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# USATHAMA

U.S. Army Toxic and Hazardous Materials Agency

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## Enhanced Preliminary Assessment Report:

### Coraopolis PI-71C Army Housing Units Robinson Township, Pennsylvania



October 1989

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prepared for

Commander  
U.S. Army Toxic and Hazardous Materials Agency  
Aberdeen Proving Ground, Maryland 21010-5401

prepared by

Environmental Research Division  
Argonne National Laboratory  
Argonne, Illinois 60439

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## SUMMARY

The Coraopolis PI-71C housing area, near the city of Coraopolis, Pa., does not present an imminent or substantial threat to human health or the environment. There is no evidence to suggest that hazardous or toxic constituents have ever been released from this property. There are no known adverse environmental impacts from this property and none were identified during the site investigation.

These housing units were originally developed in support of a Nike missile battery. No missile-related wastes were delivered to this property for management of disposal. However, because the property was once connected by sanitary sewer to the integrated fire control (IFC) area of the Nike battery, the possibility of migration of missile-related contaminants along the buried sewer line that was abandoned in place needs to be investigated.

There is no documentation of asbestos-containing construction materials being used in the units, except for floor tiles that may contain asbestos. Floor tiles were all in good condition.

It is not known whether the pole-mounted electrical transformer that services the housing site has been tested for the presence of PCBs; however, no evidence of spills or leaks in the vicinity of the pole was found during the site investigation. The transformer is the property of the electric utility company.

Based on the review of both historical and current practices at the property, the Coraopolis PI-71C housing area property poses no threat to human health or the environment.

The following action is recommended prior to release of this property:

- Locate the abandoned sanitary sewer line that once connected these housing units to the IFC area of the Coraopolis Nike battery and verify that it has been properly abandoned; sample backfill materials around this sewer line to confirm the absence of missile-related contaminants.

This recommendation is based on the presumption that this property will most likely continue to be used for residential housing.



## 1 INTRODUCTION

In October 1988, Congress passed the Defense Authorization Amendments and Base Closure and Realignment Act, Public Law 100-526. This legislation provided the framework for making decisions about military base closures and realignments. The overall objective of the legislation is to close and realign bases so as to maximize savings without impairing the Army's overall military mission. In December 1988, the Defense Secretary's ad hoc Commission on Base Realignment and Closure issued its final report nominating candidate installations. The Commission's recommendations, subsequently approved by Congress, affect 111 Army installations, of which 81 are to be closed. Among the affected installations are 53 military housing areas, including the Coraopolis housing area addressed in this preliminary assessment.<sup>1</sup>

Legislative directives require that all base closures and realignments be performed in accordance with applicable provisions of the National Environmental Policy Act (NEPA). As a result, NEPA documentation is being prepared for all properties scheduled to be closed or realigned. The newly formed Base Closure Division of the U.S. Army Toxic and Hazardous Materials Agency is responsible for supervising the preliminary assessment effort for all affected properties. These USATHAMA assessments will subsequently be incorporated into the NEPA documentation being prepared for the properties.

This document is a report of the enhanced preliminary assessment (PA) conducted by Argonne National Laboratory (ANL) at the Army stand-alone housing area in Robinson Township, Pa.

### 1.1 AUTHORITY FOR THE PA

The USATHAMA has engaged ANL to support the Base Closure Program and assess the environmental quality of the installations proposed for closure or realignment. Preliminary assessments are being conducted under the authority of the Defense Department's Installation Restoration Program (IRP); the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), Public Law 91-510, also known as Superfund; the Superfund Amendments and Reauthorization Act of 1986, Public Law 99-499; and the Defense Authorization Amendments and Base Closure and Realignment Act of 1988, Public Law 100-526.

In conducting preliminary assessments, ANL has followed the methodologies and procedures outlined in Phase I of the IRP. Consequently, this PA addresses all documented or suspected incidents of actual or potential release of hazardous or toxic constituents to the environment.

In addition, this PA is "enhanced" to cover topics not normally addressed in a Phase I preliminary assessment. Specifically, this assessment considers and evaluates the following topical areas and issues:

- Status with respect to regulatory compliance,
- Asbestos,
- Polychlorinated biphenyls (PCBs),
- Radon hazards (to be assessed and reported on independently),
- Underground storage tanks,
- Current or potential restraints on facility utilization,
- Environmental issues requiring resolution,
- Health-risk perspectives associated with continued residential land use, and
- Other environmental concerns that might present impediments to the expeditious "excessing," or transfer and/or release, of federally owned property.

## 1.2 OBJECTIVES

This enhanced PA is based on existing information from Army housing records of initial property acquisition, initial construction, and major renovations and remodeling performed by local contractors or by the Army Corps of Engineers. The PA effort does not include the generation of new data. The objectives of the PA include:

- Identifying and characterizing all environmentally significant operations (ESOs),
- Identifying property areas or ESOs that may require a site investigation,
- Identifying ESOs or areas of environmental contamination that may require immediate remedial action,
- Identifying other actions that may be necessary to address and resolve all identified environmental problems, and
- Identifying other environmental concerns that may present impediments to the expeditious transfer of this property.

