



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D. C. 20555

MAR 4 1981

PDR  
WM-42



MEMORANDUM FOR: Files

THRU: Ross A. Scarano, Chief  
Uranium Recovery Licensing Branch

FROM: William M. Shaffer III, Project Manager  
Uranium Recovery Licensing Branch

SUBJECT: GENERIC ASPECTS OF JANUARY 1981 DOE DRAFT CANONSBURG  
REMEDIAL ACTION CONCEPT PAPER (RACP) (RELATED MEETING--  
FEBRUARY 12, 1981, WITH DOE UMTRAP PROJECT OFFICE (PO)  
STAFF AT NRC, SILVER SPRING)

Background

At the request of DOE, William T. Crow (FCUF), William A. Nixon (FCUF), and myself met on February 12, 1981, with Mark Matthews, Project Engineer, UMTRAP PO, DOE-Albuquerque, to provide informal input on the latest Draft Canonsburg RACP. Because the Canonsburg RACP is the first UMTRAP RACP to be developed, it is the prototype regarding format, intent, content, and depth of detail. Thus, while Canonsburg is not a WMUR responsibility as an UMTRAP site, it was important for WMUR to provide overall comments to DOE since the forthcoming Durango, Salt Lake City, and Shiprock RACP's are planned to be identical in many generic aspects. As you know, at our subsequent February 20, 1981, meeting with DOE-HQ UMTRAP staff (Robert W. Ramsey, Jr., and Donald H. Groelsema), it was agreed that the appropriate point to begin NRC staff concurrence in the selection and performance of remedial actions is at the point where a Draft RACP has been prepared incorporating all input up to that point by DOE-HQ, DOE-field, DOE-contractor, state government, and local government entities, and an appropriate level of informal NRC staff input. The Draft Canonsburg RACP, as reviewed at the February 12, 1981, meeting, was not yet in that form. However, as a result of NRC staff input at that meeting, and subsequent telephone discussions, Richard H. Campbell, Project Manager, UMTRAP PO, indicated to me on February 24, 1981, that he feels they are now in a position to rewrite, and transmit in the near future, to both WMUR and FCUF, the Draft Canonsburg RACP on which the NRC staff may anticipate concurring. The list below presents WMUR generic comments on the January 1981 Draft Canonsburg RACP as discussed at the February 12, 1981, meeting.

WMJR Generic Input to DOE

1. The Foreword to the RACP should briefly discuss the roles and responsibilities of the NRC, as required by the UMTRCA, to concur in the selection and performance of remedial actions. It should also note that the Cooperative Agreement between the DOE and the Commonwealth of PA was concurred in by the NRC staff as well as noting that the RACP receives NRC staff concurrence.
2. The basic format and content of the Draft Canonsburg RACP, as defined by the Table of Contents (which is as previously agreed to between DOE and NRC staff), is acceptable.
3. Sec. VI, Remedial Action Objectives (p. 9) - We feel that the objective should not only be presented as implementing a cleanup program to meet EPA Standards, but also, in so doing, to ultimately allow for NRC licensing of a final disposal site.
4. The whole wording tone of the RACP is too pre-judgmental. For example, on p. 9, it states that all tailings will be combined at a single disposal site, whereas this decision would presumably result from the NEPA process which would consider this approach simply as one alternative. There would be no problem, however, with identifying this approach as part of the preferred course of action and an RACP would be the appropriate basic planning document to help guide the course of remedial action in this direction. It was emphasized that an RACP should identify all feasible alternative courses of remedial action, narrow them by adequate discussion of those considered undesirable, and subsequently indicate the preferred one if the document is truly a pre-NEPA process guiding plan.
5. Sec. VII, EPA Standards and NRC Regulations (p. 11) - There has been a misconception on the part of DOE (which I believed we have now cleared away) that the NRC was intending to promulgate new and separate regulations specifically applicable to UMTRAP sites. That is implied in this Section, and the DOE will revise the Section to note our intent to apply our new Uranium Mill Licensing Regulations (October 3, 1980 FR) as much as practicable to the UMTRAP sites. A summary of these regulations, as they pertain to tailings disposal, will appear in this section and I strongly supported that approach.
6. Sec. IX, Criteria for Alternatives Evaluation (p. 22) - I pointed out that we recognize the EPA Standards focus on a 1000-year time frame, but we do not, and prefer to think of potential health hazards due to tailings in terms of thousands of years.

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7. Sec. XIII, Future Activities and Schedules (p. 33) - The Acquisition of a disposal site by a State requires not only DOE, but also NRC, concurrence; and it was pointed out that this should be noted.

*William M. Shaffer III*

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Uranium Recovery Licensing Branch

cc: Robert W. Ramsey, Jr., DOE  
W. E. Mott, DOE  
Richard H. Campbell, DOE-Albuquerque  
R. G. Page, FCUF/NRC

DRAFT

REMEDIAL ACTION CONCEPT PAPER

FOR

URANIUM MILL TAILINGS SITE

AT

CANONSBURG, PENNSYLVANIA

January 1981

Uranium Mill Tailing Remedial Actions Project Office  
DOE Albuquerque Operations Office  
Albuquerque, NM 87115

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### III. Foreword

In November 1978, Congress enacted Public Law 95-604, the "Uranium Mill Tailings Radiation Control Act of 1978." The Act authorized the Department of Energy (DOE) to enter into cooperative agreements with the affected States, Indian tribes, and owners of the inactive uranium mill tailings, in order to establish assessment and remedial action programs at inactive uranium mill tailings sites. Title I of the Act further stipulated that DOE would meet all the radiation standards as promulgated by the Environmental Protection Agency (EPA), and the licensing conditions and rules issued by the Nuclear Regulatory Commission (NRC) for implementation of the remedial action program. Additionally, DOE is to provide up to 90 percent of the remedial action costs, and the affected states will be required to pay the remaining costs. An exception to this latter requirement are those sites on Indian tribal lands, where 100 percent of the costs for remedial action will be borne by the Federal Government.

In November 1979, twenty-five sites including Canonsburg, Pennsylvania were designated as eligible for remedial actions. The Cooperative Agreement, which establishes the guidelines, responsibilities, and conditions for remedial actions at Canonsburg, was signed by Pennsylvania and DOE and became effective on September 5, 1980.

(Rules?)



