ARGONNE NATIONAL LABORATORY
9700 South Cass Avenue, Argonne, Illinois 60439

ANL/EES-TM-377

DETERMINATION OF ECOLOGICALLY VITAL
GROUNDWATERS AT SELECTED SITES IN
THE FORMERLY UTILIZED SITES
REMEDIAL ACTION PROGRAM

ANL/EES-TM--377

DE89 015642

by

William S. Vinikour and Stephen C.L. Yin

Energy and Environmental Systems Division

August 1989

work sponsored by

U.S. DEPARTMENT OF ENERGY
Oak Ridge Operations Office
Oak Ridge, Tennessee

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ABSTRACT

The U.S. Department of Energy is classifying groundwaters at sites in its Formerly Utilized Sites Remedial Action Program (FUSRAP) based on the U.S. Environmental Protection Agency's *Guidelines for Groundwater Classification under the EPA Groundwater Protection Strategy*. Of particular concern is the potential presence of groundwaters that are highly vulnerable to contamination and that are either (1) irreplaceable sources of drinking water or (2) ecologically vital. Conditions at nine FUSRAP sites were evaluated to determine if ecologically vital groundwaters are present. (The presence of irreplaceable sources of drinking water was not considered in this analysis.) The sites evaluated were Wayne Interim Storage Site, Maywood Interim Storage Site, and Middlesex Sampling Plant in New Jersey; Ashland 2 Site, Seaway Industrial Park, Colonie Interim Storage Site, and Niagara Falls Storage Site in New York; and the St. Louis Airport Site and Hazelwood Interim Storage Site in Missouri. The analyses indicated that groundwaters are vulnerable to contamination at all but two of the sites -- the Ashland 2 and Seaway Industrial Park sites in New York. Groundwater discharge points were identified within a 2-mi radius (i.e., the *classification review area*) of all of the sites. No critical habitats for any federally listed threatened or endangered species were identified within the classification review areas of the selected FUSRAP sites. Also, no federal lands managed for ecological protection were identified within these areas. Thus, it is concluded on the basis of these findings that no ecologically vital groundwater areas exist in the vicinities of any of the nine FUSRAP sites evaluated.

1 INTRODUCTION

In August 1984, the U.S. Environmental Protection Agency (EPA) announced a strategy to protect groundwater by establishing a three-tiered classification system based on the resource's value to society, its use, and its vulnerability to contamination (EPA 1986). The basic concept of the system is to classify the groundwater in an area of

concern and then implement protective or remediation measures appropriate to that level of classification.

Environmental Protection Agency rule-making actions for Superfund and for radioactive-waste-disposal activities have incorporated aspects of the classification system. Thus, for activities such as those conducted under the Department of Energy's (DOE's) Formerly Utilized Sites Remedial Action Program (FUSRAP), the classification of groundwater resources is expected to become an additional step in site-specific analyses. The classification system will be implemented in conjunction with the site-specific assessments normally conducted to comply with EPA permits and to select appropriate remedial actions. As discussed below, the EPA has issued draft guidelines to assist in the classification process (EPA 1986).

1.1 CLASSIFICATION SYSTEM

The EPA classification system provides for three general classes of groundwater:

- Class I -- special groundwater,
- Class II -- groundwater currently and potentially a source for drinking water, and
- Class III -- groundwater not a source of drinking water.

Class I groundwaters are resources of unusually high value that are highly vulnerable to contamination and are (1) irreplaceable sources of drinking water or (2) ecologically vital. The EPA's differential system designates Class I groundwaters as deserving a very high level of protection. A groundwater source is considered irreplaceable if it serves a substantial population and if reliable delivery of comparable quantity and quality of water from alternative sources would be economically infeasible or precluded by institutional constraints.

Ecologically vital groundwaters are those that supply a sensitive ecological system that supports a unique habitat. A sensitive ecological system is defined as an aquatic or terrestrial ecosystem located in an area of groundwater discharge. Such systems are generally associated with natural areas of groundwater discharge, such as seeps, springs, caves, wetlands, streams, bays, or playas. Unique habitats include (1) those used for federally listed or proposed endangered or threatened species, or (2) federal land management areas that are congressionally designated and managed for the purpose of ecological protection. This latter class includes national parks, national wilderness areas, national wildlife refuges, and national research natural areas (EPA 1986).

For inclusion in the EPA's classification system, groundwater discharge areas must be located within a specified distance (the *classification review area*) from the site of concern. Delineation of this area is necessary because EPA's strategy is to classify groundwater on a site-specific basis rather than on a regional or aquifer-specific basis. The classification review area is initially within a 3.2-km (2-mi) radius from the boundaries of the site facility or activity (Fig. 1). Within this area, a preliminary

FIGURE 1 Example of Class I Ecologically Vital Groundwater within a Classification Review Area (Source: Adapted from EPA 1986)

inventory is made of public water-supply wells, populated areas not served by public supply, wetlands, and surface waters. If such features occur, then a determination is to be made as to whether they are highly vulnerable to contamination and, as relates to this report, ecologically vital. Figure 1 illustrates schematically the concept of the occurrence of an ecologically vital groundwaters in a classification review area.

1.2 IDENTIFICATION OF HIGHLY VULNERABLE GROUNDWATERS

Highly vulnerable groundwaters are characterized by a relatively high potential for contaminants to enter and, perhaps, to be transported by the flow system. The EPA guidelines for groundwater classification propose two methods (A and B) for defining vulnerability (EPA 1986). Method A uses the DRASTIC system (Aller et al. 1987), a numerical ranking system developed by the National Water Well Association for the

EPA. The method is based on the examination of seven hydrogeologic characteristics of an area:

- D -- depth to water table,
- R -- net recharge,
- A -- aquifer media,
- S -- soil media,
- T -- topography,
- I -- impact of the vadose zone, and
- C -- hydraulic conductivity of the subject groundwater flow system.

Determination of groundwater vulnerability would be based on the composite numerical value for the area being analyzed; the higher the score, the greater the vulnerability.

Method B proposed by the EPA allows users of the guidelines to examine the same seven criteria used in Method A or other sets of criteria to determine the vulnerability of the groundwater without using a numerical ranking system such as is used by the DRASTIC system.

To be classified as Class I, groundwater in an area must be not only highly vulnerable but also an irreplaceable source of drinking water or ecologically vital, or both.

1.3 APPLICATION TO SELECTED FUSRAP SITES

This report is intended to assist the DOE (Oak Ridge Operations Office) in classifying groundwaters at nine selected FUSRAP sites by identifying any ecologically vital groundwaters (EPA 1986) that occur at those locations. This report deals only with the identification, at the nine sites, of any Class I groundwaters that are both highly vulnerable to contamination and ecologically vital. Irreplaceable sources of drinking water are being identified separately by the DOE (Hovey 1988), and Class II and III groundwaters are outside the scope of this report.

