EPA/ROD/R03-92/154
1992

EPA Superfund
Record of Decision:

C & D RECYCLING
EPA ID: PAD021449244
OU 01
FOSTER TOWNSHIP, PA
09/30/1992

Text:
RECORD OF DECISION

C&D Recycling Site
Foster Township, Luzerne County
Pennsylvania

PART I - Declaration

PART II - Decision Summary

PART III - Appendices

DECLARATION FOR THE RECORD OF DECISION

SITE NAME AND LOCATION

C&D Recycling Site
Foster Township, Luzerne County, Pennsylvania

STATEMENT OF BASIS AND PURPOSE

This Record of Decision (ROD) presents the final selected remedial action for the C&D Recycling Site (Site) in Foster Township, Luzerne County, Pennsylvania, chosen in accordance with the requirements of the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA or Superfund), 42 U.S.C. SS 9601 et. seq., as amended, and to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 C.F.R. Part 300.

This decision document explains the factual and legal bases for selecting the remedial action for the Site and is based on the Administrative Record for the Site.

The Commonwealth of Pennsylvania (Commonwealth) has participated in the development of remedial alternatives and has provided comments on the Proposed Plan in accordance with the NCP, 40 C.F.R. S 300.515(e).

The Commonwealth has not indicated that it concurs with the U.S. Environmental Protection Agency's (EPA) selected remedial alternative as set forth in this Record of Decision.

ASSESSMENT OF THE SITE

Pursuant to duly delegated authority, I hereby determine, pursuant to Section 106 of CERCLA, 42 U.S.C. S 9606, that actual or threatened releases of hazardous substances from this Site, as discussed in Section VI ("Summary of Site Risks") of this ROD, if not addressed by implementing the response actions selected in this Record of Decision, may present an imminent and substantial endangerment to public health, welfare, or the environment.

DESCRIPTION OF THE REMEDY

The selected remedy addresses contaminated ash, soil, sediment, buildings and structures. The selected remedy includes decontamination and/or demolition of contaminated buildings and structures; stabilization of contaminated soil, ash, and sediment, as needed; and, disposal of the stabilized and/ordecontaminated material into an off-Site landfill. However, if within 180 days of the issuance of this ROD, EPA receives information that indicates that an onSite containment cell can be designed and located to comply with the substantive requirements of Pennsylvania's residual waste management regulations, provide a remedial alternative equally or more protective of human health and the environment, and be cost effective, the stabilized and decontaminated material may be disposed on-Site.

The major components of the selected remedy include:

1 - Confirmation, e.g., via sampling, of the areal limits of soil and sediment with lead contamination above 500 parts per million (ppm) (including soil beneath buildings and concrete slabs constructed after 1963 as well as pavement and sediment in Mill Hopper Creek and wetlands);

2 - Conduct of a Phase 1B archeological survey in areas possessing high or moderate archeological sensitivity potentially impacted by the Remedial Action;

3 - Removal and off-Site disposal and/or recycling of casing and wire;

4 - Excavation of all soil with lead contamination above 500 ppm resulting from Site operations (excluding soil beneath buildings and concrete slabs constructed after 1963, or pavement, which shall otherwise be maintained to prevent migration of contamination from the Site);

5 - Excavation of sediment from the banks of Mill Hopper Pond with lead levels greater than 500 ppm and excavation of the top two feet of sediment (or an amount sufficient to secure a new substrate) from the pond bottom to ensure that pond water quality is not impacted.

6 - Removal of sediment within Mill Hopper Creek contaminated with lead above 500 ppm;

7 - Removal and sampling of all sediment located within the stormwater sewer system located at the Site and evaluation of the system's integrity (including drainage ditches) to determine the potential for releases of hazardous substances from the Site into the soil and ground water and any necessary response actions;

8 - Excavation of all ash located at the Site;

9 - Post excavation/removal sampling to confirm that ash, soil, and sediment cleanup levels are met;

10 - On-Site stabilization of the contaminated soil and sediment, excavated and removed as described above, to remove any characteristic of hazardous waste;

11 - On-Site stabilization of the contaminated ash, excavated as described above to remove any characteristic of hazardous waste;

12 - Off-Site disposal of stabilized soil, sediment, and ash into a non-hazardous (RCRA Subtitle D) waste disposal facility;

13 - Decontamination of Site buildings with lead levels above 500 ppm, including dismantling of non-structural components and removal of equipment and debris which may inhibit decontamination to required levels, or demolition of buildings that can not be cleaned to 500 ppm lead;

14 - Dismantling of the old furnace (and other structures, as necessary, which inhibit soil or sediment remediation and which shall not be maintained, as necessary, to prevent migration of contaminants from the Site);

15 - Off-Site disposal of material generated from dismantling of Site buildings into a non-hazardous (Subtitle D) waste disposal facility (or decontamination and recycling of dismantled material);

16 - Performance of biota toxicity tests on remaining soil/sediment to ensure that remediated soil (i.e., soil with lead levels no higher than 500 ppm) does not pose a threat to the environment (procedures to be determined during remedial design);

17 - Site grading, revegetation, and related work, to ensure that Site topography and drainageways adequately convey water from the Site and that soil excavation does not result in low lying areas;

18 - Air monitoring during on-Site activity and implementation of dust control or other necessary abatement actions to prevent migration of contaminants to the surrounding community during the Remedial Action;

19 - Abandoning wells which serve no useful long-term purpose;

20 - Periodic monitoring of ground water and surface water; and

21 - If the soil beneath buildings and concrete slabs constructed after 1963, or pavement is greater than 500 ppm and these structures are not demolished institutional controls, e.g., deed restrictions to prevent residential use potentially affecting the protectiveness of the remedy, and to ensure that Site contaminants which may remain beneath buildings and pavement are known.

STATUTORY DETERMINATIONS

This action is protective of human health and the environment and complies with Federal and State requirements applicable or relevant and appropriate to this action. In addition, this action is cost-effective. It employs permanent solutions and alternative treatment technologies to the maximum extent practicable and satisfies the statutory preference for remedies that employ treatment that reduces toxicity, mobility, or volume as a principal element.

Because this remedy may result in levels of hazardous substances, pollutants or contaminants remaining on-Site above levels that allow for unlimited use and unrestricted exposure, a review will be conducted in accordance with Section 121(c) of CERCLA, 42 U.S.C. S 9621(c) and the NCP 40 C.F.R. S 300.430(f)(4)(ii) within 5 years after commencement of the Remedial Action to ensure that the remedy continues to provide adequate protection of human health and the environment.

Table of Contents
for the
Decision Summary

List of Figures

List of Tables

I. Site Name, Location, and Description

The C&D Recycling Site (C&D Site or Site) is located along Brickyard Road in Foster Township, Luzerne County, Pennsylvania (see Figure 1). The extent of soil contaminated with lead at the Site is depicted on Figure 2.

The Site is located primarily on three parcels of land (Tax Parcels 11, 11A, and 11B), totaling approximately 110 acres (see Figure 1 and Figure 3), once owned by the Lurgan Corporation. Prior to and apparently during ownership by the Lurgan Corporation, portions of Parcels 11 and 11B were operated as a dairy farm by the Sheaman family. Lurgan Corporation began metal reclamation operations on Parcel 11, which totals approximately 45 acres including the small enclosed Parcel 11B, in 1963 although the land was not purchased by Lurgan Corporation until 1966. All Site operations occurred on Parcels 11 or 11B. The area of soil and sediment contamination extends onto adjacent properties (see Figure 2).

Parcel 11 is currently owned by C&D Recycling, Inc. and contains the majority of the soil contaminated by Site operations as well as all of the contaminated ash. A small parcel of land (11B), which is also contaminated, is owned by the estate of Mrs. Jane Gibson, includes an artesian well, and lies entirely within Parcel 11. Horizons Unlimited, Inc., owns Parcel 11A, which is an undeveloped parcel, but contains the majority of the sediment contaminated by Site operations (Mill Hopper Pond is located on Parcel 11A).

From southwest to northeast, the elevation of the Site decreases (from elevation 1680 ft.) to a low area (between elevation 1630 ft. and 1650 ft.) located within an area of shale rock extraction and a small creek, and then increases again (to elevation 1770 ft.) towards a regional topographic high point immediately northeast of the C&D Recycling, Inc. property. A small intermittent stream, named Mill Hopper Creek, begins in an area of ground water seeps located near the remains of the dairy farm structures at the Site and flows into an area from which rock was excavated (and now acts as a man made pond) located immediately south of the C&D Recycling, Inc. property. An artesian well, located in an area of high ground water table, frequently overflows into the creek bed. The pond frequently overflows an earthen embankment at its southern limit into Mill Hopper Creek. The topographic and physical features of the Site are depicted on Figure 4.

The Site includes a farmhouse, barn, milkhouse, and several outbuildings used when the property was a dairy farm; a main facility building including four furnaces used to burn cable; and a small isolated furnace also used to burn cable. The Site's primary features associated with Site operations are depicted in Figure 5.

The Site is underlain by shale and sandstone of the Mauch Chunk Formation and a relatively thin layer of soil. The ground water exists entirely within the Mauch Chunk Formation. Shallow ground water generally flows within fractures in a southerly direction towards a local discharge area near Mill Hopper Creek and Mill Hopper Pond. The shallow ground-water system is interconnected, via fractures, with a deeper regional ground-water system. Since the aquifer is used for drinking water purposes, it is a Class II aquifer according to EPA's Ground Water Classification system.

The area of contamination includes approximately 26,273 cubic yards (yds[3]) of soil contaminated with lead, copper, antimony and/or other contaminants (including low levels of polynuclear aromatic hydrocarbons, or PAHs, e.g., benzo(a)pyrene); several small piles of ash (approximately 165 yds[3]) resulting from the burning of material at the Site contaminated with lead, copper, and low levels of dioxins and furans; approximately 1200 linear feet of Mill Hopper Creek containing sediment contaminated with lead, copper, and zinc; a 0.5-acre pond (Mill Hopper Pond) with contaminated sediment (approximately 1900 yds[3]); a barn and milkhouse used when the property at the Site was a dairy farm; a main facility building including four furnaces used to burn cable; an underground storm water sewer system, including catch basins, trench drains, a leach pit (drywell), and associated piping, which contains approximately 24 yds[3] of contaminated sediment; and a small isolated furnace once used to burn cable. The calculated volume of contaminated soil includes soil with lead levels greater than 500 ppm as determined during the Remedial Investigation.

The property once owned by Lurgan Corporation (Parcels 11, 11A, and 11B) is zoned as a C-1 Conservation District in accordance with "The Foster Township Zoning Ordinance of 1986". This zoning classification (C-1) is intended to protect areas which have environmentally sensitive characteristics, e.g., mountainous areas, aquifer recharge or discharge areas, or landwhose soils composition has been classified as hazardous, from inappropriate or untimely development. Prior to 1986 and since 1967, the Lurgan Corporation property was zoned for agricultural use.

The surrounding land use is agricultural and residential. A large undeveloped, agriculturally-zoned field exists immediately west of the Site. A wooded area which is also zoned agricultural is located immediately north of the Site. Residentially-zoned property, including a densely populated "second home/retirement" community is located northeast of the Site. A large area of undeveloped land (Parcel 11A) is located south of the Site. The nearest occupied dwelling is located approximately 1/8 mile southwest from the main facility building at the Site and approximately 275 feet from the C&D Recycling, Inc. property line (see Figure 4). Occupied residences are also approximately 1/4 mile from the Site in every direction, except south. Abandoned anthracite coal mines exist approximately 1/2 mile north and south of the

Site (see Figure 1). The Site is only occupied by security guards. The deed for Parcel 11 is restricted to prevent residential and agricultural use.

II. Site History and Enforcement Activity

From 1963 to 1978, the Lurgan Corporation operated a metal reclamation facility at the Site. In 1979, the business was conveyed to C&D Recycling, Inc. Both Lurgan Corporation and C&D Recycling, Inc. operations involved the reclamation of metals, i.e., copper and/or lead, from cable and/or scrap metal transported to the Site. Available documentation suggests that lead was recovered from cable and wire until the mid 1970's when burning of lead cable at the Site was limited. Site operations ceased in 1984.

Cable burning and processing and processing of other materials at the Site caused extensive contamination of the surrounding soil and sediment. In 1984, samples of soil and ash collected by Pennsylvania Department of Environmental Resources (PADER) indicated elevated levels of metals, e.g., lead and copper, in ash and in soil both near to and distant from the furnaces. In addition, PADER's sample results indicate that the soil and ash at the Site is a hazardous waste pursuant to the Resource Conservation
Recovery Act (RCRA) (EPA Hazardous Waste Number D008) and Pennsylvania's Hazardous Waste Management regulations [25 PA Code S 261.3] since samples of soil and ash exhibited the characteristic of toxicity [25 PA Code S 261.24].

In 1984, the Northeastern Pennsylvania Vector Control Association completed testing of blood lead levels in children residing in Foster Township, Pennsylvania. Nineteen of 62 children tested had levels of lead above 5 micrograms per deciliter (ug/dL) in blood; 8 of these children had detected levels equal to or above 10 ug/dL[1]. <Footnote>1 EPA draft policy currently states that Superfund remedies should protect at least 95% of children from exposure to lead levels which would result in their blood lead levels exceeding 10 ug/dL.</footnote> None of the children suffered from blood poisoning. Sufficient information does not exist to conclude that the children's elevated blood lead levels result from residing near the C&D Recycling Site. Children exhibiting blood lead levels above 10 ug/dL lived both near to and distant from the Site. The study by the Northeastern Pennsylvania Vector Control Association did not evaluate lead sources (e.g., paint, soil, or water) and differences in water quality or residence location near other sources of lead as accounting for elevated blood lead.

In April 1985, under supervision of the Pennsylvania Department of Environmental Resources, C&D Recycling, Inc. arranged for the excavation and offSite disposal of 134,200 pounds of ash and dirt contaminated with lead. The lead-bearing material was directed to a lead refining/reprocessing center.

A Site Inspection (SI) was conducted by EPA in April 1985. The analytical data collected by PADER and EPA in 1984 and 1985 was used to evaluate the relative hazards posed by the C&D Recycling Site in the Hazard Ranking System (HRS). The HRS is a procedure through which EPA calculates a score based upon the potential and observed hazards present at a hazardous waste site. An HRS score of 43.92 was calculated for the C&D Recycling Site in April 1985, based primarily upon the elevated levels of contamination in the
soil and sediment suspended within the shallow dairy farm well existing at the Site. If the final HRS score calculated for a Site exceeds 28.5, the Site is placed on the National Priorities List (NPL) making it eligible to receive Superfund monies for cleanup. In September 1985, EPA proposed the Site for inclusion on the NPL. The Site was placed on the NPL on February 21, 1990 [55 Fed. Reg. 6154]. In April 1986, PADER requested that EPA take the lead on the Site response action.

In 1986, EPA conducted a search for potentially responsible parties for the Site. Several owners and operators of the Site were identified and two sources (generators) of material sent to the Site were issued letters noticing them of their potential liability in regards to cleanup of the Site. EPA subsequently entered into two administrative orders on consent (Consent Orders) with AT&T Nassau Metals Corporation, the only potentially responsible party (PRP) cooperating with EPA, to: 1) implement erosion
controls and security measures to stabilize the Site; and 2) investigate the nature and extent of contamination and risks at the Site and to develop alternatives to address the contamination at the Site.

The first Consent Order, effective September 2, 1987, required AT&T Nassau Metals Corporation, under the direction and supervision of EPA, to consolidate and cover the piles of ash at the Site (see Figure 5) and toconstruct sedimentation and erosion controls to minimize migration of soil from the Site in surface water runoff. In addition, fencing was installed and areas of the Site were seeded to prevent exposure to the highly contaminated soil areas of the Site. AT&T Nassau Metals Corporation, in 1988, removed the piles of cable casing from the Site (see Figure 5) and transported them overseas for recycling. The sedimentation and erosion controls and ash pile covers constructed by AT&T Nassau Metals are inspected
monthly by AT&T Nassau Metals and periodically by EPA. The requirements of the second Consent Order will be discussed in detail at the end of this section and in Section V of the ROD.