In order to provide the preliminary plan of action for the Canonsburg site, this draft concept paper has been developed by the Uranium Mill Tailings Remedial Actions Project Office (UMTRA-PO) of DOE and concurred in by the Commonwealth of Pennsylvania. The concept paper is a basic scoping document and no commitments of specific actions are implied by DOE.

#### IV. Introduction

In November 1979, the Department of Energy (DOE) designated the Canonsburg Industrial Park in Canonsburg, Pennsylvania as eligible for remedial actions. The site is to be cleaned up and the tailings are to be stabilized in accordance with EPA standards and NRC regulations.

The Pennsylvania/DOE Cooperative Agreement, which establishes the framework for State/Federal interactions on the remedial actions project, was executed in September 1980. DOE will provide 90 percent of the funds necessary to accomplish remedial actions and Pennsylvania will pay the remaining 10 percent.

The project will be managed by the Uranium Mill Tailings Remedial Actions Project Office (UMTRA-PO) of DOE in consultation with Pennsylvania and with concurrence by NRC in major decisions relating to remedial actions.

## V. Site Description

The Canonsburg site (Figures 1 and 2) is the location of the former Vitro Rare Metals Plant, which is situated in Washington County in southwestern Pennsylvania and within the Borough of Canonsburg. Canonsburg is approximately 20 miles southwest of downtown Pittsburgh, Pennsylvania. The site is divided into three parcels of land: Area A, Area B, and Area C, as shown in Figure 2. Chartiers Creek is adjacent to Areas B and C.

The Canonsburg site originally was operated as a radium extraction plant by the Standard Chemical Company from 1911 to 1922. Later, Vitro Corporation of America acquired the property and processed the on-site tailings to extract radium and uranium salts. From 1942 until 1957, Vitro was under contract to the federal government to recover uranium from ore and scrap. For the next nine years the site was used only for storage, under the AEC contract. Since 1967, the property has been owned by the Canon Development Company and is called the Canonsburg Industrial Park. The various buildings on site are leased to tenant companies for light industry.

Processing of radioactive residues, scrap, and other material by Vitro and later storage of radioactive materials at the site eventually led to contamination of the soil to various depths. The residues contained widely varying concentrations of radium, thorium, uranium, and other naturally occurring radionuclides.

These residues have been detected over most of the site. Apparently all of the buildings in the Canonsburg Industrial Park are either built over or are adjacent to soils containing elevated concentrations of radium.

The Canonsburg site, which consists of 19 acres, has been estimated to contain more than 200,000 tons of tailings and contaminated materials.

In addition to the inactive processing site, there are also vicinity locations which are defined as properties that are not part of the designated processing site but which have been contaminated with tailings from the designated site. The major vicinity location is the Pennsylvania Railroad Landfill site. This site is located approximately one mile east of the town of Blairsville in Indiana County, Pennsylvania, north of the Conemaugh River and south of the mainline tracks of ConRail (see Figure 3). The Pennsylvania Railroad owned the property that contains the landfill during the time radioactive material was dumped at the site. Ownership later passed to the Penn-Central Transportation Company Properties Division (now ConRail) and in 1980 the James Burrows Company purchased the property; however, the Pennsylvania Railroad Landfill name has been retained, although the location is also called the Burrell Township site.

During a 4-month period, October 1956 through January 1957, radioactive material was shipped by rail from Vitro Corporation's uranium processing plant in Canonsburg, Pennsylvania to the Landfill site. Ordinary, noncontaminated materials were later placed over the contaminated waste to reduce the radiation at the surface. Subsequent radiological surveys revealed that the depth of cover over the contaminated material was not uniform and that radiation levels above background were observed at several locations.

The Burrell Township site consists of approximately nine acres and contains about 80,000 tons of radioactive materials. In addition, this site has been used as a chemical dump, and it is likely there has been some migration of the chemical and radioactive materials. The Burrell Township site is included in the Remedial Actions Concept Paper due to its containing a large amount of radioactive materials from the Canonsburg site.

## VI. Remedial Action Objectives

The objective of the remedial action project at Canonsburg is to implement a clean-up program according to EPA standards. The draft standards are summarized in Tables 1 and 2, and the final standards for the tailings disposal sites and open lands and structures are expected to be issued in late 1981. Uranium mill tailings, as well as contaminated soils and materials at the Canonsburg processing site and all vicinity properties, will be combined at a disposal site that will be designated at a later date. By combining and stabilizing all tailings and contaminated materials at a specified disposal site, potential health effects caused by exposure to the tailings will be minimized and all contaminated areas (except the disposal site) will be cleaned up sufficiently to be released for unrestricted use.

## VII. EPA Standards and NRC Regulations

The EPA has promulgated interim standards for clean-up of inactive uranium processing sites and associated vicinity properties (45 FR, 27366-27368, April 22, 1980). These clean-up standards apply to open lands and structures in which elevated radiation levels occur due to the presence of residual radioactive materials from a designated, inactive processing site. Numerical criteria for establishing the need for clean-up are outlined in Table 1.

The EPA has also proposed standards governing disposal of residual radioactive materials at inactive uranium processing sites (46 FR, 2556-2563, January 9, 1981). The proposed disposal standards place limits on the amounts of certain elements and substances that are released from the final disposal site. In addition, the disposal of the radioactive material must be coordinated in such a manner that, according to the EPA, there is a reasonable expectation that the limits in the proposed standards will be maintained for at least 1000 years. The standards apply the limits in three areas:

- (1) The average annual flux of radon-222 from the surface of the site is limited to values less than 2 picocuries/meter<sup>2</sup>-second.

- (2) Concentrations of the elements listed in Table 2 in sources of underground drinking water are limited. Material released from a disposal site is to neither cause the concentrations of the specified elements in underground drinking water to exceed the levels in Table 2, nor to result in any increase in the elements' concentrations in underground drinking waters for which the levels in Table 2 are exceeded prior to the remedial actions. These limitations apply only to underground drinking water beyond 1.0 kilometer from a disposal site that was the inactive processing site, or beyond 0.1 kilometer from a new disposal site.
- (3) Materials released from disposal sites should not cause an increase in the concentration of any toxic substance in any surface waters. In general, "surface waters" mean any body of water on the surface that the public may traverse, enter, or from which food may be taken.

