguen con volver otra vez.

SA. REYES: Nancy o Ariel.

SR. FONT: Doña Marta, yo le recomiendo, si es posible, que se quede al final de la reunión, para que se reúna con Nancy y vaya sobre el mapa, ver cuál es su propiedad en específico y discutir su situación en particular de uno a uno, con Nancy, del problema. ¿OK.?

SA. REYES: Gracias.

¿Alguna pregunta adicional?

Bueno, pues, si no hay alguna pregunta adicional, les recuerdo que hay unos...

Sí, sí, se pueden acercar aquí y ver el mapa, donde

están todos los lotes y todas las propiedades aquí.

Para concluir, les agradezco su tiempo a todos, por estar aquí. Sé que todos tenemos cosas que hacer y familias que atender. Les recuerdo que los documentos están en Caribbean University, aquí, en Vega Baja, en la Carretera 661 e intersección con la Carretera número 2, en la Alcaldía, en el segundo nivel, en nuestras oficinas de la EPA, en San Juan, en Santurce, en la Avenida Ponce de León, donde muy gustosamente le atenderemos. También están en la Junta de Calidad Ambiental y en la oficina de la EPA, en Nueva York.

Les agradecemos inmensamente todo su tiempo...

¿Tiene...? Sí, sí.

VOZ SIN IDENTIFICAR: ---- (no se escucha; habla sin micrófono).

SA. REYES: Nancy, por ínternet, si se pueden accesar cibernéticamente los documentos.

SA. RODRIGUEZ: Los documentos están... eh... electrónicos, van a estar disponibles, pero no... ahora mismo, no están en... para que... me imagino que, desde su casa, usted pueda accesarlos. Habría que trabajar eso. Están en Caribbean University, de manera electrónica, al igual que en la EPA, la Junta de Calidad Ambiental, van a estar de manera electrónica.

VOZ SIN IDENTIFICAR: La otro era...

SA. REYES: Sí.

VOZ SIN IDENTIFICAR: ...si habían co... la copia que

me tocó es en inglés y yo la entiendo, pero mi esposa no está aquí y no la entiende, si había posibilidad de accesar algo en español.

SA. RODRIGUEZ: Sí, nosotros tenemos... estuvimos repartiendo aquí una copia de una hoja informativa. Es una hoja más resumida en cuanto a la información del plan propuesto, pero el plan propuesto en español va a estar disponible en los repositorios.

SA. REYES: Le recuerdo que nos firmen la hoja de asistencia y, pues, si quieren dejarnos su correo electrónico y recuerden que tienen hasta el 29 de agosto para someter sus comentarios con relación al plan propuesto, de este lugar de superfondo.

Muchísimas gracias. Agradecemos la...

¿Sí? ¿Sí? Dígame.

VOZ SIN IDENTIFICAR: Unos años atrás, ellos le hicieron pruebas a los niños, pero esos niños ya no son niños. Esos niños tienen niños. Y gordos. Y se están criando adonde mismo se criaron ellos. Y muchos de ellos... sabe, no le hicieron las pruebas, porque eran afuera de la edad. Pero ellos están criando sus niños aquí. "So", ¿qué se va a hacer con esto, los d'esos nuevos que hay?

(Pausa.)

SR. FONT: Sí. El estudio para establecer el riesgo por las concentraciones de plomo en suelo, el estudio que se

hizo para establecer el riesgo que presenta las concentraciones de plomo, como le estuvo explicando Nancy, fue un estudio específico a este lugar. Y ese estudio es una ecuación matemática que, para ponerlo de una manera simplista, lo que hace es que establece... que utiliza las concentraciones de plomo en polvo, las concentraciones de plomo en agua potable y las concentraciones de plomo en suelo para evaluar cuál es la probabilidad de que se exceda los niveles aceptables de plomo en sangre.

O sea, que la "data" para nosotros tomar la decisión del nivel de plomo al cual vamos a limpiar fue a base de la "data" del polvo en las residencias y del agua potable. Y de ahí, extrapolamos para ver cuánto se le puede aceptar el nivel de plomo en suelo sin que presente un riesgo.

O sea, que indirectamente se... se... la fórmula matemática establece como una constante, un número ya dado, cuál es el nivel máximo de plomo que se le debe permitir a una población para que sea aceptable y que no presente un riesgo.

(Pausa.)

SA. REYES: ¿Estamos? Quiero agradecerle su tiempo nuevamente, como les indiqué, por haber venido esta noche. Muchas gracias.

(Se da por concluidos los procedimientos.)

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CERTIFICADO DEL TAQUIGRAFO

Yo, Luis García, E.R. Reporter, miembro de FASYO Reporters, CERTIFICO:

Que la que antecede constituye la transcripción fiel y exacta de la grabación realizada durante la celebración de la vista pública, en el sitio y la fecha que se indican en la página uno de esta transcripción.

En San Juan de Puerto Rico, a 20 de agosto de 2010.

_____

LUIS GARCIA

E.R. Reporter

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ENVIRONMENTAL PROTECTION AGENCY

CARIBBEAN ENVIRONMENTAL PROTECTION DIVISION

PUBLIC HEARING ON SUPERFUND SITE;

VEGA BAJA SOLID WASTE DISPOSAL SITE

Operational Unit 2: soils

Date: August 3, 2010, 6:00 p.m.

Place: Santa Rosa de Lima Chapel

Main Street, Brisas del Rosario

Rio Abaja Ward

Vega Baja, Puerto Rico

Moderator: BRENDA REYES

****

FAYSO REPORTERS – English and Spanish
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PROCEEDINGS

MRS. REYES: …Luis Santos; Luis works in the Superfund Division. We have Mike Valentino from CDM who is a contractor for this superfund site…and we want to thank him for taking time and being present.

We were passing out informative sheets in the community to – right? – invite them to participate in today's meeting, in which we will talk about the proposed plan for the second operational unit which is of the soils, here, in the community of Brisas del Rosario.

You let me know if I am going too fast or you do not understand something.

I have here the informative sheets about the proposed plan. Here it has a bit more information I am going to be passing it, for those of you who wish to read it before we start.

From six to seven we are going to be making a series of presentations. Here, this is, as you can see, we are improvising a screen and we have some maps. Chuck, who is here, with us, Chuck Nays (phonetic), is going to be giving a presentation and they are going to be taping it here, the youths, as part of the process, to have it in the record.

I would like that if you are going to ask any question…

I have problems with the sound, the … of part.

I would like that if you have any question you ask it stating your name. We have the microphones. I hope that

they function a bit better during the course of the night. And if you do not wish to ask the questions, I have here some sheets, cards and I have ballpoint pens. I am going to leave them here, in the event you wish to write them or if you have any doubt during the course of the presentation, that you may write them so that then it is not difficult to return…

Sometimes, it is a bit difficult, when we are seeing presentations that include aspects a bit technical, to refer or remember everything, so that I am going to have this here. If you wish, you may take them.

We have colleagues from the Environmental Quality Board, who will be coming here tonight. One of them already came and left, just a second, Pascual went to get coffee.

So that anything you know my name is Brenda and we are going to be starting the presentation shortly.

(Off the record.)

(For the record.)

MRS. REYES: For those who just recently arrived, my name is Brenda Reyes; I am the press officer of the Environmental Protection Agency. We are with you here this afternoon to talk to you about the plan proposed for the operational unit 2 of the superfund site of the Vega Baja Solid Waste Disposal Site, also known as Brisas. We thank the people of the parish for having facilitated the place to hold the meeting.

Tonight there are several colleagues from EPA: Ruben Alayon, there is Luis Santos; there is engineer Jose Font Deputy Director of the Office; there is colleague Chuck Nays, who is the Risk Advisor who is going to be making a presentation; Ariel Iglesias, Director of the Emergencies and Superfund Division and Nancy Rodriguez, Project Manager.

Besides that we have Mike Valentino, from CDM (sic), who is the contractor. And there in the back, we have Pascual from the Environmental Quality Board.

So that, with that, well, we are going to start the presentation we have tonight. We have here recording – right? – well for the record of the meeting.

Also for those that just recently got here I indicated there is going to be a questions and answers period, at the end. The Proposed Plan was distributed you have an informative sheet about the proposed plan. Also, I the second bench I left some index cards or some sheets. There are ballpoint pens so that well whoever wishes to ask questions or, well jot something down about the presentation here, well if anything raises any doubt or you have a question, well, you are welcome to take them.

I forgot to mention that there is a restroom here, in the

side, in the event you need to use the restroom. One has to exit by the main door…

Is there anything I have forgotten?

Yes, the questions. There is going to be a microphone for the questions. But I'll be in charge of that. So that nothing, I leave you with Nancy, who is the…Ah? With Ariel?

Ariel, you are going to be making the presentation? Well I leave you with Ariel Iglesias and you already know, any doubt or question, well, I believe that there are many here from EPA to answer your questions. Thanks.

MR. IGLESIAS: Good evening everyone. I want to thank you all for being here tonight. Thank you for taking time to partake with us.

You can't hear in the back?