### 1.3 PROCEDURES

The PA began with a review of Army Housing records located at the Charles E. Kelly Support Facility, DEH Office Building No. S-630052, Pittsburgh, Pa., during the week of July 17, 1989. A site visit to the Coraopolis PI-71C housing area was conducted on July 18, to obtain additional information through direct observation and interviews with personnel familiar with the property and its operations and history. Photographs were taken of the housing units and surrounding properties as a means of documenting the condition of the housing units and immediate land uses. Site photographs are appended.

All available information was evaluated with respect to actual or potential releases to air, soil, and surface and ground waters.

Contact was made with the senior tenant at this property prior to the visit, and arrangements were made to inspect the inside of one of the housing units. In addition, ANL investigators revisited the property on September 13, 1989, at which time the interiors of all the units were inspected.

## 2 PROPERTY CHARACTERIZATION

### 2.1 GENERAL PROPERTY INFORMATION

The Coraopolis PI-71C housing area is located in Allegheny County, 1 mile southwest of the city of Coraopolis, Pa., and 10 miles northwest of Pittsburgh.

The housing units were constructed in 1957. No additional major construction has taken place on the property since that time. The Charles E. Kelly Support Facility, DEH, located in Oakdale, Pa., is responsible for any major renovations, maintenance, or upgrading at the facility.

Figures 1 and 2 show the general location of the facility.

### 2.2 DESCRIPTION OF FACILITY

Figure 3 presents the site plan of the housing property.

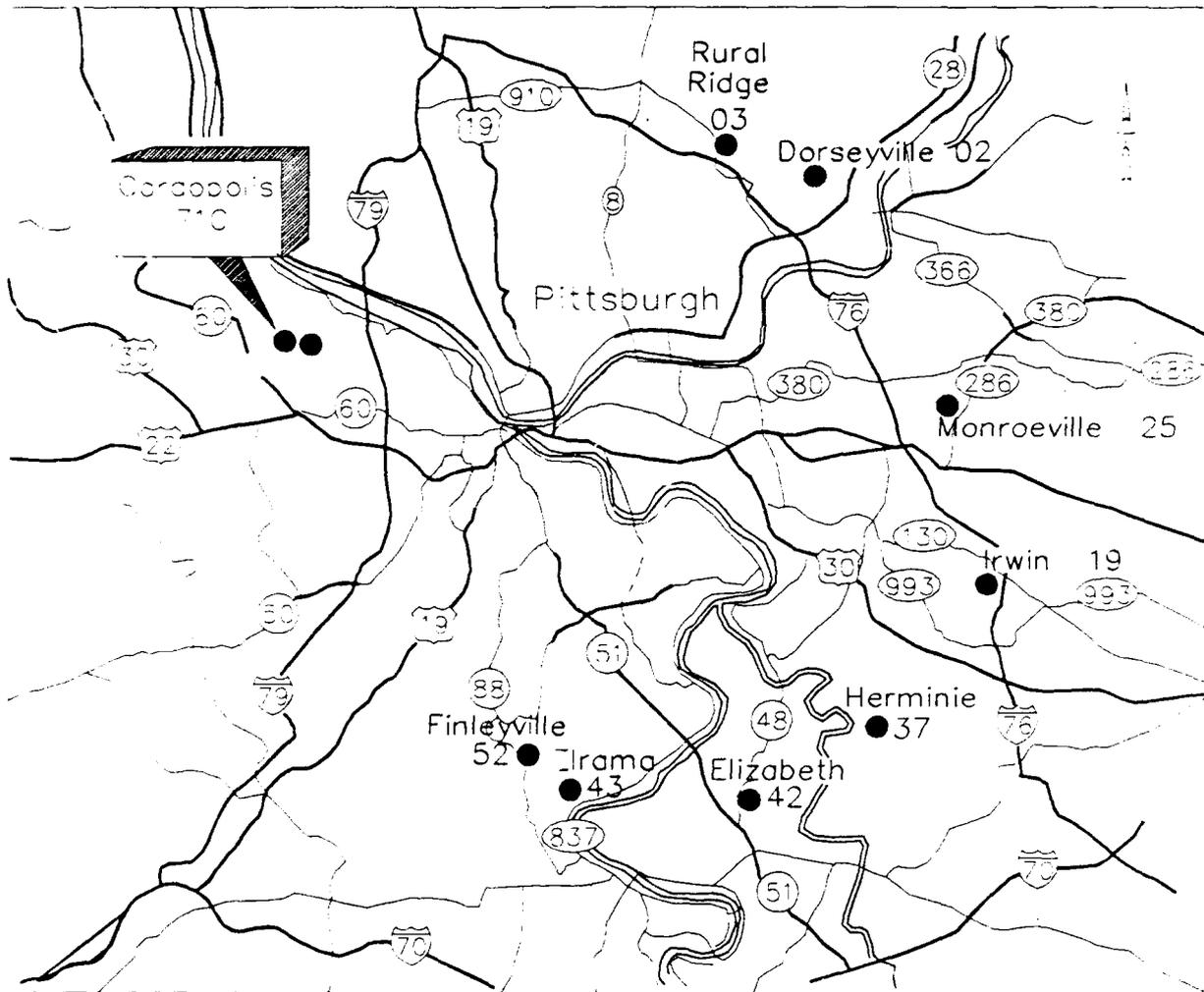
#### Housing Units

The housing site is a 6.49-acre parcel of land known as the Coraopolis PI-71C housing area and consists of seven units that are occupied by officers and enlisted personnel.<sup>2</sup>