The NRC has not proposed regulations that specifically address clean-up and disposal of residual radioactive materials at inactive uranium processing sites. Certain of the rules and criteria that apply to the licensing of active uranium mills are, however, likely to be used by the NRC staff in deciding whether they concur with UMTRA remedial actions and in their decision to



license an UMTRA disposal site. The NRC's criteria for disposal of tailings are detailed in 45 FR, 65533-65536, October 3, 1980. The following is a summary of the NRC criteria that are most applicable to disposal of wastes from designated, inactive processing sites.

(1) The disposal site should be remote from populated areas.

✓(2) Hydrogeologic and related environmental conditions at a site should favor the isolation of contaminants from humans and the environment for thousands of years; there should be no need to rely upon ongoing, active maintenance to achieve isolation.

(3) The prime option for tailings disposal is placement below grade.

(4) Methods, such as liners or dewatering, should be employed to reduce seepage of toxic materials into ground waters.

(5) Sufficient earth cover, but not less than 3 meters, should be placed over the tailings to reduce the radon-222 exhalation to not more than 2 picocuries/meter<sup>2</sup>-second above natural background levels.

- (6) A full self-sustaining vegetative cover should be established on the earth cover, or a rock cover employed, to reduce the potential for significant wind and water erosion of the earth cover. A rock cover is mandatory in arid and semi-arid regions where it is unlikely that vegetation will be full and self-sustaining.

### VIII. Remedial Action Options

The basic options available for implementing remedial actions are to undertake no action, to perform stabilization-in-place at Canonsburg, or to transport the tailings to a new disposal site and decontaminate the former processing site. None of the options includes reprocessing of the tailings. An expression of interest for reprocessing was requested from the owner of the property, and notices were issued in the Federal Register, the Commerce Business Daily, and in a public press release. Since there was no interest shown in remilling of the Canonsburg tailings, reprocessing will not be considered in any of the alternatives that are considered.

Further descriptions of the options are discussed as follows:

#### Option 1: No Action

This option consists of performing no remedial actions, i.e., allowing the present situation to continue with no corrective action. This option is included only for comparison purposes with the other options.

#### Option 2: Stabilization-in-place

This alternative consists of decontaminating vicinity properties that are contaminated with tailings by consolidating all off-site contaminated materials at the Canonsburg Development Company property after the former processing site is

acquired by the Commonwealth of Pennsylvania. The vicinity properties would include all open lands, homes, businesses, churches, and other places where radiation levels are higher than the EPA criteria due to the presence of tailings or other radioactive materials from the processing site. The right to remove materials from the Burrell Township site, which has been designated as a vicinity property, would be obtained, and contaminated material at the site would be accumulated at the Canonsburg property in the same procedure used for other vicinity properties. The Canonsburg property, then, becomes the designated disposal site.

In the next step, stabilization of all tailings and contaminated materials would be conducted at the site, with the buildings on the site being demolished and buried with other materials. If required in order to prevent groundwater contamination, a liner system would be placed under the tailings either by excavating the tailings at the site, installing a liner system and then placing the tailings on the underground liner, or using an alternate procedure that will be developed by the technology development program of the Uranium Mill Tailings Remedial Actions Project (UMTRAP). A covering would then be installed on top of the consolidated materials in order to reduce the radon flux to the prescribed EPA limit.

The 19 acre Canonsburg site would become the disposal site and, therefore, with the installation of a security fence and appropriate monitoring devices, would remain under restricted access. When stabilization had been completed, ownership of the site would be transferred from Pennsylvania to DOE, and NRC would issue a license for the disposal site. All vicinity property would be available for unrestricted use.

Option 3: Decontamination of Canonsburg Site and Transfer of Tailings to New Disposal Site

This alternative consists of demolishing the buildings on the Canonsburg site and selecting a disposal site other than Canonsburg. All contaminated materials and soils at vicinity properties (including the Burrell Township site) and the Canonsburg site would be transported by rail or truck to the new disposal site that could be one of the locations discussed in suboptions 3A or 3B below. In both of these cases, the Commonwealth of Pennsylvania would acquire both the Canonsburg Development Company property and the new disposal site. Acquisition of the Canonsburg site would enable the tenants on the site to be relocated to other locations and facilities that are not contaminated with tailings. The Canonsburg site would also be used as a temporary storage area for contaminated materials and soils from vicinity properties until such time as

the new disposal site is available for receipt of radioactive materials. The procedures for decontaminating off-site properties would be identical to those followed in Option 2.

The method and procedures of transport of the tailings and other materials from Canonsburg to the new disposal site will be selected on the basis of potential health effects, environmental and safety concerns, accessibility, and cost effectiveness. Schedules and routes will be established to minimize the impact on the surrounding communities.

The Burrell Township site was evaluated as a potential disposal site as it already has received contaminated materials from the Canonsburg site. There is, however, little assurance that this site would meet the EPA's standards for the required 1,000 years because of its location on the flood plain of the Conemaugh River. Moreover, the costs of this option are relatively large, owing not only to the need to transport the more than 200,000 tons of waste (from the Canonsburg site and local vicinity properties) more than ~~thirty~~ miles to the Burrell Township site, but also the need to construct flood control dikes--a feature not necessary for any other alternative. The potential costs in terms of public health risks and occupational accidents are also considerably

increased in this option relative to Option 2. Accordingly, this course of action was not considered further.

In 1980, the Commonwealth of Pennsylvania conducted an extensive study that investigated potential disposal sites in Washington County for the tailings at Canonsburg. Utilizing NRC criteria, Pennsylvania's detailed study included field investigations and research of existing reports, maps, files, data and aerial photographs. This extensive investigation resulted in the Commonwealth recommending to DOE that new specific locations be analyzed as tailings disposal sites in the Environmental Impact Statement (EIS).

In all cases, the stabilization procedures and systems at the disposal site will be the same as discussed in Option 2, as required. In a final remedial action step, a security fence and monitoring devices would be installed at the disposal site, and access would be restricted. Ownership of the disposal site would be transferred from Pennsylvania to DOE, and the site would be licensed by NRC. Descriptions of the new potential new disposal sites are as follows.

Option 3A: Disposal Site at Dinsmore

This option would involve the purchase of the Dinsmore site by Pennsylvania as well as the removal to Dinsmore of all tailings and contaminated materials from the Canonsburg site, the Burrell Township site and vicinity properties.

