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U.S. Army Toxic and Hazardous Materials Agency

Enhanced Preliminary Assessment Report:

Coraopolis PI-71L Army Housing Units Moon Township, Pennsylvania

October 1989

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prepared for

Commander
U.S. Army Toxic and Hazardous Materials Agency
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SUMMARY

The Coraopolis PI-71L housing area in Moon Township, 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 environmental impacts from this property and during site investigation none were identified.

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. This property remained independent of the Nike missile operations with respect to water and electrical utilities; however, the property was originally connected to the nearby launch area of the Coraopolis Nike battery. The possibility of migration of missile-related contaminants along this sewer line needs to be further investigated.

Floor tiles, which may contain asbestos, were found to be in good condition. Also, there are no known polychlorinated biphenyls (PCBs) associated with the property being exceeded. It is not known whether the pole-mounted transformer that services the housing site has been tested for the presence of PCBs; however, the transformer is the property of the utility.

The sewage treatment facility at this housing site is completely inoperative. Originally constructed to serve both the Nike missile-launch site and the housing units, the facility consisted of a septic tank, distribution boxes, dosing chambers, four sand bed filters, and chlorine contact tank and building. All above-ground equipment, including the building where chlorine was added and monitored, was destroyed by vandals sometime between 1974 and 1984. The contractor who was responsible for the maintenance and operation of the treatment facility did not, however, notify the DEH at the Charles E. Kelly Support Facility, and no major repairs were ever made to the facility. Instead, the contractor resorted to an alternative mode of operation that involved pumping accumulated sewage from the septic tank on a quarterly basis and delivering it for off-site treatment at the Moon Township sewage treatment facility. The facility is now checked on a weekly basis. Current plans are to connect the housing units to the Moon Township sanitary system, but no definite date for this connection has been set.

The following actions are recommended prior to release of this property:

- Develop and implement plans to resolve the sewage-treatment facility operational problems as soon as possible.
- Locate the abandoned sanitary sewer line that once connected this property with the nearby launch 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.

These recommendations assume 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.¹

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 Moon 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
- Identify other environmental concerns which 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 of the Coraopolis PI-71L housing area was conducted on July 19 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 of the units were inspected.

2 PROPERTY CHARACTERIZATION

2.1 GENERAL PROPERTY INFORMATION

The Coraopolis PI-71L housing area is located in Moon Township, Allegheny County, 1 mile south-southwest of the city of Coraopolis, Pa. The area is approximately 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 maintenance as well as any major renovations or upgrading at the facility.