Better?

Well, once again thank you very much for taking time and partaking with us tonight.

Tonight we are going to be talking a bit about the status of the investigation of the contamination in the superfund site here, in the Brisas del Rosario community, giving you an update and explaining the next steps and the plan proposed to address the remediation.

An excellent opportunity to clarify questions. We have a lot of colleagues here tonight to help us understand the status we are in, what are the

next steps and what the proposed plan consists of.

If you help me around here, Ruben…

Tonight's agenda, we have the welcome, well that Brenda gave us. We are gong to talk a bit about the superfund process. Nancy is going to be talking to us about the history of the site, where we presently are with regard to the remedial investigation and the risk evaluation, what are the results and the conclusions of these studies which have been carrying out here for quite some years, the feasibility study and the alternatives which have been evaluated to address the contamination found in the site and the next steps. In summary, she is going to be talking to us about the proposed plan as to how it is proposed to address the contamination which has been found in the area.

I am going to talk to you a bit about the superfund process. As you know, this process…we have been involved in an investigation process of the situation present here, in the location of Brisas del Rosario for a few years.

The superfund process of a generic location starts with the discovery of the site. The discovery of the site well normally occurs…is carried out several ways, be it because we receive citizen claims, because there is a referral from any state agency, because our personnel visited a site and found some

things which could be of concern as to the presence of hazardous materials, and once one discovers the site, well, one evaluates the information at hand to determine whether under the superfund process, the location deserves to be considered.

If the information we have on hand leads us to believe that the place can present a problem, a preliminary study is made, a preliminary evaluation and an inspection of the site and what is basically used is existing information to determine if the site must be considered to be included in what is known as the national priorities list.

The national priorities list is the hit parade of contaminated locations. That is, it is a site where, well there is contamination. This is a rigorous process, once one obtains information which suggests that a site may be contaminated, under an evaluation process and it goes to a panel which considers the information and determines whether in fact this place should be included in the national priorities list.

We have already taken these steps for the superfund site here in Brisas del Rosario; I am discussing it as background so that you understand what has been done through the years in this site.

Once the site is included in the national list of

priorities, we proceed to make a remedial investigation and a feasibility study. These are the two steps that were completed in the for the Vega Baja superfund site. This study is addressed to evaluating the nature and the extension of the contamination: the type of contaminants present. It is where these contaminants are found. And this information is used to establish if there is contamination and if that contamination presents a risk to the public health and the environment. And we, based on the risk which it may present to the public health and the environment, decide if, in fact, there is a need to perform some type of cleaning or some remedial activity to address this contamination.

If necessary, we start to develop alternatives in order to work with this contamination which is present in the site. These alternatives are evaluated, the feasibility of implementing these different alternatives is evaluated, and that is what, in block, is known as the feasibility study.

These two steps have just been concluded for this site. The nature and the extension were evaluated or the nature and the extension of the contamination were defined. The risk was evaluated and the alternatives to address the contamination present were evaluated.

Later, what Nancy is going to do is that she is going to go

over the conclusions of these studies so that you may understand the type of contamination found and the alternatives being proposed which the agency is proposing to perform to address this contamination.

Next step. The agency provides this information to the community and the public so that you have an opportunity not only to learn about it, but to express any comment you may have before a decision is made here. And that is what we are doing in this period of public comments, which ends in the month of August. And this public meeting is an opportunity we have in order to sit with you, share the information we have compiled and that you may understand what this information is, what this information means and what are the plans that are being proposed to be carried out.

Once we conclude this process of public comments, we then decide what to do in the site and this is reflected in a record of decision.

Once it is reflected in a record of decision, we go on to the next step, which consists of designing the remedy. We already defined the nature and the contamination, we decided that remedial action must be taken or a cleaning, we evaluate the alternatives, the next step is to design how these

alternatives are going to be implemented.

From the record of the decision onward these steps are prospective. That is, they are future steps. Right now we are at the point of making a final decision as to what we are going to do.

Once the remedy is designed, said remedy is constructed.

After the remedy is constructed, well, this remedy is evaluated through time -- Ruben if you can forward it – to make sure that the remedy is complying its objective that the remedy is being performing as designed. And this is what is known as the post construction monitoring.

Once the remedial action is concluded and therefore, it is concluded that the remedy is functioning, well, we go on to the process of delisting the site. This means that the work in that site has been completed, the place has been returned to beneficial use and we go on to the delisting process.

It is important to emphasize that at all times in the superfund process; we are working with contamination and with receptors, public health and environment. And these are the two elements which we are at all times on the watch for and considering in our decision making process. And the purpose of the superfund is to return the site to beneficial use.

So that with this, this process has concluded…well, this part of the background of the superfund process. Now, I am going to leave Nancy, so that she talks to you a bit about the history of the site and takes you over the work being performed and what are the conclusions of that work and what is the plan proposed and the action being proposed to be carried out to address the contamination.

MRS. RODRIGUEZ: Hello, welcome everyone. I also want to thank you for your time to be here with us tonight.

Ariel gave us a good introduction of the process we are going through there, in the site of the Vega Baja Solid Waste Disposal Site --- a bit the ---

As we know, for thirty-one years from 48 to 79 there was brought here…

You can hear better now.

Material was brought, commercial, industrial and domestic waste and the burning of waste was also performed herein. It is considered one point one yards…millions of yards were brought to the site.

In this figure, you are being shown…

Basically, this is the residential area and this is the area which is not residential, towards the hummocks, so that you have more or less an idea of where we are at in the figure. And here we are showing how the area started to be covered of the

waste being deposited.

With this graphic what I wish to show basically is that here we have a summary of the amount of samples initially taken. They are field samples which basically are the basis for EPA starting a well, more formal investigation.

As many known, from the decade of the 70s, the construction of houses was commenced on the site. The first inspection was in 94 and from there given the results, it evolved to the need for more data, of more collection of data, of better knowing, because we were finding contaminants in the site.

This took us to the site being listed in the national priorities list in 99, and thereafter, with regard to the soils unit in 2003, the parties responsible signed an Order of Consent with EPA that were as you know the Municipality of Vega Baja, PREPA, the Land authority, the Housing Department, Pfizer, due to purchase from Warner Lambert, who was the one who deposited, BFI and Motorola.

Once we have all that data which I previously presented, this gave us basis to say: “Look we understand there is contamination in the site and we wish to make a more at depth investigation. EPA then divides the place in two operational units. Once is the underground water and the other is the soil.

At the time, we started with the underground water operational unit which some time back we were presenting the results, and basically after the installation of the wells, the results obtained from water samples, also the canal, the drainage ditch, Rio Indio, waterholes were also sampled, we found that there was not contaminant related to the place in the underground waters.

Therefore, a record of decision was signed, recommending no action for the site in 2004. It is then that we move to the soil operational unit and we started an environmental investigation.

What is my objective? What do I want to achieve? Where am I going? This evaluation, based on the data we had initially collected, we decided to outline we decided to characterize what is the contamination in the site.

We searched, also with study, to determine how far it reached; the extension of this contamination and, later, evaluate the risks; what risks are presented by the contaminants present to human health and the environment.

What the soil investigation basically included were some samples in the residential zone, samples in areas, samples in properties were the old data, the original data showed us that there was a need of having

more laboratory data, more definitive data, a more profound investigation.

As in these residencies samples were taken for lead, both in the soil as well as inside the homes, in the water tap, in the tap water and also in the dust inside the homes.

Also in the whole residential area, what is Brisas del Rosario, what is the complete site, which is what I am showing here, in the figure, samples were taken around the whole area for other contaminants, to learn if they were present and if they presented any concern in the site.

Samples were also taken in the non-residential area, which is the landscape area below which is the area which is towards the hummocks, which is not developed, to outline what is the extension of lead in that area and if there was another contaminant of concern. This area below includes seventeen acres of land, which was all sampled.

Before I go on, I added this note here, below, because EPA has what is called the superfund lead contaminated residential site sample, it is a handbook, it is a guide which helps to study sites such as Brisas del Rosario, which have lead contamination and it is in a residential area.

Basically the guide gives you an idea or gives you certain directions, certain recommendations as to how you are going to take the

samples, where to take them, how to understand the data, how…what to do with the data, it takes all this process of identifying and evaluating in places which are residential and contain lead. We use it as a guideline, which assisted us in the process.

Additionally, during the soil investigation, we took samples in the mounds, in those promontories of waste, that we have four, that we can see them in brown, we have one, two, the one above, three and one around the other church. That well, as you know there was… an unauthorized removal was started and already well we advanced and that one was removed and it was accommodated in the undeveloped area. For that reason now we are left with basically three mounds of waste or promontories of waste.

In these places here, in the waste, lead samples were taken, but also for other analysis or compounds to determine what contaminants were a concern in that area.

And finally, background samples were taken, which is what we know in English as background. They are areas we seek near the site, but which has not been impacted by any activity. What we seek is to see a reference of what are the concentrations let's say that natural from these contaminants or from these metals, for examples, in these area which have not been altered by any construction or by any…work which has been performed which has impacted

these soils.

