ORIGINAL

Fourth Five-Year Review Report
for
First Piedmont Rock Quarry (Route 719) Superfund Site
Pittsylvania County, Virginia
EPA ID No. VAD980554984

February 2015

Prepared by:
United States Environmental Protection Agency
Region III
Philadelphia, Pennsylvania

Approved by:

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U.S. EPA, Region III

2/3/2015
Date

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List of Acronyms

AOC	Administrative Order of Consent
ARARs	Applicable or Relevant and Appropriate Requirements
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CFR	Code of Federal Regulations
COCs	Constituents of Concern
CRDL	Contract Required Detection Limits
EPA	U.S. Environmental Protection Agency
ESD	Explanation of Significant Differences
FFS	Focused Feasibility Study
FS	Feasibility Study
HEUC	Human Exposure under Control
ICs	Institutional Controls
LOAEL	Lowest Observable Adverse Effect Level or Concentration
ug/L	Micrograms per Liter
MCL	Maximum Contaminant Level
ug/kg	Micrograms/Kilogram
NOAEL	No Observable Adverse Effect Level or Concentration
NCP	National Contingency Plan
NPL	National Priorities List
O&M	Operation and Maintenance
PCOR	Preliminary Close Out Report
PRP	Potentially Responsible Party
RA	Removal Action
RI	Remedial Investigation
RAO	Remedial Action Objective
RBC	Risk-based Concentration
RCRA	Resource Conservation and Recovery Act
RI	Remedial Investigation
RPM	Remedial Project Manager
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
TBC	To Be Considered
VDEQ	Virginia Department of Environmental Quality
VHWMRs	Virginia Hazardous Waste Management Regulations
VSWMRs	Virginia Solid Waste Management Regulations

Executive Summary

The remedy for the First Piedmont Rock Quarry Superfund Site (Site) located on Route 719 in Pittsylvania County, Virginia, was approved by the EPA in accordance with the Record of Decision (ROD) dated June 28, 1991. The ROD included the following:

- The excavation and off-site disposal of: 1) a carbon black soil pile, 2) a soil and debris waste pile, 3) drums and debris, and 4) soils and sediments in the northern drainage area of the Facility Site.
- The construction of a Resource Conservation and Recovery Act (RCRA) Subtitle C cap on the landfill.
- The construction of a leachate collection system and leachate storage tank system. Leachate is pump-hauled and treated at the City of Danville publicly owned treatment works (POTW).
- Washing and off-site disposal of surface debris.
- Groundwater monitoring.
- Implementation of institutional controls.

The Site achieved construction completion with the EPA's signing of the Preliminary Close Out Report on September 27, 1995.

The implemented elements of the selected remedies in the ROD for the Site currently protect human health because these elements are functioning as intended, and there are no current exposures to wastes, leachate, or to on-site groundwater.

However, zinc contaminated soils and sediments were subsequently identified in the southern drainage area of the landfill and in the soils and sediments in the floodplain or wetland area along Lawless Creek, which are in need of remediation to protect potential ecological receptors. Therefore, the remedy is not currently considered protective of the environment in the long term. Institutional Controls need to be implemented to ensure that sediments and soils in the wetland area are not disturbed through any activity and will also be required to prevent the surface cap, the leachate collection system, and the temporary tank in which the leachate is stored from being disturbed.

Based on the findings of a 2005 Five Year Review (2005 FYR) Report, a Supplemental Remedial Investigation (RI) and RI Report, dated 2006, were completed to evaluate the nature and extent of zinc contaminated soils in the uplands area near the landfill proper. On May 30, 2007, EPA signed an Explanation of Significant Differences (ESD) selecting 200.2 mg/kg or less of zinc in soil as the cleanup standard for soils and to implement the clean-up remedy.

Following the completion of the Remedial Action (RA) of zinc contaminated soils in 2008 and 2009, a RA Report, dated 2009, was prepared. The RA Report documented the extent of the removal of zinc contaminated soils south of the landfill proper, the confirmatory soil sampling test results, and the various measures taken to remediate and stabilize the area.

Subsequent to the removal of the zinc contaminated soils, a Focused Feasibility Study (FFS) Report, dated 2010, and the subsequent FFS Addendum Report, dated 2011, were completed. Based upon the FFS Reports, the EPA determined that modifications (or

amendments) to the completed remedy under the 1991 ROD, and the 2007 ESD were still necessary to remediate elevated levels of zinc found in the sediments in the southern drainage area of the landfill and in the receiving wetland area soils and sediments along Lawless Creek.

On September 23, 2014, the EPA signed the ROD Amendment for the First Piedmont Superfund Site to remediate elevated levels of zinc in the sediments in the southern drainage area and in the soils and sediments of the floodplain or wetlands along Lawless Creek.

At this time, the remedial design and work plans for the above ROD Amendment are still pending.

This is the fourth Five-Year Review Report for the First Piedmont Superfund Site. The Third Five-Year Review Report, dated February 3, 2010, was the trigger for this Five-Year Review and Review Report.

SITE IDENTIFICATION		
Site Name: First Piedmont Rock Quarry/Route 719 Superfund Site		
EPA ID: VAD980554984		
Region: 3	**State:** VA	**City/County:** Pittsylvania County

SITE STATUS	
NPL Status: Final	
Multiple OUs? Yes	**Has the site achieved construction completion?** Yes

REVIEW STATUS
Lead agency: EPA **If "Other Federal Agency" selected above, enter Agency name:** Click here to enter text.
Author name: Ronnie M. Davis
Author affiliation: EPA Region 3
Review period: May 2014 – January 2015
Date of site inspection: 1/15/15
Type of review: Policy
Review number: 4
Triggering action date: 2/3/2010
Due date *(five years after triggering action date)*: 2/3/2010

FIVE-YEAR REVIEW SUMMARY FORM (CONTINUED)

Issues/Recommendations
Issues and Recommendations Identified in the Five-Year Review:

OU(s): 1	**Issue Category: Remedy Performance**			
	Issue: The remedial action has not been fully implemented.			
	Recommendation: The Potentially Responsible Parties (PRPs) will prepare the remedial design for the selected remedy identified in the 2014 ROD Amendment.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Implementing Party**	**Oversight Party**	**Milestone Date**
No	Yes	PRP	EPA	4/30/2015

OU(s): 1	**Issue Category: Institutional Controls**			
	Issue: The institutional controls identified as an element of the selected remedy set forth in the ROD have not been implemented.			
	Recommendation: EPA will work with the PRP's to finalize language for the deed notice.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Implementing Party**	**Oversight Party**	**Milestone Date**
No	Yes	PRP	EPA	8/30/2015

OU(s): 1	**Issue Category: Monitoring**			
	Issue: Metals were detected in several monitoring wells at variable levels.			
	Recommendation: Groundwater monitoring will continue which will include speciation of chromium.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Implementing Party**	**Oversight Party**	**Milestone Date**
No	Yes	PRP	EPA	5/31/2015

OU(s): 1	Issue Category: Site Access/Security			
	Issue: A portion of the fence and several monitoring wells are damaged.			
	Recommendation: The Responsible Parties (PRPs) will repair the damaged fence and monitoring wells.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Implementing Party**	**Oversight Party**	**Milestone Date**
No	Yes	PRP	EPA	6/1/2015

Sitewide Protectiveness Statement

Protectiveness Determination:	*Addendum Due Date:*
Short-term Protective	Click here to enter date.

