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NSWC WHITE OAK
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ENGINEERING SAFETY AND ENVIRONMENTAL RISK ASSESSMENT AND MANAGEMENT
PLAN VOLUME 2 OF 4 NSWC WHITE OAK MD
7/31/1991
EVENTS ANALYSIS, INC.

**NAVAL SURFACE WARFARE CENTER
WHITE OAK
ENGINEERING SAFETY AND ENVIRONMENTAL
RISK ASSESSMENT AND MANAGEMENT PLAN
VOLUME II**

**WHITE OAK
ENGINEERING ENVIRONMENTAL ASSESSMENT**

**PREPARED FOR
NAVAL SURFACE WARFARE CENTER**

**Contract N60921-88-D-0007
Delivery Order 0010**

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9064

July 31, 1991

This is Volume II of a 4-Volume report describing work performed on
Contract N60921-88-D-0007, Delivery Order 0010
BY EVENTS ANALYSIS, INC.

NAVAL SURFACE WARFARE CENTER
WHITE OAK

ENGINEERING SAFETY AND ENVIRONMENTAL
RISK ASSESSMENT AND MANAGEMENT PLAN

VOLUME II BASELINE ENGINEERING ENVIRONMENTAL ASSESSMENT

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1. PURPOSE OF AND NEED FOR ACTION

1.1. Background

This section reports the results of the engineering environmental assessment effort, designed to provide a baseline record of the current and ongoing operations at NAVSWC White Oak. While the document follows the format of an Environmental Assessment, there is no requirement, in the spirit of the National Environmental Policy Act, or OPNAVINST 5090.1A, for this assessment.

Generally, operations at White Oak represent a broad range of activities which focus on the many elements involved in the development of weapons systems for use by the U.S. Navy. Activities at White Oak range from pure explosives chemical research and development, explosives property characterization, and packaging to target sensing, acquisition, tracking and identification technologies. This broad array of research activity has resulted in the assemblage of a set of diverse and specialized facilities which provides the Navy with broad research and development capabilities in virtually all aspects of weapon systems development.

This study is designed to examine the activity ongoing at White Oak in the context of the individual facilities as they interface with:

- Other Center research facility activities
- Center environmental concerns
- Off-Center and surrounding community environments.

1.2. Decision Needed

This study is driven by the need for baseline information rather than the contemplation of any fundamental changes in the operational practices at White Oak. Accordingly, the decisions needed are based on the concern to maintain a strong pro-active environmental management program. In this respect, the decisions are simply either to maintain operations as they currently exist or to modify ongoing center operations to ensure a continued high level of safety and environmental performance.

1.3. Scoping the Issues of Concern

The scoping process used to identify the issues of concern involved the identification, consultation, and examination of a variety of NAVSWC White Oak information resources. Coupled with an intensive ground survey of White Oak activities and facilities, issues were identified which focused on safety, environmental compliance, and environmental stewardship. These issues were distilled into 3 general themes:

- Safety and environmental impact of facilities on environments within the White Oak property.

- Safety and environmental impact of facilities beyond the White Oak property.

- Safety and environmental impact of facilities on other White Oak facilities

2. ALTERNATIVES INCLUDING THE PROPOSED ACTION

2.1. Introduction

Alternatives for action under consideration relate to current NAVSWC White Oak operations and their impacts on the surrounding environment. The alternatives identified under this effort are limited to two basic courses of action. The first is to continue current operations without change and the second is to modify ongoing operations as needed to reduce their environmental impacts as necessary. Under the either alternative, the significance of a given impact is measured in the context of mission requirements, nature of the impact, and perceived environmental risk. Since this value judgement is critical to the change process, the criteria for initiating change will necessarily be linked to the perceptions of those responsible for the change process. In this context, the guidance for identifying change priorities is derived from OPNAVINST 5090.1A. As the principal document for directing Navy environmental policy, this instruction identifies requirements and general philosophical attitudes associated with Navy environmental management. In terms of priorities, certainly regulatory compliance issues have and will continue to drive changes at the highest priority level. First and foremost, guidance given in OPNAVINST 5090.1A, requires, in philosophy and in direction, maximum compliance with current regulatory programs. Exceptions to full compliance are possible under certain circumstances but as stated in 5090.1A, "...such exemptions are extremely rare and will be sought only as a last resort and only with the approval of OP-4."

2.2. Alternatives Including the Proposed Action

Given the evaluative nature of this assessment, there is only one alternative under consideration. That is, to modify center operations, as necessary to limit environmental impacts. In this regard, this study serves to document the environmental relationships of present and past activities, and their impacts on the surrounding environment.

3. AFFECTED ENVIRONMENT

3.1. Introduction

NAVSWC White Oak is located in a generally urban setting along the outskirts of Washington D.C. Historically the area was agricultural prior to the purchase of the site by the U.S. Navy. Like most of suburban Washington, the White Oak area has seen almost explosive development over the last 20 years.

3.2. Project Area Description

NAVSWC White Oak, figure 1, is located approximately 4 miles north of Washington DC in Southern Maryland. The majority of the center lies within the boundaries of Montgomery County with the southeastern corner of the center located in the adjacent Prince Georges County. Generally, the center is surrounded by a variety of residential and light commercial activities ranging from single family dwellings on 1/3 to 1/2 acre plots to multi unit apartment buildings located near the northern boundary of the center. New construction continues in the area particularly in the vicinity of the northern boundary of the center. NAVSWC White Oak currently occupies approximately 734 acres. The center is situated in the piedmont area and ranges from 350 feet MSL to 150 feet MSL in elevation. Two streams are located in the area, Paint Branch Creek and an unnamed tributary. Paint Branch Creek nearly bisects the center and its tributary lies to the east.

NAVSWC White Oak is a naval research center for the development of a variety of ordnance and weapon system components. Activities range from pure research and development of energetic material compositions to the design and testing of weapon and device configurations. Research activities include the chemistry of energetic materials, material characterization studies, detonation physics, plastics and polymer development and light manufacturing, metals research and prototyping, ceramics

research, hydroballistics research, component survivability, scale-up manufacturing, and a variety of other activities. Explosives testing in the open environment no longer occurs at White Oak and any detonations or deflagrations are now conducted in totally enclosed facilities or Bomb-Proofs. Because of the nature of the explosives research conducted at White Oak, much of the center is composed of forested areas and open fields. Buildings and structures are predominantly concentrated at the western and eastern ends of the center. The entire facility is surrounded by chain link fence and compared to the development which has occurred beyond the fence line, the center is fast becoming an island of wildlife habitat in an urban setting.

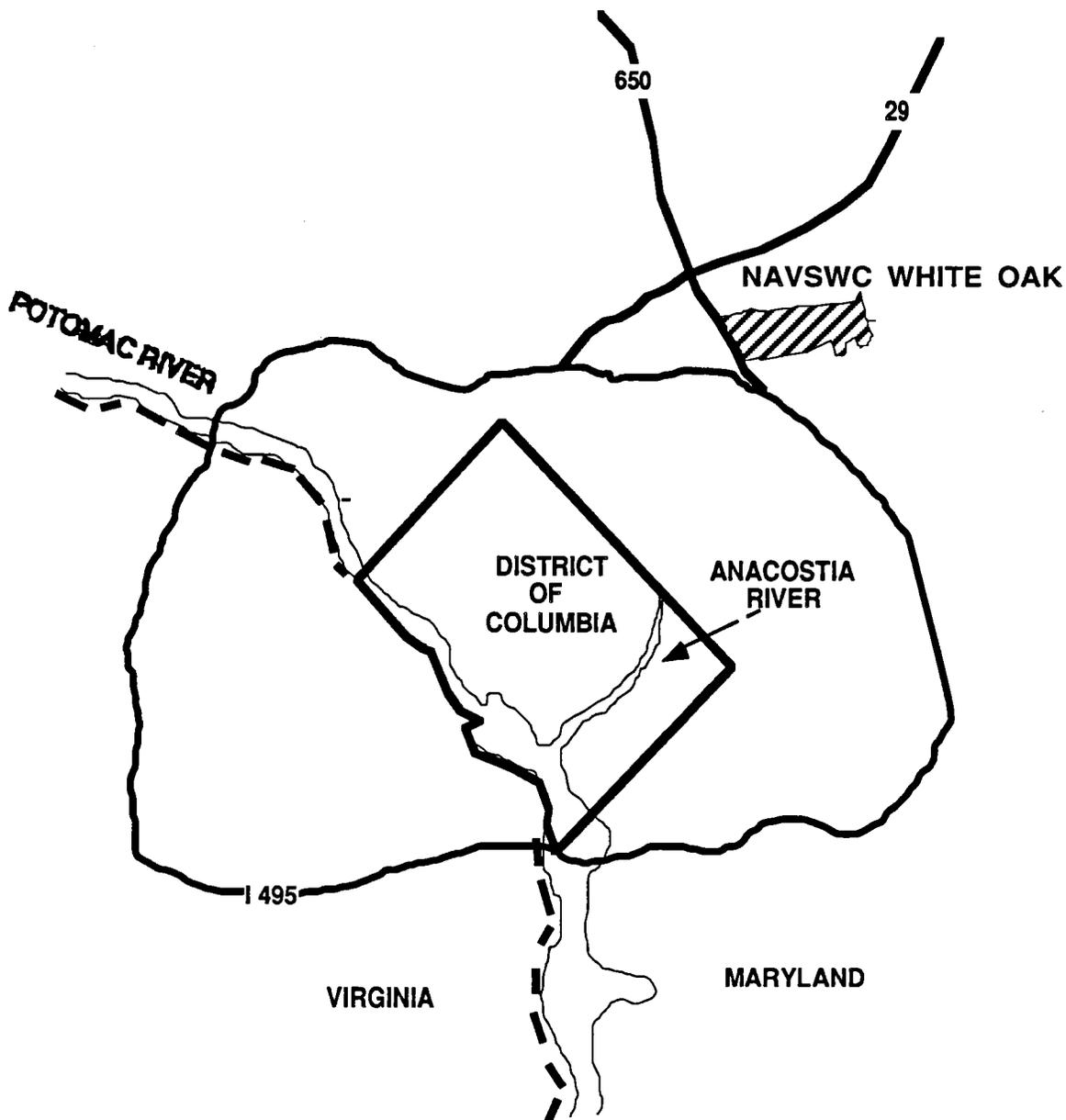


FIGURE 1 GENERAL VICINITY MAP

3.3. History

Historically, NAVSWC White Oak has been a center for naval weapons research activity since 1944. The site was acquired during World War II in response to the dramatic growth experienced by the Bureau of Ordnance, Naval Ordnance Laboratory (NOL) at the Washington Navy Yard. During this time, eight hundred and sixty nine acres were purchased and placed under the command of the Naval Ordnance Laboratory which maintained their command headquarters at the Washington Navy Yard.

The period from 1942 to 1949 saw the rapid growth and evolution of the Naval Ordnance laboratory. In 1942, NOL was formally established as a separate department of the Washington Navy yard and absorbed the functions of the Naval Gun Factory. In 1945, NOL received its first formal mission statement which was to carry out research and development in fire control; demolitions; guns and accessories;; explosives, including nuclear; projectiles; propellants; ammunition and components; guided missiles; mines; depth charges; torpedo nets; degaussing facilities;; and such other weapons or devices as any from time to time be assigned.

Immediately after World War II, in 1948, the NOL command and administration functions were moved to White Oak. During this time, White Oak also received two wind tunnels used by Nazi Germany in their V-2 rocket program. By 1949, NOL had grown to a staff of about 2300 civilian and military personnel.

Staffing continued to increase and reached a level of 2900 by 1951. This time frame also saw a much increased involvement on the part of NOL in the nuclear weapons program. In 1959, with the dissolution of the Bureau of Ordnance, NOL was placed within the Bureau of Naval Weapons. Later in 1966, NOL was removed from the Bureau and placed under the command of the Chief of Naval Material (CNM).

By 1965, several major research program areas were firmly established at NOL. These included torpedo counter-counter measures, nuclear warfare, small craft armament, swimmer weapons, and airborne submarine classification systems. In 1969, NOL was assigned the role of lead laboratory for nuclear warfare program, less warheads and propulsion.

NOL was consolidated with the Naval Weapons Laboratory, Dahlgren in 1974. In that year NOL became the Naval Surface Weapons Center, White Oak. At that time the center became the Navy's principal research, development, test and evaluation facility for surface warfare weapon systems, ordnance technology, and strategic systems support.

