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RECORD OF DECISION AMENDMENT

AVCO LYCOMING SUPERFUND SITE

April 2000

PREPARED BY
THE U.S. ENVIRONMENTAL PROTECTION AGENCY

RECORD OF DECISION AMENDMENT
AVCO LYCOMING SUPERFUND SITE

DECLARATION

I. SITE NAME AND LOCATION

Avco Lycoming Superfund Site
Williamsport, Lycoming County, Pennsylvania
EPA ID#PAD003053709

II. STATEMENT OF BASIS AND PURPOSE

This decision document revises the Record of Decision ("ROD") signed on December 30, 1996, for the Avco Lycoming Superfund Site ("Site"), located in Williamsport, Pennsylvania. The revised remedy was developed and selected in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended, ("CERCLA"), 42 U.S.C.§§ 9601 et seq., and to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan ("NCP"), 40 C.F.R. Part 300. This decision is based on the Administrative Record for this Site. The Administrative Record is located at the Environmental Protection Agency, Region III Office, Philadelphia, PA and the James V. Brown Library, Williamsport, PA.

The Pennsylvania Department of Environmental Protection has concurred with the revised remedy in a letter dated December 31, 1999. See Attachment 1 to this Record of Decision Amendment ("ROD Amendment").

III. ASSESSMENT OF THE SITE

Pursuant to duly delegated authority, I hereby determine, in accordance with Section 106 of CERCLA, 42 U.S.C.§ 9606, that actual or threatened releases of pollutants or contaminants from this Site, if not addressed by implementing the response action selected in this ROD Amendment, may present an imminent and substantial endangerment to the public health, welfare, or the environment.

IV. DESCRIPTION OF THE SELECTED REMEDY

This ROD Amendment revises a portion of the 1996 remedy, which addressed contaminated groundwater at the Site. The revised remedy is intended to be a final response action for the Site. This ROD Amendment focuses on three separate areas of concern as follows:

1. **Shallow aquifer beneath the Facility** - groundwater contamination beneath the Avco Lycoming Facility in the shallow aquifer, which is also known as the overburden aquifer.

2. **Source Areas** - areas of high contamination, called "hot spots", in the shallow aquifer beneath the Avco Lycoming Facility. The "hot spots" are specifically found in both the east parking lot and central plant areas.

3. **Shallow aquifer beyond the Facility/Deep aquifer throughout Site** - groundwater contamination beyond the property boundaries of the Avco Lycoming Facility in the shallow aquifer and groundwater contamination in the deep aquifer throughout the Site. The deep aquifer is also known as the bedrock aquifer.

The selected remedy includes different actions for the three areas of concern. The actions are as follows:

1. **Shallow aquifer beneath the Facility** - A groundwater recovery system to effectively capture groundwater contaminated with volatile organic compounds at the Facility.

2. **Source Areas** - Source reduction will be implemented using either one, or a combination, of the following technologies:

   a. Air Sparging/Soil Vapor Extraction
   b. Groundwater Extraction
   c. In-Situ Oxidation

3. **Shallow aquifer beyond the Facility/Deep aquifer throughout Site** - Recognize the existing downgradient extraction system, which is being implemented through a Consent Order and Agreement between Avco Corporation and the Pennsylvania Department of Environmental Protection.

4. Implementation of institutional controls that limit risks to human health by limiting the future use of the property to those activities compatible with Site conditions.

V. ROD AMENDMENT DATA CERTIFICATION CHECKLIST

The following information is included in the Decision Summary of this ROD Amendment. Additional information can be found in the Administrative Record file for this Site.

ROD AMENDMENT CERTIFICATION CHECKLIST	
Information	**Location/Page number**
Chemicals of Concern and respective concentrations	Table 2 / Page 8
Baseline risk	Section V / Page 7
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How source materials constituting principal threats are addressed	Source Area Reduction / Page 12
Potential future groundwater use that will be available at the Site as a result of the Selected Remedy	Section VIII, D. / Page 22
Estimated capital, annual operation and maintenance, and total present worth costs, discount rate, and the number of years over which the remedy cost estimates are projected	Table 4 / Page 18
Key factors that led to selecting the remedy	Section VIII, A. / Page 19

VI. STATUTORY DETERMINATIONS

The revised remedy is protective of human health and the environment; complies with federal and state requirements that are legally applicable or relevant and appropriate requirements to the remedial actions; and is cost effective. The revised remedy also satisfies EPA's statutory preference for treatment to remediate the contamination.

Because this remedy will allow for unlimited use and unrestricted exposure after completion of the remedial action, but attainment of the remedial action objectives and cleanup levels will take longer that five years to complete, a review will be conducted every five years in accordance with Section 121 (c) of CERCLA, 42 U.S.C. § 9621 (c), to ensure that human health and the environment continue to be adequately protected by the remedy.

Abraham Ferdas, Director
Hazardous Site Cleanup Division
EPA, Region III

4/6/00
Date

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AVCO LYCOMING SUPERFUND SITE

DECISION SUMMARY

I. SITE DESCRIPTION AND BACKGROUND

A. Site Name, Location and Description

The Avco Lycoming Superfund Site ("Site") (EPA ID# PAD003053709) includes the Avco Lycoming Facility located at 652 Oliver Street in Williamsport, Lycoming County, Pennsylvania, plus any additional property to which contamination has migrated or come to be located. (See Figures 1 and 2) Lycoming Creek runs past the Site to the west. The "Facility", which constitutes the plant property, is approximately 28 acres.

B. Contaminated Areas Addressed by ROD Amendment

The ROD Amendment addresses groundwater contaminated with Volatile Contaminated Compounds ("VOCs") in three separate areas:

1. **Shallow aquifer beneath the Facility** - groundwater contamination beneath the Avco Lycoming Facility in the shallow aquifer, which is also known as the overburden aquifer.

2. **Source Areas** - areas of high contamination, called "hot spots", in the shallow aquifer beneath the Avco Lycoming Facility. The "hot spots" are specifically found in both the east parking lot and central plant areas.

3. **Shallow aquifer beyond the Facility/Deep aquifer throughout Site** - groundwater contamination beyond the property boundaries of the Avco Lycoming Facility in the shallow aquifer and groundwater contamination in the deep aquifer throughout the Site. The deep aquifer is also known as the bedrock aquifer.

C. Facility History

The Avco Facility is situated next to a residential neighborhood with some small industry. Portions of the Facility property were first used for manufacturing purposes around the turn of

the century. Manufacturing operations consisted of a bicycle and sewing machine Facility, a sandpaper plant, a tool and die shop and a silk plant. During the 1920's, the plant property was purchased by Avco Corporation ("Avco") and plant operations centered primarily on the manufacture and repair of aircraft engines.

In February 1985, Textron, Inc. acquired Avco, which included the Avco Lycoming Williamsport Division. Avco remains a wholly-owned subsidiary of Textron. The Avco Lycoming Division was later renamed Textron Lycoming, which continues to operate the Facility; however, the Facility will be referred to as the Avco Lycoming Facility in this ROD Amendment.

D. Site History

The Site was placed on the National Priorities List ("NPL") on February 12, 1990. Between 1989 and 1991, a Remedial Investigation/Feasibility Study ("RI/FS") was conducted by Avco under an Administrative Order on Consent with U.S. Environmental Protection Agency ("EPA") and in consultation with the Pennsylvania Department of Environmental Resources ("PADER"), now the Pennsylvania Department of Environmental Protection ("PADEP"). The RI/FS was conducted to identify the types, quantities and locations of contaminants and to develop ways of addressing the contamination problems. The RI included a risk assessment that determined which of the contaminants detected posed a risk to human health or the environment.

The results of the RI are as follows:

1. The shallow aquifer is contaminated with trichloroethylene ("TCE"), 1,2-dichloroethylene ("DCE") and vinyl chloride within the property. The groundwater in the shallow aquifer beyond the Facility is contaminated with TCE and DCE. This contamination beyond the Facility flows to the southwest in the direction of Lycoming Creek.

2. The shallow aquifer beneath the western section of the property is contaminated with total chromium and hexavalent chromium.

3. The groundwater in the deep aquifer at the Site is contaminated with limited amounts of TCE, DCE and vinyl chloride.

4. Site soil samples have concentrations of lead and chromium above background levels.

5. The total VOC concentrations in Site soil samples are low, and consist primarily of xylene, ethylbenzene and TCE.

6. The surface water quality of Lycoming Creek is not impacted by the contaminants of concern at the Site.

Based on the results of the RI/FS, on June 30, 1991, EPA issued a ROD ("1991 ROD") for Operable Unit One ("OU-1") to contain, recover and treat contaminated groundwater beneath the Facility. The 1991 ROD called for the contaminated groundwater beneath the Facility to be extracted, treated, and discharged to nearby Lycoming Creek. The chromium-contaminated groundwater would be recovered through a series of extraction wells, treated and, discharged. The VOC-contaminated groundwater would be recovered through a series of extraction wells, treated on-site using air-strippers, and discharged. The ROD also called for institutional controls in the form of limiting future property use to those activities compatible with Site conditions.

The 1991 ROD addressed only the contaminated groundwater in the shallow aquifer beneath the Facility. The groundwater plume outside the boundaries of the Facility was to be addressed as a separate operable unit, after additional studies of that area. In the interim, this plume was to be remediated through the existing off-Site recovery-and-treatment systems required by the Consent Order and Agreement ("COA") that Avco had entered into with PADER, dated November 1985.

On April 9, 1992, EPA issued an Explanation of Significant Differences ("ESD"), which modified the 1991 ROD in several ways. The ESD changed the time frame for remediation, identified when recovery well pumping would be discontinued, and redefined the area of attainment.

On May 7, 1992 EPA issued a Unilateral Administrative Order ("UAO") to Avco which required Avco to implement the 1991 ROD and ESD. Activities for the remedial design of the groundwater extraction and treatment system began in December 1992.

In April 1992, Avco submitted an application to PADEP for a National Pollution Discharge Elimination System ("NPDES") permit to discharge treated groundwater to Lycoming Creek. The design of the groundwater recovery and treatment system was at the treatability study phase and could not proceed until the NPDES permit was issued. PADEP issued the NPDES permit in July 1995.

After the NPDES permit was issued, EPA notified Avco that it should continue implementing the design work plan and begin performing the treatability study. It was at this time that Avco made a formal request to EPA to perform a pilot study at the Site for an in-situ remedy that could be used in place of the groundwater extraction and treatment remedy called for in the 1991 ROD. The new technologies were thought to have a favorable remediation time frame and would eliminate the discharge required in the 1991 ROD. EPA and PADEP evaluated Avco's proposal and granted approval for a six month pilot study to be implemented at the Site. The design work plan for the groundwater recovery and treatment system was suspended pending the results of the pilot study.

In August 1995, Avco submitted the work plan for the pilot study. Groundwater contamination in the shallow aquifer beneath the Facility includes a plume of chromium-contaminated groundwater in the western portion of the property and a plume of organic-contaminated groundwater beneath the central and eastern portions of the Facility. Because of the different contaminants in the plume, the pilot study work plan included field design tests to be performed at separate locations within the Facility. The first field design test was implemented in October 1995 and consisted of air sparging and soil vapor extraction ("SVE") at three separate locations in the eastern and central areas of the Facility. The second field design test was implemented in November 1995 and consisted of a metals-precipitation test in the western portion of the Facility. The results of the air sparging/SVE and in-situ metals precipitation pilot tests were reported to the EPA in April and June 1996, respectively. The results indicated that each test was successful. As a result, EPA requested that Avco conduct a Focused Feasibility Study ("FFS") comparing these technologies to the conventional groundwater extraction and treatment remedy selected in the 1991 ROD.

On September 16, 1996, Avco's contractor submitted the FFS to EPA. On September 20, 1996, EPA issued its Proposed Plan for the air sparging/SVE and in-situ metals precipitation remedy and released the FFS and other background information to the public for comment.

On December 30, 1996, the EPA issued a new ROD ("1996 ROD") for groundwater contamination in the shallow aquifer beneath the Facility. The 1996 ROD modified the groundwater remedy for the shallow aquifer identified in the 1991 ROD. The remedy selected in 1996 consisted of two types of treatment for the shallow aquifer beneath the Facility: 1) air sparging and SVE for treatment of the VOCs; and 2) in-situ metals precipitation for treatment of the chromium. The 1996 ROD did not address contamination present in the shallow aquifer beyond the Facility and in the deep aquifer throughout the Site. The 1996 ROD stated that contaminated groundwater in those areas would be addressed in a future ROD.

On August 25, 1997, EPA amended the 1992 UAO issued to Avco to document the issuance of the 1996 ROD and change the definition of "ROD" in the 1992 UAO to encompass the 1996 ROD, so that the work to be performed under the UAO would reflect the change in remedy selection.

The in-situ metals precipitation system called for in the 1996 ROD is currently being operated. The operation of the metal precipitation system is reducing the level of chromium contamination in the shallow aquifer beneath the Facility. To date, it has been performing successfully and will continue until the performance standards outlined in the 1996 ROD are met.

During the installation of the air sparge and SVE wells in May 1998, Avco's design consultant determined that the designed remedy would not be effective due to subsurface geologic conditions, which were different from the conditions encountered during the pilot study. As a result, at the direction of the EPA, all available geologic and hydrogeologic data for the Site was

compiled by Avco's contractor and thoroughly evaluated by the contractor and EPA . These data were also entered into a 3-D geologic model in order to better determine subsurface lithology and its potential impact on remedy selection.

Results of the initial data evaluation indicated that some data gaps existed with respect to geology, hydrogeology, and VOC distribution. To address these data gaps, EPA required that Avco collect supplemental data. This program, initiated in September 1998, included the installation and sampling of 11new groundwater monitoring wells and performing 27 aquifer slug tests.

The results of the additional groundwater data indicated that the geology under the east parking lot area is very complex. The plume had not varied in size much through the years. It was determined that geology causes the contaminated groundwater to move from north to south concentrated under the center of the Facility (See Figure 1). This additional information has resulted in the need to revise the remedy for the VOC contaminated groundwater at the Site.

This ROD Amendment describes the revised remedy and explains why EPA is changing to this revised remedy. EPA is the lead agency for response activities at the Site. PADEP is the support agency for this response action.

EPA selected the remedial actions in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 as amended, ("CERCLA"), 42 U.S.C. §§ 9601 et seq., and, to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan ("NCP"), 40 C.F.R. Part 300. The decision for this Site is based on the Administrative Record, which contains all of the supporting documentation for this ROD Amendment.

II. COMMUNITY PARTICIPATION AND INFORMATION AVAILABILITY

The Proposed Plan to amend the 1996 ROD and supporting documentation was released to the public for comment on December 3, 1999. The documents were made available to the community in the information repositories maintained at the following locations:

U.S. EPA Region III
6 th Floor Docket Room
1650 Arch Street
Philadelphia, PA 19103
(215) 814-3157

James V. Brown Library
19 E 4th Street
Williamsport, PA
(570) 326-0536

The notice of availability for these documents and the announcement of the public meeting were published in the Williamsport Sun-Gazette on December 3, 1999. A public meeting was held on January 10, 2000. At this meeting representatives from EPA and PADEP answered questions

regarding the Site and the remedial alternatives under consideration. The public comment period on the Proposed Plan was held from December 3, 1999 to January 17, 2000. A response to the comments received during this period is included in the Responsiveness Summary, which is part of this ROD Amendment. These activities were undertaken by EPA as part of its public participation responsibilities under Section 117 (a) of CERCLA and Section 300.435 (c)(2)(ii) of the NCP.

The Administrative Record includes all documents such as data analyses, public comments, meeting transcripts, and other relevant information upon which the selection of the response action was based. In accordance with Section 300.825 (a)(2) of the NCP, this ROD Amendment will become part of the Administrative Record.

III. SUMMARY OF ORIGINAL REMEDY

The 1996 ROD described the treatment technology for both chromium and VOCs. The 1996 ROD required two types of treatment for contamination in the shallow aquifer beneath the Facility: 1) in-situ metals precipitation for chromium; and, 2) air sparging/SVE for VOCs.

The 1996 ROD did not differentiate between the three areas of concern that this ROD Amendment covers:

1. **Shallow aquifer beneath the Facility** - groundwater contamination beneath the Avco Lycoming Facility in the shallow aquifer, which is also known as the overburden aquifer.

2. **Source Areas** - areas of high contamination, called "hot spots", in the shallow aquifer beneath the Avco Lycoming Facility. The "hot spots" are specifically found in both the east parking lot and central plant areas.

3. **Shallow aquifer beyond the Facility/Deep aquifer throughout Site** - groundwater contamination beyond the property boundaries of the Avco Lycoming Facility in the shallow aquifer and groundwater contamination in the deep aquifer throughout the Site. The deep aquifer is also known as the bedrock aquifer.

IV. RATIONALE FOR CHANGING A PORTION OF THE REMEDY SELECTED IN 1996 ROD

After reviewing all the data, EPA has concluded that although air sparging/SVE could be used to remediate the Site, it would not be very effective. The geology in the areas with the VOC contaminated groundwater does not facilitate the use of air sparging/SVE to remediate the

shallow aquifer beneath the Facility. Some of the air sparging/SVE wells would be located in silt, which limits the effectiveness of the technology.

The revised remedy will be more effective in attaining the remedial objectives outlined in the 1996 ROD for the VOC contaminated groundwater. The revised remedy will contain and remediate the groundwater in the shallow aquifer beneath the Facility. A subsequent objective of the revised remedy is to reduce the VOC mass in the source areas to assist in reaching the remedial objectives.

Table 1
Description of Remedy Modifications

Original Remedy	Modified Remedy
Installation of air sparging/SVE system: • air sparging/SVE wells • air compressors • blowers • vapor-phase carbon for off-gas	Installation of groundwater recovery and treatment system to contain and remediate the shallow aquifer beneath the Facility : • extraction wells • pretreatment • air stripping • vapor-phase carbon for off-gas Reduce contamination in the source areas either by one, or a combination, of the following: • Air Sparging/SVE • Groundwater Extraction • In-Situ Oxidation

V. SUMMARY OF SITE RISKS

As part of the RI/FS conducted in 1991, a Baseline Risk Assessment ("RA") was conducted to estimate the human health and environmental risks that would be present if contamination at the Site was not remediated. The Baseline RA determined that there is no current risk because there is no ingestion pathway associated with the contaminated groundwater. There may be a potential future risk to human health, if the contamination is not addressed by a remedial action. Therefore, a remedial action needs to be selected to reduce the future risk to acceptable levels.