The following assumptions and procedures were adopted to determine if ecologically vital groundwaters occur within the classification review area of the selected FUSRAP sites. First, 7.5-minute topographic maps encompassing a 3.2-km (2-mi) radius around each FUSRAP site were examined. When available, U.S. Fish and Wildlife Service wetland inventory maps also were examined. For initial screening, it was conservatively assumed that all surface waters (including wetlands) within the classification review area could be potential groundwater discharge points and could be hydrogeologically connected to the FUSRAP sites.

Concurrently with the above, the literature was reviewed to determine (1) if the ranges of federally listed (or proposed) threatened and endangered species could include the FUSRAP sites, and (2) which, if any, of these species are dependent (at least partially) upon habitats characteristic of groundwater discharge points. Additionally, letters of inquiry were sent to U.S. Fish and Wildlife Service endangered species field

offices for a listing of threatened or endangered species that might occur within the immediate vicinity of the FUSRAP sites (see Appendix at the end of this document).

If the probability of the presence of listed species or their critical habitats within the classification review area was high, or if federally managed lands were present, further procedures were to be implemented. These procedures would include field surveys for the presence of listed species or habitats that could support them. Also, a more critical review of the hydrogeologic data would be undertaken (1) to more accurately assess groundwater interconnections between the FUSRAP site and habitat for the listed species and (2) to determine if the classification review area was a highly vulnerable hydrogeologic setting. As mentioned above, both the presence of ecologically vital areas and a highly vulnerable hydrogeologic setting are required for a rating of Class I - Ecologically Vital Groundwater.

2 SITE-SPECIFIC EVALUATIONS

The nine FUSRAP sites where groundwater must be classified are the Wayne Interim Storage Site, Maywood Interim Storage Site, and Middlesex Sampling Plant in New Jersey; the Ashland 2 Site, Seaway Industrial Park, Niagara Falls Storage Site, and Colonie Interim Storage Site in New York; and the Hazelwood Site and St. Louis Airport Site in Missouri (Hovey 1988). The following sections briefly describe the setting of each site and present sufficient information on hydrological and environmental conditions to determine the presence of any ecologically vital and vulnerable groundwaters. More detailed information on site characteristics, contamination, and completed or planned remedial actions is provided in the documents referenced in the following site summaries and listed in Sec. 4.

2.1 WAYNE INTERIM STORAGE SITE

2.1.1 Setting

The Wayne Interim Storage Site is located in northeastern New Jersey in the western portion of Wayne Township, Passaic County. The site is 1.9 km (1.2 mi) east of Pompton Plains and 2.9 km (1.8 mi) north of the town of Wayne. Newark is 29 km (18 mi) to the southeast (Fig. 2). The storage site is near the intersection of Black Oak Ridge Road (N.J. Route 202) and Pompton Plains Cross Road in Wayne Township. Land within the immediate vicinity of the Wayne site is used for a combination of industrial, commercial, agricultural, and residential purposes. Future land use in the vicinity is expected to remain primarily residential (ANL 1984a).

2.1.2 Hydrology

Soils at the Wayne site consists mostly of well-drained, sandy loams. A drainage ditch that originates south of the site flows north onto the site. A second drainage ditch flowing from east of the property joins the first ditch. The combined ditch then curves and flows west from the Wayne site through a stormwater sewer under a parking lot. The ditch resumes at the outfall of the stormwater sewer 200 m (670 ft) to the west of the site. The ditch then flows southwest for about 100 m (330 ft) into Sheffield Brook. About 0.8 km (0.5 mi) west of the site the brook empties into the Pompton River, a tributary of the Passaic River (Fig. 3) (ANL 1984a). Wetlands occur along Sheffield Brook. Before off-site remedial actions were conducted along the brook, three wetland types occurred: palustrine forested wetland, palustrine emergent wetland, and palustrine forested/scrub-shrub wetland (Kulp 1986). Currently, the wetland areas are in early secondary successional stages following remedial actions and consist primarily of palustrine emergent or emergent/scrub-shrub wetlands.

The site is underlain by two distinct geologic units: Quaternary unconsolidated glacial till and the Brunswick formation (Triassic sandstone). The unconsolidated

FIGURE 2 Location of Wayne, New Jersey (Source: Adapted from ANL 1984a)

FIGURE 3 Surface Drainage in the Vicinity of the Wayne Site (Source: Adapted from ANL 1987a)

deposits are 6.4-13 m (21-41 ft) thick. The underlying Brunswick formation forms the bedrock in the area. The uppermost 4.6-6.1 m (15-20 ft) of the Brunswick formation contains numerous vertical to near-vertical, fresh to slightly weathered, open fractures (Bechtel 1986a).

In the site vicinity, groundwater occurs in both the unconsolidated deposits and in the Brunswick formation. Groundwater in the deposits probably flows to the southwest. Measurements from on-site wells, however, indicate a highly variable groundwater surface. This may be due to the nature of the deposits as well as to disturbance caused by the presence of waste burial areas on the site (ANL 1987a). In the vicinity of the Wayne site, groundwater in the bedrock aquifer flows to the west (Bechtel 1986a).

Although the unconsolidated deposits in the site vicinity have not been extensively explored and developed, they are an important source of water for public supply and industrial use in Wanaque, Pompton Lakes, and along the western side of Wayne Township. These areas are about 6, 3, and 6 km (4, 2, and 4 mi), respectively, from the site. Currently, the Brunswick formation is the major source of groundwater for public supply and industrial use in Passaic County (ANL 1987a).

The groundwater in both the unconsolidated deposits and the bedrock at the Wayne site is considered vulnerable to contamination because of the (1) relatively permeable nature of the soils, unconsolidated deposits, and the bedrock, (2) shallow depth to the water table, and (3) relatively thin overburden above the bedrock formation.

2.1.3 Federally Listed Species and Managed Lands

Three federally endangered species and two threatened species may occur in the vicinity of the Wayne site. The endangered species are the bald eagle (*Haliaeetus leucocephalus*), American peregrine falcon (*Falco peregrinus anatum*), and roseate tern (*Sterna dougallii dougallii*). The two threatened species are the Arctic peregrine falcon (*F. p. tundrius*) and piping plover (*Charadrius melodus*). However, these species would be expected to occur over the area only as occasional transients (Chezik 1989).

The bald eagle breeds in forests, open areas, or mountains (usually in association with large bodies of water). It winters along the coast or inland near ice-free waters. Large bodies of water, pilot and perch trees, and isolation from human disturbance are important habitat requirements (DeGraaf and Rudis 1986; Forest Service 1977).