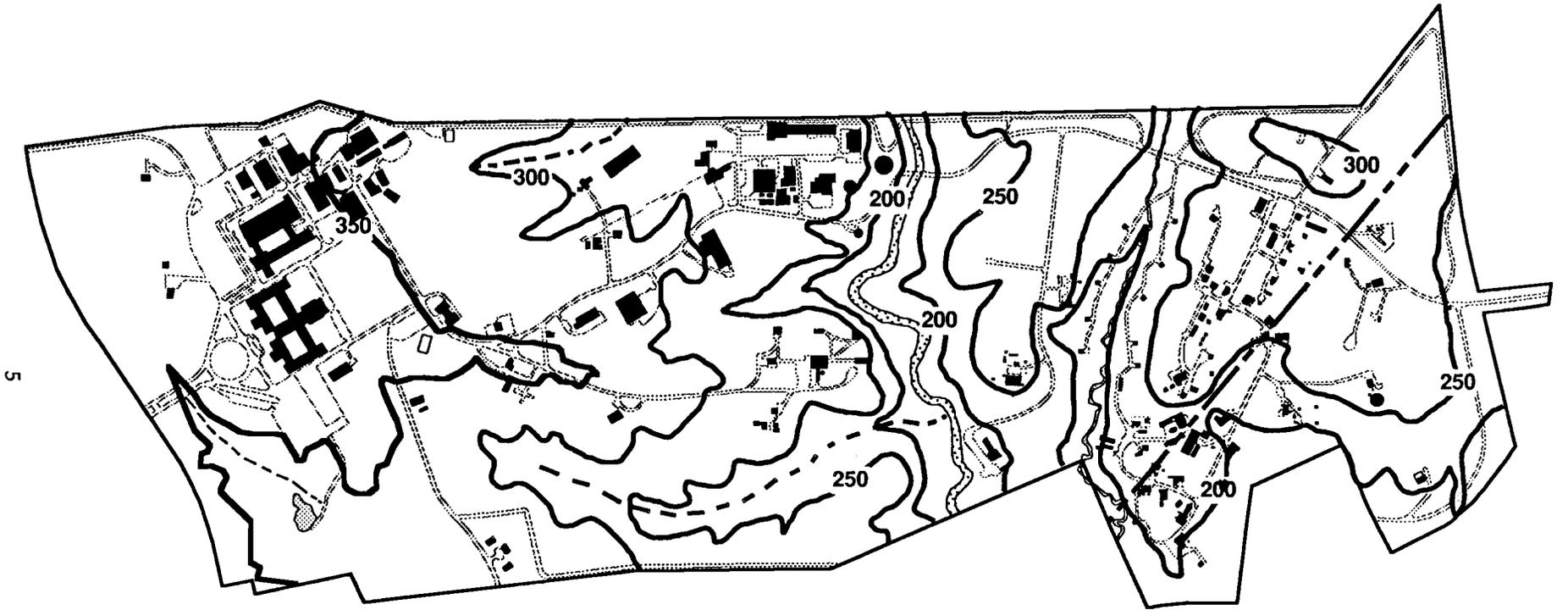
4. PHYSICAL ATTRIBUTES

4.1. Surface topography

NAVSWC White Oak, figure 2, lies on the fall line which is an area which generally defines the zone of contact between the piedmont and coastal plain physiogeographic provinces. This area is characterized by a rolling topography and, on White Oak, is divided in a north south fashion by 2 deep stream cuts. These are Paint Branch Creek and its tributary. Elevations range from 390 feet MSL in the northwestern corner of the facility to approximately 150 feet MSL at the bottom of the Paint Branch Creek stream cut. Generally the elevations of the facility range from 350 to 200 feet MSL.

Except in the vicinity of the stream cuts, the surface drainages generally tend from the northwestern corner of the facility to the southeastern corner. Slopes along the stream areas may achieve as much as a 20% grade in places.

Surface drainages generally tend from the northwestern portion of the facility to the southeastern portion. Interrupting this flow are 2 major streams, Paint Branch and its tributary, running north-south



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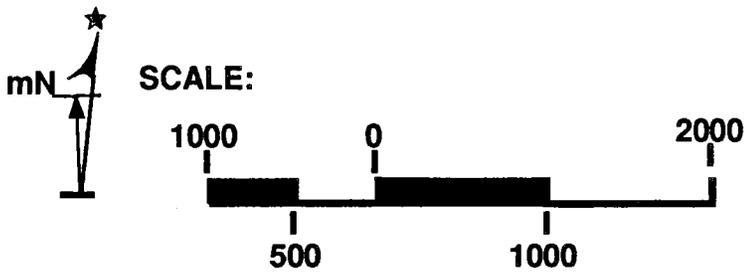


Figure 2
Generalized Surface Contours
NAVSWC White Oak

and several intermittent drainages which also feed into the Paint Branch Creek. Specifically, the surface runoff characteristics of the facility are such that all runoff eventually ends up in Paint Branch Creek. Drainages in the northwestern section of the facility tend toward the southwest where they are intercepted by a intermittent tributary and carried to Paint Branch. Southwestern sections of the facility tend to the east and north east into the same tributary. Eastern sections of the facility tend to drain in a north-south fashion where the either intercept Paint Branch Creek directly or its major tributary.

The surficial Geology of the area is typical for the region. Straddling the fall line, the surface soils are composed of deposits which in the piedmont are generally of terrestrial origin and in the coastal plain, a more recent marine origin. Piedmont deposits are mainly composed of weathered sedimentary and metamorphic rock, (saprolite) which derives from rock units of Precambrian or Ordovician age. These deposits are underlain by by gneiss and schist bedrock formations which were strongly folded and deformed during the Allegheny Orogeny ending in the late permian. Dipping to the east, at approximately 125 feet per mile, these formations lie below the coastal plain province where they are overburdened by marine sediments ranging from a few feet in thickness near the piedmont province to several thousand feet along the eastern coastal margin. These coastal sediments are of a more recent origin with deposition occurring as late as late tertiary, along the more western margins of the coastal plain province, and ongoing deposition occurring along the coastal edges of the province. Local to White Oak, the piedmont is marked by numerous outcrops of highly fractured bedrock formations consisting of gneiss and schists of the Wissahickon group.

Surface soils occurring on White Oak fall mainly into two groups. These are the Wissahickon Saprolite and Upland Sands and Gravels of tertiary origin. Along the stream margins, principally along Paint Branch Creek, and its tributary, exposed rock facies of the Wissahickon formation are the principal surface feature. The depth of these layers varies with the local terrain and proximity to the stream cuts, however, in general, the tertiary sands and gravels represent the upper most strata ranging from 1 or 2 feet to up to 40 feet in thickness. Below this strata lies the Wissahickon Saprolite which typically ranges around 50 to 70 feet thick. Finally, below the saprolite lies the Wissahickon gneiss rock facies. This formation is highly fractured and and may range in thickness up to 15,000 feet.

4.2. Hydrogeological features

The Groundwater (piezometric) surface at NAVSWC White Oak generally occurs the saprolytic and sand gravel strata overlying the bedrock facies. Typically, the piezometric surface follows the surface topography, as shown in figure 3, and generally lies approximately 16 feet below the topographic land surface. Locally, this can deviate as much as 40 feet depending on conditions in the immediate area. Ground water flows tend in a west to east direction which follows the general contour of the White Oak site. In this manner, groundwater flows are interrupted by the deep topographic incision created by the Paint Branch Creek and its tributary. In the vicinity of these streams, the ground water discharges to the streams directly or via seeps, springs or rills. Ground water penetrating the sedimentary facies into the bedrock formation is expected to behave differently as the primary means of distribution will occur not through porous strata but through the abundant rock fractures. Form the uppermost levels of the gneiss, the fracturing and subsequent groundwater infiltration is abundant. As the depth increases to the 300 to 400 foot level, less fracturing occurs and the formation can act as a confining layer. Since the geology of the area is composed of porous layers over the bedrock formation, no classical confining layers exist to create a confined aquifer. As a result, the groundwater system exists as an unconfined aquifer and recharge of the ground water is expected to occur throughout the area except in the stream cut areas where discharge occurs. Locally occurring clay lenses from time to time, capture rainwater infiltrate allowing the presence of ground water nearer the surface above the level of the aquifer. This perched water table is limited in distribution and often dependent on seasonal rainfall.

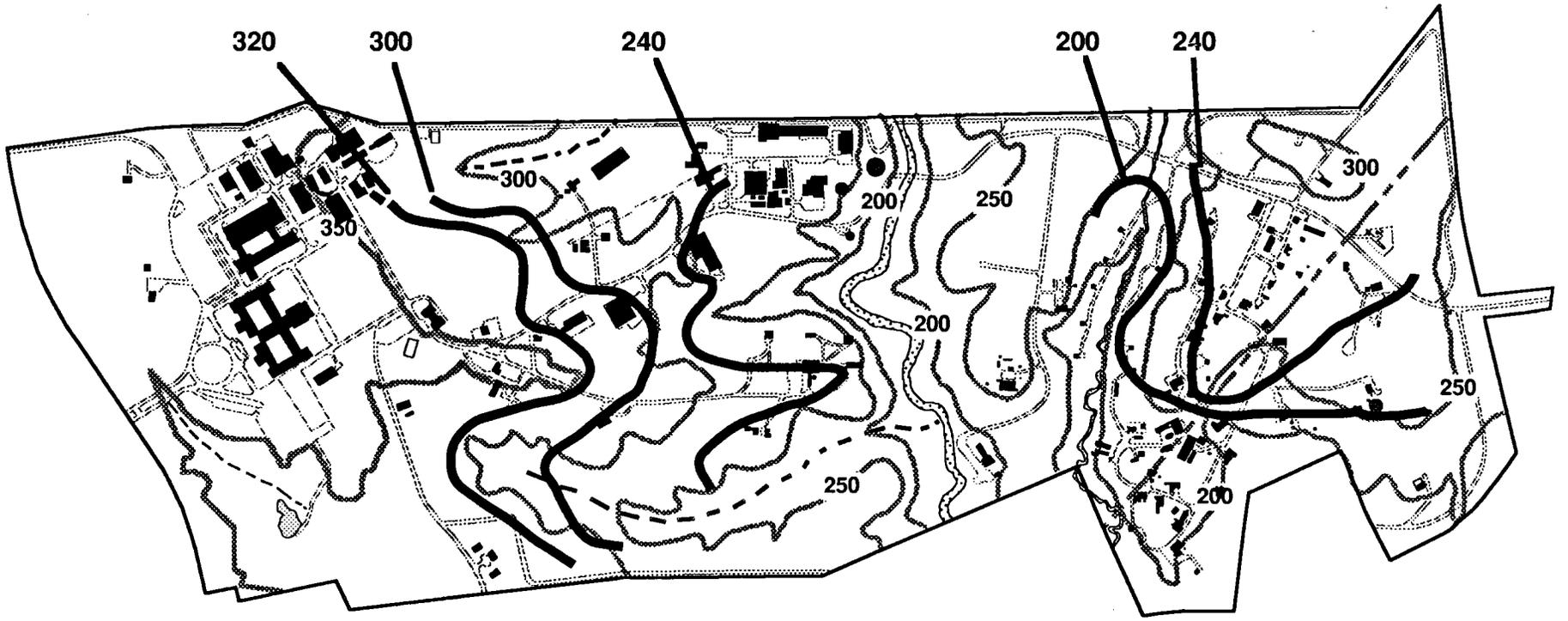


Figure 3
 Generalized Piezometric
 Surface Contours
 NAVSWC White Oak

5. BIOLOGICAL FEATURES

Generally, White Oak is composed of a variety of habitats including forest, open field, old field, and swamp areas. Disturbance has created gaps in the forest and around the developed sites, particularly along the western half of the center, large areas of grass lawn are maintained. This includes a large expanse dedicated to the centers golf course. Historically, the area was and still is dominated by the Oak Hickory forest type. This is typical of the piedmont areas in the region. Locally the area is not considered biologically unique, however, with the intense development occurring around the center and considering the developmental trends common to the east coast U.S., this type of habitat is gradually being replaced as construction claims more of the regions piedmont areas.

5.1. Vegetative Communities

NAVSWC White Oak supports several vegetative communities which include the Oak-Hickory forest, Pine forest, Open Field, Old Field, and Wetland associations. While a diverse collection of vegetative community types, the area is largely fragmented and generally disturbed. At one time or another, the entire area has been timbered and prior to its purchase by the Navy, landuse at White Oak was generally agricultural. As shown in figure 4, the major forest types predominantly occupy the eastern segments of the center.

As with most military installations, the centers activities require the maintaince of undeveloped areas as a safety zone or buffer for the activities conducted at White Oak. This need has preserved much of the forest habitat located in the southern and western segments of the base.

5.2. Habitat types

5.2.1. Oak - Hickory Forest

On NAVSWC White Oak, the oak-hickory forest is the dominant forest type. The canopy layer is composed of generally of nut producing trees which include a variety of oaks including White Oak (*Quercus*), Hickory (*Carya*), Beech (*Fagus grandifolia*), Tulip Poplar (*Liriodendron tulipifera*), Red Maple (*Acer rubrum*), Sweet Gum (*Liquidambar strraciflua*), Yellow Poplar (*Liriodendron tulipifera*), and others.

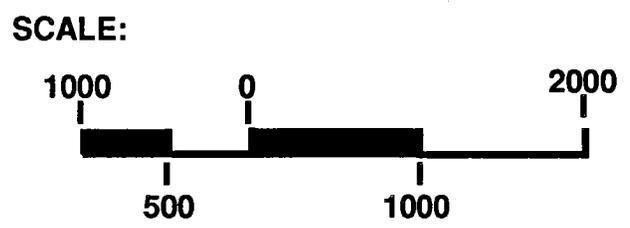
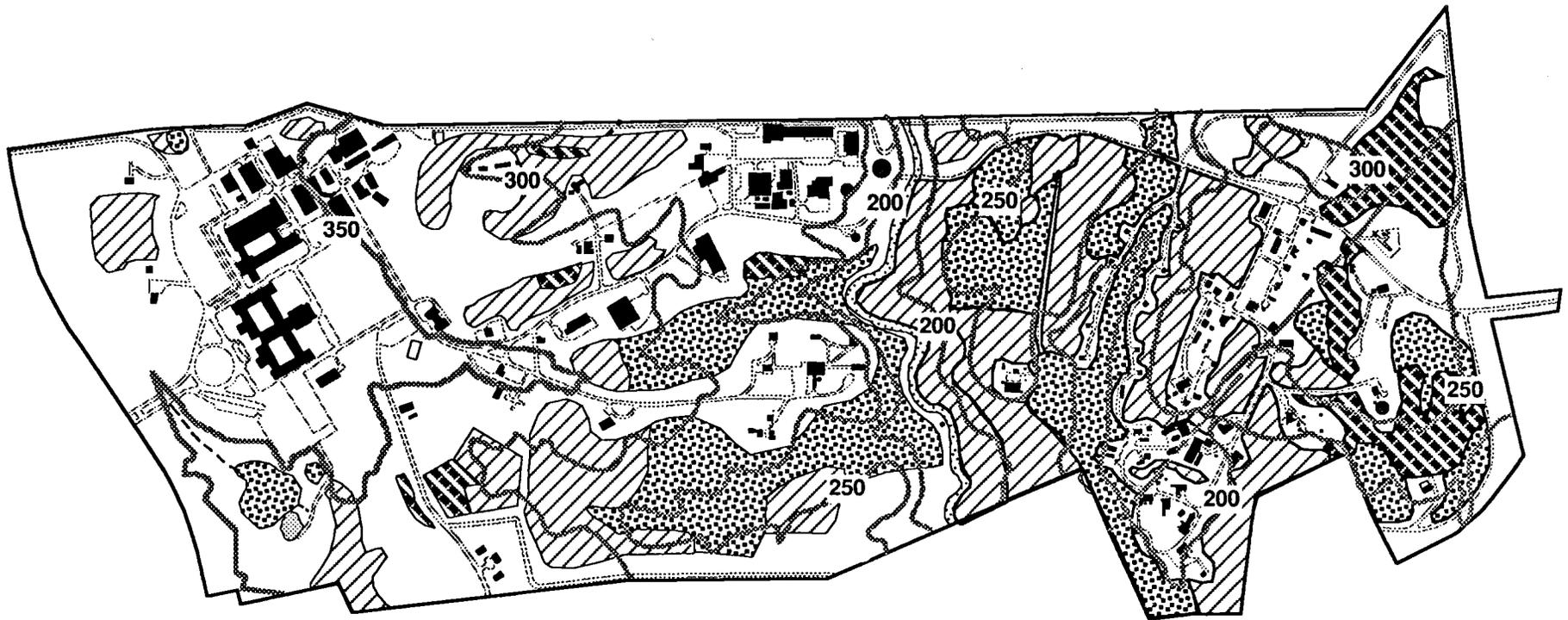
The next level is the understory which is typically composed of dogwood, sassafras, and American chestnut. This forest type is generally found along the eastern half of the center and is relatively continuous in the stream valleys created by Paint Branch creek and its major tributary.