The Dinsmore site is approximately 18 miles northwest of Canonsburg and 65 miles west of Burrell Township. It is presently uninhabited and not being used in any way. The site is on top of a lobate ridge between two stream valleys, which are approximately 1 mile apart. Most of the ridge top has been strip mined for coal and the site is almost entirely underlain by backfill material that consists of sandstone, mudstone and claystone.

There are several possibilities regarding the transport of the contaminated material. These include rail, truck or combinations of the two. If, for example, 20 ton trucks were to be used, and assuming only 200,000 tons of materials are to be transported from Canonsburg to Dinsmore, it will take about 50 weeks with 6 loads/hour and operating 7 hours/day and 5 days/week. To move the 80,000 tons of materials from Burrell Township to Dinsmore, it would take 19 weeks if 20 ton trucks are used for 6 loads/hour, 7 hours/day and 5 days/week.



At the Dinsmore site, the backfill material would be excavated and a liner system may be installed in the resultant cavity. Tailings would be placed onto the liner, and a cover system would be placed on top of the radioactive materials. While the liner and cover systems would be designed later, the excavated backfill material would probably be used as part of the cover system. The construction portion of the project would take about 2 1/2 years.

Option 3B: Disposal at Ash Dump Site

This option would involve the acquisition of the ash dump site by Pennsylvania as well as the removal to the dump site of all the tailings and contaminated materials from Canonsburg, Burrell Township and vicinity properties.

The Ash Dump site is about 18 miles northwest of Canonsburg and 65 miles west of Burrell Township. The site is uninhabited and is being used as a disposal location for ash. It is on a ridge due west of the site described in Option 3A, and the characteristics of the two locations are very similar. The area has been strip mined for coal, and the backfill material consisting predominantly of sandstone covers the site. Underneath the backfill material is bed rock with low permeability.

With the site in this option being close to the site in Option 3A, it would take the same amount of time to transport the tailings to this location as noted in Option 3A, i.e., approximately 50 weeks for the Canonsburg contaminated materials and 19 weeks for the Burrell Township materials. In addition, the procedures for decontaminating Canonsburg and Burrell Township would be same as discussed in Option 3A.

At the Ash Dump site, the backfill material would be excavated and a liner system may be installed on top of the underlying bedrock, if necessary. The excavated backfill material and the plastic claystone in the area could be used as part of the cover system. Construction would consume about 2 1/2 years.

## IX. Factors for Evaluation of Options

In the assessment of the options for disposing of the Canonsburg tailings, factors have been developed that will be used as the basis for determining the preferred choice. These factors are directed toward achieving the requirements of the EPA standards for at least 1000 years and meeting the NRC regulations. These factors include, but are not limited to, the following:

- (1) Vulnerability of proposed disposal site to catastrophic natural phenomena, e.g., seismic disturbance, floods, land or rock slides, avalanches, extreme erosion, mine subsidence, etc.
- (2) Economics of the decontamination/transport/stabilization alternatives, including costs for site acquisition, rights of way, construction, transportation, impoundment system, proximity of cover materials, etc.
- (3) Present and forecasted population density surrounding the potential disposal sites.

- (4) Potential health effects from the mode of transport of the tailings, i.e., comparing the health effects of stabilizing the tailings in-place at Canonsburg with transporting, by various means, the tailings to alternate disposal sites.
- (5) Hydrology of the disposal site area, e.g., depth of groundwater table, proximity to aquifers and streams, groundwater flow rates, quality of uppermost groundwater, potential for flowing artesian wells, etc.
- (6) Characteristics, e.g., geochemical, physical, etc. of the surrounding soils and rocks.
- (7) Type and condition of underlying strata and bedrock.
- (8) Meteorological information of the site locations.
- (9) Differences in long-term maintenance/surveillance requirements among the various sites.
- (10) Land use potential of disposal sites for other activities, e.g., mineral recovery, agriculture, industrial development, wildlife refuge, transportation corridor, etc.
- (11) Topography of disposal site area.

## X. Evaluation of the Options

This section is concerned with the assessment of the various disposal site options for the Canonsburg and Burrell Township tailings. It should be emphasized that the assessments for each option are preliminary at this time, and more detailed analyses will be conducted before a final decision on the best option is made. The purpose of this assessment is to eliminate options that are obviously not qualified for implementation and to identify a preferred option from among the ones that do appear to be qualified. The environmental-impact studies conducted in compliance with the National Environmental Policy Act (NEPA) must be completed before the preferred option identified here is selected for implementation.

### Option 1: No action

This option involves no remedial actions. Since radon daughter concentrations (RDC) and external gamma radiation (EGR) at the Canonsburg site exceed the draft EPA standards, this option is not consistent with the enabling legislation (Public Law 95-604), which requires remedial action at Canonsburg in accordance with EPA standards. Therefore, this option is rejected.

Option 2: Stabilization-in-place at the Canonsburg Industrial Park

This option involves using the Canonsburg Industrial Park as the disposal site for all contaminated materials that are presently at the Industrial Park and materials consolidated there in the cleanup of vicinity properties, including the Burrell Township site. A disposal site at the Canonsburg Industrial Park could be made to meet the EPA's standards over a short term by proper design of the system for emplacement of wastes. Moreover, the costs of this option are low in relation to the costs of other options, since there is no need to transport the more than 200,000 tons of material away from Canonsburg. The nearly 80,000 tons of material at the Burrell Township site would of course have to be moved to Canonsburg. Health risks from tailings transport would also be minimized in this option.

Nevertheless, this option <sup>offers</sup> ~~is unsatisfactory since there is~~ little assurance that a disposal site at the Canonsburg Industrial Park would meet EPA's standards for at least 1,000 years. Over the long term the site may become vulnerable to subsidence if coal mining is extended under the Canonsburg area and it may be subject to flooding from Chartiers Creek. The site is and probably always will be located in a populated area.

A real concern?

The residential population within one mile of the site is more than 8,000 people, and a population of 15,000 may be attained in the area within 15 years. Therefore, stabilization-in-place incurs risks of inadvertent intrusion or disruption of the tailings containment in the far future.