EPA's review of documents supplied by potentially responsible parties, documents within PADER and EPA Site files, and information and documents supplied by the public, indicate that the material processed at the Site

consisted primarily of telephone and similar cable. The cable typically had a plastic or lead outer casing and an inner insulator or sheathing of steel, aluminum, paper, or other material. Miscellaneous telephone scrap, e.g., splice boxes, was also sent to the Site. Processed materials contained polyvinylchloride (PVC) based upon 1974 sample results collected by PADER. Plastic samples collected by PADER in 1984 contained no detectable traces of PVC, but polyethylene and polyester type resins. Certain cable also contained a "jelly"-like substance (e.g., petroleum base, copolymer, and polyethylene) for water-proofing. According to 1979 analytical results obtained from AT&T Nassau Metals Corporation, the processed cable contained detectable levels of antimony, iron, lead, nickel, silver, tin, and zinc.
Available documentation and information also indicate that other types of electrical cable, rubber-coated cable, electrical power equipment parts, miscellaneous metal scrap, batteries, and battery lugs were also sent to the Site by other potentially responsible parties.

Typical Site operations involved mechanical removal of the outerplastic casing and burning of the inner lining, sheathing or insulation to expose the copper cable in one of five furnaces located at the Site. The copper was returned to the generator and the plastic casing was stockpiled at the Site. Site documentation indicates that the operating temperature of the furnaces was sufficient to melt lead, but not copper, i.e., approximately 800 degrees Fahrenheit. Thus, lead was also recovered and returned to the generator or shipped to other locations. Based upon available records, it appears that lead-cased cable was no longer burned at the Site beginning in the mid 1970s, but sorted and shipped back to the generator. Eleven samples of cable and wire collected at the Site and analyzed by PADER in 1974 indicate detectable levels of lead only on the soldered connections of one wire insulator. Samples of wire collected by PADER in 1984 detected 26% lead on the "covering" of one type of clustered wire. According to available documentation and local residents, burning also took place within pits located on the Site. Proposed drawings of the Lurgan Corporation facility indicate that water used in the metals processing area of the Site was collected in a trench drain and directed to a leach pit (drywell) along with stormwater from a truck bay.

A Remedial Investigation and Feasibility Study (RI/FS) was initiated at the Site in September 1987 by AT&T Nassau Metals Corporation pursuant to the second Consent Order. During the RI/FS, two underground storage tanks were removed, decontaminated, and disposed. See Figure 5 for tank locations. Also during the RI/FS, EPA determined that contaminated sediment was transported through a pipe located beneath Brickyard Road to a field located west of the C&D Recycling, Inc. property. The RI/FS for the C&D Recycling Site was completed and the final documents were approved by EPA in March 1992.

EPA continued the search for potentially responsible parties in 1991 and 1992. Notice letters have been sent to 14 owners or operators of the Site, and generators of material sent to the Site.

III. Highlights of Community Participation

EPA has several public participation requirements that are defined in Sections 113(k)(2)(B), 117, and 121(f)(1)(G) of CERCLA, 42 U.S.C. SS 9613(k)(2)(B), 9617, and 9621(f)(1)(G).

The documents which EPA utilized to develop, evaluate, and select a remedial alternative for the C&D Recycling Site were sent to the information repositories, located at the Foster Township Building and the FreelandPublic Library, in January 1992. Additional information was sent to these locations on April 17, 1992. A copy of the Administrative Record file is located in EPA's Region III offices. The Administrative Record, required by Section 113(k)(1) of CERCLA, 42 U.S.C. S 9613(k)(1), is a compilation of documents, which EPA used to support the selection of a remedy for the C&D Recycling Site. The Administrative Record included the RI/FS Report, the Risk Assessment Report, and the Ecological Assessment that were developed for the Site.

A Proposed Remedial Action Plan ("Proposed Plan"), which described EPA's preferred alternative, as well as other alternatives, for remediating contaminated ash, soil, sediment, structures and buildings, was released to the public on April 24, 1992. The Proposed Plan and Administrative Record were also sent to the information repository. Also on May 6, 1992, EPA published a notice of availability of the Proposed Plan and Administrative Record in two newspapers of general circulation; Standard Speaker and the Times Leader.

The public was encouraged to review the Proposed Plan and Administrative Record file and to submit comments on any remedial alternative and EPA's preferred remedial alternative during a 30-day comment period from April 24, 1992 to May 25, 1992. The public was given an additional opportunity to comment on the Proposed Plan and Administrative Record file at a public meeting held at the Freeland Elementary School on May 8, 1992. At this meeting, representatives from EPA answered questions and received comments about the Site, the remedial alternatives under consideration, and the proposed remedy. In response to a request from the public, the public comment period was extended an additional 30 days to provide more opportunity for review of the Site documents. The public comment period was then closed on June 25, 1992.

A stenographic report of the public meeting was prepared by EPA and will be included in the Administrative Record. A response to the comments received during the 60-day public comment period as well as the May 8, 1992 public meeting is included as part of this ROD in the Responsiveness Summary (Appendix A). Community concerns with the selected remedy are contained within Section VIII, (Comparative Analysis of Alternatives), of this ROD and within the Responsiveness Summary.

The index for the Administrative Record, upon which this decision document is based, is contained within Appendix B. This decision document is also based upon comments contained within the stenographic report of the public meeting on May 8, 1992 and other comments received by EPA during the entire public comment period, which are included in the Site file maintained at EPA's offices in Philadelphia and which will be added to the Administrative Record.

In June 1989, a $50,000 Technical Assistance Grant (TAG) was awarded to the Concerned Citizens of Foster Township Task Force (CCFTTF). The TAG provides funds to obtain technical advisors to interpret information relating to the Site and to disseminate information to the interested public.

IV. Scope and Role of Action

The RI/FS is an investigation and evaluation process which enables EPA to select a remedy that will be protective of human health and the environment, that will maintain protection over time and that will minimize untreated waste [40 C.F.R. 300.430]. The primary purpose of the Remedial Investigation (RI)is to collect data necessary to characterize adequately the Site for the purpose of developing and evaluating alternatives to effectively remediate Site contamination [40 C.F.R. 300.430(d)]. During the RI, samples of soil, sediment, ash, air, ground water, and surface water were collected and analyzed. The analytical results are discussed in Section V ("Summary of Site Characteristics") of this ROD.

The analytical results from the RI are used to determine the magnitude of risks posed by the contaminants at the Site in the absence of any remedial action. The baseline risk assessment (Risk Assessment or RA) is a process wherein the current and potential threats to human health and the environment posed by exposure to contaminants at the Site are quantified [40 C.F.R. 300.430(d)(4)]. The potential risks posed by the Site are discussed in Section VI ("Summary of Site Risks") of this ROD.

The baseline risk assessment results are used by EPA to establish acceptable levels of exposure for use in developing remedial alternatives in a Feasibility Study (FS). In addition, the quality and characteristics of the flora and fauna at the Site were evaluated in an Ecological Assessment (EA). EPA strives to select a remedial alternative with residual contaminant exposure levels which do not exceed EPA's acceptable risk range of 1 excess chance of contracting cancer in 10,000 (1x10[-4]) to 1 excess chance of cancer in 1,000,000 (1x10[-6]) for known or suspected carcinogens [40 C.F.R. S 300.430 (e)(2)(i)(A)(2)]. Additionally, EPA strives to select remedial alternatives which reduce exposure to non-carcinogens such that there is no adverse effect, i.e., a Hazard Index (HI) less than or equal to 1.0.

A treatability study, which is a test to determine the effectiveness of a particular remedial alternative, was conducted in 1990 to evaluate the effectiveness of stabilization as a remedial technology for the Site. Based upon the RI, RA, and EA, several remedial alternatives are developed within the FS along with supporting information to enable EPA to select a remedial alternative which is protective of human health and the environment and which best satisfies the goals and expectations of the Superfund program. Section VII ("Alternatives") of this ROD discusses the alternatives evaluated for the C&D Recycling Site.

The response action in this ROD addresses a remedy for contaminated ash, soil, sediment, and buildings at the Site. Although limited areas of soil with very high lead levels exist at the Site, the Site contaminants, considered in whole, are neither highly mobile nor highly toxic at the concentrations present at the Site. Thus, the contaminated soil and sediment and buildings are considered to be low-level threats. Isolated occurrences of extremely high levels of lead, e.g., ash, are considered principal threat wastes due to high toxicity.

The NCP (40 C.F.R. S 300.430(a)(1)(i)) states that the general goal of the remedy selection process is to select remedies that: 1) are protective of human health and the environment, 2) maintain protection over time, and 3) minimize untreated waste. In addition, Section 121 of CERCLA, 42 U.S.C. S 9621, includes general goals for remedial actions at all Superfund sites. The goals include; achieving a degree of cleanup which assures protection of human health and the environment (Section 121(d)(1)), selecting cost effective remedies (Sections 121(a) and 121(b)(1)), preference for selecting remedial actions in which treatment that permanently and significantly reduces the volume, toxicity, or mobility of contaminants is a principal element (Section 121(b)), and requiring that the selected remedy comply with or attain the level of any applicable or relevant and appropriate requirements of federal or state environmental laws (Section 121(d)(2)(A)).

The primary objectives of the remedy for the C&D Recycling Site, in addition to those stated above, are to prevent potential exposure to the contaminated media at the Site, to control and/or prevent the migration of contamination from the Site via wind, ground water, and surface water transport, and to reduce residual risk to acceptable levels.

The Site-specific remedial response objectives, which take into consideration the level of contamination and the risks posed by the contamination, are identified in Table 1.

TABLE 1
SITE SPECIFIC REMEDIAL OBJECTIVES FOR THE C&D SITE

1. Protection of human health and the environment.

2. Source control and prevention of migration of contamination from the Site via wind and surface water transport.

3. Source control of contaminants in soil such that leaching of contamination to ground water will not occur in the future.

4. Source control of soil, sediment, and ash with lead concentrations greater than 500 ppm such that the Site no longer poses an unacceptable risk.

5. Decontaminate Site buildings.

6. Prevent exposure to contaminants.

The remedy selected in this ROD addresses each of these objectives. To the maximum extent practicable, the remedy selected is consistent and compatible with the prior activities completed to stabilize or clean up the Site, e.g., cable casing removal and sedimentation and erosion controls. The remedial action for this Site is not separated into operable units. This is the only response action planned for this Site.

V. Summary of Site Characteristics

The major findings of the RI and the previous investigations relating to contamination at the Site and response actions conducted at the Site are discussed in this section of the ROD. This section of the ROD primarily discusses lead, copper, zinc, and antimony contamination. These four contaminants are Site-related and are found in the contaminated media at the Site. Thus, the tables in this section of the ROD depict the range of detected concentrations of each of these "selected" contaminants (lead, copper, zinc, and antimony) for the purpose of comparing contamination impacts between various affected media. However, the samples of contaminated media, e.g., soil and sediment, were analyzed for over 100 organic and inorganic constituents and compounds. The Remedial Investigation Report and Administrative Record contain all of this analytical data.

UNDERGROUND STORAGE TANKS

Two underground fuel storage tanks were decontaminated and removed from the Site in 1988 (see Figure 5). The soil surrounding the tanks was sampled and analyzed in June 1988. The larger tank (10,000 gallons capacity) stored fuel for Site operations and the smaller tank (1,000 gallons capacity) apparently stored gasoline for farm use. Low concentrations of Total Petroleum Hydrocarbons (TPH), e.g., 44 and 24 ppm, were detected in the soil excavated from around the 10,000 gallon tank and no TPH were detected in the other excavation. The excavated soil was backfilled into the tank excavations and clean quarry fill was added to bring the backfill to existing grade. In response to two separate requests from a local resident suspecting additional tanks at the Site, two geophysical (magnetometer) surveys were conducted in the area depicted in Figure 5. No additional tanks were identified.

CABLE CASINGS

In October 1987, cable casings stockpiled at the Site (see Figure 5) were sampled prior to their removal from the Site. Each of several types of casing found at the Site was analyzed for RCRA hazardous waste characteristics via the Extraction Procedure (EP) Toxicity test. Lead and barium leached from all cable casing, but at levels less than those established for RCRA characteristic of toxicity [25 PA Code S 261.24]. Low levels of cyanide and/or mercury also leached from two types of cable casings. However, the cable is not classified as a RCRA hazardous waste. The cable casings which were not in contact with contaminated soil wereremoved from the Site in 1988 and shipped overseas for recycling.

AIR

During on-Site activity associated with construction of the Site erosion control system in 1987, the air was sampled to determine if vehicles moving on the Site resulted in elevated contaminant levels. Air was sampled again in 1988 during rock coring activity. Selected inorganic analytical data from these sampling events is presented in TABLE 2. Complete analytical results are contained within the Remedial Investigation Report and the Administrative Record. The data indicate that implementation of a remedial action at the Site may cause elevated levels of airborne contaminants.

ASH

Ash, resulting primarily from the combustion of cable components in the furnaces at the Site, is located in several piles at the Site (see Figure 5). According to analytical results, ash samples contain elevated levels of inorganic constituents, e.g., lead and copper, low levels of semivolatile compounds, e.g., PAHs, and very low levels of chlorinated dibenzo-p-dioxins (dioxin) and chlorinated dibenzo-p-furans (furan). Analytical data from ash samples collected at the Site are depicted in Table 3. An additional sample collected during the RI indicated that the ash contains 7.5% lead by weight and 4.6% copper by weight. <Footnote> [2]ND = Not Detected.

Ash samples were also analyzed pursuant to the EP Toxicity test or the Toxicity Characteristic Leaching Procedure (TCLP) to determine if the ash would exhibit the characteristic of toxicity as defined by 25 PA Code S 261.24. The results of the EP Toxicity test and TCLP test analyses are depicted in Table 4 and indicate that the ash exhibits the characteristic of toxicity since the levels of lead in the extract exceed 5 mg/L (EPA Hazardous Waste Number D008). Complete analytical results are contained within the Remedial Investigation Report and the Administrative Record.

In July and November 1989, the ash was sampled and analyzed for dioxin and furan compounds. The analytical results indicate that the ash contains approximately 1.5 ppb of dioxin and furan measured as a toxicity equivalence factor equivalent to 2,3,7,8 - tetrachloro dibenzo-p-dioxin (TCDD). TCDD is the most toxic dioxin isomer. The potential toxicity of a mixture of dioxins and furans was evaluated relative to the equivalent toxicity of TCDD in accordance with EPA guidelines (EPA/625/3-89/016).

SOIL

Soil at the Site contains high concentrations of several inorganic constituents, e.g., lead, copper, zinc, and antimony, and low concentrations of semivolatile organic chemicals, e.g., polychlorinated biphenyls (PCBs) and PAHs. Although the majority of the soil contamination is located within the upper portion of the soil column, i.e., upper 1 to 6 inches of the soil, elevated levels of lead were identified at deeper levels, e.g., 1 foot, in some areas.

Initially, samples were collected by PADER and/or EPA between 1984 and 1987 in areas suspected of contamination by Site operations. In 1988, a 100-foot -interval sampling grid was established at the Site and samples were collected at the intersection of grid lines (nodes) in June 1988 as part of the RI. Additional samples were collected in areas located beyond the C&D Recycling, Inc. property in transects oriented along the suspected directions of wind-entrained soil migration. EPA collected split samples during the June 1988 soil sampling activity. After the data was evaluated by EPA, additional samples were collected in July 1989 to better define the limits of the contamination. Additional samples were collected in October 1989 to further define potentially impacted areas. The majority of the samples were collected from the 0-6" interval of soil although some of the 1989 samples were collected at depths up to 3 feet into the soil column.