5.2.2. Pine Forest

The pine forest on white oak is fragmented and composed of four stands located along the north eastern and southeastern margins of the center. These stands are mixed pine, predominantly Scrub pine (*Pinus virginiana*) with some Loblolly pine (*Pinus taeda*) mixed in. with a successional

5.2.3. Open Field Community

The open field communities at White Oak are generally maintained, grass areas in association with the laboratory and headquarters structures at the western end of the center. The golf course lies at the extreme western boundary. These areas are mowed regularly and maintained as lawn grasses. Succession at the margins of these areas adjacent to the wooded areas is occurring naturally and forest areas adjacent to these open spaces respond with understory structures typical of the forest lights created by the fields. These margins are typically productive in a variety of plant species and vinaceous hedges created by black berry (*Rubus*), Trumpet vine (*Campsis radicans*), virginia creeper



LEGEND:

-  PINE
-  OAK
-  YELLOW POPLAR

FIGURE 4
MAJOR FOREST TYPES
NAVSWC WHITE OAK

(*Parthenocissus quinquefolia*), wild grape (*Vitis*), and honeysuckle (*Lonicera*). This transitional band is particularly productive in terms of food plants and cover.

5.2.4. Old Field Community

Old field communities are those allowed to transition through natural succession. At White Oak, these areas are usually abandoned fields or cleared areas which are no longer used in the conduct of business at White Oak. Typically, these areas were maintained grass areas where structures or test sites were located. No longer needed, these areas were no longer maintained and allowed to grow. Old fields consist of a variety of tall grasses and herbaceous species. Allowed to progress, these areas will eventually develop into successional forest areas.

5.2.5. Wetlands

Wetlands occurring on the center are generally found in the vicinity of Paint Branch Creek. The creek itself, a drainage tributary to the Potomac River system, receives runoff from virtually all segments of the center. Marsh areas are located along the creek, particularly in the vicinity of Monroe Loop. Plant species typical of these areas are numerous but are represented by cattails (*Typha*), rushes, sedges (*Cyperaceae*), and other marsh grasses. Areas of this type are typically wet year round drying only in periods of severe drought. They are subject to periodic flooding in periods of heavy precipitation and serve as a runoff trap for infiltrates from the surrounding areas as well as nutrient traps in support of stream side life.

5.3. FAUNAL ASSOCIATIONS

5.3.1. General

The faunal associations at NAVSWC White Oak are diverse and reflective of the variety of fragmented habitats present on the center. All species which range in the region are expected to occur at white Oak except where habitat type or level of disturbance would account for the exclusion of a given species.

Birds, shown in Table 1 potentially represent the greatest diversity of all the vertebrate species, herpetofauna (Table 2) second, and mammals (Table 3) in terms of species diversity are, as expected, third. No federally endangered species are known from or expected to occur on the center.

5.3.2. Birds

Since birds are much more mobile than any of the other vertebrate fauna, the species expected to occur at White Oak (Table 1) includes, occasionals, winter species (**WI**), summer species (**SU**) (nesting birds) , fall/spring migrants(**SP/FA**) and year round residents (**YR**). This includes the majority of species found along the east coast save for those species dependent on mountain or coastal salt marsh environments. Of particular interest, from an ecological perspective are those species expected to be dependent on the habitat offered at White Oak for nesting (breeding) and winter residence.

5.3.3. Reptiles and Amphibians

Herpetofauna, composed of turtles, lizards, snakes, frogs, and salamanders are usually much less mobile. They are generally dependent on the locality year round and over winter either in hibernation or torpor. Species expected to occur at White Oak are not unusual for the region and listed in table 2.

5.3.4. Mammals

Mammalian species found or expected at White Oak are also representative of the piedmont region. Carnivours are probably the least likely to occur in significant numbers owing to the availability and fragmented nature of the available habitat. Furthermore, given the history of mans activities in the region, carnivores were generally the first to be extirpated. Top carnivores occurring on the center are probably best represented by feral and free ranging cats from the surrounding community. Feral and free ranging dogs have also been noted in the past. Foxes and Raccoons are also probably well represented as they are relatively opportunistic and function fairly well in the presence of mans activities. Bats are often overlooked and poorly characterized for the area. Several species are possible and likely for the White Oak area and are listed in table 3. Most of the bat species are migratory and present in numbers during the spring, summer, and fall seasons. As all bats in the eastern U.S. are insectivorous they are highly susceptible to pest control measures particularly involving insecticides which are passed through the food chain as well as measures which serve to reduce the general insect (food) population. Small mammals in the area are typical for the piedmont region and are represented by an assortment of insectivores (moles and shrews), Microtines (voles), and Cricetids (field mice). There is a remote possibility for the occurrence of weasels in the area however given the disturbed nature of the area their presence is unlikely and certainly not in abundance.

Two mammal species which are found on the center are showing signs of stress given the confined nature of the habitat. The White-tailed Deer (*Odocoileus virginian*) is represented by a small (greater than 20) population. Individuals observed casually, appear somewhat malnourished and high brows levels observed in the fall of 1990 indicate a general lack of appropriate food material. Since these comments are based on casual observations, they are only suggestive of a potential herd management problem.

Gray squirrels (*Sciurus carolinensis*) are abundant throughout the center and give every indication of a captive inbred population. Melanism (black pelage) occurs with an apparent high frequency. Since the trait is recessive and relatively rare unconfined populations, the frequency of this trait occurring at the center suggests that the breeding population is limited and stagnant. Albinism and partial albinism have also been reported in the population. Both the deer and squirrels should be examined in greater detail as these observations suggest the need for additional information. This particularly in light of the spread of Lyme disease throughout the region as closely kept populations tend to loose their vigor and are generally more susceptible to disease and parasitic infestations

TABLE 2
REPTILES AND AMPHIBIANS POSSIBLY OCCURRING AT NAVSWC WHITEOAK

COMMON NAME	TECHNICAL NAME	OCCURS	STATUS	FAMILY
Coopers Hawk	<i>Accipiter cooperi</i>			yes
Sharp-shinned Hawk	<i>Accipiter striatus</i>			yes
Rough-legged Hawk	<i>Buteo lagopus</i>	yes		
Red-tailed Hawk	<i>Buteo jamaicensis</i>			yes
Red-shouldered Hawk	<i>Buteo lineatus</i>			yes
Broad-winged Hawk	<i>Buteo platypterus</i>	yes		
Golden Eagle	<i>Aquila chrysaetos</i>	yes		
Bald Eagle	<i>Haliaeetus leucocephalus</i>	yes	yes	yes
Osprey	<i>Pandion haliaetus</i>			
Peregrine Falcon	<i>Falco peregrinus</i>	yes		
Pigeon Hawk	<i>Falco columbarius</i>	yes	yes	yes
Sparrow Hawk	<i>Falco sparverius</i>			yes
Turkey	<i>Meleagris gallopavo</i>	NL		yes
Ruffed Grouse	<i>Bonasa umbellus</i>	NL		yes
Bobwhite Quail	<i>Colinus virginianus</i>			yes
Common Egret	<i>Casmerodius albus</i>			yes
Snowy Egret	<i>Leucophoyx thula</i>	yes		
Cattle Egret	<i>Bubulcus Ibis</i>		yes	yes
Great Blue Heron	<i>Ardea herodias</i>			yes
Little Blue Heron	<i>Florida caerulea</i>	yes		
Green Heron	<i>Butorides virescens</i>	yes		
Black-crowned Night Heron	<i>Nycticorax nycticorax</i>			yes
Yellow-crowned Night Heron	<i>Nyctanassa violacea</i>	yes		
American Bittern	<i>Botaurus lentiginosus</i>			yes
Least Bittern	<i>Ixobrychus exilis</i>	yes		
Common Gallinule	<i>Gallinua chloropus</i>	yes		
American Coot	<i>Fulica americana</i>	yes	yes	yes
Killdeer	<i>Charadrius vociferus</i>			yes
Solitary Sandpiper	<i>Tringa solitaria</i>		yes	yes
Spotted Sandpiper	<i>Actitis macularis</i>	yes		
Greater Yellowlegs	<i>Totanus melanoleucus</i>		yes	yes
Lesser Yellowlegs	<i>Totanus flavipes</i>		yes	yes
Stilt Sandpiper	<i>Micropalama himantopus</i>			yes
Short-billed Dowitcher	<i>Limnodromus griseus</i>		yes	yes
Long-billed Dowitcher	<i>Limnodromus scolopaceus</i>			
Rock Dove	<i>Columba livia</i>			yes
Mourning Dove	<i>Zenaidura macroura</i>			yes
Yellow-billed Cuckoo	<i>Coccyzus americanus</i>	yes		
Black-billed Cuckoo	<i>Coccyzus erythrophthalmus</i>	yes		
Screech Owl	<i>Otis asio</i>			yes
Great Horned Owl	<i>Bubo virginianus</i>			yes
Long-eared Owl	<i>Asio otus</i>	yes		
Short-eared Owl	<i>Asio flammeus</i>	yes		
Barn Owl	<i>Tyto alba</i>			yes
Barred Owl	<i>Strix varia</i>			yes
Saw-whet Owl	<i>Aegolius acadicus</i>	yes		
Whip-poor-will	<i>Caprimulgus vociferus</i>		yes	

•PR = PROBABLE, PS = POSSIBLE, NL = NOT LIKELY

TABLE 2
REPTILES AND AMPHIBIANS POSSIBLY OCCURRING AT NAVSWC WHITEOAK

COMMON NAME	TECHNICAL NAME	OCCURS	STATUS	FAMILY
Common Nighthawk	<i>Chordeiles minor</i>	yes		
Chimney Swift	<i>Chaetura pelagica</i>	yes		
Ruby-throated Hummingbird	<i>Archilochus colubris</i>	yes		
Belted Kingfisher	<i>Megaceryle alcyon</i>			yes
Yellow-shafted Flicker	<i>Colaptes auratus</i>			yes
Pileated Woodpecker	<i>Dryocopus pileatus</i>			yes
Red-bellied Woodpecker	<i>Centurus carolinus</i>			yes
Red-headed Woodpecker	<i>Melanerpes erythrocephalus</i>			yes
Yellow-bellied Sapsucker	<i>Sphyrapicus varius</i>	yes		
Hairy Woodpecker	<i>Dendrocopos villosus</i>			yes
Downy Woodpecker	<i>Dendrocopos pubescens</i>			yes
Eastern Kingbird	<i>Tyrannus tyrannus</i>	yes		
Great Crested Flycatcher	<i>Myiarchus crinitus</i>	yes		
Eastern Phoebe	<i>Sayornis phoebe</i>	yes		
Yellow-bellied Flycatcher	<i>Empidonax flaviventris</i>		yes	yes
Acadian Flycatcher	<i>Empidonax virescens</i>	yes		
Traill's Flycatcher	<i>Empidonax trailli</i>		yes	yes
Least Flycatcher	<i>Empidonax minimus</i>		yes	yes
Eastern Wood Pewee	<i>Contopus virens</i>	yes		
Horned Lark	<i>Eremophila alpestris</i>			yes
Barn Swallow	<i>Hirundo rustica</i>	yes		
Cliff Swallow	<i>Petrochelidon pyrrhonota</i>	yes		
Tree Swallow	<i>Iridoprocne bicolor</i>		yes	yes
Bank Swallow	<i>Riparia riparia</i>	yes		
Rough-winged Swallow	<i>Stelgidopteryx ruficollis</i>	yes		
Purple Martin	<i>Progne subis</i>	yes		
Blue Jay	<i>Cyanocitta cristata</i>			yes
Common Crow	<i>Corvus brachyrhynchos</i>			yes
Fish Crow	<i>Corvus ossifragus</i>			yes
Black-capped Chickadee	<i>Parus atricapillus</i>	yes		
Carolina Chickadee	<i>Parus carolinensis</i>			yes
Tufted Titmouse	<i>Parus bicolor</i>			yes
White-breasted Nuthatch	<i>Sitta carolinensis</i>			yes
Red-breasted Nuthatch	<i>Sitta canadensis</i>	yes		
Brown Creeper	<i>Certhia familiaris</i>	yes		
House Wren	<i>Troglodytes aedon</i>		yes	
Winter Wren	<i>Troglodytes troglodytes</i>	yes		
Carolina Wren	<i>Thryothorus ludovicianus</i>			yes
Mockingbird	<i>Mimus polyglottos</i>			yes
Catbird	<i>Dumetella carolinensis</i>			yes
Brown Thrasher	<i>Toxostoma rufum</i>			yes
Robin	<i>Turdus migratorius</i>			yes
Wood Thrush	<i>Hylocichla mustelina</i>		yes	
Hermit Thrush	<i>Hylocichla guttata</i>	yes		
Swainson's Thrush	<i>Hylocichla ustulata</i>		yes	yes
Gray-cheeked Thrush	<i>Hylocichla minima</i>		yes	yes
Veery	<i>Hylocichla fuscescens</i>		yes	yes