Breeding habitat for the peregrine falcon typically consists of high, rocky cliffs of mountains, which are often associated with water bodies. Wintering habitat consists mainly of barrier beaches or, more rarely, tall buildings in cities (DeGraaf and Rudis 1986). The piping plover requires undisturbed coastal sand beaches for breeding. Similar habitat, plus offshore islands, are used by the roseate tern (Dowhan and Craig 1976). Neither the piping plover nor the roseate tern winters in the north. No habitats critical for the survival of these species occur in the vicinity of the Wayne site. Thus, no impacts to these species would be anticipated from wastes currently contained at the site or from any further remedial actions that may be taken at the site.

No federal lands managed for ecological protection occur within a 3.2-km (2-mi) radius of the Wayne Interim Storage Site.

2.2 MAYWOOD INTERIM STORAGE SITE

2.2.1 Setting

The Maywood Interim Storage Site is located in northeastern New Jersey about 21 km (13 mi) northeast of Newark. The site is in the borough of Maywood and the township of Rochelle Park, Bergen County, New Jersey (Fig. 4). Most of the land within a few kilometers of the site is zoned for residential or light-industrial use (ANL 1987b).

2.2.2 Hydrology

Terrain at the Maywood site is generally flat, with intermittent shallow ditches and slight mounds. The surface of the site slopes gently to the west and is poorly

FIGURE 4 Location of Maywood, New Jersey (Source: Adapted from ANL 1987b)

drained. Runoff from the site currently flows into the Saddle River via Westerley Brook (Fig. 5). The brook flows under the site through a concrete storm drain, passes under New Jersey Route 17, and eventually empties into the Saddle River. Neither Westerley Brook nor the Saddle River is used as a source of drinking water (ANL 1987b).

The bedrock underlying the area is the Brunswick formation (Bechtel 1985a). The formation is 1,800-2,400 m (6,000-8,000 ft) thick and is overlain by unconsolidated sand, gravel, silt, and clay deposits (primarily of glacial origin). These unconsolidated glacial materials are 0.55-6.6 m (1.8-22 ft) thick and consist primarily of stratified drift (ANL 1987b).

Most of the groundwater used in the area comes from the Brunswick formation (Bechtel 1985a). The uppermost 4.6-6.1 m (15-20 ft) of the formation often contains numerous vertical to nearly vertical, fresh to slightly weathered, open fractures. Storage and movement of groundwater within the formation is confined primarily to these openings (Bechtel 1985a). Some groundwater is available from the unconsolidated deposits; however, because of the nature of the deposits, well yields are highly variable (ANL 1987b).

The groundwater table at the Maywood site is generally shallow -- 2-3 m (7-10 ft) below the ground surface. Measurements of groundwater levels indicate that the groundwater gradient in the area is slight (Bechtel 1985a). Flow both in the unconsolidated deposits and the bedrock generally is to the southwest.

The groundwater at the Maywood site both in the unconsolidated deposits and the bedrock is considered vulnerable to contamination because of the (1) relatively permeable nature of the soils, unconsolidated deposits, and the bedrock; (2) shallow depth to the water table; and (3) relatively thin overburden above the bedrock formation.

2.2.3 Federally Listed Species and Managed Lands

The bald eagle, peregrine falcon, piping plover, and roseate tern may occur in the vicinity of the Maywood site, but only as occasional transients (Chezik 1989). No habitats critical for the survival of these federally listed species occur in the vicinity of the Maywood site (see Sec. 2.1.3). Thus, no impacts to these species would be anticipated from wastes currently contained at the site or from any further remedial actions that may be taken at the site. No federal lands managed for ecological protection occur within a 3.2-km (2-mi) radius of the Maywood site.

2.3 MIDDLESEX SAMPLING PLANT

2.3.1 Setting

The Middlesex Sampling Plant is located in the urban area of Middlesex, New Jersey, about 29 km (18 mi) southwest of Newark (Fig. 6). A combination of residential,

FIGURE 5 Surface Drainage in the Vicinity of the Maywood Site
(Source: Adapted from ANL 1987b)

commercial, industrial, public, and vacant land occurs in the site vicinity. Future development is expected to be primarily residential and industrial (ANL 1984b).

2.3.2 Hydrology

The site of the Middlesex Sampling Plant is generally flat, ranging in elevation from 15 m (50 ft) mean sea level (MSL) on the southern boundary to 18 m (60 ft) MSL on the northern boundary. Soils at the site are silty to sandy loams ranging from 0.45 to

FIGURE 6 Location of Middlesex, New Jersey (Source: Adapted from ANL 1984b)

2.4 m (1.5 to 8.0 ft) thick over bedrock. Surface runoff from the Middlesex site is collected in several drains that empty into a large settling basin through an underground drainage system. The settling basin empties into a drainage ditch south of the site. The ditch flows 180 m (600 ft) south to Main Stream. Main Stream empties into Ambrose Brook, which in turn flows into Green Brook near its confluence with the Raritan River (Fig. 7). Neither Main Stream or Ambrose Brook is used as a source of drinking water (ANL 1984b).

The bedrock underlying the site consists of shales of the Brunswick formation. Groundwater is available from shallow and deep systems under the site. The shallow unconfined aquifer is a zone located 0.6-3.0 m (2-10 ft) below the ground surface. Groundwater in this zone flows generally from north to south. The deep groundwater system is in the Brunswick shale, with flow from south to northeast. The fact that the deep and shallow systems flow in opposite directions indicates that a confining layer exists between the two aquifer systems (Bechtel 1989). The Brunswick formation is a major aquifer in the western part of Middlesex County and adjoining Essex County.

The shallow aquifer at the Middlesex site is considered vulnerable to contamination because of the shallow depth to the water table. Because of the possible existence of a confining layer (discussed above), the deep aquifer may not be as vulnerable. However, no detailed information on the confining layer is available.

2.3.3 Federally Listed Species and Managed Lands

The bald eagle, peregrine falcon, piping plover, and roseate tern may occur at the Middlesex site as occasional transients (Chezik 1989); however, no habitats critical for the survival of these species occur in the vicinity of the site (see Sec. 2.1.3). Thus, no impacts to these species would be anticipated from wastes currently contained at the site or from any additional remedial actions that may be taken at the site. No federal lands managed for ecological protection occur within a 3.2-km (2-mi) radius of the Middlesex site.

