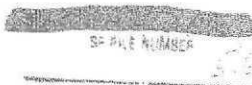
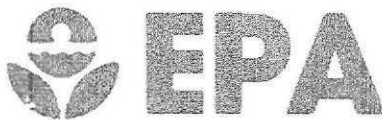




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## SOIL CLEANUP OF SMUGGLER MOUNTAIN SITE

### ASPEN-PITKIN COUNTY, COLORADO EXPLANATION OF SIGNIFICANT DIFFERENCES

Region VIII  
Superfund Program

MAY 16, 1990

#### OVERVIEW

Portions of the Smuggler Mountain Site in Aspen, Pitkin County, Colorado, are contaminated with mining wastes, which contain high concentrations of lead and cadmium. These concentrations pose a potential health risk to humans, especially small children and pregnant women. Consequently, the site was placed on the Environmental Protection Agency's (EPA) National Priorities List for cleanup under the Comprehensive Environmental Response, Compensation, and Liability Act (better known as CERCLA or Superfund). Under the Superfund law, EPA is charged with the responsibility of developing and implementing clean-up remedies that protect human health and the environment.

After thorough study and evaluation, EPA issued a Record of Decision in September 1986, describing the remedy chosen to clean up the site. This remedy was subsequently changed because additional sampling results caused EPA to question the implementability of the clean-up plan. Changes were reflected in EPA's March 1989 Explanation of Significant Differences, a document which described differences between the remedy proposed in the Record of Decision and the remedy to be implemented at the site.

Aspen residents and local officials expressed concern with the changes and submitted to EPA an alternative proposal for site cleanup. Given these concerns and the results of additional soil sampling,

EPA decided to make further revisions to the remedy. The revisions affect four primary components: (1) on-site repository, (2) cleanup on individual residential properties, (3) remedial action at Hunter Creek and Centennial Condominiums, and (4) institutional controls.

Major changes to the remedy proposed in this draft Explanation of Significant Differences are as follows:

1. The number and size of the on-site repositories needed for the disposal of contaminated soil may be reduced.
2. For individual properties, the protective cover of clean soil to be placed over contaminated areas will be reduced from 2 feet to a geo-textile liner overlain with 1 foot of clean soil.
3. For the Hunter Creek and Centennial Condominiums, the protective cover of clean soil to be placed over contaminated areas will be reduced from 2 feet to 6 inches.
4. More stringent institutional controls will be implemented to ensure the effectiveness and permanence of the remedy.

These changes are described in detail in this Explanation of Significant Differences.

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SOIL CLEANUP OF SMUGGLER MOUNTAIN SITE  
ASPEN-PITKIN COUNTY, COLORADO

EXPLANATION OF SIGNIFICANT DIFFERENCES  
May 16, 1990

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## INTRODUCTION

The purpose of this document is to explain the significant differences between the Record of Decision (ROD) signed by the EPA in 1986 (which was subsequently modified by a previous Explanation of Significant Differences in March 1989) and the remedy as proposed herein, which will be implemented at the site.

The ROD divided the site into two operable units (OU): #1 - Residential areas including the site of the repository at the Mollie Gibson Park and #2 - The Mine site on Smuggler Mountain. The ROD selected a remedy only for OU #1. The previous ESD and this ESD only address changes to the remedy selected for OU #1. A remedy will not be selected for OU #2 until a remedial investigation and feasibility study (RI/FS) is completed for the mine site.

Under Section 117 of the Comprehensive Environmental Response Compensation and Liability Act of 1980 (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), EPA is required to publish an explanation of significant differences when significant, but not fundamental, changes are proposed to the previously selected remedy. This document provides a brief history of the site, describes the remedial action to be undertaken at the site, and explains the ways in which this remedial action differs from the remedy selected by EPA in 1986 and subsequently modified in 1989.

This ESD presents only a synopsis of information on the site. The final ESD will be incorporated into the administrative record file. The reader may wish to refer to the administrative record file, which is available at the Pitkin County Library and at the Aspen-Pitkin County Environmental Health Department.

## SUMMARY OF SITE HISTORY AND CONTAMINATION PROBLEM

### Site History

The Smuggler Mountain Site (the site) is located at the base of the western side of Smuggler Mountain in Aspen, Pitkin County, Colorado. Waste rock, tailings, and slag from mines on Smuggler Mountain cover much of the site. The mine wastes are either exposed, covered, or, in many instances, mixed with native or imported soil. Due to its location in the resort town of Aspen, some residential development has taken place immediately on top of these waste piles. In addition, some piles have been leveled or moved to the edge of the developed areas where they now remain as berms of contaminated soil.

The site is approximately 90 percent developed. Development includes two large condominium complexes, approximately 160 individual homes, several small or condominium developments (4-12 units), and a tennis club.

Soil analyses in the early 1980s, conducted first by residents, later by EPA and the potentially responsible parties (PRPs), identified concentrations of lead up to 46,000 parts per million (ppm). Elevated levels of cadmium, as well as other metals, were also found in the soils. The potential for ground water contamination was also identified during the investigations. The site was proposed for the National Priorities List (NPL), the Superfund list, in October 1984. Listing was final in 1986.

In 1986, EPA selected a remedy for soil cleanup at the site. During the design of the remedy, EPA conducted additional soil sampling at the site to determine the necessary capacity for the on-site repository. The results of this additional soil sampling, which was conducted in the summer of 1988, indicated that the remedy selected in 1986 needed to be changed.

In March 1989, an initial ESD was drafted and presented to the Aspen community. The residents had major concerns regarding the extent and magnitude of the remedial action. Their concerns related to the actual design and implementation of the remedy, the estimated cost, evidence of an actual health risk, and their potential liability, as defined under CERCLA.

Throughout the spring and summer of 1989, EPA met with local officials and citizens in an effort to address their concerns. EPA received a citizens' proposal through Pitkin County dated June 28, 1989, which proposed an alternative remedy which differed from the one presented in the 1989 ESD. This proposal also included a request for assurances from EPA regarding the residents' potential liability. Discussions occurred between EPA and the County concerning the citizens' proposal. The remedy proposed in this ESD addresses both EPA's concerns about the impracticability of the 1986 remedy and, to the extent practicable, concerns expressed by the citizens about the remedy.

In the discussions between EPA and the community, other issues were identified which will not be addressed in this ESD. Design issues, such as preservation of trees or the soil sampling of individual properties, will be addressed in more detail during the design phase of the project after the ESD is final. Other issues of concern to the residents, such as statutory contribution protection and the potential deletion of statutory reopener clauses, would be addressed as part of any settlement between EPA and the property owners. Finally, deletion of the site from the NFL will be addressed in more detail after completion of the remedy.

### **Background on Lead and Cadmium Contamination**

The primary health risk at the site is the potential for human exposure to lead and cadmium through direct contact with mine wastes and contaminated soils.

Lead is a heavy metal that is associated with the mine wastes found at Smuggler Mountain. Lead can be absorbed by humans either through breathing dust in the air or inadvertently ingesting

contaminated soil and dust. Because small children tend to put things in their mouths, children who live near a source of lead pollution are more likely to be exposed to lead than adults.

Exposure to lead may cause long-term and possibly permanent damage to the nervous system, which may result in learning disabilities and behavioral problems in children. Even at very low levels, lead exposure can cause harmful effects to the nervous system in children.

Lead exposure may also cause long-term damage to the cardiovascular system, the reproductive system, the kidneys, and the liver. Lead has been shown to be carcinogenic in animal studies.