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

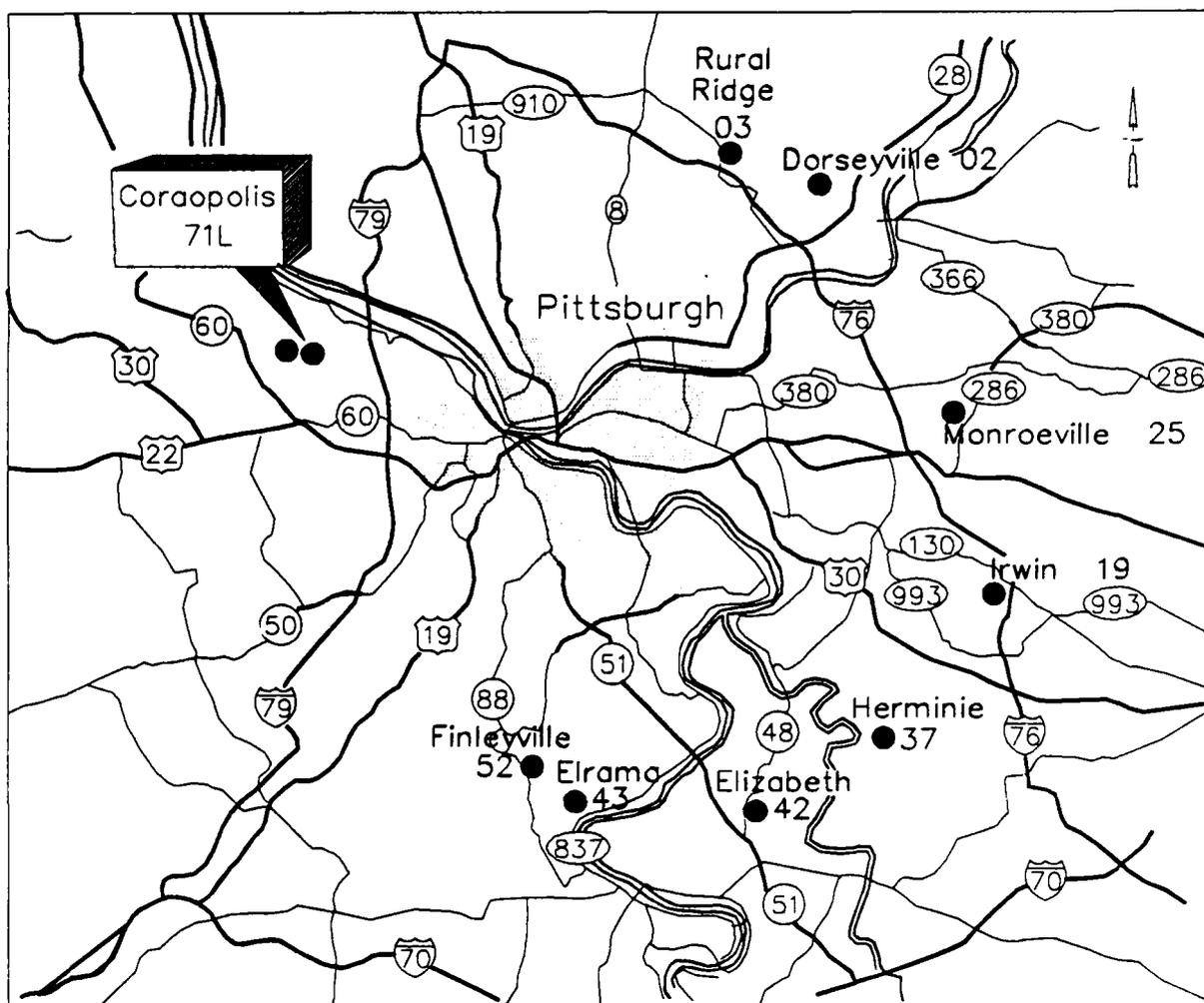


FIGURE 1 Location Map of Pennsylvania Army Housing Facilities

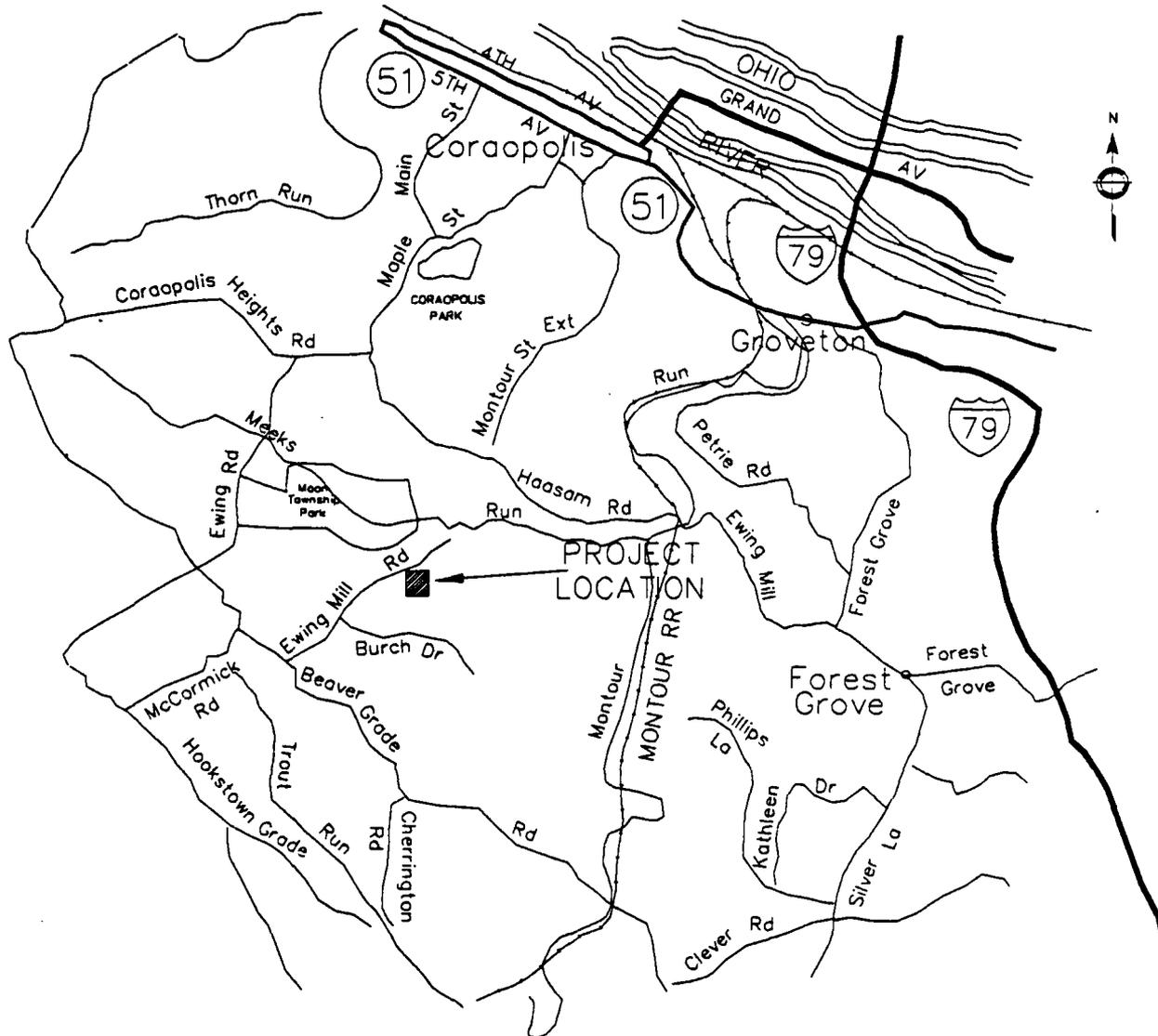


FIGURE 2 Vicinity Map of Coraopolis PI-71L Army Housing Units

2.2 DESCRIPTION OF FACILITY

Figure 3 presents the site plan of the housing property.

Housing Units

The housing site is located on 2.34 acres of land known as the Coraopolis PI-71L housing area and consists of five units that are occupied by military personnel.²

The units were constructed by the U.S. Army in 1957. All units are built on concrete and masonry block foundations with asphalt floor tile overlaying the foundation. Original outside construction was of wood frame covered with vertical wood