Now I am going to show you some figures and, in these figures, basically you can see where the samples were taken. Here I am emphasizing the residential area and as we can see the majority is concentrated between Santa Maria Alturas Street and Los Angeles Ortiz and this area here, in progress.

Once I emphasize that these area arise form the results which had previously been taken in the whole area, in the two hundred thirteen houses, which is what includes the fifty five acres of property in the residential area.

What I had previously explained, that for contaminants other than lead, all this residential part was separated, they were separated in blocks. And what we sought here was to have a representation of the different areas, but what we are seeking was to collect samples based on what we need to make a risk evaluation. That is what led us to make this…let's say these different figures here, to separate the blocks and what we sought was to satisfy the need of data which the risk evaluation requests, in order to know for other contaminants that are not lead, if there is a risk to human health or to the ecological.

This is the nonresidential area. They are seventeen acres in green, below, in the figure. Basically,

the whole area was also shown and as we can see, they were sufficient samples to know how far my contamination reaches.

And fin…the next.

And finally, this is what I meant by the background areas. If you see, open areas were taken, which have had no construction, no building. Basically they are areas that can give us an idea of the natural concentration of these contaminants or of these metals at the location.

I added this figure, but basically, this is part of what was done in the investigation of the underground water. When I mentioned that wells were installed, also at that time, the idea was to take samples in the drainage ditch which you have, which runs by Alturas and up to Rio Indio, but as you well know, it is principally dry. We were unable to take water…samples of water, but samples of sediment were taken. In some areas, it did give us concentrations of lead and that is why we are… Within the action we are recommending for the site, we are including the drainage ditch for cleaning.

That taking that…all that data, that all that data is analyzed, in this box, well I can … basically, we have the documents here, available, certain documents are generated, which are reviewed by different experts of the

Agency and the conclusion is reached that the lead, definitely is a problem in the site and here, I am giving a few of the values we found.

The residential soil, in the surface area, I am giving a rank of seventy nine to thirteen hundred milligrams per kilogram. That was what we found in the… in the…in the data collected. The soil at depth, there was an area that reached up to twenty six thousand milligrams per kilogram of lead.

As we can see in the trash mounds, we have some values a bit higher. We have realized that it is in the trash mounds and the non residential area, is where I have higher values of lead in the site.

In the residential dust…

I basically used this data to run the risk analysis models I was required, basically information of the site, a more specific information. Basically, we wanted to see what the concentration of dust inside the residences. It gave us a maximum of eight hundred twenty-four, but the average was some lower values. That is why there remains an average of one hundred twenty-two.

The same with the tap water. That data I used basically to run the risk model and see then what is my situation as to risk to the human health at the site.

During the investigation and the… the data that was collected, we also found some sporadic excesses of antimony, chrome, thallium, zinc and iron, also they were more oriented towards the …trash mounds and towards the non residential area.

After an excellent evaluation and many aspects, many perspectives that are taken as to the data collected and evaluating what is interpreted, it was concluded that we already understood or we had already defined the nature of the contamination – which is resumed to lead – and what is the remediation; where it is and how far it reaches.

In the hummocks, that seventeen acres were investigated, we were able to see that only eight point five acres are impacted by lead and therefore, well this problem needs to be addressed. And the values, such as arsenic, chrome and manganese were found…although they were above the values of residence, it is compared with the background analysis we had performed. For those samples which I explained that were in places that have not been impacted, near the area, upon comparing them, they are certain levels that are in average pretty close, therefore, it is concluded that it is not related to the place, rather it is the particularity of the soil.

Once we have all that data, what do we do with it? Here we have Chuck Nays, who is our toxicologist and he basically, is the leader by evaluating the documents which are

looked at with relation to human health, the human health risk, in a complicated process that I am going to resume. It is basically….what is sought is to see the exposure to this chemical, in our case, the exposure to the chemical, what does it mean, what does it represent, to the residents, be they adult or children, for the intermittent visitors, which is the person who comes, plays, visits, leaves, therefore, it is not exposed day to day but may come frequently and the construction worker who has a minor exposure, but who may come to the place.

What is the exposure for this type of persons when there are chemicals in the soil, in dust and in vegetables. The conclusion was that there is no…The risk of cancer, present by the contaminants of the place, is not high. It is within EPA's ranges. Therefore, we understand there is no problem of a risk of cancer.

The hazard, which are the compounds that are not carcinogens. It was determined that it is principally associated with the compounds I said, that although they exceeded EPA's reference values, they were at values that were similar to the conditions of the site, to the background samples, the background samples, what we see in this region.

And, basically, it was concluded that lead we know is a problem, and for the levels that one may find in the

blood, it could create a potential of high levels in the blood. Therefore, it leads me to what we need to do and take action in the site.

The risk to the environment, the ecological risk. What did we do there? Basically, first there is an evaluation an inspection of what are the species that we can see in this area, in this region in Puerto Rico. And based on the species that may be present, the ecological receptors that may be present, birds, bats were selected, I believe there is the Puerto Rican boa, which are species that may be present in the site.

The risk to these receptors with regard to lead are evaluated. It was concluded that the contaminant presents a level unacceptable for the birds. What does this mean? That obviously the lead for the birds is also a problem we have that then we must post a cleaning or a remediation.

For the other contaminants. In the other concentrations seen in the site, the risk to the ecological receptors is minimal. Therefore, we again conclude that we have to do something with the lead. What are we going to do? How are we going to resolve this problem? What alternatives do I have? What technology exists for me to clean up which basically

resolves the problem of lead in the site?

The feasibility study is a mechanism used for a detailed evaluation of the alternatives of remediation or clean-up. What does this mean? I seek my objective. My objective that I want to carry out in the site. What am I going to clean? How much am I going to clean? and then I evaluate what is available in the market for me to resolve this problem.

My objectives here are basically to prevent or minimize the contact of the persons…the human contact, the contact of the ….of the birds, which we already saw was a problem with regard to lead, in areas such as the residential area, in the properties where it was identified there was a problem, in the mounds of waste and in the non residential area.

My objective here is that I must resolve or minimize the direct contact to these areas with high lead content. And we also want, to resolve the ecological problem, eliminate the lead contact to protect the receptors.

EPA then makes…Of all this information we have collected, what the risk evaluation has told me, the reference values we have as to lead, we search for an analysis and we arrive at the conclusion that of four hundred fifty milligrams of kilograms, is going to be my value, it is going to be my clean up goal in the site. That is a

Very conservative value which addresses the problem, it...and we understand that cleaning up over four hundr…cleaning up the areas of four hundred fifty milligrams kilogram, everything that has a value over that would be our alternative of resolving the problem in the site.

And I remind you that this includes the non residential area, the residential area, the drainage ditch that, in operation unit 1, we had indicated there were certain values similar to those we found in the residential area, in the ditch and in the trash mounds.

I already know what I want to do. I know my problem, I know what I want to achieve, my objective, my goal, I know the value I have to reach, how am I going to do it? What technologies exist so that I can then reach my goal?

We have these technologies, pretty simple and which are feasible for the Vega Baja site. The first is to excavate soil. Arrive, remove, excavate the soil remove it from the site. What can we do with this excavated soil? It is either removed, to a landfill or it may be consolidated in an area… In the case of Vega Baja, it would be to the nonresidential area. It can be consolidated there and a cover of soil is placed which basically minimizes my exposure to the contaminated soil.

Containment. That is to place a cover of soil. You can place a cover of soil and basically, you are…

have a soil coverage, which serves as a barrier with the soil that contains lead contamination.

Solidification or stabilization. This involves treatment. Basically, here we would be bringing cement or lime and it would be mixed with the contaminated soil. Everything that has unacceptable lead levels would be mixes to solidify it; so that the lead loses its mobility and avoid the direct contact and in the future well it could affect or contaminate another type of soil or reach the underground water.

Other technology for the dust in the residents is removal.

And finally institution…institutional controls. What are institutional controls? Basically they are certain use restrictions, restrictions which basically limit the use of the contaminated area, as well as limits excavation where there is contaminated soil.

What can we do in Brisas del Rosario with regard to the alternative of soil excavation? When I say, arrive, excavate, remove soil, what do I mean? I am referring to the trash mounts, to the trash mounds. I go and remove all the waste, all the trash mounds we have…at this time, we have three existing in the residential area.

Once I remove, I bring in fill, I bring in clean soil,

I use a membrane, simply well to identify how far the concentration reached and on top I cover with fill to restore the level of the soil and not leave an open hole.

In the areas prope…in the residential properties or in the areas that, well, it is understood that there must be a removal, basically, what is over four fifty we go in, we excavate and we remove, we remove the contaminated soil form the resident, from the area of the property, in the majority of the cases the backyard. And with the soil that is contaminated it is either sent to a landfill, as I had previously mentioned or it is taken to an area where it may be consolidated and covered.

The containment alternative…Here I added what…when we talk about the geotextile membrane, it is what you can see in the photo below, it is … simply a physical barrier to, once it is placed, if there is any excavation in the future, you may note: “Look the prior removal reached here, from there onward there is….there may be contaminated soil or waste.”