Samples of soil from residential gardens near the Site and from vegetables grown in a garden near the Site were collected by PADER and/or local residents in 1985. The results do not indicate that the concentrations of lead in garden vegetables are elevated based upon a comparison to literature values and an evaluation of the results of lead in the garden soil. Additionally, the levels of Site-related constituents, e.g., lead, detected in the garden soil did not indicate contamination from the Site.

In November 1991, EPA collected soil samples from areas near the then-defined limits of the soil contamination. These samples were collected from the 0-6" interval of soil and from the 0-1" interval of soil in response to concerns that the limit of contaminated soil most likely available for exposure to young children was not well defined by the 0-6" soil sampling program. Additional 0-1" interval soil samples were collected from properties adjacent to C&D Recycling, Inc. in June 1992 in response to requests from Technical Assistance Grant advisors and local citizens.

The results of sampling in the uppermost interval of the soil column, i.e., the 0-1" interval, indicate that the areal extent of contamination issomewhat larger than that defined by sample results from the 0-6" interval of soil. The November 1991 sampling results further suggest that a significant proportion of the contamination is in the 0-1" interval since samples from the 16" interval showed substantially lower contaminant levels. The data support a conclusion that the total volume of soil requiring remediation based upon consideration of the results of sampling in the 0-1" soil interval would not likely be increased from a volume calculation based upon sampling results of the upper six inches of soil. The FS assumed excavation of the top 1 foot of soil.

In all, more than 250 soil samples and 55 duplicate and/or split soil samples were collected from the Site during and after the RI. Selected analytical results of the soil sampling are summarized in Table 5 and Table 6. Complete analytical results are contained within the RI Report and the Administrative Record file.

Soil samples were also analyzed pursuant to the EP Toxicity or the Toxicity Characteristic Leaching Procedure (TCLP) test to determine if the metals within the soil would exhibit the characteristic of toxicity [25 PA Code S 261.24]. The results of the EP Toxicity test and TCLP analyses indicate that levels of lead in the leachate exceed regulatory levels of 5 mg/L. Thus, the contaminated soil is a RCRA hazardous waste (EPA Hazardous Waste Number D008) because it exhibits the characteristic of toxicity. The lead analytical results are depicted in Table 7.

The soil, surface water, sediment, and ash data collected during the RI/FS is generally consistent with data collected during previous investigations. EPA's split sample data suggest that concentrations of compounds and constituents reported in the RI Report are typical of the Site.

SURFACE WATER

Soil contaminated by Site operations was transported away from the operations area behind the main facility building primarily via the action of surface water drainage and wind. Precipitation events over the Site generated stormwater runoff which ran through drains and over the land surface and eventually into nearby surface water bodies (e.g., Mill Hopper Creek). Stormwater drainage from the operations area as well as overland flow of stormwater runoff carried suspended contaminated soil south towards Mill Hopper Creek from the majority of the Site and northwest across Brickyard Road from a small portion of the northwest corner of the Site. Stormwater from the truck loading area and water used in Site operations were channeled to a dry well located west of the main facility building. Stormwater in the vicinity of the process area was channeled to the shale pit via an underground storm water drainage system. Surface water draining the majority of the Site (Mill Hopper Creek) was sampled in 1984 by PADER, in 1986 and 1987 by EPA, and in 1988 during the RI. Selected surface water inorganic analytical results are depicted in Table 8.

One organic compound, bis (2-ethylhexyl) phthalate, was detected in surface water. This phthalate, a common plasticizer and laboratory contaminant, was detected in an unfiltered water sample from the outflow of Mill Hopper Pond (estimated concentration of 7 ppb) and Mill Hopper Creek downstream of the pond at a concentration below EPA's Contract Required Detection Limit (CRDL) (5 ppb). Surface water was also analyzed for organic compounds in April 1987. No organic compounds were detected.

SEDIMENT

Sediment samples (soil and natural debris within drainage channels, streams, and the pond) were collected on several occasions from the Site. Mill Hopper Creek originates from small seeps issuing from the base of a soil bank near the farmhouse on the Site. The seeps contribute a sufficient amount of water to form an identifiable channel. During the removal activity at the Site in 1987, rip-rap was placed in the channel to minimize erosion of the soil bank and subsequent transport of the eroded material downstream in Mill Hopper Creek. Prior to placement of rip-rap, and in 1986 and 1987, the sediment in the stream channel was sampled by EPA. In addition to the water from the seeps, water enters Mill Hopper Creek from the area of shale excavation located in the south central portion of the Site. Water discharges into the shale pit from a pipe draining the facility operations area near the furnaces behind the main facility building. The sediment within this drainage pathway was sampled by PADER in 1984 and by EPA in 1987 prior to installation of erosion control features in 1987[12]. <Footnote>12 PADER sampled soil (sediment) located in the shale pit in September 1984. The analytical results have been included in the range of contamination depicted in Table 5.</footnote> The sediment in Mill Hopper Creek channel, the pond, and in drainage ditches alongside Brickyard Road were sampled during the Remedial Investigation. Selected inorganic analytical results are depicted in Table 9. Low concentrations of several organic compounds, predominantly phthalate and polynuclear aromatic hydrocarbon (PAH) compounds, were also detected in the sediment within the pond and creek. A portion of the facility's drainage network discharges into a dry well or leach pit rather than the shale pit. The drainage system's network of pipes, catch basins, and pits is currently clogged with sediment. Table 10 contains select inorganic analytical results of sediment within the leaching pit (these results were submitted to EPA in June 1992 during the public comment period). Complete analytical results are contained within the RI Report and the Administrative Record.

GROUND WATER

Ground water in the Mauch Chunk Formation is used for drinking water purposes. Thus, the aquifer is classified as a Class II aquifer pursuant to "EPA Guidelines for Ground Water Classification" (Final Draft, December 1986). Extensive sampling of ground water near the Site was initiated by PADER, in 1984, and EPA, in 1985. Samples of ground water were collected from nearby residential wells, from a well located within the C&D Recycling main facility building, from existing wells at the Site, and then from monitoring wells installed by PADER at the Site (certain wells were later converted to screened monitoring wells during the Remedial Investigation).

Ground water monitoring wells were installed in locations at which potential releases of hazardous substances from the Site into the ground water could be monitored. No ground water impact was indicated by the analytical results of sampling of these wells.

The analytical results indicate elevated levels of inorganic constituents, e.g., lead and copper, in residential wells. Some of the levels detected since sampling was initiated in 1984 exceeded the existing Maximum Contaminant Level (MCL) for lead (50 ppb) (40 C.F.R. S 141.11) and the treatment level of 15 ppb applicable to public water suppliers proposed under the Safe Drinking Water Act, 42 U.S.C. S 300f et. seq., as amended. The analytical results do not consistently indicate the presence of contamination, thereby suggesting that a "plume" of lead- or copper-contaminated ground water does not exist. Additionally, both filtered and unfiltered samples were collected from many of the monitoring wells and residential wells. Much higher levels of inorganic constituents typically existed in unfiltered, rather than filtered, samples. The levels of inorganic constituents dropped significantly when the water was filtered suggesting that the majority of the metals were suspended or attached to sediment within the ground water and not dissolved in the ground water.

The residential well sampling results also demonstrate that a significant amount of lead and copper is leaching from the water distribution system within each residence. Lead and copper levels in water samples collected as soon as the tap is opened are significantly higher than lead and copper levels in water samples collected after the tap was run for 30 seconds. Lead and copper levels were lower still after the tap was opened for 3 to 5 minutes. In addition, PADER's samples of ground water from monitoring wells they installed in 1985 do not suggest the presence of ground water contamination from the Site in residential wells.

In 1985, EPA and PADER collected samples of ground water from existing wells apparently used by the dairy farm predating Site operations. The results from these wells indicated high levels of contamination, e.g., 11,600 micrograms of lead per liter ("ug/L") or parts per billion ("ppb") of unfiltered ground water withdrawn from the farmhouse well. However, the wells were not properly sealed. In fact, the well with the highest level of contamination was flush with the ground surface and did not have a protective cap. When water was purged from this well the sediment accumulated at the bottom of the well was disturbed and suspended in the water column. Therefore, the water sample was extremely turbid, contained a high level of sediment, and would not be representative of ground water moving through the aquifer, but more representative of sediment that entered the well from the surface.

The data collected during the RI/FS is consistent with past information and indicates that the ground water has not been impacted by lead, copper and other contaminants from the Site operations. Instead, elevated levels of lead and copper in residential wells are most likely attributed to leaching of metals from the water distribution systems within individual residences caused by reaction with aggressive (corrosive) ground water and ambient ground water quality. For example, concentrations of lead and copper are significantly higher in water sampled from the tap prior to purging or letting the water run. EPA has determined that there is no difference in the quality of ground water beneath the Site, adjacent to the Site, and in the region underlain by the Mauch Chunk Formation, attributable to Site operations.

The ground water is not contaminated as a result of Site operations, reiterating previous determinations made by EPA and PADER.

Ground water analytical data indicate that contaminants, e.g., lead, copper, and antimony are not leaching from the Site into the ground-water system and residential wells. Ground water analytical data for lead is summarized in TABLE 11, TABLES 12A and 12B, and TABLE 13. Complete analytical results are contained within the RI Report and the Administrative Record. TABLES 11, 12A, 12B, and 13 depict lead contamination since it is the contaminant of primary concern at the Site and has caused the most significant concern for local residents. EPA has not identified any Site-related ground water contamination.

The analytical results in TABLE 12B indicate that only well MW-5D has elevated levels of lead. Considering the concentrations of other metals detected in the monitoring wells, there is no indication of Site-related ground water contamination. EPA's analysis of analytical data indicates that metals in the ground water do not originate from the Site. For example: 1) samples from wells open to deep aquifer intervals tend to have poorer water quality, 2) samples from wells upgradient to the source areas have concentrations of metals similar to those found in downgradient wells, and 3) wells do not have similar suites of metals indicative of Site contamination.

Infrequent detections of organic compounds, e.g., acetone, methylene chloride, and bis (2-ethylhexyl) phthalate, in monitoring well samples do not indicate that the Site is a source of these compounds. The detected organic compounds are common laboratory contaminants and/or were frequently detected in blank samples (i.e., control samples used to determine if contaminants are originating from sources, e.g., laboratory, other than the sampled media). Similar to the inorganic constituents, there was no trend suggesting that the organic compounds originated from the Site. Although the levels of metals in some wells are periodically elevated, EPA has not identified the Site as a source of ground water contamination.

During the Remedial Investigation, EPA collected split samples of soil, sediment, surface water and ground water samples collected on behalf of AT&T Nassau Metals Corporation. The analytical results of EPA split samples are similar to the results of samples collected during the RI on behalf of AT&T Nassau Metals Corporation. The similarity between contaminant concentrations detected by EPA and by contractors acting on behalf of AT&T Nassau Metals Corporation, as well as the consistency between data collected before, during, and after the Remedial Investigation, indicates that the Site's contamination characteristics have been well defined.

VI. Summary of Site Risks

An assessment of the potential risks posed to human health and the environment was completed in accordance with the NCP [40 C.F.R. 300.430(d)]. This section of the ROD discusses the results of the baseline risk assessment. The results of the baseline risk assessment are used to determine whether remediation is necessary, to help provide justification for performing the remedial action and to assist in determining what exposure pathways need to be remediated.

A. HUMAN HEALTH RISK EVALUATION

The potential human health risks posed by a Superfund site if no remedial action is taken are calculated in a baseline risk assessment. A baseline human health risk assessment for the C&D Recycling Site was completed in March 1992.

In general, a Site poses a potential human health risk if 1) the contaminants at the Site may cause cancer or some other health effect at existing levels, 2) there is a route or pathway through which a receptor may be exposed, e.g., ingestion of contaminated soil, and 3) there is a receptor which is exposed, e.g., a child ingesting soil. In a baseline human health risk assessment, the contaminants are evaluated, the exposure routes are characterized and the receptors are identified.

The Site is not currently occupied although a guard occupies the main facility building on a temporary basis. Persons potentially at risk include trespassers, recreational users and future residents.

According to Foster Township zoning maps, land located north and west of the Site is zoned for agricultural use although no agricultural activity is ongoing. East and south of the Site is land zoned for residential use. A trailer park (Maple Lane Estates) and a second home/retirement community (Hickory Hills and Hickory Hills West) exist northeast of the Site. According to available information, the trailer park and second home/retirement community are expected to expand. In fact, Hickory Hills West has lots partially developed adjacent to the northeast corner of the Site. Forested area exists north, east, and south of the Site and acts as a buffer between the Site and the nearest residential dwellings. C&D Recycling, Inc. has voluntarily restricted the deed to parcel 11 (see Figure 3) to prevent residential, recreational and agricultural use. Nonetheless, residential occupation of the Site in the future is possible.

In 1984, the Northeastern Pennsylvania Vector Control Association sampled blood from 62 children in Foster Township. Apparently only 19 of the 62 samples were analyzed for blood lead concentrations. The results indicate that some of the children have elevated blood lead concentrations, but a conclusion as to the source of the lead was not established. Some of the children living both near to and distant from the Site had elevated blood lead. Blood lead concentration data submitted by some of the local residents was also considered by EPA in the assessment of risk.

The baseline human health risk assessment for the C&D Recycling Site evaluated the potential risks posed if an individual (e.g., recreational user of adjacent land) is actually exposed to Site contamination in the absence of any remedial action. In addition, the potential risks posed by a theoretical future scenario of residential development on the Site were assessed. Thus, potential risks posed by current and potential future uses of the Site were evaluated.

In an effort to simplify the application of the results of the risk assessment to the development of remedial alternatives, the Site was separated into various areas, e.g., inside and outside of the currently fenced area. This separation by area is reasonable since the current exposure likely to occur within these various areas is likely to be different due to access limitations. Nonetheless, future residential use of the Site, i.e., unrestricted access, in the absence of remediation was evaluated in the assessment of risk.

The potential risks posed by exposure to soil, sediment, air, surface water, and ground water were evaluated in the baseline human health risk assessment. EPA considers organic compounds and inorganic constituents which: 1) present a potential risk to human health and the environment at the detected concentrations and 2) originated from the Site or likely originated from the Site, to be contaminants of potential concern for the Site. Inorganic constituents and organic compounds which were not identified in at least 5% of the samples or are essential nutrients, e.g., calcium, were not considered to be contaminants of potential concern. The contaminants of potential concern for the C&D Recycling Site are listed in TABLE 14. TABLE 14 also includes inorganic constituents and organic compounds which: 1) may have been detected in only one ground water sample or in only one sampling round and 2) may have been detected at concentrations below EPA's contract required detection limit for that chemical in accordance with the Contract Laboratory Program (CLP). Thus, the comprehensive list of inorganic constituents and organic compounds in TABLE 14 may not be indicative of Site contamination. The contaminants listed in TABLE 14 and marked by an asterisk (*) may contribute to the human health risk posed by exposure to soil, sediment, air, ground water, or surface water potentially contaminated by Site-related constituents and compounds, but are not related to the Site. These constituents are considered in the overall risk as background risk.

Inorganic constituents and organic compounds which were detected at concentrations within the background range or were not solely attributable to the Site (some compounds, e.g., PAHs, could originate from other sources), but contribute to unacceptable health risk were evaluated in the risk assessment. Some of these contaminants (e.g., arsenic, beryllium, and benzo(a)pyrene) cause a large portion of the potential risk posed by the Site.

The baseline human health risk assessment evaluated the potential risk posed by exposure to contaminants detected at the Site. The baseline human health risk assessment considered several plausible exposure routes. TABLE 15 lists those contaminants which could result in an excess cancer risk greater than 1x10[-6] or a non-carcinogenic risk with a Hazard Index greater than 1. These contaminants will be addressed in the remedy selected in this ROD.