The units were constructed by the U.S. Army in 1957. Since original construction, the housing units have been supplied with city water from the Municipal Authority of the Township of Robinson, which is also now providing sewage treatment for the housing units. All units are built on concrete and masonry block foundations with asphalt floor tiles overlaying the foundation. Original outside construction was of wood frame covered with vertical wood siding, which was later covered with vinyl siding (date unknown). The roofing is of the built up gravel type of construction (tar and pea gravel). Each unit has an exterior storage building, two garbage receptacles (no longer in use), and a paved terrace.<sup>3</sup>

The housing site is composed of one three-bedroom home with an area of 1,307 square feet; one two-bedroom home with 1,121 square feet; three two-bedroom homes, each with 1,013 square feet; and two three-bedroom homes, each with 1,117 square feet.<sup>4</sup>

All units have separate natural gas-fired forced-air heating facilities that are adequate for the climatic conditions for the area. A play area is located inside the housing site's property boundary. This area is approximately 3,960 square feet and is equipped with playground equipment such as slides, merry-go-rounds, jungle gyms, and swings. A bus-passenger waiting shelter is located on the property.



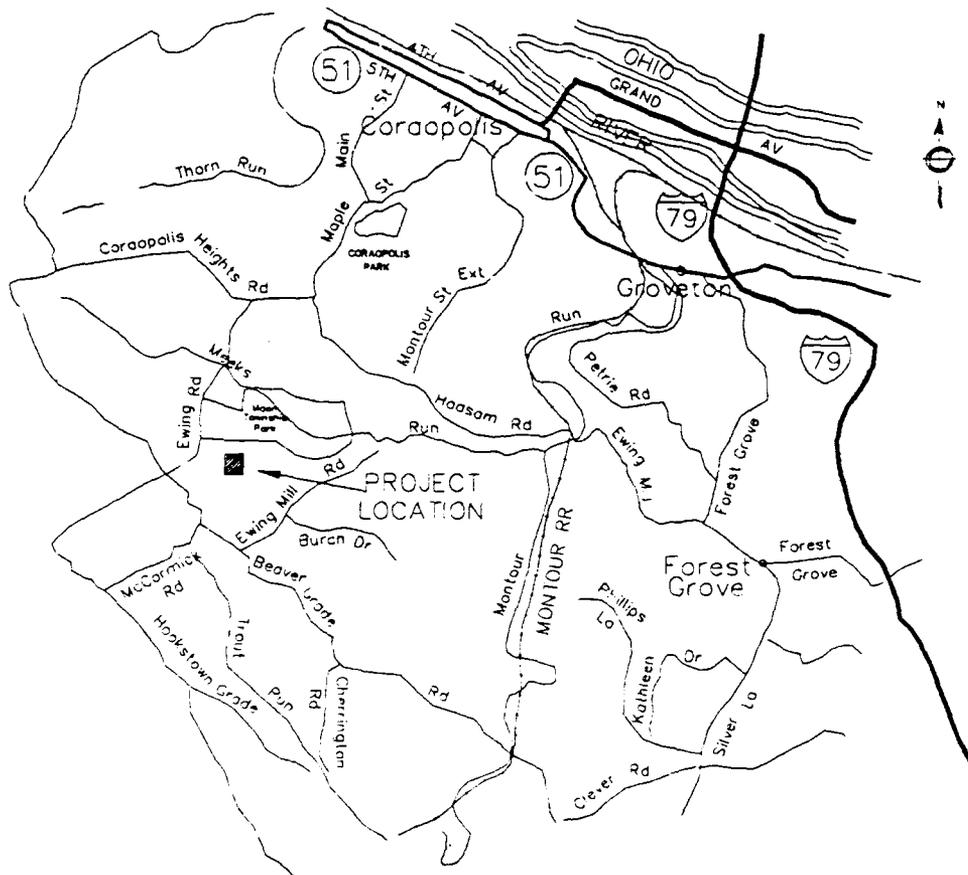
**FIGURE 1 Location Map of Pennsylvania Army Housing Facilities**

#### **Utilities**

Electricity for the Coraopolis PI-71C housing area is furnished by the Duquesne Light Company, which also owns the pole-mounted electrical transformer located on the property. Water is furnished by the Municipal Authority of the Township of Robinson. Natural gas is furnished by the Equitable Gas Company,<sup>5</sup> and refuse (solid waste) is collected by Larry Schultheis Company, a private contractor.<sup>6</sup>

#### **Sewage**

The Municipal Authority of the Township of Robinson furnishes sanitary sewage treatment for the housing site. Originally sewage from the housing units was delivered by sewer to the treatment facility at the nearby IFC area. However, that sewer connection has since been abandoned, and the housing units have been connected instead to the municipal sewage treatment facility. The exact changeover is undocumented, but