As stated in both the 1991 and 1996 RODs, the only media of concern at the Site is contaminated groundwater, which may pose a risk to human health through the ingestion pathway. The risk associated with exposure to contaminated groundwater at the Site has not changed. Actual or threatened future risk from this Site, if not addressed by a remedial action, presents a potential threat to public health, welfare or the environment.

Table 2 Chemicals of Concern and Highest Concentration Detected	
Chemical	**Concentration (ug/L)[1]**
1, 2- Dichloroethene	48,000
Trichloroethene	40,800
Vinyl Chloride	23,000

[1] Values taken from Fourth Quarter 1999 Quarterly Progress Report, Remedial Action Report, Annual LNAPL Monitoring, Annual UST Groundwater Monitoring, Textron Lycoming, Williamsport, PA, Table 1.

Refer to the Summary of Site Risks in the 1991 ROD for further discussion of the human and ecological risk assessment performed for the Site or to the Baseline Risk Assessment for the complete assessment. Both documents are part of the Administrative Record for the Site.

VI. DESCRIPTION OF REMEDIAL ALTERNATIVES

The FFS, dated February 25, 1999, evaluated six remedial alternatives for containing and remediating the VOC plume identified in the **shallow aquifer beneath the Facility**. The remedial alternatives outlined in the study include:

1. groundwater extraction and treatment
2. air sparging and soil vapor extraction
3. in-well air stripping
4. potassium permanganate oxidation
5. Hydrogen peroxide oxidation
6. Ozone sparging

Previous evaluations of the first three alternatives have been performed and documented in Environmental Resources Management, Inc., Draft Feasibility Study, Textron Lycoming, Williamsport, Pennsylvania, March 15, 1991, and Geraghty & Miller, Inc., Focused Feasibility Study Operable Unit No.1, Avco Lycoming Superfund Site, Williamsport Pennsylvania, September 1996. All six remedial alternatives are evaluated in the Draft Focused Feasibility Study, Avco Lycoming Superfund Site, Williamsport, Pennsylvania, prepared by IT Corporation, dated February 25, 1999.

Regardless of the alternative chosen, EPA will review the remedy at least every five years to ensure the continued protection of human health and the environment.

Below is a brief description of the six alternatives EPA considered.

No Action Alternative

The Superfund Program is required to evaluate the "No Action" Alternative. Under this alternative, no remedial action would be taken at the site. The existing groundwater extraction and treatment systems would not be operated; however, groundwater monitoring would continue.

At the Avco Lycoming Site, remedial actions have already been undertaken pursuant to a COA with PADEP. Thus, a true no action alternative is not possible. The best approximation of a no action alternative is ceasing current actions, that is shutting off the groundwater extraction system. This alternative would be selected only if the Site posed little or no risk to public health or the environment. There are no capital costs or Operation and Maintenance costs associated with the No Action Alternative.

Capital Cost	$0
Annual O&M Costs	$0
Present Worth	$0

Alternatives for the Shallow Aquifer beneath the Facility

Alternative 1: **Groundwater Extraction, Chemical Pretreatment for Iron, Air Stripping, Emissions Control and Discharge of Treated Water**

This alternative consists of a groundwater extraction and treatment system installed to effectively capture VOC-contaminated groundwater plume in the shallow aquifer beneath the Facility. The system would be designed based on two performance objectives: 1) containment of the plume, 2) and restoration of the aquifer to beneficial use. For cost purposes, it was estimated that recovery wells would pump the water into an equalization tank. A transfer pump would then pump water through a pretreatment unit into a tray air stripper. A pretreatment system may be necessary due to elevated levels of iron in the groundwater. The air stripper effluent would be discharged to Lycoming Creek via a discharge pipe or discharge outfall, which would be regulated by a new NPDES permit. If required, the air stripper off-gas would be treated by a vapor-phase granular activated carbon (VGAC) system. This system would contain a series of two VGAC vessels. The final determination of the requirements for the groundwater recovery system would be made during system design.

Capital Cost	$464,800
Annual O&M Costs	$81,600
30-year Present Worth	$1,460,000
Total Remediation Present Worth[2]	**$2,300,000**

[2] Total Remediation Present Worth includes the cost for Source Area reduction

Alternative 2: **Air Sparging and Soil Vapor Extraction**

This technology would employ a series of air sparge and SVE wells within the subsurface preferential groundwater flow pathway to remediate VOC-contaminated groundwater, in the shallow aquifer, as it migrates off the Facility. Compressed air is injected through the air sparging wells and travels upward through the water column and volatilizes the VOCs. The air, containing the volatilized contaminants, moves up into the unsaturated zone where it is captured and removed using a SVE system.

The components of the air sparging/SVE system will include the following: a series of air sparging and soil vapor extraction wells along the perimeter of the site; air compressors, blowers and associated piping and equipment; and, VGAC for off-gas treatment, if required.

Capital Cost	$363,300
Annual O&M Costs	$106,800
30-Year Present Worth	$1,660,000
Total Remediation Present Worth	**$2,500,000**

Alternative 3: **In-well Air Stripping**

This technology would utilize air to lift groundwater, from the shallow aquifer, to the top of the well. The water would then cascade down through an in-well air stripper. The process of lifting the water and passing through the air stripper removes the VOCs from the groundwater. Treated groundwater then re-enters the subsurface though a second screen at the base of the unsaturated

zone within the same well. The TCE-contaminated air would be removed from the well and treated with VGAC. Recovery wells would be positioned at similar intervals as those used for a groundwater extraction and treatment system.

Capital Cost	$333,900
Annual O&M Costs	$118,000
30-Year Present Worth	$1,770,000
Total Remediation Present Worth	**$2,610,000**

Alternative 4: **Potassium Permanganate Oxidation Process**

This technology would involve injecting a solution of potassium permanganate into the shallow aquifer to oxidize VOCs. An initial slug of potassium permanganate would be injected in approximately 50 to 70 locations. This initial slug would treat the initial mass of VOCs and help to remediate "pockets" of higher concentrations. Once the initial slug of potassium permanganate had been introduced to the subsurface, a series of approximately 200 passive injection wells would be installed for injection of potassium permanganate to treat groundwater flowing off-Facility.

Capital Cost	$1,101,100
Annual O&M Costs	$94,150
30-Year Present Worth	$2,225,000
Total Remediation Present Worth	**$3,065,000**

Alternative 5: **Hydrogen Peroxide Oxidation Process**

This technology would inject a solution of hydrogen peroxide into the shallow aquifer to oxidize VOCs. An initial slug of hydrogen peroxide would be injected in approximately 50 to 70 locations. This initial slug would treat the initial mass of VOCs and help to remediate "pockets" of higher concentrations. Once the initial slug of hydrogen peroxide had been introduced to the subsurface, a series of approximately 200 passive injection wells would be installed for injection of hydrogen peroxide to treat groundwater flowing off-Facility.

Capital Cost	$1,100,680
Annual O&M Cost	$91,960
30-Year Present Worth	$2,222,000
Total Remediation Present Worth	**3,062,000**

Alternative 6: **Ozone Sparging**

This technology involves the production of ozone and rapidly delivering it into the shallow aquifer. Ozone would be created by a generator utilizing ambient air. The ozone would be injected into approximately 70 sparge wells. A SVE system would be employed with the ozone sparging, including a VGAC unit.

Capital Cost	$899,500
Annual O&M Cost	$85,600
30-Year Present Worth	$1,940,000
Total Remediation Present Worth	**$2,780,000**

Source Area Reduction

Source reduction activities in the east parking lot and the central plant area (**"Source Areas"**) will be implemented along with the alternative chosen for containing further off-site migration and remediating the VOC plume identified in the shallow aquifer beneath the Avco Lycoming Facility. The source area remedy will be evaluated during the remedial design. The EPA has estimated that the 30-year present worth (8% net interest rate) cost to implement any of the source area remedies would be approximately $840,000. This amount has been added to the 30-year present worth for each of the alternatives to derive the Total Remediation Present Worth, with the exception of the No Action Alternative.

A brief discussion of the source reduction technologies to be used in the **Source Areas** follows. A more detailed discussion can be found in the 1999 FFS update.

Air Sparging/Soil Vapor Extraction

Field pilot testing of source reduction technologies was previously performed in the east parking lot and central areas. This testing included air sparging/SVE in the east parking

lot and SVE only in the central area. While the air sparging portion of the pilot testing was not appropriate in high watertable conditions, the technology could work under certain conditions and may be appropriate as a source reduction technology. Testing also indicated an approximate radius of SVE influence of 30 feet in the central area and east parking lot.

Groundwater Extraction
Hydraulic conductivity values derived from slug testing ranged from approximately 2 to 12 feet per day in both the east parking lot and the central area. Based on these hydraulic conductivity values, groundwater extraction could be implemented to reduce VOC mass.

In-Situ Oxidation
Potassium permanganate is an oxidizing agent that has unique oxidation capabilities for certain chlorinated solvents. When permanganate is used for in-situ remedial treatment of the groundwater, it temporarily turns the groundwater purple. However, the color disappears as the permanganate reacts with contaminants and natural organic material in the soil and groundwater. Potassium permanganate is generally added to the subsurface in a solution either through direct injection or by direct addition via wells or infiltration galleries. The addition method is dependent upon geology, zones to be treated, etc. This technology can be used to treat both soils (saturated and unsaturated) and groundwater.

Shallow aquifer beyond the Facility/Deep Aquifer throughout Site

Finally, in connection with EPA's re-evaluation of the remedy for the VOC-contaminated groundwater beneath the Facility, EPA now proposes to address the **shallow aquifer beyond the Facility/deep aquifer throughout Site** through the existing downgradient extraction system which is being implemented by Avco through its COA with PADEP. The EPA has evaluated all the hydrogeological data collected since the 1991 ROD and has determined that, in conjunction with the revised remedy selected in this ROD Amendment, the current downgradient extraction system, along with natural attenuation, is protective of human health and the environment.

VII. COMPARATIVE ANALYSIS OF ALTERNATIVES

Each of the six remedial alternatives described above, for the **shallow aquifer beneath the Facility**, was evaluated using nine criteria. The strengths and weaknesses of the alternatives were then weighed to identify the alternative providing the best balance among the nine criteria. These nine criteria, which are separated into three categories, are presented below:

Threshold Criteria

1. **Overall protection of human health and the environment** - Addresses whether a remedy provides adequate protection and describes how risks posed through each

pathway are eliminated, reduced, or controlled through treatment, engineering controls, or institutional controls.

2. **Compliance with applicable or relevant and appropriate requirements (ARARs)** - Addresses whether a remedy will meet all of the ARARs of other federal and state environmental laws and/or justifies a waiver.

Primary Balancing Criteria

3. **Long-term effectiveness and permanence** - Addresses expected residual risk and the ability of a remedy to maintain reliable protection of human health and the environment over time, once cleanup goals have been met.
4. **Reduction of toxicity, mobility, or volume through treatment** - Addresses the anticipated performance of the treatment technologies a remedy may employ.
5. **Short-term effectiveness** - Addresses the time needed to achieve protection and any adverse impacts on human health and the environment that may be posed during the construction and implementation period, until cleanup goals are achieved.
6. **Implementability** - Addresses the technical and administrative feasibility of a remedy, including the availability of materials and services needed to implement a particular option.
7. **Cost** - Includes estimated capital and operation and maintenance costs, and present worth costs.

Modifying Criteria

8. **State/Support Agency Acceptance** - Indicates the support agency's comments. Where the state or federal agency is the lead for the ROD, EPA's acceptance of the selected remedy is addressed under this criterion.
9. **Community Acceptance** - Summarizes the public's general response to the alternatives described in the Proposed Plan. The specific responses to public comments are addressed in the Responsiveness Summary section of the Record of Decision.

A. Overall Protection of Human Health and the Environment

A primary requirement of CERCLA is that the selected remedial alternative be protective of human health and the environment. A remedy is protective if it reduces current and potential risks to acceptable levels under the established risk range posed by each exposure pathway at the Site.

For overall protection of human health and the environment, no unacceptable risks are associated with current groundwater use in the area, because of the treatment system at the Williamsport Municipal Water Authority ("WMWA") well field. The future risk from groundwater would be

reduced by Alternatives 1 through 6, which minimize migration of contaminants in groundwater flowing from the Site. Alternative 1, the Preferred Alternative, should achieve this goal in the most timely manner.

B. Compliance with Applicable or Relevant and Appropriate Requirements ("ARARs")

Any cleanup alternative considered by EPA must comply with, or waive, all applicable or relevant and appropriate federal and state environmental requirements as outlined in Section 121(d) of CERCLA. The requirement is that remedial actions at CERCLA sites at least attain legally applicable or relevant and appropriate cleanup standards, standards of control, and other substantive environmental protection requirements, criteria or limitations promulgated under Federal or State law, which are collectively referred to as "ARARs", unless such ARARs are waived under CERCLA Section 121(d)(4). This discussion supplements the discussion of ARARs selected in the 1996 ROD; reference should also be made to the 1996 ROD for a complete discussion of all Site ARARs.

"Applicable" requirements are those cleanup standards, standards of control, and other substantive environmental protection requirements, criteria or limitations promulgated under Federal or State law that specifically address a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a CERCLA site. "Relevant and appropriate" requirements are those requirements that, while not legally "applicable", address problems or situations sufficiently similar to those encountered at the site and that their use is well-suited to the particular site. Only those State standards that are promulgated, are identified by the State in a timely manner, and are more stringent than federal requirements may be applicable or relevant and appropriate. The term "promulgated" means that the standards are of general applicability and are legally enforceable.

ARARs may relate to the substances addressed by the remedial action (chemical-specific), to the location of the site (location-specific), or the manner in which the remedial action is implemented (action-specific). In addition to ARARs, the lead agencies may, as appropriate, identify other advisories, criteria, or guidance to be considered for a particular release. The "to be considered" ("TBC") category consists of advisories, criteria, or guidance that were developed by EPA, other federal agencies or states that may be useful in developing CERCLA remedies.

Section 121(d)(2)(A) of CERCLA provides that remedial actions shall require a level or standard of control which at least attains the Maximum Contaminant Level Goals ("MCLGs") established under the Federal Safe Drinking Water Act ("SDWA"), 42 U.S.C. §§ 300f et seq., at 40 C.F.R. §§ 141.11-.12 and 141.61-.62 and water quality criteria established under Section 304 or 303 of the Clean Water Act, where such goals or criteria are relevant and appropriate under the circumstances of the release or threatened release. The NCP further specifies that at Superfund sites whose ground or surface waters are current or potential sources of drinking water, all non-

zero MCLGs shall be met in such waters to the extent they are relevant and appropriate; and that to the extent a non-zero MCLG is not relevant and appropriate for a given contaminant, the MCL for that contaminant shall be met in the surface and groundwater to the extent relevant and appropriate. The NCP also provides that where an MCLG for a contaminant has been set at a level of zero, the MCL promulgated for the contaminant under the SDWA shall be attained by remedial actions for ground or surface waters that are current or potential sources of drinking water, where the MCL is relevant and appropriate under the circumstances of the release.

The requirements of the following statutes and regulations were evaluated as potential chemical-specific ARARs for the contaminants of concern being remediated in the VOC contaminated groundwater at the Site under this Amendment:

a. MCLs promulgated under the SDWA, 42 U.S.C. §§ 300f et seq., at 40 C.F.R. §141.61;

b. non-zero MCLGs, promulgated under Section 300g-1 of the SWDA, and set forth at 40 C.F.R. §§ 141.50-.51;

c. With respect to Pennsylvania Land Recycling and Environmental Standards Act ("Act 2"), 35 P.S. § 6026.301, PADEP had previously identified Act 2 as an ARAR for the remedy selected in connection with the 1996 ROD. EPA has determined that Act 2 does not, on the facts and circumstances of this proposed remedy Amendment, impose any requirements more stringent than the federal standards.

Table 3 below sets forth the proposed chemical-specific ARARs for this Amendment, which standards are "relevant and appropriate" to the proposed remediation. Furthermore, EPA proposes these levels as the groundwater cleanup standards for the contaminants of concern addressed in this Amendment in order to restore the VOC-contaminated groundwater in the shallow and deep aquifers to levels that are protective of human health.

Table 3
Potential Chemical-Specific ARARs

CHEMICAL	POTENTIAL ARAR (ug/l)	SOURCE*
1,2- Dichloroethene	70	MCL
Trichloroethene	5	MCL
Vinyl Chloride	2	MCL

*MCLs, promulgated under the SDWA at 40 C.F.R. § 141.61; and MCLGs, promulgated under the SDWA, at 40 C.F.R. §§ 141.50-.51.

The major potential action-specific ARARs for this Amendment include the requirement that new air contamination sources be controlled to the maximum extent and consistent with the best available technology, as set forth at 25 Pa Code § 127.1, and Pennsylvania's regulations for fugitive air emissions, as set forth at 25 Pa Code §§ 123.1(a) and 123.2. Other Pennsylvania air pollution regulations are outlined in 25 Pa. Code §§ 124.1 - 124.3, 127.81 - 127.83, 127.201 - 127.217, 127.25, 127.401 - 127.464, 129.91 - 129.95. Federal Clean Air Act requirements are applicable and must be met for the discharge of contaminants into the air. These substantive air emission requirements are outlined in 40 C.F.R. §§ 264.1030 - 264.1034 (Air Emission Standards for Process Vents), and 40 C.F.R. §§ 264.1050 - 264.1063 (Air Emission Standards for Equipment Leaks). Emission standards for vinyl chloride are outlined in 40 C.F.R. §§ 264.94 - 264.96 (National Emission Standards for Vinyl Chloride). Office of Solid Waste and Emergency Response ("OSWER") Directive #9355.0-28, Control of Air Emissions from Superfund Air Strippers at Superfund Ground Water Sites, is a TBC requirement.