Cadmium is a heavy metal that is also associated with the mine wastes found at Smuggler Mountain. Studies have shown that cadmium may be carcinogenic to humans. Exposure to cadmium can cause long-term effects on the kidneys, bones, liver, and respiratory and immune systems. Cadmium may also adversely affect human reproduction.

Plants, including leafy green vegetables and root crops, may uptake cadmium from contaminated soils. In addition, vegetables collect dust, which is not easily removed. Vegetables grown in contaminated soils may present an exposure to humans who consume those vegetables.

### **SUMMARY OF THE 1986 RECORD OF DECISION (ROD)**

The objectives of the remedy selected in the 1986 ROD were to isolate waste materials with lead concentrations greater than 1000 ppm by requiring: 1) excavation and disposal of soils/tailings with lead concentrations greater than 5000 ppm in an on-site repository, 2) capping of soils with lead concentrations between 1000 and 5000 ppm with 6 to 12 inches of clean soil and revegetation, 3) continued monitoring of the groundwater, 4) provision of an alternate water supply for residences with domestic wells, and 5) operation and maintenance of the remedy through regular inspections as well as through institutional controls.

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The 1986 ROD selected a soil clean-up level for lead concentrations of 1000 ppm based on the information in the Endangerment Assessment and the RLIS report and on the recommendation by the Agency for Toxic Substances and Disease Registry (ATSDR) to EPA.

The reader may refer to the ROD for a more detailed discussion of the remedy selected in 1986. The ROD is available at the Pitkin County Library and at the Aspen-Pitkin Environmental Health Department.

## SUMMARY OF THE 1990 REMEDY

The 1989 ESD has been superseded by the remedy in this ESD. Many components of the remedy in this ESD have not changed from the 1989 ESD. It will be noted in the discussions below whether a component has changed from the previous remedies. The changes will be noted at the end of a paragraph by brackets ( ) and highlighting.

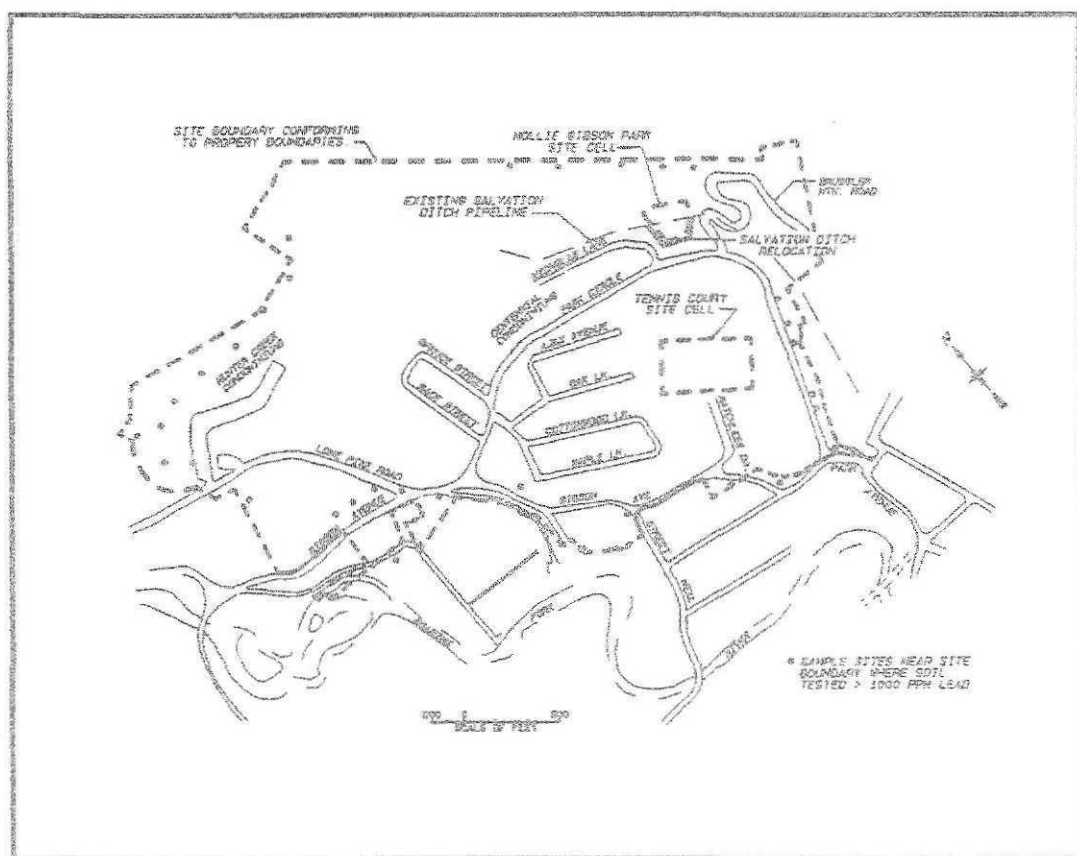


Exhibit #1 Site Boundary Map

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Before describing the components of the remedy, an explanation of how the site boundary in Exhibit I was determined and a discussion of the factors that led EPA to make changes to the selected remedy will be provided.

### Site Boundary

The remedy addresses the residential areas within the site boundary for OU #1 which also includes the Mollie Gibson Park repository. Exhibit I of this ESD shows the site boundary which has been drawn to conform to the property boundaries of those properties on the border of the contaminated area. The site boundary is considered an administrative boundary that defines the area subject to the institutional controls adopted by the County.

Sampling has shown lead contamination greater than 1000 ppm in the soils on the properties at the edge of the site. These properties have been included within the site boundary. Because the site boundary has been drawn to conform to the boundaries of these properties, it may appear that the original site boundary has expanded in some areas. Additional soil sampling during the design phase may be necessary for some properties to identify the contaminated portion of the property that would require remediation.

### Justification for Changing the Remedy

Previous investigations conducted at the site did not clearly identify the exact areas of soil contamination. In addition, the volume of material to be excavated and buried in an on-site repository (i.e., soils with lead concentrations greater than 5000 ppm) was not fully known, since previous investigations had not sampled at depth.

The results of the pre-design sampling conducted by EPA in 1988 indicated that the volume of material with lead concentrations higher than 5000 ppm was significantly greater than the capacity of the Mollie Gibson Park repository. The results also indicated that both the areal and vertical distribution of lead concentrations in the soils/tailings are highly variable. This variability in lead concentrations made it impractical to calculate exact volumes needing to be excavated. The variability also made

it extremely impractical to implement two different approaches for soil cleanup, (i.e., total excavation for soils 5000 ppm vs. soil capping for soils 1000-5000 ppm).

The 1989 ESD required 2 feet of clean soil with a vegetative cover for areas where lead concentrations were greater than 1000 ppm. In many situations, achievement of that 2 ft. soil cover would have required excavating 2 ft. of contaminated material first, before placing 2 ft. of clean fill and topsoil. Based on the 1988 soil sampling results and the requirement for a 2 ft. soil cover, EPA estimated that the volume of material to be excavated and buried in an on-site repository ranged from 35,000 to 85,000 cubic yards. A second on-site repository would have been required to accommodate this volume of material.