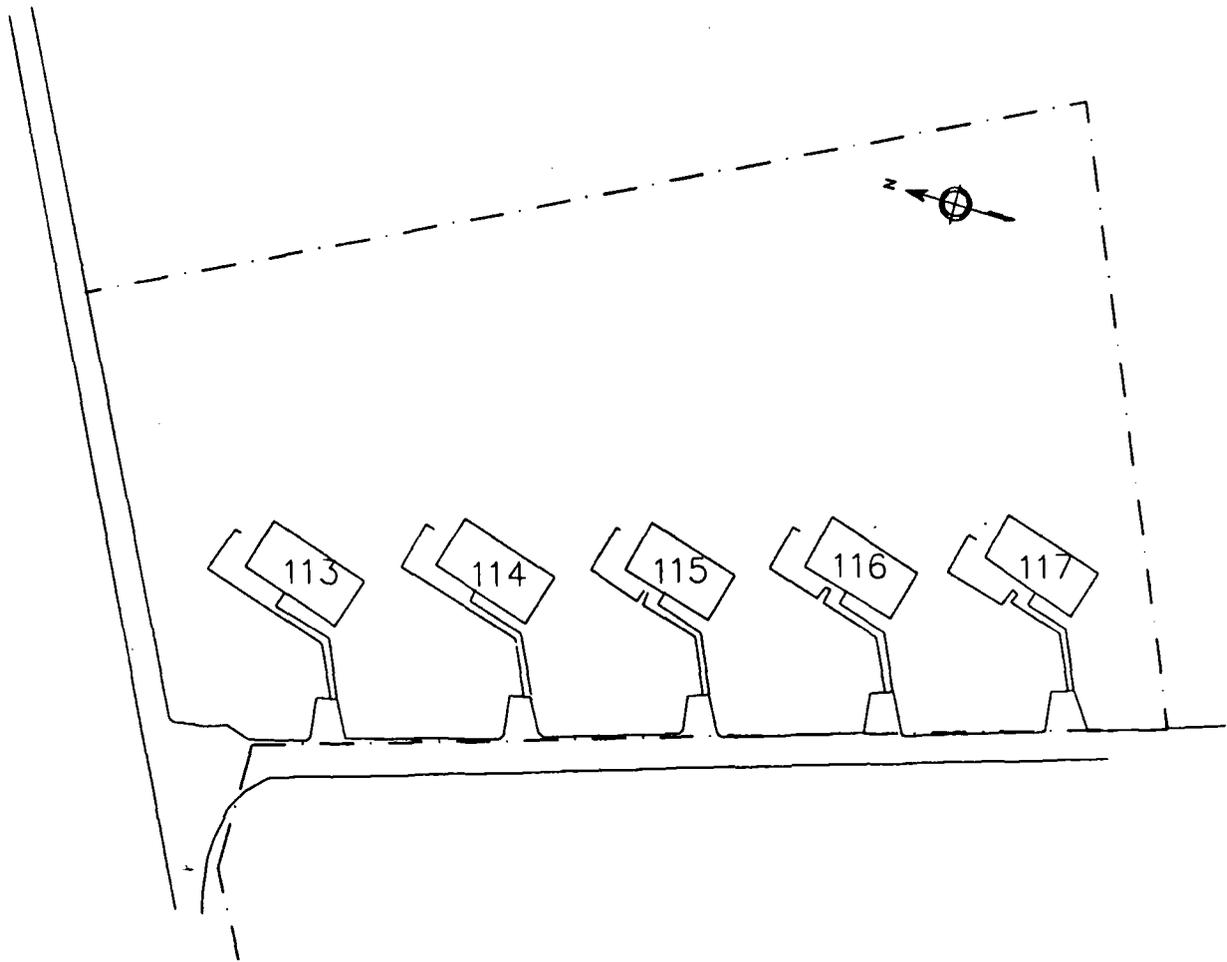


FIGURE 3 Site Plan Map of Coraopolis PI-71L Army Housing Units

siding that 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.³

The housing site is composed of one two-bedroom unit, with an area of 1,121 square feet; two two-bedroom units, each with 1,013 square feet; and two three-bedroom units, each with 1,117 square feet.⁴

All units have separate natural gas-fired forced-air heating facilities that are adequate for the climatic conditions for the area. The housing units have utilized city water since original construction. A children's playground is located in the housing area and occupies approximately 12,000 square feet. The area is equipped with playground equipment such as slides, merry-go-rounds, jungle gyms, and swings. A bus-passenger waiting enclosure is also located on the property.

The sewage treatment facility originally surrounded by a chain link fence and locked gate is in a run-down state, overgrown with brush, and inoperative in accordance with its original design.

Utilities

Electricity for the Coraopolis PI-71L area is furnished by the Duquesne Light Company, which also owns the one pole-mounted electrical transformer located on the property. Water is furnished by the Moon Township Municipal Authority. Natural gas is furnished by Columbia Gas of Pennsylvania,⁵ and refuse is collected by the Larry Schultheis Company, a private contractor.⁶

Sewage

The Coraopolis PI-71L area has its own sewage treatment facility, utilizing a sand bed filter system. This facility is inoperative and sewage is currently being pumped periodically from the septic holding tank by a local contractor.⁷

Storm Drainage System

The storm drainage for the housing units is of the common type of 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.

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 Engineers⁸ and the other by the U.S. Army Toxic and Hazardous Materials Agency.⁹ 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 excessed 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-71L Housing Units

The Coraopolis PI-71L housing area was developed in 1957 to provide stand-alone housing for military personnel assigned to the Coraopolis PI-71L Nike site. Five single-family housing units were constructed on 2.34 acres just outside the town of Coraopolis. The site has been used as a family housing area for active-duty military personnel in the greater Pittsburgh area since the Coraopolis Nike missile battery was deactivated in the early 1970s.