The treated groundwater effluent shall be discharged to a storm sewer then to the Lycoming Creek. The surface water discharge will comply with the substantive requirements of the federal Clean Water Act's NPDES regulations (40 C.F.R. §§ 122.41-122.50), and the Pennsylvania NPDES regulations (25 Pa Code § 92.31).

In addition, federal regulations under the Federal Underground Injection Control ("UIC") Program, as set forth at 40 CFR § 144.24, are potential action-specific ARARs for several of the Alternatives.

All the Alternatives evaluated, except the no action alternative, can be designed and implemented with the objective of satisfying ARARs. The Preferred Alternative may achieve compliance with ARARs sooner than the other Alternatives.

C. Long-Term Effectiveness and Permanence

Alternatives 1, 2, 3 and 4 are expected to provide a high degree of permanence, but the effectiveness of Alternatives 2 through 6 is less certain, due to the variable geology of the site. Alternative 1 is a proven technology for remediating groundwater in bedrock.

D. Reduction of Toxicity, Mobility or Volume

All alternatives would reduce the toxicity, mobility, or volume of contaminants by extracting and treating the groundwater. The Preferred Alternative is a proven method to reduce the toxicity, mobility , and volume of contaminants. The source reduction element of the Preferred Alternative focuses on reducing the volume of contaminants. The other Alternatives have the ability to reduce the toxicity, mobility or volume of contaminants, but their effectiveness in the variable geology of the Site may be a limiting factor.

E. Short-Term Effectiveness

There are minimal short-term potential risks associated with the construction of Alternatives 1 through 4. There are health and safety concerns associated with Alternatives 5 and 6. The hydrogen peroxide used in Alternative 5 and the ozone used in Alternative 6 are corrosive materials. The risks from these corrosive materials are readily controlled through engineering measures.

F. Implementability

All the Alternatives should be implementable. Alternatives 2 through 6 have uncertainties associated with both their short and long-term effectiveness at the Site due to the complex geology. Alternatives 4 and 5 require the installation of a high number of injection wells. These will require a high degree of maintenance and installation would be labor intensive based on the quantity and the high degree of underground utility interference. The implementation of the first phase of the Preferred Alternative can be expedited and completed within 10 months. The source reduction element of the Preferred Alternative can be easily implemented after the first phase is underway.

G. Costs

Evaluating the costs of any remedy involves calculating the direct and indirect capital costs and the annual operations and maintenance ("O&M") cost, and then converting these calculations to a present worth basis. The estimated capital, annual O&M and present worth cost for each of the Alternatives has been calculated for comparative purposes and is presented in Table 4.

Table 4
Summary of Estimated Costs for Each Alternative

	Capital Cost	Annual O&M Cost	30-yr Present Worth
Alternative 1	$464,8000	$81,6000	$1,460,000
Alternative 2	$363,300	$106,800	$1,660,000
Alternative 3	$333,900	$118,000	$1,770,000
Alternative 4	$1,101,100	$94,150	$2,225,000
Alternative 5	$1,100,680	$91,960	$2,222,000
Alternative 6	$899,500	$85,600	$1,940,000

H. State Acceptance

The Commonwealth of Pennsylvania has provided support to EPA throughout the re-evaluation process. In a letter dated December 31, 1999, PADEP concurred with the selected remedy (Alternative 1).

I. Community Acceptance

On December 3, 1999, pursuant to section 113 (k)(2)(B)(i)-(v) of CERCLA, 42 U.S.C. § 9613 (k)(2)(B)(i)-(v), EPA released for public comment the Administrative Record and the Proposed Plan setting forth EPA's Preferred Alternative for the Avco Lycoming Superfund Site. EPA made these documents available to the public in the Administrative Record located at the EPA Region III offices in Philadelphia, PA, and at the John V. Brown Library, Williamsport, PA. The notice announcing the availability of the Proposed Plan and the public meeting was published in Williamsport-Sun Gazette on December 3, 1999.

A public comment period was held from December 3, 1999 to January 17, 2000. The Proposed Plan discussed each Alternative evaluated by EPA and solicited comments from all interested parties. On January 10, 2000, EPA and PADEP conducted a public meeting at the City Council Chambers, City Hall in Williamsport, PA. At this meeting, representatives from EPA answered questions about conditions at the Site and the remedial alternatives under consideration. Responses to all comments received during the public comment period are included in the Responsiveness Summary, which is included in this ROD Amendment.

VIII. THE SELECTED REMEDY

A. Summary of the Rationale for the Selected Remedy

Groundwater extraction and treatment is a proven method of remediating VOC-contaminated groundwater in bedrock. The revised remedy provides the most effective and efficient remedy when evaluated using the balancing and modifying criteria. The revised remedy will remediate the aquifers to allow for beneficial use by treating the contamination. The remedy can easily be implemented and it is cost effective. EPA carefully considered state and community acceptance of the remedy prior to reaching the final decision regarding the selected remedy.

B. Description of the Selected Remedy

The Agency's revised remedy is Alternative 1: *Groundwater Extraction, Chemical Pretreatment for Iron, Air Stripping Emission Control and Discharge of Treated Water*, for the remediation of the **shallow aquifer beneath the Facility.** For the **Source Areas**, source reduction will be

implemented using one or a combination of the following technologies: Air Sparging/SVE; Groundwater Extraction; and/or, In-Situ Oxidation. EPA will recognize the existing downgradient extraction system, which is being implemented through a COA between Avco and PADEP, for the remediation of the **shallow aquifer beyond the Facility and the deep aquifer throughout the Site.** Based on current information, this combination of alternatives provides the most effective and efficient remedy to remediate contamination at the Site when evaluated under EPA's nine criteria.

The revised remedy consists of the following components:

- Installation of groundwater recovery and treatment system to contain and remediate groundwater in the shallow aquifer beneath the Facility. This recovery and treatment system will include:
  - extraction wells
  - pretreatment
  - air stripping
  - vapor-phase carbon for off-gas

- Contamination reduction of the source areas by one or a combination of the following:
  - Air Sparging/SVE
  - Groundwater Extraction
  - In-Situ Oxidation

- Recognize the continued use of downgradient extraction system, which is being implemented by Avco under a COA with PADEP, as the method for remediating groundwater in the shallow aquifer beyond the Facility and the deep aquifer throughout the Site.

- Implementation of institutional controls (e.g. easements and covenants, title notices and land use restrictions) that limit risks to human health by limiting future use of the property to those activities compatible with Site conditions.

C. Summary of Estimated Remedy Costs

The estimated cost of implementing the selected remedy, without the cost of the existing downgradient remedy, is summarized in Table 5.

Table 5 Summary of Estimated Costs	
Alternative 1 (revised remedy):	
Capital Cost	$464,800
Annual O&M Costs	$81,600
30-year Present Worth	$1,460,000
Source Area:	
30-year Present Worth	$840,000
Remedy Implemented through COA between Avco and PADEP[1]	
Capital Costs	$1,292,000
Total Remediation Cost:	
30-year Present Worth	$3,592,000

[1]Annual O&M Costs could not be determined at this time

A detailed cost estimate summary table is provided as Table 6. The information in the cost estimate summary table is based on the best available information regarding the anticipated scope of the revised remedy. Changes in the cost elements are likely to occur as a result of new information and data collected during the engineering design of the revised remedy. Major changes may be documented in the form of a memorandum in the Administrative Record file an ESD, or a ROD amendment. This is an order-of-magnitude engineering cost estimate that is expected to be within +50 to -30 percent of the actual project cost.

Table 6
Cost Estimate
for
Groundwater Extraction and Treatment
CAPITAL COSTS

Item	Quantity	Description	Unit Cost	Total Cost
Recovery Wells and Roadboxes	*10 wells*	*6 inch SS, 32 ft deep*	$7,500	$75,000
Groundwater Pumps	10	½ HP Electric	$2,000	$20,000
Well and Transmission Piping	1100 feet	Pitless adapter and header system	$10	$11,000
Excavation, Backfill, Resurfacing	1000 feet	4 feet deep, around utilities	$75	$75,000
Subsurface Electrical Installation	5000 feet	Power to each recovery well	$10	$50,000
Soil Disposal	560 tons	Non-hazardous soil	$50	$28,000
Pretreatment System	1 system	3,000 gal tank, filters, transfer pump	$20,000	$20,000
Air Stripper System	1 skid unit	5 HP Blower & discharge pump	$20,000	$20,000
VGAC System	2 units	1,200 lbs VGAC per unit	$4,000	$8,000
System Plumbing and Electrical	*1 lump sum*	*Inside Equipment Building*	$25,000	$25,000

Table 6 Cost Estimate for Groundwater Extraction and Treatment CAPITAL COSTS				
Capital Cost Subtotal				$332,000
Mobilization/Demobilization, Engineering, Permitting, and Contingencies (40%)				$132,800
Capital Cost Total				$464,800

ANNUAL COSTS				
Item	Quantity	Description	Unit Cost	Total Cost
Electrical Consumption	25 HP	Pumps, Air Stripper Blower, misc.	$0.12 /kWhr	$24,000
Vapor-phase GAC Consumption	1,200 lbs	Quarterly Changeouts	$2.00/lb	$9,600
System Operation and Maintenance	24 visits	System optimization & sampling, equipment maintenance	$2,000 / visit	$48,000
Annual Cost Total				$81,600

TOTAL NET PRESENT VALUE COSTS (8% Net Interest Rate)	
5 Year Total Net Present Value	$817,000
15 Year Total Net Present Value	$1,219,000
20 Year Total Net Present Value	$1,460,000

D. Expected Outcomes of the Selected Remedy

The revised remedy for the **shallow aquifer beneath the Facility** will contain and remediate the VOC plume through the design, installation and implementation of the proposed groundwater extraction and treatment system. The **source area** reduction actions will quickly address "hot spots" of contamination, and are meant to enhance the remedial alternative chosen for containment and restoration of the aquifer by reducing the time frame for meeting the performance standards. These two remedies working together are expected to return the groundwater to drinking water standards. The anticipated time frame for cleanup has not been modeled. It is anticipated that significant cleanup progress can be made in 30 years.

For the **shallow aquifer beyond the Facility and the deep aquifer throughout the Site,** the use of the current treatment system, along with natural attentuation, is protective of human health and the environment. This portion of the remedy will ensure that the groundwater meets drinking water standards during the process of being fully remediated.

E. Performance Standards

1. Groundwater extraction and treatment system

a. The groundwater in the shallow aquifer beneath the Facility shall be remediated through a groundwater extraction and treatment system. The extraction wells shall be designed to remediate the dissolved contaminant plume to the MCLs listed in Table 7. The exact number and location of the extraction wells will be determined during the remedial design phase. The design will account for the geologically controlled groundwater pathway, trending approximately north to south, near the center of the Facility.

Table 7
Cleanup Levels for Contaminants of Concern

Chemical	Concentration Limits (ug/l)	Source*
1,2 - Dichloroethene	70	MCL
Trichloroethene	5	MCL
Vinyl Chloride	2	MCL

* MCLs, promulgated under SDWA at 40 C.F.R. § 141.61; and MCLGs, promulgated under the SDWA, at 40 C.F.R. §§ 141.50-.51.

b. Recovered groundwater shall be treated and reduced to MCLs via air stripping followed by vapor phase granular activated carbon. The treatment system shall reduce the contaminants in the extracted groundwater, unattended, on a continuous 24-hour-per-day performance basis. The final pumping rate and the exact location, size, and number of extraction wells shall be determined during the remedial design. The design, construction and operation of the treatment system shall consider and reduce the possible visual and noise impacts to the surrounding residences. The design, construction and operation of the treatment system shall be in harmony with the surrounding community to the extent practicable.

c. The treated groundwater effluent shall be discharged to a storm sewer then to the Lycoming Creek. The surface water discharge will comply with the substantive requirements of the federal Clean Water Act's NPDES regulations (40 C.F.R. §§ 122.41-122.50), and the Pennsylvania NPDES regulations (25 Pa Code § 92.31).

d. Any VOC emissions from treatment of groundwater, including air stripping, will be in accordance with the Pennsylvania air pollution regulations outlined in 25 Pa. Code §§ 123.1, 123.2, 124.1 - 124.3, 127.81 - 127.83, 127.201 - 127.217, 127.25, 127.401 - 127.464, 129.91 - 129.95. 25 Pa Code § 127.12 requires all new air emission sources to achieve minimum attainable emissions using best available technology ("BAT"). In

addition, the PADEP air permitting requirements for remediation projects require all air stripping units to include emission control equipment. Federal Clean Air Act requirements, 42 U.S.C. §§ 7401 et seq., are applicable and must be met for the discharge of contaminants into the air. Air permitting and emission requirements are outlined in 40 C.F.R. §§ 264.1030 - 264.1034 (Air Emission Standards for Process Vents), and 40 C.F.R. §§ 264.1050 - 264.1063 (Air Emission Standards for Equipment Leaks). Emission standards for vinyl chloride is outlined in 40 C.F.R. Subpart F (National Emission Standards for Vinyl Chloride). Office of Solid Waste and Emergency Response ("OSWER") Directive #9355.0-28, Control of Air Emissions from Superfund Air Strippers at Superfund Ground Water Sites, is a TBC requirement.

e. Management of waste from the operation of the treatment system (i.e., spent carbon units) shall comply with the requirements of 25 Pa. Code Chapter 262, Subchapters A (relating to hazardous waste determination and identification numbers); B (relating to manifesting requirements for off-site shipments of hazardous wastes); and C (relating to pre-transport requirements); 25 Pa. Code Chapter 263 (relating to transporters of hazardous wastes); and with respect to the operations at the Site generally, with the substantive requirements of 25 Pa. Code Chapter 264, Subchapters B-D, I (in the event that hazardous waste generated as part of the remedy is managed in containers); 25 Pa. Code Chapter 264, Subchapter J (in the event that hazardous waste is managed, treated or stored in tanks); and 40 C.F.R. Part 268, Subchapter C, Section 268.30, and Subchapter E (regarding prohibitions on land disposal and prohibitions on storage of hazardous waste).

2. Source Area Reduction

a. Source Area reduction using groundwater extraction and treatment will reduce the mass of VOCs in the **Source Areas**. The exact number and location of the extraction wells will be determined during the remedial design phase. During design, a method to evaluate the effectiveness of this technology will be developed. This reduction technique shall meet all the performance standards outlined above in 1.c - e.

b. Source Area reduction using air sparging and SVE will reduce the mass of VOCs in the **Source Areas**. The exact number and location of the wells will be determined during the remedial design phase. During design, a method to evaluate the effectiveness of this technology will be developed. This reduction technique shall meet the performance standards outlined in 1. d, and e.

c. Source Area reduction using in-situ oxidation will reduce the mass of VOCs in the **Source Areas**. The exact number and location of the wells will be determined during the remedial design phase. During design, a method to evaluate the effectiveness of this technology will be developed. This reduction technique should not be designed to mobilize manganese. Mobilization of the manganese is not desirable as it will interfere

with the operation of the WMWA system, and will necessitate additional treatment on that system. A monitoring scheme shall be developed to identify mobilization of manganese during the design phase. This monitoring program will continue throughout the implementation of the remedy.

3. Maintenance and Monitoring

a. The groundwater extraction and treatment system and all other remedial action components shall be operated and maintained in accordance with an Operation and Maintenance Plan to be developed for this remedial action. The Operations and Maintenance Plan shall ensure that all remedial action components operate within design specifications and are maintained in a manner that will achieve the Performance Standards. The Operations and Maintenance Plan shall be updated from time-to-time as may be necessary to address additions and changes to the remedial action components.

b. A long-term groundwater monitoring program shall be implemented to evaluate the effectiveness of the treatment system and other remedial action components in reducing contamination in the groundwater to achieve the Performance Standards.

(i) The plan for the long-term groundwater monitoring program shall be included in the Operation and Maintenance Plan for the groundwater extraction and treatment system. The Plan shall include the sampling of a sufficient number of wells to monitor the effectiveness of the remedial action. EPA, in consultation with PADEP, will determine the number and location of monitoring wells necessary to verify the performance of the remedial action.

(ii) The installation of additional monitoring wells may be required to monitor the migration of contaminants in the shallow and deep groundwater zones. Numbers and locations of these monitoring wells shall be determined (as needed) by EPA during the remedial design, in consultation with PADEP.

(iii) The wells shall be sampled quarterly for the first three years. Based on the findings of the first three years of sampling, the appropriate sampling frequency for subsequent years will be determined by EPA, in consultation with PADEP.

(iv) Sampling and operations and maintenance shall continue until such time as EPA, in consultation with PADEP, determined that the Performance Standards for each contaminant of concern has been achieved throughout the entire area of groundwater contamination.

(v) If EPA, in consultation with PADEP, makes the determination that performance standards have been achieved, the wells shall be sampled for twelve

consecutive quarters throughout the entire plume, and if contaminants remain at or below the performance standards, the operation of the extraction system shall be shut down.

(vi) Annual monitoring of the groundwater shall continue for five years after the system shutdown.

(vii) If subsequent to an extraction system shutdown, annual monitoring shows that groundwater concentrations of any contaminant of concern are above the Performance Standard set forth above, the system shall be restarted and continued until the Performance Standards have once more been attained for twelve consecutive quarters. Annual monitoring shall continue until EPA determines, in consultation with PADEP, that Performance Standards for each contaminant of concern have been achieved on a continuing basis.

IX. STATUTORY DETERMINATIONS

Under section 121 of CERCLA and the NCP, the lead agency must select remedies that are protective of human health and the environment, comply with applicable or relevant and appropriate requirements (unless a statutory waiver is justified), are cost-effective, and utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable. In addition, CERCLA includes a preference for remedies that employ treatment that permanently and significantly reduces the volume, toxicity, or mobility of hazardous wastes as a principal element and a bias against off-site disposal of untreated wastes. The following sections discuss how the revised remedy meets these statutory requirements.