TABLE 2
REPTILES AND AMPHIBIANS POSSIBLY OCCURRING AT NAVSWC WHITEOAK

COMMON NAME	TECHNICAL NAME	OCCURS	STATUS	FAMILY
Eastern Bluebird	<i>Sialia sialis</i>			yes
Blue-gray Gnatcatcher	<i>Polioptila caerulea</i>		yes	
Golden-crowned Kinglet	<i>Regulus satrapa</i>	yes		
Ruby-crowned Kinglet	<i>Regulus calendula</i>	yes		
Cedar Waxwing	<i>Bombycilla cedrorum</i>			yes
Loggerhead Shrike	<i>Lanius ludovicianus</i>			yes
Starling	<i>Sturnus vulgaris</i>			yes
Solitary Vireo	<i>Vireo solitarius</i>		yes	yes
White-eyed Vireo	<i>Vireo griseus</i>	yes		
Yellow-throated Vireo	<i>Vireo flavifrons</i>	yes		
Red-eyed Vireo	<i>Vireo olivaceus</i>	yes		
Philadelphia Vireo	<i>Vireo philadelphicus</i>		yes	yes
Warbling Vireo	<i>Vireo gilvus</i>	yes		
Black and White Warbler	<i>Miniotilta varia</i>	yes		
Prothonotary Warbler	<i>Protonotaria citrea</i>	yes		
Swainson's Warbler	<i>Limnithlypis swainsonii</i>	yes		
Worm-eating Warbler	<i>Helminthos vermivorus</i>	yes		
Blue-winged Warbler	<i>Vermivora pinus</i>		yes	yes
Tennessee Warbler	<i>Vermivora peregrina</i>		yes	yes
Orange-crowned Warbler	<i>Vermivora celata</i>			yes
Nashville Warbler	<i>Vermivora ruficapilla</i>		yes	yes
Parula Warbler	<i>Parula americana</i>	yes		
Yellow Warbler	<i>Dendroica petechia</i>	yes		
Magnolia Warbler	<i>Dendroica magnolia</i>		yes	yes
Cape May Warbler	<i>Dendroica tigrina</i>		yes	yes
Myrtle Warbler	<i>Dendroica coronata</i>	yes		
Black-throated Green Warbler	<i>Dendroica virens</i>		yes	yes
Black-throated Blue Warbler	<i>Dendroica caerulescens</i>	yes		
Cerulean Warbler	<i>Dendroica cerulea</i>	yes		
Yellow-throated Warbler	<i>Dendroica dominica</i>	yes		
Blackburnian Warbler	<i>Dendroica fusca</i>	yes		
Chestnut-sided Warbler	<i>Dendroica pensylvanica</i>	yes		
Bay-breasted Warbler	<i>Dendroica castanea</i>		yes	yes
Blackpoll Warbler	<i>Dendroica striata</i>		yes	yes
Pine Warbler	<i>Dendroica pinus</i>	yes		
Prairie Warbler	<i>Dendroica discolor</i>	yes		
Palm Warbler	<i>Dendroica palmarum</i>	yes		
Ovenbird	<i>Seiurus aurocapillus</i>	yes		
Northern Waterthrush	<i>Seiurus noveboracensis</i>		yes	yes
Louisiana Waterthrush	<i>Seiurus motacilla</i>	yes		
Yellowthroat	<i>Geothlypis trichas</i>	yes		
Yellow-breasted Chat	<i>Icteria virens</i>	yes		
Kentucky Warbler	<i>Oporonis formosus</i>	yes		
Mourning Warbler	<i>Oporonis philadelphia</i>		yes	yes
Connecticut Warbler	<i>Oporonis agilis</i>		yes	yes
Hooded Warbler	<i>Wilsonia citrina</i>	yes		
Wilson's Warbler	<i>Wilsonia pusilla</i>		yes	yes

TABLE 2
REPTILES AND AMPHIBIANS POSSIBLY OCCURRING AT NAVSWC WHITEOAK

COMMON NAME	TECHNICAL NAME	OCCURS	STATUS	FAMILY
Canada Warbler	<i>Wilsonia canadensis</i>		yes	yes
American Redstart	<i>Setophaga ruticilla</i>	yes		
House Sparrow	<i>Passer domesticus</i>			yes
Bobolink	<i>Dolichonyx oryzivorus</i>		yes	yes
Eastern Meadowlark	<i>Sturnella magna</i>			yes
Red-winged Blackbird	<i>Agelaius phoeniceus</i>			yes
Rusty Blackbird	<i>Euphagus carolinus</i>	yes		
Common Grackle	<i>Quiscalus quiscula</i>			yes
Brown-headed Cowbird	<i>Molothrus ater</i>			yes
Orchard Oriole	<i>Icterus spurius</i>	yes		
Northern Oriole	<i>Icterus galbula</i>	yes		
Scarlet Tanager	<i>Piranga olivacea</i>	yes		
Summer Tanager	<i>Piranga rubra</i>	yes		
Cardinal	<i>Cardinalis cardinalis</i>			yes
Rose-breasted Grosbeak	<i>Pheucticus ludovicianus</i>		yes	yes
Evening Grosbeak	<i>Hesperiphona vespertina</i>	yes		
Blue Grosbeak	<i>Guiraca caerulea</i>	yes		
Indigo Bunting	<i>Passerina cyanea</i>	yes		
Purple Finch	<i>Carpodacus purpureus</i>			yes
Pine Grosbeak	<i>Pinicola enucleator</i>	yes		
Common Redpoll	<i>Acanthis flammea</i>	yes		
Pine Siskin	<i>Spinus pinus</i>	yes		
American Goldfinch	<i>Spinus tristis</i>			yes
Red Crossbill	<i>Loxia curvirostra</i>	yes		
White-winged Crossbill	<i>Loxia leucoptera</i>	yes		
Rufous-sided Towhee	<i>Pipilo erythrophthalmus</i>			yes
Savannah Sparrow	<i>Passerculus sandwichensis</i>	yes		
Grasshopper Sparrow	<i>Ammodramus savannarum</i>	yes		
Henslow's Sparrow	<i>Passerherbulus henslowii</i>	yes		
Sharp-tailed Sparrow	<i>Ammodramus caudacuta</i>		yes	yes
Vesper Sparrow	<i>Poocetes gramineus</i>	yes		
Dark-eyed Junco	<i>Junco hyemalis</i>			yes
Bachman's Sparrow	<i>Aimophila aestivalis</i>	yes		
Tree Sparrow	<i>Spizella arborea</i>	yes		
Chipping Sparrow	<i>Spizella passerina</i>	yes		yes
Field Sparrow	<i>Spizella pusilla</i>			
White-crowned Sparrow	<i>Zonotrichia leucophrys</i>	yes		
White-Throated Sparrow	<i>Zonotrichia albicollis</i>			yes
Fox Sparrow	<i>Passerella iliaca</i>	yes		
Lincoln's Sparrow	<i>Melospiza lincolni</i>		yes	yes
Swamp Sparrow	<i>Melospiza georgiana</i>	yes		
Song Sparrow	<i>Melospiza melodia</i>			yes
Snow Bunting	<i>Plectrophenax nivalis</i>	pos		

TABLE 2
REPTILES AND AMPHIBIANS POSSIBLY OCCURRING AT NAVSWC WHITEOAK

COMMON NAME	TECHNICAL NAME	OCCURS	STAT	FAMILY
American Toad	<i>Bufo americanus</i>	PR		Bufoidea
Fowler's Toad	<i>Bufo woodhousei</i>	PR		Bufoidea
Northern Cricket Frog	<i>Acris crepitans</i>	PR		Hylidae
Gray Treefrog	<i>Hyla versicolor</i>	PR		Hylidae
Northern Spring Peeper	<i>Pseudacris crucifer</i>	PR		Hylidae
Upland Chorus Frog	<i>Pseudacris triseriata</i>	PR		Hylidae
Bullfrog	<i>Rana catesbeiana</i>	PR		Ranidae
Green Frog	<i>Rana clamitans</i>	PR		Ranidae
Pickerel Frog	<i>Rana palustris</i>	PR		Ranidae
Wood Frog	<i>Rana sylvatica</i>	PR		Ranidae
Southern Leopard Frog	<i>Rana utricularia</i>	PR		Ranidae
Spotted Salamander	<i>Ambystoma maculatum</i>	PR		Ambystomatidae
Marbled Salamander	<i>Ambystoma opacum</i>	PS		Ambystomatidae
Northern Dusky Salamander	<i>Desmognathus fuscus</i>	PR		Plethodontidae
Northern Two-lined Salamander	<i>Eurycea bislineata</i>	PS		Plethodontidae
Three-lined Salamander	<i>Eurycea longicauda</i>	PS		Plethodontidae
Northern Spring Salamander	<i>Gyrinophilus porphyriticus</i>	PS		Plethodontidae
Four-toed Salamander	<i>Hemidactylium scutatum</i>	PS		Plethodontidae
Red-backed Salamander	<i>Plethodon cinereus</i>	PR		Plethodontidae
Slimy Salamander	<i>Plethodon glutinosus</i>	PS		Plethodontidae
Eastern Mud Salamander	<i>Pseudotriton montanus</i>	PS		Plethodontidae
Northern Red Salamander	<i>Pseudotriton ruber</i>	PS		Plethodontidae
Red-spotted Newt	<i>Notophthalmus viridescens</i>	PR		Salamandridae
Northern Fence Lizard	<i>Sceloporus undulatus</i>	PS		Iguanidae
Six-lined racerunner	<i>Cnemidophorus sexlineatus</i>	PS		Scincidae
Five-lined Skink	<i>Eumeces fasciatus</i>	PR		Scincidae
Southeastern Five-lined Skink	<i>Eumeces inexpectatus</i>	PR		Scincidae
Broad-headed Skink	<i>Eumeces laticeps</i>	PS		Scincidae
Ground Skink	<i>Scincella lateralis</i>	PS		Scincidae
Worm Snake	<i>Carphophis amoenus</i>	PR		Colubridae
Northern Black Racer	<i>Coluber constrictor</i>	PS		Colubridae
Northern Ringnecked Snake	<i>Diadophis punctatus</i>	PR		Colubridae
Black Rat Snake	<i>Elaphe obsoleta</i>	PR		Colubridae
Eastern Hognose Snake	<i>Heterodon platyrhinos</i>	PS		Colubridae
Mole Kingsnake	<i>Lampropeltis calligaster</i>	PS		Colubridae
Eastern Kingsnake	<i>Lampropeltis getulus</i>	PR		Colubridae
Queen Snake	<i>Natrix septemvittata</i>	NL		Colubridae
Northern Water Snake	<i>Natrix sipedon</i>	PS		Colubridae
Rough Green Snake	<i>Opheodrys aestivus</i>	PS		Colubridae
Northern Brown Snake	<i>Storeria dekayi</i>	PR		Colubridae
Northern Red-bellied Snake	<i>Storeria occipitomaculata</i>	NL		Colubridae
Eastern Ribbon Snake	<i>Thamnophis sauritus</i>	PS		Colubridae
Eastern Garter Snake	<i>Thamnophis sirtalis</i>	PS		Colubridae
Eastern Smooth Earth Snake	<i>Virginia valeriae</i>	PS		Colubridae
Northern Copperhead	<i>Agkistrodon contortrix</i>	PR		Viperidae
Snapping Turtle	<i>Chelydra serpentina</i>	NL		Chelydridae
Spotted Turtle	<i>Clemmys guttata</i>	NL		Emydidae
Wood Turtle	<i>Clemmys insculpta</i>	NL		Emydidae
Eastern Box Turtle	<i>Terrapene carolina</i>	PR		Emydidae
Stinkpot	<i>Sternotherus odoratus</i>	NL		Kinosternidae