Protectiveness Statement:

The remedy at the Site currently protects human health in the short-term because the elements of the remedy that have already been implemented are functioning as intended. The chain link security fence around the Site restricts access and reduces the potential for exposure to Site contaminants. The RCRA cap on the landfill prevents direct contact with the waste, minimizes migration of contaminants to the groundwater, and reduces the generation of leachate. There is no evidence of erosion or breach of the RCRA cap on the landfill. The collection and off-site disposal of leachate reduce the potential for direct contact with the leachate. The Carbon Black Pile, the Waste pile, debris and drums have been removed and treated off-site which reduces the potential of direct contact with these contaminated material. However, in the long-term, the remedy is not protective of the environment because the zinc contaminated soils and sediments in the Lawless Creek Wetlands area and the Southern Drainage area have not been cleaned up. In order for the remedy to be protective in the long-term, institutional controls need to be implemented to restrict land use and to prohibit groundwater use in the vicinity of the landfill Site. Metals were detected in several monitoring wells at variable levels. Groundwater monitoring will continue. Additionally, repairs need to be made to the damaged portion of the fence and the damaged monitoring wells.

GPRA Measure Review

As part of this Five Year Review the GPRA Measures have also been reviewed. The GPRA Measures and their status are provided as follows:

Environmental Indicators

Human Health: Current Human Exposure is Under Control (HEUC)
Groundwater Migration: Groundwater Migration is Under Control (GMUC)

Sitewide RAU

The Site is not Site-Wide Ready for Anticipated Use (SWRAU).

First Piedmont Rock Quarry/Route 719 Superfund Site

Pittsylvania County, Virginia
Third Five-Year Review Report
EPA ID No.VA980554984

I. Introduction

The purpose of a five-year review is to determine whether the remedy at a site is protective of human health and the environment. The methods, findings, and conclusions of reviews are documented in Five-Year Review reports. In addition, Five-Year Review reports identify issues found during the review, if any, and identify recommendations so to address noted deficiencies found at the Site.

The U.S. Environmental Protection Agency (EPA) is preparing this Five-Year Review report pursuant to the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) §121 and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). CERCLA §121 states:

> *If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the site, the President shall review such remedial action no less often than each five years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented. In addition, if upon such review it is the judgment of the President that action is appropriate at such site in accordance with section [104] or [106], the President shall take or require such action.*

The Agency interpreted this requirement further in the NCP; 40 Code of Federal Regulations (CFR) §300.430(f)(4)(ii) states:

> *If a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure, the lead agency shall review such action no less often than every five years after the initiation of the selected remedial action.*

EPA Region 3 conducted this five-year review of the remedial actions implemented at the First Piedmont Rock Quarry (First Piedmont" or "Site) is located on Route 719 in Pittsylvania County, Virginia. This review was conducted by the EPA and VDEQ Remedial Project Managers of the Site between May 2014 and February 2015. This report documents the results of the Five-Year review.

This is the fourth Five-Year Review Report for the First Piedmont Superfund Site. The triggering action for this review is the completion of the third Five-Year Review Report, dated February 3, 2010. The five-year review is required due to the fact that hazardous substances, pollutants, or contaminants remain at the site above levels that allow for unlimited use and unrestricted exposure.

II. Site Chronology

Table 1 - Chronology of Site Events

DATE	ACTIVITY
April 1970	First Piedmont placed waste in the quarry.
June 1, 1981	Goodyear notified Fist Piedmont that they had sent hazardous waste to the quarry.
July 21, 1987	EPA placed the Site on the National Priorities List (NPL)
December 31, 1987	EPA and First Piedmont Corporation, Corning Glass Works and the Goodyear Tire and Rubber Company (the Potentially Responsible Parties or (PRPs)) signed an Administrative Order on Consent (AOC) to conduct the Remedial Investigation/Feasibility Study (RI/FS).
June 28, 1991	EPA issued A Record of Decision (ROD).
July 23, 1992	EPA and the PRPs entered into a Consent Decree for implementation of the Remedial Design/Remedial Action (RD/RA).
September 6, 1994	PRPs initiated the construction activity.
April 27, 1995	EPA and PRPs conducted the final inspection at the Site.
September 27, 1995	EPA issued the Preliminary Site Closeout Report.
September 30, 1999	First Five-Year Review Report.
December 2001	Additional Site Investigation Report First Piedmont Rock Quarry Superfund Site, Route 719, Pittsylvania County, Virginia.

December 2003	Zinc Source Investigation Report - First Piedmont Rock Quarry Superfund Site, Route 719, Pittsylvania County, Virginia.
September 2004	Draft Investigation Approach for Additional Remedial Investigation Work at the First Piedmont Rock Quarry Superfund Site, Route 719, Pittsylvania County, Virginia.
February 3, 2005	Second Five-Year Review Report.
March 2005	Additional Site Investigations Work Plan for the Lawless Creek Floodplain and former Carbon Black Disposal Area was approved by USEPA.
June 7, 2006	Request for Jurisdictional Determination (Waterway or Wetlands Area), First Piedmont Rock Quarry Superfund Site, Golder Associates, Inc.
June 14, 2006	Jurisdictional Delineation Confirmation, Waterway - Lawless Creek, First Piedmont Superfund Site – By U.S. Army Corps of Engineers, Norfolk District, Eastern Virginia Regulatory Section, Nottoway, VA 23955
May 30, 2007	EPA signed an Explanation of Significant Differences (ESD) selecting 200.2 mg/kg or less of zinc in soil as the cleanup standard for soils and remediation of the former Carbon Black Disposal Area.
December 15, 2008	Former Carbon Black Disposal Area Remedial Action activities began.
January 2, 2009	Former Carbon Black Disposal Area Remedial Action activities were completed.
May 29, 2009	PRP's submitted the Site Inspection and Spring Planting Letter Report.
July 2009	EPA completes the final inspection.
February 3, 2010	Third Five Year Review Report.

April 2010	Focused Feasibility Study Report – Remediation of Zinc Contaminated Soils and Sediments in Southern Drainage and Floodplain or Wetlands of Lawless Creek.
July 2011	Focused Feasibility Study Addendum Report – Remediation of Zinc Contaminated Soils and Sediments in Southern Drainage and Floodplain or Wetlands of Lawless Creek – Established geometric mean of the NOAEL and LOAEL, the site-specific cleanup level for zinc in soils and sediments in the wetland area as 148.6 mg/kg.
August 12, 2013	Public Notice for the Public Comment Period Initiated for Proposed ROD Amendment – Published in Danville Register & Bee
September 5, 2013	EPA's Public Meeting for Draft ROD Amendment held in Blairs, VA - Remediation of Zinc Contaminated Soils and Sediments in Southern Drainage and Floodplain or Wetlands of Lawless Creek.
September 23, 2014	EPA signed the ROD Amendment for the Remediation of Zinc Contaminated Sediments in Southern Drainage and Soils and Sediments of the Floodplain or Wetland Area of Lawless Creek.
February 2015	Fourth Five Year Review Report.