A. Protection of Human Health and the Environment

Based on current risk, the Site is protective of human health and the environment because nobody is currently using the groundwater as drinking water. The revised remedy seeks to protect human health and the environment from future risk through treatment to contain and remediate the **shallow aquifer beneath the Facility.** The source reduction actions are meant to enhance the remedial alternative chosen for containment and restoration of the aquifer by reducing the time frame for meeting the performance standards. The revised remedy chosen for containment and restoration of the aquifer will be protective of human health and the environment without source reduction. There are no short-term threats associated with the revised remedy that cannot be readily controlled. In addition, no adverse cross-media impacts are expected from the revised remedy.

B. Compliance with and Attainment of Applicable or Relevant and Appropriate Requirements

The revised remedy will comply with all applicable or relevant and appropriate chemical-specific, location-specific and action-specific ARARs. During the design phase, emissions will be determined. Depending on emission levels, the following requirements may be applicable or relevant and appropriate requirements. Those ARARs are identified below:

- MCLs promulgated under the SDWA, 42 U.S.C. §§ 300f et seq., at 40 C.F.R. § 141.61;

- non-zero MCLGs, promulgated under Section 300g-1 of the SDWA, and set forth at 40 C.F.R. § 141.50-.51;

- With respect to Pennsylvania Land Recycling and Environmental Standards Act ("Act 2"), 35 P.S. § 6026.301, PADEP had previously identified Act 2 as an ARAR for the remedy selected in connection with the 1996 ROD. EPA has determined that Act 2 does not, on the facts and circumstances of this ROD Amendment, impose any requirements more stringent than the federal standards;

- Table 6 set forth the proposed chemical-specific ARARs for this Amendment, which standards are "relevant and appropriate" to the proposed remediation. Furthermore, EPA proposes these levels as the groundwater cleanup standards for the contaminants of concern addressed in this Amendment in order to restore the VOC contaminated groundwater in the shallow aquifer to levels that are protective of human health;

- The treated groundwater effluent shall be discharged to a storm sewer then to the Lycoming Creek. The surface water discharge will comply with the substantive requirements of the federal Clean Water Act's NPDES regulations (40 C.F.R. §§ 122.41-122.50), and the Pennsylvania NPDES regulations (25 Pa Code § 92.31); and,

- Pennsylvania air pollution regulations are outlined in 25 Pa. Code §§ 123.1, 123.2, 124.1 - 124.3, 127.81 - 127.83, 127.201 - 127.217, 127.25, 127.401 - 127.464, and 129.91 - 129.95. 25 Pa Code § 127.12 requires all new air emission sources to achieve minimum attainable emissions using best available technology ("BAT"). In addition, the PADEP air permitting requirements for remediation projects require all air stripping units to include emission control equipment. Federal Clean Air Act requirements, 42 U.S.C. §§ 7401 et seq. Air permitting and emission requirements are outlined in 40 C.F.R. §§ 264.1030 - 264.1036 (Air Emission Standards for Process Vents), and 40 C.F.R. §§ 264.1050 - 264.1063 (Air Emission Standards for Equipment Leaks). Emission standards for vinyl chloride is outlined in 40 C.F.R. §§ 264.94 -264.96 (National Emission Standards for Vinyl Chloride). Office of Solid Waste and Emergency Response

("OSWER") Directive #9355.0-28, Control of Air Emissions from Superfund Air Strippers at Superfund Ground Water Sites, is a TBC requirement.

C. Cost-effectiveness

In EPA's judgement, the revised remedy is the most cost-effective alternative considered. The revised remedy provides the best overall protection in proportion to cost, and meets all other requirements of CERCLA. Section 300.430 (f)(1)(ii)(D) of the NCP requires EPA to evaluate the cost-effectiveness by comparing all of the alternatives which meet the threshold criteria, overall protection of human health and the environment and the environment and compliance with ARARs, against three additional balancing criteria: long-term effectiveness and permanence; reduction of toxicity, mobility or volume through treatment; and, short-term effectiveness. The estimated present worth cost for the revised remedy presented in this ROD Amendment is $2,300,000.

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

EPA has determined that the revised remedy represents the maximum extent to which permanent solutions and treatment technologies can be utilized while providing the best balance among other evaluation criteria. Of those alternatives that are protective of human health and the environment and comply with ARARs, EPA has determined that the revised remedy is the most efficient and effective alternative when evaluated using the five balancing criteria, while also considering (1) the statutory preference for treatment as a principal element, (2) the bias against off-site treatment and disposal, (3) state and community acceptance.

The revised remedy includes treatment to reduce the VOCs in the source areas. The revised remedy satisfies the criteria for long-term effectiveness by remediating the VOCs in the groundwater. The remedy does not present short-term risks different from the other treatment technologies. There are no special implementability issues that sets the revised remedy apart from any of the other alternatives evaluated.

E. Preference for Treatment as a Principal Element

The revised remedy treats the VOC-contaminated groundwater through extraction, treatment and discharge. By utilizing treatment, the statutory preference for remedies that employ treatment as a principal element is satisfied.

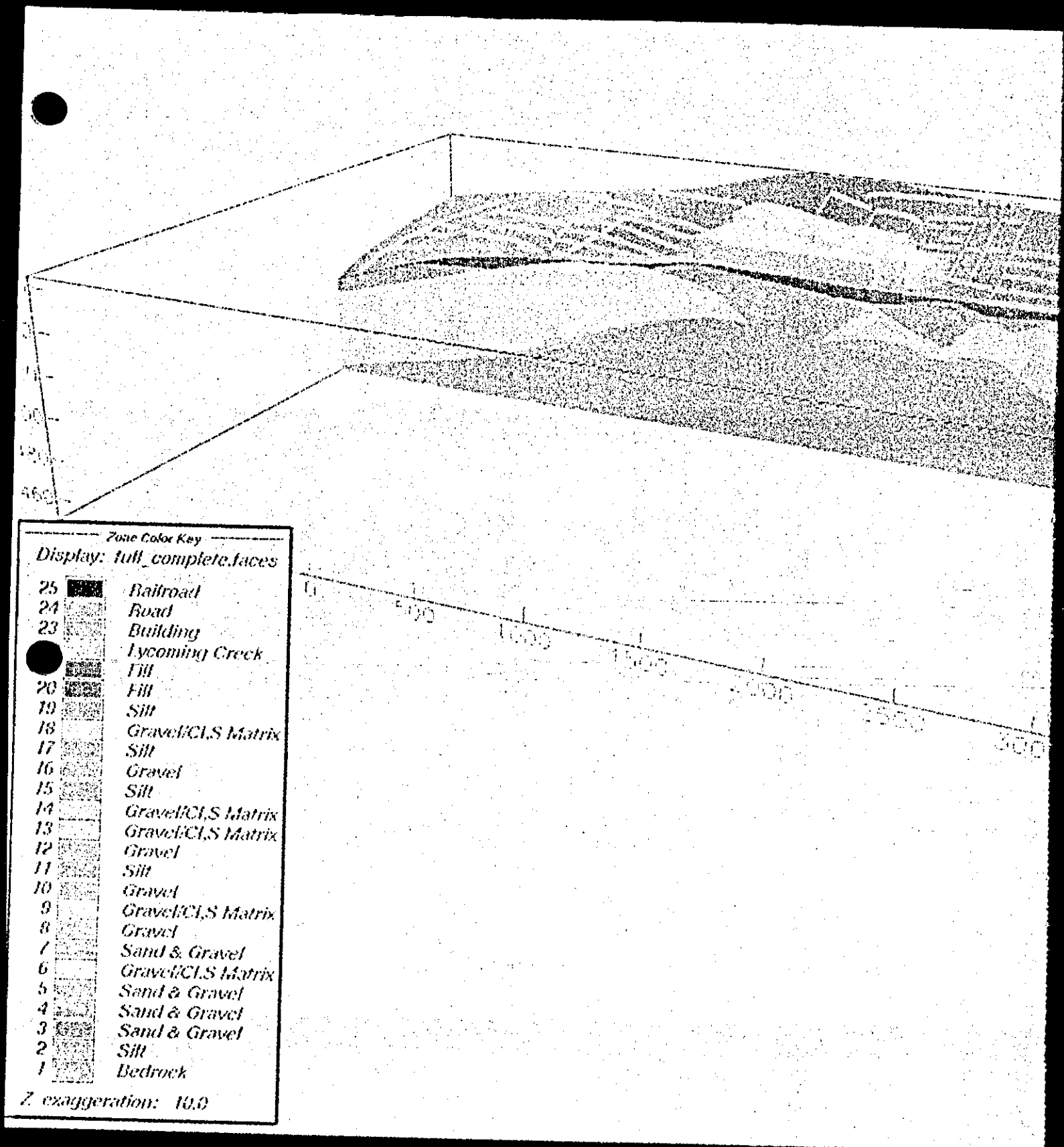
F. Five - Year Review Requirements

Because this remedy will allow for unlimited use and unrestricted exposure after completion of the remedial action, but the attainment of the remedial action objectives and cleanup levels will

take longer than five years to complete, a policy review will be conducted within five years of construction completion for the remedial action. The policy review is conducted to ensure that the remedy is, or will be, protective of human health and the environment.

X. DOCUMENTATION OF CHANGES FROM PROPOSED PLAN

The Proposed Plan for the Avco Lycoming Site was released for public comment in December 1999. The Proposed Plan identified Alternative 1, groundwater extraction and treatment, as the Preferred Alternative for groundwater remediation. EPA reviewed all written and verbal comments submitted during the public comment period. It was determined that no significant changes to the remedy, as originally identified in the Proposed Plan, were necessary or appropriate. The only change to the remedy was the inclusion of institutional controls that limit risks to human health by limiting future use of the property to those activities compatible with site conditions.



Preferential groundwater flow path (gravel channel) oriented north to south under the center of the Facility

FIGURE 1

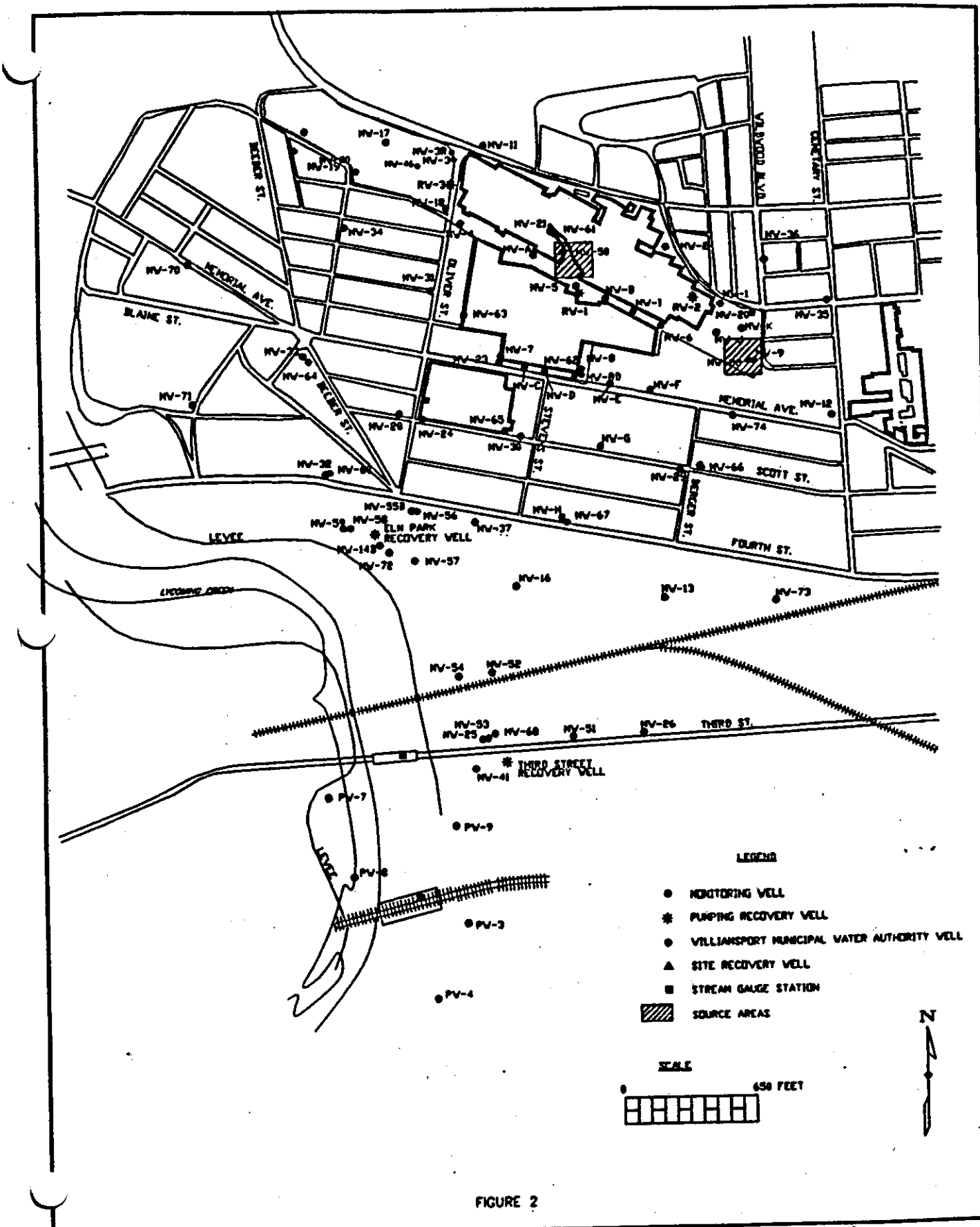


FIGURE 2

RESPONSIVENESS SUMMARY
FOR THE PROPOSED PLAN FOR A CHANGE IN REMEDY
FOR THE AVCO LYCOMING SUPERFUND SITE

WILLIAMSPORT, LYCOMING COUNTY, PENNSYLVANIA

Public Comment Period
December 3, 1999- January 17, 2000

This Responsiveness Summary is divided into the following sections:

Overview: This Section discusses the U.S. Environmental Protection Agency's ("EPA's") selected remedy for containing and remediating the contaminated groundwater at the Avco Lycoming Superfund Site ("Site").

Background: This Section provides a brief history of community relations activities conducted during remedial planning at the Avco Lycoming Superfund Site.

Summary of Commentors' Issues and Concerns: This section provides a summary of commentors' issues and concerns and expressly acknowledges and responds to those comments provided by the community during the 45-day public comment period, including the public meeting held on January 10, 2000.

Overview

On December 3, 1999, EPA announced the opening of the public comment period and released the proposed plan to amend the Record of Decision ("Proposed Plan") for the Avco Lycoming Site, located in Williamsport, Lycoming County, Pennsylvania. In the Proposed Plan, the EPA screened six possible alternatives, including no action, to address groundwater contamination at the Site and detailed the Agency's preferred alternative, after having considered the initial seven of the following nine criteria[1].

Threshold Criteria

- Overall protection of human health and the environment
- Compliance with federal and State laws and regulations

Balancing Criteria

- Long-term effectiveness and permanence
- Reduction of mobility, toxicity, or volume of contaminants through treatment
- Short-term effectiveness
- Implementability
- Cost

[1] Full consideration of the last two criteria, State and Community Acceptance, could only occur at the conclusion of the public outreach component of the remedy process.

Modifying Criteria

- State acceptance
- Community acceptance

EPA carefully considered state and community acceptance of the cleanup alternatives before reaching the final decision regarding the remediation plan. This Record of Decision Amendment ("ROD Amendment") details EPA's final remediation decision.

EPA's selected remedy for the shallow aquifer beneath the Facility is Alternative 1 in the Proposed Plan. Alternative 1 is summarized below. Based on current information, the remedy selected is the most efficient and effective of the remedies when evaluated using the nine evaluation criteria above.

Installation of groundwater recovery and treatment system includes the following:

- extraction wells
- pretreatment
- air stripping
- vapor-phase carbon for off-gas

This ROD Amendment also focuses on two other areas which are common to all the Alternatives as follows:

Source Areas

- Source reduction will be implemented using one or a combination of the following technologies:
  - Air Sparging/SVE
  - Groundwater Extraction
  - In-Situ Oxidation

Shallow aquifer beyond the Facility/Deep aquifer throughout Site

- Recognize the existing downgradient extraction system, which is being implemented through a Consent Order and Agreement ("COA") between Avco Corporation ("Avco") and the Pennsylvania Department of Environmental Protection ("PADEP").

Background

EPA community involvement efforts for the proposed amended remedy included:

- Maintaining information repositories with relevant Site-related documents at the James V. Brown Library in Williamsport, Pennsylvania;
- Releasing a Proposed Plan to amend the remedy selected and a public comment period from December 3, 1999 to January 17, 2000; and
- Hosting a public meeting to present and discuss the Proposed Plan to amend the Record of Decision on January 10, 2000.

To obtain public input on the Proposed Plan to amend the Record of Decision, EPA held a public comment period from December 3, 1999 to January 17, 2000. EPA announced the public comment period in a newspaper display advertisement placed in the December 3, 1999 edition of the Williamsport-Sun Gazette. Following the announcement, EPA mailed copies of the Proposed Plan to local officials and community members, upon request.

In addition, EPA held a public meeting on the Proposed Plan on January 10, 2000. EPA notified the public of this meeting in a newspaper display advertisement placed in the Williamsport-Sun Gazette on December 3, 1999. At this meeting, representatives from EPA and PADEP answered questions about conditions at the Site and the remedial alternatives under consideration. Those in attendance at the meeting included local area residents, local government officials, news media representatives, representatives from EPA, and representatives from PADEP.

Finally, EPA established and maintained Site information repositories at the following locations:

U.S. EPA Region III 6th Floor Docket Room 1650 Arch Street Philadelphia, PA 19103 (215) 814-3157	James V. Brown Library 19 East 4th Street Williamsport, PA 17701 (570) 326-0536

The Site repositories contain the Community Relations Plan; the RODs issued on June 28, 1991 and December 30, 1996; the Draft Feasibility Study, Textron Lycoming, Williamsport, Pennsylvania, March 15, 1991; the Focused Feasibility Study for Operable Unit No.1, Avco Lycoming Superfund Site, Williamsport Pennsylvania, September 1996; the Draft Focused Feasibility Study, Avco Lycoming Superfund Site, Williamsport, Pennsylvania, prepared by IT Corporation, dated February 25, 1999; the Focused Feasibility Study Update, Avco Lycoming Superfund Site, dated May 26, 1999; and the Proposed Plan to amend the 1996 ROD. In addition, copies of EPA's Administrative Record File for the Site, which includes all key documents EPA used in selecting the revised Site remedy, are housed at the Site repositories.