**FIGURE 2 Vicinity Map of Coraopolis Army Housing Units**

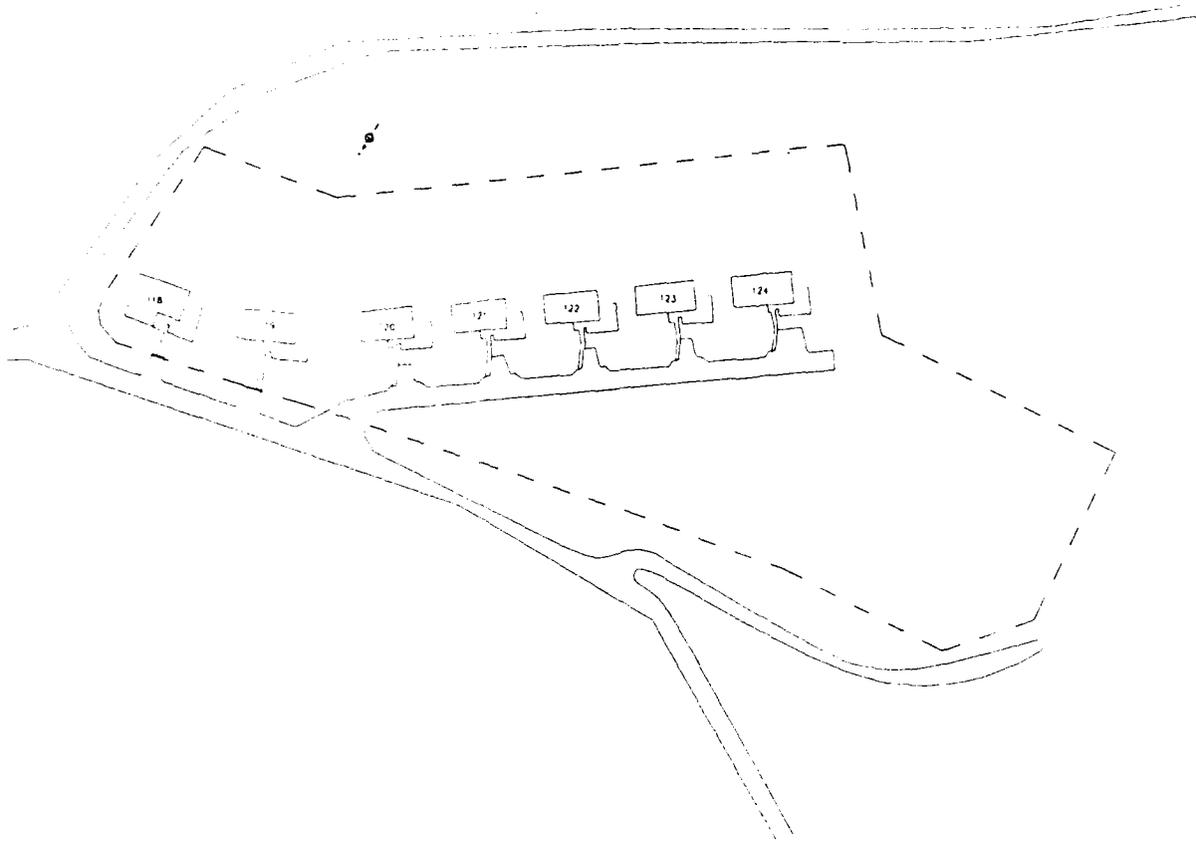
it probably occurred at the time the Nike battery was decommissioned. A similar changeover of sewer connections occurred at the nearby Coraopolis housing area PI-71L in 1969. Changeover at this property (PI-71C) is likely to have occurred at the same time. There is no documentation on the details of the sewer-line abandonment, but it is presumed that the line was abandoned in place. There were no documented problems of sewer operation prior to the changeover to the municipal sewer and no documented problems associated with the municipal sewer line.

#### **Storm Drainage System**

The storm drainage for the housing units consists of outfalls to open ground ditches and surface runoff.

#### **Other Permanent Structures or Property Improvements**

There are no other permanent structures or major property improvements on this property.



**FIGURE 3 Site Plan Map of Coraopolis Army Housing Units**

## **2.3 PROPERTY HISTORY**

### **2.3.1 Nike Defense Program and Typical Battery-Level Practices**

Generic information on the national Nike anti-aircraft defense program has been compiled in two studies, one commissioned by the Army Corps of Engineers<sup>7</sup> and the other by the U.S. Army Toxic and Hazardous Materials Agency.<sup>8</sup> In both studies, independent contractors relied on information contained in unclassified documents related to the Nike surface-to-air missile program, including engineering drawings and specifications (for the facilities and the missiles themselves), interviews with Army personnel participating in the Nike program, and operations manuals and directives relating to the operations and maintenance of Nike facilities. Taken together, these two reports represent the most complete assemblage of generic information on the Nike missile program from an environmental perspective. Salient points from both reports are condensed below.

At its zenith in the early 1960s, the Nike program included 291 batteries located throughout the continental United States. The program was completely phased out by

1976, with many of the properties sold to private concerns or exceded to state or local governments for nominal fees.

Nike Ajax missiles were first deployed in 1954 at installations throughout the continental United States, replacing, or in some cases augmenting, conventional artillery batteries and providing protection from aerial attack for strategic resources and population centers. Typically, Nike batteries were located in rural areas encircling the protected area. The Ajax was a two-stage missile using a solid-fuel booster rocket and a liquid-fuel sustainer motor to deliver a warhead to airborne targets.