Option 3: Decontamination and Disposal of Canonsburg Material

This option includes the decontamination of the Canonsburg Industrial Park and the transfer to a specifically selected and designed disposal site (see 3A and 3B below). Following decontamination and removal, the site would meet all EPA criteria and unrestricted use would be allowed. Furthermore, all potential for adverse environmental and health impacts would be removed from the area. Small short term impacts would be involved, however, from the demolition and excavation activities. These include possible air quality degradation from suspended particulates, noise from construction machinery and disruption of local traffic. Care will be taken to mitigate such impacts through appropriate engineering practices.

Options 3A and 3B:

The transport and disposal of the contaminated material at sites, which are carefully selected using NRC criteria and designed with the latest engineering technology, represent the

highest probability of achieving EPA standards for 1,000 years. The Dinsmore and Ash Dump sites have been selected for further study after careful review of potential sites in Washington County that were recommended by the Commonwealth of Pennsylvania. Additional studies for the EIS will insure that the final disposal of residual radioactive materials meet all applicable standards and criteria. The design of the disposal site will be in accordance with the most recent DOE research on disposal methods.



XI. Preferred Option

As briefly noted in the above Section, Option 3 is the preferred option at this time. While there are other remedial action options that may be acceptable, Option 3 is preferred because it has the highest probability of insuring long term protection of the health of the human community and the natural environment.

add paragraph on EIS: all options examined.  
in EIS

"Proposed Action for EIS"  
• does not imply decision

Feb. 27

• Costs  
• transportation  
• health effects

## XII. Environmental, Health and Safety Concerns

While several major considerations are involved in determining the preferred remedial action option, the following concerns warrant special consideration since they will broadly affect health, safety, and environmental quality during and after remedial actions.

### A. Transportation

In moving the tailings from the inactive processing site to a disposal location, there are heightened health and safety concerns. For example, if trucks are utilized, the operators of equipment loading trucks with tailings, the truck drivers, and the operators of the equipment unloading the trucks are all exposed to contaminated materials. Strict quality control must be exercised to prevent spillage of tailings from the trucks. Times and routes of operations and the number of trucks must be restricted to limit noise pollution and congestion. The transportation phase of the project results in major health concerns due to the increased release of radon-222 as the tailings are loaded and unloaded.

B. Site Selection

The tailings disposal site that is selected must be in a location that is isolated from human populations and is relatively immune to floods, seismic disturbances and other natural phenomena. The meteorological, hydrological and mechanical characteristics of the site must be conducive to retaining a disposal site in an undisturbed state and allow for continued immobilization and isolation of contaminants from useable groundwater sources.

C. Radon Reduction

The primary health risk from uranium tailings is the potential for lung cancer due to radon and radon daughter emanation from the tailings pile. Therefore, a cover must be designed and placed over the tailings to reduce the radon flux to a value below the EPA standard for at least 1,000 years. Designing and constructing such a cover is of major environmental importance to the project.

D. Ground Water Contamination

In areas where there is potential for ground water contamination, a barrier system must be designed and emplaced to prevent leaking of toxic elements from the tailings to the ground water. The prevention of certain element levels exceeding EPA standards is a major concern.

### XIII. Future Activities and Schedules

The Remedial Action Concept Paper for Canonsburg is the preliminary plan of action for the Canonsburg tailings. Before a final decision is made, however, additional activities will be performed, as noted below:

#### A. Data Gathering

More detailed data, including meteorological, seismic, hydrological, geochemical, physical, etc., are required for the potential disposal sites ~~before assurance can be provided that the currently preferred option is~~ indeed the best option. DOE contractors will be instructed to visit the disposal sites for Options 3A and 3B, and gather and accumulate all data necessary to make informed recommendations concerning ~~the pre-~~ ~~ferred~~ disposal site. Additional data as required will also be obtained at the inactive processing site. R

B. Acquisition of Canonsburg Site

Since all options, excluding Option 1, require acquisition of the Canonsburg Industrial Park, the Commonwealth of Pennsylvania with DOE concurrence will initiate negotiations with the owner of the site to buy the property. This will enable the individuals working on the site to be relocated to less contaminated surroundings in the near future. Acquisition of the Canonsburg site is planned for FY 1981.

C. Decontamination of Off-Site Properties

For remedial actions to commence at the vicinity properties, the following actions must be accomplished:

- (1) The Cooperative Agreement signed by Pennsylvania and DOE;
- (2) Sufficient State and Federal funds appropriated or earmarked for remedial actions;
- (3) Off-site properties officially designated by DOE;
- (4) Temporary storage site identified for contaminated materials until permanent disposal site selected (the most feasible storage site seems to be the Canonsburg Industrial Park);

- (5) Permission from vicinity property owners to conduct detailed radiological survey of their property and to perform remedial actions;
- (6) Contractor selected by DOE to accomplish off-site remedial actions at Canonsburg;
- (7) Preparation, review and approval of Radiological Evaluation and Assessment Report;
- (8) Conduct engineering design effort for remedial action at each property;
- (9) Construction contractor selected to remove contaminated materials from vicinity properties.

Action (1) was accomplished on September 5, 1980, and Actions (2) and (3) have been partially completed. Action (6) has also been accomplished.

Once all the above actions are completed, remedial actions can commence on off-site properties, and this is expected to occur by the fall of 1981.

D. On-Site Remedial Actions

To implement remedial actions at the Canonsburg site, the following activities must be accomplished:

(1) Prepare an EIS

An Environmental Impact Statement (EIS) for the Canonsburg tailings situation is to be prepared by a DOE contractor (Weston, Inc.). Preparation of the EIS commenced following issuance of EPA draft standards for disposal sites, which occurred on January 9, 1981. The issuance of the final EIS is contingent upon promulgation of the final EPA standards. Provided this occurs by September 1981, the EIS can be issued in June 1982.

(2) Acquire Disposal Site

The Commonwealth of Pennsylvania, with DOE concurrence, will acquire the preferred disposal site following the issuance of the final EIS.

(3) Select Contractor to Provide Architect-Engineer and Construction Management Services and Perform Design

The Remedial Actions Contractor (RAC) will be selected by DOE by early 1982. The RAC will use the output of the UMTRAP technology development



program and the draft EIS to develop detailed designs and issue subcontracts to move the tailings to a new disposal site.

(4) Conduct On-Site Remedial Action Efforts

An outline of the remedial action process at Canonsburg is shown in Figure 4. It is expected that remedial actions that will decontaminate the Canonsburg site will be initiated in September 1982.