2.4 ASHLAND 2 AND SEAWAY INDUSTRIAL PARK SITES

2.4.1 Setting

Ashland 2 and Seaway Industrial Park are adjacent sites in an industrialized area of Tonawanda, Erie County, New York. The area is about 4.8 km (3 mi) northwest of Buffalo (Fig. 8). The Ashland 2 site consists generally of brushland transected by substantial marshy areas. The Seaway Industrial Park is an active landfill except for portions where low-level radioactive wastes have been buried. These portions are grown over with vegetation (grasses, brush, and small trees).

FIGURE 7 Surface Drainage in the Vicinity of the Middlesex Site (Source: Adapted from ANL 1984b)

2.4.2 Hydrology

Runoff from the Ashland 2 and Seaway Industrial Park sites enters a number of drainage channels that cross the sites from the southeast. These various channels combine into one channel northeast of the Ashland 2 site. The combined drainage channel flows north into Twomile Creek about 1.6 km (1 mi) northeast of the Ashland 2 site (Fig. 9). In turn, the creek flows into the Niagara River.

The main aquifer in the vicinity of the Ashland/Seaway sites is in the Camillus shale bedrock of Silurian age. The aquifer has a potential for high groundwater yields, but the dissolved solids content appears to be too high for most uses. A relatively permeable glaciolacustrine unit and a sandy glacial till overlying the Camillus shale are hydraulically connected with the shale and are included in the following discussion. Overlying the glaciolacustrine unit and the sandy glacial till is a low-permeability glacial clay unit averaging about 18 m (60 ft) thick. Soils and the landfill overlie the glacial clay unit.

FIGURE 8 Locations of the Ashland and Seaway Sites (Source: Adapted from Bechtel 1988)

FIGURE 9 Surface Drainage in the Vicinity of the Ashland and Seaway Sites
(Source: Adapted from Bechtel 1988)

At the Seaway Industrial Park, a groundwater mound has formed within virtually all portions of the landfill. The water table is contained within the solid waste, which forms the topographic surface of much of the Seaway site. The water table has a variable surface subject to seasonal fluctuations in response to varying rates of recharge from precipitation. The base of this water-bearing zone corresponds to the top of the nearly impervious glacial clay unit (Wehran and RECRA 1979).

The groundwater in the Camillus shale aquifer occurs in the numerous joints and bedding planes. The Camillus shale is the most productive aquifer in the area, although the water quality is poor. Bedrock groundwater in the site vicinity generally flows west toward the Niagara River. The glaciolacustrine unit and the sandy glacial till overlying the Camillus shale both exhibit some water-bearing capacity, although they are much less permeable than the shale.

The downward migration of leachate from the Seaway landfill through the underlying glacial clay unit into the glaciolacustrine unit, the sandy glacial till, and the Camillus shale aquifer is essentially precluded by the extremely low permeability of the glacial clay. The clay unit varies between 14 and 23 m (45 and 75 ft) thick, averaging

about 18 m (60 ft). The permeability of clay unit has been estimated as 1.6×10^{-8} cm/s (6.3×10^{-9} in./s) (Wehran and RECRA 1979).

A compacted clay cutoff wall keyed into the upper clays of the underlying glacial till was installed around the landfill site in 1983. A perimeter leachate collection system was installed inside the cutoff wall to control mounding groundwater and to monitor leachate. The leachate exits the Seaway landfill through numerous seeps, or springs, along the toe of slope of the landfill and discharges into the surface streams. Therefore, the primary potential impact of the leachate on the area's water resources would be pollution of surface streams emanating from or passing through the landfill.

The Camillus shale aquifer is considered to have low vulnerability to contamination by the radioactive waste at the site because the aquifer is separated from the waste by the relatively thick, impermeable glacial clay.

2.4.3 Federally Listed Species and Managed Lands

The only federally listed species that may occur in the vicinity of the Ashland 2 and Seaway Industrial Park sites are the bald eagle and peregrine falcon. However, these species would be expected to occur over the area only as occasional transients (Gill 1989). No habitats critical for the survival of these species occur in the vicinity of the sites (see Sec. 2.1.3). Thus, no impacts to either species would be anticipated from wastes currently contained at the sites or from any further remedial actions that may be taken at the sites. No federal lands managed for ecological protection occur within a 3.2-km (2-mi) radius of the Ashland 2 or Seaway Industrial Park sites.

2.5 NIAGARA FALLS STORAGE SITE

2.5.1 Setting

The Niagara Falls Storage Site (NFSS) is located in Lewiston, Niagara County, New York (Fig. 10). The site is 30 km (19 mi) north of Buffalo. Land use in the immediate vicinity of the site includes a hazardous waste disposal site, a sanitary landfill, federally owned land used for training operators of construction equipment, a power line corridor, and privately owned land. Homes, a trailer park, schools, and campgrounds are located less than 3 km (2 mi) from the site. Lewiston and Porter are generally rural and land use types include active agricultural areas, old fields, recreational areas, and second-growth forests (DOE 1986).

2.5.2 Hydrology

Natural drainages in the area of NFSS are shown in Fig. 11. Historically, Fourmile, Sixmile, and Twelvemile creeks all received runoff from the site. However, in the 1940s, a series of ditches were dug, and Sixmile Creek was diverted to alter the

FIGURE 10 Location of Niagara Falls Storage Site (NFSS) (Source: Adapted from DOE 1986)

FIGURE 11 Natural Surface Drainage Patterns in the NFSS Area (Source: Adapted from DOE 1986)

drainage pattern of the area. Since then, drainage from the site flows primarily into Fourmile Creek (Fig. 12), which in turn flows into Lake Ontario (DOE 1986).

Within Niagara County, groundwater is present both in the surficial glacial deposits and the underlying bedrock. The three most significant water-bearing zones at the site are (1) intermittent sand lenses found at 3-6 m (10-12 ft) below the ground surface (upper soil aquifer), (2) a brown, gravelly, sand-silt layer found at 9-12 m (30-40 ft) below ground surface (lower soil aquifer), and (3) the weathered and fractured 3- to 4.5-m (9.9- to 15-ft) thick upper surface of the Queenston formation, beginning about 15 m (50 ft) below the ground surface (bedrock aquifer). The lower soil aquifer flows northwest and discharges into Lake Ontario, the Niagara River, and local streams and ditches. The major zone of groundwater movement is in the weathered and fractured bedrock aquifer in the upper portion of the Queenston formation. Where the red till is

FIGURE 12 Current Drainage Features at NFSS and Surrounding Areas (Source: Adapted from DOE 1986)

absent, this aquifer is connected with the lower soil aquifer. None of these water-bearing zones is a major aquifer (DOE 1986).

The groundwater from all aquifers underlying the site is of low quality for use as drinking water. Groundwater from the Queenston aquifer is more mineralized than water from the other two aquifers.