The Ajax missile was gradually replaced by the Nike Hercules missile, introduced in 1958. Like the Ajax, the Hercules was a two-stage missile, but it differed from the Ajax in that its second stage was a solid-fuel rather than liquid-fuel power source and its payload often was a nuclear rather than conventional warhead. Ajax-to-Hercules conversions occurred between 1958 and 1961 and required little change in existing Nike battery facilities. A third-generation missile, the Zeus, was phased out during development and consequently was never deployed.

A typical Nike missile battery consisted of two distinct and separate operating units, the launch operations and the integrated fire control (IFC) operations. The two operating areas were separated by distances of less than two miles, with lines of sight between them for communications purposes. A third separate area was also sometimes part of the battery. This area was typically equidistant from the two battery operating sites and contained housing for married personnel assigned to the battery. Occasionally, these housing areas also contained battalion headquarters, which were responsible for a number of Nike batteries.

Depending on area characteristics and convenience, the housing areas were often reliant on the launch or IFC sites for utilities such as potable water, electrical power, and sewage treatment. In those instances, buried utility lines connected the housing area to one or both of the other battery properties. It is also possible, however, that housing areas were completely independent of the missile launcher and tracking operations. In those instances, the necessary utilities were either maintained on the housing site or purchased from the local community. In many localities, as the character of the land area around the housing units changed from rural to suburban or urban, communities extended utility services to the housing unit locations, in which case conversions from independent systems to community systems were made.

A large variety of wastes was associated with the operation and maintenance of Nike missile batteries. Normally encountered wastes included benzene, carbon tetrachloride, chromium and lead (contained in paints and protective coatings), petroleum hydrocarbons, perchloroethylene, toluene, 1,1,1-trichloroethane, 1,1,2-trichloroethane, and trichloroethylene. Because of the rural locations of these batteries, and also because very few regulatory controls existed at that time, most of these wastes were managed "on-site." (Unused rocket propellants and explosives, however, would always have been returned to central supply depots and not disposed of on-site.) It is further conceivable that wastes generated at one of the Nike properties may have been transferred to its companion property for management or disposal.

Wastes related to missile operation and maintenance would not have been purposely transferred from a battery operating area to a housing area with no facilities for waste management or disposal. In some instances, however, the sewage treatment facilities for all Nike battery properties were located at the housing area; that possibility cannot be automatically ignored. Finally, where housing areas received various utilities from either of the operating areas, it is also possible that wastes disposed of on those other properties may have migrated to the housing area via the buried utility lines. And since decommissioning of the Nike batteries did not normally involve removal of buried utility or communication lines, any such contaminant migration is likely to have gone unnoticed.

### **2.3.2 Coraopolis PI-71C Housing Units**

The Coraopolis PI-71C area was developed in 1957 to provide stand-alone housing for military personnel assigned to the Coraopolis PI-71C Nike IFC site. Seven single-family housing units were constructed on a 5.69-acre piece of land just outside the town of Coraopolis. The site has been used as a family housing site for active duty U.S. military families in the greater Pittsburgh area since the missile sites were deactivated in the early 1970s.

All the Coraopolis PI-71C housing units are built on foundations made of concrete and masonry block with asphalt flooring overlaying the concrete block. Original construction was of wood frame with the exteriors covered with vertical wood siding. The siding was then recovered with vinyl siding at a later date (unknown). The roofing is of the built-up gravel type of construction (tar and pea gravel). Each unit was originally equipped with forced-air natural gas-fired furnaces. Natural gas for indirect heating has been supplied to this property since its initial construction; therefore, no underground fuel oil storage tanks ever existed on this property. Since the initial property development in the 1957, the housing units have always been on city supplied water. Sewage was originally delivered by sewer to the nearby IFC area of the Coraopolis Nike battery, but that sewer connection has since been abandoned and the housing units are now connected by sewer to the municipal treatment facility. The date of this changeover is undocumented, but it is believed to have occurred around 1969. No other permanent structures have been added and none of the original structures has been razed.

## **2.4 ENVIRONMENTAL SETTING AND SURROUNDING LAND USE**

The population of the city of Coraopolis is 7,308. The population of the state of Pennsylvania is 11,864,751; that of Allegheny County is 1,450,085 (1980 census).

The family housing units are located on terrain composed of gently rolling to steep slopes along areas of gullies and streams; this terrain is approximately 2 miles north of Coraopolis, Pa., and 10 miles northwest of Pittsburgh, in Robinson Township. The surrounding area is wooded and hilly and has some residential properties and a office complex located to the south.

In 1980, the land-use pattern in the Allegheny River Basin was as follows: 6% urban, 15% crop land, 5% pasture land, 60% forest, and 14% other (including surface

mining).<sup>9</sup> By the year 2020, it is estimated that land-use distribution will be: 10% urban, 14% cropland, 2% pasture land, 65% forest, and 9% other. Thirty-seven percent of the forest land is being commercially harvested. Urban expansions are expected to occur at the expense of farm land. The area surrounding Coraopolis is only 10 miles northwest of Pittsburgh and is expected to absorb some of the anticipated urban expansions within the Allegheny Basin.

Land use within the immediate Coraopolis area is primarily rural, pasture, or forest. However, Coraopolis lies adjacent to the industrialized area associated with Pittsburgh. This industrialized area extends north from Pittsburgh. Additional industrial expansions around Pittsburgh, therefore, may also involve the Coraopolis vicinity.