Since the area contaminated by the elements and compounds listed in TABLE 15 is greater than the area contaminated by other inorganic constituents and organic compounds resulting from Site operations (e.g., Site-related contaminants listed in TABLE 14) cleanup of the Site based upon the contaminants listed in TABLE 15 will be protective of human health and the environment. Since lead has spread the farthest from the source areas, remediation of soil, ash, and sediment based upon lead concentrations alone is protective and will result in the removal of all other contaminants above health-based levels.

Exposure Assessment

Cancer potency factors (CPFs), also called slope factors, have been developed by EPA's Carcinogenic Assessment Group for estimating excess lifetime cancer risks associated with exposure to potentially carcinogenic (cancercausing) chemicals. CPFs, which are expressed in units of (mg/kg-day)[-1], are multiplied by the estimated chronic daily intake (CDI) of a potential carcinogen, in mg/kg-day, to provide an upper bound estimate of the excess lifetime cancer risk associated with that intake level. The term "upper bound" reflects the conservative nature of the risks calculated from the CPF. It is a statistical term related to the degree of certainty of the data used to calculate the CPF. Use of this approach makes underestimation of the actual cancer risk highly unlikely. CPFs are derived from the results of human epidemiological studies or chronic animal bioassays to which human-to-animal extrapolation and uncertainty factors have been applied. CPFs for the contaminants of concern at the Site, as well as the models from which the CPFs were obtained are referenced in the tables within APPENDIX C.

EPA represents the toxicity of individual PAHs with no known CPF in terms of a toxicity equivalence factor (TEF) to the CPF of benzo(a)pyrene. This is a conservative assumption since benzo(a)pyrene is a potent carcinogen. The TEFs are multiplied by the CPF of benzo(a)pyrene to yield a lower, individual CPF. The TEFs used by EPA in the C&D Recycling baseline risk assessment are identified in TABLE 16.

Potential concern for non-carcinogenic effects of a single contaminant in a single medium is expressed as the ratio of the estimated intake derived from the contaminant concentration in a given medium to the contaminant's reference dose (Rfd). This ratio is referred to as the hazard quotient (HQ). By addition of the HQs for all contaminants within a medium or across all media to which a given population may reasonably be exposed, the Hazard Index (HI) can be generated. The HI provides a useful reference point for gauging the potential significance of multiple contaminant exposures within a single medium or across media. APPENDIX C contains information on CPFs and Rfds used in the assessment of risk at the C&D Recycling Site.

If contaminants of concern in a completed exposure pathway (individual or multiple pathway) results in the exposed individual having 1 to 100 extra chances of contracting cancer in 1,000,000 such chances, EPA considers the risk to be acceptable and does not necessarily recommend remedial action to address the risk. EPA expresses the acceptable risk range in scientific notation and in accordance with the NCP as follows: 1x10[-6] to 1x10[-4] [40 C.F.R. 300.430(e)(2)]. EPA recommends remedial action to address excess cancer risks greater than 1x10[-4] (100 in 1,000,000). EPA may recommend remedial action to address risks within the 1x10[-6] to 1x10[-4] excess cancer risk range. EPA recommends remedial action to address non-cancer risks with a Hazard Index (HI) greater than 1.0. EPA considers non-carcinogenic risks with a HI less than 1.0 to be acceptable. The tables within APPENDIX D depict the potential risks posed by exposure to the contaminants at the Site in each of the media and exposure pathways to which people could reasonably be exposed.

Risk Characterization

The majority of the Site's potential carcinogenic risk is posed by exposure to PAH, PCB, and dioxin in the surface soil and/or ash. The majority of the non-carcinogenic risk posed by the Site is due to antimony and copper in the surface soil and/or ash. Lead contributes significantly to the risk posed by the Site and was evaluated separately in the lead Uptake Biokinetic Model.

Carcinogenic risks greater than 1x10[-6] and non-carcinogenic risks with a HI greater than 1 are shown in TABLE 15. The 95% upper confidence limit (UCL) of the mean concentration of the contaminant at the Site causing the potential risk is also listed in TABLE 15. The 95% UCL of the mean concentration of the contaminant was used to calculate the chronic daily intake of the contaminant and the resultant lifetime risk pursuant to EPA's Reasonable Maximum Exposure Scenario (RMES) guidelines. Using the 95% UCL of the mean concentration is reasonable since there is only a 1 in 20 chance that the true mean would be a higher concentration.

The only exposure scenarios at the C&D Recycling Site which result in potential excess cancer risk greater than 1x10[-4] ("unacceptable" risk) involve ingestion of ground water. However, the majority of the risk is due to arsenic and beryllium which EPA believes are not related to the Site, e.g.,background. In addition, the current risk posed by ingestion of ground water is not due to the C&D Recycling Site since EPA believes Site-related contaminants have not migrated to residential wells through the ground water system. The only exposure scenario which does not involve ingestion of ground water and which results in a non-cancer risk with a HI greater than 1 involves ingestion of soil under future residential use of the Site.

Several exposure scenarios result in potential excess cancer risk between 1x10[-4] and 1x10[-6] ("acceptable" risk). However, the majority of these scenarios assume future residential development of the Site. At least three current exposure scenarios pose an excess cancer risk greater than 1x10[-6] due to contaminants which may be related to the Site. Each of these three scenarios involves ingestion of surface soil contaminated with PAHs, specifically benzo(a)pyrene. Since PAH contamination is the result of the incomplete combustion of organic matter and the Site operations involved various burning processes, it is reasonable to assume that PAHs will be found on the Site. It is also probable that PAH contamination originated, in part, from other sources. EPA has recently revised the potency slope for benzo (a) pyrene, thereby reducing the estimate of risks posed by PAHs by approximately 50%. TABLE 15 does not reflect these reduced risk calculations.

Ingested arsenic is a known human carcinogen which results in an increased incidence of skin cancers. Only a fraction of the arsenic-induced skin cancers are fatal, although the non-fatal skin cancers remain of some concern. Furthermore, the assumption of a linear relationship between arsenic dose and cancer risk may overestimate the risk. EPA believes that the uncertainties associated with ingested inorganic arsenic are such that risk estimates could be modified downwards as much as tenfold relative to risk estimates associated with other carcinogens. Most of the exposure scenarios which result in potential noncarcinogenic risk with a hazard index greater than 1.0 ("unacceptable" risk) involve ingestion of ground water. The risk is due mainly to antimony (current off-Site ingestion) and thallium (future on-Site ingestion). As discussed previously, the Site data do not suggest that Site-related contaminants have migrated to residential wells. Ingestion of soil by a toddler residing on the Site in the future would result in a hazard index of 2.87.

Summation of the potential risks posed by several pathways over a 30 year time period reasonably estimates the total potential risk posed by contaminants detected during the RI. The calculations suggest that the current risks posed to off-Site residents and future risks potentially posed to on-Site residents are greater than 1x10[-4]. The majority of the risk results from ingestion of beryllium in ground water, which EPA believes is not related to Site operations.

Lead

Although EPA considers lead to be a possible human carcinogen, it has not yet developed the necessary factors, e.g., Cancer Potency Factor (CPF), to evaluate risks posed by lead similar to other carcinogenic compounds. Therefore, it is not possible to calculate a cancer risk number as is done for other contaminants. EPA believes, however, that levels of lead equal to or greater than 10 ug/dL of blood may cause adverse effects on nervous system development in children. Therefore, the assessment of potential risks posed by the C&D Recycling Site would be incomplete without considering the risk posed by lead.

Lead cleanup levels were evaluated based upon the Lead Uptake Biokinetic (UBK) Model which considers all probable lead exposure routes and allows EPA to evaluate soil lead cleanup levels necessary to protect children from adverse affects of lead in the bloodstream. EPA uses the model to predict the percentage of children which could have blood lead levels above 10ug/dL if exposed to lead from various sources including soil. EPA currently endeavors to reduce soil lead levels such that at least 95% of the children exposed to lead contaminated soil would have blood lead levels below 10 ug/dL.

Using the calculated maximum concentration of lead in air (0.0226 ug/m[3]) and the 95% UCL (UCL[95]) of the mean concentration of lead in residential well water (9.29 ug/L) and soil located beyond the C&D Recycling, Inc. property line (476.6 mg/kg), blood lead information for exposed children was modeled with the Lead UBK Model. The modelled output indicates that a minimum of 94% of exposed children would exhibit blood lead levels below 10 ug/dL. A Geometric Standard Deviation of 1.42 was used in the model. This GSD reflects exposure to a very small number of children, and was selected on the basis of the limited extent of off-Site lead contamination. Had lead contamination been more widespread, a higher GSD would have been used. In addition, the model assumed a condition wherein indoor dust lead concentrations are equal to outdoor soil lead concentrations. Since the affected land immediately adjacent to the Site is not characterized by active residential use and soil lead values near the homes are less than 476 ppm, this modelled output is an over-estimate of the elevated blood lead risk posed to children playing on property adjacent to the Site. Use of the UCL[95] value in the model provided a slightly protective estimate of the average soil lead concentration.

Using the calculated maximum concentration of lead in air (0.0226 ug/m[3]) and the UCL[95] of the mean concentration of lead in on-Site monitoring wells (12.72 ug/L) and soil located on the Site (20,207 mg/kg), blood lead information for exposed children residing at the Site in the future was modeled with the Lead UBK Model. The modelled output indicates that exposed children would exhibit blood lead levels above 10 ug/dL.

The baseline human health risk estimate was conducted using various reasonably conservative assumptions about the likelihood of exposure, the amount of exposure, and the toxicity of the chemicals. For example, the C&D Recycling Site baseline risk assessment assumed that the exposed child would ingest 200 mg/day of soil with levels of contaminants present at the UCL[95] of the mean concentration level. Additional exposure assumptions include ingestion by adults of 2 liters of water and 100 mg of soil per day. EPA believes that incorporation of these assumptions will lead to calculation of a Reasonable Maximum Exposure Scenario (RMES) and a risk value which is unlikely to underestimate the actual risk.

The excess cancer risk posed by ground water, which is unrelated to the Site, is greater than 10[-4]. The non-cancer risk posed by ground water is greater than 1.0. The excess cancer risk posed by surface soil contaminants other than lead at the C&D Recycling Site (including Site-related contaminants) is within EPA's acceptable risk range. In addition, the HI is less than 1 for all, but one, exposure scenarios involving ingestion of soil or sediment contaminated by the Site. The only exposure scenario resulting in a HI greater than 1 and involving ingestion of soil or sediment contaminated by the Site is based upon future residential land use.

The Lead Uptake Biokinetic Model and existing EPA policy indicate that soil lead levels should be reduced to provide protection of human health. Although ground water is presently not demonstrably impacted by contaminants from the C&D Recycling Site, remedial action for soil, sediment, and ash to ensure future protection of ground water is warranted. In addition, migration of contaminants from the Site has impacted surface water bodies near the Site. Thus, remedial action to address the contaminated ash, soil and sediment at the Site is justified.

B. ENVIRONMENTAL EVALUATION

An ecological assessment was performed at the Site in 1990. The assessment included evaluation of the plant and animal species living at or using the Site surroundings. Terrestrial and aquatic animals and plants were observed and identified. An aquatic benthic survey was performed and species diversity for aquatic and terrestrial plants and animals was characterized. Surface water and sediment samples were collected and analyzed during the Remedial Investigation.

Based upon consultation with State and Federal agencies knowledgeable about threatened and/or endangered species in the Commonwealth of Pennsylvania, EPA has determined that no threatened and/or endangered species are located within or near the C&D Recycling Site.

According to PADER, the Sandy Run basin is a High Quality Cold Water Fishery. An evaluation of migration pathways from the contaminant source areas, e.g., furnaces and ash piles, to Mill Hopper Creek suggests that Site contaminants have impacted Mill Hopper Creek and the pond which lie within the Sandy Run Basin. The lack of aquatic vegetation in the pond is likely the result, in part, of the high levels of sediment and contaminants flowing into the pond. Unfiltered water samples exceeded Pennsylvania Water Quality Standards for lead, cadmium, beryllium, copper, and silver. Filtered water samples exceeded Water Quality Standards for lead.

Wetland areas were identified at the Site. The wetland areas within the area of contamination are primarily limited to the Mill Hopper Creek channel and the immediate surroundings of the channel. Downstream of the Site, Mill Hopper Creek flows through larger wetland areas.

An archeological survey was conducted on the Site in 1991. The Phase 1A survey was completed due to the existence of an abandoned (and ruined) frame farmhouse and its associated structures located in the center of the Site. The farmhouse dates to the middle of the 19[th] century. There are no properties listed on the National Register of Historic Places within 1 mile of the Site.

Although the buildings on the Site are not historically significant, the area near the headwaters of Mill Hopper Creek may have prehistoric archaeologic significance and should be further investigated before disturbed by any remedial activity. In addition, the area immediately adjacent to the farmhouse ruins and associated structures may have historic significance since it may provide insight into human occupation in the area in the 1800's and 1900's.

C. CLEANUP LEVELS

In addition to the remedial objectives stated in the Feasibility Study, EPA seeks to eliminate, reduce, or control risks to human health and the environment. EPA expects to include both treatment to minimize the threat posed by highly mobile wastes and containment to control low-level threats. Additionally, EPA expects to minimize the amount of untreated waste. To achieve the necessary level of protection, EPA establishes remediation goals, i.e., cleanup levels based upon levels of exposure protective of human health and the environment. For known or suspected carcinogens, EPA has established acceptable exposure levels as those which may result in 1 to 100 extra chances of contracting cancer among 1,000,000 such chances, i.e., excess cancer risk between 1x10[-4] and 1x10[-6].

Based upon the results of the Lead Uptake Biokinetic Model and the baseline risk assessment, the concentrations of contaminants in the soil within the fenced area of the Site would pose a health risk if the Site were developed as residential property. Additionally, the level of lead in soil within adjacent properties may not provide the necessary level of protection suitable for active residential use. Finally, the levels of toxic metals in the sediment may inhibit healthy growth in Mill Hopper Pond.

The Lead UBK Model showed that an average level of approximately450 ppm lead in the soil on residential property (2-acre lot) would not result in blood lead concentrations exceeding 10 ug/dL in greater than 95% of the exposed children. Reducing the average soil lead level to approximately 300 ppm on individual residential lots (2-acre lot) would increase the level of protection to greater than 99%. These model runs include assumptions that indoor dust concentration is equal to outdoor soil lead concentrations and ground water and soil lead concentrations equal the UCL[95] mean concentration of lead in these media beyond C&D Recycling, Inc. property line. A geometric standard deviation (GSD) of 1.42 was used consistent with the assumption that the exposure occurs to a single theoretical family on their 2-acre property. Two acres is consistent with Foster Township zoning requirements and nearby properties.

Based upon this information and EPA's existing policy on soil lead cleanup levels [OSWER Directive #9355.4-02], EPA proposes a soil cleanup level of a maximum of 500 ppm lead, i.e., no confirmatory sample collected shall exceed 500 ppm. EPA believes that 500 ppm lead would be protective of human health (residential exposure) and would not impact the environment, e.g., leach to the ground water. EPA believes and expects that a cleanup level of 500 ppm would ensure that the average soil lead level remaining on any two-acre plot would be less than approximately 235 ppm, including theoretical residential plots located on the Site. Thus, residual soil lead levels would be protective.

Since property west and north of the C&D Recycling Site is zoned for agricultural use, and many residents near the Site grow garden vegetables, the soil lead cleanup maximum level of 500 ppm was considered in evaluating possible impacts to future agricultural activity. Existing information suggests that the soil cleanup level of 500 ppm (the average level expected to be less than 235 ppm on any 2-acre lot after the cleanup) would not result in elevated risk to individuals ingesting vegetables grown in this soil. Lead contamination spread the farthest from the source areas, e.g., furnaces and ash piles. Thus, the area of lead contamination represents the largest contaminated area and encompasses areas of soil and sediment contaminated by other compounds and constituents, e.g., PAHs, copper, and antimony. The area of remediation delineated by lead satisfactorily addresses unacceptable levels of other Site-related contaminants in the soil.