Then as you may see in this figure, first the membrane is laid and then a foot is placed, twelve inches of soil on top and that would be the cover. To avoid then the erosion of the site, a vegetative layer is also added, after concluding with the layer of soil. This technology requires maintenance, because

obviously, once you install them, you need to ensure that there is no type of future excavation and that the layer is maintained, so that then the remedy continues to be effective.

In this figure, here we can see what I had explained about the technology in solidification and stabilization. You extract water and you extract the material, it may be cement or it may be lime, and basically what you are doing is mixing it with the contaminated soil, so that then the contaminated soil is mixed and creates, then…It is seen as weak cement, as weak cement once you have all that mixed, to solidify it in contaminated soil.

I have these technologies: I can excavate; I can put a cover of soil; I can solidify. These technologies, what do I do with them now? Well, I group them in alternatives. CERCLA requires me that one of my alternatives be no action. And it is rather to have a point of comparison. In no action, what I am saying is: “I am not going to do anything. I am going to leave things as they are.” And this… and in the case of the report we have developed, it is our alternative number 1.

Alternative number 2, what it groups is removing all the contaminated soil that is over the four hundred fifty milligrams per kilogram, according to the data we have already collected form the residential area, from the properties, obviously, that well, we have that information that

It is over the four fifty, from the ditch and also from the trash mounds, from the …from the trash mounds. I remove all the contaminated soil, I take it to the undeveloped area and I consolidated it there. I have everything consolidated together with the eight point five acres of land we had mentioned had an excess level and I place a soil cover. I place the membrane cover, as I showed you before and I place a cover of a foot of soil. And later a vegetative layer so that basically the vegetation covers that my layer of soil is not altered, is not lost, is not minimized and provokes an exposure of waste. What I am seeking is that this barrier of…this barrier of soil allows me, minimizes serves as a barrier for the contaminated soil and the waste.

Alternative 3 would be that for all the areas, the four areas – residential, ditches, waste and non residential – all the soil is excavated and it is sent to some landfill.

And alternative 4 is the…basically, remove…the same as alternative 2, remove the soil from the residential area, from the ditch, from the mound, take it to my undeveloped area and it is there that I perform my treatment system, where I mix the contaminated soil be it with cement or lime, which is what I am going to be adding.

Any of these alternatives is going to take institu…institutional controls, because any of

these alternatives is going to prevent, according to the alternative, the future use of the place or what areas, as for example, under pavement or under structures which cannot be reached to remove the soil or remove the waste, not be altered in the future.

I already have these alternatives. All these alternatives have certain common elements and these elements are the institutional controls that I had already mentioned. Obviously, except the alternative of no action. It calls for a pre-design investigation. In the design is where we in detail discuss all the logistics, all the …how this alternative is to be implemented, of the design, of the remediation, of the clean up. And always, before the design well there are times one has to come and get some additional data in order to complete…define what the work is going to be, in a more detailed precision.

We also…the…the storm water runoff is something that is also taken into consideration. We do not want to alter or create a problem of storm water runoff. Therefore, there has to be a handling, there have to be certain controls, and in the design, it must take into consideration what is going to happen with the storm water run off. In the event… As we have the drainage ditch, it would be divided so that the rain water goes through the channel, they don't stay in residence, that way they reach the Rio Indio. So, the two would be connected within the design.

The agreements of access. We cannot go into your homes without your permission, authorization to enter. So, before we perform any of these alternatives, we must request the persons where we have to enter their properties, access to the properties. And then, now everything is green, now everything is green.

So, the region, EPA Region 2 has developed a green clean-up policy for superfund sites that we are going to be taking into consideration and this includes, well, recycling of materials, everything that may save energy… A treatment system could be using solar energy… Any aspect that could be implemented, that is going to be taken into consideration in the design.

We have the alternatives. We know what we want to do in the site. We know how much we wish to clean up. But how do I select it? I select alternative 1, 2, 3, 4. It is not like that, it is not at random, it is not so easy.

The superfund program has nine criteria which helps us to evaluate them. To evaluate them in a detailed manner, to make a correct decision as to resolving the problem of contamination in the site.

These criteria are how does the alternative protect obviously our mission, the human health and the environment. How does it comply with the applicable requisites, applicable regulations and appropriate in the site. What is my

efficiency long-term. What does long-term mean? What does that alternative represent for me? The same as short-term. What does this alternative mean at short term? What is the reduction of toxicity, mobility or volume of contaminants. And that is when there is treatment. This is through the treatment. How does it reduce, how toxic is the contaminant or how mobile is the contaminant.

The implementability. Perhaps there is a fabulous alternative, but it is not something that is feasible in Puerto Rico. And it is also evaluated to see if it is an alternative that may be implemented.

The cost is evaluated, the acceptance of the state agency, which in this case is the Environmental Quality Board and the acceptance of the community, that is why we are here tonight and that is why we opened a period for comments, because you also have participation within the evaluation of these alternatives.

Here I want to show you, basically, how the alternatives compare one with the other with regard to my nine criteria. And basically, what I want to show you is that the alternative of no action, if you see, does not protect the human health and does not protect…does not comply with the applicable requisites. Why? Because it is to do nothing; it is to leave the contamination as is. Therefore, it is something that does not comply with my criteria. The other alternatives do comply.

The long-term efficiency. Remove everything from the

Place, obviously, well the contamination, the contaminated soil not being present in Brisas del Rosario well, at long-term creates a better efficiency and permanency of the remedy. But basically, we are moving the contamination from point A to point B, and in point B well, one would then have to take certain measures at long-term to ensure that it is not an exposure in another location.

The reduction of toxicity, mobility or volume through treatment, what I am indicating here is that it is not that the other alternatives…These do present a minimization or a prevention of direct exposure to the contaminant. But since this criteria is only through treatment and excavation is not a treatment, only when it is mixed with what I mentioned about the cement or lime, it is the only thing that is considered treatment, it is due to this that alternative 4 is the only one that can reduce the toxicity or mobility or volume. In this case, it does not reduce the volume, because the volume remains the same, but it does reduce the mobility of the lead.

And then there are the costs. As you can see we have… Excuse me, implementability, they are all implementable. They are all alternatives that can be carried out here. Some easier and one more difficult. For example, having to stabilize and bring cement and lime, that entails certain additional studies, because one has to make some…It is an alternative, well, which has not been practiced here and one would seek

then, make like a…a minor scale, basically, seek what is the…if…the magic formula, let's say. And that would entail that additional study. Therefore, it is implementable but it takes a bit more work.

The same well with alternative 3. It is implementable, but then, we already went into the problem of choosing the landfill and the capacity of the landfill to receive an amount, a volume which is pretty big of land that would be removed from the site.

Acceptance by the state agency, the Environmental Quality Board, well, which has been working with us from the beginning, they have also participated in the review of the documents and making comments. They have already reviewed the proposed plan we have for the superfund site here in Vega Baja. They already issued their letter of support for the alternative we are going to be presenting as the preferred alternative, which is alternative 2, the alternative of removal, excavation of soil in the residential area, in trash mounds, in the drainage ditch and consolidate them in the area that you have which is non residential and cover them with soil. They already issued the letter of support.

The community's acceptance, this criteria is still open, because we are in the process of public comments and it is now that we are evaluating what is your acceptance as to alternative 2, which is the

alternative we are presenting tonight as the one preferred.

Going into a bit more detail, as I mentioned, tonight we want to present the alternative of removing all the soil which is on top of the four hundred milligrams per kilogram, which we understand is a very conservative value for lead levels, remove it from the residential area, from the drainage ditch, from the trash mounds, transport all this material to the nonresidential area, which as I have explained, we already have eight point five acres of land that are already impacted, which is why the costs…

I did not discuss costs, but I don't know if you were able to see that alternative 2 represents four million, when alternative 3 and 4 represents twenty four million and twenty five million and it is because basically in those two alternatives I am going in to either excavate or go treat eight point five land of eight point five acres of land and that a lot of volume, at a depth of either four or six feet.

The greatest volume of contamination is in the non residential area and that is what impacts the costs a log.

UNIDENTIFIED VOICE: ---- (talks without microphone).

MRS. RODRIGUEZ: Not residential. Which is the area this landscape area below, which is where my greatest concentration is, in terms of volume, of the lead contamination in the

site.

In this area the material would be consolidated, and later a cover would be made, first with a geotextile membrane and later with twelve inches or one foot of a layer of soil which is also going to be covered later with a vegetation layer.

This is similar to what was already done in trash mound 1, that I had mentioned in the beginning that a removal of the trash mound had been started, which was not authorized, basically, at that time, that was done there. The area which presented a risk was removed, consolidated, a geotextile membrane was placed and twelve inches of soil were placed. Basically, we are doing what…similar to this process.

In the areas to be excavated, in the residential area, there are going to be obviously brought again to level with clean soil that would be brought to restore the property, according to the conditions prior to the excavation.