The entire Allegheny Basin was at one time a forest. Now, only 65% of the county is still forest. Major tree species include white pine, hemlock, oak, hickory, elm, ash, red maple, beech, birch, and aspen.

The main farm crops in Allegheny County are corn, oats, wheat, sweet corn, tomatoes, and apples. Most soils within the county, however, are only marginally acceptable for such crop applications and require the regular addition of fertilizer and lime for acceptable yields. Rotating land use between row crops and pasture is a common practice, both to maintain the productivity of the soil and control erosion. Other erosion-control practices include terrace farming, diversion of runoff, installation of field tiles, and the use of grassed waterways for drainage.

## 2.5 GEOLOGIC AND HYDROLOGIC SETTINGS

The city of Coraopolis lies within Area 4 of the Eastern Coal Province.<sup>10</sup> Area 4 is within the unglaciated Allegheny Plateau and Allegheny Mountain sections of the Appalachian Plateaus Physiographic Province. The area is characterized by mildly folded rocks and plateau-like broad ridges with moderate reliefs. The Coraopolis PI-71C housing area is located approximately one mile to the south-southwest of Coraopolis in Robinson Township.

Rock types in Area 4 of the Eastern Coal Province are primarily sandstone and shale and contain thin beds of limestone or coal. The rocks dip only a few degrees to either the northwest or the southeast on either side of the broad geologic folds, which average about 10 miles across.

Rocks of this province are divided into seven stratigraphic units: the Monongahela Formation, Conemaugh Formation and Allegheny and Pottsville groups, all of Pennsylvanian age; the Ohio Shale of the Devonian System; undifferentiated rocks of Mississippian age; and the Dunkard Group of the Pennsylvanian and Permian Systems. Coal seams are found throughout the Pennsylvanian system, but, for the most part, historical coal production has been in the central and northern reaches of the Eastern Coal Province. The Monongahela Formation predominates in the Coraopolis area.

Most of the soils within Area 4 of the Eastern Coal Province are mildly acidic with pH ranging from 5.0 to 7.0. In all, 11 soil associations are found within the Eastern Coal Province.<sup>10</sup>

Abundant supplies of groundwater are available in portions of the Allegheny Basin from unconsolidated sediments and bedrock formations. In the northern portion of the Basin, groundwater yields can be over 1,000 gallons per minute. The Conemaugh Group crops out in most of the Pittsburgh area and yields only moderate groundwater supplies. Quaternary unconsolidated deposits overlie bedrock in a few places along the major stream valleys. The deposits consist of clay, sand, and gravel and were laid down in the valleys as glacial outwash or alluvium. The alluvium is generally permeable and, when saturated, will yield moderate to large supplies of water. The alluvium deposits are the most widely exploited aquifers in the area for domestic and industrial use. The alluvium aquifers are hydraulically connected to their associated rivers so that major pumpage will result in water being drawn from the rivers.

The Ohio River and its tributaries cut valleys below the water table in the interstream areas. As a result, many aquifers discharge on the slopes of the valleys as hillside streams. Groundwater recharging of surface water streams is commonplace throughout Area 4 of the Eastern Coal Province.<sup>11</sup>

Surface-water flow characteristics within the Allegheny Basin are largely the result of topographic features.<sup>11</sup> Surface runoff averages over 23 inches throughout the Allegheny Basin. The 7 day/10 year low flow as regulated at the mouth of the Allegheny River at Pittsburgh is 4,500 million gallons per day. Surface water represents 94% of all water withdrawals from the Allegheny Basin and is the predominant source of drinking water within the basin. In many streams, water availability is insufficient to meet in-stream flow needs and future consumptive use, based on the concept of maintaining the 7 day/10 year low flow in streams.<sup>11</sup>

Major flowing water bodies in the Coraopolis vicinity are the southwest-flowing Allegheny River and the north-flowing Monongahela River that combine at a point approximately six miles east of Coraopolis to form the northwest-flowing Ohio River, which is adjacent to the town of Coraopolis to the north. These three major rivers in the vicinity of Coraopolis -- the Monongahela, Allegheny, and Ohio -- all support major navigational networks, industrial activities, and many recreational activities.

Stream flows in the area vary widely with the seasons. Typical yearly stream flow cycles are as follows: October, low flow and low average rainfall; November and December, increased flow as evapotranspiration decreases with lower ambient temperatures; January and February, intermittent low temperatures with some runoff from snow melt; March and April, increased flow because of spring thaw and rains; May and June, diminished rainfall and increased evapotranspiration; July and early August, some replenishment of flow by thunderstorms, then a recession of flow in August and September during which time groundwater discharge is the main source of stream flows.

### 3 ENVIRONMENTALLY SIGNIFICANT OPERATIONS

#### 3.1 ASBESTOS CONSTRUCTION MATERIALS

Asphalt floor tiles, which may contain asbestos material, were observed to be in good condition. Furthermore, inspections conducted on September 13, 1989, revealed that there was no insulation whatsoever on the water pipes. No other insulating materials were found.