Summary of Commentors' Issues and Concerns Received in Writing During the Public Comment Period

This section provides a summary of commentors' issues and concerns raised during the public comment period and EPA's response to them.

A. Williamsport Municipal Water Authority comments:

1. The organization of the plan description should be modified to clearly explain the parts of the cleanup plan and phasing of the work. This is not readily apparent in the write-up which you sent to us. The plan description should be outlined as described at the public meeting, breaking it down into three basic parts as follows:

a. **Containment of the Overburden Plume to the AVCO Property A series of additional pump and treat wells in the overburden material above bedrock will be installed in an east-west line in an effort to keep the VOC contaminants in the overburden plume from escaping beyond the property (i.e. South of Memorial Avenue). This part is described in your Proposed Plan as Alternative 1. The plan goal is that these containment wells will eventually "dry up" the source of the VOCs which are migrating south to West Third Street and beyond into the WMWA well field.**

b. **Extra Clean-up Efforts in the "Hot Spots" on the AVCO Property. The plan will further address two main areas of concentrated contaminants on the AVCO property by using air sparging/soil vapor extraction, groundwater extraction (pump and treat), and other possible technologies to clean-up the "hot spots" areas on a more aggressive time table. The plan goal is that cleaning up these two "hot spots" will cut off the source of the contaminants to the bedrock aquifer and the contribution of the "hot spots" to the overburden aquifer.**

c. **Continuation of the Off-site Extraction Systems to Address VOC contamination of the Overburden and Bedrock Aquifer beyond the AVCO Property. The plan indicates that the PADEP-required operations at the two off-site groundwater extraction wells are adequate to protect human health and the environment beyond the AVCO property, and operation of these two wells will continue under the PADEP consent order.**

EPA's Response: EPA agrees with this opinion. An effort to more thoroughly explain the three parts of the proposed plan was made in the ROD.

2. The proposed series of Alternative 1 containment wells along Memorial Avenue must be sufficiently close in proximity to each other to have overlapping cones of depression of the water table which prevent the southward migration of VOCs. Monitoring wells down gradient of Memorial Avenue must be sufficiently numerous and close enough to Memorial Avenue to assess the success of the extraction/containment wells. Review of the performance of the Alternative 1 wells must occur in the next two years and thereafter in five years formal reviews. Pumped ground water must be treated prior to discharge so that no measurable increase in the level of VOCs in Lycoming Creek water at the West Third Street Bridge will occur.

EPA's Response: EPA agrees with the comment. The comment will be considered when designing the pump and treat system. The remedial action will be evaluated on a quarterly basis. The five-year review will assess the Site as a whole. The discharge will require a National Pollution Discharge Elimination System ("NPDES") permit.

3. Any technology used to clean up the AVCO site aquifers must not introduce any other potential contaminants to the aquifer beyond the site. For example, before the alternative of using potassium permanganate for *in situ* oxidation of VOCs is considered, sufficient proof that any additional manganese will not be allowed to migrate off the property must be obtained, and if implemented, sufficient monitoring be performed to verify that requirement. Manganese is a secondary MCL contaminant for which the WMWA does not want to add treatment.

EPA's Response: So noted. EPA will take this comment into consideration when authorizing the technology to be used in the source areas. If potassium permanganate is used for in situ oxidation, EPA will require sufficient proof that manganese is not migrating off the property and a monitoring plan to verify the requirement.

4. The offsite cleanup activities required under the PADEP consent order are minimal and do not keep concentrations of VOCs above the 5 ug/L primary MCL for trichloroethene (TCE) from migrating south of West Third Street into the WMWA well field (see any of the plume maps in the Textron quarterly reports to the PADEP). The WMWA stripping towers are able to deal with the levels of TCE in the well field's aggregate raw water (generally 5-20ug/L) by effectively reducing the finished water TCE levels to less than 0.5ug/L. However, the AVCO recovery well at West Third Street is required by the PADEP to be pumped at 500 gallons per minute in order to have the desired effectiveness. It is likely that the present AVCO recovery well on WMWA property is pumping predominantly Lycoming Creek-recharged water, not water from the overburden plume.

It would be much more preferable and efficient to have a series of lower capacity wells along the east-west line farther to the north near the railroad tracks near the City of

Williamsport Public Service and Department of Transportation buildings in order to capture more TCE with less water being pumped. During drought periods, the AVCO West Third Street recovery well has a negative impact on the quantity of groundwater available to the WMWA well field. Future plan evaluations and modifications need to address this ongoing issue.

EPA Response: The current design in the proposed plan calls for all the contamination at the Textron facility to be intercepted before it leaves the site. The regulatory agencies will review the effectiveness of the treatment system once it has been operating for long enough to determine if it has been effective. Based on the results of this review the agencies will decide what, if any, modifications to the existing recovery system are necessary.

B. Comments from a concerned citizen:
1. Should "VOC" be properly noted as "VOCs" inasmuch as volatile organic compounds (plural) are involved?

EPA Response: So noted.

2. What does VOCs include/exclude in comparison with what other contaminants are there?

EPA Response: The contaminants of concern at the Site are VOCs, which include trichloroethene, perchloroethene, and vinyl chloride, and chromium, which is a metal.

3. "Overburden aquifer" isn't defined.

EPA Response: The overburden aquifer is the shallow aquifer at the Site.

4. "(the Site") isn't properly defined geographically if it properly includes the neighborhood, municipal parks, Williamsport Municipal Water Authority grounds, business and industries, etc. south and west to the Lycoming Creek and Susquehanna River.

EPA Response: "Site" shall mean the Avco Lycoming facility, located in Lycoming, Pennsylvania, plus any additional property to which contamination has migrated or come to be located.

5. Is this amendment to the 12/30/96 ROD now an Explanation of Significant Differences?

EPA Response: No. The Amendment is a ROD Amendment.

6. Is "the Site" identical to OU-1?

EPA Response: OU-1 was defined as the contamination in the shallow aquifer beneath the Avco Lycoming facility in the 1991 ROD. This ROD Amendment focuses on three areas of groundwater contaminated with VOCs:

1. **Shallow aquifer beneath the Facility** - groundwater contamination beneath the Avco Lycoming facility in the shallow aquifer, which is also known as the overburden aquifer.

2. **Source Areas** - areas of high contamination, called "hot spots", in the shallow groundwater beneath the Avco Lycoming facility. The "hot spots" are specifically found in both the east parking lot and central plant areas.

3. **Shallow aquifer beyond the Facility/Deep aquifer throughout Site** - groundwater contamination beyond the Avco Lycoming facility in the shallow aquifer and groundwater contamination in the deep aquifer, which is also known as the bedrock aquifer.

7. When it is said that the "contamination exists beneath the Avco-Lycoming property and extends southward to where the railroad crosses Lycoming Creek (figure 2)", are these two places two sites or two plumes or two OUs? All one site? The vocabulary used by the EPA over the years needs to be clarified. Also, which railroad bridge is being referred to; there are two.

EPA Response: "Site" shall mean the Avco Lycoming facility, located in Lycoming, Pennsylvania, plus any additional property to which contamination has migrated or come to be located. The VOC contamination is located in both the shallow and deep aquifers beneath the Avco Lycoming Facility and southward to the first set of railroad tracks encountered moving in a southerly direction from the Facility. See Figure 2 in the ROD.

8. Re:Figure 2, there are no street names to orient the reader; a larger map of Avco should show the features subsequently discussed (i.e., the central section, the east parking lot, the north/south stream channel)

EPA Response: The Figure was updated in the ROD Amendment taking this comment into consideration.

9. Figure 2, in comparison with an earlier one the 3rd quarterly report of July 1992, from the ERM Group, lacks noting the MW-10 in the upper left hand corner. If maps from one year to another do not agree with what is/is not present, confusion results. Perhaps some table can note what types of wells are noted with what nomenclature, when they first were

drilled and thus first appeared on the map, when they were disbanded, what they were used for, etc. The map legend could be more complete (e.g. the PADEP officer present at the 1/10/00 meeting said an air stripper southwest of PW-9 was deleted from Figure 2). Inaccurate maps do not lend credibility to the EPA and lead to a lack of confidence in the EPA by residents. Note too that some MW-designations are followed by letters, others by numbers, raising a question as to what the difference is.

EPA Response: Figure 2 was used to identify where the Site is located in relation to local landmarks. The Figure was updated in the ROD Amendment taking this comment into account.

A complete history of the wells at the Site is too cumbersome to provide as a Figure.

The well designations are determined by the well drillers. "MW" usually stands for monioting well and they letter or number following it are just for identification purposes.

10. Figure 2: Confusion exists to what the property line of Avco is, inasmuch as it is said they purchased homes along Oliver St., and then razed them. A line should demarcate what the Avco-owned property is. It should be made clear that the Superfund Site is not is not identical with the Avco property site; perhaps the Superfund Site should be re-named so it is understood it goes beyond the Avco property lines.

EPA Response: The ROD Amendment more clearly distinguishes between "Site" and "Facility".

11. Figure 2: The beltway (U.S. Interstate 180, State Routes 220 and 15) isn't shown on figure 2 (but is on figure 1, the previous page). The beltway should be on figure 2, especially to show what items in the legend are in relationship to the beltway. It has been said some wells are below the beltway.

EPA Response: Street names have been added to Figure 2. Inclusion of the beltway on Figure 2 would change the perspective that the EPA was trying to identify.

12. Figure 2: As I mentioned to Ms. Deitzel in a late 1999 phone call, two prominent people in our community, from the neighborhood, died recently of cancer. One of these, Police Chief William Miller, lived on Memorial Avenue adjacent to the containment zone, and this circumstance logically raises questions in the mind of the public about the relationships.

EPA Response: The EPA has determined that there are no current routes of exposure for the groundwater contamination. Drinking water is currently provided by Williamsport Municipal Water Authority and it meets the requirements of the Safe Drinking Water Act. To the best of the EPA's knowledge, there were never any private drinking water wells in the plume of contamination.

13. Some place the characteristics of the 1991 ROD and the 1996 ROD should be noted, their similarities and differences.

EPA Response: In this ROD Amendment, EPA compares the modified remedy to the remedy chosen in the 1996 ROD.

14. Define "downgradient side of the facility" for the layperson; is this still on Avco property?

EPA Response: The downgradient side of the Facility would be towards Memorial Avenue. For example, if groundwater flows from north to south, downgradient would be towards the south. This description includes areas off Avco property.

15. When there is containment of contaminated groundwater that controls its further migration beyond the facility, is all such water contained? What is done with this water so contained? What does it contain, what is its volume, location, how is it known for certain that it all is contained, etc.?

EPA Response: Groundwater containment is accomplished by pumping contaminated groundwater from the aquifer. The pumping rate is designed to capture all contaminated water before it leaves the property. The contaminated water is treated and disposed of. The pumping rates and volumes of water treated will be determined during the design of the system.

16. "The contaminated groundwater plume beyond the facility was to be addressed in a separate operable unit, after additional studies of that area." Discuss? Does this refer to the neighborhoods? What studies, when, and what conclusions/action taken?

EPA Response: The EPA has evaluated all the hydrogeological data collected since the 1991 ROD and has determined that, in conjunction with the remedy selected in this ROD Amendment, the current downgradient extraction system, along with natural attenuation, is protective of human health and the environment.

17. How shallow is the overburden (shallow) aquifer beneath the Avco property? How shallow is beyond said property? How many feet below a residential basement?

EPA Response: The depth to the watertable below the Avco property is approximately 10 feet. It is approximately 25 feet near Third Street.

18. Somewhere it needs to be explained what air sparging is, what soil vapor extraction is, how they differ from air stripping, etc. Preferably some definitions need to occur as soon as the technical terms are introduced, or refer the reader to a glossary of technical terms in and appendix.

EPA Response: Descriptions of the technologies can be found in the section "Summary of Alternatives" in the Proposed Plan. They can also be found in section VI.. of the ROD Amendment.

19. In the last sentence here that continues on page 2, if the 1996 ROD did not address these issues, where/when will they be addressed? These are issues for the neighborhood.

EPA Response: The issue of the contaminated groundwater in the overburden (shallow) aquifer beyond the facility and in the bedrock (deep) aquifer beneath and beyond the facility are addressed in the Proposed Plan and the ROD amendment. The ROD Amendment is expected to be the final decision document for this Site.

20. When were the pilot tests for Air Sparging/SVE done?

EPA Response: The pilot test was initiated in October 1995.

21. What causes unexpectedly low water table conditions? What were the high water table conditions at the time of the pilot tests? Is there some mechanism that records low and high water table conditions? How long and how high can these be? Would any high water table conditions be of concern to the neighbors for seepage into their basements?

EPA Response: The depth to the water table fluctuates seasonally. Typically water levels are higher in the wetter cold seasons and lower in the dryer hot seasons. The pilot test was conducted during an unseasonably dry summer. Currently, Avco records depth to groundwater of each well as part of its monitoring program.

22. Did the promoters of Air Sparging/SVE think high water table conditions would not occur, or if they would occur, that the system would not be rendered inoperable under such conditions? Was this not a predictable outcome that should have ruled out the promotion of the system to begin with?

EPA Response: The pilot test was conducted during a time when the water table was unseasonably low. Complexities in the layering of the sand and clay units extenuated the changes in water level in this area. This marked change in water levels was anomalous to the rest of the site and was unexpected.

23. Does this Proposed Plan, this new proposal, mean that the RW-1, the pumping recovery well, will no longer be used? RW-2, RW-3, etc? Does "groundwater extraction and on-site treatment" mean "pump and treat" in the shorthand verbiage?

EPA Response: Yes, "groundwater extraction and on-site treatment" does mean "pump and treat". Currently, there are two recovery wells operating at the Site and they will continue to

operate.

24. When EPA seeks not to improve upon the COA between Avco (or is it the EPA?) And the PADEP, (or is it COA between Textron Corporation and the PADEP?), is the EPA agreeing that the PADEP remedy for the "contamination in the overburden aquifer and the bedrock aquifer downgradient of the Avco property" is best available, best achievable, best possible, or what? And what of the technology that tests the contaminants after they supposedly leave the water– what level of technology is that ? As technology improves, should the remedy selected change to reflect the change in state of the art of the air stripping and its alternatives? Is this issue revisitied every five years? I assume that "downgradient" means neighborhood.

EPA Response: Air Stripping remediates VOC contamination to the required levels. At this point in time, air stripping is a "best available technology". There is no need to change the technology if another "better" technology becomes available, because air stripping meets the EPA's performance Standards for this application.

See the response to question #B14 for a definition of downgradient.

25. What is the state of technology that tests the water before its discharged into the Lycoming Creek?

EPA Response: The test methods used to test the water before it enters Lycoming Creek have appropriate detection limits. The tests are able to detect contamination above the cleanup levels specified.

26. What becomes of the contaminants after they are "air stripped"?

EPA Response: The contaminants volatilize from the water into the air. If required, the air is then passed through a vapor phase activated granulated carbon unit, which removes the contaminants from the air. The carbon unit is replaced when it can no longer remove the contaminants and either disposed of as hazardous waste, at a permitted hazardous waste disposal facility, or recycled.

27. What is the date of the COA?

EPA Response: The COA between PADEP and Avco was dated November 1985.

28. Are all said strippers noted on Figure 2?

EPA Response: In addition to the two off-site strippers, two on-site strippers are used to treat water from RW-1 and RW-2. These wells are shown in Figure 2.

29. Where is the discharge into the Lycoming Creek?

EPA Response: The discharge from the Third Street air stripper occurs adjacent to the strippers, just above the railroad bridge. The Elm Park stripper and one of the two onsite strippers discharge into the existing storm sewer system that discharges to Lycoming Creek between Third Street and Fourth Street. The other onsite stripper discharges to a storm sewer that discharges to Cemetery Run, a tributary of the Susquehanna

30. Are the "pumping wells located in Elm Park and on Third Street" the same as the air strippers? Or are there an equal number?

EPA Response: The stripper in Elm Park serves a single well adjacent to it. One of the strippers at Third Street serves the extraction well operated by Textron. The other strippers at this location are used by the WMWA to treat water from their wells.

31. Which railroad bridge crossing Lycoming Creek (page 2, paragraph 3); if you mean the southern one, say so.

EPA Response: So noted. Please see response to question #B7.

32. Where are the municipal wells? What is the geography of the reserve well fields? Acreage of the same?

EPA Response: Several of the wells are shown on figure 2, labeled PW-3, PW-4, PW-7, PW-8 and PW-9. The remaining supply wells are shown located farther south then the map extends. The well field straddles Lycoming Creek below Third Street. The WMWA can supply you with more specific information as to the precise size of the well field.

33. When it is said that the primary drinking water system draws water from surface waters, does surface water refer to the Lycoming Creek or the dam impoundments across the Susquehanna River?

EPA Response: The surface water supply referred to here is the reservoirs on the mountain above South Williamsport, across the Susquehanna River.

34. Under what conditions could the WMWA use the water now being discharged into the Lycoming Creek? What volume parameters are there of that?

EPA Response: The water currently being discharged into Lycoming Creek is from the air stripper being operated by Textron. This water can only be used on an emergency basis if the both the surface water supply in South Williamsport and the existing well field can not provide enough water to meet demand. To date this scenario has not occurred.

35. Identify those parts of the 1996 ROD (and that of 1991) that remain in effect.

EPA Response: The 1996 ROD superseded the 1991 ROD. The portions of the 1996 ROD associated with the in-situ metals precipitation to remediate the metals in the shallow aquifer beneath the Facility still remain in effect. This ROD Amendment only modifies the remedy in the 1996 ROD associated with the VOC-contaminated groundwater in the shallow aquifer beneath the Facility.