This alternative had already been explained about the cover of soil in the non residential area and for all the areas where there is excavation, some confirmation samples are going to be taken basically to make sure that the soil over four hundred fifty was removed. And start…then, understand that we reached our clean up goal.

This figure is basically the same map I have here bigger. I invite you to once we conclude the presentation if you have doubts you may approach and get a closer look. But here, I am showing it, the area of the remediation action. The areas that are blue are the areas being proposed for residential, the backyards of the residences that were found with values over four hundred fifty, to carry out an excavation.

We have the trash mounds which are the brown areas the non residential areas… Ah, all this soil is going to be removed, it is going to be taken to the non residential area and I am also showing the areas for which access is going to be requested, the residences that are going to be impacted to request access and in order to enter and do some work.

This figure also shows areas like for example, these … places. Here, previously, it could not be accessed during the remediation. Then, we want to return to complete this part of taking samples in these residences and all this is shown in this figure, that well, I invite you to approach at the end of the present and get a closer look so that then you are able to see it more clearly.

But also you have it in the proposed plan sheet. It is the same figure that is at the end of the handout we passed of the proposed plan.

What then? Ariel did an excellent job

explaining the process, but I wanted to remind you where we are at.

We already investigated the soil, we made the feasibility study, we are moving here, to the record of decision. Basically now we have a section for comments, which ends on August 29. Once it concludes the comments that are received in writing, a summary is prepared and that is part of the decision record.

Once the comments period is concluded and we replies to the concerns of the community, the decision record is issued, which details the alternative selected and details on the decision, the bases to make that decision and the decision.

And there we move to the remedy design. Here, like this place, now basically the responsible parties are the ones that would be well also working in what is the design of the remedy and the action, the implementation of the action, between the decision record and the design document there is a process, let's say legal, where a Consent Agreement is once again signed which basically details what must be covered, the work plan and the requisites to then be able to move to the remedy design and obviously that the parties responsible well agree with the implementation. It also includes the design and the implementation.

Once this process is completed, we have already reviewed the design, it has gone by EPA, different experts have

evaluated it, comments have been submitted, the comments have been incorporated, we have the final design – possibly, you will see us again, because we will then share with you everything that is the logistics, everything that is the details of how this event is going to happen --- the construction. Then we move towards…the construction, in this case, would be the excavation and the layer of soil in the non residential area.

After concluded there are always a series of evaluations, of inspections, to ensure that everything goes according to design, that everything is as planned. There is also a 5-year review. Basically what is sought is follow up and ensure that the institutional controls…that the remedy that was implemented continues to be effective and protective to the residents.

After that once it is understood that the clean up objectives have been achieved and the place is then ready to be proposed to be removed from the national list of properties …of priorities, another public meeting is also held, where you are involved to let you know there is an intention to remove the site form the national priorities list.

And once completed well obviously there are other potential reuses to… specially, well for the area… Obviously in the residential part it is already being used as residential, the area… or there is a remedy in the area non

Residential, if it is a candidate for some type of reuse. And that could be at the end.

Here I am giving you information about the sites of EPA on the Internet, where you can look for additional information, if you have doubts, with regard to the superfund program. This like I have here takes you to a page which is in Spanish and there is additional information about the superfund program, about the opportunities of community participation, that I invite you well to visit it so that you learn more.

Also within EPA there is the link I have here below you can access the information as it is found and it is included in a page dedicated to the Vega Baja site. I invite you to then if you need additional information…Of course I am here at your disposal in EPA's offices in San Juan, for any questions.

I am going to leave you here at this time with Brenda.

(Pause)

MRS. RODRIGUEZ: Now I am going to leave you with Jose Font our Deputy Director of the Office.

MR. FONT: Thanks Nancy.

After Nancy's presentation, I wanted to emphasize certain points, before going into the most important section of questions and answers.

For us the process of public participation is very important and that is why we are here. All the comments shall be taken into consideration. What is being discussed here today is being recorded and each and every one of your comments shall be addressed. This is addressed in writing. Today we will be answering questions here.

But to emphasize certain points. The clean-up. The clean-up would be proposed; today here, places which exceed four hundred fifty. Four hundred fifty milligrams per kilogram.

Besides that, an alternative is not selected without having heard all of you. So we are here today so that you let us know your concerns, you ask questions…And we can be here all the time you wish of course.

In terms of the process the Environmental Quality Board participates actively, EPA shall try and seek the manner to have an effective communication with you. The documents are available certainly we have been working here for many years various actions have been carried out. You will recall when contaminated soil was removed because there was an immediate risk to the public health. Today we are working with long-term risk.

Besides the long-term risk, the underground water was studied. It has no problems. Do not worry about that. There is no

problem. At this time, long-term, soils contaminated with lead in excess of four hundred fifty. That is what you have to bear in mind today and I imagine that many questions will be where; where does it exceed that concentration?

Well, we will be here indicating those places and trying to clarify specific concerns of those persons who could be affected by the clean-up now proposed. And this clean up shall not be final until the process ends. And the process ends after having received your comments, evaluating each and every one of them. These they are part of an administrative challenge that shall be attached to the final decision.

With this, perhaps we can start with the questions. Or Brenda, you…

MRS. REYES: Well, you saw the presentation and you heard some additional final points expressed by Jose Fond, Deputy Director of the Office..

In terms of questions and answers, how we are going to do this. The microphone is here. I need –it is very important – that you state your name and surname, since the youths are here recording the transcript of this meeting. I need you to state your name and surname. Try, please, to do so in the most organized manner possible. We like to avoid the distractions and the conversations a bit. "John Doe asked, but Richard Roe and I are adding on the side." I tell you. It is a lot

easier. You want to get home, we want to get home. We want to answer all your questions and that you leave here tonight with all your questions answered and a clear idea – right?—in terms of these answers.

So that I am going to ask you then to organize yourselves in terms of asking the questions. We have a microphone here and we have a microphone over here, so that the person from EPA or from the Board who has to answer your question well, does so.

May we start? Yes?

Who wants to start?

Remember, you have to state your name and surname. If you can come here a moment as far as the microphone reaches.

MR. MALAVE: Hello, greetings. Thanks for the information. I have a question and it regards the information given by Nancy. You mentioned that work was going to be carried out in the areas that have four hundred fifty ppm or more of contamination. If the maximum level of exposure recommended is four hundred what is going to happen with these units that have four hundred one to four hundred forty nine? That is my question. Carlos Malave.

MRS. RODRIGUEZ: And that question is excellent. As I had mentioned before, we had taken certain values

Specific of domestic dust within the site, the tap water, the tap water of the site, these values, basically what is done is that a risk model is entered, which is similar to the one used by EPA to develop the value of four hundred.

What happens? When EPA uses this model and arrives at…it gives you the number, let's say, magic of four hundred, is using certain values which are called "default values," some values which are general. Once I replace those values with the specific values of the site, it gives me in the case of Brisas del Rosario, the value of the residential dust, also the tap water value, they are much lower than the "default," run by the model, which results in four hundred.

What happens? In the case of Brisas, it gave me a range between five hundred sixty six to six hundred five, which is a conservative value. It is what the model, similar to the manner, with the national values used by EPA, to derive the four hundred with the specific values of the place, it indicates that a protective value is leaving…having a value of lead of between a range of five hundred sixty six to six hundred five.

What happens? EPA… That is why I previously said that the value of four hundred fifty is a very conservative value and it is because we decided not to go

exactly to the value resulting from the model. We decided to go a bit lower, to address certain concerns or some areas that could bring a level of uncertainty and we then decided that four hundred fifty is a very conservative value.

It is a process a bit complicated, a bit long, that is… I would say that it is well explained in the documents, which even in the feasibility study, opens a section which talks about all these values we took into consideration and how e arrived at the conclusion of four hundred fifty.

But basically, we are saying that up to a value a bit higher than four fifty is so protective to human health and in the case of ecological here, to the receptors, as well as the value of reference of EPA.

I want… Did I answer the question?

Very good.

I want to remind you that I forgot to say in the presentation that we have certain depositories of information and basically, all these documents that are in this case, go from the initial work plan up to the proposed plan we are presenting today, are available in Caribbean University, here, but unfortunately, this week they are at recess. So they would be opening...I believe it is next Monday. They are going to be there available. At present

they are in the Mayor's Office, on the second floor, in City Hall, there is a copy there also of the whole administrative record, of all these documents. At the University they will be available electronically. In City Hall they are in had copy. But also in EPA, here in Puerto Rico we have a copy and the Environmental Quality Board well these documents are also available for your review, in New York. Those who wish in New York to review these documents. We also have a copier available. These is on the informative sheet that I gave you, all those places are there, the schedules so that you can…those who have the time and wish to learn in more detail about the reports they are available for review.

MRS. REYES: The gentleman in the blue guayabera shirt had a question here.