#### 3.2 ORIGINAL SEWER LINE

As noted above, these housing units were originally connected by sanitary sewer to the nearby IFC area of the Coraopolis Nike battery. Although no details of that sewer line's abandonment could be located, there is no documentation of environmental problems associated with the sewer line. Its abandonment appears to have been precipitated by the decommissioning of the IFC area and the subsequent loss of access to those treatment facilities.

#### 4 KNOWN AND SUSPECTED RELEASES

No major releases of contaminants or impacts on the environment are known to have occurred at the Coraopolis PI-71C housing area. No hazardous wastes or hazardous materials are stored on site. The housing area is not believed to have ever been the site of missile-related activities. It has always been used as a housing site for military personnel, and no industrial activities are believed to have occurred on this property.

The units all contain floor tiles that may contain asbestos. The floor tiles, however, are all in good condition. No other asbestos-containing materials are believed to be present.

No problems have been documented for the sewer line that originally connected these housing units with the sewage treatment facility at the nearby IFC area for the Coraopolis Nike battery.

## 5 PRELIMINARY ASSESSMENT CONCLUSIONS

Although these housing units were originally developed in support of a Nike missile battery, no wastes associated with the operation or maintenance of the battery were ever delivered to or managed at this housing property. Furthermore, the housing facility was independent of the battery's launch and fire-control operations with respect to water and electrical utilities. The sewer line that originally connected this property with the IFC area has since been abandoned, but no details of its abandonment are available. Although no problems have been documented, the possibility that Nike missile-related wastes may have migrated from the IFC area in backfill materials surrounding this sewer line needs to be further investigated.

## 6 RECOMMENDATIONS

The Coraopolis PI-71C housing area represents no imminent or substantial threat to human health or the environment. There is no evidence to suggest that hazardous or toxic constituents have ever been released from this property. No immediate remedial action, therefore, is warranted for the site.

Possible migration of Nike missile-related contaminants along the sewer line that once connected this property with the IFC area should be further investigated. An effort should be made to locate the sewer line and verify that it was properly abandoned. Samples of backfill materials should be analyzed to confirm the absence of Nike missile-related contaminants.

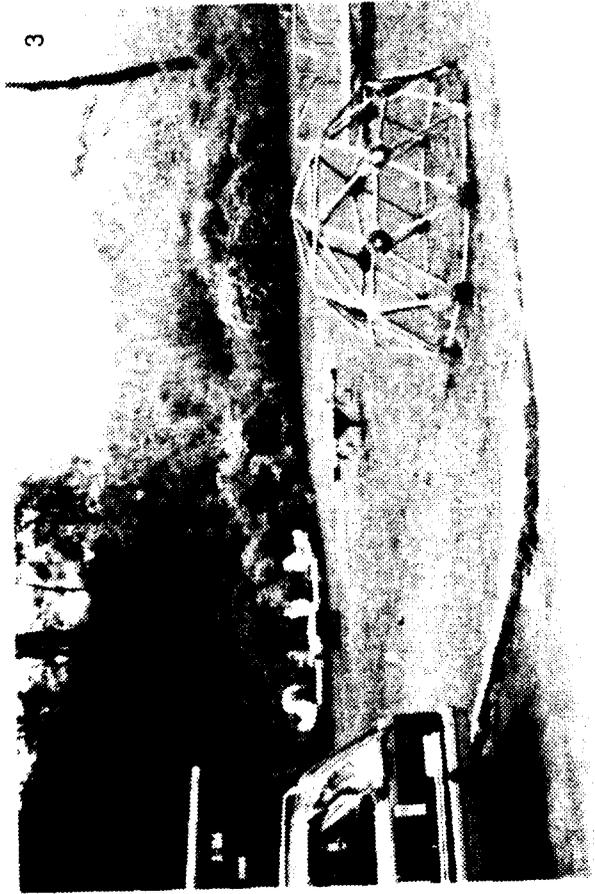
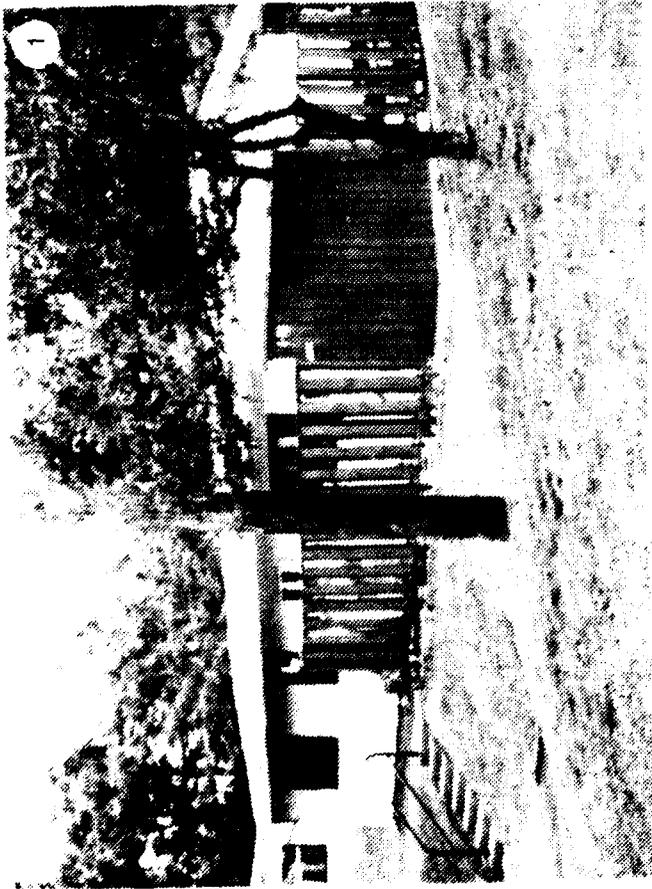
This recommendation assumes that this property will most likely continue to be used for residential housing.