•PR = PROBABLE, PS = POSSIBLE, NL = NOT LIKELY

TABLE 3
MAMMALS POSSIBLY OCCURRING AT NAVSWC WHITEOAK

COMMON NAME	TECHNICAL NAME	O C	S T	FAMILY
Coyote	<i>Canis latrans</i>	D		Canidae
Domestic Dog	<i>Canis familiaris</i>	R	N	Canidae
Gray fox	<i>Urocyon cinereoargenteus</i>	R	N	Canidae
Red fox	<i>Vulpes vulpes</i>	R	N	Canidae
Beaver	<i>Castor canadensis</i>	D	N	Castoridae
Meadow Vole	<i>Microtus pennsylvanicus</i>	R	N	Cricetidae
Pine Vole	<i>Microtus pinetorum</i>	R	N	Cricetidae
Muskrat	<i>Ondatra zibethicus</i>	D	N	Cricetidae
Rice Rat	<i>Oryzomys palustris</i>	D	N	Cricetidae
Eastern Harvest Mouse	<i>Reithrodontomys humulis</i>	S	N	Cricetidae
Southern Bog Lemming	<i>Synaptomys cooperi</i>	S	N	Cricetidae
Opossum	<i>Didelphis virginiana</i>	R	N	Diedelphidae
White-tailed Deer	<i>Odocoileus virginiana</i>	R	N	cervidae
Domestic Cat	<i>Felis domesticus</i>	R	N	Felidae
Man	<i>Homo sapiens</i>	R	N	Homonidae
Eastern Cottontail Rabbit	<i>Sylvilagus floridanus</i>	R	N	Leporidae
Norway Rat	<i>Rattus norvegicus</i>	R	N	Muridae
Deer Mouse	<i>Peromyscus maniculatus</i>	R	N	Cricetidae
White Footed Mouse	<i>Peromyscus leucopus</i>	R	N	Cricetidae
House Mouse	<i>Mus musculus</i>	R	N	Muridae
River Otter	<i>Lutra canadensis</i>	D	N	Mustelidae
Striped Skunk	<i>Mephitis mephitis</i>	R	N	Mustelidae
Long-tailed Weasel	<i>Mustela frenata</i>	S	N	Mustelidae
Mink	<i>Mustela vison</i>	S	N	Mustelidae
Raccoon	<i>Procyon lotor</i>	R	N	Procyonidae
Southern Flying Squirrel	<i>Glaucomys volans</i>	S	N	Sciuridae
Woodchuck	<i>Marmota monax</i>	R	N	Sciuridae
Gray Squirrel	<i>Sciurus carolinensis</i>	R	N	Sciuridae
Fox Squirrel	<i>Sciurus niger</i>	D	N	Sciuridae
Eastern Chipmunk	<i>Tamias striatus</i>	R	N	Sciuridae
Red Squirrel	<i>Tamiasciurus hudsonicus</i>	D	N	Sciuridae
Short-tailed Shrew	<i>Blarina brevicauda</i>	R	N	Soricidae
Least Shrew	<i>Cryptotis parva</i>	R	N	Soricidae
Pigmy Shrew	<i>Microsorex hoyi</i>	R	N	Soricidae
Southeastern Shrew	<i>Sorex longirostris</i>	R	N	Soricidae
Long-tailed Shrew	<i>Sorex fontinalis</i>	R	N	Soricidae
Star-nosed Mole	<i>Condylura cristata</i>	S	N	Talpidae
Common Mole	<i>Scalopus aquaticus</i>	R	N	Talpidae
Big Brown Bat	<i>Eptesicus fuscus</i>	R	N	Vespertilionidae
Silver Haired Bat	<i>Lasionycteris noctivagans</i>	R	N	Vespertilionidae
Red Bat	<i>Lasiurus borealis</i>	R	N	Vespertilionidae
Hoary Bat	<i>Lasiurus cinereus</i>	R	N	Vespertilionidae
Keens Myotis	<i>Myotis keeni</i>	S	N	Vespertilionidae
Little Brown Bat	<i>Myotis lucifuga</i>	R	N	Vespertilionidae
Small-footed Myotis	<i>Myotis subulatus</i>	S	N	Vespertilionidae
Evening Bat	<i>Nycticeius humeralis</i>	R	N	Vespertilionidae
Eastern Pipistrelle	<i>Pipistrellus subflavus</i>	R	N	Vespertilionidae
Jumping Mouse	<i>Zapus hudsonius</i>	S	N	Zapodidae

R = PROBABLE, S = POSSIBLE, D = DOUBTFUL

6. SOCIO-ECONOMIC COMPONENTS

6.1. General

NAVSWC White Oak is located within both Prince Georges and Montgomery counties. This area borders Washington, D.C. and is approximately 35 miles from Baltimore. Montgomery County appears to be the fastest- growing jurisdiction in Maryland and Prince George's County is not far behind. The general area reflects major business and professional growth in all aspects of commercial development. Major business concentrations are located along the I-270 corridor and the Route 29 corridor in Eastern Montgomery County, and along I-95, US 1, and the Baltimore- Washington Parkway in Prince George's County. High technology, engineering-related firms and government agencies comprise a large share of the investment activity in the area.

In Montgomery County, major Federal research and development installations include NAVSWC, National Institutes of Health, National Institute of Standards and Technology, Naval Ship Research and Development Center and the Naval Medical Center. Some 19,440 companies employ 314,752 workers and 499 of them have 100 or more workers. Some of the major private employers include COMSAT, IBM, Martin-Marietta, Marriott, Fairchild Industries, Vitro, Singer-Link, Hughes Network Systems, Life Technologies, Microbiological Associates and NAVSWC (many Center employees reside in Prince George's County).

In Prince George's County, more than 13,420 firms employ 234,540 workers and 379 of those businesses have 100 workers or more. Major employers include Goddard Space Flight Center, Andrews Air Force Base, the University of Maryland, Computer Sciences Corporation, Arbitron, Biospherics, Digital Equipment, OAO, Beltsville Agricultural Research Center, Giant Food and Litton Amecom. The County's office development has brought an influx of professionals, scientists and technicians. During the past eight years, the total amount of office space has tripled and the tax base has doubled.

While the early economic history of the M-PG metroplex was based in agriculture and light industry, its recent development has been technological, industrial and service-based. Because of its proximity to Washington and Baltimore, the area has experienced rapid residential growth as a suburban appendage of this metropolitan area. The sustained movement of industry and population into the M-PG metroplex has highlighted the steady economic growth of the past several decades. Most of the economic growth attributable to the long-standing presence of NAVSWC has occurred in the form of white-collar, high-tech contractor firms in both the service and research and development sectors. This growth creates requirements for quality office and industrial space in the area. Employees of these businesses demand additional housing, private services and public services. While the NAVSWC will continue to provide jobs and income to the area, there is no reliance on a single industry and the strategy is to diversify the economic base of the M-PG area. A diversified industrial base will provide more jobs for local residents and enable the area to be less susceptible to economic distress in an unpredictable economy.

6.2. PRINCE GEORGE'S COUNTY

6.2.1. ECONOMIC DEVELOPMENT AND FUTURE TRENDS

Beside the official county government Departments of Planning and Finance under the Office of the County Executive, economic development assessments also are performed under the guidance of the Maryland-National Capital Park and Planning Commission (a bi- County agency with Montgomery County). The Commission in each County, by means of a Planning Board, is appointed by and responsible to the county government. A third agency that is critical to the enhancement of economic growth and development is the Prince George's County Economic Development Corporation (EDC). This agency is a

private, non-profit corporation under contract to the Prince George's County Government. It has a 23-member Board of Directors, a 100-person Economic Development Advisory Committee and a staff of 20. The political and governmental system of Prince George's County is committed to a combination of high quality industrial, commercial, residential, agricultural and recreational development projects. Prince George's County expends tremendous energy and resources on economic development and planning.

It is instructive to examine key components of Prince George's County's 1990-91 Economic Development Plan because the Plan is an example of the intense scrutiny and analysis that NAVSWC's environmental and safety program must operate under.

6.2.2. GOALS AND OBJECTIVES ECONOMIC DEVELOPMENT CORPORATION

6.2.2.1. Introduction

Since 1982, Prince George's County has enjoyed tremendous growth which is expected to continue as major projects mature. The challenge for the County and EDC is now to ensure that these projects are successful.

With this goal in mind, the EDC will assist in attracting quality new users for existing and planned office space and upscale retailers for shopping centers and first class restaurants. These will provide services and amenities that improve the quality of life, improve the local economy and enhance the County's image.

6.2.2.2. Marketing Objectives

Only through an active marketing program can the EDC use its limited resources to achieve its greatest impact and leverage Priority Project resources. The EDC's marketing efforts will be clearly and tightly focused. The Corporation will continue to expand its marketing to meet the following objectives:

- Promote the County as an excellent location.
- Encourage new business, especially upscale retail establishments, hotels and restaurants, to locate in the County.
- Create awareness of available space and sites in the County.
- Offer and define the EDC's resources in assisting quality development.

6.2.2.3. Business Assistance Objectives

The primary goal of the Business Assistance Program is to assist local businesses to grow within the County. A mid-1988 survey by the Council for Economic Action indicated that a high percentage of existing businesses plan to expand at their current site in the next two years.

6.2.2.4. Coordinate transportation improvement projects in accordance with County's Economic Development Objectives.

Focus on timely completion of transportation improvements in major growth nodes.

Coordinate scheduling of transportation improvements with buildout of commercial office space.

Monitor development process to ensure acquisition of transportation rights-of-way in advance of development.

Provide input on major development proposals at Metrorail stations and other transportation loci.

Coordinate with State and regional transportation agencies, committees, and boards, such as Transportation Oversight Committee, State Highway Administration, and WMATA Board of Directors.

(SOURCE: FY 1991 Prince George's County Economic Development Plan)

6.2.3. THE STATE OF THE ECONOMY

The economy of the Washington metropolitan area has remained strong throughout the past decade. There is no question that there are soft spots in the region's economy and some projects are having difficulty reaching fruition. However, the Washington area continues to attract businesses, developers and investors from other localities and foreign countries because of its strong economy and long-term growth prospects.

Historically, the Washington area has fared well in good and bad times primarily because of the Federal presence. Economic diversification has changed the facade and operational patterns of the regional economy, but its underlying strength persists. Although down from the previous level, federal purchases and contracts remain a strong attractor to new business and investment. Employment and consumer income growth have combined to push the regional economy ahead during 1989. As noted by the D.C. Department of Employment Services, the region's job growth is moving ahead at a pace (3 percent) that still exceeds the national average.

The cooling of the regional economy has been visible in Prince George's County by the level of office vacancy, the slow pace of some projects to develop, and the deferral of others. Despite this slowing, the County's economy remains strong and its level of achievement impressive. Commercial construction had a record year in 1989 with nearly 4 million square feet started. Over the past decade some 25.3 million square feet have been added to the County's commercial space inventory. Residential construction continues to be very active with over 5,500 units completed in 1989, just below the record year of 1988. The decade has seen over 35,000 housing units added to the housing stock. Employment growth, though slowed, continues to move upward, while unemployment remains below that of state and national levels.

The affluence of Prince George's County has moved ahead although not as rapidly as some of its neighbors. Comparisons among Washington area jurisdictions, some of whom are the wealthiest in the Nation, usually show the County in a subordinate position. It has been aptly noted however, that almost anywhere else in the country the County would be known as a very prosperous community. It is often the case that those outside the Washington area voice a greater appreciation of our economic well being and development potentials than Prince Georgians do.

Statements of economic well being do not diminish the significance of existing social problems and issues. Attention to these problems will become even more critical to business and government interests in the years ahead. Growing labor shortages and the absence of affordable housing are two issues frequently cited as potentially restricting local economic expansion. Clearly social and environmental concerns in each locality are becoming a greater part of an economic assessment. How well each locality handles these problems will be closely watched by prospective businesses and investors as well as local citizens.

Prince George's County is fortunate to have a facility and infrastructure base sufficient to handle the amount of new growth it has experienced. The recently released County Budget and five-year Capital Improvement Program (CIP) seek to maintain this lead in public facilities and services. The \$1.1 billion CIP proposes major improvements to county roadways, schools, libraries, recreation facilities, public

safety and environmental projects. The County's proposed budget for FY 91 of just under one billion dollars further emphasizes the government's concern to stay ahead of local development pressures and not allow problems to become significant inhibitors to the realization of local growth potentials. The current economic condition of Prince George's County is clearly evident in the following indicators.

6.2.4. Commercial Office Space

The total amount of new commercial construction started in Metropolitan Washington during 1989 was down some 14 percent from the previous year. Most area jurisdictions witnessed a sharp decline in construction activity with a few notable exceptions: the District of Columbia (+63%), Loudoun County (+110%), Prince William County (+81%) and Prince George's County (+58%). In 1989, Prince George's County had 47 commercial construction projects started. These projects contained nearly 4 million square feet of new space at a total cost of almost \$200 million. Prince George's County ranked third behind the District of Columbia and Fairfax County in the amount and cost of construction started over the calendar year. County increases were recorded in office space, R & D space, hotel and motel space, educational and medical, and mixed use space. Retail and other space starts were below those reported in 1988. This increase enabled Prince George's County to raise its share of new metropolitan construction from 6.5 percent in 1988 to 11.9 percent in 1989.

<p style="text-align: center;">Table 4 ANNUAL ADDITIONS TO OFFICE AND R&D SPACE PRINCE GEORGE'S COUNTY</p>	
Year Open	Rentable Floor Area*
1980	757,584
1981	551,413
1982	928,674
1983	1,279,100
1984	1,692,485
1985	1,401,763
1986	1,985,100
1987	1,705,851
1988	2,042,248
1989 preliminary estimate	1,600,000
<p>* Total square feet Source: Prince George's County Economic Development Corporation, 1990.</p>	

While the metropolitan area has been experiencing a slump in new commercial construction, the County has seen numerous projects move forward. Many of these have been in the development pipeline for some time but have only recently initiated construction. Currently the market for office space in the County is quite soft and developers are hesitant to add new space to their existing inventories.

Preliminary estimates from the Prince George's Economic Development Corporation's office survey show rentable office space additions of 1.6 million square feet in 1989. These additions bring the County's total office space inventory to nearly 24 million square feet.

Vacancy rates in commercial building moved upward in 1989 to an estimated 18.0 percent. This is still substantially below the levels found in several neighboring jurisdictions and among a number of large commercial projects.

The size and structure of recent commercial development suggests that Prince George's County is forging its own economic market increasingly independent of regional or surrounding jurisdictional influences. This change may explain the sustained level of construction and interest in further development in the County by builders and investors.

6.2.5. Residential Construction

Residential construction was down slightly from the record level of 1988, quite likely due to inclement weather conditions in the Spring of 1989. Total completions numbered 5,577, which is fewer than 100 below that recorded in 1988. Single-family housing continued to make up the great majority (85%) of this new growth. Townhouse construction remained strong, comprising some 42 percent of all single-family units.

<p style="text-align: center;">Table 5 RESIDENTIAL DEVELOPMENT INDICATORS PRINCE GEORGE'S COUNTY</p>		
Year	Residential Units Completed	Building Permits Issued
1980	2,125	1,714
1981	1,781	1,962
1982	2,047	1,849
1983	2,548	3,318
1984	3,033	3,188
1985	3,260	3,772
1986	4,198	5,321
1987	4,898	5,193
1988	5,671	5,032
1989	5,577	4,616
<p style="text-align: center;">Source: Prince George's County Planning Department, Information Management Division, Data Resources Section, March 1990.</p>		

Multifamily construction remained relatively active although the number of completions was down from 1988. A total of 877 multifamily units were reported completed in 1989. Two-thirds of these units were located outside the Capital Beltway, with a predominant cluster between Route 50 and Route 4.