MR. PEREZ: Yes, good evening to this distinguished community. We have come…My name is Mario B. Perez, I am here with several friends, residents of the area, from the group VIDAS, Vegabajeños Impulsando Desarrollo Ambiental Sustentable ("Residents of Vega Baja Promoting Sustainable Environmental Development"). One of the areas we have worked is in Villa Pinares with a project. We are going to present an image, we wish to share it with the officials presented to us here. This is a scientific work, published in 1999. I don't know if it can be enlarged.

This image has been scanned from the publication

Scientific, so that the… It is handwritten, but what is here, the image per se are the plumes of a contaminant from a superfund site on Road 2, in the area… on the corner of 686 and Road 2, the industrial area, the scientist is Sepulveda, who publishes it. That which appears…

May I approach?

MRS. RODRIGUEZ: Be careful, you don't fall.

MR. PEREZ: This here… this here are concentrations similar to a carcinogen contaminant, which is a volatile organic compound. VOCS, as resumed by EPA. It is called trichloroethylene, TCE. It is a carcinogen.

When this study is published, the concentrations which qualified for the superfund, according to Sepulveda would take twenty years –and sets 99 – to continue running towards the sea, under the water. If a lining had been placed here so that the rain does not percolate underneath, whatever, the underground water runs towards the sea, anyway. Like a river, that runs towards the sea, that's how it is. The only thing that it is underground.

That is a …that work appears on page 81, as I handwrite, in a document which resumes different studies, that is called "Karst Region a Vital Resource," the Karst zone…of the karst, a vital resource. By water.

Here in Villa Pinares, there is an Aqueduct water main, but it is not the only one. At the end of Villa Pinares

Immediately. One hundred meters around is the influence area, according to the work of those who work with the use of water for Aqueduct and the specialists in this field. I am going to say that I am a specialist in natural resources that I worked in that scientific investigations area.

That means that the water, around one hundred meters from where it suctions for use of all of you and all of us, shall be influenced by the contaminants there, whether they have a lining or not, because it is going to be suctioning and the water molecules are like magnets that attract each other, because they have loads like magnets. It is a bipolar molecule.

I am concerned in terms of the population, if something as simple as lead paint –which was prohibited—and it is barely going to peel very little. Now imagine four hundred fifty parts… Per million is it? Or per thousand?

UNIDENTIFIED VOICE: Million.

MR. PEREZ: Per million. Well, that is going to be in an area and it is going to concentrate by the suction. You can measure in a particular point, but if you go to the well which suctions Aqueducts, which are many gallons a day, it is going to concentrate what already concentrated on land and that is a great concern.

In terms of the millions, the costs, what methodology to use, I would ask how much more would people cost

with cancer – as the cause of lead – or learning problems which it causes children, between five and twenty five million, which is the difference.

And I also take the opportunity to applaud the fact that even if in a remedial manner, there is taken…precautions start to be taken to stop the damaging process from this point onward and that it serves as a lesson to not continue issuing permits for activities that are very contaminant to the human population.

Right now, in Villa Pinares Sur, there has just…after having been detained by public hearings of the VIDA group, the OCUPA group, which is a part of us, a project to the south of Villa Pinares, fifteen hundred houses have been approved with… in an area of subsidence, area which is good for farming, they will plant houses, they can sink, as happened in Monte Verde, with the same geological formation, as happened…Ricardo if you remind me, I have it here printed, a house which sunk…

UNIDENTIFIED VOICE: Parcelas Marquez.

MR. PEREZ: Parcelas Marquez. Due to the time factor we were unable to pass it to that image you are looking at. I also printed it. They are parcels which adjoin the land

of Villa Pinares, well, I'll show it to you later, so as to not take any more of your time. That this is the photo of a house that also sunk. And the hummocks that are going to be cut also, by the scientific studies, there have been landslides of the size of two cars one on top of the other, fifty meters down, that also in Manati and Vega Baja, we have seen that they have gone over houses and they have demolished them.

Then, let it serve as a lesson, that we become aware and that the regulating agencies—right?—regulate in favor of ordinary people, of the people, in the same manner that we are now having to remediate it, which is costlier than preventing. Thank you very much.

MRS. REYES: Thank you for your comments.

(Pause.)

MR. FONT: Yes, thank you very much for the very broad comment. We shall try to handle it step by step. If here in Puerto Rico, precisely in the northern area, it is a karst zone, you mentioned there are many places we have passed by the contaminants, volatile organic compounds, carcinogens, but on the other hand, many of them are already in remediation. Through the years of working in those places we have realized that the quicker the place is mobilized and one works with the contamination source, the less time it would take us to remediate it, but anyway, once these contaminants reach the underground waters, we are talking about thirty years in

Remediation.

But that is not the case here. The case here, what we have is lead in the soil. And we are not talking about the carcinogen risks, rather non carcinogens. And we must keep focused on the lead in the soil and the remediation we are discussing today.

In general terms, I could also add that this karst formation of the north provides for the quick flow, at high speed of contaminants in underground waters. They all discharge into the sea. The best would be to intercept them as quickly as possible, before this happens. The situation could exacerbate with the extraction of excessive underground water in that area. Several things have occurred which have eased this: cleaning, supertube, several things which have occurred, but certainly, the immense majority of these places are being addressed. And significant amounts have been extracted throughout the years, through the superfund program of volatile organic compounds of the underground water.

MRS. REYES: Very respectfully the flow of underground water, in the case raised by Sepulveda, without intervention by the superfund flow, would take twenty years to correct and get out of that. Twenty years gives time for one to bioconcentrate one carcinogenic contaminant. One.

I must also differ that the iron in soil is not carcinogenic. In Vieques –that I was part of the group of

Technical and professional support to Vieques, with investigations in water, soil, sediments, plants and animals and persons --, that chain…that food chain, through food, of the fugitive dust, as well as through underground waters, were conduits to find five heavy carcinogenic metals in the hair, nails and in some cases, blood and urine.

The cancer index in Vieques was twenty seven percent over any comparable community, municipality. But this type of company did not exist in Vieques except the one there, which were the Navy bombs. But putting that point aside, science itself showed that by these three ways, fugitive dust, underground water of the east of Vieques, that in Esperanza there is an aquifer of two percent to four, it does go through because the iron becomes ferric, by changes in ionization, loss of electrons and it becomes available. And it is carcinogenic. Lead is the same. I differ but this is part of science.

MR. FONT: But we can continue discussing it and certainly, there are many places with their individual characteristics and behavior of the contaminants.

MR. PEREZ: No, excuse me. Iron is an atom lead is an atom and behaves the same everywhere. Making it into ferric iron… That is, the condition of the iron versus de valence depends on the acidity of the soil. And in karst soil, where you have a combination of water and

Organic matter, the acid is formed which creates the caves and the caverns. That is why the water runs beneath it, because it acidified it. And that is where the iron forms and becomes available. And this is science, and not "a case by case story." That is how nature behaves.

MR. FONT: Gosh, we are not debating your argument nor is it our interest to do so. We only talked by specific experiences in other places, not necessary that it is here. But we can continue talking.

But going back to the case we have here, is there any other question?

MRS. RODRIGUEZ: We appreciate your statements right? All statements are valid. And I understand your concern. And later I am going to ask you to give me your e-mail to put it in our mailing list of the agency, because well for us it is very important to keep in contact with the communities, and most of all well, when there are a series of groups –right-- formed.

I am going to ask that if you have any other question…

Yes, please come forward and tell us your name, and don't forget for the record. Name and well, your statement.

I believe it is not on.

MRS. MORALES OTERO: Ok. Excuse me.

MRS. REYES: Yes, good evening.

MRS. MORALES OTERO: Good evening. God bless you all. Really well the information that has been brought is very good for everyone, but let's get to the point.

MRS. REYES: Yes.

MRS. MORALES OTERO: Uh… perhaps, my question is, would practically be the conclusion of the talk here…we have had. The question is…rather two. When…Because I arrived a bit late. When you were talking about the different alternatives available to correct the problem we, the residents of Rio Abajo have.

I believe it was said…four were mentioned and of those four, I believe there is one already which practically does not count…

MRS. REYES: The proposed alternative.

MRS. MORALES OTERO: Amen, excuse me, yes, exactly. Alternatives, exactly. But I believe there is one…ah, no. I believe it is number 2, which is the most feasible for everyone, be it as to cost and the manner of how to handle it.

The question is, pursuant to the prior experiences, how long do you think it is going to take…uh…well from the start of the process until its conclusion that you can say: "Okay, Rio Abajo is now free of all contamination"? I ask you because although I don't know if it is pertinent, but like many people know in this community, many …eh…we have the problem that we don't have title to the property and then, one of the

Obstacles put by the…that agency specifically are you. That I understand that no, because already, well, from prior experiences, I know that EPA has nothing to do with the property titles and that they do not …put any obstacles, but that is the information they give us, I believe that is a way of passing the buck.

MRS. REYES: That would be the Housing Department?

MRS. MORALES OTERO: Housing Department. It hides behind EPA saying it is EPA the one …who does not want this. And I understand that it is not… that EPA has nothing to do with that, but since that is the information they give us.

The last information I had with them, when I met with them was that until EPA –you—conclude the full clean-up process, etcetera well they will not proceed. Then I ask you, more or less when do you think this would be ready?