Since the evaluation in the ecological assessment of the cause of the poor conditions in the pond was not conclusive, but includes impact from the Site, EPA assumes that Site contaminants in Mill Hopper Pond sediment have resulted in poor growth of aquatic vegetation. Thus, EPA proposes removal of 2 feet of pond sediment and placement of a protective layer of rock/soil to support vegetative growth. Removal of contaminated pond sediment will also ensure that this sediment is not released downstream.

Since Mill Hopper Creek and portions of Mill Hopper Pond periodically run dry making exposure to contaminated sediment a possibility, EPA proposes that all sediment available for recreational or future residential exposure (i.e., bank of pond and dry stream bed) exceeding 500 ppm lead be removed. This level should be equally protective of the environment. Considering Pennsylvania's Co-Occurrence database, only lead levels of approximately 300 to 500 ppm in the sediment may cause benthic toxicity in the remediated creek bed. Since the Co-Occurrence database may not apply to the Site and the majority of the creek to be remediated is periodically dry, the 500 ppm cleanup level is deemed to be adequate for environmental protection. Consideration of the significant stresses likely caused by periodic dryness suggests that lower cleanup levels may not provide improved habitat for benthic organisms in the creek.

Air sampling and sampling of decontaminated building surfaces would be implemented to ensure that residual contaminant levels do not exceed appropriate levels. Ambient air should not exceed 50 micrograms lead per cubic meter (ug/m[3]) and 1000 ug/m[3] copper to protect future occupational inhabitants. Building surfaces should not exceed soil cleanup levels to protect human health and the environment.

VII. Alternatives

The Feasibility Study report developed alternatives to meet the remedial objectives of the Site cleanup. TABLE 17 lists the remedial alternatives developed in the Feasibility Study and provides information on estimated costs, including present worth costs which include the cost of operation and maintenance (O&M) and estimated implementation time for each alternative. TABLE 17 provides estimated cost data for a cleanup level of 1000 ppm as presented in the FS and 500 ppm as preferred by EPA. The documentation for the costs can be found in Appendix E. Each alternative considered is also briefly described in this section of the ROD. Each alternative, except Alternative 1, includes implementation of the common actions described in this section.

TABLE 17

SUMMARY OF REMEDIAL ALTERNATIVES
C&D Recycling Site

ALTERNATIVE 1 - NO FURTHER ACTION

	1000 ppm	500 ppm
Estimated Capital Cost :	$ 0	
Estimated Annual O&M Cost :	$ 70,500	
Estimated Present Worth Cost :	$ 831,020	$ 831,020
Estimated Implementation Time:	N/A	

ALTERNATIVE 2 - ACCESS RESTRICTIONS and CONSOLIDATION

	1000 ppm	500 ppm
Estimated Capital Cost :	$ 1,296,100	
Estimated Annual O&M Cost :	$ 82,090	
Estimated Present Worth Cost :	$ 2,263,740	$ 2,270,531
Estimated Implementation Time:	12 months	

ALTERNATIVE 3 - SOIL/VEGETATIVE COVER

	1000 ppm	500 ppm
Estimated Capital Cost :	$ 2,903,560	
Estimated Annual O&M Cost :	$ 33,820	
Estimated Present Worth Cost :	$ 3,302,210	$ 3,863,586
Estimated Implementation Time:	20 months	

ALTERNATIVE 4 - RCRA COVER

	1000 ppm	500 ppm
Estimated Capital Cost :	$ 3,465,460	
Estimated Annual O&M Cost :	$ 33,820	
Estimated Present Worth Cost :	$ 3,864,110	$ 4,830,138
Estimated Implementation Time:	22 months	

ALTERNATIVE 5 - STABILIZATION AND OFF-SITE DISPOSAL

	1000 ppm	500 ppm
Estimated Capital Cost :	$ 8,645,275	
Estimated Annual O&M Cost :	$ 25,390	
Estimated Present Worth Cost :	$ 8,944,565	$ 11,985,717
Estimated Implementation Time:	18 months	

ALTERNATIVE 6 - STABILIZATION AND ON-SITE DISPOSAL

	1000 ppm	500 ppm
Estimated Capital Cost :	$ 5,258,185	
Estimated Annual O&M Cost :	$ 38,020	
Estimated Present Worth Cost :	$ 5,706,345	$ 7,361,185
Estimated Implementation Time:	18 months	

The remedial alternatives are described in this section of the ROD as they are described in Feasibility Study and the Proposed Plan for the purpose of consistency (the FS draft was reviewed by the public and the FS alternatives were described in the Proposed Plan). EPA's modifications to the alternatives are described as modified common actions and new common actions in this ROD (as well as in the Proposed Plan). Modifications are also described in Section XI ("Explanation of Significant Differences") and in Section IX ("Selected Remedy) of this ROD. Differences between the remedy preferred by EPA in the Proposed Plan and selected in this ROD are detailed in Section XI ("Explanation of Significant Differences") and in Section IX ("Selected Remedy) of this ROD.

ALTERNATIVE 1 - NO FURTHER ACTION

	1000 ppm	500 ppm
Estimated Capital Cost :	$ 0	
Estimated Annual O&M Cost :	$ 70,500	
Estimated Present Worth Cost :	$ 831,020	$ 831,020
Estimated Implementation Time:	N/A	

The NCP [40 C.F.R. Section 300.430(e)(6)] requires that EPAconsider a "No Action" or "No Further Action" alternative for each site. This alternative provides only for continued maintenance of the sedimentation and erosion control systems, ash pile covers, and fencing. In the No Further Action Alternative, the contaminants in the soil and sediment at the Site would be left in place. The Site would continue to pose a potential risk to trespassers and would pose a risk to nearby residents if their land were to be used in a different manner, e.g., occupation of land immediately adjacent to the Site. In addition, continued migration of contaminants in the surface water may further impact the environment. Alternative 1 is not protective of human health and the environment.

COMMON ACTIONS

Alternatives 2 through 6 include several common actions. Common actions which were developed in the FS ("FS COMMON ACTIONS"), and described in the Proposed Plan, are also described below for consistency purposes. EPA also considered modifications to the common actions developed in the FS ("USEPA MODIFIED COMMON ACTIONS"). EPA's modified common actions were also described in the Proposed Plan and are described below. EPA also considered newly developed common actions, i.e., not developed within the FS ("USEPA COMMON ACTIONS"). The new common actions were described in the Proposed Plan and are described below. Each of the common actions was considered in the comparative evaluation of remedial alternatives and in the development of the Proposed Plan. The estimated costs for Common Actions are contained in APPENDIX E.

FS COMMON ACTIONS

FS COMMON ACTION #1) - Excavation and Stabilization of Pond Sediment

The top two feet of sediment within the pond shall be excavated from the pond. Since EPA expects that sediment will fail the TCLP (similar to Site soils), the sediment shall be stabilized, e.g., with a mixture of portland cement and water, to remove any hazardous characteristic and to comply with Land Disposal Restrictions of the Resource Conservation and Recovery Act (RCRA) [40 C.F.R. Part 268]. According to the results of a Treatability Test conducted in 1990, stabilization is an effective treatment technology for the Site contaminants. The pond bottom would then be covered with uncontaminated soil and crushed stone to support vegetative growth. The stabilized sediment would be disposed as described in Alternatives 2 through 6 (Subtitle D waste disposal facility) and may be combined with other soil or sediment. During activity in the pond, Mill Hopper Creek would be diverted around the pond subject to Dam Safety and Waterway Management Regulations [25 PA Code S 105.1 et. seq.]. Additionally, activity in the pond shall not result in a release of contaminants to Mill Hopper Creek in excess of Pennsylvania Ambient Water Quality Standards [25 PA Code SS 93.1 et. seq.]. The estimated volume of sediment is 1900 yards[3] based upon a sediment depth of 2 feet.

FS COMMON ACTION #2) - Excavation and Stabilization of Storm Water Sewer System Sediment

All (approximately 24 yards[3]) sediment within pipes, drains, basins, and pits which constitute the subsurface storm water sewer system shall be removed, sampled (via TCLP) to determine if the sediment exhibits the RCRA characteristic of toxicity, and stabilized, as necessary, e.g., with a mixture of portland cement and water to remove any RCRA hazardous characteristic. The stabilized sediment would be disposed as described in Alternatives 2 through 6 (Subtitle D waste disposal facility) and may be combined with other soil or sediment on the Site if sampling demonstrates that the sediment within the storm sewer system is compatible with other soil or sediment, e.g., suitable for codisposal.

FS COMMON ACTION #3) - Decontamination of Site Buildings

The main facility building, barn, and milkhouse shall be decontaminated. The interior space of the buildings, approximately 83,000 square feet, shall be vacuumed to remove contaminated surface material. Interior smooth surfaces would be wiped down with damp cloths. Surfaces which cannot be cleaned by vacuum or wet cloth shall be encapsulated. Vacuum filters, water, cloths, and contaminated debris shall be treated, as necessary, to meet RCRA Land Disposal Restrictions (40 C.F.R. Part 268) and disposed in a RCRA Subtitle C hazardous waste landfill if determined to be a RCRA hazardous Waste. The small furnace structure shall be dismantled since it is not structurally sound and would interfere with soil removal. The dismantled material would be disposed as described in Alternatives 2 through 6.

FS COMMON ACTION #4) - Removal of Casing and Wire

The remaining casing cable and wire shall be baled and disposed off-Site in a non-hazardous facility. If feasible, the material shall be cleaned and recycled rather than disposed. The remedial alternatives which include this common action (i.e., Alternatives 2 through 6) assume, for cost estimating purposes, that the material shall be disposed into a permitted off-Site landfill.

FS COMMON ACTION #5) - Deed Restriction

A restriction of the deed shall be filed to prohibit residential, agricultural and recreational activity on any portion of the Site on which hazardous substances above cleanup levels shall remain. Available information indicates that such a deed restriction for Tax Parcel 11 has been filed.

USEPA's MODIFIED COMMON ACTIONS

USEPA MODIFIED COMMON ACTION #1) - Removal of Pond/Creek Sediment

All sediment within the pond with levels of lead above 500 ppm shall be removed. A 500 ppm cleanup level is consistent with the cleanup level applied to surface soil and would not adversely affect the pond environment since the remaining sediment would subsequently be covered. At minimum, a maximum of 2 feet of sediment shall be removed from the bottom of the pond regardless of the degree of contamination to allow for placement of rock/sediment on the pond bottom intended to support new growth of aquatic vegetation. This action is necessary to minimize further release of suspended contaminated sediment from the Site and to prevent future exposure to contaminated sediment when the pond is dry. Remediation of the pond has the added benefit of significantly improving the habitat within the pond.

Additionally, sediment in the bed of Mill Hopper Creek with lead levels above 500 ppm shall be removed. A 500 ppm cleanup level is necessary to both minimize further release of contaminated suspended sediment and potential risk to individuals ingesting sediment during recreational activity when Mill Hopper Creek runs dry. Remedial activities shall not result in migration of surface water from the Site with contaminant levels in excess of federal or state water quality criteria or standards [25 PA Code SS 93.1 et. seq., Pennsylvania Clean Streams Law 35 P.S. 691.1-691.1001] [Clean Water Act, Federal Water Quality Criteria, 33 U.S.C. S 1251] and shall be completed in accordance with State requirements regulating activity in streams [25 PA Code S 105.1 et. seq.]. This modification affects each alternative discussed within the FS and was evaluated in regard to the alternative evaluation criteria in the Proposed Plan and this ROD.

USEPA MODIFIED COMMON ACTION #3) - Decontamination of Site Buildings

On-Site buildings with dust lead levels above 500 ppm lead remaining after soil remediation shall be decontaminated by washing/vacuuming/sealing exposed surfaces. Air monitoring shall be implemented. After decontamination, the dust lead level in any on-Site building shall not exceed the soil lead cleanup level of 500 ppm. In addition, non-structural components and equipment within the buildings which would interfere with proper decontamination of the buildings shall be removed and disposed or cleaned and recycled in compliance with the requirements of 40 C.F.R. Part 268. The debris, water, cloths, filters, etc. generated during decontamination of the buildings, shall be treated, as necessary, to meet Land Disposal Restrictions (40 C.F.R. Part 268) and disposed in a RCRA Subtitle C facility. Building components may be disposed into a Subtitle D facility. This modification affects each alternative discussed within the FS and was evaluated in regard to the alternative evaluation criteria in the Proposed Plan and this ROD.

USEPA MODIFIED COMMON ACTION #4) - Removal of Casing and Wire

Remaining cable casing and wire shall be either (1) recycled, if feasible, and if the recycling process does not result in additional debris requiring disposal, or (2) disposed into a non-hazardous (Subtitle D) offSite waste disposal facility. Cable casing and wire which has come to be located on adjacent properties shall also be removed. This modification affects each alternative discussed within the FS and was evaluated in regard to the alternative evaluation criteria in the Proposed Plan and this ROD.

USEPA NEW COMMON ACTIONS

USEPA COMMON ACTION #6) - Abandon Wells

Several wells located at the Site, e.g., farmhouse well, serve no useful purpose and should be properly plugged and abandoned in order to eliminate the possibility of these wells acting as a conduit for future ground water contamination. Any well not used or considered for practical use as part of a long-term ground water monitoring network should be properly plugged and abandoned in accordance with minimum requirements of 25 PA Code 109.602(c) and consistent with PADER's Public Water Supply Manual, Part II, Section 3.3.5.11. This new common action affects each alternative discussed within the FS and was evaluated in regard to the alternative evaluation criteria in the Proposed Plan and this ROD. The expected additional cost is very low and the potential for additional protection is significant.

USEPA COMMON ACTION #7) - Stream Monitoring

The flowing water within Mill Hopper Creek and/or pond shall be periodically sampled to assure that the remedy is protective of the aquatic environment. In addition, stream biota shall be periodically inspected to ensure that no impact is resulting from the remedy. The additional cost of this common action is low and necessary to ensure compliance with regulations protecting fresh water streams. This new common action affects each alternative discussed within the FS and was evaluated in regard to the alternative evaluation criteria in the Proposed Plan and this ROD. The anticipated additional cost is very low and the potential for additional protection is significant.

USEPA COMMON ACTION #8) - Phase 1B Archeological Survey

Prior to any soil excavation, shovel test pits shall be conducted to determine if archaeologically significant artifacts exist at the Site. A Phase 1B Archeological survey shall be conducted in accordance with Pennsylvania Bureau of Historic Preservation guidelines in areas of moderate or high archaeologic or historic significance potentially impacted by the Site remediation. This new common action affects each alternative discussed within the FS and was evaluated in regard to the alternative evaluation criteria in the Proposed Plan and this ROD. The expected additional cost is moderately low and necessary to ensure that potential cultural resources are not impacted. This Common Action is necessary to comply with the requirements of the National Historic Preservation Act (Chapters 106 and 110(f) and 36 C.F.R. Part 800) and Archeological and Historic Preservation Act (16 U.S.C. S 469a-1).

USEPA COMMON ACTION #9) - Toxicity Testing

After soil excavation and regrading is completed, or as early as reasonably practicable, samples of soil shall be tested to ensure that remaining concentrations of Site contaminants do not pose a threat to human health and the environment. The test protocol and standards shall be developed during the remedial design. This new common action affects each alternative discussed within the FS and was evaluated in regard to the alternative evaluation criteria in the Proposed Plan and this ROD. The expected additional cost is moderately low and necessary to ensure that the residual soil contaminant levels do not impact human health and the environment.

Each of the remaining remedial alternatives, i.e., Alternative 2 through Alternative 6 is described in this ROD as they were presented in the Feasibility Study and Proposed Plan. The common actions referenced in each alternative and figured into the estimated cost are the common actions developed in the FS. However, EPA's evaluation of the remedial alternatives was performed with consideration for the modified common actions and new common actions described above. Additionally, EPA comparatively evaluated each remedial alternative with a cleanup level of 500 ppm lead as well as 1000 ppm lead. Alternatives 2 through 6 are discussed below.