The residents and local officials expressed concern about several components of the 1989 remedy. Their major concerns included the amount of excavation, the resulting disturbance to the community, and the need for two on-site repositories. EPA considered the 2-foot soil cover in the 1989 remedy a necessary balance between engineering controls and institutional controls, because some contamination would be left on-site. The citizens' proposal submitted to EPA in June 1989 suggested an alternative balance that would: 1) still provide protection of human health and the environment, 2) minimize the need for a second on-site repository, and 3) provide more certainty in calculating the volume of excavated material requiring on-site disposal.

EPA has revised the selected remedy given the findings of the soil sampling, the need to address the impracticality of the 1986 remedy, and the concerns expressed by the citizens about the remedy in the 1989 ESD. EPA has made the following changes to the remedy. The remedy consists of four major elements:

1. On-site Repository
2. Cleanup on Individual Residential Properties
3. Remedial Action at Hunter Creek & Centennial Condominiums
4. Institutional Controls

### 1. On-site Repository

- \* An on-site repository will be constructed at the Mollie Gibson Park Site with a design capacity of approximately 35,000 cubic yards. This repository will serve as the primary location for disposal of contaminated soil/tailings excavated during the residential cleanup. Access to the repository will be controlled by the County.
- \* The Mollie Gibson Park repository will also serve as the "open" repository for disposal of contaminated soil/tailings displaced due to any kind of development of the properties within the site boundary after completion of cleanup. [A repository at the Mollie Gibson Park Site was envisioned in the remedy in the 1989 ESD. However, the primary purpose of a repository at the Mollie Gibson Park was for future disposal after completion of the remedial action.]

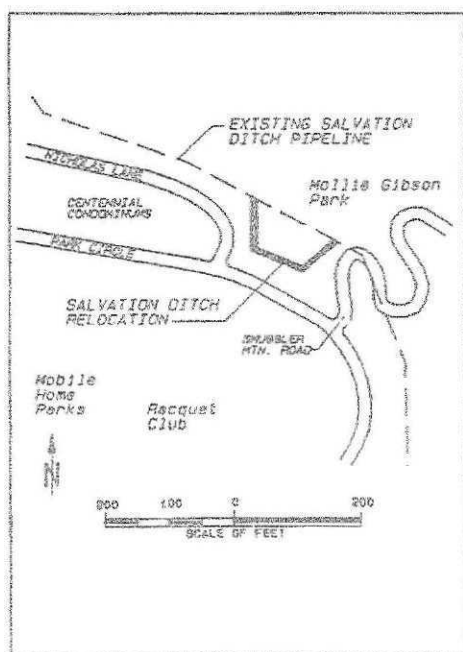


Exhibit 2 Relocation of Salvation Ditch

- \* The Salvation Ditch Irrigation pipeline, which currently passes directly through the Mollie Gibson Park site, will be relocated. (See Exhibit 2 in this ESD). The pipe itself will be upgraded to withstand the expected additional weight from the materials placed in the repository and the pipeline will be re-aligned along the outer edge of the lower bench of the repository for future access. [The relocation of the pipeline has not changed from the 1989 ESD.]
- \* The Mollie Gibson Park repository will be constructed to be structurally stable, to minimize surface runoff, and to prevent unauthorized access. The "open" portion of the repository will have a temporary cover to minimize dust and a fence to prevent direct contact with the contaminated materials.
- \* The clean fill and topsoil used as cap material for the repository will have lead concentrations of 250 ppm or less. [This requirement has not been changed from the remedy in the 1989 ESD].
- \* To conserve the capacity of the "open" portion of the repository, the County will encourage the containment of contaminated soil/tailings on as many properties being developed as possible by administering local ordinances.
- \* Containment of contaminated soil/tailings on future properties will be accomplished through one of the following approaches:
  - 1) Designing the development project to minimize the displacement of contaminated materials, or
  - 2) Relocating the contaminated materials on the property being developed and covering the materials with an approved cover that is in compliance with the remedy. Any decision to dispose of contaminated materials on the property will include consideration of the amount of material being relocated, the surrounding topography, surface runoff patterns and the effect on adjacent properties.
- \* A second on-site repository may be necessary depending on the amount of contaminated soil/tailings to be excavated during cleanup.

The proposed location of the second repository is the Smuggler Racquet Club property. A major design goal during the cleanup will be to minimize the volume of soil to be excavated and moved, thereby reducing or even eliminating the need for a second repository.

- \* The decision for a second on-site repository will be based on the number of properties to be remediated and the volume of material to be excavated from those properties. This decision will be made late in the summer of 1990, when all of the soil sampling and volume calculations have been completed.
- \* Because of changes to the remedy in this ESD (i.e., the change in the soil cover depth from 2 feet to 1 foot would result in a reduction of volume of material to be excavated), the likelihood of a second repository is reduced.
- \* If a second on-site repository is necessary, the size and capacity would be significantly less than the repository envisioned in the 1989 remedy. It is hoped that, the second repository would not necessitate disturbances of the tennis courts at the Smuggler Racquet Club.
- \* The berm separating the Racquet Club and the Smuggler Mobile Home Park will be remediated and vegetated whether or not a second on-site repository at the Racquet Club is

necessary. [Remediation of the berm was always a component of the remedies previously selected].

## 2. Cleanup on Individual Residential Properties

- \* Soil sampling will be conducted prior to initiating remedial action on each individual residential property that is not part of the Hunter Creek or the Centennial developments. Sampling will be conducted in the top 1 foot of soil to determine if the existing soil cover has lead concentrations greater than 1000 ppm. [Soil sampling will provide EPA with the ability to calculate accurately the volume of soil to be excavated and disposed of in the on-site repository. Additional details on this soil sampling program will be provided to residents in the Spring of 1990.]
- \* Properties where sampling shows soil lead concentrations above 1000 ppm would be fully remediated, as described below. The soil cleanup on the individual properties includes the following components: (See Exhibit 3 showing the components of the remedy)
  - A geo-textile liner covered with 1 foot of clean fill and topsoil (settled and compacted) and a vegetative cover to minimize erosion is required for all areas

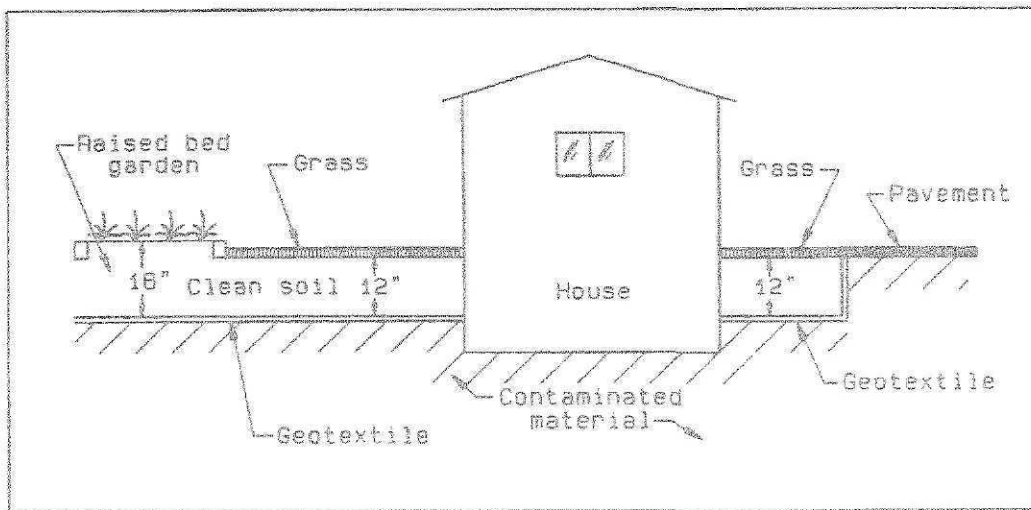


Exhibit 3 Typical Remedy Components



not paved or covered by permanent structure. A geo-textile liner is a porous man-made material (similar to felt) that will be laid over the contaminated soils/tailings. [The geo-textile liner was not a component of the remedies previously selected. The requirement for the 1-foot soil cover is a change from the 1989 remedy which required a 2-foot soil cover. The original 1986 remedy required 6-12 inches of clean topsoil for soils with lead concentrations ranging from 1000-5000 ppm.]