III. Background

Physical characteristics

The First Piedmont Corp. Rock Quarry Superfund Site is located along Route 719 in Pittsylvania County, Virginia near the intersection with Route 360. It is approximately six miles north of the city of Danville (see Figure 1). The Superfund Site covers approximately four acres, and is an abandoned rock quarry and is located on a topographically high ridge. The quarrying operation left a cut into the rock outcrop bounded on three sides by the quarry high walls. The fourth side of the cut is open and slopes to the west.

The former rock quarry was subsequently used as an open-dump or landfill from 1970 to 1975. The landfill operations were historically restricted, almost exclusively, to the two-acre quarry area, although First Piedmont Corporation leased the entire four acre Site. The landfill Site has been capped and closed under the Superfund Program and the landfill portion of the Site is currently under Post-Closure Care.

The access to the landfill is limited by the access road and the forested land which surrounds the property. The landfill Site has been fenced off and a fence/gate limits access to the landfill Site. The landfill part of the Site is covered with fescue grass, which is regularly mowed and maintained by the potentially responsible parties (PRPs). The non-landfill portion of the site is vegetated with fescue, other native vegetation, and trees. There are two, 20,000 gallon leachate storage tanks located onsite which contain the leachate from the landfill leachate collection system. Leachate is pump-hauled on a regular basis by the PRPs to the Danville POTW System for subsequent treatment. There have not been any changes in physical features at the Site since the last five year review in 2010.

Directly across Route 719 and south of the Site is a residential area, the Beaver Park community. The community is cross-gradient and/or up-gradient of the Site. Two of the closest homes near the Site have been condemned and no one currently lives in those homes. The closest home to the Site is approximately 150 feet from the Site. All of the homes in Beaver Park obtain residential water from either wells or springs. Approximately 455 people live within one mile of the Site; approximately 1,893 people live within a two-mile radius of the Site.

The land surface in the immediate vicinity of the Site slopes gently westward. Drainage from the landfill Site and area is towards Lawless Creek, which lies approximately 1,400 feet to the west of the Site. Lawless Creek is a tributary of Fall Creek, which is a tributary of the Dan River. The majority of the land use in the immediate vicinity of the Landfill Site is woodlands, pastures, and/or open land.

Land and Resource Use

The landfill is no longer in use and will not be returned to use, but should remain under Post-Closure Care under the Superfund Program, until it is determined the Site is no longer a

potential threat to human health or the environment. The property owner has not indicated how the land will be used in the future. The Site has been fenced off and there is a locked gate at the entrance. The majority of the land use in the immediate Site vicinity is woodlands, pastures, and/or open fields. The homes located side-gradient and/or up-gradient from the Landfill Site continue to use groundwater as a drinking water source. The upgradient groundwater wells of nearby residents have been sampled and tested in the past and the evaluations and findings has determined that the nearby wells were not contaminated by the First Piedmont Landfill Site (Figure 4).

History of Contamination

The Site was initially operated as a quarry for crushed stone. The four-acre property which comprises the Site consists of the abandoned quarry and the adjacent land. The Site was leased by the First Piedmont Corporation to be used as a landfill for disposal of industrial and agricultural waste from April 1, 1970 to April 1, 1975. Wastes were disposed of in the landfill from April, 1970 to July 1972, at which point the Virginia Department of Health ordered waste disposal operations to cease due to fire on the landfill.

The landfill operations were historically restricted, almost exclusively, to the two-acre quarry area of the Site. The quarry was not filled in a systematic fashion; no cells or segregated disposal areas were used for specific wastes. Hundreds of drums were buried in the landfill in random fashion with other solid waste. Upon arrival at the Site, wastes were generally dumped at the high wall along the eastern edge of the landfill, where the quarry is approximately 35 feet deep. Wastes were then moved within the two acre quarry footprint and compacted down with a bulldozer. Subsequent investigations by EPA indicated that wastes disposed at the Site were not covered at the end of each day. Therefore, the site was operated similar to an open dump than a modern day landfill operation.

The landfill contained approximately 65,000 cubic yards of industrial and agricultural waste and approximately 3,000 cubic yards of soil used as a landfill cover when land filling operations were stopped. The industrial wastes were generated by the Goodyear Tire and Rubber Company (Goodyear), and Corning Glass Works (Corning), while the agricultural wastes were primarily generated by Southern Processors, Inc. (Southern Processors).

The wastes from Goodyear consisted of tires, general plant refuse, scrap rubber, rubber buildup and approximately 15,000 gallons of a mixture of residual MS-20 (a floor degreaser), water, carbon black (a reinforcement additive used in tire manufacturing that is comprised almost entirely of carbon) and detergent. The MS-20 contained ten percent by volume of tetrachloroethylene, which is a listed hazardous waste under the RCRA Regulations. The wastes from Corning consisted of paper, glass, cardboard and off-specification batch materials which contained trace amounts of lead oxide. The wastes from Southern Processors, a tobacco processing company, consisted of soil removed from tobacco leaves, tobacco scrap, paper and wood.

Separate and apart from the landfill proper are two other waste disposal areas on the Site which were associated with the disposal operations of First Piedmont Corporation. These two areas are denoted as the "Carbon Black Pile" and the "Waste Pile" (See Figure 1).

The Carbon Black Pile consisted of approximately 1260 cubic yards of carbon black and contaminated soils. Zinc oxide bags were reportedly observed in the pile during the construction of access roads for the Remedial Investigation of the Site. The Carbon Black Pile was located approximately 150 feet from the most western edge of the landfill. The Waste Pile contained approximately 95 cubic yards of waste material and consisted of waste steel and nylon tire cording, some waste glass, waste rubber strips, and contaminated soils and was located about 75 feet from the western edge of the landfill.

Another disposal area not associated with the land filling operations was found located about 100 feet southwest of the Carbon Black Pile. This area, denoted as the "Old Disposal Area", in Figure 2, contained miscellaneous waste including bottles, cans, and metal debris. Based on visual observation, the material in the Old Disposal Area was estimated to have occurred 20 to 30 years prior to the land filling operation, and; therefore, was not within the scope of the Record of Decision. As mentioned above, the "Old Disposal Area" is separate from the landfill (the rock quarry). The "Old Disposal Area" was not a part of the landfilling operation where industrial and agricultural waste were disposed of from April 1, 1970 to April 1, 1975. The "Old Disposal Area" was not investigated.