All of the Coraopolis PI-71L housing units are built on foundations made of concrete and masonry block, with asphalt flooring overlaying the concrete block. The original outside construction was wood frame covered with vertical wood siding. The siding was then recovered with vinyl siding at a later date (unknown). The roofing is 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 the time of its initial construction and, therefore, no underground fuel oil storage tanks were ever located on this property. Since the initial property development in 1957, the housing units have always been supplied by city water. 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; that of Pennsylvania is 11,864,751; and that of Allegheny County is 1,450,085 (1980 census).

The family housing units are located on terrain made up of gently rolling to steep slopes along areas of gullies and streams. Surrounding areas are wooded, hilly, and with some residential properties.

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).¹⁰ 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, being only 10 miles

northwest of Pittsburgh, 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 west 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 basin is 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.¹¹ 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.

Rock types within 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 that average about 10 miles across.

Rocks of this province are divided into seven stratigraphic units: the Monongahela Formation, Conemaugh Formation, 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.¹¹

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 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.¹²

Surface-water flow characteristics within the Allegheny Basin are largely the result of topographic features.¹² 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.¹²

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. These three major rivers in the vicinity of Coraopolis 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

Information is not available as to whether asbestos-type products were used in the original construction of the housing units. Asphalt floor tiles, which may contain asbestos, are all in good condition. Inspections on September 13, 1989, revealed that there was no insulation whatsoever on water pipes. No other insulating materials could be found.

3.2 SEWAGE TREATMENT FACILITY

Currently, the sewage treatment facility is inoperative. However, sewage from the houses is still flowing by sewers to the treatment facility's septic tank where it is removed quarterly by a local contractor for off-site treatment. The current inoperative condition of the facility is reported to be the direct result of vandalism to above-ground equipment. The alternative mode of operation (periodic removal of sewage from the septic tank for off-site treatment) is not resulting in an adverse impact to the environment. There have been no reports of problems with the treatment facility prior to the vandalism incident.

There is no documentation on the abandonment of the sewer line that once connected the treatment facility on this property with the nearby launch area of the Coraopolis Nike battery. This line is presumed to have been abandoned in place.

4 KNOWN AND SUSPECTED RELEASES

Because of the nature of the facility, no major releases or impacts on the environment have occurred at the Coraopolis PI-71L housing area. No hazardous wastes or hazardous materials are stored on site. The housing area included in this PA is not believed to have ever been involved in Nike site-related activities.

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.

The Coraopolis PI-71L housing area has its own sewage-treatment facility, a sand-filter system. However, this facility is inoperative because of vandalism, and sewage is presently being pumped quarterly from the septic holding tank by a contractor. This alternative method of managing sewage, while not an efficient long-term solution, does not result in adverse environmental impacts. Repairing the on-site treatment facility, or alternatively, abandoning the facility and connecting the housing units to the Moon Township sewage treatment facilities are preferred options for resolving the problem. The interim solution is, nevertheless, environmentally acceptable.

Floor tiles, which may contain asbestos, were all found to be in good condition. No other asbestos-containing materials were found to be present.

6 RECOMMENDATIONS

The Coraopolis PI-71L 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 is warranted for the site.

The sewage treatment facility at this housing site is inoperative, although no environmental degradation results from the current method of sewage treatment. Current plans are to connect to the Moon Township sanitary system but no definite date for this connection has been set. An alternative option, repairing the system, is equally acceptable from an environmental standpoint. Permanent corrective action to the sewage problem should be implemented as soon as possible.

Possible migration of Nike missile-related contaminants along the sanitary sewer line that once connected the sewage treatment facility with the nearby launch 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.

These recommendations assume that this property will most likely continue to be used for residential housing.