- The purpose of the geo-textile liner is to prevent mixing of the contaminated materials with the clean fill. Also, the liner will serve to alert property owners that excavation below this liner would require approval from the County. The geo-textile liner with the 1-foot soil cover functions as a barrier to break exposure pathways and to prevent direct contact with contaminated materials, thus protecting human health. [EPA believes that the geo-textile liner plus a 1-foot soil cover will achieve the same goal of preventing the mixing of clean soil with contaminated soil that would be achieved with a 2-foot soil cover.]
- All clean fill and topsoil used as backfill in the residential areas will have lead concentrations of 250 ppm or less. [This requirement has not changed from the 1989 remedy.]
- Paved areas such as streets, driveways, patios, parking areas, and sports facilities provide an adequate cover to prevent direct contact with any underlying contaminated soil/tailings. Driving areas on the site, such as streets and driveways, that are currently not paved will be paved to prevent direct contact. [The 1989 remedy allowed gravel as well as paving. However, gravel is not as permanent as paving. Dust levels are usually greater with gravel surfaces.]
- Permanent structures such as single family homes, condominiums, modular homes,

garages and other structures with a floor and foundation provide adequate cover for preventing direct contact with contaminated materials. Future modifications to these structures that might increase the risk for direct contact with contaminated materials would require prior approval by Pitkin County as part of the institutional controls to be implemented as part of the remedy. [This component has not changed from the 1989 remedy.]

- Access under any home, deck, or similar structure will be limited or the materials adequately covered to prevent the potential for direct contact with contaminated materials. [This component has not changed from the 1989 remedy.]
- Where topographical conditions permit, contaminated materials may be covered in-place with a geo-textile liner, 1 foot of clean fill (settled and compacted), and a vegetative cover to minimize erosion. Practical considerations such as the drainage patterns and preservation of large trees, as well as discussions with affected property owners will determine the appropriate approach during cleanup. [This component has only changed from the 1989 ESD with respect to the required geo-textile and the thickness of the soil cover.]
- Undeveloped lots will be covered with 1 foot of clean fill over a geo-textile liner and revegetated with a natural grass mixture. Other acceptable covers that provide a protective barrier and are approved by EPA may be substituted. During construction of the remedy, EPA will work with property owners to the extent possible to accommodate the owner's plans for development, where those plans conform to the remedy. [This component has only changed from the 1989 ESD with respect to the required geo-textile and the thickness of the soil cover.]
- All flower and vegetable gardens will be replaced with raised-bed gardens that are at least 6 inches above the top of the soil and

vegetative cover. The purpose of raised-bed gardens is to provide a total of at least 18 inches of clean soil that will: 1) ensure that an adequate barrier exists between the roots of vegetables and any contaminated materials and 2) minimize frequent digging below the top 1 foot of clean soil. [The requirement for raised-bed gardens is a new component in the remedy due to changing the required soil cover depth from 2 feet to 1 foot.]

- All residential areas will be restored to their original condition to the maximum extent possible. Since preserving the large trees is a major concern to the residents on the site, special care will be taken during cleanup in working around the trees. Because replacement in-kind of large trees is very costly and not always possible, efforts will be made to protect the existing trees. For smaller trees and bushes it may be more cost-effective to replace them rather than work around them during construction. [This component of the remedy has not changed from the 1989 remedy.]
- Additional information and design details regarding the treatment of trees will be developed during the design phase with opportunities for residents' input.
- \* Those properties where sampling of the top 1 foot of soil does not show contamination greater than 1000 ppm may still require some remedial action to meet the minimum requirements of the remedy. In addition to the 1-foot soil cover already in place, the minimum requirements include a healthy vegetative cover; paved driving area; raised bed gardens; and limited access under homes, decks, and similar structures.
- \* During remedial design, EPA will evaluate each property where sampling does not show contamination in the top 1 foot for compliance with the remedy. If a property is not in compliance with the remedy, those deficiencies will be addressed during the cleanup. For those properties where soil sampling shows no contamination in the top 1 foot of soil,

excavation of the property would not be required; hence, the geo-textile liner would not be part of the remedy on that property.

### 3. Remedial Action at Hunter Creek & Centennial Condominiums

The remedy at the Hunter Creek and Centennial Condominiums differs somewhat from that at the rest of the site. There are several reasons for these differences in the remedy.

First, property ownership at the Hunter Creek and Centennial Condominiums is unique in that access and usage of the common areas is already limited by the condominium regulations, i.e., declarations, by-laws, and association rules. Second, the grounds at the condominium areas (including the landscaped and paved areas which comprise the cover) are maintained by the property management associations.

Activities such as individual gardening (other than in containers) and use of the lawns for recreational activities (such as soccer or football) that would tend to be detrimental to the sod cover are currently prohibited by the condominium association rules.

Third, although condominium regulations could be changed to allow other uses, making those changes involves the collective decision of the group rather than the decision of one individual owning the property, as is the case with the individual residential property areas.

Finally, maintenance of the common areas by the condominium associations will also be required by the County's proposed ordinances.

- \* When Centennial Condominiums were constructed, most contaminated materials were relocated to the Mollie Gibson Park site. However, soil sampling results in 1988 and 1989 at Centennial Condominiums show some limited areas where contamination greater than 1000 ppm still exists in the top 6 inches of the soil.
- \* In 1985, a 6-inch soil cover was applied at the Hunter Creek Condominiums. The 1988 and 1989 soil sampling results at the Hunter Creek Condominiums show that in many areas lead

concentrations are greater than 1000 ppm in the top 6 inches of the soil cover.

- \* The cause for failure of the soil cover is not known since EPA did not conduct oversight during construction at either the Hunter Creek or Centennial Condominiums. The lack of adherence to strict construction standards in construction of the soil cover may be one of the causes for failure of the soil cover.
- \* Most of the components of the remedy described for the individual residential properties will be the same for the Hunter Creek and Centennial Condominiums. The following discussion of the soil clean-up remedy at the Hunter Creek and Centennial Condominiums will include only those components that differ from the individual residential properties.
  - Six (6) inches of clean topsoil (settled and compacted) and a vegetative cover to minimize erosion will be required for all areas not paved or covered by permanent structures. [This component has changed from the 1989 remedy which required a 2-foot soil cover. The 1986 remedy required 6-12 inches of clean fill and topsoil.]
  - Areas where the soil cover has "failed" will be repaired such that an uncontaminated 6-inch soil cover (after settling and compaction) exists at all times throughout the Hunter Creek and Centennial condominiums properties.
  - Because a 6-inch soil cover is proposed for the condominiums instead of the 1-foot soil cover required at the rest of the site additional institutional controls including certain access restrictions on common areas will be implemented. These additional controls will be discussed in more detail in #4 below. [Although institutional controls were always a component of the remedy, the additional institutional controls for the common areas are a new component in the remedy.]
  - Because children's exposure to lead is a major concern at the site, a geo-textile liner

covered with 1 foot of clean soil will be required for all existing and any new play areas at Centennial and Hunter Creek Condominiums. A vegetative cover will be required to complete the protective barrier in the play areas. In place of the vegetative cover, 1 foot of clean sand over the geo-textile liner and the 1-foot soil cover may be substituted in these play areas. These requirements will provide an extra level of protection in areas where children may play for extended periods of time. [This component of the remedy has changed from the 1989 remedy which required a 2-foot soil cover. Also, the 1989 remedy did not provide for a sand cover as a substitute for a vegetative cover to complete the remedy.]