36. If the 1996 ROD was not begun to be implemented until 1998, why did it take so long? Was this the intended time frame?

EPA Response: The remedy in the 1996 ROD had to go through the Remedial Design phase of the Superfund process before it could be implemented. Also, the Unilateral Administrative Order ("UAO") had to be modified to instruct Avco to begin the Remedial Design and Remedial Action.

37. Why did it take so long for data gaps to be found? Someone seems not to be exercising close overview of the progress, or lack of such, in the Williamsport Surperfund Site. Who is the responsible party, the corporation or EPA? How did the EPA give the go-ahead in 1996 if data gaps were present then? Is this strictly a hydrogeology issue?

EPA Response: The geology at the Site is very varied. During the pilot test, the test wells, which were limited in number, were installed in areas of sand/gravel which contained both a saturated and an unsaturated zone. Both these zones are necessary for the technology to work effectively. When the full system was being installed, some well locations and screening locations were in areas which did not contain both zones, therefore, they were not conducive to the air sparging/SVE technology. While air sparging/SVE technology would work across most of the site, its failure in one area of higher contamination limited the effectiveness of the system.

38. Kindly identify the geologic conditions, the VOC plume, and the mid-site migration pathway associated with a north-south buried stream channel, in separate maps attached to the proposed plan and ROD.

EPA Response: Additional maps will be included with the ROD Amendment.

39. How was the public notified of the Focused Feasibility Study ("FFS") of 2/25/99, and its update of 5/26/99? Was there no requirement if the public was not so notified.

EPA Response: The documents were added to the Administrative Record on December 3, 1999, when the Proposed Plan was issued. The Proposed Plan was advertised in the Williamsport-Sun Gazette on December 3, 1999. There is no requirement to notify the public about a FFS.

40. There was a "Community Information Bulletin" issued by Textron and ARCADIS Geraghty and Miller in later winter or early spring of 1998 (no date given). Is this the only such bulletin ever issued? Have none others been required? When a decision was made not to proceed with the construction activities noted therein, how was the public notified? Did construction proceed fully, and when an effort was made to use it, was it then that it was learned that it was inoperable due to the higher (more normal) water table? How long did it take from learning it was inoperable until the FFS was begun?

EPA Response: Textron is not required by EPA to distribute "Community Information Bulletins". EPA does not know how many bulletins may have be distributed. The public was notified when the Proposed Plan was issued on December 3, 1999. The FFS was issued within 9 months of determining that the remedy was not effective.

41. Besides one corporate Community Information Bulletin, and EPA public meetings such as the two in the 1990s, are there any other events or processes or opportunities for public outreach, information and referral, education and the like? Are there just three instances over the lifespan of the identification of the Superfund Site here? Is this all that is warranted?

EPA Response: All appropriate information is included in the Information Repository at the James V. Brown Library in Williamsport, PA. The Superfund process requires that public meetings be held when a proposed plan is issued. Additional public meetings may be held if necessary, but the community interest in this Site did not warrant additional meetings.

42. Note that I requested timely updates and such were only sporadically given.

EPA Response: So noted.

43. When did Mr. Dennis leave his oversight responsibility for the Site? Has it been his since the beginning? Does Ms. Lowe have prior remedial project responsibility? I believe Ms. Deitzel said at the 1/00 public meeting Ms. Lowe has been "on Board" for about a year. Am I correct that three community involvement coordinators have been assigned over the years to this site? Their dates of tenure were what? Is there a job description for the remedial project manager and the community involvement coordinator that can be shared? Just what is the division of labor in terms of who is responsible for what? Also what EPA or ASTDR or PADEP or PADOH etc. consultants (sub-contractors?) Have been used over the years? And what of the consultants that Avco (or more accurately Textron?) Have used, and their subcontractors, etc. over the years?

EPA Response: Ms. Lowe took over as the Remedial Project Manager (RPM) from Mr. Dennis in approximately June 1999. Ms. Lowe does have prior experience as an RPM with another agency. The general responsibilities of the RPM can be found in the NCP, at 40 C.F.R. Subpart

B § 300.120.

No records have been kept of all the CIC's involved with the Site.

Avco's current contractor is Secor, Inc.

This comment is not relevant to the remedy selected in the ROD Amendment.

44. The timing of the review and comment period, occurring over the holidays, did not allow for substantive work to be done by the public, nor by the Concerned Citizens Committee, a neighborhood association formed several years ago that meets monthly, the first Monday at St. Paul Methodist Church on Memorial Avenue.

EPA Response: The EPA did not want to delay the progress a the Site by not issuing the Proposed Plan until the new year. In an effort to compensate for issuing the document over the holidays, the comment period was extended from 30 to 45 days.

45. It would be helpful to have a table of contents of what the administrative record file should look like in the city library information repository. It also would be helpful to know what is not there, but available through other channels.

EPA Response: There should be a listing of the contents of the Administrative Record at the library. EPA will ensure that it is part of the file. The Administrative Record contains all the documents that were used to develop the ROD. After the ROD is issued, pertinent documents (i.e., five-year reviews, preliminary construction completion reports) become part of the information repository at the library.

46. The date for closing public comments is January 17, 2000, a Monday Federal holiday without mail delivery. Subsequent closing dates should accommodate such holidays in some way. No FAX number was issued in the December 3, 1999 EPA legal notice in the Williamsport-Sun Gazette newspaper. No press release was given by the EPA any closer to the January 10, 2000 public meeting (to my knowledge at least). If any press release was issued, the paper chose not to publish it. Nor did the paper voluntarily notify the public about the 1/10 public meeting in any way, again to my knowledge. Nor did, to my knowledge, any of the other local/regional media.

EPA Response: EPA acknowledges the mistake in closing comments on the holiday. Comments postmarked on the 18th would have been accepted. EPA provided proper notice of the meeting as required by CERCLA and the NCP.

47. The site is more than 28 acres Textron facility, right? How many acres beyond, or square miles beyond, the facility site is part of the Superfund Site? How many acres or

square miles in all? What percentage of Williamsport is this? Population? Residences?

EPA Response: Refer to the response given to question #B7.

48. When was the Remedial Investigation done that included a risk assessment that determined which of the contaminants detected posed a risk to human health or the environment?

EPA Response: The Remedial Investigation and the Risk Assessment were done in January 1991.

49. Where does one read of that human health risk assessment?

EPA Response: The Risk Assessment is part of the Administrative Record which can be found at the EPA Region III Office in Philadelphia and at the James V. Brown Library in Williamsport, PA.

50. When were the first detections of contaminants noted by WMWA?

EPA Response: In the fall of 1984, WMWA detected VOCs in the groundwater at their water supply well field. No water was used from the well field in 1985 or 1986 pending the results of an investigation.

51. How long did it take between that date and the Risk Assessment?

EPA Response: An investigation was immediately started by PADEP. Avco started its own investigation in 1985. Avco and EPA reached an agreement to begin the Remedial Investigation in June 1988.

52. How long before the WMWA detection is it estimated that the contaminants were in the reserve well fields?

EPA Response: The WMWA regularly tested the well field, so the duration of the contamination in the well was probably just between sampling events.

53. How much water is it estimated was used from the contaminated well fields, by private well users, and through the WMWA system, before contamination was secured below harmful levels by the WMWA, and before private wells were no longer in use?

EPA Response: To the best of EPA's knowledge, no private drinking water wells were ever located in the plume of contamination.

54. What is the estimated risk of such contaminated water use by private well users and by public water users?

EPA Response: Please refer to the Risk Assessment. Currently, there is no risk since the WMWA supplies drinking water that meets all drinking water standards.

55. How long did it take for remediation of the contaminated well fields so that no pollutants entered the public water supply?

EPA Response: Refer to the response to question #B50. The treatment system was installed on the wells in approximately 1985.

56. Was any contaminated water in the public water supply after it was detected by the WMWA but before it was reduced to an insignificant level?

EPA Response: The WMWA did not operate the well field after the contamination was detected until the treatment system was installed.

57. What are the historically read parameters of contamination in water that may have reached private well users and/or public water users?

EPA Response: VOCs were detected in the groundwater, primarily trichloroethylene ("TCE") and 1,2-dichloroethylene ("DCE"). To reiterate, EPA knows of no private wells located within the contamination plume, and the well fields were not used after contamination was detected until the treatment system was installed.

58. What degree of probability is there that before tests detected contaminants that contaminations existed above the highest recorded levels? What might the range be? Risk level?

EPA Response: The well field was sampled regularly.

59. Is it reasonable to suppose that private wells nearest the Avco site would have been polluted the most and earliest? If not, what other factors entered in?

EPA Response: Refer to response to question #B53.

60. From the time that contaminants were first detected, and subsequently measured, but before remediation efforts began, was there a natural diminution of the contaminant levels that can be attributed to natural processes? What are those natural processes? Someone had likened the process, to explain it in terms of a housewife might understand, as saying it is akin to a sponge loaded with detergent and that for it to become void of detergent what

amount of water would need to rinse it over time without the sponge ever being squeezed? It would be helpful for the EPA to have explanations that are understood by lay people.

EPA Response: Natural attenuation includes dilution and dispersion of the contamination (mixing with uncontaminated water), and the breakdown of the contaminants by microbes to different chemical species. These actions are always occurring in nature. The rate of degradation varies with time and location.

61. What length of time is it estimated took place for the contaminants to reach the level they did upon being discovered?

EPA Response: EPA cannot estimate the time.

62. What length of time does Avco admit to dumping the toxics into the ground? Does this correspond with historic records and laborer-informant oral histories?

EPA Response: Historic records and oral histories are scarce. EPA's records indicate that disposal of hazardous substances at the Facility by Avco likely began in the early 1940s.

63. What amounts of TCE and DCE were found in the shallow groundwater in the overburden beyond the plant property? How long is it estimated they were there in those amounts or higher?

EPA Response: The highest detected levels of the contaminants of concern can be found in Table 2 of the ROD. EPA cannot estimate the time.

64. What does "shallow" mean, and would private wells and/or the WMWA wells use water from such shallow groundwater?

EPA Response: Shallow is a relative term to relate spatially where the overburden aquifer is in relation to the bedrock aquifer. To the best of EPA's knowledge, no private wells were ever located in the plume of contamination.

65. Are TCE and DCE both VOCs?

EPA Response: Yes.

66. Is total chromium and hexavalent chromium metals?

EPA Response: Yes.

67. Is vinyl chloride a VOC?

EPA Response: Yes.

68. Is chromium different than total chromium and hexavalent chromium?

EPA Response: This ROD Amendment only effects VOC contamination.
Chromium has several different species. Hexavalent chromium is a particular species, and total chromium is a measure of all the chromium species.

69. Is lead a metal?

EPA Response: Yes.

70. Where were soil samples taken?

EPA Response: Please refer to the Remedial Investigation.

71. Do site samples refer to Avco property alone?

EPA Response: Samples were taken both on and off the Avco Facility.

72. What is xylene and ethylbenzene?

EPA Response: They are VOCs, which can be found in gasoline, among other compounds.

73. Are the contaminants noted in #64, 65, 66, 67, 68, 71 the only ones at issue? What is this total?

EPA Response: This ROD Amendment addresses VOC contamination in groundwater. See Table 2 of the ROD Amendment for levels detected.

74. For each of the expected toxics, what are the readings in the neighborhood shallow and deeper water, soils, and air?

EPA Response: Please refer to the Remedial Investigation and Table 2 of the ROD Amendment.

75. Re: RI Result #6, is not surface water of Lycoming Creek or Susquehanna River? If all water is treated before it enters the creek and/or river, it still has some pollutants in it, does it not?

EPA Response: Any water discharged to the Lycoming Creek will be treated to levels which meet surface water discharge requirements. The water may still contain chemicals, but they will be below the required levels for discharge.

76. How is contaminated water from the plant property extracted, treated and discharged to the Lycoming Creek? Where is the discharge located? How does it get there?

EPA Response: Please refer to Section VIII. of the ROD Amendment. The location of the discharge will not be known until the system has been designed. The discharge will probably be through a piping system into a storm sewer.

77. Is the "existing waste water treatment plant and discharge" for chromium contaminated water located on Avco or WMWA property?

EPA Response: This ROD Amendment does not address the in-situ metals precipitation. There is no discharge from this process.

78. When organic contaminated water (define please) is recovered through a separate series of extraction wells and pumped to on-Site air strippers for treatment and then discharges, where are these air strippers, and what is the discharge?

EPA Response: Organic-contaminated groundwater is groundwater contaminated with VOCs above allowable levels. The design and placement of the air strippers will be determined during the Remedial Design.

79. When the 1991 ROD called for institutional controls in the form of limiting future property use to those activities compatible with Site conditions, I assume this refers only to OU-1, the Avco property. Was any advisory issued on future neighborhood property use or development, and if not why? Does the EPA have any oversight responsibility for limiting future property use in the surrounding neighborhood to see to it that such activity is compatible with overall Superfund site conditions? If so, what is that responsibility? If not, why not?

EPA Response: Yes, the 1991 ROD called for institutional controls on the Avco property only. No, an "advisory" was not issued to neighboring residents regarding future use or development because the neighboring residences are currently hooked up to a public water supply. EPA has made the public aware of conditions at the Site through several public meetings and press releases. Yes, EPA has the authority to ensure that neighboring properties are used in a way that does not exacerbate contamination or interfere with the remedy at the Site. At this time, EPA is not aware of any current or proposed use of neighboring property which would exacerbate contamination or interfere with the remedy at the Site.

80. Where can the Explanation of Significant Differences (ESD) of April 9, 1992 be read?

EPA Response: It is part of the Administrative Record for the Site. Copies of the Administrative Record are located at the Region III Offices in Philadelphia, PA and at the James V. Brown

Library in Williamsport, PA.

81. Where can the Unilateral Administrative Order (UAO) of May 7, 1992 be read?

EPA Response: It is part of the Administrative Record for the Site.

82. Are they (ESD and UAO) still in effect?

EPA Response: The ESD was superseded by the 1996 ROD, and the UAO has been amended, but is still in effect.

83. What water was discharged into the Lycoming Creek prior to the National Pollution Discharge Elimination System permit of July 1995? How is this water characterized before and after the permit and treatments?

EPA Response: The previous water discharges from the Avco Facility to the Lycoming Creek were permitted under the National Pollution Discharge Elimination System (NPDES) program. The water is characterized through sampling.

84. Confusion in the reader's mind occurs with all the changes noted in the first paragraph (pg6). I had thought it was hard to overturn, amend, change, revisit, revise RODs, given what I thought was the case in Clinton County Superfund Sites. Please simplify with some sort of timeline or chart or something.

EPA Response: The 1996 ROD supersedes the 1991 ROD. This ROD Amendment modifies the 1996 ROD. RODs can be changed when additional information is presented which affects the remedy chosen.

85. "The 1996 ROD did not address contaminated groundwater present in the overburden aquifer beyond the facility boundary and in the bedrock aquifer beneath and beyond the facility boundary". Some expectation existed that such would be addressed better in a ROD subsequent to 1996; this is not the case, is it? Has no significant improvement been made in the technology available to address the neighborhood contamination since the PADEP UAO was issued many years ago? EPA gives its nod to PADEP; PADEP gives its nod to EPA. In the meantime it takes longer and longer to get anything accomplished.

EPA Response: The EPA has evaluated all hydrogeological data collected since the 1991 ROD and has determined that, in conjunction with the proposed remedy, the current downgradient extraction system, along with natural attenuation, is protective of human health and the environment.

86. "Results of the initial (1998?) data evaluation indicated some gaps with respect to

geology." Such data gaps creates a lack of confidence in EPA/Textron hydrogeologists.

EPA Response: The geology at the Site is very complex. EPA suggested to Textron that the stratigraphy of the aquifer may effect the effectiveness of the air sparging/soil vapor extraction system. Given the geologic data collected at that time Textron did not foresee any difficulties. It was not until the line of air sparging wells along the property boundary were installed that the full nature of the of the stratigraphic complexity was revealed.

87. Did the effort that began in September 1998 continue through January 2000? If not, what is the current drilling underway along Memorial Avenue near Stevens Street on Avco property now?

EPA Response: The current drilling is associated with gathering more data.

88. What route through the neighborhood does this "geologically controlled preferential groundwater pathway, trending approximately north to south, near the center of the facility" take?

EPA Response: Please refer to Figure 1 in the ROD Amendment.

89. The new pump and treat proposal "should require fewer wells to capture and treat the plume than was previously proposed in 1991", is it fewer than 11 new groundwater monitoring wells and 27 aquifer slug tests in new and existing groundwater monitoring wells noted in paragraph 4 on page 6?

EPA Response: The exact design will be determined during the Remedial Design phase of the project.

90. "The cost estimate for this alternative is based on the tentative design, which proposes using fewer extraction wells", fewer than what?

EPA Response: Fewer than previously proposed in 1991.

91. Have the "source or 'hot spot' areas" gotten "hotter" over time?

EPA Response: No, they have not.

92. In this proposal the Air sparging/soil vapor extraction alternative choice of technology is explained. I assume that the "groundwater extraction" is the same as the "groundwater extraction" alternative choice technology. Is "in-situ oxidation" another alternative technology choice, for if it is, it is not labeled as such in the alternatives 1-6 on pages 10-12. Or is in-situ oxidation another name for natural processes over time? Could natural

processes over time be considered a "no action alternative" and if so, please explain what the natural cleansing/rinsing processes are, for these occur in conjunction with human technological means, do they not?

EPA Response: Alternatives 1-6 are remedial alternatives for the remediation of the shallow aquifer beneath the Facility. Alternative 4 and 5 are two different in-situ oxidation technologies.

For the Source Areas there are three approved technologies, which may be used:

- Air Sparging/SVE - similar technology to Alternative 2
- Groundwater extraction - similar technology to Alternative 1
- In-situ oxidation - similar technology to Alternative 4

In-situ oxidation is a technology that requires a substance to be injected into the aquifer that will cause the contamination to oxidize. Natural attenuation is the natural degradation of the contamination.

93. "The objective of the source area remedy would be to reduce the VOC mass in an effort to reduce the overall remediation time frame for the site", from what to what, or in other words, what is the anticipated time frame reduction?