Residential permit activity was also off about 9 percent in 1989 with 4,616 issued permits. Single-family units predominated, comprising 95 percent of all permits issued. Townhouses made up 43 percent of all single-family type units. Multifamily permits numbered only 202 units during the year. These levels point to a moderating of the pace of residential development in the County. While the rate of this activity may have been affected by weather conditions during 1989, the cumulative evidence points to a continuation of this pace of residential growth in 1990.

6.2.6. At-Place Employment

The reporting of employment, especially at the County level, lags by months and frequently years. This means the employment figures are more significant historically to this analysis and are not directly related to other trends or conditions identified. Nevertheless the employment figures represent essential indicators of the local economy's strength and direction of growth.

Between March of 1988 and 1989 total wage and salary employment in Prince George's County rose by 8,618 workers or 3.2 percent. This was down some 15 percent from the 10,171 worker increase reported during the similar 1987-88 period. Three-quarters of this recent growth occurred in the private sector. The public sector recorded a net increase in employment for the first time in several years following implementation of clerical corrections to the reporting of Federal and State employment at work locations across the state.

Employment increases were reported by most sectors except Manufacturing and Wholesale Trade which experienced a decline of 312 and 57 workers respectively. Retail Trade led all sectors with an increase of nearly 2,000 employees, the most predominant gain occurring in general merchandise establishments. The services sector was close behind with over 1,900 new jobs, many in the fields of health services and private education services. The Transportation, Communications and Utilities sector also displayed strong employment growth with over 1,200 new jobs. A significant portion of this growth was in trucking and warehousing operations.

Annual employment changes, shown in Table 6, indicate that Prince George's County had a net gain of some 26 percent in wage and salary employment between 1980 and 1988. This gain would have been significantly higher had not the public sector registered sharp declines over the period. These declines were caused, in part, by cutbacks in Federal and State services and employment support programs during the early 1980s. Some were because of the reassignment of employees to other jurisdictions as noted in the table.

**Table 6
ANNUAL WAGE AND SALARY EMPLOYMENT
PRINCE GEORGE'S COUNTY**

	Annual Employment Change		Change
	1980	1988	1980-1988
Private Sector Employment:			
Retail Trade	49,596	64,645	15,049
Services and Other	34,355	61,185	26,830
Construction	16,950	26,117	9,167
Manufacturing	10,773	12,491	1,718
Wholesale Trade	9,458	15,055	5,597
Finance, Insurance & Real Estate	9,285	12,754	3,469
Transportation, Communications & Utilities	7,408	16,054	8,646
<i>Subtotal</i>	<i>137,825</i>	<i>208,301</i>	<i>70,476</i>
Public Sector Employment:			
Federal Government	26,981	23,687	-3,294
State Government	18,424	12,264	-6,160
Local Government	29,951	24,182	-5,769
<i>Subtotal</i>	<i>75,356</i>	<i>60,133</i>	<i>-15,223</i>
Total Employment	213,181	268,434	55,253
Note:	A major portion of the reported declines in Government employment over the time period shown are due to clerical corrections in geocoding worker employment sites.		
Source:	Maryland Department of Economic and Employment Development, Office of Labor Market Analysis and Information, 1990.		

The private sector had a reported increase of more than 51 percent over the eight year period. Service industry gains led all sectors, increasing by nearly 27,000 jobs or 78 percent. Retail trade rose by some 15,000 jobs or 30 percent and construction gained over 9,100 jobs or 54 percent during this same period. All private employment sectors including manufacturing have registered gains in the County since 1980. These trends are in contrast to declines in industrial employment reported by the State of Maryland during the period. Private sector employment now comprises some 78 percent of all County employment, compared to 65 percent in 1980.

6.2.7. Household Income

Median household effective buying income (EBI) in Prince George's County rose to an estimated \$41,777 in 1988, based upon data reported by Sales and Marketing Magazine Inc. This figure represented a 9 percent increase over 1987, the largest annual gain since 1982.

Table 7 MEDIAN HOUSEHOLD EFFECTIVE BUYING INCOME PRINCE GEORGE'S COUNTY	
Year	Median Household EBI
1980	\$24,597
1981	27,140
1982	29,938
1983	32,059
1984	33,332
1985	34,077
1986	35,944
1987	38,411
1988	41,777
Source: <i>Sales and Marketing Magazine</i> , "1989 Survey of Buying Power."	

Since 1980 the County's Total EBI has risen by 106 percent to over \$12.4 billion. Median household EBI has risen by 70 percent and the number of households with incomes in excess of \$50,000 has grown from 5 percent to more than 38 percent.

Household and per capita income levels in Prince George's County and in neighboring jurisdictions are among the highest in the Country. A recent listing by the U.S. Census Bureau showed five of the top seven wealthiest communities the country are neighbors: Falls Church, Alexandria, Arlington and Fairfax County in Virginia and Montgomery County in Maryland. Prince George's ranked 77th on a list of 3,140 — wealthy by national standards, yet frequently portrayed as poor in local comparisons.

6.2.8. Housing Costs

Housing prices continued to move upward throughout the Washington metropolitan area during 1989. Increases were most rapid during the first half of the year becoming much smaller at year's end. Overall, the average sales price of new and existing homes rose 8.1 percent to \$197,200. This was \$14,700 more than the average price in 1988 and \$77,200 more than that of 1980.

**Table 8
EXISTING AND NEW HOME SALES PRICES**

Year	Washington Area*	Prince George's County	Percent of Metro Area
1983	\$ 120,000	\$ 93,641	78%
1984	131,800	109,471	83
1985	142,000	116,669	82
1986	154,400	120,141	78
1987	154,200	102,220	66
1988	182,500	115,769	63
1989	197,200	129,137	65

* Includes the District of Columbia, Prince George's, Montgomery and Fairfax Counties.
Source: Rufus S. Lusk and Son, Inc.

Prince George's County's average sales price rose by 11.5 percent to \$129,137 during 1989. This was \$13,368 more than the County average in 1988 and \$35,496 more than that of 1980; roughly half the metropolitan area increase. County housing prices continue to average two-thirds that of the metropolitan area. It is not uncommon to find the same house, built by the same builder selling for thousands of dollars less in Prince George's County. Clearly the County offers some of the best housing values in the metropolitan area.

6.2.9. Population Estimates

As of January 1, 1990, the County population was estimated at 719,880 residents, an increase of 11,880 from that of a year earlier. The increase during 1989 was down very slightly from that recorded during 1988 (12,000). Population tends to be a lagging indicator behind housing permits and housing completions. The leveling off of these indicators in 1988 and 1989 pointed to the potential slowing of population growth in 1989. Their continued decline suggests an even lower level of population growth in 1990.

Since 1980, Prince George's County has gained over 54,800 additional residents. While this amount is substantial it is not as large as that experienced by several neighboring jurisdictions such as Montgomery, Fairfax, Anne Arundel and Howard Counties. Prince George's County now ranks third behind Fairfax and Montgomery as the most populous county in the Washington metropolitan area.

6.2.10. Labor Force Changes

The County's labor force recorded its largest gain since 1986, adding 14,634 persons during 1989. An estimated 426,974 county residents made up the County's civilian labor force last year.

Resident employment in the County averaged 413,042 during 1989, an increase of 16,282 over that recorded in 1988. Not only is job growth rising, it is rising faster than the local labor pool. Many local employers are finding it increasingly difficult to fill entry level positions, especially in the trades and

services sectors. Higher wages, flexible working hours and other benefits are among the numerous inducements being offered to attract needed workers. Given this area's already high rates of labor force participation, future economic expansion is expected to be operating in a very tight and competitive labor market.

6.2.11. Unemployment

One of the benefits of current trends is the low level of unemployment, in numbers and rate. County unemployment averaged 3.3 percent during 1989, down from the 3.8 percent of 1988. The number of persons reported as unemployed was also down by 1,648 from that of a year ago. Suburban jurisdictions in the Washington area continue to rank among the lowest levels of unemployment in the State and the Nation.

6.2.12. THE OUTLOOK TO 1995

The recent downturn in the national economy and the slowing of regional growth have prompted inquiries regarding current County forecasts and the need to revise them. Regular monitoring of county housing construction and the preparation of population estimates have been ongoing for several years. Comparisons with adopted County forecasts have been made each year to detect variations and potential adjustments.

To date the levels of residential development, both housing units and people, have been following the forecast trend line. The number of dwelling units and the total County population are estimated to be within the forecast range published in 1988. In some instances (between 1985 and 1990) developments progressed faster than anticipated, causing our estimates to be closer to the high forecasts for 1990. A significant adjustment in growth rates was anticipated after 1990. Forecasts of housing units and population for the 1990- 1995 period show growth rates 30 and 25 percent respectively below those for 1985-1990. These lower growth patterns were anticipated in the 1988 forecasts. Recent declines in building permit activity and employment growth rates suggest that these forecasts (1990- 1995) may also be realized. Pending the findings of the 1990 Census of Population and Housing when a full re-evaluation will be conducted, the existing County forecasts appear to be maintaining their relevancy as indicators of County development.

The national economy now appears to be headed for a period of relatively slow growth with considerable uncertainty about the impacts of international markets, competition and environmental protectionism. The Washington area and the Washington/Baltimore Urban Corridor are expected to out-perform the national economy over the next five years. The size and diversity of this regional economy are viewed as major attractions to new jobs, people and investment dollars, both domestic and foreign. Foreign investments are frequently cited as a key factor in helping sustain local development activity.

Direct Federal stimulus to local economic development is expected to be minimal over the next five years. Federal job expansion will likely be limited, as will subsidy and grant programs. The responsibility for sustaining economics and growth has been shifted to the states and localities. How well these responsibilities are handled will determine how closely the forecasts identified here are achieved.

6.2.12.1. Employment Growth

County employment growth is assumed to be ahead of current forecasts based on commercial construction and labor force trends. Precise comparisons are not available since the employment statistics were revised in 1989 and new trend data is not yet available.

The pace of employment growth in Prince George's County is expected to moderate somewhat as the economy absorbs excess capacity, works with higher land and development costs and seeks to address economic, social and environmental concerns. Between 1990 and 1995, an additional 36,250 jobs are forecast in the County, about one thousand less than forecasts between 1985 and 1990. Almost all of this growth will be in private sector employment, with Services, Trade and Construction leading the way.

6.2.12.2. Housing Growth

Housing stock growth has kept pace with current forecasts. Since 1985 some 22,000 units have been added to the housing stock. This compares with the 22,237 units forecast over the five-year period.

Between 1990 and 1995 an additional 15,738 units are forecast, about one-third fewer than between 1985 and 1990. Slower economic gains, rising construction costs and land prices will contribute to these trends. At the same time, Prince George's County is expected to continue to offer the most affordable housing available within the metropolitan area.

Table 9 PRINCE GEORGE'S COUNTY GROWTH 1985-1995				
	Estimated		Forecast	
	1985	1/1/90	1990	1995
Employment	274,550	NA	311,850	348,100
Housing Units	247,823	269,782	270,060	285,798
Population	676,924	719,880	718,363	749,771
Source: Prince George's County Planning Department, Cooperative Forecasting Program, Round IV, March 1988.				

6.2.12.3. Population Growth

Estimated population as of January 1, 1990 now exceeds that forecast for July 1990. The spurt of residential construction that took place in 1986-1989 brought with it a substantial number of new households. This growth upswing now appears to be receding as witnessed by the declining number of residential building permits issued during the past several years. Population growth rates now seem to be moving toward that level forecast for the 1990-95 period. Analysis of the 1990 Census will provide the basis for a full re-evaluation of population and housing estimates plus the preparation of new long-range forecasts.

6.2.13. FUTURE FORECASTS OF GROWTH IN PRINCE GEORGE'S COUNTY

6.2.13.1. Dwelling Unit Forecasts

Dwelling units, existing and forecast, provide the statistical foundation for estimating present and future households and population. Starting with the 1985 base year, estimates of dwelling unit growth were prepared utilizing a variety of development indicators ranging from very certain (hard) information on new dwelling units, i.e., reported completions, to more speculative (soft) information on potential dwelling unit development, i.e., residentially zoned land. Listed below are the various

development indicators examined in this process. They were evaluated both individually and collectively in preparing assessments of County and small area growth potential.

RESIDENTIAL DEVELOPMENT INDICATORS Used in Forecasting Dwelling Units

- Dwelling Unit Completions and Demolitions
- Residential Building Permits Issued
- Recorded Plats
- Approved Preliminary Subdivisions
- Submitted Preliminary Subdivisions
- Major Project Proposals
- Vacant Zoned Residential Property
- Planning Area Assessments

The total number of dwelling units in Prince George's County is expected to grow from 247,823 in 1985 to 346,467 in 2010 (see Table 10). This growth of just under 100,000 units represents a 40 percent increase over the 25-year period and an annual completion rate of nearly 4,000 units per year.

Table 10			
ROUND IV FORECASTS OF DWELLING UNITS IN PRINCE GEORGE'S COUNTY			
	Dwelling Units		
Year	Low	Intermediate	High
1985	--	247,823	--
1990	268,060	270,060	272,060
1995	279,796	285,798	290,428
2000	292,653	303,142	310,751
2005	307,001	322,397	333,447
2010	325,338	346,467	361,558
Amount of growth 1985 to 2010	+77,515	+98,644	+113,735
Percent change 1985 to 2010	+31%	+40%	+46%
Annual growth 1985 to 2010	+3,101	+3,946	+4,549

6.2.13.2. Population Forecasts

Total population is forecast to rise by 40 percent over the next 25 years, from 676,924 in 1985 to 840,922 in 2010. This population includes those persons living in existing housing and forecast housing plus others

living in group quarters (dormitories, jails, institutions, etc.). In 1985 an estimated 16,076 persons (2.4 percent of the total population) resided in group quarters. This group is expected to increase by some 200 persons over the forecast period.