#### 4. Institutional Controls

- \* The term "institutional controls" refers to administrative requirements adopted by governing bodies to require or prohibit certain types of activities. Under the remedy, institutional controls will be adopted to ensure the effectiveness and permanence of the remedy. Institutional controls include County or City ordinances, condominium association covenants, by-laws, or rules and regulations.
- \* A major component of the remedy is the adoption of institutional controls that will ensure the effectiveness and permanence of the remedy. The purpose of the institutional controls is to ensure that any future development or other activity within the boundaries of the site does not interfere with the integrity and effectiveness of the permanent remedy. [Institutional controls have always been a component of the previously selected remedies although they have never been defined in detail as they have been in this ESD.]
- \* The institutional controls will apply to all properties within the site boundary (as shown on Exhibit 1), whether or not the properties are remediated during the cleanup.
- \* Institutional controls will include various measures to maintain the integrity of the soil

and vegetative cover. Institutional controls may also include notices to future owners on the site advising them of the need to maintain the vegetative cover on their property.

- \* The primary measure will be the enactment and enforcement of County ordinances that will require permits for some types of activities and compliance with the remedy for other activities. The performance standards in the County's proposed ordinances are based on the requirements of the remedy as described in the ROD and in this ESD.
- \* The County ordinances will include additional requirements for the Hunter Creek and Centennial Condominiums due to the difference in the required thickness of the soil cover. Other measures may include existing regulations and restrictive covenants enforced by the Hunter Creek and Centennial Condominium associations.
- \* The County ordinances are being drafted by the County with input from EPA, the State of Colorado, and local elected officials. Residents of Aspen and Pitkin County will have an opportunity to provide input on the ordinances during the County adoption process. A draft of the proposed ordinances will be published in Spring, 1990, as part of the County's formal adoption process.
- \* A Draft of the County ordinances will be attached to the final ESD. When the ordinances are adopted, a copy of the adopted ordinances will replace the draft and be attached to the final ESD. If the ordinances are not adopted by the County as presented in the draft attached to the final ESD, then EPA will reevaluate the proposed remedy.
- \* The County ordinances under development are described in general terms as follows:
  - Permits will be required for activities or developments that will involve excavation of more than 1 cubic yard of soil. For activities that involve no excavation or excavation of less than 1 cubic yard of soil, the property owner will not need a permit, but will have to comply with certain requirements or performance standards.
  - Information regarding the proposed activity or development such as the depth of excavation, the volume of material to be excavated, the duration of the project, etc., will be required for application of a permit.
  - The performance standards or requirements for maintaining and restoring the remedy are briefly summarized below:
    - \* Flowers and vegetables will be planted only in raised bed gardens at least 6 inches above the soil cover for a total of 18 inches of clean soil above contaminated soils.
    - \* Where excavation of the soil cover is necessary for landscaping purposes (trees and shrubs), the property owner must comply with the performance standards discussed below. Excavation for landscaping will be limited to less than a foot where possible.
    - \* For excavation and construction activities, interim safety measures will be required to minimize dust, to prevent surface runoff and erosion, and to prevent access to contaminated materials throughout the duration of the project.
    - \* The Director of the Aspen-Pitkin Environmental Health Department will determine through the permitting process the appropriate method for disposal of contaminated soils/tailings displaced due to development activities. Disposal of displaced contaminated soils/tailings will be either: 1) on the property covered by the approved remedy or 2) in the on-site repository. The Director may require soil sampling to determine the lead content of such materials.
    - \* Containment of contaminated soils/tailings on the property will be encouraged to the maximum extent possible by minimizing their displacement in the project design or by incorporating the material into the existing topography and covering with

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the appropriate components of the remedy.

- \* After completion of any activity or development, the property owner will be required to replace or restore the permanent remedy, i.e., geo-textile liner covered by 1 foot of clean topsoil, and a vegetative cover to minimize erosion.
- Because the remedy is different for the Hunter Creek and Centennial Condominium complexes, additional requirements will be included in the County's ordinances. These additional requirements are summarized as follows:
  - \* Lawns or other landscaped areas may be fenced, as determined to be necessary by the County, to prevent deterioration of the vegetative cover by foot traffic from residents. Such areas would be fenced with wood or other effective fencing materials (i.e., hedge rows) at a height of 3-1/2 feet. Any fencing would be approved by the County prior to installation.
  - \* Lawns and other landscaped areas will be posted to notify residents of the restricted use of such areas. The purpose of the signs would be to remind residents to keep to the designated walkways.
  - \* Vegetated and paved areas will be regularly maintained. Any changes in the use of the vegetated or paved areas will require prior approval from the County.
  - \* The Condominium Associations will be responsible for maintaining the common areas and will be required to submit an annual budget and maintenance plan to the County for approval.
  - \* The Condominium Associations will also be required to post a bond with the County to guarantee annual maintenance costs. The County may

draw on the bond should the Condominium Associations fail to meet their maintenance obligations.

- \* The County will conduct quarterly inspections of the common areas. The cost of these inspections will be borne by the Condominium Associations.
- \* Restrictive covenants will be placed on the properties governing the use and maintenance of playing fields and recreational areas.
- \* No new playing fields or recreational areas will be constructed without County approval.
- \* The implementation and enforcement of the institutional controls by the County is a major component of the remedy. As such, if the institutional controls as envisioned in this document are not adopted by the County, then EPA would need to reevaluate the remedy once again.

### Protectiveness of the Remedy

The remedy in this ESD is protective of human health and the environment because it breaks the exposure pathway between the contaminated soils/tailings and the residents living on-site. The geo-textile liner and a 1-foot soil cover proposed in the remedy provide a protective barrier that prevents direct contact with contaminated soils. Paved streets, driving areas, etc., and permanent structures also provide a protective barrier against direct contact.

The geo-textile liner prevents mixing of underlying contaminated materials during the placement of the soil cover and due to frost heave and other natural forces after cleanup. The liner also alerts a property owner of the need for a permit under County ordinances.

A maintained vegetative cover ensures that the soil cover remains intact and does not erode, and expose the underlying contaminated soils. A vegetative cover also minimizes dust, protecting the overall air quality.



The County ordinances and condominium restrictions provide institutional measures that ensure the integrity of the engineering controls in the remedy. Because contaminated soils will remain on-site, institutional controls are necessary to ensure the permanence of the soil cover.

The County ordinances allow for some disturbance of the soil cover, but the institutional controls will ensure that the remedy is restored or replaced upon completion of the activity. Provisions for an "open" repository ensure an appropriate disposal place for contaminated materials.

The County ordinances include additional requirements governing the use and maintenance of the landscaped areas at the Hunter Creek and Centennial Condominiums. The County ordinances also require financial assurances from the Hunter Creek and Centennial Condominiums to ensure proper maintenance of the grounds.