The groundwater zones at the NFSS, although not considered as major aquifers, are potentially vulnerable to contamination from the waste stored at the site. This vulnerability is due to the shallow depths of the aquifers and the lack of a continuous, impermeable layer overlying these zones.

2.5.3 Federally Listed Species and Managed Lands

The only federally listed species that may occur in the vicinity of NFSS are the bald eagle and peregrine falcon, which would be expected to occur over the area only as occasional transients (Gill 1989). No habitats critical for the survival of these species occur in the site vicinity (see Sec. 2.1.3). No impacts to either species would be anticipated from wastes currently contained at the site or from any further remedial actions that may be taken at the site. No federal lands managed for ecological protection occur within a 3.2-km (2-mi) radius of the site.

2.6 COLONIE INTERIM STORAGE SITE

2.6.1 Setting

The Colonie Interim Storage Site is located in the town of Colonie, Albany County, New York, just north of the city of Albany (Fig. 13). Land around the site is used for light industrial, commercial, and residential purposes (ANL 1984c).

2.6.2 Hydrology

The Colonie site is located within the Patroon Creek drainage basin. A small, unnamed creek traverses a former lake bed on the western edge of the site. The unnamed creek empties into Patroon Creek, which is located about 0.4 km (0.25 mi) south of the site and flows to the east (Fig. 14). Patroon Creek is not used as a source of drinking water (ANL 1984c).

The bedrock underlying the Colonie site consists of Ordovician shale of the Normanskill formation at a depth of 45-60 m (150-200 ft) (Bechtel 1984). The Normanskill formation is a relatively impervious rock and yields only about 0.3 L/s (5 gal/min) of water from joints and bedding planes (Heath 1964). The bedrock is overlain by thin layers of glacial till and stratified drift. These glacial deposits are in turn overlain by a layer of clay and silt 30-46 m (100-150 ft) thick (Dineen 1975).

FIGURE 13 Location of Colonie, New York, Site (Source: Adapted from ANL 1984c)

FIGURE 14 Surface Water Drainage in the Vicinity of the Colonie Site
(Source: Adapted from ANL 1984c)

Two groundwater units have been identified in the unconsolidated material at the Colonie site -- the upper sands and the lower sands. The two sand units are separated by a clay layer 0.76-3.3 m (2.5-10.7 ft) thick (Bechtel 1985b). The upper sands unit is about 2.4-7.4 m (8.0-24.2 ft) thick, and the lower sands unit is about 3.4-7.9 m (11.0-26.0 ft) thick. Field tests indicate that the hydraulic conductivity of the sand layers is on the order of 10^{-4} cm/s (10^{-5} in./s) (Bechtel 1985b).

Groundwater in the site area is available in small quantities from bedrock and in moderate to large quantities from unconsolidated surficial deposits. The Ordovician shales yield small amounts of poor-quality water. The water from the glacial deposits has, on the average, a lower mineral content than that from the bedrock (Arnow 1949). Because of the absence of a low-permeability layer above the groundwater units and the

shallow depth to water, the groundwater appears to be vulnerable to contamination at the Colonie site.

2.6.3 Federally Listed Species and Managed Lands

The only federally listed species that may occur in the vicinity of the Colonie site are the bald eagle and peregrine falcon, which would be expected to occur over the area only as occasional transients (Gill 1989). No habitats critical for the survival of these species occur in the site vicinity (see Sec. 2.1.3). Thus, no impacts to either species would be anticipated from wastes currently contained at the site or from any further remedial actions that may be taken at the site. No federal lands managed for ecological protection occur within a 3.2-km (2-mi) radius of the Colonie site.

2.7 HAZELWOOD AND ST. LOUIS AIRPORT SITES

2.7.1 Setting

The Hazelwood Interim Storage Site (Latty Avenue) is located in Hazelwood, Missouri, about 3.2 km (2 mi) north of the Lambert-St. Louis International Airport and northeast of the St. Louis Airport Site (SLAPS) in northern St. Louis County, Missouri (Fig. 15). The area near the site is primarily commercial and industrial. The closest residential areas are in Hazelwood, about 0.5 km (0.3 mi) east. High-density residential areas are located 1.2 and 1.6 km (0.75 and 1 mi) east and southeast of the site in Hazelwood and Berkeley, respectively (ANL 1988).

The SLAPS is in the city of St. Louis north of the Lambert-St. Louis International Airport, 24 km (15 mi) northwest of downtown St. Louis (Fig. 15). Coldwater Creek borders the western end of the site. Land in the area of SLAPS is used for a combination of transportation, commercial, residential, and recreational purposes, or is vacant (ANL 1988).

2.7.2 Hydrology

The Hazelwood site is located within the Coldwater Creek drainage basin. Coldwater Creek is about 30 km (19 mi) long and drains a total area of about 118 km² (46 mi²). The ground surface at the Hazelwood site ranges from about 157 m (514 ft) MSL near Latty Avenue to about 165 m (540 ft) MSL at the top of the existing contaminated material pile (ANL 1988). The Hazelwood site slopes gently from the pile of contaminated material to the west and south towards Coldwater Creek at an elevation of about 152 m (500 ft) MSL. Stormwater runoff from the site flows north into a ditch along Latty Avenue and to the south and southwest into another ditch, both of which drain into Coldwater Creek (Fig. 16).

The SLAPS is also located on the eastern bank of Coldwater Creek upstream of the Hazelwood site. Coldwater Creek flows into the Missouri River about 24 km (15 mi)

FIGURE 15 Locations of the SLAPS and Hazelwood (Latty Avenue) Sites (Source: Adapted from Bechtel 1986b)

northeast of SLAPS. The surface of SLAPS is 4.5-6.0 m (15-20 ft) above Coldwater Creek and slopes from east to west at an average grade of 1%. The site surface is generally flat, but because the fill placed over the site in the early 1970s was not compacted and revegetated, differential settling and erosion have resulted in an irregular surface. Surface runoff from SLAPS is intercepted by drainage channels along the northern and southern boundaries of the site. These channels discharge into Coldwater Creek (R.F. Weston Inc. 1980) (Fig. 17).

Most of the wetlands that occurred in the St. Louis area have been drained for mosquito control, agricultural use, urban development, and flood control (Missouri Botanical Gardens 1975). Thus, few potential groundwater discharge areas occur near the sites, except for those associated with Coldwater Creek and its drainages.

The soils in the area consist of a veneer of alluvial deposits from the Mississippi and Missouri rivers -- about 1 m (3 ft) of dark silt loam and up to 3 m (10 ft) of wind-deposited silty fine sands and clays (loess) that are underlain by 11-26 m (35-84 ft) of lacustrine sediments. Beneath the lacustrine sediments, the bedrock consists of Pennsylvanian shales and sandstones and Mississippian limestone (Ford, Bacon & Davis Utah 1978).