EPA Response: This information cannot be determined at this time.

94. "...the most important short-term objective is to create a barrier to further off-Site migration of the dissolved VOC plume..." Where, off the Superfund Site, does the VOC plume extend to? I thought such a plume was defined as always "on-site". Or if "off-site" refers to the neighborhood beginning across Memorial Avenue, what is the danger to the neighborhood if barrier is not in place?

EPA Response: The statement should have said, "to create a barrier to further off-Facility migration.." Refer to Figure 1 in the ROD Amendment.

There is no current risk, refer to the response to question #B54.

95. Define "off-Site migration of VOCs in the overburden aquifer."

EPA Response: It should have read off-Facility. It is the migration of the groundwater contaminated with VOCs past the boundaries of the Facility.

96. What is the time frame for the EPA to eventually "focus, in the design phase, on the selection of a source reduction alternative for the central area and east parking lot"? Would we expect to have more ESDs, UAOs, FFSs, revised/amended RODs, public

meetings, etc., in this process?

EPA Response: The source area reduction technologies will be chosen during the Remedial Design of the groundwater extraction and treatment system. EPA estimates this will occur in the Spring of 2000.

The UAO will be amended to incorporate this ROD Amendment. It is anticipated that this will be the last decision document for the Site.

97. How will public input to the choice of these for this aspect of the ROD occur? Or if a choice is made without public input, how will public notice occur?

EPA Response: Comments on the source area reduction technologies should have been made during the comment period for the Proposed Plan.

98. Is source reduction to be achieved, or not? Has it ever been a goal? Is a source of contamination still in progress, and only containment and restoration a goal without stopping the source? Some sentences say a source reduction alternative or action is a goal; yet another here says 'the remedial alternative chosen for containment and restoration of the aquifer will be protective of human health and the environment without source reduction." Thus I am confused by this paragraph. Is a remedial alternative for the central area, east parking lot and aquifer to include source reduction or not? Or is source reduction anticipated only for the east and central areas, but not for the aquifer? Explain/discuss please.

EPA Response: The two source areas are located in the central area of the Facility and the east parking lot area. The "source" is a high quantity of VOC contamination in the shallow aquifer in these areas. These areas provide a continuous "source" of higher levels of VOCs leaching into area of lower concentration.

Source Area reduction will be implemented at the Site to reduce the length of time required to remediate the aquifer. Even if the source area reduction is not implemented, the Selected Remedy for the shallow aquifer beneath the Facility will be protective of human health and the environment.

99. Re: the 30 feet radius, why is this parameter chosen and not more? (Page 8)

EPA Response: The 30 feet radius refers to the area that is influenced or effected by SVE in the source areas. This parameter is a function of the geology, not one that was randomly chosen.

100. "The EPA has evaluated all the hydrogeological data collected since the 1991 ROD and has determined that, in conjunction with the proposed remedy, the current

downgradient extraction system, along with natural attenuation, is protective of human health and the environment" I read the conclusion, now where is the data and interpretations that leads to this argument? Is it the best possible or achievable or available technology? Or merely one of several proven technologies addressing groundwater contamination in variable geologic conditions?

EPA Response: The data used to evaluate the downgradient extraction system are the approximately 14 years of data collected during the operation of this system.

101. Are Risk Assessments beyond Baseline ones optional?

EPA Response: Yes.

102. "The Baseline RA"– was this done in 1991?

EPA Response: Yes, refer to the response to question #B48.

103. What might the future threat to human health be if hazardous substances at the site are not addressed by a remedial action?

EPA Response: There is no current risk because there is no ingestion pathway associated with the contaminated groundwater. Residents in the area are currently supplied water by the WMWA drinking water system. EPA cannot ensure that in the future this will always be the case; therefore, if the aquifer gets remediated to the cleanup levels outlined, future risk will also be eliminated.

Please refer to the Remedial Investigation and the Risk Assessment for further information.

104. "....a remedial action needs to be selected to reduce the future risk to acceptable levels." If previous remedial actions were never fully implemented, what was the unacceptable level of risk been? What surveys/studies/assessments were done, and what will be done, to see if human health was harmed due to such unacceptable risks?

EPA Response: Refer to response to question #B103.

105. Re: the 1996 ROD, did it include any update to the 1991 baseline RA?

EPA Response: No. The 1996 ROD did not include an updated RA.

106. You say "the contaminated groundwater presents a principal threat to human health through the ingestion pathway." Identify these. Are there also sub-principal threats? Explain please.

EPA Response: The risk associated with ingesting the contaminated groundwater is above the limits EPA set as safe to human health. Since all drinking water in the vicinity of the Site is supplied by WMWA, nobody is currently ingesting the contaminated groundwater. Other potential pathways of exposure could include inhalation and dermal contact, but these pathways were determined to have a risk which was below EPA's action level. Please refer to the RA for further information.

107. "Actual or threatened releases of hazardous substances from this Site, if not addressed by a remedial action, present a current or potential threat to public health, welfare or the environment." What of historical, past-time threats? Name the threats please.

EPA Response: Refer to the responses to questions #B53 and #B106.

108. "Regardless of the alternative chosen, EPA will review the Site at least every five years..." What is the latest date by which such a review will occur in the future, and what are the components of such a review?

EPA Response: A five-year review is scheduled for December 2001. The five-year review will assess if the remedial action undertaken at the Site is protective of human health and the environment. Reviews will be discontinued when no hazardous substances, pollutants, or contaminants remain at a site above levels that allow for unlimited use and unrestricted exposure. These reviews should be discontinued only when a five-year review report documents that the contaminants of concern are reported at acceptable levels based on an appropriate period of monitoring.

109. "This alternative would be selected only if the Site posed little or no risk to public health or the environment." What is the definition of "little" and "no" risk? And is it public health and/or the environment that you speak of? And is there little or no risk only if there are no private wells?

EPA Response: Refer to the response to question #B53. "Little risk" would be a calculated risk level that is below the EPA action criteria. "No risk" would be no calculated risk. Please refer to the RA for more information.

110. Re: Alternative 1, Is this the most proven technology? Most available? Most achievable? Most possible? It would help laypeople if a primer of the levels of technology were given, and each alternative choice so labeled as to what level it represents.

EPA Response: EPA assessed the alternatives using nine criteria:

THRESHOLD CRITERIA

- protective of human health and the environment
- compliance with ARARs

PRIMARY BALANCING CRITERIA

- long-term effectiveness and permanence
- reduction of toxicity, mobility, or volume through treatment
- short-term effectiveness
- implementability
- cost

MODIFYING CRITERIA

- state/support agency acceptance
- community acceptance

EPA chooses the alternative which provides the best balance of the nine criteria. This may result in a technology being chosen which is not the most technologically advanced. Alternative 1 provides the best balance of the nine criteria and is a proven technology to remediate VOCs in groundwater.

111. Re: Alternative 1, What size tank? What equipment and where?

EPA Response: This type of information will be determined during the Remedial Design.

112. Re: Alternative 1, What will determine if a pretreatment system is necessary ? Cost?

EPA Response: This type of information will be determined in the Remedial Design. Pretreatment may be necessary to remove constituents that might interfere with the removal of the VOCs.

113. What piping makes possible the taking of air stripper effluent to be discharges into the Lycoming Creek?

EPA Response: This type of information will be determined in the Remedial Design.

114. "If required, the air stripper off-gas would be treated by a vapor-phase granular activated carbon (VGAC) system." Would a new one be required?

EPA Response: The treatment system has yet to be designed or installed.

115. "The final determination of the requirements for the groundwater recovery system will be made during system design." This is all so vague, this entire description of alternative 1. How can we make educated choices about this alternative and its costs and effectiveness and monitoring? It is hard for the community to accept such an "iffy" proposal.

EPA Response: Design information is determined in the Remedial Design phase of the

Superfund process. The Proposed Plan attempts to select an appropriate technology to meet the remedial goals, not a specific design.

116. Is this in-well air stripping the same as that which is in Elm Park? Elsewhere? Is there a record of carbon screen removals? Or am I confused with the VGAC carbon screen system? What happens to VOCs subject to in-well air stripping? Is in-well air stripping for the aquifer issues beyond the Avco property the COA with the PADEP? Is it more fully described and monitored in PADEP documents, or is it in the EPA administrative Record?

EPA Response: Groundwater pumped by the Elm Park and Third Street wells are treated by an above ground air-stripper. An in-well air-stripper utilizes a smaller air-stripping unit that is placed in the well. In both cases air is pumped through the water. The volatile contaminants are transferred from the water to the air stream. The volatile contaminants are removed from the air by blowing the air though a vapor phase granular activated carbon ("VGAC") unit.

117. Have the WMWA concerns about this alternative been considered?

EPA Response: Yes. Refer to the beginning of this Responsiveness Summary.

118. Is the Preferred Alternative the least expensive? How can a public suspicion (that any least expensive proposal agreed to by a corporation and government is also the least effective solution) be removed.

EPA Response: Yes, it is the least expensive. Please refer to Tables 4 & 5 in the ROD Amendment for further information on cost. The Preferred Alternative was selected because it was the best and most efficient remedy when evaluated using the nine criteria listed in the response to #B110.

119. How can the community read of the State acceptance of the alternative?

EPA Response: PADEP's comment letter regarding the Proposed Plan is part of the Administrative Record.

120. Are there other criteria used in the 1996 ROD for EPA decision-making of alternative preferencing? Are the 1996 criteria "primary balancing criteria" and the criteria in this 1999 ROD amendment "modifying criteria"? Explain. Are threshold criteria common to both the 1996 and the 1999 issuances?

EPA Response: Refer to the response to question #B110. As required by the NCP, All nine criteria are always used to assess alternatives.

121. Re: Long and Short term effectiveness, should it read that the cleanup goal have been met/achieved plus a time period of 12 consecutive quarters beyond that, according to the Significant Difference EPA statement.

EPA Response: This criteria is stated in the Performance Standards of this ROD Amendment. Long-term effectiveness addresses expected residual risk and the ability of a remedy to maintain reliable protection of human health and the environment over time, after cleanup goals have been met. Short-term effectiveness addresses the period of time needed to achieve protection and any adverse impacts on human health and the environment that may be posed during the construction and implementation period, until cleanup goals are achieved.

122. Re: State/Support Agency Acceptance, distinguish what the PADEP is lead angency for, and what the EPA is lead agency for. Who reviews what?

EPA Response: This differs, depending on the Site. For the Avco Lycoming Site, the EPA is the lead agency except for the portion of the remedy that accepts the off-facility remediation using the COA between PADEP and Avco. PADEP is the lead for the COA action.

123. Re: State/Support Agency Acceptance and Community Acceptance, the word "addresses" should read "addresses".

EPA Response: So noted.

124. Pages 15-18 (Proposed Plan) list and discuss the nine criteria for evaluating the alternatives. Note however that the sequence of the nine criteria differs from (1) page 13; (2) page 14, Table 1; and (3) the listing on pages 15-18. Such inconsistency does not make it easy for the reader to compare and contrast these matters. The sequence of the nine criteria in lists, when repeated throughout the proposed plan three times, should be consistent each time.

EPA Response: So noted.

125. Re: Protection of Human Health and the Environment, this page (15) begins by saying "For overall protection of human health and the environment, no unacceptable risks are associated with current groundwater use in the area because of the treatment system at the WMWA well field." Yet, firstly, on page 9 one reads "a remedial action needs to be selected to reduce future risk to acceptable levels" based on the Baseline Risk Assessment conducted as part of the 1991 Remedial Investigation/Feasibility Study.

EPA Response: Refer to the responses to questions #B54, B104 and B106.

125 (continued): Also, secondly, as another contradiction to what appears on page 15, on

page 9 it notes that by virtue of the 1996 ROD, the EPA concluded that "the contaminated groundwater presents a principal threat to human health through the ingestion pathway"; that "the risk associated with exposure to contaminated groundwater at the Site has not changed"; and that "actual or threatened releases of hazardous substances from the Site, if not addressed by a remedial action, present a current or potential threat to public health or the environment.

EPA Response: The contamination does present a threat through the ingestion pathway. Currently, this pathway is eliminated because of the WMWA drinking water system. The risk has not changed since 1996. "Current or" should be removed from the last sentence.

125 (continued): The third contradiction seems to occur on page 10 where the "no action alternative" is found to be unacceptable, and would be acceptable "only if the Site posed little or no risk to public health or the environment", which is clearly not the case. Thus the first statement in this criterion of protecting human health and the environment. The second statement for this criterion of choosing an alternative, which reads "Alternatives 1 through 6 minimize migration of contaminants in groundwater flowing from the Site, which would reduce the future risk from groundwater" does not discuss in detail each alternative and its effect on human health and the environment, presents no data in support of the conclusion that each alternative would reduce such risk (by how much? To what level?), and seems to imply that the "no action alternative #1 "would minimize migration of contaminants and thus reduce the future risk.

EPA Response: As the EPA has noted, the Site does pose a future risk to human health and the environment which is unacceptable, therefore, the no action alternative is unacceptable. Alternative #1 is the groundwater extraction and treatment system, which would remediate the groundwater to acceptable levels, thus, eliminating future risk.

126. Re: Compliance with Applicable or Relevant and Appropriate Requirements, what ARARs have been derived from the PADEP, and shouldn't they be discussed here?

EPA Response: Refer to page 16 of the Proposed Plan.

127. Have any TBCs been used? Discuss.

EPA Response: Please refer to Section IX, B. in the ROD Amendment.

128. What is a non-zero MCLG?

EPA Response: Maximum Contaminant Level Goal is a non-enforceable concentration of a drinking water contaminant that is protective of adverse human health effects and allows an adequate margin of safety. An MCLG of zero is set for potential carcinogens. Non-zero MCLGs

are set for non-carcinogens since these compounds exhibit thresholds for their effects.

129. Cite the date and accessibility of the Federal Safe Drinking Water Act, and/or SDWA.

EPA Response: The Safe Drinking Water Act ("SDWA"), as amended, 42 U.S.C. §§ 300f et seq. was enacted in 1974. The SDWA can be accessed on the EPA website, "www.epa.gov", or at your local law library, Lycoming County Law Library, 48 W 3rd Street, Williamsport, PA.

130. Cite the date and accessibility of the Clean Water Act.

EPA Response: The Clean Water Act ("CWA"), as amended, 33 U.S.C. §§ 121 et seq., was enacted in 1972. The CWA can be accessed on the EPA website, "www.epa.gov", or at your local law library, Lycoming County Law Library, 48 W 3rd Street, Williamsport, PA.

131. Cite the date and accessibility of the NCP.

EPA Response: National Oil and Hazardous Substances Pollution Contingency Plan, 40 C.F.R. Part 300, dated March 1990. This can be accessed on the EPA website, "www.epa.gov", or your local law library, Lycoming County Law Library, 48 W 3rd Street, Williamsport, PA.

132. Is it that the WMWA and PADEP have oversight for Section 121 (d) (2) (A) of CERCLA?

EPA Response: No. For a site on the National Priorities List, which is being remediated under CERCLA, EPA sets the cleanup standards.

133. The first paragraph (pg 16), beginning on the previous page, seems full of "bureaucratese"; can the subject be explained in language a lay person can understand?

EPA Response: Appropriate cleanup standards, which are set by EPA, must be met.

134. In the final paragraph, explain the grounds for the EPA determination the Act 2 (the Pennsylvania Land Recycling and Environmental Standards Act) "does not, on the facts and circumstances of this proposed remedy amendment, impose any requirements more stringent than the federal standards."

EPA Response: The standards that apply to this Site for VOC-contaminated groundwater are not more stringent than the federal standards.

135. I ask for more discussion for the last sentence in this paragraph. (Pg16)

EPA Response: The cleanup levels proposed in Table 2 of the Proposed Plan are the cleanup

levels EPA proposed to use for this Site.

136. Might it be helpful for the Table 2 that follows on page 17 to list the comparative state and federal cleanup standards, along with the range of chemical specific concentrations throughout the Superfund Site. Why not a map of plume levels?

EPA Response: The cleanup levels chosen are always those that are the most stringent. Please refer to Table 2 of the ROD Amendment for a list of contaminants of concern and the highest concentration detected at the Site. Also refer to Figure 1 in the ROD Amendment.

137. Does PADEP concur with this entire section on compliance with ARARs?

EPA Response: PADEP's approval letter is part of the Administrative Record.

138. Has there been any critique of this subject by such groups as the Clean Water Action, and if so, what is the substance to that?

EPA Response: Anyone was free to comment on the Proposed Plan during the comment period. Responses to all comments are contained in this Responsiveness Summary.

139. Re: "new air contamination sources", what does "new" mean or refer to?

EPA Response: There is an air discharge associated with several of the alternatives discussed in the Proposed Plan. Therefore, if one of those alternatives implemented, the source would be a new air emission or a new source of contamination.

140. If this is the first time in the present ROD amendment proposal that air contamination is mentioned, please discuss the topic more fully.

EPA Response: Refer to response to question #B139.

141. Does "BAT" (best available technology) mean better than anything? Is there nothing better?

EPA Response: "BAT" means the best technology currently available. Refer to response to question #B110.

142. If both water contaminants and air emissions are threats to human health and/or welfare and/or the environment, please explain fully yet succinctly, perhaps in a chart, what the monitoring tests are for each.

EPA Response: Contaminants in the groundwater at the Site present an unacceptable risk to

human health. The air emissions from the treatment of groundwater are being treated because EPA does not want to transfer contamination from the groundwater to the air. The air discharge permit with the Commonwealth of Pennsylvania will define the sampling frequency of the air emission. The system will be designed and operated to keep all contaminants from transferring to the atmosphere.

143. Inasmuch as "federal regulations under the Federal Underground Injection Control (UIC) Program, as set forth at 40 C.F.R. (144.24) are potential action-specific ARARs for several alternatives", might there be some explanation for each?

EPA Response: Alternatives 4, 5 and 6 require underground injection.

144. Explain the time difference represented in the statement that the "Preferred Alternative may achieve compliance with ARARs sooner than the other Alternatives.

EPA Response: This was meant on a relative basis. The time difference cannot be definitively determined.