The County has committed to implementation and enforcement of the ordinances described in this ESD. Enforcement of the institutional controls is assured by the County entering into a Consent Decree with EPA.

Additional institutional controls will ensure the maintenance of the vegetative cover. Restrictive covenants currently exist at the Hunter Creek and Centennial Condominiums which govern the use of the landscaped areas. Notices will advise all future owners on the site of the need to maintain the vegetative cover on their property.

Although the 1989 remedy requiring a 2-foot soil cover anticipated institutional controls as a component of the remedy, the breadth and scope of the institutional controls were not as comprehensive as those presented here. Under the 1989 remedy with a 2-foot soil cover, most "homeowner" activities, i.e., gardening and other yard improvements, would not have involved excavation below the top 2 feet, thus minimizing the permitting requirements under the County ordinances. With the remedy requiring a 1-foot soil cover, permits under the County's ordinances may be required in more instances. A protective barrier against direct contact with contaminated soils would be provided with either a 1- or 2-foot soil cover, as long as either is maintained appropriately.

## EXPLANATION OF SIGNIFICANT DIFFERENCES

The 1986 remedy, as modified by the 1989 remedy, and the 1990 remedy remain fundamentally the same. The same waste management practices will be employed. Both remedies have combined the practice of isolating the contaminated wastes with institutional controls to protect human health and the environment. The other elements of the 1986 remedy remain in the remedy.

The major differences between the 1986 remedy, which was subsequently modified by the 1989 ESD, and the 1990 remedy are as follows:

- \* The 1990 remedy requires a geo-textile liner covered with 1 foot of clean soil and a vegetative cover. The previous remedy as modified by the 1989 ESD required 2 feet of clean soil and a vegetative cover. Both remedies are considered protective since both provide a protective barrier to prevent direct contact with contaminated soils. However, a 1-foot cover will likely require more intervention from the County through its permitting program to ensure that the shallow cover is maintained.
- \* The 1990 remedy will require soil sampling on each property to demonstrate contamination within the top 1 foot before soil removal and placement of a geo-textile liner covered with 1 foot of clean topsoil and a vegetative cover. The previous remedy did not require sampling of each property prior to soil remediation. By sampling each property before remediation, EPA will be able to more accurately determine the required capacity for the on-site repository.
- \* Changing the soil cover requirement from 2 feet to 1 foot will minimize the need for a second on-site repository at the Smuggler Racquet Club. Should a second repository be necessary, the scale of the repository at the Racquet Club will be much smaller.
- \* Soil sampling will indicate only whether contamination was found in the soil samples taken in the top 12 inches. Previous soil

sampling results have indicated contamination can exist below the top 12 inches. Since the potential for contamination exists below the top 1 foot at all properties, all properties will be required to have the major components of the remedy, i.e., a vegetative cover and paved driving areas. All property owners will also be required to maintain the equivalent of the remedy and comply with the institutional controls whether or not the property is remediated.

- \* A major difference between the 1986 remedy as modified by the 1989 ESD is the thickness of the soil cover required for the Hunter Creek and Centennial Condominiums. Because of the difference in uses of the property and the maintenance of the property by the condominium associations, the 1990 remedy will consist of 6 inches of clean soil, a vegetative cover and additional institutional controls that will be enforced by the County. The 1989 remedy required 2 feet of clean backfill and topsoil and a vegetative cover.
- \* Institutional controls are a major component in both the 1990 remedy and in the remedy in the 1989 ESD. However, as discussed above under the "Protectiveness of the Remedy", the institutional controls envisioned in this remedy will be more comprehensive. Additional institutional controls will be required for the Hunter Creek and Centennial Condominiums to ensure maintenance of the landscaped areas.
- \* The design criteria (e.g., cap material, erosional stability, etc.) of the on-site repository(ies) will not significantly change from the 1989 remedy. However, the scale of the second on-site repository, if needed, will be much smaller.
- \* Institutional controls will become a more integral part of the proposed remedy than was envisioned in the previous remedy. The County's role in the implementation and enforcement of the institutional controls will be crucial to preserving the integrity of the proposed remedy. The County's entry into a Consent Decree with EPA ensures that the institutional controls will be enforced.

- \* The monitoring requirements outlined in the ROD for ground water quality and for maintenance of the soil cover will be changed to reflect the changes to the remedy as presented in this ESD.

### SUPPORTING AGENCY COMMENTS

The Colorado Department of Health has reviewed the proposed 1990 remedy in this ESD and has provided comments to EPA. These comments have been incorporated into this ESD to the maximum extent practicable. The Colorado Department of Health supports implementation of the remedy as presented in this ESD.

### STATUTORY DETERMINATIONS

The changes to the remedy were made in accordance with all applicable and statutory requirements for hazardous substances remaining on site. Because hazardous substances above recommended levels will remain at the site, periodic review (every 5 years) of the response action will be conducted, pursuant to CERCLA, to ensure that the remedy remains protective of human health and the environment.

The remedy meets the statutory and regulatory evaluation criteria for selection of a remedy. Because treatment of the principal threats at the site was determined to not be practicable, this remedy does not satisfy the statutory preference for treatment as a principle element of the remedy. However, the revised remedy utilizes permanent solutions and alternative treatment technologies to the maximum extent practicable for this site.

Considering new and existing information and the changes to the selected remedy, EPA has determined that the remedy remains protective of human health and the environment because it breaks

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the exposure pathway by preventing direct contact with contaminated soils/tailings.

The remedy complies with the recommended health advisory by the Agency for Toxic Substances and Disease Registry for cleanup of soils contaminated with lead. The remedy requires remediation, where lead concentrations are greater than 1000 ppm in the top 1 foot of soil on the site.

As noted above, contaminated materials will remain on-site after completion of the remedy. The long-term effectiveness of the remedy is ensured by the engineering components of the remedy and the ongoing maintenance of the vegetative cover required by the institutional controls.

During implementation of the remedy, dust levels may increase slightly. Stringent health and safety measures will be implemented to minimize dust levels and ensure the safety of both the workers and the residents, thus ensuring short-term effectiveness of the remedy.

Implementability of the remedy should not be a problem because the technology is a standard engineering practice for preventing direct contact with contaminated soils.

The cost of the proposed remedy is estimated to be \$7.2 million. The remedy is still considered to be cost-effective due in large part to the reduction in the soil cover from 2 feet to 1 foot, and the potential for not needing a second repository.

EPA has worked extensively with the community during the past year to understand the residents' concerns regarding the remedy. To the extent practicable, EPA has addressed the community's concerns. Because the changes to the remedy presented in the 1989 ESD raised numerous concerns, EPA provided this ESD in draft for the community to review and provide comments before a final ESD was issued. EPA has attempted to address the community's comments regarding this draft ESD to the extent possible. The State of Colorado supports implementation of the remedy as presented in this ESD.

## SCHEDULE FOR SAMPLING AND CLEANUP

The schedule for the Smuggler Mountain site soil sampling and cleanup is presented below in Exhibit 4. The relocation of the pipeline is scheduled for the fall of 1990 and the cleanup in the residential areas will begin in the Spring of 1991.