FIGURE 16 Layout of the Hazelwood Site (Source: Modified from Boggs-Mayes and Yu 1989)

FIGURE 17 Layout of SLAPS (Source: Adapted from Boggs-Mayes and Yu 1989)

Groundwater occurs in the area largely in the unconsolidated deposits and to a much smaller extent in the bedrock. Water from bedrock aquifers is of poor quality. The unconsolidated aquifers are believed to be hydrologically isolated from the bedrock aquifers (Clark and Berven 1984; R.F. Weston Inc. 1982).

The unconsolidated deposits contain two distinct aquifer systems: a shallow unconfined aquifer and a deeper confined aquifer, separated by a clay zone of low permeability. A downward gradient across the clay has been observed (R.F. Weston Inc. 1982); however, because of limited information, the amount of hydrologic inter-connection between the two aquifers has not been accurately determined.

Groundwater elevation data show that the predominant direction of flow in both the confined and unconfined aquifers is to the west, with a lesser flow to the north. The upper aquifer is hydraulically connected to Coldwater Creek and, except during periods of flooding, discharges to the creek.

Groundwater at the two Missouri sites is considered vulnerable to potential contamination from the radioactive wastes at the sites.

2.7.3 Federally Listed Species and Managed Lands

The only federally listed species that may occur in the vicinity of the Hazelwood and St. Louis Airport sites is the bald eagle. Although the bald eagle has been observed in St. Louis County, most of these observations have been of migrating and wintering individuals along the Missouri River. Furthermore, there is no critical habitat for the bald eagle within a 3.2-km (2-mi) radius of either FUSRAP site (Tieger 1989). In Missouri, the bald eagle winters near large impoundments and along major rivers, with waterfowl management areas in the northern portion of the state providing important wintering habitat (Nordstrom et al. 1977). Such conditions do not occur in the immediate area of metropolitan St. Louis. Thus, no impacts to bald eagles would be anticipated from wastes currently contained at the sites or from any remedial activities conducted at the sites. No federal lands managed for ecological protection occur within a 3.2-km (2-mi) radius of the Hazelwood or St. Louis Airport sites.

3 CONCLUSIONS

Based on the above evaluations of information on the sites obtained from NEPA and other environmental documentation and information on endangered species and habitats obtained from the open literature, maps, and correspondence with the U.S. Fish and Wildlife Service, it is concluded that no ecologically vital groundwaters exist in the vicinity of any of the nine FUSRAP sites examined. It should be noted that the EPA groundwater classification guidelines have not been finalized. If the definition of ecologically vital groundwaters changes between the draft and final version, a reassessment of this conclusion might be necessary.

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APPENDIX:
LETTERS OF CONSULTATION

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United States Department of the Interior

FISH AND WILDLIFE SERVICE

P.O. Box 534
705 White Horse Pike
Absecon, New Jersey 08201
(609) 646-9310

March 30, 1989

Mr. William S. Vinikour
Energy and Environmental Systems Division
Argonne National Laboratory
9700 South Cass Avenue
Argonne, Illinois 60439

Dear Mr. Vinikour:

This letter is in response to your March 2, 1989 request to the Fish and Wildlife Service (Service) for information on the presence of federally listed endangered or threatened species within a two-mile radius of the following U.S. Department of Energy Formerly Utilized Site Remedial Action Program sites:

Wayne Interim Storage Site, Wayne, New Jersey;

Maywood Interim Storage Site, Maywood, New Jersey; and,

Middlesex Sampling Plant, Middlesex, New Jersey.

This response is provided pursuant to the Endangered Species Act of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.) to ensure the protection of endangered and threatened species and does not address other Service concerns for fish and wildlife resources.

Except for occasional transient species, no federally listed or proposed threatened or endangered flora or fauna are known to exist at either of these sites. Therefore, no further consultation pursuant to Section 7 of the Endangered Species Act is required with the Service. Should project plans change, additional information on listed or proposed species become available, or a significant period of time elapses before project implementation, this determination may be reconsidered.

Enclosed is a summary of federally listed and candidate species in New Jersey for your information. Candidate species are those species under consideration by the Service for possible inclusion on the List of Endangered and Threatened Wildlife and Plants. Although these species receive no substantive or procedural protection under the Endangered Species Act, the Service encourages

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the Department of Energy to consider these species in the project planning process. The New Jersey Natural Heritage Program provides the most up-to-date data source for candidate species in the State, as well as maintaining information on State listed species and may be contacted at the following address:

Mr. Thomas Breden
Natural Heritage Program
Division of Parks and Forestry
CN 404
Trenton, New Jersey 08625
(609/984-0097)

Further information on State listed species may be obtained from the following office:

Ms. JoAnn Frier-Murza
Endangered and Nongame Species Program
Division of Fish, Game and Wildlife
CN 400
Trenton, New Jersey 08625
(609/292-9101)

Information contained in this letter and additional information obtained from the aforementioned State sources represents the public interest for fish and wildlife resources and should warrant full consideration in the planning process. The Service requests that no part of this letter be taken out of context and if reproduced, the letter should appear in its entirety.

Please contact Lynn Wilson of my staff should you have any questions or require further assistance.

Sincerely,

Michael T. Chezik
Acting Supervisor

Enclosure

FEDERALLY ENDANGERED AND THREATENED SPECIES
IN NEW JERSEY

An endangered species is any species which is in danger of extinction throughout all or a significant portion of its range.

A threatened species is any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

<u>COMMON NAME</u>	<u>SCIENTIFIC NAME</u>	<u>STATUS</u>	<u>DISTRIBUTION</u>
<u>Fishes:</u>			
Sturgeon, shortnose*	<u>Acipenser brevirostrum</u>	E	Hudson, Delaware and Atlantic coastal rivers
<u>Reptiles:</u>			
Turtle, Atl. Ridley*	<u>Lepidochelys kempii</u>	E	Oceanic, summer resident coastal waters
Turtle, green*	<u>Chelonia mydas</u>	T	Oceanic, summer visitor coastal waters
Turtle, hawksbill*	<u>Eretmochelys imbricata</u>	E	Oceanic, summer visitor coastal waters
Turtle, leatherback*	<u>Dermochelys coriacea</u>	E	Oceanic, summer visitor coastal waters
Turtle, loggerhead*	<u>Caretta caretta</u>	T	Oceanic, summer resident coastal waters, rarely nests: Atlantic and Cape May Counties
<u>Birds:</u>			
Eagle, bald	<u>Haliaeetus leucocephalus</u>	E	Entire state
Falcon, Am. peregrine	<u>Falco peregrinus anatum</u>	E	Entire state, re-establishment to former breeding range in progress
Falcon, Artic peregrine	<u>Falco peregrinus tundrius</u>	T	Entire state migratory
Plover, piping	<u>Charadrius melodus</u>	T	Entire state
Tern, roseate	<u>Sterna dougallii dougallii</u>	E	Entire state