ALTERNATIVE 2 - ACCESS RESTRICTIONS (and CONSOLIDATION)

	1000 ppm	500 ppm
Estimated Capital Cost :	$ 1,296,100	
Estimated Annual O&M Cost :	$ 82,090	
Estimated O&M Present Worth Cost:	$ 967,640	
Estimated Present Worth Cost :	$ 2,263,740	$ 2,270,531
Estimated Implementation Time :	12 months	

In addition to the FS Common Actions described above and the continued maintenance described in Alternative 1, Alternative 2 involves consolidating soil with lead at concentrations exceeding 500 ppm and not located on C&D Recycling, Inc. property, i.e., adjacent residential and agricultural land, and soil above 1000 ppm lead located in areas readily accessible to trespassing recreational users into a main area to be enclosed by a 6-foot high chain link fence. Excavated soil would be consolidated within the 1000 ppm lead isoconcentration line. The existing fence at the Site would be extended to include additional area generally located east and south of the existing fence. The fence in Alternative 2 would enclose all areas of soil with lead exceeding 500 ppm to minimize accidental exposure to contaminated soil. The volume of soil to be addressed is 3550 cubic yards from areas located on adjacent property and 650 cubic yards from other areas for a total volume of 4200 cubic yards (assuming a conservative depth of remediation of 1 foot). The excavated soil would be replaced by soil containing lead levels at or below the mean soil lead background level (approximately 44 ppm).

Consolidation of soil would comply with the erosion control requirements of the Pennsylvania Erosion Control regulations (25 PA Code S 102.1 et. seq.) and would include investigation, e.g., search for archeological artifacts, in soil near Mill Hopper Creek affected by the remediation.

Additionally, Alternative 2 includes excavation of approximately 24 yd[3] of contaminated sediment from the storm sewer system and 1900 yd[3] of sediment from the pond, sampling storm sewer system sediment, stabilization of the excavated sediment, as necessary, to remove any RCRA hazardous waste characteristic and to comply with the Land Disposal Restrictions [40 C.F.R. Part 268], and disposal of all sediment into a permitted non-hazardous waste disposal facility. Off-Site disposal would comply with EPA's Off-Site Policy (OSWER 9330.2-07). Non-hazardous waste resulting from building decontamination disposed in Pennsylvania would be disposed into a landfill regulated by residual waste regulations [25 PA Code Chapters 287, 288, and 289].

The treatment, i.e., stabilization, of RCRA characteristic hazardous waste at the Site would comply with the substantive requirements of hazardous waste treatment facilities, 25 PA Code Chapter 264. Transportation and handling of hazardous waste, i.e., soil, sediment, and ash prior to stabilization, would comply with the substantive hazardous waste handling and transportation requirements of 25 PA Code Chapters 262 and 263.

Alternative 2 includes continued maintenance of the storm water control system, sedimentation and erosion controls, fencing, and ash pile covers, i.e., continued implementation of the ongoing maintenance.

Since soil is to be consolidated within a single unit or Area of Contamination, placement, as defined by RCRA (40 C.F.R. S 268.1), would not occur. Since this remedial alternative is not generating contaminated soil, the soil is not classified as a waste. Since placement of a hazardous waste is not occurring, Land Disposal Restrictions (LDRs) under RCRA are not Applicable or Relevant and Appropriate Requirements ("ARARs") relating to soil consolidation. Thus, EPA believes the hazardous waste regulations under RCRA and Pennsylvania's hazardous, municipal, or residual waste regulations are neither applicable nor relevant and appropriate requirements for soil consolidation in Alternative 2. Post excavation sampling, e.g., sampling with X-Ray Fluorescence (XRF) and confirmatory laboratory sampling, would be implemented to ensure that cleanup levels are met.

During the Remedial Action, release of particulate matter (dust) from the Site would be monitored and shall comply with applicable or relevant and appropriate regulations [Clean Air Act 109, National Ambient Air Quality Standards, regulations at 40 C.F.R. Part 50] [25 PA Code SS 123.1 et. seq. and SS 131.1 et. seq.].

EPA estimates that Alternative 2 could be fully implemented within 1 year from the date field activity is started. If all soil above 500 ppm were consolidated into a fenced area of the Site, the estimated present worth cost would increase to 2,270,531.

ALTERNATIVE 3 - SOIL/VEGETATIVE COVER

	1000 ppm	500 ppm
Estimated Capital Cost :	$ 2,903,560	
Estimated Annual O&M Cost :	$ 33,820	
Estimated O&M Present Worth Cost:	$ 348,650	
Estimated Present Worth Cost :	$ 3,302,210	$ 3,863,586
Estimated Implementation Time :	20 months	

Alternative 3 includes the elements of Alternative 2, including common actions, and a soil cover to prevent direct contact with contaminated soil and ash. The soil cover would be at least 3 feet thick and include a topsoil layer to promote growth of a stabilizing vegetative layer. Alternative 3 also includes some grading to establish suitable slopes for cover placement and consolidation of additional soil located on steep slopes into areas of the Site with gentler slopes. In addition, soil would be removed from existing paved areas and a new pavement cover emplaced, as needed. The soil cover would be placed over all soil with lead levels exceeding 1000 ppm. The cover would include storm water control features to protect the integrity of the cover and minimize erosion. Alternative 3 includes a ground water monitoring program, consistent with Pennsylvania's waste management regulations.

Since soil is to be consolidated within a single unit, placement, as defined by RCRA (40 C.F.R. S 268.1), would not occur. Since this remedial alternative is not generating contaminated soil, the soil is not classified as a waste. Since placement of a waste is not occurring, Land Disposal Restrictions (LDRs) under RCRA are not ARARs for soil consolidation activities. Thus, EPA believes the hazardous waste regulations under RCRA and Pennsylvania's hazardous or residual waste regulations are not applicable or relevant and appropriate to consolidation and covering of soil in Alternative 3.

The continued maintenance of ash pile covers would no longer be necessary under Alternative 3. Instead, the soil/vegetative cover would be maintained.

EPA estimates that Alternative 3 could be fully implemented within 20 months from the date field activity is started. If all soil above 500 ppm were addressed in Alternative 3, the estimated present worth cost would increase to $3,863,586.

ALTERNATIVE 4 - RCRA COVER

	1000 ppm	500 ppm
Estimated Capital Cost :	$ 3,465,460	
Estimated Annual O&M Cost :	$ 33,820	
Estimated O&M Present Worth Cost:	$ 398,650	
Estimated Present Worth Cost :	$ 3,919,220	$ 4,830,138
Estimated Implementation Time :	22 months	

Alternative 4 includes all aspects of Alternative 3 although a drainage layer and a low permeability liner shall be installed within the soil cover. The drainage layer will minimize the amount of water infiltrating through the underlying contaminated soil and the liner further ensures that infiltration into the underlying soil is minimized. The multilayer cap in Alternative 4 complies with cover requirements of RCRA [25 PA Code S 264.310], although compliance is neither an applicable nor relevant and appropriate requirement. Since soil is to be consolidated within a single unit, placement, as defined by RCRA, would not occur. Since the Remedial Action is not generating contaminated soil, the soil is not classified as a waste. Since placement of a hazardous waste does not occur in Alternative 4, the Land Disposal Restrictions of RCRA are not applicable [40 C.F.R. S 268]

The continued maintenance of the ash pile covers would no longer be necessary under Alternative 4. Instead, the RCRA cover would be periodically maintained.

EPA estimates that Alternative 4 could be fully implemented within 22 months from the date field activity is started. If all soil above 500 ppm lead were addressed in Alternative 4, the estimated present worth cost of the remedy would increase to $4,830,138.

ALTERNATIVE 5 - STABILIZATION AND OFF-SITE DISPOSAL

	1000 ppm	500 ppm
Estimated Capital Cost :	$ 8,645,275	
Estimated Annual O&M Cost :	$ 25,390	
Estimated O&M Present Worth Cost:	$ 299,290	
Estimated Present Worth Cost :	$ 8,944,565	$ 11,985,717
Estimated Implementation Time :	18 months	

Alternative 5 includes all common actions and elements described in Alternative 2 including excavation of soil and sediment as described in Alternative 2. In addition, Alternative 5 includes excavation of all soil with lead above 1000 ppm and all ash located at the Site. Approximately 20,565 cubic yards of excavated soil, sediment and ash would be stabilized, e.g., mixed with portland cement and water, to remove any hazardous characteristic and transported offSite to a permitted non-hazardous disposal facility. The ash will either be stabilized and disposed at a non-hazardous facility, or transported to a hazardous waste facility for treatment, as needed, and disposal. With the addition of stabilizing mixture, over 22,600 cubic yards of stabilized soil, sediment and ash would be removed from the Site. A cleanup level of 500 ppm increases the amount of soil, sediment, and ash to be stabilized to approximately 28,362 cubic yards and the amount requiring disposal to approximately 31,000 cubic yards. Stabilization removes the hazardous characteristic of toxicity from the ash, soil, and sediment to be disposed and meets the treatment requirements of RCRA Land Disposal Restrictions [40 C.F.R. S 268]. Stabilization would meet the general handling, treatment, and transportation requirements of 25 PA Code Chapters 262, 263 and 264.

The Site would be closed and monitored considering monitoring requirements of Pennsylvania's residual waste regulations (25 PA Code S 288.152)

EPA estimates that Alternative 5 could be fully implemented within1 and one half years from the date field activity is started.

If all soil above 500 ppm were disposed off-Site, the estimated present worth cost of Alternative 5 will increase to $11,985,717.

ALTERNATIVE 6 - STABILIZATION AND ON-SITE DISPOSAL

	1000 ppm	500 ppm
Estimated Capital Cost :	$ 5,258,185	
Estimated Annual O&M Cost :	$ 38,020	
Estimated O&M Present Worth Cost:	$ 444,160	
Estimated Present Worth Cost :	$ 5,706,345	$ 7,361,185
Estimated Implementation Time :	18 months	

Alternative 6 includes all the common actions and excavation and stabilization of approximately 20,565 cubic yards of soil and sediment with lead above 1000 ppm and ash discussed within Alternative 5 with the exceptions discussed herein. The excavated and stabilized soil and sediment would be disposed into a containment cell constructed on-Site. The Feasibility Study provided an evaluation of two possible locations; the on-Site depression known as the "shale pit" and the northeast corner of the Site. Prior to disposal an impermeable liner system would be constructed in the base of the containment cell. After all the material is placed within the containment cell, including over 22,600 cubic yards of stabilized soil, sediment, and ash as well as any non-degradable rubble from dismantling of any on-Site building, a multilayer cover would be placed on top. According to the Feasibility Study, the liner and cover would be designed in accordance with the RCRA standards [25 PA Code S 264.310] although these requirements are neither applicable nor both relevant and appropriate, since the stabilized material is not hazardous. The residual waste regulations of PADER are relevant and appropriate for disposal. Thus, the on Site containment cell would meet siting and design standards of Pennsylvania's residual waste management regulations (25 PA Code SS 287 and 288). Stabilization removes the hazardous characteristic of toxicity from the material to be disposed and meets the treatment requirements of RCRA Land Disposal Restrictions [40 C.F.R. S 268]. A cleanup level of 500 ppm increases the amount of soil, sediment, and ash to be stabilized to approximately 28,362 cubic yards and the amount requiring disposal to approximately 31,000 cubic yards.

The maintenance of ash pile covers under Alternative 6 is no longer necessary. Maintenance of the on-Site disposal cell and associated features is included. The O&M period is cost estimated for 30 years.

EPA estimates that Alternative 6 could be fully implemented within 1 and one half years from the date field activity is started. If all soil above 500 ppm were disposed off-Site, the estimated present worth cost of Alternative 6 will increase to $7,361,345.

VIII. Comparative Evaluation of Alternatives

As required in the NCP [40 C.F.R. S 300.430(e)(9)(iii)], each of the alternatives is evaluated against nine remedy evaluation criteria. The comparative evaluation of alternatives enables EPA to select the option which most appropriately meets the remedial objectives. The nine evaluation criteria are defined as follows:

A) THRESHOLD CRITERIA [relates to statutory requirements that each alternative must satisfy in order to be eligible for selection]

1) Overall Protection of Human Health and the Environment: whether each alternative provides adequate protection of human health and the environment in the long and short term and describes how risks posed through each exposure pathway are eliminated, reduced or controlled through treatment, engineering controls, or institutional controls.

2) Compliance with ARARs: whether each alternative will meet all of the Applicable or Relevant and Appropriate Requirements (ARARs) of Federal and State environmental laws and/or provides a basis for invoking a waiver; whether a remedy complies with advisories, criteria and guidance that EPA and PADER have agreed to follow.

B) PRIMARY BALANCING CRITERIA [technical criteria upon which the detailed analysis is primarily based]

3) Long-term Effectiveness and Permanence: refers to expected residual risk and the ability of a remedy to maintain reliable protection of human health and the environment over time, once clean-up goals have been met. This criterion includes consideration of residual risk and the adequacy and reliability of controls.

4) Reduction of Toxicity, Mobility, or Volume through Treatment: addresses the statutory preference for selecting remedial actions that employ treatment technologies that permanently and significantly reduce the toxicity, mobility or volume of hazardous substances.

5) Short-term Effectiveness: relates to adverse impacts on human health and the environment that may be

posed during the construction and implementation period, until clean-up levels are achieved.

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

7) Cost: estimated capital, operation & maintenance (O&M), and net present worth costs.

C) MODIFYING CRITERIA [criteria considered throughout the development of the preferred alternative and formally assessed after the public comment period which may modify the preferred alternative]

8) State/Support Agency Acceptance: whether the state concurs with, opposes, or has no comment regarding the RI/FS and the preferred alternative.

9) Community Acceptance: the public's general response to the alternatives which will be assessed in the Record of Decision following a review of the public comments received on the administrative record and the proposed plan.

Each alternative considered was compared and evaluated against each of the nine evaluation criteria in this section of the ROD.

EPA's comparative evaluation of remedial alternatives in the Feasibility Study and this ROD was completed with consideration of several modifications to some of the common actions described in the Feasibility Study. EPA's modified common actions are described in this section of the ROD.

Overall Protection of Human Health and the Environment

Each alternative, except Alternative 1, is protective of human health and the environment by eliminating, reducing, or controlling risk through treatment of soil, sediment, and ash, engineering controls, and or institutional controls. Since Alternative 1 does not eliminate, reduce, or control some of the exposure pathways, it is not protective of human health and the environment. Therefore, Alternative 1 will no longer be considered as a remedial alternative.

Institutional controls, e.g., access restrictions specified in Alternatives 2, 3, 4, 5, and 6, minimize direct contact with contaminated media posing a potentially unacceptable health risk. Engineering controls such as consolidation (Alternative 2) reduce the chance for exposure to the contaminated soil, ash, and sediment. Implementation of multiple engineering controls such as a combination of consolidation and on-Site containment (Alternatives 3, 4, and 6) or a combination of consolidation and disposal into an offSite landfill (Alternative 5), eliminates exposure to contaminated soil, ash, and sediment. Thus, accidental ingestion and inhalation of the contaminated soil, ash, and sediment is minimized or prevented.

Treatment of contaminated soil, ash, and sediment (Alternatives 5 and 6), combined with engineering controls and institutional controls, provides a higher degree of protection since the toxicity and mobility of the contaminants is significantly reduced. Thus, Alternatives 5 and 6 provide the highest degree of protection of human health and the environment.