6.2.13.3. Employment Forecasts

Forecasts of place-of-work employment in Prince George's County are based on a variety of trend statistics, project assessments and economic observations. In addition, a group of basic assumptions provided a framework around which general trends and tendencies were assessed. Information on specific projects and local development potentials was made available by County area planners and staff in other County agencies. All of this information was reviewed and evaluated as part of the employment forecasting process.

The following statements outline the general conditions and/or factors assumed to be in place or active in influencing County employment over the forecast period:

- National and Regional Economic Conditions

While fluctuations in national and regional economic conditions will take place, no unusually large or prolonged deviation is expected to occur. The United States will not experience any large scale catastrophic event, e.g., war, depression, natural disaster, plague, etc., that will alter the course of future growth. Similarly, the Washington Metropolitan Area is not expected to be subjected to major growth constraints, either physical or political, that would seriously retard development. A general trend toward modest yet sustained economic growth is assumed for both the national and the regional economies.

- Local Economic Development Policy

Prince George's County will continue to pursue an aggressive policy of encouraging economic development, including new entrepreneur formation, private investment and job growth.

- Land, Water and Sewer Capacity

The County now has and will continue to have an ample supply of available commercially zoned land, water and waste treatment capacity to meet the needs of projected economic development.

- Interest Rates and Financing

Variations in interest rates and the availability of financial resources are expected to occur and may have short-term impacts on the pace of new construction and expansion. However, variations are not anticipated to be of such magnitude nor duration to alter the overall course of development.

- A Sustained Federal Presence

Federal Government jobs, functions and facilities constitute a major element of Prince George's economy. Conservative federal policies have held down the levels of federal employment and will probably continue to do so through the mid 1990s. The County does, however, house several key federal installations whose programs are expected to expand, e.g., Goddard Space Flight Center, National Agricultural Research Center, Suitland Federal Center, etc. Employment growth, either public, private or both, is anticipated on or near these sites.

The development of County employment forecasts followed two separate approaches. The first looked at the historical trends in total employment in the County and changes taking place in individual industry groups, e.g., Manufacturing, Services, Federal Government, etc. The second examined the

small-area (Policy Analysis Zone) estimates of existing employment and the development occurring or planned to occur in each PAZ suggested by a variety of development indicators. The resulting estimates were aggregated and compared with the trend-line figures produced above. Estimates of employment change produced by both procedures were then reconciled to the forecast levels reported here. Listed below are the nonresidential development indicators examined in this process.

NONRESIDENTIAL DEVELOPMENT INDICATORS Used in Forecasting Employment

- Inventory of Occupied and Vacant Office & R&D Space
- Commercial/Industrial Building Completions
- Commercial/Industrial Space Under Construction
- Nonresidential Building Permits Issued
- Planned New Construction
- Major Development Proposals
- Planned Transportation and Public Facility Improvements
- Vacant Commercial/Industrial Property
- Planning Area Assessments

Based upon current construction and job creation, plus those indicators of future development potential noted above, future employment in the County is forecast to reach 473,000 jobs in 2010. This is an increase of 58,000 above the level forecasted in Round III and reflects the increased attractiveness of Prince George's County to commercial investment. Such improvements have spurred several major projects toward fruition which in turn have stimulated still more development proposals. The intermediate forecasts represent the most probable path of local employment given present information and knowledge. The high and low forecasts provide a range of expectations under alternate economic conditions and unforeseen events.

Future employment gains will be led by the Services sector, followed by Retail Trade, Construction and Manufacturing. By the year 2010 employment in the Services category is anticipated to make up about one-third of the County total. Public sector employment (federal, state and local government) will experience some increase but will decrease as a share of all jobs from 25 percent in 1985 to 19 percent in 2010. Self-employment and other nonpayroll employment are also expected to register substantial gains. Agricultural is the only employment sector not expected to record gains over the forecast period.

6.2.14. TRANSPORTATION (M-PG COUNTIES)

The following transportation networks serve Prince George's County and Montgomery Counties:

- **Highways:** I-95, I-495, U.S. 1, U.S. 50, U.S. 301, and the Baltimore-Washington Parkway.
- **Rail:** CSX Transportation, Consolidated Rail Corporation (Conrail), Amtrak Metroliner (passenger service from D.C. to New York with intermediate stops, including the Capital Beltway Station in the County), and MARC (the Maryland Rail Commuter line with stops between Baltimore and Washington, D.C.).
- **Metro:** Washington Metropolitan Area Transit Authority (WMATA). Rapid rail system serving Washington and nearby suburban areas.
- **Truck:** More than 90 freight lines serve the County. Most of the County lies within the Washington Commercial Zone as defined by the I.C.C.
- **Water:** Served by the Port of Baltimore, 42' channel (being dredged to 50'), 7th largest U.S. port in dollar volume.

- **Air:** Served by Baltimore-Washington International Airport (BWI), Dulles International (IAD) and Washington National (DCA) Airports.

The dominant mode of personal transportation in both counties is the private automobile and the vast majority of travel occurs on the highways of the counties. In addition, most of the goods produced or consumed in the counties are hauled by truck over these same highways. The railroad which once served this area is long gone and is not likely to return. Mass transit services (Metro) have been provided both within the counties and between the counties and the Washington, D.C. metropolitan areas. The private automobile has been, now is, and will be for the foreseeable future the focus of transportation.

The population and economic growth experienced by both counties between 1978 and 1991 includes an increase in traffic volumes and highway-related commercial activities competing for visibility and access. The result has been occasional periods of congestion, delays and slower speeds. Failure to plan for adequate highway capacity and safety provisions will lead to further deterioration of the vital transportation system which in turn will adversely affect the general welfare. It is therefore of public interest to plan for adequate transportation improvements.

A reduction in federal funding for roadways places more financial responsibility at the state, county and local levels— as well as on private developers—to fund new roadways and roadway improvements. Roadway construction funds must therefore be carefully expended, and road needs carefully identified and programmed. New funding mechanisms will be necessary as the rate of new development and potential funds generated through impact fees may not be sufficient to cover the costs of new roads to relieve current as well as anticipated congestion.

NAVSWC-White Oak is bordered by heavily-traveled roadways that include New Hampshire Avenue, Cherry Hill Road, Powder Mill Road and the Columbia Pike. It is within a mile of the I-495 Beltway and its heavy volume of traffic.

6.2.15. PRINCE GEORGE'S COUNTY GOVERNMENT AND ADMINISTRATION

The County is a body corporate and politic of the State of Maryland. There are also 28 incorporated municipalities in the County which can levy taxes on their own authority beyond County limitations.

The County operates under a "home rule" Charter which was adopted in November 1970 (the "Charter"). The powers of the County government are provided in the Charter and in the Constitution and the laws of the State of Maryland (see Article 25A of the Annotated Code of Maryland, 1987 Replacement Volume; 1990 Cumulative Supplement). Under the Charter, the County government is composed of two branches— executive and legislative. The executive branch enforces the laws and administers the day-to-day business of government. It consists of a County Executive (who is elected County-wide) and all other officers, agents, and employees under the County Executive's supervision and authority, including the Chief Administrative Officer who is responsible for the day-to-day administration of government. The legislative branch of the County government consists of a nine-member County Council (elected by Councilmanic Districts) and its staff. Both the County Executive and the County Council are elected for the same four-year term by qualified voters of the County.

Each member of the Council has one vote. Five votes are generally required to pass legislation and six votes are needed to enact emergency bills and to override a veto by the County Executive. The Council elects from among its members a Chairman and a Vice Chairman customarily for a term of one year.

The court system for the County was established by and is under the authority of the State. District and Circuit Court judges are appointed by the Governor but Circuit Court judges must thereafter run for election. Other State court officials are directly elected for various terms.

The Office of Finance is headed by a Director who is responsible to the County Executive for the administration of the fiscal policies and procedures established by the Charter and by legislative act of the County. The Director of Finance is responsible for maintenance of a system of accounts, control of appropriations, preparation of financial statements, custody of County funds and securities, preparation for bond sales and advising on debt management, administration of tax sales, disbursement of County funds, collection and billing of all revenues due to the County and administration of the County's safety and insurance program.

The Office of Management and Budget is headed by a Director who is responsible to the County Executive for assisting in the preparation of the annual current expense and capital budgets and advises on any request for County funds and revenue needs. The Director of the Office of Management and Budget is responsible for budget formulation, fiscal control, program and project control and evaluation, management and policy analysis, and the administration of data processing activities. The Director of the Office of Management and Budget is also responsible for studies concerning budget execution and the efficiency of organization, methods and procedures, and prepares reports related thereto, the Capital Improvement Program, management reports, policy and procedures review, fiscal analysis and planning, administration of the County's data processing facilities management contract and other management related work.

The Chief Administrative Officer and heads of County offices and departments are appointed by the County Executive subject to confirmation by a simple majority vote of the full Council.

6.3. MONTGOMERY COUNTY

6.3.1. ECONOMIC INDICATORS

6.3.1.1. Non-Residential Construction

Montgomery County's 1988-1990 non-residential completions fell for the second straight year to 4.01 million square feet. Down 21 percent from the previous year and 43 percent from the 1986 high of 7.01 million square feet, 1988 non-residential completions were still well above the 1982 and 1983 slow-down. Non-residential completions for 1989-1990 are expected to be between 4.00 and 4.50 million square feet.

The Washington region's commercial starts continued to increase, totaling 30.48 million square feet in 1988 and representing the third straight year the region has outpaced the previous year's construction starts. Both Montgomery County's commercial starts and its share of the Washington region's growth decreased; commercial starts dropped 21 percent and the County's share of the region's starts decreased from 19 percent in 1987 to just under 13 percent in 1988.

Office space production continues to lead non-residential development, but represents a smaller share of total annual completions. In 1988, a total of 1.64 million square feet was completed, representing 41 percent of the 1988 completions total. Industrial development surged in 1988, more than doubling the previous year's industrial space completions with 1.30 million square feet. The County's retail base increased by 899,924 square feet in 1988, similar to the amount of retail space completed in 1987. Completions in the "other" category dropped significantly below the previous year, to only 159,719 square feet in 1988.

Gaithersburg East, Gaithersburg West and the Bethesda CBD led the County in commercial completions in 1988. Gaithersburg East contributed 935,582 square feet followed by Gaithersburg West with 863,264 square feet. Combined, the Gaithersburg policy areas account for 45 percent of the County's total commercial development. The Bethesda CBD ranked third with over a half million square feet of new space.

6.3.1.2. Vacant Office and R&D Space

Montgomery County's commercial/industrial real estate market experienced its slowest period in the last five years as new construction and absorption figures responded to the cooled Washington market. Delivery of new space amounted to just over 900,000 square feet during the survey period, with another 400,000 expected by year end. Absorption of new space was moderate, but still only slightly below new construction numbers at 718,000 square feet. Montgomery County's leasable base has reached 38.4 million square feet.

Vacancy rates have risen during the first half of 1990 to 13.2 percent, up six-tenths of a percentage point from the previous survey. Relet space was plentiful, particularly in the Bethesda and Lower Rockville areas. New construction was almost entirely accounted for in the Bethesda and Gaithersburg submarkets.

Listed below are data for survey submarkets:

Table 11 OFFICE/R&D SPACE AVAILABILITY BY SUBMARKET JUNE 30 1990			
Submarket	Leasable Base	Available Sq. Ft.	Vacancy Rate
Bethesda/Chevy Chase	10,804,313	1,421,390	13.2%
Gaithersburg & Vicinity	4,552,100	780,830	17.2%
Germantown/Clarksburg	871,089	45,000	5.2%
Rockville & Vicinity	14,668,459	1,759,500	11.9%
Silver Spring/Rt. 29*	7,593,047	1,081,700	14.2%
Total	38,489,008	5,088,420	13.2%
* NAVSWC submarket			

The Bethesda submarket realized 572,000 square feet of new development during the first half of 1990 as Bethesda Place, South Woodmont and Rockspring Plaza all delivered space to the market. While several deals were completed as the buildings were delivered, the net effect was nonetheless a rise in the vacancy rate. Bethesda's vacancy now stands at 13.2 percent, up approximately 2.5 percent from the previous survey. Activity in Bethesda remains good as several deals are rumored to be near conclusion. The second half of 1990 should see a return of more typical Bethesda vacancy rates (below 10 percent) as no new delivery will occur and tenant interest remains good.

The Route 29 corridor (White Oak area) continued to do well during the first half of 1990 as Westfarm, Spring Pointe Executive Center, and Burtonsville Office Park inked new deals totalling nearly 100,000 square feet. Overall new space absorption totalled 142,000 square feet during the survey period. New product in the Central Business District also continued to lease. Vacancies in the submarket rose about one percent during the first half of the year mainly due to the soft relet market. Large pieces of space

are available in several older buildings in the CBD as the real market finds it difficult to compete with new, price competitive product.

Table 12				
FIRST HALF 1990 MONTGOMERY COUNTY				
OFFICE BUILDINGS PROPOSED OR UNDER CONSTRUCTION				
Building	Size (Sq.Ft.)	Stories	Delivery Date	Lease Rate
Silver Spring/Route 29				
Tech Center 29 Tech Road	54,000	1	Early 1991	TBD
Westfarm-Somerset Bournfield Way	94,000	1	Early 1991	TBD
Spring Pointe Exec. Ctr. I I, Sandy Spring Road	85,000	1	Early 1992	TBD
Subtotal	481,000		100,000 U/C	
Grand Total	1,792,000		381,000 U/C	
Source: Montgomery County Planning Department, 1990				

6.3.1.3. Overall Employment Growth

Employment in Montgomery County reached about 408,700 in 1987 and rose to an estimated 423,000 in 1988. Employment increased by an estimated 18,600 between March, 1986 and March, 1987, and by an estimated 14,300 between March, 1987 and March, 1988. This rate of growth is slower than the previous five-year period when annual job gains averaged 19,300 between 1982 and 1987. The rate of new job growth peaked between 1984 and 1985, when the County's employment gain registered a record high increase of about 25,100 jobs, or 7 percent.