## PUBLIC PARTICIPATION

### MAILING LIST ADDITIONS

If you did not receive this update by mail, and you would like to be added to EPA's mailing list for the Smuggler Mountain Site, please send the following information to:

Ms. Diane Sanelli  
Office of External Affairs (80EA)  
U. S. Environmental Protection Agency  
999 18th Street, Suite 500  
Denver, Colorado 80202-2405

Name \_\_\_\_\_

Address \_\_\_\_\_

City/State \_\_\_\_\_

Zip \_\_\_\_\_

Company, organization, or governmental entity \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

ACTIVITY DESCRIPTION	1990												1991				
	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY
<b>ESD</b>																	
Draft ESD for Public Comments																	
Response/Response Summary to Comments																	
ESD Finalized																	
<b>SOI SAMPLING</b>																	
Access for SOI Sampling																	
SOI Sampling																	
<b>DEMO PROJECT (PROPOSED)</b>																	
Demo Award/Notice to Proceed																	
Demo Construction																	
Demo Evaluation & Comment Period																	
<b>CITIZEN COMMENT DECREE</b>																	
Citizen Comment Decree Signature																	
Approval Signed CD by HQ, DOJ																	
<b>SALVATION PITCH/REPOSITORY</b>																	
Construction of Pipeline																	
<b>NEIGHBORHOOD REMEDIAL DESIGN</b>																	
Draft Remedial Design																	
Finalize Neighborhood Design																	
<b>INDIVIDUAL LOT PLAN DESIGN</b>																	
Neighborhood Cleanup Contracting																	
Award Contract/Notice to Proceed																	
Neighborhood Cleanup Construction																	

Exhibit #4 Schedule for Sampling and Cleanup

SMUGGLER MOUNTAIN SUPERFUND SITE

RESPONSIVENESS SUMMARY

MAY 1990

A. OVERVIEW

EPA issued a Record of Decision (ROD) in September 1986, describing the remedy chosen to clean up the Smuggler Mountain Superfund Site. This remedy was subsequently changed because additional sampling results caused EPA to question the implementability of the clean-up plan, as selected in the ROD. Changes were reflected in EPA's March 1989 Explanation of Significant Differences. Aspen residents and local officials expressed concern about the changes proposed in the ESD and submitted to EPA an alternate proposal for site cleanup. Given these concerns and in light of all available information, EPA decided to make further revisions to the remedy. These revisions were detailed in the March 1990 Explanation of Significant Differences.

Comments were received from several parties on the 1990 Explanation of Significant Differences. EPA will address most of these comments in this document. Other comments residents and local officials submitted regarding implementation of the remedy, rather than the description of the remedy itself, will be addressed in the future as EPA proceeds with soil sampling, remedial design, and other remedial implementation activities.

This summary has been divided into the following sections:

- o Background on Community Involvement,
- o Summary of Comments Received and EPA Responses, and
- o Other Comments.

B. BACKGROUND ON COMMUNITY INVOLVEMENT

Community interest in the Smuggler Mountain Superfund Site is high. Health and economic issues, as well as EPA's Superfund process, are of primary concern to Aspen residents and local officials.

EPA has responded to community concerns by conducting various activities. For example, an EPA toxicologist has met several times with the local medical community, parents, and school officials to discuss health-related issues. In addition, EPA has agreed to sample each property prior to initiating a cleanup to give residents a chance to test out.



### Health Issues

Many residents in the affected community question the NPL listing because they believe no negative health effects (e.g., no one has been ill or died as a result of exposure to the lead contamination on site) have been observed. Some residents believe that their children's health is not threatened by the levels of lead or other metals found in soils at the site. In addition, some residents believe that the remedy will cause more of a health risk due to the dust that will be generated during remediation than leaving contaminated soils in place. As mentioned before, EPA's toxicologist has worked extensively with various groups to explain the threat posed by the high concentrations of lead at the Smuggler Mountain Superfund Site.

### Economic Issues

It is EPA's perception that the affected community is frustrated by the difficulty buying and selling properties on the site due in large part to the Superfund designation and also in part to deed restrictions imposed by Pitkin County. Much of the frustration appears to be due to the uncertainty over the potential liability of present and future owners. Title companies and lending institutions have apparently refused to transact titles or loans on properties within site boundaries. The companies and institutions believe they will become potentially responsible parties and be liable for clean-up costs. Lending institutions are also reluctant to make loans given that many of the homes in the site are deed restricted by the County for employee housing. In response to these concerns, EPA intends to hold a meeting with the local lending community to clarify and address issues surrounding Superfund liability.

### Superfund Process

Although the Superfund process is long and complicated due to the amount of study that is needed to determine the appropriate clean-up remedy and the amount of time spent addressing community concerns, the community is frustrated by it. They comment that agreements reached are not being kept and questions are not being answered. As a result, some residents and local officials are unsupportive of the clean-up process. EPA has, however, responded to community concerns in many ways. For example, it has made changes to some portions of the remedy based on community input and has agreed to sample individual properties before initiating cleanup to determine whether certain properties already meet remedy requirements.

### C. SUMMARY OF COMMENTS RECEIVED AND EPA RESPONSES

Comments raised during the public comment period on the proposed changes to the clean-up plan for the Smuggler Mountain

Superfund Site in Aspen, Colorado, (i.e., the ESD) are summarized below in various categories. A 21-day comment period was held from March 9, 1990, to March 30, 1990.

#### Remedial Action at Condominium Complexes

1. A condominium homeowner took issue with the additional requirements placed on the condominium associations. Primary concern centered on the requirements to post a bond with the County to guarantee annual maintenance; to have the County conduct monthly inspections, with the costs being borne by the condo associations; and to post signs restricting the use of some areas.

##### EPA Response:

Additional requirements are necessary due to the differences in the remedy for the individual residences and condominium complexes. EPA has placed these requirements on the condominium complexes, which were proposed by the County and the citizen task force, to ensure the permanence and protectiveness of the remedy. The additional requirements are also needed to assure the County that funds will be available to maintain the remedy should the condominium association be unable to do so at some future time.

2. One resident of the Hunter Creek Condominium Complex questioned the sampling scheme, commenting that it appears to be purely judgmental and does not follow established sampling practices. The resident suggested that various sample points be reexamined and that the extent of the contamination at various levels be verified. He further added that because the sample points in question do not contain any play area, a geo-textile liner is unnecessary.

##### EPA Response:

EPA will be reviewing the soil sampling results obtained at the Hunter Creek Condominium Complex to determine if any additional sampling is necessary.

EPA agrees that there are no play areas in the currently defined contamination areas at Hunter Creek. However, if a play area is constructed, a geo-textile liner plus 1 foot of clean soil is needed. In addition, a sand or vegetative cover will be required to complete the protective barrier in the play areas. The purpose of the geo-textile liner is to prevent mixing of the contaminated materials with the clean fill. It alerts individuals that excavation below this liner would require approval from the County. It is required for remediation of individual residential properties.

Site Boundary and Cleanup on  
Individual Residential Properties

3. The Colorado Department of Health (CDH) recommended that EPA redefine the site boundaries. CDH contends that drawing the site boundary along administrative boundaries may create major problems for some landowners at the edge of this boundary. Although entire properties along the edges are not contaminated, the entire property bears the Superfund stigma, which is preventing the sale of property.

EPA Response:

EPA has decided to adhere to the site boundary as defined in the March 1990 Explanation of Significant Differences. However, based on a review of sampling locations, the site boundaries have slightly changed. These changes are reflected in the site boundary map in the final Explanation of Significant Differences, which is available at the Pitkin County Library.

4. The Colorado Department of Health commented that the cleanup of individual properties does not adequately address two issues: (1) the availability of testing out for all landowners and (2) the possibility of subdividing a property for the purposes of remediation.