Initial Response Activities

In a letter dated June 1, 1981, the Goodyear Tire and Rubber Company notified the First Piedmont Corporation that some of the wastes deposited at the First Piedmont Rock Quarry Landfill were hazardous wastes in accordance with the RCRA Regulations. Approximately 15,000 gallons of a mixture of residual MS-20, a floor degreaser which contained ten percent by volume of tetrachloroethylene was disposed in waste washwaters by Goodyear at the Site. Tetrachloroethylene is a listed hazardous waste under the RCRA, 42 U.S.C. §§ 6901 et seq. The First Piedmont Corporation subsequently filed a "Notification of Hazardous Waste Site" form with EPA on June 5, 1981, which listed waste solvents as one of the waste materials disposed of at the First Piedmont Rock Quarry Landfill.

The EPA Field Investigation Team subcontractor sampled the various media in the landfill vicinity in July 1983, to provide data in order for EPA to determine whether the landfill should be proposed for listing on the National Priorities List (NPL). Based on the results of this sampling, a Hazard Ranking Score (HRS) of 37.85 was calculated in 1985 for the Site. Based on comments received by EPA, the HRS was rescored to 30.16. The Site was listed on the NPL on July 21, 1987, pursuant to Section 105 of CERCLA, 42 U. S. C. § 9605.

Basis for Taking Action

Hazardous substances that have been detected at the Site in each media include:

Leachate	Surface Water	Groundwater	Soil
Antimony	Arsenic	Zinc	Arsenic
Arsenic	Barium		Barium
Barium	Cadmium		Cadmium
Lead	Lead		Chromium
	Zinc		Lead
			Nickel
			Vanadium
			Zinc

In addition, benzene, Bis(2EH) Phthalate, and Tetrachloroethylene had been detected at the Site.

Of the above contaminants, Benzene, Bis(2EH) Phthalate, Tetrachloroethylene, Arsenic, Cadmium, Lead, and Nickel are known to cause cancer in humans or laboratory animals and; therefore, are classified as carcinogens. Although Tetrachloroethylene was known to be disposed at the landfill Site, sampling results of the various media did not detect levels of Tetrachloroethylene which exceeded risk-based criteria or standards to protect human health.

EPA sent Special Notice Letters on May 6, 1986 to initiate negotiations with the potentially responsible parties (PRPs); First Piedmont, Corning, and Goodyear to perform a Remedial Investigation /Feasibility Study (RI/FS) for the Site. On December 31, 1987, EPA signed an Administrative Order on Consent with the PRPs to undertake the RI/FS of the Site, which was designed to determine the nature and extent of contamination at the Site and to identify and evaluate remedial alternatives for implementation at the Site.

The RI field sampling activities and analytical testing program were designed to address the following: 1) define the nature and extent of environmental media contamination, 2) to identify contaminant migration pathways, and 3) to provide data to support a FS of potential remedial actions. Samples from the leachate seeps, subsurface soils, subsurface soils, surface waters, sediments, bioassays, shallow and deep groundwater, and nearby residential wells were analyzed to characterize the quality of these media and determine media which exceeded risk-based criteria and standards to protect human health and the environment.

Surface water samples were collected from the north pond, the south pond, the northern drainage, the southern drainage, and Lawless Creek.

The RI findings indicated that groundwater flowed through the wastes in the landfill and surfaced as leachate along the western edge of the quarry/landfill. This leachate discharged to the north pond and eventually into the northern drainage, as identified in Figure 2. Sampling and analyses indicated that contamination from the landfill contents migrated to the north pond and

northern drainage via the transport and deposition of sediments in the leachate. The highest concentrations of contaminants detected in the northern drainage were in the samples closest to the quarry and levels of constituents of concern (COCs) decreased with distance from the quarry area. The COCs found in the leachate were arsenic, lead, antimony, and barium.

In the north pond, concentrations of arsenic, barium, cadmium, lead, and zinc were detected in concentrations of 58 µg/l, 8420 µg/l, 8 µg/1, 21 µg/l and 219 µg/l, respectively, which were slightly above the Site background levels

Leachate that had accumulated in the north pond ultimately flowed into the Northern Drainage area. The area identified as the upper portion of the Northern Drainage in Figure 1 was closest in proximity to the landfill. In this upper portion of the Northern Drainage arsenic, barium, iron, lead, manganese, and zinc were detected at concentrations of 13.7 ug/l, 5600 ug/l, 59,000 ug/l, 4.1 ug/l, 1540 ug/l, and 48.1 ug/l respectively, which were above background levels. The concentrations of these contaminants significantly decreased downstream from the landfill. In fact, where the Northern Drainage meets the Lawless Creek flood plain, only very low levels of barium, lead, and zinc (109 ug/l, 2.4 ug/l, and 32.8 ug/l, respectively) were detected; all of which were below background concentrations.

Sampling data from the south pond indicated that water there was not adversely affected by landfill contamination. A very low level of 20 micrograms/liters (ug/l) of zinc was the only significant heavy metal contaminant detected in the south pond. The zinc concentration detected was below the background level for surface water zinc concentrations.

Zinc and cadmium were detected in the southern drainage at the maximum level of 111,000 ug/L and 18.2 ug/L, respectively. The source of these high levels of zinc and cadmium was believed to be attributed to the carbon black pile for a number of reasons: 1) the carbon black pile was located up-gradient of the southern drainage; 2) concentrations of zinc were higher in drainage waters down-gradient of the carbon black pile than up-gradient of the carbon black pile; 3) empty zinc oxide bags were reported and sighted in the vicinity of the carbon black pile during the construction of access roads during the RI. Therefore, infiltration of precipitation and surface water into the carbon black pile was believed to have mobilized zinc from the pile in high concentrations. The zinc contaminated water had likely migrated down-gradient through the shallow subsurface soils (and possibly rock fractures) and appeared to have discharged into the surface waters in the southern drainage and the receiving wetlands and floodplain of Lawless Creek.

Samples were collected from three locations in Lawless Creek (one was background) and two non-background samples. At one non-background sampling location, barium, iron, manganese, and zinc were detected at concentrations of 20.5 ug/l, 647 ug/l, 79 ug/l, and 26.5 ug/l, respectively, all of which are above the background concentrations. At the other non-background sampling location, iron, manganese, and zinc were detected at concentrations of 604 ug/l, 57.7 ug/l, and 16.3 ug/l, respectively, which were above background concentrations.

At the landfill portion of the Site, soil samples had concentrations of arsenic, barium, cadmium, chromium, lead, nickel, vanadium, and zinc exceeding Site background levels.

Barium, lead, and zinc were found in the highest concentrations.

The waste pile soil samples generally showed concentrations of arsenic, barium, cadmium, lead, and zinc at levels exceeding background, with barium, lead, and zinc found in highest relative concentrations. The concentrations range from twice the background level for arsenic to ten times the background concentration for lead.

The soil samples from the carbon black pile had concentrations of arsenic, barium, cadmium, lead, and zinc which exceeded background levels. Lead concentrations were about twice the background level, while zinc was detected at concentrations ten times the established background level.