E. Public Participation

The Canonsburg Task Force will hold public hearings and meetings periodically so that current information can be provided to the community, as well as allow the populace to provide input into the decision-making process of determining the best remedial action alternative for the Canonsburg tailings.

Table 1

EPA STANDARDS FOR REMEDIAL ACTION (RA)

<u>Type of Radiation</u>	<u>Remedial Action (RA) Criteria</u>	
External Gamma Radiation (EGR) in Dwellings	RA required if EGR	0.2 mR/hr above background
Radon Daughter Concentration (RDC) in Dwellings	RA required if RDC	0.015 WL including background
<sup>226</sup> Radium Concentration on Open Lands	RA required if <sup>226</sup> Ra	5 pCi/gm

Legend

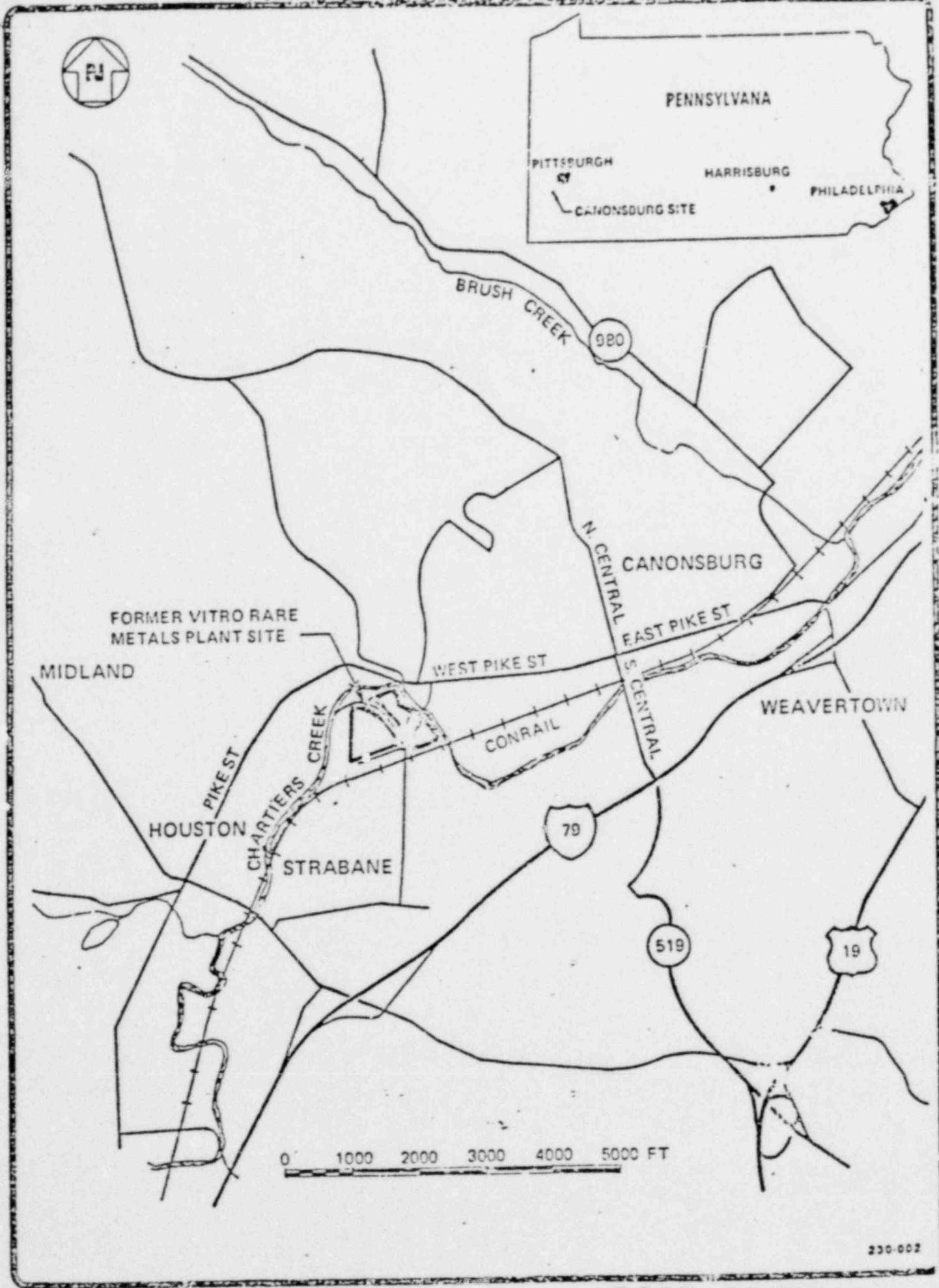
mR/hr = MilliRoentgen per Hour

WL = Working Level, or RDC per liter of air that results in eventual emission of  $1.3 \times 10^5$  MeV of alpha energy