Mammals:

Cougar, eastern	<u>Felis concolor couguar</u>	E	Entire state, probably extinct
Whale, blue*	<u>Balaenoptera musculus</u>	E	Oceanic
Whale, finback*	<u>Balaenoptera physalus</u>	E	Oceanic
Whale, humpback*	<u>Megaptera novaeangliae</u>	E	Oceanic
Whale, right*	<u>Balaena glacialis</u>	E	Oceanic
Whale, sei*	<u>Balaenoptera borealis</u>	E	Oceanic
Whale, sperm*	<u>Physeter catodon</u>	E	Oceanic

Plants:

Pogonia, small whorled	<u>Isotria medeoloides</u>	E	Sussex County
Swamp pink	<u>Helonias bullata</u>	T	Atlantic, Burlington, Camden, Cape May, Cumberland, Gloucester, Middlesex, Mon- mouth, Morris, Ocean, and Salem Counties

E: endangered species

T: threatened species

* Except for sea turtle nesting habitat, principal responsibility for these species is vested with the National Marine Fisheries Service.

CANDIDATE SPECIES IN NEW JERSEY

Candidate species are species which appear to warrant consideration for addition to the List of Endangered and Threatened Wildlife. Although these species receive no substantive or procedural protection under the Endangered Species Act, the Service encourages federal agencies and other planners to give consideration to these species in the environmental planning process.

<u>COMMON NAME</u>	<u>SCIENTIFIC NAME</u>	<u>STATUS</u>
VERTEBRATES		
<u>Reptiles:</u>		
Turtle, bog	<u>Clemmys muhlenbergii</u>	2
Terrapin, northern diamondback	<u>Malaclemys terrapin terrapin</u>	2
Snake, northern pine	<u>Pituophis melanoleucas melanoleucas</u>	2
<u>Birds:</u>		
Shrike, migrant loggerhead	<u>Lanius ludovicianus migrans</u>	2
<u>Mammals:</u>		
Bat, eastern small-footed	<u>Myotis subulatus leibii</u>	2
Rabbit, New England cottontail	<u>Sylvilagus transitionalis</u>	2
Shrew, long-tailed	<u>Sorex dispar</u>	2
Shrew, tuckahoe masked	<u>Sorex cinereus nigriculus</u>	2
Woodrat, eastern	<u>Neotoma floridana magister</u>	2
INVERTEBRATES		
<u>Dragonflies and Damselflies:</u>		
Dragonfly, banded bog skimmer	<u>Williamsonia lintneri</u>	2
<u>Beetles:</u>		
beetle, northeastern beach tiger	<u>Cicindela dorsalis dorsalis</u>	1
beetle, cobblestone tiger	<u>Cicindela marginipennis</u>	2
<u>Butterflies and Moths:</u>		
butterfly, Mitchell satyr	<u>Neonympha mitchelli</u>	2
butterfly, regal fritillary	<u>Speyeria idalia</u>	2
butterfly, tawny crescent	<u>Phyciodes batesi</u>	2
moth, Albarufan dagger	<u>Acronicta albarufa</u>	2
moth, Bucholz' dart	<u>Agrotis bucholzi</u>	2
moth, Daecke's pyralid	<u>Crambus daeckeellus</u>	2*
moth, Hebard's noctuid	<u>Erythroecia hebardii</u>	2
moth, Lemmer's noctuid	<u>Lithophane lemmeri</u>	2
moth, precious underwing	<u>Catocala pretiosa</u>	2

Mussels:

Mussel, dwarf wedge	<u>Alasmidonta heterodon</u>	1
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Plants:

Beaked-rush, Knieskern's	<u>Rhynchospora knieskernii</u>	1
Bitter cress, Long's	<u>Cardamine longii</u>	2
Boneset, Pine Barrens	<u>Eupatorium resinosum</u>	2
Bulrush, Long's	<u>Scirpus longii</u>	2
Chaffseed	<u>Schwalbea americana</u>	2
Fern, Curly-grass	<u>Schizaea pusilla</u>	2
Grass, sand	<u>Calamovilfa brevipilis</u>	2
Jacob's ladder	<u>Polemonium vanbruntiae</u>	2
Joint-vetch, sensitive	<u>Aeschynomene virginica</u>	2
Lobelia, Boykin's	<u>Lobelia boykinii</u>	2
Micranthemum, Nuttall's	<u>Micranthemum micranthemoides</u>	1*
Morning-glory, Pickering's	<u>Stylisma pickeringii</u> var. <u>pickeringii</u>	2
Muhly, Torrey's	<u>Muhlenbergia torreyana</u>	1
Bog asphodel	<u>Narthecium americanum</u>	2
Panic grass, Hirst's	<u>Panicum hirstii</u>	2
Pigweed, sea-beach	<u>Amaranthus pumilus</u>	2
Pipewort, Parker's	<u>Eriocaulon parkeri</u>	2
Quillwort, Eaton's	<u>Isoetes eatonii</u>	2
Rush, New Jersey	<u>Juncus caesariensis</u>	2
Sedge, Barratt's	<u>Carex barrattii</u>	2
Sedge, variable	<u>Carex polymorpha</u>	2
Spurge, Darlington's	<u>Euphorbia purpurea</u>	2

STATUS:

1: Taxa for which the Service currently has substantial information to support the appropriateness of proposing to list the species as threatened or endangered. Development and publication of proposed rules on these species is anticipated.

2: Taxa for which information now in possession of the Service indicates that proposing to list the species as threatened or endangered is possibly appropriate, but for which conclusive data are not available to support proposed rules at this time.

*indicates those species for which there have been no authenticated records in New Jersey since 1963; some of these are possibly extinct, but further research is needed to determine their status with any confidence.

United States Department of the Interior

FISH AND WILDLIFE SERVICE

100 Grange Place
Room 202
Cortland, New York 13045

March 27, 1989

Mr. William S. Vinikour
Environmental Specialist
Energy & Environmental Systems Div.
Argonne National Laboratory
9700 S. Cass Ave.
Argonne, IL 60439

Dear Mr. Vinikour:

This responds to your March 2, 1989, letter requesting information on Federally listed or proposed endangered or threatened species in the vicinity of the following Department of Energy's Formerly Utilized Site Remedial Action Program sites located in New York:

1. Colonie Interim Storage Site, Albany County
2. Ashland 2, Erie County
3. Seaway Industrial Park, Erie County
4. Niagara Falls Storage Site, Niagara County

The bald eagle, Haliaeetus leucocephalus, and the peregrine falcon, Falco peregrinus, may occasionally transit these areas; other potential occurrences of Federally listed or proposed species within a two-mile radius of the sites are not anticipated. Additional information pertaining to historical records may be obtained by contacting the New York Natural Heritage Program, Wildlife Resources Center, Delmar, NY 12054, telephone 518-439-7488.