Shallow and deep groundwater at the Site flows to the west, toward Lawless Creek. Zinc was detected in three monitoring wells at concentrations of 504 ug/l, 2050 ug/l, and 213 ug/l, which exceeded the background level of 61.3 ug/l. (There is no drinking water maximum contaminant level (MCL) established for zinc; however, the EPA risk based concentration (RBC) screening level for zinc is 6,000 ug/l.) One monitoring well had lead concentrations of 28.8 ug/l, which exceeded background and the proposed lead action level of 15 ug/l for drinking water.

EPA sampled the residential water sources of ten homes in the Beaver Park community near the Site (Figure 3). Only two of the ten residential wells sampled had levels above drinking water standards. One well had a detection of 466 ug/l of iron. The second well had a detection of 333 ug/l iron and 65.1 ug/l of manganese. The Secondary Drinking Water criteria for iron and manganese are 300 ug/l and 50 ug/l, respectively. Because none of the Site contaminants were detected in the residential water, these results indicated that the Site contamination had not affected any residential wells in the nearby vicinity of the landfill Site.

Solid samples were collected from the contents of two of the drums on the surface of the landfill. Low concentrations of chromium, copper, and lead and higher concentrations of cadmium and zinc were detected in one drum. Low concentrations of cadmium, lead, nickel, selenium and vanadium and higher concentrations of copper and zinc were detected in the other drum sampled.

IV. Remedial Actions

Remedy Selection

The RI was designed to define the nature and extent of environmental medial contamination, identify contaminant migration pathways, and provide data to support a FS of potential remedial actions. Samples from the leachate seeps, subsurface soils, subsurface soils, surface waters, sediments, bioassays, shallow and deep groundwater, and residential wells were analyzed to characterize the quality of these various media in comparison to risk-based criteria and standards, and applicable and appropriate regulatory requirements (ARARs).

The final Risk Assessment was submitted to EPA in January 1991. The final RI Report was submitted on February 4, 1991, and the Final FS Report was submitted to EPA on March 31, 1991. The Risk Assessment Report, the RI Report and the FS Report for the Site summarized the results of previous investigations and findings associated with the Site. (The investigations at the Site began in1987.) The media of concern were quarry leachate, source material, and quarry soil Based on a review of the chemical sampling analytical data, antimony, arsenic, barium, cadmium, lead, nickel, vanadium, and zinc were detected in the soil, sediments, leachate, and surface water on the Site.

The RI/FS presented a Conceptual Site Model (CSM) that was summarized in the 1991 ROD. The evaluations of the site investigations and evaluations and findings, the remedial action alternatives, and the recommended remedy were provided in the RI/FS and the 1991 ROD. The recommended remedy in the FS was implemented in accordance with the 1991 ROD and is summarized below.

The Proposed Remedial Action Plan for the Site was released to the public on April 10, 1991. The public comment period of 30 days was provided for review and comments. A public meeting to present the Proposed Plan was held on April 16, 1991. The Commonwealth of Virginia concurred with the proposed and selected remedies. Following consideration of comments, the Record of Decision (ROD) was signed by EPA on June 28, 1991.

The remedy selected for the Site addressed all of the contaminated media known to exist at the Site in 1991. The selected remedy consisted primarily of excavation and off-site disposal of the non-landfill wastes, off-site disposal of the surface drums and debris, installation of a RCRA Subtitle C cap over the Landfill, the installation of a leachate collection system, and installation of a leachate storage system, groundwater monitoring wells and monitoring system, implementation of land use restrictions for the Site, and implementation of drinking water restrictions for the Site. By implementing all of these components, the Site risks, due to potential exposures to leachate, waste materials, and contaminated Site soils and contaminated Site groundwater, would be reduced to within EPA's acceptable risk-based criteria and standards.

The EPA issued a Record of Decision (ROD) for the Site on June 28, 1991. The Commonwealth of Virginia concurred with the selected remedy within the ROD.

Remedy Implementation

The following is a summary of the activities conducted at the Site pursuant to the June 28, 1991 ROD, as described in the 1999 Five-Year Review Report:

- *Carbon Black Excavation.* Carbon Black excavation began on September 8, 1994. Excavation and off-Site disposal of an estimated 1,260 cubic yards of Carbon Black Pile soil was completed on October 4, 1994.
- *Waste Pile.* Soil and debris were removed from the waste pile on September 12, 1994. Ninety-five (95) cubic yards of waste material was removed and disposed of off-site as a special waste in a RCRA Subtitle D Landfill.
- *Drum and Debris Removal.* Removal of drums and debris from the surface of the landfill began on September 21, 1994. A total of 96 drums and 100 cubic yards of tires and debris were removed from the Site and disposed off-site in a RCRA Subtitle D Landfill. The drum and debris removal operation was completed on October 5, 1994.
- *Gas Venting Layer.* Placement of the gas venting layer on the landfill portion of the Site began on October 26, 1994. Three gas vents were installed to release any methane build up. Placement and grading of this layer was completed on November 9, 1994.
- *Installation of Landfill Cap.* Placement of a Geosynthetic Clay Liner (GCL) began on November 26, 1994. Panels were laid out so that the length of the panel was parallel to the slope of the gas venting layer. The GCL placement and the final landfill cap/cover material was completed on January 9, 1995.
- *Leachate Collection System.* Construction of a leachate collection system began on October 17, 1995, and it took approximately two weeks to complete. The leachate collection system collects leachate in a collection trench excavated below the top of bedrock at the western edge of the landfill. The leachate in the trench collects in a 4 inch slotted polyvinyl chloride (PVC) pipe, which is surrounded by fill material, and flows into the leachate collection sump at the southern end of the trench. Leachate is then pumped from the leachate collection sump to primary and secondary 20,000 gallon storage tanks. The leachate is sampled quarterly and disposed of at Danville's publicly owned treatment works (POTWs).
- *Wetland Revegetation and Monitoring.* The remedial action included the planting of vegetation and berry-producing shrubs in the disturbed portion of the Northern Drainage Area. The Operation and Maintenance plan called for an annual "walk through" site inspection by a qualified biologist for the first five years following the completion of the 1994 - 1995 remedial work. The biologist checked the Northern Drainage Area for evidence of plant and vegetation succession. The plants were growing and becoming established as designed.
- *Groundwater Monitoring.* Groundwater monitoring is conducted at existing wells up-gradient and down-gradient of the landfill to ascertain the remedy is protective of human health and the environment. Groundwater monitoring is to be conducted as long as leachate is collected at the Site, or for 30 years, whichever is longer. Groundwater

monitoring results from 1995 through 2004 indicated that zinc contamination decreased significantly after the Carbon Black Pile was removed. However, one monitoring well, which is located approximately one hundred feet north of the Southern Drainage channel, had an average zinc concentration of 97 ug/l over a nine year period, which is above the zinc background level of 61.3 ug/l. (There is no MCL for zinc. The EPA RBC tap water screening level for zinc is 6 mg/l or 6,000 ug/l.)