MRS. REYES: Who answers this?

MRS. MORALES OTERO: Santa Morales Otero.

MR. FONT: I recognize by what you say that you were not at the beginning of our talk. Only as a review, once we select the alternative finally, after going through this public comments process and the record of decision is issued…

I don't know…Can you hear me…?

Okay. Thank you very much. Okay.

Once we complete this process of finally selecting the alternative, once the process of public comments concludes and of public participation and the record of decision is issued, we go on to a process of design of the remedy, design how that remedy is to be implemented. Part of what Nancy was explaining is that during this design process additional samples shall be taken in some areas which include properties where there was no prior access …or access was impossible to take these samples.

After the remedy is designed then we go on to the implementation of the remedy and the construction of this remedy. Right now we have no time established for…of how long this is going to take, but certainly it is a process that takes a couple of years before having the physical construction of the remedy.

Now then, with regard to the property tiles I want well only to emphasize that the process of property titles is not part of the EPA's process. EPA is not involved in this property title. Those are other ----, well, that belong to the Family Department and which are external to this process we are conducting right now.

(Pause.)

MRS. REYES: Yes, she, excuse me. Excuse me. Nancy is

going to say something.

MRS. RODRIGUEZ: I wanted to add that… Yes, the next step is the detailed design obviously of the alternative selected, of the final alternative, which is included in the record of the decision.

Once the record of the decision is published, if it is correct, we go on to the design. But before that happens there is a legal part which is the one, at times that brings a bit of uncertainty as to how long it takes between EPA and the parties responsible for negotiation how it is going to happen, how we are going to move the participation of the parties responsible in the part of the design and implementation. And this could delay the process a bit, because a short negotiation could occur, and perhaps not. And once it is negotiated, once that legal document is signed, it is then that the responsible parties start the design. And then we shall be finalizing the details and have a …let's say a better estimate of when, then, we would be starting the work.

MRS. REYES: The gentleman has requested a turn.

Remember to state your name and surname.

MR. GUTIERREZ JAIME: My name is Disrael Gutierrez Jaime and I live in Villa Pinares and I regret having arrived a bit late to this presentation. I was unable to hear it all, but I read the four alternatives I have here, in… in…here present. And I have one concern. Because first I heard, in

part of the statements of…about the alternatives and I know that you are gong to decide, but I am going to try to, as resident here, that the alternative chosen be the one that is cost beneficial to the health. That is, the safest for the residents who are going to remain here.

And I was looking like browsing and from my experience in Villa Pinares, when it rains, this subsoil…I am not…My preparation is in philosophy. But I have seen that the subsoil, the water it suctions. And was looking in some of the alternatives, that if they remove the contaminated area, to leave it in the same … in situ, as they say in the same place, well, I know that... if whether…I don't know if they are going to cover that with cement or something at any time, with the water, that…that could percolate and affect the well that…mine, where I take water is in Villa Pinares, in the…in the bottom and …and only well I wanted to state that, that the alternative chosen be the one …that will be cost beneficial to the health of the residents here.

MRS. REYES: Thank you very much.

MRS. RODRIGUEZ: I am going to leave it there.

MRS. REYES: Nancy, you are going to answer him.

MRS. RODRIGUEZ: Yes, we wanted… I wanted well to tell you that we are basically with you and we…one of the criteria…and basically, the first criteria is that the alternative be...complies with the protection of human health and the environment. We would not chose an

alternative only based on costs, put the health at risk.

As I had mentioned, there are nine criteria. Cost is one of them. But the same as you, we would not choose an alternative that was not protective.

Also, it is a collaborative effort. EPA does not impose the alternative. Simply we state which is the one preferred and you, the community, are part of the selection process. It is due to this that it is after the comments period that the final decision is made as to the place. The same as the agency of the state which is also a part of this selection process and of the approval of the alternative.

MRS. REYES: Yes?

MR. PEREZ: Yes, well hello. I forgot an important point. How many of you are without water with some frequency in Vega Baja?

UNIDENTIFIED VOICE: All the time.

MR.PEREZ: However you…between Rio Indio according to Moe Nimelly (phonetic) Freytes, between Rio Indio and Rio Grande of Manati, there is a greater recharge of the aquifer of the north coast. That is, you are over the water and you are left without water. That, with regard to a “codiferendo” which I forgot to bring up, when in… between 2003 and 2005, we went to some public hearings for a construction to be carried out in an area where it could not be constructed according to Natural Resources, we found in the

Documents that… I don't remember the order, but Vega Baja and Manati, there was being extracted from this aquifer between the sixty, on one side, in a municipality and eighty percent in the other of just this aquifer.

Recently, in another place in which VIDAS intervened for a project that… by… fact and law, should not have been given the permit, we have certified letters form the Aqueduct Authority saying that no more than what is being extracted can be taken out, in millions of gallons daily, from this…from this aquifer, over which all of you live, over which all of us live here and precisely on the land to the south of Villa Pinares, Vega Sereno, the project proposed that they have just recently approved its location, despite having been detained two years by our opposition grounded scientifically, they are lands which sink, that which Disraeli point out, which is part of the group OCUPAS and VIDAS, is scientifically correct.

That is, that is why the aquifer is reloaded because… and we have images here, scientific about that and observations on the land, it is because the soil are layers of sand. You know the sand when the waves come, it goes all down and part goes back. That is what we have here. They are elastic soils which expand and contract and underneath they have layers of sand rich in silica, to the south of Villa Pinares.

What happens if we seal those lands?

The aquifer is not reloaded that way, and there are seven sinkholes there, next to Las Bolinas which they are going to seal.

At the same time, they are fifteen hundred houses extracting eighty gallons daily per person, which is what Aqueduct estimates.

MRS. RODRIGUEZ: Is that the new development?

MR. PEREZ: Yes. What this means is that, if it is already saturated, no more water can be provided, one of the issues mentioned by the gentleman is complied, which would contaminate the water more.

And second, we would loose the capacity of reloading the aquifer, which is already…there would be less than that available, but with more houses.

And third, do you know what happens when you…we extract more water from the aquifer than what flows? It is like a river. If we take out the water, then water form the sea comes in. And we have images here also showing the point where it meets under the aquifer, the saline intrusion which in Barceloneta, in 84, passed to the south of Road 2 and what we extracted was saltwater.

What happens if the aquifer becomes saline by all of this? Besides the existing conditions to contaminate in the manner of creating cancer, would be, for more than twenty years, if …if the aquifer is reloaded, it would take a long time to expel the saline intrusion and we would not have water. Not sometimes, but when it is drawn it was going to be saltwater. That is the importance of the

the regulatory agency for the prevention of damages to the environment.

If the resources are good and give us service, like water, well then to damage them for the benefit of any company or any development does not benefit the common pie, as stated by the Constitution, Article 6, Section 19. That in light of that constitutional mandate is that the organic laws of regulatory agencies are created in Puerto Rico. And that is what we are appealing to.

That is, the conditions exist, yes, with the lead, to be carcinogenic and toxic. The other conditions, if projects continue to be approved in this area, so that there is a risk to public safety, that is another matter, I am not going to continue elaborating because of the time, but I also want to vote, as Disraeli Gutierrez indicates, that if the company was able to generate its private income at the cost of damaging the environment, there is a federal law RCRA, whoever soils must clean-up. And if they were good to it, its company, to generate the income, it should be good to clean up what it soiled. Thank you very much.

MRS. REYES: Thank you for your statement.

Precisely the superfund program is designed so that whoever soils cleans-up and the agency is empowered to recuperate the costs of the clean-up up to three times, if necessary. And I appreciate well the statements. I know that some – right?—are of jurisdiction of the state; the issue of permits which concerns jurisdiction of the

Commonwealth of Puerto Rico and its regulatory agencies, but I believe that in many of its issues I believe that …the must be taken, perhaps, to Natural Resources.

MR. PEREZ: Yes, but I also spoke to…

MRS. REYES: Yes.

MR. PEREZ: …Carl Soderberg and coincidentally…

MRS. REYES: Yes.

MR. PEREZ: Since this is recorded right? Greetings to Dr. Carl Soderberg. I remember that when we went to the encounter of the federal Coral Reef Task Force, that was held now, in 2009 at the Caribe Hilton, we talked about this matter. Another person talked about this type of thing, of permit issue "I don't have jurisdiction," with…he replied correctly, from EPA, for the use of land. But it results that for water, yes. And in the measure that an action impacts the water for human consumption, which is what we are raising here, the aquifer becomes saline, a vital resource, nothing is more important than water – forget about the light – there is no life without water.

Mr. Carl Soderberg, there is material here to have jurisdiction that they do not seal the reloading zone of the aquifer and that they do not… and there the use of the land does not have to enter into jurisdiction. Simply, all the studies indicate since the 80s. That is why the Law was created to protect the karst of 1999, Act No. 292, in 1984, 85, the protection of the caves, caverns and sinkholes and they are

Planning to fill them up and it is going to impact the water. They are laws of Puerto Rico, but they are going to impact the water.