## REFERENCES

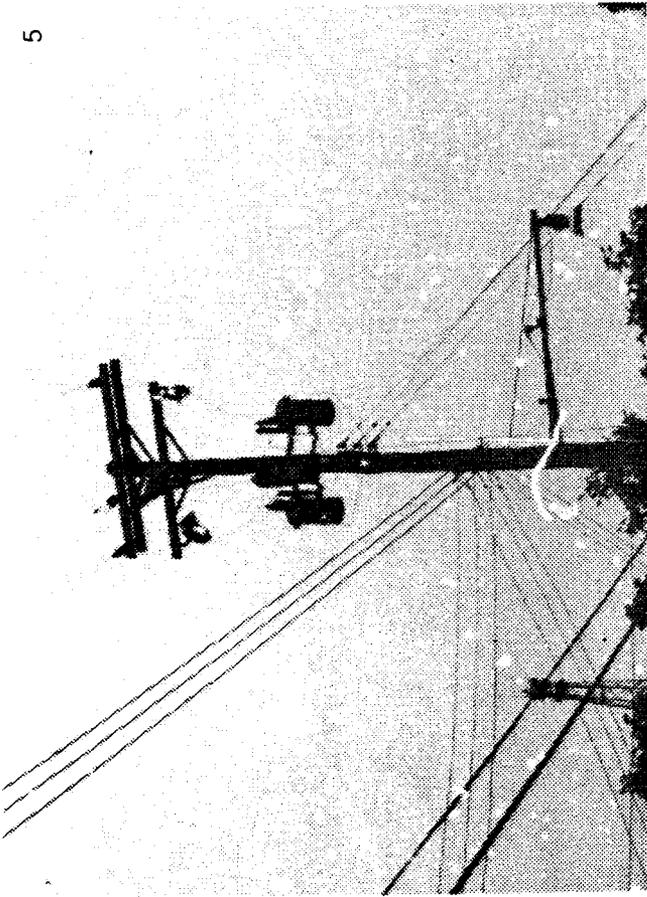
1. *Base Realignments and Closures*, Report of the Secretary's Commission (Dec. 1988).
2. *Report of Excess*, C.E. Kelly Support Facility, Family Housing Site PI-71C, Pittsburgh (April 1989).
3. Real Property Record - Buildings, (DA 5-47) (Jan. 1958).
4. Building Information Schedule (March 29, 1989).
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**APPENDIX:**  
**PHOTOGRAPHS OF CORAOPOLIS HOUSING FACILITY**  
**AND SURROUNDING LAND**

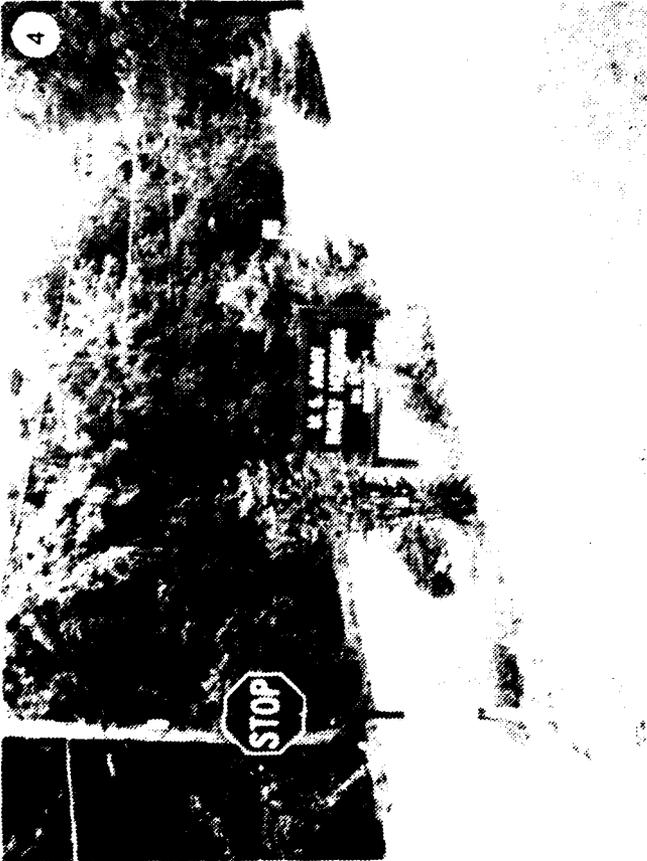




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**IDENTIFICATIONS OF PHOTOGRAPHS**

1. Front view of one of the single-family homes.
2. Rear of the housing units; storm drain runs from bottom towards center in this view.
3. Playground area in the housing facility.
4. The entrance to the housing area.
5. Electrical transformers at the top of a utility pole; the Duquesne Light Company is responsible for them.