- *Site Use Restrictions.* Appropriate Site use restrictions will be placed for future land use and groundwater use scenarios to ensure protection of public health and the environment. (As of February 2014, the implementation of Institutional Controls (ICs) for site use restrictions and drinking water well use restrictions is still needed for the Site.)
- *Preliminary Site Close Out Report.* On September 27, 1995, EPA signed the Preliminary Site Close Out Report, which documented that the PRPs had completed construction activities at the Site.

The EPA 1999 Five-Year Review Report found that the remedy was not protective of the environment at that time and recommended that the PRPs perform additional investigations to further delineate the nature and extent of metal contamination in sediment of the southern drainage and Lawless Creek from past loading. The sediment found in the Southern Drainage indicated that the metals detected in surface water may have migrated directly to Lawless Creek. The PRPs had conducted some limited sampling as part of the surface monitoring program required by the ROD.

Sampling results showed elevated levels of metals in surface water and sediments in the Southern Drainage in excess of the acute and chronic freshwater ambient water quality criteria. Aquatic toxicity tests using sediment collected from the Southern Drainage established the presence of aquatic toxicity to aquatic benthic organisms based upon testing of the two benthic indicator organisms tested.

In June 30, 2000, the Regional Administrator signed an Amendment to the Administrative Order, ordering the PRPs, as part of the work to be performed, to conduct the additional investigations described in the 1999 Five Year Review.

The second Five-year Review Report (2005) indicated that groundwater at the Site is not contaminated. The above Report also indicated that leachate from the landfill is still being collected, stored, and pump-hauled to the Danville POTW System for treatment.

The second Five-year Review Report (2005) noted that the 1991 ROD included land use restrictions included fencing and restrictions to prohibit future development of the Site. To date, only the fencing has been implemented. Therefore, institutional controls still need to be implemented for the Site to restrict land use, and to prevent drinking water use at the Site.

In addition, the second Five-Year Review Report (2005) determined that the remedy was not fully protective of the environment because sediments in the Southern Drainage area and portions of Lawless Creek were found to have elevated levels of zinc.

In response, the PRPs developed a Work Plan to delineate the nature and extent of the zinc contamination in the Southern drainage and Lawless Creek Floodplain areas. EPA approved the work plan in March 2005.

The PRPs submitted a report to EPA entitled "Additional Remedial Investigation Report First Piedmont Rock Quarry Superfund Site, Pittsylvania County, Virginia" in March 2006. The report documented field activities and laboratory analyses, which EPA found to be equivalent to a supplemental RI under the National Contingency Plan (NCP), 40 C.F.R. Part 300, in the Southern Drainage area and Lawless Creek floodplain area.

In May 2007, EPA issued an Explanation of Significant Difference (ESD), in order to document the basis for a modification of the original excavation and off-site disposal of the Carbon Black Pile component of the selected remedy in the 1991 ROD. The ESD summarized the information that supported the modification to the ROD, and to affirm that the revised remedy under the ESD complied with the statutory requirements of CERCLA.

The ESD included the excavation of soils with elevated zinc residuals that remained after the Carbon Black Pile was initially excavated and removed from the Site. The ESD included the selection of the cleanup standards for zinc and required that soils above 200.2 mg/kg zinc be excavated and disposed of off-site in a RCRA Subtitle D Landfill in order to mitigate the migration of zinc to down- gradient areas, sediments, and State Waters.

After completion of the 2007 Remedial Action (RA) a RA Report, dated 2009, was completed in accordance with the 2007 ESD. The RA Report documented the excavation and disposal of soils contaminated with zinc residuals that had remained after the Carbon Black Pile was initially excavated at the Site.

The 2010 Five Year Review found that in the long-term, the remedy was not protective because the zinc contaminated soils and sediments in the Lawless Creek Wetlands area and the Southern Drainage area had not been clean up. Also, in order for the remedy to be protective in the long-term, ICs need to be implemented to protect the integrity of the remedy and prevent exposure to contaminated soils and groundwater. Implementation of the ICs were postponed until after the zinc contaminated soils and sediments are addressed.

V. SYSTEM OPERATION/OPERATION AND MAINTENANCE (O&M)

The PRP's continue to operate and maintain the landfill cover, the leachate collection and storage system, the groundwater monitoring system, and the landfill site. Leachate is temporarily stored on-site in two, twenty thousand gallon storage tanks. The leachate is sampled quarterly, and pump-hauled to the City of Danville's POTW System for treatment.

VI. PROGRESS SINCE THE LAST FIVE-YEAR REVIEW

In April 2010, a Focused Feasibility Study (FFS) Report was submitted to EPA by the PRPs to evaluate the remedial alternatives and to present the preferred remedy for zinc-impacted sediments and soils which remained within the southern drainage and the floodplain or wetlands along Lawless Creek. (The above FFS Report was prepared following the upland zinc soil source area excavation activities, which were completed in January 2009.)

At the direction of EPA, the PRPs submitted an FFS Addendum Report, dated July 6, 2011, to address and incorporate the EPA's comments, which resulted from the EPA's review correspondence and meeting discussions. The FFS Addendum Report recommended revisions to the remedial action alternatives proposed, and revised the preferred remedy for the remediation of the zinc-impacted sediments and soils which remained within the southern drainage and the floodplain or wetlands of Lawless Creek.

Based upon the FFS Report and FFS Report Addendum, EPA determined that modifications (or amendments) to the remedy selected under the 1991 ROD were still necessary to remediate elevated levels of zinc found in the sediments in the southern drainage area of the landfill and in the receiving wetland area soils and sediments along Lawless Creek.

On August 12, 2013, a public notice was issued for a 30-day comment period for the proposed ROD Amendment for the First Piedmont Superfund Site; the public notice was published in the *Danville Register & Bee*. The public comment period was extended by the EPA to September 28, 2013.

On September 5, 2013, a public meeting was held at the Blairs Fire and Rescue, 7100 US Highway 29, Blairs, Virginia 2427 to discuss EPA's preferred alternative for the ROD Amendment. Questions and concerns raised during the public meeting along with EPA's responses were proved in the EPA's Response to Comments Summary within the ROD Amendment. Additional comments that were submitted to EPA during the comment period were also addressed in the Response to Comments Summary.

On September 23, 2014, EPA signed the ROD Amendment for the Site to remediate elevated levels of zinc in the sediments in the southern drainage area and in the soils and sediments of the floodplain (wetlands) along Lawless Creek.

The ROD Amendment consisted of the following components:

- Excavation of zinc contaminated sediments from the southern drainage and contaminated soils and sediments from the floodplain or wetlands of Lawless Creek.
- Transportation of zinc contaminated sediments and soils off-site to a permitted RCRA Subtitle D disposal facility.
- Reclamation of the excavated area which includes replacement of soils with an equivalent amount of soils deemed suitable for the wetland area and planting of

vegetation. Monitoring for soil and sediment erosion control will be required until the wetland portion of the Site is successfully re-vegetated.