145. What are the time frames projected in the last two sentences under Implemtability (pg 18)?

EPA Response: EPA anticipates starting the Remedial Design in the Spring of 2000. It is projected that the groundwater extraction and treatment system construction and the design for the source area reduction would be completed in ten months.

146. In addition to the view of the WMWA, and others asking questions at the Public Meeting, have other community voices been added? Will a list of community input sources be accessible? Is the view of Textron seen as a community voice?

EPA Response: All community questions are answered in this Responsiveness Summary.

147. Is there any Commonwealth of Pennsylvania provision for a public hearing on the Avco COA with the PADEP?

EPA Response: No provision exists for a public hearing on the COA.

148. What EPA 5-year timelines have been, and will be followed, regarding reviewing of the PADEP COA with Textron?

EPA Response: Refer to the response to question #A108. The COA should be reviewed at that time.

149. "EPA may modify the preferred alternative or develop another alternative, if public response warrants such an action, or if new material is presented." Gaps in the hydrogeological data have, I believe, prompted this 1999 proposed ROD Amendment. In my letter to the EPA prior to the public meeting, reviewed by the neighborhood Concerned Citizens Committee at the January 3, 2000 regularly scheduled meeting, and foreshadowed by the CCC December 1999 meeting, I have tried to raise questions about data gaps (as I did at the public meeting) in terms of assessing the threat to human health, welfare and the environment. I have tried, as a resident of the community neighborhood, to offer a fresh perspective; perhaps this is capable of being regarded as new material. Can the EPA modify the preferred alternative or develop another alternative alone, or only in consultation with the various parties involved (e.g., the Principal Responsible Party, or PRP, Textron-Lycoming; the WMWA; PADEP; community groups, etc.)?

EPA Rsponse: EPA cannot make a substantial modification to the ROD without a public comment period.

150. Your 800 number, your fax number, your email address, your WEB site address could all be added to this page (19); and allowance for a different postmark given that local postmarks are not provided for January 16 or 17.

EPA Rsponse: So noted. The information was included in the Fact Sheet distributed at the public meeting. Refer response to question #B46.

151. Re: the proposal, how many extraction wells exist now on Avco property and off, and how many more would be installed under the new planned proposal? Is this all that are needed? What volume of water is pulled for various treatments; and how much of that returns to the aquifer, or goes to the WMWA well fields, or is discharges into the Creek?

EPA Rsponse: There are presently two active recovery wells on the Avco property. There are two offsite extraction wells, one at Third Street and a second at Elm Park. The number of new extraction wells to be installed on Avco property, and their associated capture zones will be determined during design. All treated groundwater from the offsite extraction wells is discharged to Lycoming Creek. Treated groundwater from the onsite system will be discharged to the public sewer system.

152. What is the area of influence for each extraction well? The total zone/cone of influence for all the extraction wells combined? What percent of the Superfund Site does that represent? Why is that sufficient?

EPA Response: This type of information will be determined during the Remedial Design. The system will be designed to capture all contaminated groundwater leaving the Avco property.

153. What is the developing consensus within the engineering community in the last five years as regards to efficiency of pump and treat systems? Is it too expensive and inefficient over time unless there are high levels of contaminants? Or too expensive and inefficient over time if there are low levels?

EPA Response: EPA cannot comment for the engineering community. EPA believes that a pump and treat system is the most cost effective technology to remediate this Site.

154. Isn't it preferable not to have any water contaminants treated in the open air?

EPA Response: The Remedial Design will ensure that all contamination (air and water) is treated to acceptable levels. The remedy will meet all applicable ARARs.

155. Isn't it not a good thing to expose people to such contaminants?

EPA Response: People will not be exposed to contaminants above acceptable levels. Refer to response to question #B154.

156. Isn't there a reasonable question to ask about how realistic air testing and monitoring for these contaminants can be given the circumstances of aeration of the contaminants from the water?

EPA Response: The contamination can be monitored with reasonable accuracy.

157. Isn't it preferable to have an enclosed system for taking the contaminants out of all of the water, be it in the shallow or deep aquifer, and thus use some system of activated carbon filter or other such enclosed device that prevents air pollution both on Avco property and off of it?

EPA Response: The Selected Remedy will treat the off-gas using vapor phase granulated activated carbon, if required.

158. Re: the discharged water, how broad is the monitoring system? Does it include the full range of VOCs, PCBc, PAHs, POHs, metals, etc., and the priority pollutant list of 128 substances as well as others known at the site? Shouldn't all these potential contaminants be monitored before any discharge in the Creek and before any use as part of the reserve wellfield system for the WMWA?

EPA Response: The monitoring program has not been established yet. It will definitely include monitoring for contaminants of concern (see Table 2 of the ROD Amendment), and other chemicals may be added as needed. The discharge will meet the substantive requirements of the National Pollution Discharge Elimination System (NPDES) Program.

159. Is any air monitoring system needed if a closed filter system is used? Or only a minimal air monitoring system under the closed system?

EPA Response: This will be determined during the Remedial Design. If a monitoring system is used, it will be determined by the make-up of the discharge and the regulations governing the discharge.

160. How often are filters changed?

EPA Response: Engineering calculations will be done to estimate the frequency of filter changes and monitoring in the field will verify the timing.

161. What determines the frequency of such changes? Is monitoring done? Are calculations used for when they need to be changed on the basis of certain assumptions? Is there monitoring of the air pressure so that when the air pressure drops it is inferred that the filter is clogged and thus some determination based on that as to when filter changes need to occur?

EPA Response: Refer to the response to question #B160.

162. What happens to the filters? Where do they go, etc.?

EPA Response: They will either be disposed of as hazardous waste or will be regenerated and used again.

163. Re: the backup wells for city water, explain fully the monitoring. How does it occur, and how often? Is there adequate money and time for such monitoring? Might more monitoring time and financial resources for such be warranted? Does monitoring occur for the national priority pollutant list potential contaminants as well as volatiles and everything else found on the Superfund Site?

EPA Response: The water supply wells are monitored quarterly for volatile contaminants. In addition these wells are monitored for all the parameters required for a permitted supply of municipal water when the well field is in use. The Department believes that this monitoring is adequate.

164. For the shallow aquifer and the deep aquifer, on and off the Avco property, how many pump and treat wells are there currently, and how many under the proposed plan? Are there only two now? Distinguish between the number of pump and treat wells and the number of monitoring wells. Do all monitoring wells measure contaminant levels as well as water table levels?

EPA Response: Currently, there are two wells off-Facility and two wells on the Facility. Water levels and contaminant levels can be measured in all monitoring wells. The number of new pumping wells needed on Avco property will be determined during design.

165. Re: the Legend for Figure 2, please more clearly distinguish the definitions and locations and numbers of the monitoring wells, the pumping recovery wells, the site recovery wells, the strippers. What is a pump and treat well? What is an extraction well? Is the RW-2 a pumping recovery well? Are there only RW-1, RW-2, RW-3 on Avco property? How many Site Recovery wells are there? What is the abbreviation for Site Recovery well? I assume RW means a Pumping Recovery Well. Are WMWA wells identified as Pumping Wells (PW)? Are PW-7 and PW-8 located within Lycoming Creek? What is the dark circle on the southern-most bridge? Where is the pipe located that discharges water into the Lycoming Creek? Can you have an enlarged/magnified map showing what owuld appear if the proposed plan is adopted, especially on the hard-to-read Containment Zone.

EPA Response: Figure 2 was intended to provide a reference as to where the Site was located in relationship to the neighborhood.

166. What is the situation with private wells in the Superfund site today?

EPA Response: Refer to the response to question #B53.

167. Were any wells ever drilled adjacent to private wells to get pollutant readings? Were pollutant readings ever taken directly from private wells?

EPA Response: Only one private well, in the vicinity of the contamination, was still in existence during the investigation. This well was used to supply water to raise minnows, not as drinking water. No well adjacent to it was drilled, although other wells were drilled in the general area.

168. What computer modeling was used to estimate toxic exposure to residents using private wells over time?

EPA Response: Please refer to the RA.

169. Did the PADEP COA with Textron involve only two pump and treat wells off Avco property, and no agreement as to what should be done on Avco property?

EPA Response: The COA applies to the four recovery wells, two off-Facility and two on-Facility.

170. Do Technical Assistance Grants exist for EPA Superfund sites?

Under the Superfund law, EPA can award Technical Assistance Grants (TAGs) of up to $50,000 per site. TAGs allow communities to hire and independent expert to help them interpret technical data, understand the site hazards, and become more knowledgeable about the different technologies that are being used to clean up sites.
To be eligible, a group must be a citizen association, or an environmental or health advocacy group that demonstrates a genuine interest in the site. The group also must be incorporated as a nonprofit organization. In addition the group must "match" the TAG funds they receive by contributing 20 percent of the total cost of the project using cash or "in-kind' donations.

C. Concerned Citizens Committee of Memorial Avenue, Scott and W. 4th Streets January 3, 2000 letter:

1. What is a Superfund Site, and why has the Avco Lycoming Corporation been so designated by the U.S. Government?

EPA Response: Congress established the Superfund Program in 1980 to clean up hazardous waste sites which pose a health and environmental risk. To evaluate the dangers posed by hazardous waste sites, EPA developed a scoring system called the Hazard Ranking System (HRS). EPA uses the information collected during the assessment phase of the process to score sites according to the danger they may pose to public health and the environment. Sites that score high enough on the HRS are eligible to become Superfund Sites.

2. Is the neighborhood we represent, from Rose St. west to Lycoming Creek along Memorial Avenue, Scott and W.4th Streets, also designated as a Superfund Site?

EPA Response: "Site" shall mean the Avco Lycoming facility, located in Lycoming, Pennsylvania, plus any additional property to which contamination has migrated or come to be located.

3. What are the contaminants at issue here?

EPA Response: Volatile Organic Compounds ("VOCs"), which include 1, 2 - Dichloroethene, Trichloroethene, and Vinyl Chloride and chromium. This ROD Amendment only addresses the VOCs.

4. Where are they?

EPA Response: The contaminants are in the groundwater.

5. How long have they been there?

EPA Response: They were first detected in the fall of 1984.

6. In what concentration?

EPA Response: Please refer to Table 2 of the ROD Amendment.

7. What is their danger and/or toxicity?
8. What is their dangerous route to humans (for example, inhalation, ingestion, skin contact, etc.)?
9. How could they infiltrate our residences/workplaces/outdoor living areas?
10. What prevents the unwanted chemicals from seeping or evaopating into our basements.

EPA Response to #7, 8, 9, 10: There is no current risk because no one is currently drinking contaminated groundwater. All residents are currently supplied with water by the WMWA drinking water system. Ingestion is the pathway of concern to human health at this Site. EPA cannot ensure that in the future the WMWA will supply water to all residents in the vicinity of the Facility. Therefore, if the aquifer gets remediated to the cleanup levels outlined, future risk will also be eliminated.

Please refer to the Remedial Investigation and the Risk Assessment (RA) for further information.

11. What symptoms in humans (babies, children, older persons exposed over a long period of time) would occur if the contaminants/pollutants reached a certain threshold of exposure by ingestion, inhalation, skin contact, etc.?

EPA Response: There is no current route of exposure. Please refer to the RA.

12. Are we speaking of potential immune system degradation, reproductive system changes, hormonal disruptions, carcinogenic effects, neurological or central nervous system effects, what?

EPA Response: There is no current route of exposure. Please refer to the RA.

13. When the chemicals are stripped from the groundwater and released into the air, what are the outcomes of our breathing such?

EPA Response: The air discharge will be treated, if necessary, using vapor phase activated carbon, to insure that the emissions are at an acceptable level. The air discharge will meet all emission regulations.

14. What prevents the pollutants from entering the city water system (the Superfund site

area includes the reserve well fields for the Williamsport Municipal Water Authority)?

EPA Response: The wells which are located in the plume of contamination have treatment systems on them which are part of the Consent Order and Agreement between Avco and the PADEP.

15. Have people in the neighborhood historically used polluted water directly (that is, had their own wells)?

EPA Response: To the best of EPA's knowledge, no private drinking water wells were ever located in the plume of contamination.

16. Have those wells been determined? How many? Addresses? Long-term use? For what purposes?
17. When did such wells get surveyed?
18. When were well owners/users advised of the danger of continued use?
19. When were the wells closed or capped?
20. Was any health study performed of long term private well users?
21. Was any health study performed of Avco workers who were exposed to the chemicals in the workplace?
22. Was any health study done for those who got a double exposure (workplace and home)?

EPA Response to #16, 17, 18, 19, 20, 21: U.S. Health and Human Services, Public Health Service, Agency for Toxic Substances and Disease Registry performed a Public Health Assessment for Avco-Lycoming Williamsport Division. Also, refer to the Risk Assessment (RA) for the Site dated January 1991.

23. If private wells were used for various purposes, what were the dangers? For example, drinking, bathing, showering, food preparation, watering vegetable gardens, feeding pets, watering lawns, filling pools and fish tanks, car washing, clothes washing, etc.?

EPA Response: To the best of EPA's knowledge, no private drinking water wells were ever located in the plume of contamination. Refer to the RA for the Site.

24. For each of the contaminants, what do periodic sample tests show in terms of their reduced concentration over the years to the present?

EPA Response: The concentration of VOCs have declined slightly over the years. Please refer to Table 2, in the ROD Amendment, for the historically high levels of each contaminant.

25. When did testing start?

EPA Response: The contamination was first detected by the Williamsport Municipal Water Authority ("WMWA") in the fall of 1984.

26. Are there any estimates of what the historical high levels would have been before testing started?

EPA Response: EPA cannot estimate what these concentrations might have been. Table 2 in the ROD Amendment shows the highest concentrations that have been detected to date.

27. Have some readings gone up since testing began? If so, why?

EPA Response: They have not.

28. Are we experiencing a straight-line historical diminution of recorded chemicals/metals in groundwater and soil beneath our homes.

EPA Response: EPA has not studied this trend. The groundwater plume has been better defined and there are still levels of contamination above action-levels. Soil concentration above action levels has not been found a the Site. Therefore, soils are not a media of concern for this Site.

29. How did these pollutants enter our neighborhood to begin with? Accidental discharges? Purposeful dumping? What?

EPA Response: EPA believes that the contamination came from past practices, accidental discharges and poor housekeeping at the Avco Facility.

30. When was the pollution in our neighborhood discovered? Is there any estimate for how long such pollution was occurring?

EPA Response: In the fall of 1984, WMWA detected VOCs in the groundwater at its water supply well field. No water was used from the well field in 1985 or 1986 pending the results of an investigation. An investigation was immediately started by PADEP. Avco started its investigation in 1985. Avco and EPA reached an agreement to begin the Remedial Investigation in June 1988. The WMWA regularly tested the well field, so the duration of undetected contamination in the WMWA well field was probably just between sampling events.

31. Assuming the chemical discharges from Avco/Textron Corporation are responsible for the neighborhood contamination, what assurances are there that such discharges ceased, and as of what date?

EPA Response: To the best of EPA's knowledge, all of Avco's processes currently meet environmental regulations. The EPA can give no assurances regarding accidental releases.

32. Are similar chemicals still used at the corporate property, and if so, what assurances are there that workers and neighboring properties are better protected from such substances?

EPA Response: There is an extensive sampling program in place which provides protection against future contamination.

33. What are the various processes used to clean up the mess? On-site at Avco/Textron? In the surrounding residential neighborhoods?

EPA Response: Please refer to the ROD Amendment.

34. When did cleanup begin?

Treatment began in 1985.

35. Since the cleanup began until now, has it been effective?

All the treatment technologies used have been effective for its intended use.

36. How much longer will it take?

EPA Response: It cannot be determined at this time. Remediation will continue until the remedial action goals have been met.

37. Besides testing we see done in our neighborhoods periodically (environmental workers drawing samples from deep wells), is testing done before water from the reserve well field enters into the public water supply serviced by the Williamsport Municipal Water Authority?

EPA Response: Yes.

38. What testing is done before treated water is discharged into Lycoming Creek?

EPA Response: Treated ground water will be monitored on a regular basis in accordance with the Commonwealth of Pennsylvania permit.

39. Would swimmers and people who fish be advised not to expose themselves to the Lycoming Creek water the discharge occurs?

EPA Response: No detrimental impacts to Lycoming Creek are being caused by the site. No advisories are warranted.

40. When water "pools" in the neighborhood Memorial Park following a heavy rain or high water in Lycoming Creek, is such water coming down from the atmosphere, or might it be surfacing from beneath the playground level? If the latter, is there danger to young people playing in such "pools" or on the soil and grass after the water subsides/evaporates?

EPA Response: Pooled water is most likely coming from precipitation (rain, snow). When pools of water sit outside, in the open air, the volatile organic compounds volatilize or evaporate. The RA for the Site determined that the ingestion pathway is the only pathway of concern for the groundwater contamination. Please refer to the RA for further information.

Summary of Commentors' Issues and Concerns Raised During the Public Meeting on January 10, 2000

The majority of the questions raised during the Public Meeting have been answered in previous sections of this Responsiveness Summary. The following question was not previously answered.

1. Would you help a lay person understand the difference between air stripping and air sparging and soil vapor extraction?

EPA Response: Pumping and treating and air stripping, what that entails is we pump the groundwater and the volatile contaminants out of the ground and put it through an above ground air stripper. Basically, the water trickles down through the top of a cylinder and there are a lot of particles or different materials inside this cylinder that makes the water flow through many pathways. At the same time, air is blown up from the bottom and strips the volatiles out of the water. Air sparging and soil vapor extraction is all done in the ground. In concept, it is the same thing as the air stripper, but it's subsurface. You have two wells. The first well goes down into the aquifer and it is in that well air is injected so the air bubbles up through the aquifer until it comes to the top of the water table. Above the water table you have a core space which is basically filled with air and very little water and in that area you install a second well in which you extract the air that is in the core space. So the intent is when you bubble air into the aquifer, the bubbles strip out the volatile organic contamination from the aquifer those bubbles that migrate up until the unsaturated zone where the air is sucked off by the higher well, which is the air sparging well. So, the physical concept is the same, you just do it all subsurface.