pCi/gm = picocuries per gram

⋮

FIGURE 1 AERIAL VIEW OF CANONSBURG



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FIGURE 2 IDENTIFICATION OF STRUCTURES AT CANONSBURG INDUSTRIAL PARK



WASHINGTON-CANONSBURG ST RAILWAY RIGHT-OF-WAY

WEST PENN  
POWER CO

AREA B

W. S. GEORGE  
POTTERY CO.

INDICATES FOUNDATION ONLY

CANON DEVELOPMENT CO

PAYNE  
CHURCH  
PROPERTY

AREA A

AREA C

BLDG 6

BLDG 7

BLDG 9

BLDG 10

BLDG 1

BLDG 2

BLDG 2A

BLDG 3

BLDG 4

BLDG 11

BLDG 14

BLDG 12

BLDG 18

BLDG 15

BLDG 16

BLDG 19

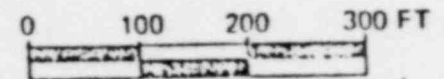
GEORGE ST

WARD ST

STRABANE AVE

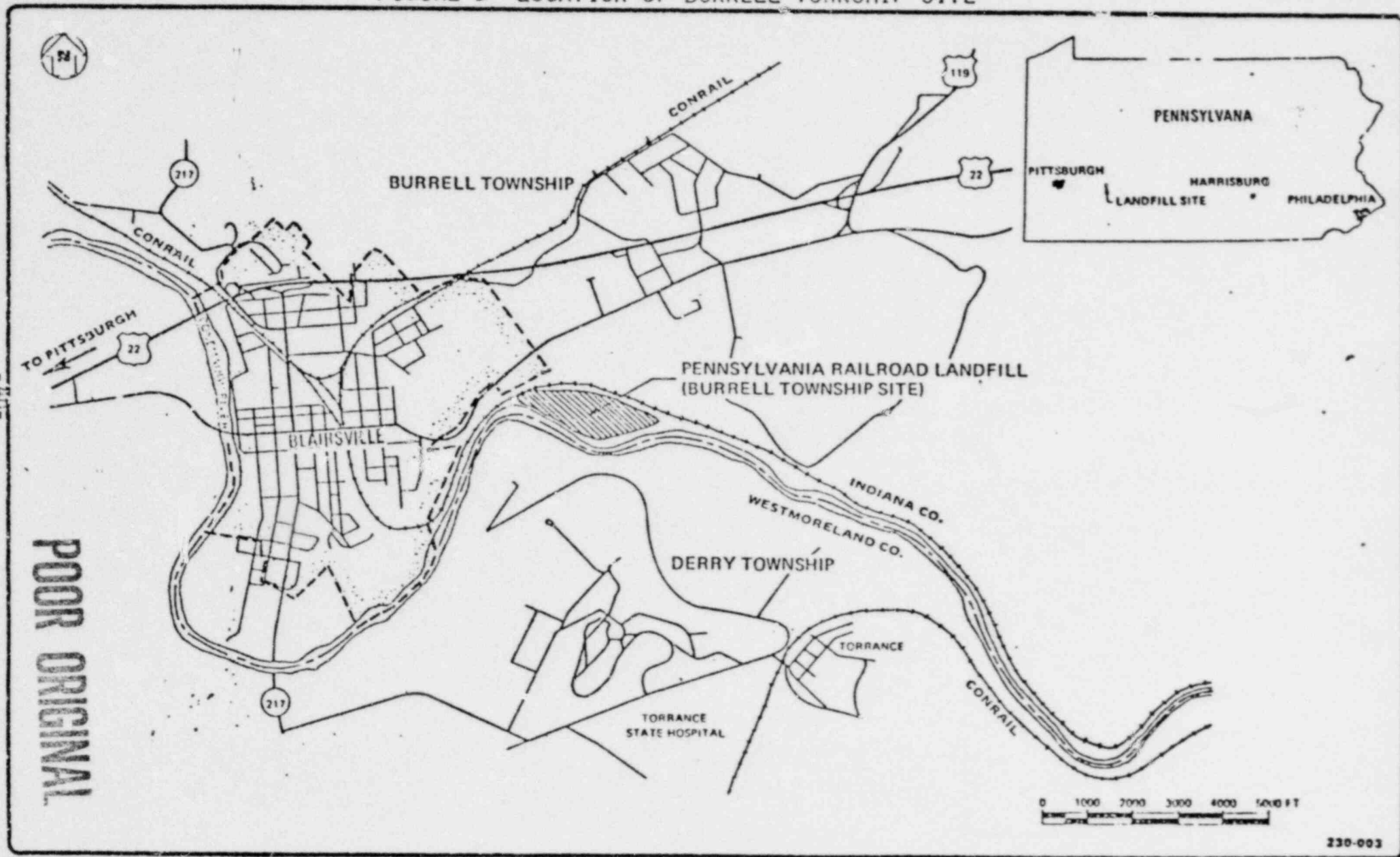
CHARTIERS CREEK

CONRAIL



230-002

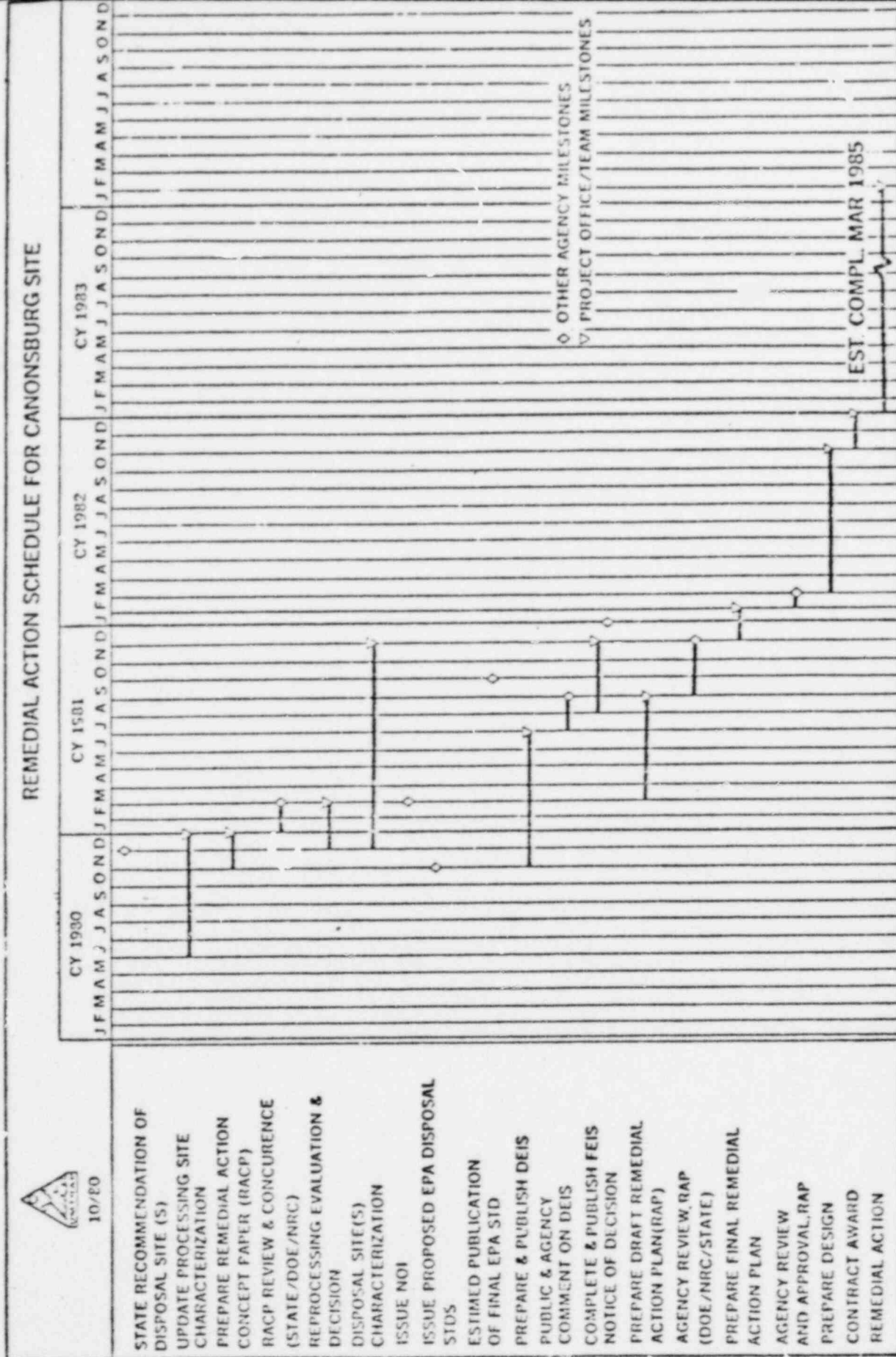
FIGURE 3 LOCATION OF BURRELL TOWNSHIP SITE