- Wetland impacts will be further mitigated through the purchase of wetland credits from a mitigation bank at a ratio of 2:1.
- Institutional Controls will be implemented to ensure that sediments and soils in the wetland area are not disturbed through any activity.
- Institutional Controls will be required to restrict use of the Site, to protect the engineered landfill cap, the leachate collection system, and the leachate storage tank system, the groundwater monitoring system, and the landfill proper.
- Institutional Controls will be required to prevent groundwater use at the landfill Site.

As of February 2015, the development of the remedial design and work plans for the remedial action under the ROD Amendment are still pending.

VI. Five-Year Review Process

Administrative Components

EPA notified PRP's and VDEQ in October 2014 of the initiation of the five-year review. The Five-Year Review team was led by Ronnie M. Davis, EPA's Remedial Project Manager (RPM) for the Site, and included Larry Brown, EPA's Community Involvement Coordinator, and Bruce Pluta, BTAG, Linda Watson, Toxicologist, and Mark Leipert, Hydrogeologist. Richard Criqui, Jr., RPM, C.P.S.S., Superfund Program, VDEQ, assisted in the review.

The review team established the review schedule whose components included:

- Community Involvement;
- Document Review;
- Data review;
- Site Inspection; and
- Five-Year Review Report Development and Review.

The schedule extended from May 2014 through February 2015.

Community Involvement

A notice announcing the availability of this Five-Year Review will be placed in the Star-Tribune on February 9, 2015 to inform the public that the findings of this Five-Year are available.

Document Review

This five year review consisted of a review of relevant documents including monitoring data. Applicable or relevant and appropriate requirements (ARARs) identified in ROD were reviewed.

The following documents were reviewed for this five year review:

- Record of Decision Amendment (September 23, 2014)
- Third Five-Year Review Report (February 3, 2010)
- Groundwater Monitoring Data (2010 thru 2013)

Data Review

EPA's toxicologist screened the 2013 data (3/35/13 and 9/23/13) using EPA's tap water RSL (dated May 2014) and the following metals failed screening:

	Tap Water RSL (ug/L)	***MW-3A***	***MW-8A***	***MW-6B***	***MW-1A***	***MW-1B***	***MW-2A***
Aluminum	2,000		**4,010** (3/25/13)				
Arsenic	0.052	**3.0** (3/25/13)	**3.0** (3/25/13)				
Beryllium	2.5		**3.0** (3/25/13) **2.9** (9/23/13)				**2.9** (3/25/13) **2.7** (9/23/13)
Chromium	0.035	**ND** (3/25/13) **6.9** (9/23/13)		**3.2** (3/25/13) **ND** (9/23/13)	**60.2** (3/25/13) **70.9** (9/23/13)	**35.1** (3/25/13) **37.2** (9/23/13)	**4.9** (3/25/13) **3.7** (9/23/13)
Iron	1,400		**1560** (3/25/13)				
Manganese	43	**63.1** (9/23/13)	**357** (3/25/13) **376** (9/23/13)	**104** (3/25/13) **133** (9/23/13)			

Based on the screening results a risk assessment was performed on the contaminants that failed screening during the last round of sampling (9/23/13) and the following are the risk results:

	Maximum Concentration Detected (ug/L)	***Adult HI***	***Child HI***	***Lifetime Cancer Risk***
Beryllium	2.9	4.2E-02	1.0E-01	
*Chromium	70.9	8.8E-01	**2.3**	**7.5E-04**
Manganese	376	8.2E-02	2.0E-04	
Total Risks		**1.0**	**2.6**	

*Chromium was screened and assessed as hexavalent chromium.

The ROD states that the Contaminants of Concern (COCs) in groundwater are lead and zinc. Since 2002, the groundwater has been sampled and analyzed for the target Analyte list (TAL) inorganic metals. The list of metals found in the upgradient and downgradient wells has been variable. The COCs, lead and zinc, are below the MCL and action levels. Manganese and magnesium concentration, although elevated, have been consistent over the last thirteen years. The PRPs will continue bi-annual groundwater monitoring and evaluate findings against background levels and seasonal fluctuations.

Site Inspection

On January 15, 2015, Ronnie M. Davis, EPA's project manager, Mark Leipert, EPA's hydro-geologist and Tom Wade, First Piedmont Corporation, conducted a site inspection as a part of the five year review. The objective of the inspection was to assess the protectiveness of the remedy. The portion of the site where the former landfill, waste pile, and the former carbon black pile were located is completely fenced. Signs are located at the two entrances. The cap on the landfill is in good condition and the grass is cut low. There were no signs of erosion of the cap, and the vegetation on the cap is in good condition. The wetlands area of the site is not fenced in. Previously, the entire area leading from the fenced in portion of the site down to wetland and Lawless Creek were mostly filled with tress. Many of the trees have been cut down.

Two monitoring well pads are damaged and needs to be repaired. One monitoring well cap is broken. A fallen tree damaged a portion of the fence located near one of the entrances and will need to be repaired.

VII. Technical Assessment

Question A: Is the remedy functioning as intended by the decision document?

Yes.

The remedy at the Site currently protects human health because the elements of the remedy that have already been implemented are functioning as intended. The chain link security fence around the Site restricts access and reduces the potential for exposure to Site contaminants. The RCRA cap on the landfill prevents direct contact with the waste, minimizes migration of contaminants to the groundwater, and reduces the generation of leachate. There is no evidence of erosion or breach of the RCRA cap on the landfill. The collection and off-site disposal of leachate reduce the potential for direct contact with the leachate. The Carbon Black Pile, the Waste pile, debris and drums have been removed and treated off-site which reduces the potential of direct contact with contaminated material from these sources.

Residuals from the former Carbon Black Pile were excavated and disposed off-site. These residual are believed to be the source of the zinc contamination in the Lawless Creek Wetlands and the Southern Drainage areas. A Feasibility Study was done by the PRP's to evaluate the best method for cleaning up the zinc contaminated soils in the Lawless Creek Wetlands area and the Southern Drainage area. On September 23, 2014, EPA signed a ROD Amendment, which modifies the remedy selected by EPA in the June 28, 1991 ROD. The ROD

Amendment documents a remedy modification for the wetland area (contaminated sediment and soil located at the entry of the Southern Drainage to the Lawless Creek Floodplain). The 2013 groundwater monitoring data indicated that elevated concentrations of heavy metals were present in several monitoring wells.

Institutional controls have not been implemented. Institutional controls will be required to prevent the surface cap, the leachate collection system, and the temporary tank in which the leachate is stored from being disturbed.

Several times a year, leachate is sent to Danville POTW. The leachate has to meet the POTW standards in order to be accepted for treatment. If the POTW standards are not met, the leachate has to be pre-treated before the POTW will accept the leachate.

Question B: Are the exposure assumptions data, cleanup levels, and remedial action objectives (RAOs) used at the time of the remedy still valid?