Except for occasional transient individuals, no Federally listed or proposed endangered or threatened species under our jurisdiction are known to exist in the project impact area. Therefore, no Biological Assessment or further Section 7 consultation under the Endangered Species Act (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.) is required with the Fish and Wildlife Service. Should project plans change, or if additional information on listed or proposed species becomes available, this determination may be reconsidered. A compilation of Federally listed and proposed endangered and threatened species in New York is enclosed for your information.

This response relates only to endangered species under our jurisdiction. It does not address other Fish and Wildlife Service concerns under the Fish and Wildlife Coordination Act or other legislation.

Please contact Mark Clough of my staff at 607-753-9334 if we can be of further assistance.

Sincerely,

William H. Gill

ACTING FOR

Leonard P. Corin

Field Supervisor

cc:

NYSDEC, Albany; Buffalo; Olean; Stamford

EPA, NY, NY

EPA, Chief, Marine & Wetlands Protection Br., NY, NY

FEDERALLY LISTED AND PROPOSED ENDANGERED AND THREATENED SPECIES
IN NEW YORK

Common Name	Scientific Name	Status	Distribution
<u>FISHES</u>			
Sturgeon, shortnose*	<u>Acipenser brevirostrum</u>	E	Hudson River & other Atlantic coastal rivers
<u>REPTILES</u>			
Turtle, green*	<u>Chelonia mydas</u>	T	Oceanic summer visitor coastal waters
Turtle, hawksbill*	<u>Eretmochelys imbricata</u>	E	Oceanic summer visitor coastal waters
Turtle, leatherback*	<u>Dermochelys coriacea</u>	E	Oceanic summer resident coastal waters
Turtle, loggerhead*	<u>Caretta caretta</u>	T	Oceanic summer resident coastal waters
Turtle, Atlantic ridley*	<u>Lepidochelys kempi</u>	E	Oceanic summer resident coastal waters
<u>BIRDS</u>			
Eagle, bald	<u>Haliaeetus leucocephalus</u>	E	Entire state
Falcon, peregrine	<u>Falco peregrinus</u>	E	Entire state - re- establishment to former breeding range in progress
Plover, piping	<u>Charadrius melodus</u>	E	Great Lakes Watershed
		T	Remainder of coastal New York
Tern, roseate	<u>Sterna dougallii dougallii</u>	E	Southeastern coastal portions of state
<u>MAMMALS</u>			
Bat, Indiana	<u>Myotis sodalis</u>	E	Entire state
Cougar, eastern	<u>Felis concolor cougar</u>	E	Entire state - probably extinct
Whale, blue*	<u>Balaenoptera musculus</u>	E	Oceanic
Whale, finback*	<u>Balaenoptera physalus</u>	E	Oceanic
Whale, humpback*	<u>Megaptera novaeangliae</u>	E	Oceanic
Whale, right*	<u>Eubalaena glacialis</u>	E	Oceanic
Whale, sei*	<u>Balaenoptera borealis</u>	E	Oceanic
Whale, sperm*	<u>Physeter catodon</u>	E	Oceanic

* Except for sea turtle nesting habitat, principal responsibility for these species is vested with the National Marine Fisheries Service.

FEDERALLY LISTED AND PROPOSED ENDANGERED AND THREATENED SPECIES
IN NEW YORK (Cont'd)

Common Name	Scientific Name	Status	Distribution
<u>MOLLUSKS</u>			
Snail, Chittenango ovate amber	<u>Succinea</u> <u>chittenangoensis</u>	T	Madison County
<u>PLANTS</u>			
Monkshood, northern wild	<u>Aconitum</u> <u>noveboracense</u>	T	Ulster County
Pogonia, small whorled	<u>Isotria</u> <u>medeoloides</u>	E	Entire state
Swamp pink	<u>Helonias</u> <u>bullata</u>	T	Staten Island - presumed extirpated
Gerardia, sandplain	<u>Agalinis</u> <u>acuta</u>	E	Nassau and Suffolk Counties
Fern, American hart's-tongue	<u>Phyllitis</u> <u>scolopendrium</u> var. <u>americana</u>	Proposed T	Onondaga and Madison Counties
Orchid, eastern prairie fringed	<u>Platanthera</u> <u>leucophea</u>	Proposed T	Not relocated in New York

IN REPLY REFER TO:

United States Department of the Interior

FISH AND WILDLIFE SERVICE

COLUMBIA FIELD OFFICE (ES)

P.O. Box 1508

Columbia, Missouri 65205

April 28, 1989

Mr. Bill Vinikour
 Environmental Scientist
 Energy and Environmental Systems Division
 Argonne National Laboratory
 9700 South Cass Avenue
 Argonne, Illinois 60439

Dear Mr. Vinikour:

This letter is in reference to the Department of Energy's groundwater study of Formerly Utilized Site Remedial Action Program (FUSRAP) sites located at the St. Louis Airport and Latty Avenue in Hazelwood, St. Louis County, Missouri. This letter provides comment only on the endangered species aspect of the project. Comments on other aspects of the project under the authority of the provisions of the Fish and Wildlife Coordination Act (16 U.S.C. 661 et. Seq.) will be sent under separate cover.

Endangered Species Comments

Under Section 7(c) of the Endangered Species Act, Federal agencies are required to obtain from the Fish and Wildlife Service information concerning any species, listed or proposed to be listed, which may be present in the area of a proposed action. Therefore, we are providing you with the following list of species which may be present in the concerned area:

Endangered

Bald eagle

(Haliaeetus leucocephalus)

There is no designated critical habitat in the project area.

The bald eagle has been sighted in St. Louis County. However, most of these were migrating and wintering along the Missouri River. Therefore, the project will not affect the bald eagle.

If you have any questions regarding this response or if we can be of any further assistance, please contact Dr. Mamie A. Parker, Columbia Field Office, P.O. Box 1506, Columbia, Missouri 65205 (314)875-5374 or (FTS)276-5374.

Sincerely yours,

A handwritten signature in cursive script that reads "Joe Tieger".

Joe Tieger
Field Supervisor

MAP:mb:wp:1130SLDOEIXA