Well the Environmental Quality Board to take jurisdiction and EPA who could assume jurisdiction, because if they make the water saltwater there is no water available. That is the challenge. Thank you very much.

MRS. RODRIGUEZ: We shall bring your issue to the attention of Mr. Soderberg.

Ah and that the comment has been noted for the process, but we shall bring your issue to engineer Soderberg.

Does anyone have any additional question about today's presentation?

MRS. CALDER: My name is Avia Calder. When are you going to start?

UNIDENTIFIED VOICE: We can't hear.

MRS. CALDER: When are you going to start?

OK. When are you going to start the clean-up…eh…and how long…and what happens with the houses that are not contaminated with ---- (unintelligible – speaks without a microphone).

MRS. REYES: She wants to know what happens with the residences that do not have all the land contaminated, but there are spots that are contaminated. Nancy, you answer.

MRS. RODRIGUEZ: Yes, basically well it takes us time because now well we move to the record of decision and from the negotiation with the parties responsible to the design of the

Place, that once we have the design and we have all …the details of the… in the … alternative which is selected, we would then be addressing you again to let you know the details of…specifics, both of the entry, exist of trucks, all those details, both of the specific areas where we are going to be excavating. But these areas which basically have patches within the residences, basically, are going to be excluded…it is going to be included in the part of the design.

UNIDENTIFIED VOICE: ----(unintelligible; speaks without a microphone).

MRS. REYES: Well, I inform you that whenever we have a superfund site like this one – and I have worked with Nancy in other cases also--, we inform the community when we are going to start and we visit door to door, we distribute a flyer, we always contact the community leaders and they are informed, in advance, what is the manner in which the clean-up will proceed or the action being carried out in the community. But we always let them know in advance.

So that you will have…you will see a flyer or we will knock on your door.

Any question? Yes?

Remember to state your name.

MRS. GARCIA: Yes, my name is Nydia Garcia, Mrs.

Nydia Garcia. My question is for you what does long-term risk mean. When you say long-term risk to the persons who live here, how many years does that mean to you? Long-term.

MR. FONT: Yes, I see that this, this term always raises doubts and this is not the exception. I mentioned it, when I made a brief introduction, before the questions and answers, that there is imminent risk to the public health. That is immediate. That is why, in these plac…in this neighborhood, we removed soil contaminated at concentrations we understood were sufficiently high to represent an immediate risk.

Now, when we look long-term, we look at thirty years. Normally, it is the risk that could exist if the person is exposed… Allow me, allow me to explain. If a person is exposed, throughout the years, to these concentrations. And from there are obtained certain values of risks and we work back to eliminate and take them to acceptable levels.

That is that when we talk long-term it is if you reside in your house, we are ensuring that, from here onward and hereinafter, you must not suffer adverse effects to public health, because we are looking long-term. At long-term.

At short-term it would be if I determine that the

concentration is excessively high, perhaps I have to remove it, it is already too high. Or I have to take action or remove soil. But here we are talking about prospectively making sure that should you reside there for a long period, make sure that you are not going to receive any adverse effect. And that is what we are…that is what we mean.

And the clean-up is not at thirty years, they just…said here. The clean-up is done immediately. These are engineering works, removal of soil, consolidation….This does not take a long time. Perhaps, a negotiation. But these actions are carried out with…with certain immediacy, that I don't believe it is going to take long.

(Pause.)

MRS. GARCIA: Those lands that you plan to clean up now…

MRS. REYES: What is your name?

MRS. GARCIA: Nydia Garcia. The land you plan to clean now, because they appear on the map like they are contaminated, there are persons who live there, for more than fifty years, more or less, about that, because there are many persons there… That is, these persons who have already been there, let's say dealing with those lands since then, what would happen to those persons who have been there for a long time with that contamination? Because little by little the glass fills up.

MR. FONT: Yes, she ask…the…the issue of the neighbor is that there are persons who have been living there for a long time and she is concerned, legitimately, what could happen to them, who have been living there for a long time.

Well look this matter of the risk studies provides certain hypothetical scenarios. For example, when the risk is being evaluated, one goes and seeks the highest concentration found in the whole neighborhood and one assumes that every person who lives there is going to be exposed to that. Then, one looks at that prospectively towards the future.

Therefore, what I am saying is they are conservative hypothetical scenarios. They assume the worst of the situations for alls and each one of you and based on that, decision are made. And those decisions are so to ensure that the health is protected.

We go into this science of risk studies, which is pretty complicated. It is not understood, but I am doing everything possible here to try to explain this in a clear and precise manner so that we may effectively be well-grounded.

Any other question?

MRS. REYES: Come forward and tell us your name and surname for the record.

MRS. PEREZ: Everyone here knows me.

MRS. REYES: But to record it, we need it.

MRS. PEREZ: My name is Marta Perez. I have a concern… I have a concern, because my lot, was cleaned, but by parts, because the neighbor well started cleaning with a machine and it affected my…my lot. Then, there was the obligation to clean my…my lot, but it was not completely…completely clean.

MRS. RODRIGUEZ: Let me see if I understand correctly. The neighbor removed soil and deposited it on your lot.

MRS. PEREZ: No, no, no, no. No, no, no. He started to clean the lot on the back. What happened? He brought a machine and then, he started to gather up the waste. It affected my lot. It was obligatory to clean, because there was a very high mountain. Then they cleaned part. The other, half, they did not clean it. And they continue with they will be back.

MRS. REYES: Nancy or Ariel.

MR. FONT: Marta, I recommend if possible that you stay at the end of the meeting, so that you meet with Nancy and go over the map, to see which is your property specifically and discuss your particular situation one on one with Nancy, about the problem, okay?

MRS. REYES: Thank you.

Any additional question?

Well then, if there is no additional question, I remember that there are certain…

Yes, yes, you may approach here and see the map where

all the lots and all the properties are here.

To conclude I thank you for your time, for being here. I know we all have things to do and families to take care of. I remind you that the documents are in Caribbean University here in Vega Baja, on Road 661 and intersection with Road Number 2, in City Hall, on the second floor, in our EPA offices in San Juan, in Santurce, on Ponce de Leon Avenue, where we will very gladly assist you. They are also at the Environmental Quality Board and in EPA's office in New York.

We greatly appreciate all your time…

You have…? Yes, yes.

UNIDENTIFIED VOICE: ----(unintelligible, speaks without a microphone).

MRS. REYES: Nancy, by Internet, whether the documents may be accessed on the Internet.

MRS. RODRIGUEZ: The documents are…eh…electronic they are going to be available, but not…right now, they are not in…so that…I imagine that from your home you may access them. We would have to work on that. They are in Caribbean University, electronically, the same as in EPA, the Environmental Quality Board, they are going to be electronically.

UNIDENTIFIED VOICE: The other was…

MRS. REYES: Yes.

UNIDENTIFIED VOICE: …if there are co….the copy that

I got is in English and I understand it, but my wife is not here and she does not, if there was a possibility to access something in Spanish.

MRS. RODRIGUEZ: Yes, we have…we distributed here an informative flyer. It is a more resumed flyer as to the information of the proposed plan, but the proposed plan in Spanish is going to be available in the repositories.

MRS. REYES: I remind you to sign the attendance sheet and well, if you want to leave your e-mail and remember you have until August 29 to submit your comments with regard to the proposed plan, of this superfund site.

Thank you very much. We appreciate the…

Yes? Yes? Tell me.

UNIDENTIFIED VOICE: Some years back, they tested the children, but those children are no longer children. Those children have children. And fat ones. And they are growing in the same place they grew up. And many of them…you know, were not tested because they are outside of the age. But they are raising their children here. So, what is going to be done with them, the new ones here?

(Pause.)

MR. FONT: Yes, the study to establish the risk for the concentrations of lead in soil, the study which was

made to establish the risk presented by the lead concentrations as was explained by Nancy was a specific study in this place. And this study is a mathematical equation that to put it simply, what it does is establish…it uses the concentrations of lead in dust, the concentrations of lead in drinking water and the concentrations of lead in soil to evaluate the probability that it exceeds the acceptable levels of lead in the blood.

That is that the data for us to make the decision of the level of lead which we are going to clean was based on the data of the dust in the residences and the drinking water. From there, we extrapolate to see how much can be accepted of the lead level in soil without it presenting a risk.

That is that indirectly the…the….the mathematical formula provides as a constant a number already given, which is the maximum level of lead which should be allowed to a population to be acceptable and that does not present a risk.

(Pause.)

MRS. REYES: Okay? I want to thank you for your time once again, as I stated for having come tonight. Thank you very much.

(The proceedings are concluded.)

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CERTIFICATE OF THE REPORTER

I, Luis Garcia, E.R. Reporter, member of FASYO Reporters, CERTIFY:

That the preceding constitutes the true and exact transcript of the recording made during the public hearing held, in the place and on the date indicated on page one of this transcript.

In San Juan, Puerto Rico, August 20, 2010.

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LUIS GARCIA

E.R. Reporter

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