-40-

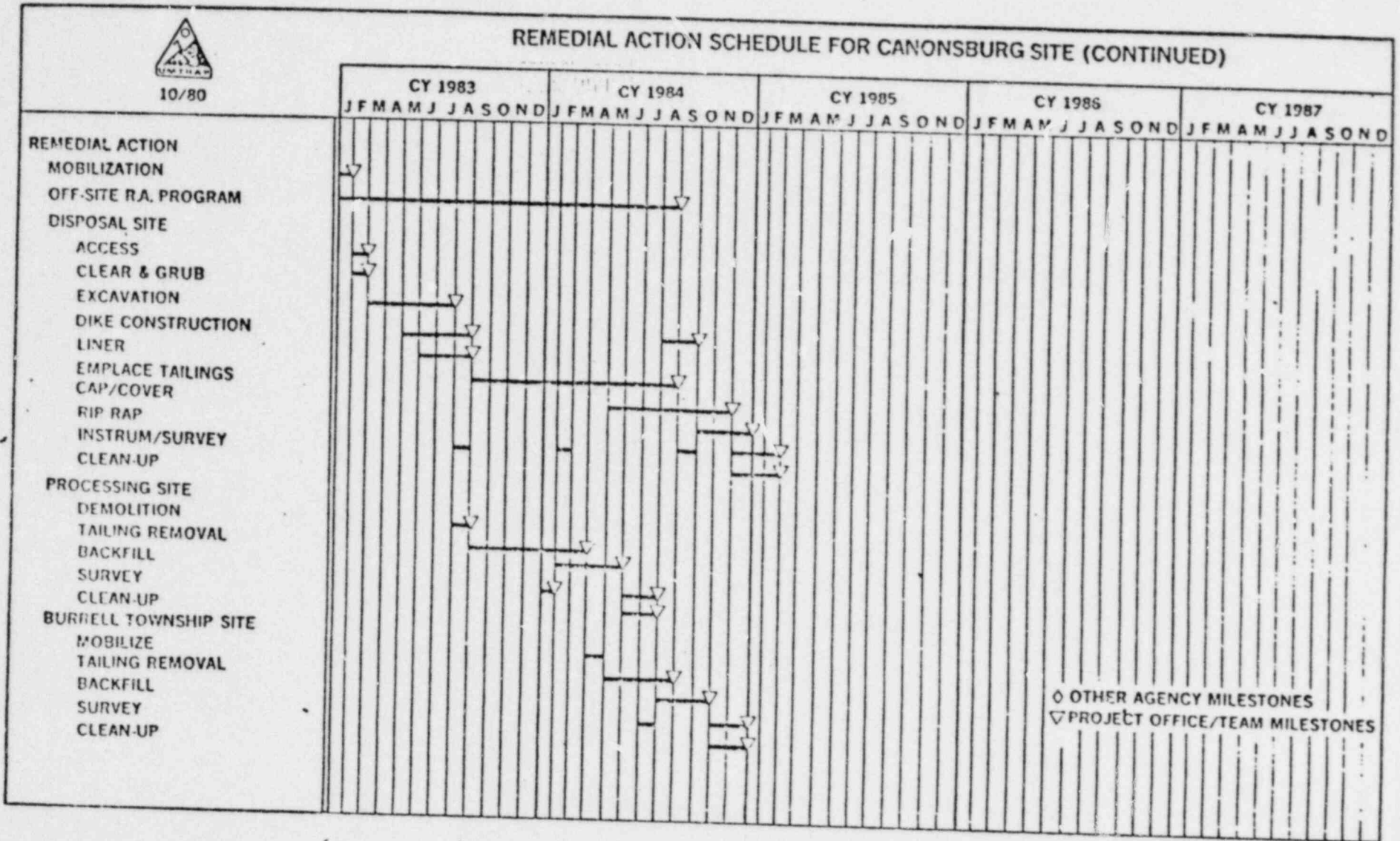
POOR ORIGINAL

FIGURE 4



POOR ORIGINAL

FIGURE 4 (CONT'D)



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POOR ORIGINAL

Table 2

EPA STANDARDS FOR TAILINGS DISPOSAL SITEA. Element Concentration in Sources of Under Ground Drinking Water

<u>Element</u>	<u>Maximum Permissible Concentration in Ground Water</u>
Arsenic	0.05 milligram/liter
Barium	1.0 milligram liter
Cadmium	0.01 milligram/liter
Chromium	0.05 milligram/liter
Lead	0.05 milligram/liter
Mercury	0.002 milligram/liter
Molybdenum	0.05 milligram/liter
Nitrate nitrogen	10.0 milligram/liter
Selenium	0.01 milligram/liter
Silver	0.05 milligram/liter
Combined radium-226 and radium-228	5.0 pCi/liter
Gross alpha particle activity including radium-226 (but excluding radon and uranium)	15.0 pCi/liter
Uranium	10.0 pCi/liter

B. Radon Flux Limit from Disposal Site

Maximum permissible radon flux emitting from disposal site	2	pCi/m <sup>2</sup> -sec
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Legend

pCi = picocuries

M<sup>2</sup> = (meter)<sup>2</sup>