EPA's Response:

EPA will address the availability of testing out in a soil sampling plan to be available in June and is presently developing a soil sampling plan to be used. The possibility of subdividing a property for remediation purposes may be considered, but will be based on construction considerations for the affected area and will be determined as part of the individual lot plan design.

Language Changes

5. Some individuals commented that the Site History section of the ESD contains inaccuracies. They claim that the only activity that ever took place at the Smuggler Mine was mining. Tailings are waste materials produced by a mill, while slag is the waste material produced by a smelter. Neither a mill nor a smelter was ever located at the Smuggler Mine.

EPA Response:

EPA will revise the Site History section to read: "Waste rock, tailing, and slag from mining activity on Smuggler Mountain cover much of the site."

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6. One commenter noted that a sentence in the Background on Lead and Cadmium Contamination was incomplete. The sentence should read: "Lead can be absorbed by humans either through breathing dust in the air or inadvertently ingesting the contaminated soil."

EPA Response:

EPA will make the recommended change.

7. The Colorado Department of Health recommended that the language in the Supporting Agency Comments section of the ESD read: "The State of Colorado supports implementation of the remedy as presented in this ESD."

EPA's Response:

EPA will make the recommended change.

Ground Water Monitoring

8. The Colorado Department of Health noted that the original ROD required ground water sampling for 5 years following the remedy. Because there is no evidence to warrant this continued monitoring, CDH recommended that the ESD include the discontinuation of the monitoring and abandonment of the wells.

EPA's Response:

Changes in the ground water monitoring are not part of the Explanation of Significant Differences; therefore, the need for continued ground water monitoring will be assessed at a later date. Thus, the requirements remain.

D. OTHER COMMENTS

EPA received other comments that do not directly pertain to the Explanation of Significant Differences, but warrant a response. These responses follow.

1. Residential landowners and the Pitkin County Board of County Commissioners recommended that EPA develop a testing (soil sampling) protocol prior to signing of the citizen consent decree.

EPA Response:

EPA plans to develop a soil sampling plan and make it available prior to signing of the citizen consent decree or requesting access for sampling.

2. Residential landowners and the Pitkin County Board of County Commissioners recommended that EPA clarify the remediation design, including a dust control plan, prior to offering the citizen consent decree in May.

EPA Response:

Although both the general remediation design and the dust control plan are not yet complete, they will be available to the community before the deadline to sign either the citizen consent decree or an access agreement. The general remediation design is being developed now as part of the demonstration project. More information on the design will be available to the community in mid-June and during the demonstration project.

The design for individual properties will not be available until after sampling for each property has been completed. All sampling is scheduled to be completed in August 1990. As sampling results are obtained for properties, remedial design for individual properties will begin.

A dust control/air monitoring plan for the demonstration project will be available prior to the onset of the demonstration in July 1990 and before the deadline for signing the citizen consent decree.

3. Residential landowners and the Pitkin County Board of County Commissioners recommended that EPA research a mechanism to allow for the incremental release of property by certifying the remedy has been completed.

EPA Response:

EPA intends to issue a letter stating that the remedy has been completed and is protective of human health and the environment. EPA hopes to issue this letter to individual homeowners as their properties are remediated, rather than at the completion of the entire project. A similar letter will be given to homeowners whose property already meets the remedy requirements based on soil sampling and does not warrant remediation.

4. Residential landowners and the Pitkin County Board of County Commissioners recommended that EPA separate the air standard testing conducted during the remediation from that that is done for the rest of the city.

EPA Response:

Under the Superfund law, EPA is required to meet all local, state, and federal environmental standards, including air



quality standards during remedial action. EPA will be conducting an air monitoring program to ensure that air quality standards are not violated during remediation. A complete dust control/air monitoring program is being developed and will be presented to the community prior to the demonstration project.

5. Residential landowners and the Pitkin County Board of County Commissioners recommended that EPA research and implement a day care center.

EPA Response:

Recognizing that concerns have been raised about children being present during remedial construction, EPA will explore the possibility of a day center for children and other sensitive populations to attend during remedial construction. In any case, EPA intends to ensure that all appropriate health and safety measures will be implemented during construction activities.

6. Residential landowners and the Pitkin County Board of County Commissioners recommended that EPA resolve the cost recovery suit to mutual satisfaction.

EPA Response:

EPA shares this goal and is committed to resolving the cost recovery suit pursuant to law and developed policy.

7. Residential landowners and the Pitkin County Board of County Commissioners recommended that EPA include in the remediation design a way to evaluate for the presence of radon.

EPA Response:

Radon is a naturally occurring, radioactive gas which has been found in elevated concentrations in some homes in Pitkin County. It is found in the ground by the radioactive decay of uranium and radium, and is only a problem indoors where it can increase in concentrations and be inhaled by the inhabitants. Construction activities outdoors will not alter the average radon level appreciably, as has been demonstrated in other clean-up actions involving uranium mill tailings. There is, however, a theoretical possibility that the remedial activities in the Smuggler Mountain Superfund area might change the radon levels in nearby homes.

To address this latter possibility, EPA is proposing a limited radon gas monitoring program for the demonstration

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project. Monitoring for radon gas would be conducted in homes both in the demonstration area and in a control area prior to and following the demonstration project. The purpose of the monitoring program is to assess the impact of the construction activities on the levels of radon in the affected areas.

EPA does not believe that the remediation would increase radon gas levels inside the homes. Soil permeabilities in the residential areas should not change significantly following remediation. In fact, if anything, soil permeabilities in the top 1 foot should be greater following remediation due to the soils being less compacted. The permeability of the clean soils used in remediation will be appropriate for its intended use, that is, as a growth media for residential lawns and gardens.

8. A medical toxicologist recommended that the Smuggler Mountain Superfund Site be delisted for various reasons, including:

--The site is covered with snow 4 to 5 months a year, thus providing a barrier from possible human exposure.

--No reported cases of pediatric lead poisoning have occurred in the affected community.

--The soil contamination occurred about 100 years ago by responsible parties that no longer exist; yet, innocent homeowners are being assessed costs for the site cleanup.

--The site has been arbitrarily selected, given that other areas in Aspen have lead contamination.

EPA's Response:

EPA responded in detail to these comments in a separate letter to the toxicologist. Key points in EPA's response are summarized below.

--Much of this year, as well as in other years, the site has had little or no snow at all. In addition, the conception that all exposure occurs via direct contact with the outside soil is ill-founded. The exposure of most concern on this type of Superfund site occurs through contact with small dust particulates. The dust is easily picked up on clothes and hands and is tracked into the home on shoes and pets.

--Symptoms of lead poisoning do not appear until persistent neuronal and other cellular damage has occurred. Such damage can result in lower IQs and other intelligence test scores. Because none of these effects is commonly assessed

in the average pediatric or family clinic, it is not surprising that no cases have been reported.

--Under the Comprehensive, Environmental Response, Compensation and Liability Act (Superfund), parties who are potentially responsible for hazardous waste include past and present landowners as well as other categories. However, EPA has not named the individual homeowners as potentially responsible parties in its legal action for reimbursement of costs.

--EPA is aware that other areas in Aspen, as well as in Colorado, may contain soil contaminated with heavy metals. EPA is currently investigating other areas in Colorado, some of which have been listed on the National Priorities List. Few of these areas, though, have lead levels as high as those at the Smuggler Mountain Superfund Site.

A copy of the toxicologist's letter and EPA's response are available at the Pitkin County Library and the Aspen-Pitkin Environmental Health Department.