Each alternative provides different degrees of protection of human health. Since the contaminated soil will not be covered in Alternative 2, Alternative 2 provides the lowest degree of protection of human health. Trespassers will contact the contaminated soil. Alternatives 3 and 4 provide an increased degree of protection since the contaminated soil will be covered. Alternatives 5 and 6 provide the highest degree of protection of human health since the toxicity and mobility of the contaminants is reduced. Alternative 5 includes stabilization of the soil and sediment and transportation of the soil, ash, and sediment to an off-Site disposal facility. In Alternative 5, the ash will either be stabilized and disposed at a non-hazardous facility, or transported to a hazardous waste facility for treatment, as needed, and disposal. Alternative 6 includes stabilization and on-Site disposal of the soil, ash, and sediment.

Each alternative provides different degrees of protection of the environment. However, off-Site migration of contaminated particulate matter suspended in surface water runoff is probable under Alternative 2 (Alternative 2 relies upon maintenance of existing silt fencing to prevent off-Site migration).

Additionally, Alternative 2 may not provide sufficient protection of ground water in the future although no ground water impact is evident or reasonably foreseeable. Alternatives 3, 4, 5, and 6 significantly reduce or eliminate potential environmental impacts by preventing migration of contaminated material from the Site. EPA Common Actions #6, 7, 8, and 9 also provide for assurance that the selected remedial alternative will not result in environmental damage.

Compliance with ARARs

Alternatives 2, 3, 4, 5, and 6 comply with applicable or relevant and appropriate federal environmental regulations.

Long-term Effectiveness and Permanence

Stabilization significantly reduces the threat posed by the contaminated material by reducing the mobility of the contaminants. A treatability study performed in 1990 demonstrated that stabilization effectively reduced the mobility of the contaminants in the affected media.

Stabilization of sediment is included in Alternatives 2 through 6. Stabilization of sediment and soil above 500 ppm and ash is included in Alternatives 5 and 6. Alternatives 5 and 6 provide the greatest reduction of the overall risk posed by residual contamination since soil, ash, and sediment would be stabilized. Stabilization is a proven technology. Although little data exist to demonstrate the effectiveness of stabilization over decades, existing experience indicates that stabilized material would remain immobile given proper maintenance.

The reliability of covers and liners, assuming proper design, construction and adequate maintenance, and the relatively homogenous nature of the stabilized waste ensures that Alternatives 3, 4, and 6 are effective over the long term. However, there is no liner in Alternative 3 and no bottom liner in Alternative 4. An off-Site disposal facility (Alternative 5) should have a liner both above and beneath the waste to be as effective as the on-Site containment cell (Alternative 6), although this is not a liner requirement of all non-hazardous waste landfills. The liners above and beneath the waste in the onSite containment cell (Alternative 6) best minimizes infiltration through the contaminated material. Construction of a proper liner system is ensured in Alternative 6.

The reliability of Alternative 5 is similar to Alternative 6provided that the operator of the off-Site disposal facility properly maintains the facility, separates wastes by type to ensure that co-disposal of stabilized soil, sediment, and ash with waste which may affect the stabilized material does not occur, and the integrity of the stabilized material is not compromised prior to final capping of the facility. In Alternative 6, the disposal cell would contain similar wastes and would be immediately capped. Additionally, the off-Site landfill utilized in Alternative 5 would need to be constructed in a similar manner as the containment cell in Alternative 6 to be equally or more effective over the long term.

Alternative 2 cannot reliably prevent exposure to contaminated materials. The RCRA cover in Alternative 4 and soil cover in Alternative 3, in addition to the institutional controls specified in each alternative, would adequately prevent direct contact with the contaminated material. Since the material would remain untreated, continued maintenance of the these covers is critical to prevent future exposure. The absence of a liner beneath the contaminated material in Alternative 4 and the lack of a bottom liner and low permeability layer in the cap in Alternative 3, provide less future protection of ground water from untreated contaminants than Alternatives 5 and 6. However, no ground water impact is evident or reasonably foreseeable.

Reduction of Toxicity, Mobility and Volume through Treatment

Alternatives 2, 3, and 4 do not reduce the toxicity, mobility, or volume of hazardous substances via treatment, although Alternatives 3 and 4 utilize containment technologies to reduce the contaminant mobility.

The primary contaminants of concern at the Site are metallic elements which cannot be destroyed. However, stabilization of the contaminated material effectively immobilizes the metals within the stabilized soil structure thereby reducing the mobility of the contaminants. Stabilization is also an effective means of immobilizing low level organic contamination. However, stabilization results in an increase in the volume of material to be addressed in any remedial alternative. Stabilization will also reduce the toxicity of the contaminants as demonstrated by EP Toxicity and TCLP testing. The Stabilization Treatability Study indicates that this technology is effective at reducing the mobility of the contaminants.

Alternatives 5 and 6 each include stabilization of approximately 28,362 cubic yards of contaminated soil, sediment, and ash. Once stabilized, the results of Toxicity Characteristic Leaching Procedure testing performed during a treatability study indicate that contaminants of concern do not leach from the stabilized soil at levels of concern. Additional testing during implementation of Alternatives 5 and 6 would ensure that contaminants of concern do not leach above regulatory levels. Although reversible, it is not expected that conditions promoting destabilization would occur once the stabilized material is disposed, especially in Alternative 6 where potential co-disposal with potentially harmful waste is easily prevented. Although some elements within the contaminated soil, sediment, and ash have economic value, e.g., copper and lead, recycling of the material is not a feasible alternative.

Short-term Effectiveness

Each alternative, except Alternative 1, involves earth moving activity which would result in generation of dust. Thus, dust control measures must be implemented and air monitoring may need to be performed to reduce the chance of off-Site migration of contaminants above ambient air quality standards. Personnel protective apparatus to prevent exposure via inhalation of contaminants is available and reliable. Alternatives 5 and 6 would result in the greatest levels of potentially contaminated dust generated due to the stabilization procedure, although off-Site contaminated emissions are not expected with implementation of reliable dust abatement measures.

The only alternative which may cause additional short term impacts during implementation is Alternative 5. Over 2000 trucks of stabilized soil, sediment, and ash would leave the Site and travel to a disposal facility thereby increasing the chance of accident and subsequent contact with stabilized material. In addition, the large number of heavy trucks traveling on the highway during implementation of the off-Site disposal alternative (Alternative 5) would generate a significantly higher level of air pollutants than on-Site disposal (Alternative 6).

Each Alternative, except Alternative 1, may result in temporary impact to Mill Hopper Creek as the creek is diverted to facilitate remediation of the pond and the creek itself. However, Mill Hopper Creek periodically dries up, thus significantly reducing potential impacts to flowing stream segments and minimizing disturbance of aquatic communities in the creek bed providing activity is scheduled to occur while the Creek is dry. After remediation of the creek and pond is complete, a significantly more improved substrate will exist to promote a healthier environment in the pond and creek.

Implementability

The Stabilization Treatability Study results indicate that this technology would be effective and implementable at the C&D Recycling Site.

Each alternative is implementable and utilizes readily available and reliable technologies. Stabilization (Alternatives 5 and 6) requires use of crushing machinery, but can be implemented without difficulty based upon the results of the stabilization treatability study. Alternatives 3, 4, 5, and 6 include some off-Site actions which would require administrative coordination.

Alternative 5 relies heavily upon administrative coordination to provide a level of protection equivalent to Alternative 6, i.e., coordination is necessary to ensure disposal into a facility with appropriate liners, to prevent co-disposal of waste, and to ensure prompt construction of the protective cap. Alternative 6 includes construction of a complex containment cell requiring significant technical design and review prior to implementation.

Off-Site disposal of dioxin-contaminated ash in Alternative 5 may not be easily implementable. Currently, EPA has no knowledge of a permittedoperational dioxin treatment facility. Capacity at long-term dioxin waste storage facilities is limited and potentially unavailable. However, EPA believes that the stabilized ash can be disposed in a RCRA Subtitle D facility.

Cost

Considering a soil cleanup level of 1000 ppm, the costs of Alternatives 2, 3, and 4 range from an estimated $ 2.2 to $ 3.9 million; the estimated cost of Alternative 6 is $ 5.7 million; and, the estimated cost of Alternative 5 is $ 8.9 million. The estimated capital cost, annual operation and maintenance costs and present worth costs for each alternative are depicted in TABLE 17.

TABLE 17 includes costs based upon a cleanup level of 1000 ppm lead in the soil as discussed in the Feasibility Study. EPA evaluated excavation of all soil contaminated with lead above 500 ppm. Excavation and disposition of additional soil results in additional costs. The estimated additional costs associated with excavation of soil contaminated above 500 ppm lead are depicted in TABLE 18.

Thus, considering a cleanup level of 500 ppm, the present worth costs for the Remedial Alternatives are depicted in TABLE 19 as follows:

State Acceptance

The Commonwealth of Pennsylvania Department of Environmental Resources has not indicated whether it concurs with EPA's selection of Alternative 5.

Community Acceptance

A public comment period was held from April 24, 1992 to June 25, 1992. A public meeting was also conducted on May 8, 1992. The public expressed a great deal of dissatisfaction with EPA's preference for Alternative 6.

The Concerned Citizens of Foster Township Task Force (CCFTTF) received a Technical Assistance Grant (TAG) in 1989. The CCFTTF and the TAG advisors are opposed to on-Site disposal of stabilized waste, a 500 ppm cleanup level, and decontamination of buildings. CCFTTF and the TAG advisors advocate off-Site disposal, a cleanup level less than 200 ppm, demolition of on-Site buildings, and compliance with all Foster Township zoning ordinances. CCFTTF, TAG advisors, and community members request additional sampling and more comprehensive testing of soil at the Site and neighboring land. CCFTTF also requests that the remedy address ground water.

Several local, State, and Federal elected officials have supported the requests of the CCFTTF, TAG advisors and local residents.

Based upon the public comments, EPA believes that the community agrees with off-Site disposal of the stabilized material as selected in this ROD.
EPA has responded to each of the public comments in the Responsiveness Summary appended to this ROD (APPENDIX A). EPA believes that this ROD addresses and includes technically important comments relating to the remedial alternatives evaluated in this ROD.

IX. THE SELECTED REMEDY

EPA received numerous comments during the public comment period. After consideration of the public comments and an analysis of all of the proposed remedial alternatives, utilizing the nine criteria listed in 40C.F.R 300.430(e)(9)(iii), EPA has determined that Alternative 5 is the most appropriate remedy for the C&D Recycling Site.

Specifically, the selected remedy for the C&D Recycling Site includes:

1 - Confirmation, e.g., via sampling, of the areal limits of soil and sediment with lead contamination above 500 parts per million (ppm)(including soil beneath buildings and concrete slabs constructed after 1963 as well as pavement and sediment in Mill Hopper Creek and wetlands);

2 - Conduct of a Phase 1B archeological survey in areas possessing high ormoderate archeological sensitivity potentially impacted by the Remedial Action;

3 - Removal and off-Site disposal and/or recycling of casing and wire;

4 - Excavation of all soil with lead contamination above 500 ppm resulting from Site operations (excluding soil beneath buildings and concrete slabs constructed after 1963, or pavement, which shall otherwise be maintained to prevent migration of contamination from the Site);

5 - Excavation of sediment from the banks of Mill Hopper Pond with lead levels greater than 500 ppm and excavation of the top two feet of sediment (or an amount sufficient to secure a new substrate) from the pond bottom to ensure that pond water quality is not impacted.

6 - Removal of sediment within Mill Hopper Creek contaminated with lead above 500 ppm;

7 - Removal and sampling of all sediment located within the storm water sewer system located at the Site and evaluation of the system's integrity (including drainage ditches) to determine the potential for releases of hazardous substances from the Site into the soil and ground water and any necessary response actions;

8 - Excavation of all ash located at the Site;

9 - Post excavation/removal sampling to confirm that ash, soil, and sediment cleanup levels are met;

10 - On-Site stabilization of the contaminated soil and sediment, excavated and removed as described above, to remove any characteristic of hazardous waste;

11 - On-Site stabilization of the contaminated ash, excavated as described above to remove any characteristic of hazardous waste;

12 - Off-Site disposal of stabilized soil, sediment, and ash into a non-hazardous (RCRA Subtitle D) waste disposal facility;

13 - Decontamination of Site buildings with lead levels above 500 ppm, including dismantling of non-structural components and removal of equipment and debris which may inhibit decontamination to required levels, or demolition of buildings that can not be cleaned to 500 ppm lead;

14 - Dismantling of the old furnace (and other structures, as necessary, which inhibit soil or sediment remediation and which shall not be maintained, as necessary, to prevent migration of contaminants from the

Site);

15 - Off-Site disposal of material generated from dismantling of Site buildings into a non-hazardous (Subtitle D) waste disposal facility (or decontamination and recycling of dismantled material);

16 - Performance of biota toxicity tests on remaining soil/sediment to ensure that remediated soil (i.e., soil with lead levels no higher than 500 ppm) does not pose a threat to the environment (procedures to be determined during remedial design);

17 - Site grading, revegetation, and related work, to ensure that Site topography and drainageways adequately convey water from the Site and that soil excavation does not result in low lying areas;

18 - Air monitoring during on-Site activity and implementation of dust control or other necessary abatement actions to prevent migration of contaminants to the surrounding community during the Remedial Action;

19 - Abandoning wells which serve no useful long-term purpose;

20 - Periodic monitoring of ground water and surface water; and

21 - If the soil beneath buildings and concrete slabs constructed after 1963, or pavement is greater than 500 ppm and these structures are not demolished institutional controls, e.g., deed restrictions to prevent residential use potentially affecting the protectiveness of the remedy, and to ensure that Site contaminants which may remain beneath buildings and pavement are known.

EPA has selected off-Site disposal of stabilized soil, sediment, and ash. Within 180 days of issuance of this ROD, EPA may modify its selection of Alternative 5, pending a demonstration that the on-Site containment cell (Alternative 6), can provide an equally or more protective remedy which is cost effective and complies with all ARARs. If EPA preliminarily determines that an on-Site remedy is equally or more protective than the remedy selected in this ROD and that an on-Site remedy is cost effective and complies with all ARARs, EPA will solicit public comment before making a decision to modify the remedy.

Including excavation of all soil contaminated with lead above 500 ppm, the estimated present worth cost of Alternative 5 rises to $11,985,717. Thus, the estimated present worth cost of EPA's modification of Alternative 5, i.e., the selected remedial alternative, is $11,985,717 plus costs of addressing debris, equipment in buildings, well abandonment, stream sampling, and removal of cable from adjacent properties which are common to all alternatives evaluated by EPA. The estimated costs associated with the selected remedy are detailed in APPENDIX E.

Performance Standards

Performance standards applicable to the selected remedy are:

1. The Phase 1B Archeological Survey shall comply with Guidelines on Archaeology and Historic Preservation, 48 Fed. Reg. 44716-42 (September 29, 1983), 36 C.F.R. Parts 65 and 800.

2. Site activity shall not cause exceedance of Pennsylvania Water Quality Standards in Mill Hopper Creek, 25 PA Code SS 93.3 through 93.8, or exceedance of background water quality in Mill Hopper Creek should background quality exceed Pennsylvania Water Quality Standards, 25 PA Code SS 93.5 and water quality criteria for toxic substances of 25 PA Code Chapter 16. However, compliance with Chapter 16 regulations will consider the ambient background water quality of Mill Hopper Creek and Mill Hopper Pond.

3. The stabilization process and/or earth moving shall not generate dust exceeding National Ambient Air Quality Standards within 100 feet of the Area of Contamination [Clean Air Act 109, National Primary and Secondary Ambient Air Quality Standards for lead, 40 C.F.R. S 50.12, and particulate matter, 40 C.F.R. 50.6 and 40 C.F.R. Part 52 Subpart NN] [Pennsylvania's Air Pollution Control Act, 25 PA Code SS 123.1 et. seq. and 131.1 et. seq.]. Dust suppression methods, e.g., wind screens, water spray, or chemical agents, shall be utilized to minimize dust. Air monitoring shall be performed in accordance with 40 C.F.R. Part 50 Appendix G [25 PA Code SS 123.1 et. seq. and 131.1 et. seq.].