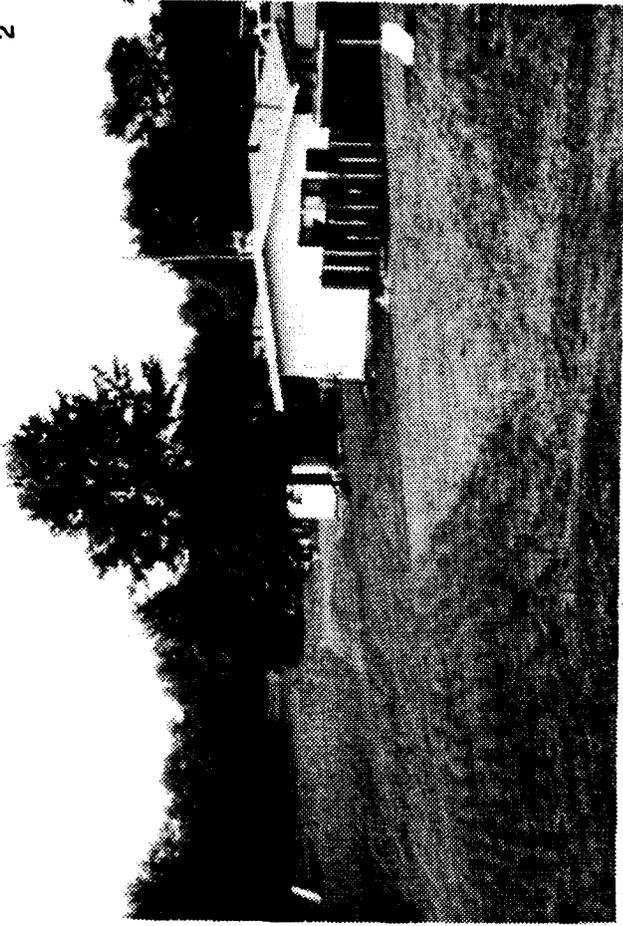
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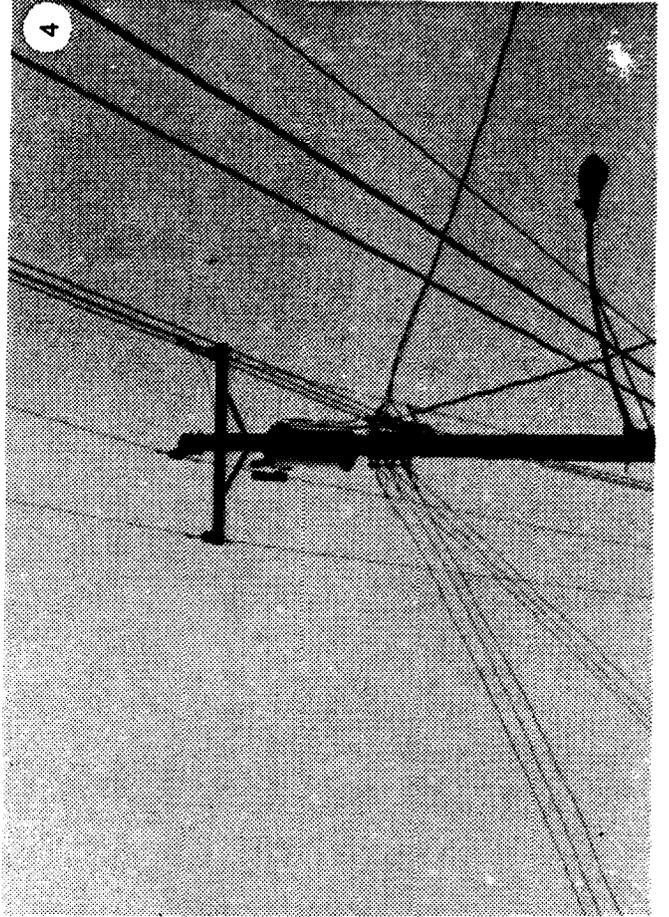
APPENDIX:

**PHOTOGRAPHS OF CORAOPOLIS PI-71L HOUSING FACILITY
AND SURROUNDING LAND**

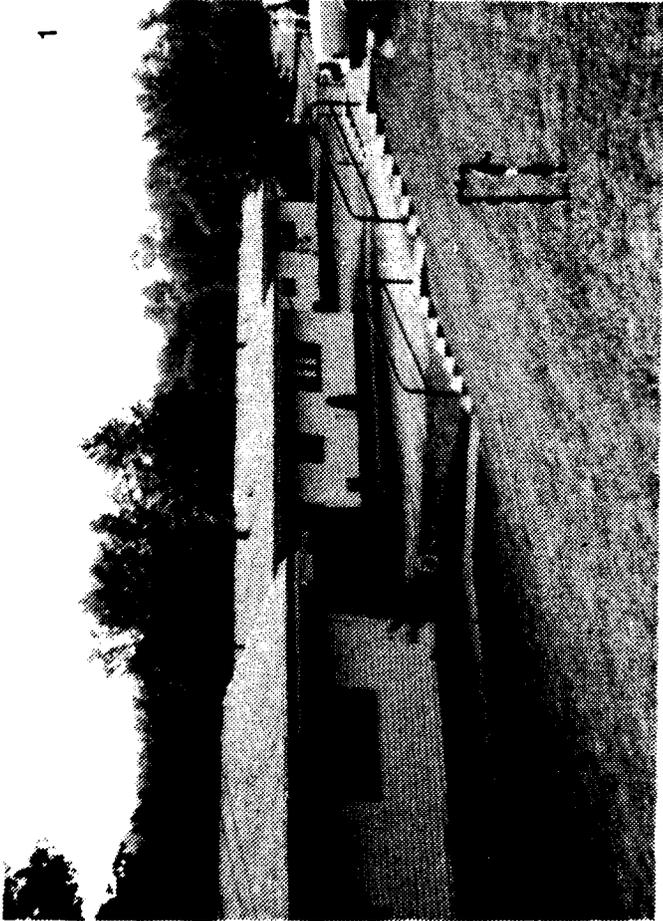
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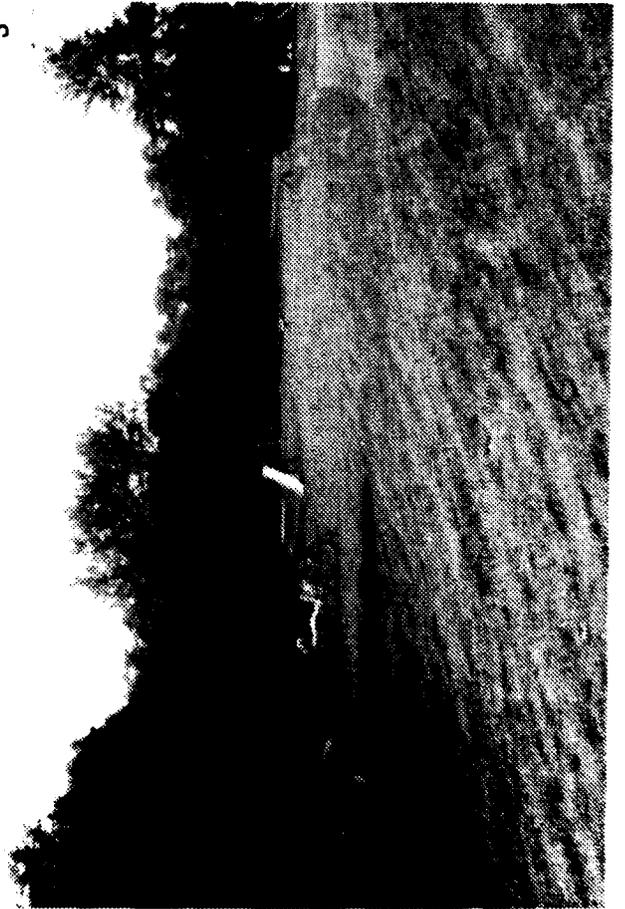
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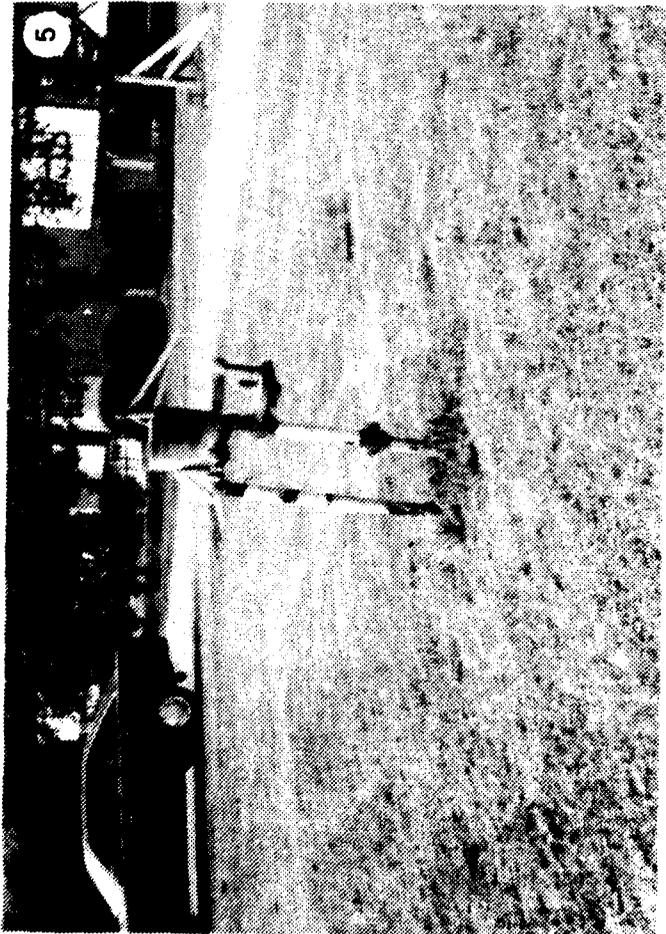
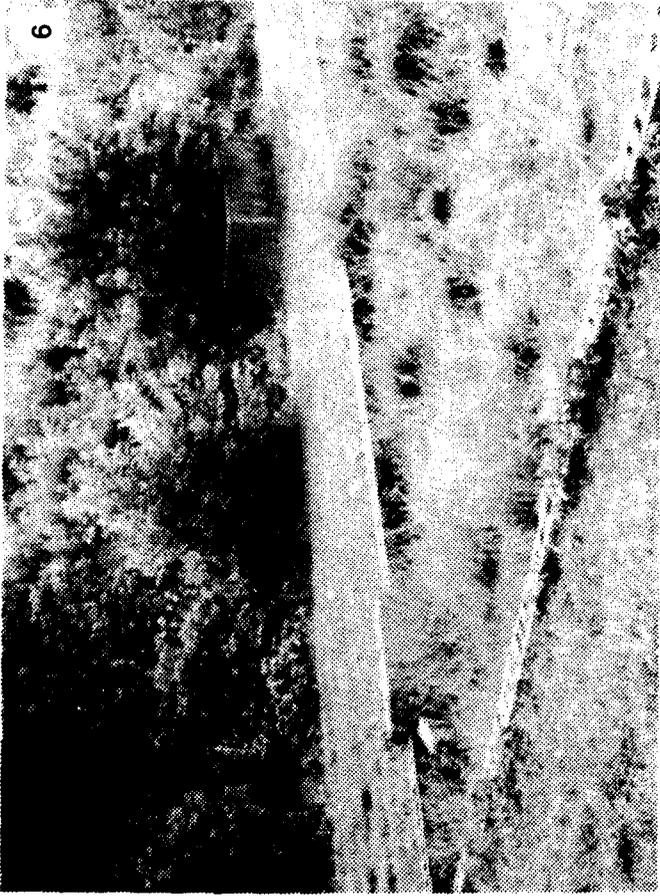


1



3





IDENTIFICATIONS OF PHOTOGRAPHS

1. Front view of the housing units.
2. Rear of the units and open land behind housing area; at left center is the playground, shown at closer range in view #3 following.
3. Playground at the housing area.
4. Electrical transformer at the top of the utility pole; transformers at this site are owned by the local utility company.
5. Natural gas regulator.
6. The sewage-treatment system; sand pit and valve box shown here.
7. Sewage-treatment system, treatment tank; because of problems in the existing system, it is scheduled to be replaced by sewage services from the Moon Township system, but no date for the changeover is set.