Yes for human health. However, RAOs for ecological receptors were not developed in the 1991 ROD. EPA established cleanup standards of 200.2 mg/kg for zinc in soil located in the former Carbon Black pile in the May 30, 2007 ESD. The cleanup standards for zinc-contaminated soil and sediment in the Southern Drainage and Lawless Creek floodplain was established at 148.6 mg/kg. The Southern Drainage and Lawless Creek floodplain constitute the wetlands area.

Changes in Standards and To Be Considered (TBC)

Have standards identified in the ROD been revised, and does this call into question the protectiveness of the remedy? Do newly promulgated standards call into question the protectiveness of the remedy? Have TBCs used in selecting cleanup levels at the site changed, and could this affect the protectiveness of the remedy?

The cleanup standard of 200.2 mg/kg of zinc in soil was established in the 2007 ESD, The Cleanup standards of 148.6 mg/kg of zinc in soil and sediment was established for the cleanup of zinc from the wetlands area.

Remedial Action Objectives

The RAOs were to prevent human contact with contaminants found in the quarry leachate, exposed waste material, quarry soil, Northern Drainage soil and sediment and to prevent their migration off-site. Although the Carbon Black Pile was excavated and disposed of off-site, residual zinc contamination continued to migrate off-site into the Southern Drainage area and Lawless Creek Wetlands area. The PRP's excavated approximately 608 tons of residual zinc exceeding 200.2 mg/kg and disposed of the soils off-site.

To protect the environment from current and future ecological risk, the following RAO was developed to amend the 1991 ROD and address the contaminated soil and sediment in the wetlands area located at the entry of the Southern Drainage to the Lawless Creek floodplain in

order to:

- Reduce zinc concentrations to levels protective of ecological receptors (less than or equal to 148.6 mg/kg) in soil and sediment within 2 feet of the existing ground surface within the Southern Drainage and Lawless Creek floodplain.

Changes in Exposure Pathways

Has land use or expected land use on or near the site changed?

No.

Have human health or ecological routes of exposure or receptor been newly identified or changed in a way that could affect the protectiveness of the remedy? Are there newly identified contaminants or contaminants sources? Are there unanticipated toxic byproducts of the remedy not previously addressed by the decision documents? Have physical site conditions or the understanding of these conditions changed in a way that could affect the protectiveness of the remedy?

No.

Changes in Toxicity and Other Contaminants Characteristics

Have toxicity factors for contaminants of concerns at the site changed in a way that could affect the protectiveness of the remedy? Have other contaminant characteristics changed in a way that could affect the protectiveness of the remedy?

Of the toxicity changes, some have increased while others have decreased, making it impossible to generalize about whether the risks would be higher or lower if recalculated today.

Changes in Risk Assessment Methods

Have standardized risk assessment methodologies changed in a way that could affect the protectiveness of the remedy?

There have been significant changes in EPA's risk assessment guidance since 1992. These include changes in dermal guidance, inhalation methodologies, exposure factors, land change in the way early life exposure is assessed for vinyl chloride. Since risk assessments mythologies could change again in the future, protectiveness is best assessed when remediation goals are believed to have been achieved.

Expected Progress towards Meeting RAOs

Is the remedy progressing as expected?

The remedy is progressing toward meeting RAOs.

Question C: Has any other information come to light that could call into question the protectiveness of the remedy?

Yes.

The extent of zinc contamination in the Lawless Creek Wetlands area and the Southern Drainage area were delineated. The PRP's prepared a feasibility study to evaluate the most effective way of cleaning up this areas. A ROD Amendment was signed by EPA on September 23, 2014.

Technical Assessment Summary

The review of the Site related documents, risk assumptions, and the results of the Site inspection indicates that the implemented components of the selected remedy are functioning as intended by the ROD, dated 1991. In 2008 and 2009, approximately 608 tons of zinc contaminated upland soils were excavated from the former Carbon Black Piles source area and disposed off-site in accordance with the ESD, dated 2007.

The extent of zinc contaminated sediments in the Southern Drainage area and within the soils and sediments in the floodplain or wetlands of Lawless Creek had been delineated in 2001. The PRP's prepared Focused Feasibility Study Reports in 2010 and 2011, to evaluate remedial alternatives for cleaning up the zinc contaminated soils and sediments. A ROD Amendment was signed by EPA on September 23, 2014, to address the elevated levels of zinc in sediments in the southern drainage and in the soils and sediments of the floodplain or wetlands of Lawless Creek.

The institutional controls, which will provide for land-use restrictions, and groundwater use restrictions have not been implemented, to date. Future uses will be restricted under future ICs so to be protective of the engineering controls constructed at the landfill and to be protective of human health and the environment.

VIII. Issues

Table 2 - Issues

Issue	Currently Affects Protectiveness (Y/N)	Affects Future Protectiveness
The remedial action required by the 2014 ROD Amendment has not been implemented	**N**	**Y**
Institutional Controls have not been implemented	**N**	**Y**
A portion of the fence and several monitoring wells have been damaged	N	**Y**

IX. Recommendations and Follow-Up Action

Table 3 - Recommendations and Follow-Up Actions

Issue	Recommendations/ Follow-up Actions	Party Responsible	Oversight Agency	Milestone Date	Affects Protectiveness? (Y/N)	
					Current	Future
The remedial action has not been implemented	**PRP's will submit a remedial design for review**	**PRP's**	**EPA**	**4/30/2015**	**N**	**Y**
Institutional Controls have not been implemented	**EPA will work with the PRP's to finalize language for the deed notice**	**PRPs EPA**	**EPA**	**8/30/2015**	**N**	**Y**
A portion of the fence and several monitoring wells have been damaged	**The PRPs will repair the damaged fence and monitoring wells.**	**PRP's**	**EPA**	**6/1/2015**	**N**	**Y**

X. Protectiveness Statement

The remedy at the Site currently protects human health in the short-term because the elements of the remedy that have already been implemented are functioning as intended. The chain link security fence around the Site restricts access and reduces the potential for exposure to Site contaminants. The RCRA cap on the landfill prevents direct contact with the waste, minimizes migration of contaminants to the groundwater, and reduces the generation of leachate. There is no evidence of erosion or breach of the RCRA cap on the landfill. The collection and off-site disposal of leachate reduce the potential for direct contact with the leachate. The Carbon Black Pile, the Waste pile, debris and drums have been removed and treated off-site which reduces the potential of direct contact with these contaminated material.

However, in the long-term, the remedy is not protective of the environment because the zinc contaminated soils and sediments in the Lawless Creek Wetlands area and the Southern Drainage area have not been cleaned up. In order for the remedy to be protective in the long-term, institutional controls need to be implemented to protect the integrity of the remedy and prevent exposure to contaminated soil and groundwater. Metals were detected in several monitoring wells at variable levels. Groundwater monitoring will continue.

XI. Next Review

The next five-year review for the First Piedmont Rock Quarry/Route 719 Superfund Site is required in February 2020, five years from the date of this review.

ATTACHMENT 1

Figure 1 – Site Location