4. Excavation and consolidation of the soil, sediment and ash shall comply with the Pennsylvania Erosion Control Regulations, 25 PA Code S 102.1 et. seq., Pennsylvania's Air Pollution Control Act, 25 PA Code SS 123.1 et. seq. and 131.1 et. seq.

5. Diversion of Mill Hopper Creek during implementation of selected remedy shall comply with Pennsylvania Dam Safety and Waterway Management Regulations, 25 PA Code S 105.1 et. seq. 6. Disposal of hazardous waste debris generated from the decontamination, dismantling and/or demolition of Site buildings, the old furnace and any other structures, shall comply with the Land Disposal Restriction requirements of 40 C.F.R. Part 268.

7. The stabilized soil, sediment, and ash shall be analyzed using the Toxic Characteristic Leaching Procedure. No sample of leachate from tested stabilized material shall exceed the levels specified in TABLE 20.

8. Cleanup levels for contaminants of concern in soil and sediment (TABLE 20) shall not be exceeded in any soil or sediment sample, excluding areas not impacted by the Site, remaining after Sit remediation.

Compliance Points

The point of compliance for soil and sediment shall be determined during the remedial design to consist of a representative sampling of the soil and sediment areas from which contaminated material was removed. For example, to ensure that soil lead levels do not exceed 500 ppm, a representative number of samples will be collected and analyzed for lead.

The point of compliance for building dust shall be determined during remedial design and shall consist of sampling from representative surface area within the remediated buildings.

During remediation of sediment and soil in the vicinity of Mill Hopper Creek and pond, Pennsylvania Water Quality Standards shall be maintained in downstream Mill Hopper Creek. The point of compliance shall be in flowing water of Mill Hopper Creek downstream of the Site.

During stabilization and earth-moving activities, the air shall be monitored. The National Ambient Air Quality Standards shall not be exceeded within 100 feet of the Site boundary which shall be the point of air compliance.

X. Statutory Determinations

The selected remedy which was outlined in Section IX satisfies the remedy selection requirements of Section 121 of CERCLA (42 U.S.C. Section 9621) and the NCP (40 C.F.R. Section 300.430(e)). The remedy provides protection of human health and the environment, achieves compliance with ARARs, utilizes permanent solutions to the maximum extent practicable, contains treatment as a principal element, and is cost effective.

A. Protection of Human Health and the Environment

The selected remedy is protective of human health and the environment. Engineering, treatment and institutional controls are utilized to protect public health and the environment. Excavation of soil and sediment with lead levels above 500 ppm would encompass the area of soil, sediment, and ash contaminated with Site-related constituents and compounds at levels of concern and is the level necessary to be protective of human health and the environment. Excavation and subsequent treatment and disposal of this material would eliminate potential exposure to the hazardous substances released from the Site. Decontamination, dismantling and/or demolition of Site buildings with lead levels above 500 ppm, the old furnace, and other structures, is necessary to protect human health and the environment. The residual level of excess cancer risk is expected to be less than 1x10[-6] and the residual risk resulting from Site-related non-carcinogenic constituents and compounds will have a Hazard Index less than 1. There would be no long-term impacts on the environment although short-term impacts are necessary to effect off-Site transportation and disposal and to improve the pond and stream. No unacceptable cross-media impacts are expected to occur.

Once remediation is completed, the levels of contaminants of concern remaining in the soil and sediment exposed at the Site, i.e., less than 500 ppm lead, will be below risk levels, i.e., 1x10[-6] excess cancer risk or HI equal to 1 or blood lead level of 10 ug/dL. The amount of contaminants in the treated soil, sediment, and ash will not be reduced, but potential exposure is virtually eliminated. Thus, residual risk at the Site will be acceptable in accordance with the NCP. According to the Lead Uptake Biokinetic Model, the levels of lead remaining in the soil and sediment would not result in blood lead levels above 10 ug/dL in exposed children consistent with EPA policy.

B. Compliance with Applicable or Relevant and Appropriate Requirements (ARARs) of environmental laws

It is expected that the selected remedy will comply with all ARARs identified in this ROD. Major ARARs and other non-promulgated advisories or guidances issued by federal or state governments that are to-be-considered ("TBC") include:

1) The Pennsylvania Water Quality Standards, 25 PA Code SS 93.1 et. seq. designate the use of Mill Hopper Creek as a High Quality (HQ) stream supporting Cold Water Fishes (CWF). Several standards relating to this designation are provided. The standards are relevant and appropriate to the extent that the Site contributes concentrations of listed contaminants above ambient background levels.

2) 25 PA Code Chapter 16 establishes limits for concentrations of Site contaminants which may enter Mill Hopper Creek to the extent that the Site causes the short- or long-term release of listed contaminants above ambient background levels.

3) Fish and Wildlife Coordination Act (16 U.S.C. 661 et. seq.) -requires action to protect fish and wildlife from actions modifying streams or areas affecting streams. This statute is relevant and appropriate to Mill Hopper Creek and Pond sediment remediation.

4) The Clean Water Act, 33 U.S.C. S 1344 and 40 C.F.R. Part 330, establishes requirements for discharge of fill material into Mill Hopper Creek and wetlands.

5) Archaeological and Historic Preservation Act, 16 U.S.C. S 469a1 and 36 C.F.R. Part 65, provides for preservation of historical and archaeological data that might otherwise be lost as a result of alterations of the terrain. The National Historical Preservation Act, 16 U.S.C. SS 470 et. seq. 36 C.F.R. Part 800 provides for the protection of places which may be eligible for listing on the National Register of Historic Places (NHRP). The Phase 1B Archeological Survey will determine if historic or cultural features at the Site exist and may be impacted by the remedy.

6) Fugitive dust emissions of lead and particulate matter generated during implementation of the selected remedy comply with National Primary and Secondary Ambient Air Quality Standards, 40 C.F.R. Part 50. These standards are applicable requirements. EPA expects that the Remedial Action will not be a "major" source of emissions, i.e., greater than 250 tons/year. Measures shall be taken to prevent fugitive emissions. The Commonwealth of Pennsylvania implements regulation of air quality pursuant to Sections 107 and 110(a)(2) of the Clean Air Act. Fugitive dust emissions generated during remedial activities will comply with regulations in the Commonwealth of Pennsylvania, 40 C.F.R. Part 52, Subpart NN.

7) Pennsylvania's Air Pollution Control Act, 25 PA Code SS 123.1 et. seq. and 131.1 et. seq., limit fugitive emissions from the Site and establishes standards for particulate matter and lead.

8) Treatment, i.e., stabilization of contaminated sediment, soil, and ash shall comply with the regulations in 25 PA Code 264, Subchapters A-E, Subchapter I, and Subchapter J.

9) The diversion of Mill Hopper Creek during implementation shall comply with the Pennsylvania Bureau of Dam Safety and Waterways EncroachmentsAct of 1978, P.L. 1375, as amended, 32 P.S. 693.1 et. seq. and the Pennsylvania Dam Safety and Waterway Management Regulations, 25 PA Code S 105.1 et. seq.

10) Any storage and/or transportation of hazardous wastes from the Site shall be performed in accordance with 25 PA Code Chapters 262 and 263.

11) Consolidation or excavation of soil would comply with erosion control requirements of Pennsylvania's Erosion Control Regulations, 25 PA Code S 102.1 et. seq.

12) To the extent that material must be excavated or mined to replace soil removed from the Site, the borrow activity would consider the requirements of the Pennsylvania Bureau of Mining and Reclamation, 25 PA Code S 77.1 et. seq.

13) Potential discharges of water during remedial activity in Mill Hopper Creek and Pond shall comply with the Pennsylvania's Water Quality Standards, 25 PA Code SS 93.1 et. seq. The selected remedy shall not impair the ability of the stream to maintain or propagate cold water habitat fishes pursuant to 25 PA Code 93.3 through 93.8, considering the ambient background water quality of Mill Hopper Creek and pond pursuant to 25 PA Code SS 93.5.

14) Potential discharges of water during remedial activity in Mill Hopper Creek and Pond shall comply with the water quality criteria for toxic substances of 25 PA Code Chapter 16, considering the ambient background water quality of Mill Hopper Creek and Pond.

15) The selected remedy shall include ground water monitoring pursuant to substantive requirements of 25 PA Code SS 288.251 through 288.258.

16) Any on-Site discharge of water generated from the stabilization or decontamination activities shall comply with the substantive requirements of the Clean Water Act NPDES regulations, 40 C.F.R. SS 122.41-122.50, Pennsylvania NPDES regulations, 25 PA Code SS 92.31, and the Pennsylvania Wastewater Treatment Regulations, 25 PA Code SS 93.1-93.9.

17) The Occupational Health and Safety Act (OSHA), 29 C.F.R. Parts 1904, 1910, and 1926, provides occupational safety and health requirements for workers involved in field construction or operation and maintenance activities.

TBC

1) EPA OSWER Directive #9355.4-02 -- Recommends a soil cleanup of 500 to 1000 ppm for soil in residential setting.

2) Executive Order 11593 "Protection of and Enhancement of the Cultural Environment" -- Requires that historic and cultural properties are not substantially altered. The results of the Phase B Archeological Survey will ensure that potentially significant cultural resources are not substantially altered or destroyed.

3) DOI Criteria for Inclusion in the National Register of Historic Places (36 C.F.R. S 60.4) -- The Phase 1B Archeological Survey will identify if cultural or historic resources at the Site exist and will recommend additional study, as needed, to determined if these resources are eligible for inclusion on the National Register of Historic Places.

4) Rivers and Harbors Act (33 U.S.C. 403) -- applies to dredging from navigable waters. Removal of contaminated sediment from Mill Hopper Creek shall consider the requirements of the River and Harbors Act.

5) Determinations about the effectiveness of soil remediation at the Site will be based on EPA 230/02-89-042, Methods for Evaluating Cleanup Standards, Vol. I: Soils and Soil Media.

6) Section 121(d)(3) of CERCLA, 42 U.S.C. S 9621(d)(3) and EPA OSWER Directive # 9330.2-07 ("Off-Site Policy") concerning the off-Site disposal of hazardous substances from Superfund Sites.

7) Abandoning wells shall be completed in accordance with minimumrequirements of 25 PA Code 109.602(c) and consistent with PADER's Public Water Supply Manual, Part II, Section 3.3.5.11.

C. Cost Effectiveness

The selected remedy is cost effective. The estimated present worth cost of the selected remedy is $11,985,717 plus the costs of toxicity testing, well abandonment, stream monitoring and Phase 1B Archeological Survey (common to all alternatives except Alternative 1). The elements in the soil, sediment, and ash can not be destroyed. Off-Site disposal does not provide a reduction in risk beyond that provided by Alternative 5, but rather transfers minimal risk to a new location for an additional cost of approximately $ 4.6 million. EPA believes that the selected remedy will eliminate the risks to human health and the environment at the Site, therefore the selected remedy provides an overall benefit proportionate to its costs such that it represents a reasonable value for the money that will be spent.

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

EPA has determined that the selected remedy represents the maximum extent to which permanent solutions and treatment technologies can be utilized in a cost effective manner to control contamination at the Site. Of those alternatives evaluated that are protective of human health and the environment and meet ARARs, the selected remedy provides the best balance with regard to long-term and short-term effectiveness and permanence, cost, implementability, reduction in toxicity, mobility, or volume through treatment, also considering the statutory preference for treatment as a principal element and considering State and community acceptance.

The selected remedy utilizes permanent solutions to the maximum extent practicable. The elements contaminating the soil, sediment, and ash can not be destroyed to totally eliminate the potential risk posed. However, stabilization of the soil, sediment, and ash eliminates the risk associated with ingestion. Stabilization permanently reduces mobility of the contaminants and the toxicity of the contaminants as demonstrated by the TCLP testing. The remedy also relies on containment and long-term management of the treated material.

E. Preference for Treatment as a Principal Element

By stabilizing the soil, sediment, and ash, the selected remedy satisfies the statutory preference for treatment as a principal element. The selected remedy addresses the principal threat posed by the Site through the use of treatment technologies.

XI. Documentation of Significant Differences

This section of the ROD discusses the changes made to the preferred remedy. In certain instances, this section simply clarifies intended components of the preferred remedy described in the Proposed Plan.

The Proposed Plan, released for public comment on April 24, 1992, identified Alternative 6 as EPA's preferred alternative. EPA, in consultation with PADER, decided to select a remedy that requires off-Site disposal of the stabilized soil, sediment, and ash (Alternative 5) rather than disposal into an on-Site containment cell (Alternative 6).

During the public comment period, EPA was able to evaluate the two modifying criteria, state and public acceptance. The comments reviewed from the community in which the Site is located were strongly in favor of off-Site disposal of the stabilized material. The Commonwealth of Pennsylvania has stated that it cannot concur with the construction of an on-Site containment cell until more information concerning the design of the on-Site containment cell is available to ensure compliance with Pennsylvania's residual waste management regulations, although no current information prevented the location of acontainment cell at the Site. EPA believes that Alternative 6 (on-Site containment cell), if implemented in accordance with State ARARs, will satisfy the requirements of Section 121 of CERCLA, 42 U.S.C. S 9621.

EPA has selected off-Site disposal of stabilized soil, sediment, and ash. Within 180 days of issuance of this ROD, the PRPs may submit to EPA information demonstrating that the on-Site containment cell (Alternative 6), can provide an equally or more protective remedy which is cost effective and complies with all ARARs. If EPA preliminarily determines that an on-Site remedy is equally or more protective than the remedy selected in this ROD and that an on-Site remedy is cost effective and complies with all ARARs,
EPA will solicit public comment before making a decision to modify the remedy.

Section VIII ("Comparative Analysis of Alternatives") of this ROD presents the full evaluation of all alternatives based upon the nine criteria identified in the NCP and provides the basis for the selection of Alternative 5.

Additional changes from the remedial alternative contained in the Proposed Plan are:

1. Dust control measures will be required. This ROD specifies a point of compliance for ambient air quality standards.

2. Post excavation sampling must confirm that all Site-related contaminants have been addressed.

3. Soil sampling shall be required under pavement and buildings constructed after 1963 (when EPA believes the Site first operated). The soil need not be excavated if the structures are maintained such that contaminants within these soils do not migrate from the Site and do not become available for exposure. As such, re-paving may be required in some areas and the deed for Tax Parcel 11 may be restricted.

4. The Phase 1B Archeological Survey shall only be conducted in areas of high or moderate archeological or historical sensitivity potentially impacted by the remedy, i.e., areas to be excavated or subject to excessive traffic.

5. The Proposed Plan incorrectly specified the contaminated soil volume. The volume of contaminated soil to be addressed is approximately 26,273 yd^3 due to a 500 ppm soil lead cleanup level. This volume of soil was considered in the evaluation of alternatives, but was mistakenly left out of the Site description.

6. EPA expects that any structure or debris inhibiting Site remediation would be dismantled.

7. Only building surfaces with lead exceeding 500 ppm shall be remediated. The building surfaces shall be cleaned such that the remaining concentrations of contaminants are consistent with the soil cleanup levels, i.e., less than 500 ppm lead.

8. Two feet of pond sediment shall be removed and then a new pond substrate shall be added. The selected remedy does not consider removal of all pond sediment above 500 ppm since exposure to pond sediment beneath the new pond bottom will be unlikely (i.e., residential exposure is unreasonable).
However, the remedy specifies a cleanup level of 500 ppm for all sediment available for exposure.

9. A fence is not necessary at the Site except to limit access to any exposed areas where hazardous substances above the cleanup levels are located.

10. Final Site grading was not included in the FS. Site grading was considered in the Proposed Plan and was comparatively evaluated in this ROD. Site grading will ensure that storm water can be properly managed at the Site and that final slopes do not promote erosion. Minor Site specific changes may be made to the remedy as a result of the remedial design and construction processes.