Since the 1981-82 recession, Montgomery County's employment growth rate has been twice as high as the national growth rate and ahead of the Washington, D.C. Metropolitan Statistical Area's (MSA) growth rate. Between 1982 and 1987, employment in the Washington, D.C. MSA increased by about 549,000 jobs, according to the U.S. Department of Commerce, Bureau of Economic Analysis. During this time period, Montgomery County's employment gains represented about 18 percent of the growth in the Washington, D.C. MSA. This is second to Fairfax County, which contributed roughly 28 percent of the region's new jobs, and ahead of Prince George's County, which contributed about 14 percent. Washington D.C., the jurisdiction with the largest employment base, contributed about 13 percent of all new jobs created between 1982 and 1987.

Montgomery County's unemployment rate remains extremely low, with an average rate of only 2.6 percent in 1988. This low rate indicates a labor shortage condition in the County. Rapid at-place job growth, following the 1981-82 recession, caused the County's unemployment rate to decline from 4.2 percent in 1982 to only 2.3 percent in 1985 and 1986.

Historically, Montgomery County's unemployment rate has been lower than the state of Maryland's and the national rate. Table 13 lists local, state, and national unemployment rates.

Table 13 AVERAGE ANNUAL UNEMPLOYMENT RATE FOR MONTGOMERY COUNTY, THE STATE OF MARYLAND, AND THE UNITED STATES 1982 - 1989 (SEPTEMBER)				
	Year	Montgomery County	State of Maryland	United States
	1982	4.2%	8.4%	9.7%
	1983	3.5%	6.9%	9.6%
	1984	2.9%	5.4%	7.5%
	1985	2.3%	4.6%	7.2%
	1986	2.3%	4.5%	7.0%
	1987	2.4%	4.2%	6.2%
	1988	2.6%	4.5%	5.5%
September	1989	2.6%	4.1%	5.1%
Source: Maryland Department of Economic and Employment Development, Office of Labor Market Analysis and Information				

Table 14 EMPLOYMENT BY CATEGORY			
Industry	Employment	Percentage	Weekly Wage
Federal Government	39,735	10.4	\$601
State Government	1,647	0.5	397
Local Government	28,315	7.4	508
Private Employment	311,577	81.7	484
Construction	28,829	7.6	550
Manufacturing	17,707	4.6	594
Durable Goods	9,944	2.6	633
Nondurable Goods	7,763	2.0	545
Transportation, Communication & Utilities	7,946	2.1	588
Wholesale & Retail Trade	94,297	24.7	359
Wholesale	16,287	4.3	640
Retail	78,010	20.4	301
Finance, Insurance & Real Estate	26,482	6.9	555
Services & Other	136,316	35.8	523
Total	381,274	100.0	\$498
Source: Maryland Department of Economic and Employment Development			

The data in Table 14 reinforce the high socio-economic occupational status of the Montgomery Count workforce. Slightly less than a fifth of the workforce is in government, while the private sector employment is heavily skewed toward service and high tech industries, wholesale and retail trade, and finance.

Montgomery County's talented work force and strategic location adjacent to the Nation's Capital help shape its scientific-research and development-industrial character. The County is one of the Nation's centers of research and development activities—both private and governmental. Among major federal R&D installations are: National Institutes of Health, Food and Drug Administration, National Institute of Standards and Technology, Naval Ship Research and Development Center, Naval Surface Warfare Center, and National Naval Medical Center.

More than 40 percent of the County's major private employers are in the advanced computer, electronics, telecommunications, medical sciences and other high technology fields. The County is also the home of an impressive cross section of world, national and regional corporate headquarters, including Marriott, Martin Marietta, IBM and VITRO.

To date, more than 200 manufacturing firms are operating in the County, mostly in the electrical, electronic and precision instruments fields.

6.3.14. Income

The high socio-economic population pattern in Montgomery County is reflected in Table 15.

Table15			
INCOME PATTERNS			
EFFECTIVE BUYING INCOME (EBI) DECEMBER 1988			
Distribution	Percent Households		
	Montgomery County	Maryland	
\$ 0 - 9,999	5.8	12.5	19.0
- 19,999	10.5	17.0	22.1
- 34,999	19.4	25.2	26.6
- 49,999	17.6	19.2	16.0
and over	46.7	26.1	16.3
Median Household	\$47,082	\$32,119	\$24,488
Average Household	\$55,858	\$39,819	\$33,198
Per Capita	\$21,206	\$14,512	\$12,359
Total EBI (Millions)	\$15,109.6	\$67,712.0	\$3,064,006.0
Effective Buying Income: is personal income less personal tax and non-tax payments. It is commonly known as "disposable personal income." Reprinted by permission of Sales & Marketing Management Copyright: Survey of Buying Power Data Service, 1989			

6.3.1.5. Population Distribution Trends

Table 16 POPULATION		
	Montgomery County	Maryland
1970	522,809	3,923,897
1980	579,053	4,216,975
1990*	710,000	4,666,200
1995*	760,000	4,853,800
2005*	805,000	5,135,150
*Projection Incorporated Towns (1986): Barnesville, 110; Brookville, 120; Chevy Chase, 6,520; Gaithersburg, 32,350; Garrett Park, 1,120; Glen Echo, 280; Kensington, 1,760; Laytonsville, 170; Martin's Additions, 990; Poolesville, 3,740; Rockville, 46,900; Somerset, 1,090; Takoma Park (part), 10,150; Washington Grove, 770. Source: U.S. Bureau of the Census, Maryland Office of Planning		

6.3.1.6. Housing

Montgomery County's housing portfolio continued to grow in 1988, but at a much slower pace than in previous years. A total of 8,435 housing units were completed, 14 percent below the 1987 production level. Completions in the Washington, D.C. MSA and the nation also declined, but at a substantially lower rate. An overall slowdown in the economy, limited revenue bond financing for rental housing, and a short term response to increased housing prices slowed the County's housing completions activity.

Building permits for 6,533 units were issued in Montgomery County, a decrease of 11 percent from the 1987 level, and a decrease of 46 percent from the 1986 record high of 12,026 units. Montgomery County's share of the region's residential building activity remains the same as the previous year, roughly 20 percent.

Housing production in Montgomery County in 1988 declined for the second year in a row. The 1988 residential completions total of 8,435 units was 14 percent below the 1987 level of 9,831 units and 19 percent below the 1986 record high of 10,364 units. The County's 14 percent decline in completions in 1988 was substantially greater than the Washington, D.C. MSA 3 percent and nation's 8 percent declines.

The slowdown in housing production encompassed pre-construction activities, as well. County building permit authorizations, subdivision approvals, and plat recordations also declined significantly between 1987 and 1988. Residential building permit issuances, amounting to 6,533 units in 1988, declined for the second straight year, a decrease of about 11 percent below the previous year. Also, for the second year in a row, Montgomery County's share of total permit activity in the Washington, D.C. area fell to below 20 percent, compared to the over-30 percent shares which prevailed for four out of the five years between 1982 and 1986.

Housing sales, which, together with housing completions, reflect the strength of housing markets, declined 16 percent in 1988 to 21,808 units. This 4,300 unit decline in sales exceeds the nearly 1,400 unit

decrease in housing completions. It reflects consumer resistance to rapidly escalating prices for both new and existing housing.

The median price for all single-family housing (detached and townhouse, combined) rose 17 percent during 1988 to \$145,050. This increase was more than twice as great as 1987's 8 percent increase. The price of a new single-family, detached house increased the most, roughly 28 percent. These substantial price increases in 1988 worsened the County's housing affordability condition.

The Montgomery County Council adopted the Adequate Public Facilities Ordinance (APFO) in 1973 as part of the Montgomery County Subdivision Ordinance. The County uses the APFO to promote orderly growth by synchronizing development with the availability of public facilities needed to support that development. The Montgomery County Planning Board administers the Subdivision Ordinance and the APFO. In April of 1986, the County Council enacted legislation which established an Annual Growth Policy for the County. Since that time, the Council has used the AGP to direct the Planning Board's administration of the County's APFO. In the case of White Oak, future job-housing coordination appears to be adequate for the short-term future.

Table17 ADEQUATE PUBLIC FACILITIES ORDINANCE STAGING CHART FOR FAIRLAND-WHITE OAK		
	Jobs	Housing
Base	24,300	24,200
Gross Pipeline (9/27/90)	31,476	25,963
FY 92 Scenario 2/3 Gross Ceiling	19,816	23,839
Net Remaining	(11,660)	(2,124)
FY 92 Scenario 4 Gross Ceiling	19,816	23,839
Net Remaining	(11,660)	(2,124)
ESTIMATE		
	Number	Rank
Job Queue (9/30/90)	0	21
Housing Queue (9/30/90)	0	19
Job/Housing Ratio	1.25	12
Land Area in Square Miles	0.54	23
Source: FY 92 Annual Growth Policy , Montgomery County Planning Board 1990.		

6.3.2. NATURAL RESOURCES POLICY IN MONTGOMERY COUNTY

Natural resources policies provide for the conservation, protection, development, and use of natural resources, including air, water, forests, soils, rivers, streams, lakes, wildlife, energy, and minerals. General policies include the following:

- Provide an aesthetic and healthful environment for present and future generations.
- Preserve and protect the County's open space and parklands.
- Coordinate the timing of private development with the provision of sewerage and water service and other needed utilities.
- Ensure that agriculture in the County becomes or continues as a viable land use.
- Protect the natural environment from the consequences of growth by regulating activities which might damage soils, streams, water supply, air quality, plants, and wildlife, and by preserving agricultural and open space.
- Further energy efficiency and promote cost-effective energy use throughout all segments of the community while maintaining efforts to meet environmental goals and guidelines.

The policies of the Department of Environmental Protection and the Soil Conservation District, as expressed in the FY 90 budget, are to:

- Contribute to the protection of the public from unsafe and unhealthful environmental conditions.
- Implement measures designed to preserve and enhance the quality of the natural environment.
- Provide for the transportation and disposal of solid waste in an environmentally responsible and safe manner.
- Promote the effective management and conservation of soil, water, and related natural resources in the County.
- Prevent the construction and occupancy of unsafe structures.

6.3.3. FY 92 TRANSPORTATION STAGING CEILINGS

For the past two years, the Montgomery County Planning Board has proposed the following scenarios for future road projects directly relevant to NAVSWC-White Oak:

- Fairland/White Oak. The construction of two additional lanes to New Hampshire Avenue between Randolph Road and Notley Road and the construction of four additional lanes to New Hampshire Avenue between Notley Road and near Good Hope Road increasing the housing staging ceiling by 500 units. Despite this increase, Fairland/White Oak remains in a subdivision moratorium for both housing and jobs.

Quite clearly, this indicates increased congestion in the NAVSWC area.

6.3.4. MONTGOMERY COUNTY GOVERNMENT AND PLANNING AUTHORITY

All legislative powers which may be exercised by Montgomery County under the Constitution and Laws of Maryland, and those planning and zoning powers conferred by the Regional District Act, are vested in the Montgomery County Council.

Article I of the Montgomery County Charter defines the authority and powers, composition, and election of the Legislative Branch, the County Council. Article II describes the Executive Branch and vests executive power in an elected County Executive.

Although all seven Council Members are elected by voters throughout the County, five of the seven must at the time of the election reside in five different Councilmanic districts; no residence requirement governs the selection of two "at large" members.

The basic authority for planning, zoning, and subdivision in Montgomery County is provided by Article 28 of the Annotated Code of Maryland (recodified Chapter 780 of the Acts of the General Assembly of Maryland, 1959, as amended)—commonly referred to as the Regional District Act. Under this Act, the State Legislature established The Maryland-National Capital Park and Planning Commission (M-NCPPC) and the Maryland-Washington Regional District. Within the Maryland-Washington Regional District, which encompasses substantially all of Montgomery and Prince George's Counties, this Act provides the basic planning and zoning authority under which M-NCPPC and the District Councils for each County exercise their various planning and zoning powers. The Regional District Act provides that the elected County Councils act as the District Councils for their respective Counties.

7. ENVIRONMENTAL CONSEQUENCES

7.1. Introduction

As a weapon systems research and development center, the activities at White Oak are generally environmentally compatible. One of the major issues in the region, and perhaps across the United States is the issue of habitat preservation and habitat fragmentation. Certainly as an explosives research center, the need for space, due to reasons of safety and security, has contributed significantly to the local preservation of piedmont habitat types. As development in the region continues, the habitats on White Oak will become increasingly important from a biological perspective. In the coming years, it is conceivable that White Oak could become an island refugia in an urban environment. The ongoing activities at White Oak are generally confined to buildings and structures. Explosives testing is conducted in fully enclosed structures or "bomb proofs" which severely limit the external effects so most of the testing operations. While a number of chemical materials are used at White Oak, the management and handling of these materials is generally on a relatively small quantity basis. While material spills are always possible, the nature and quantities of the materials used at White Oak limits the potential for a major spill. This is reflected in the spill history of the facility which consists of a very few and minor releases.

7.2. Probable Effects - Center Operations

7.2.1. Physical components

The probable effects of NAVSWC White Oak operations on the surrounding physical environment are based on two types of activities. These are current operations, and historical practices with present day manifestations. For these two groups, the physical environment is divided into the three basic compartments, air, soil, and water. The effects of the operational practices are discussed under the compartment which is the primary target of the activity.

7.2.1.1. Air

Present day activities affecting the air compartment are generally minor in impact and show no evidence of contributing to any deleterious changes locally or in the region, short or long term. The types of activity which occur which affect the air compartment include automobile emissions, emissions from laboratory fume hoods, emissions of combustion products from explosives testing, and the possibility of the spill of a volatile material on the center.

Automobile emissions are quite low given the activity of the surrounding area. Aside from the commuting impact produced by center personnel, traffic on the center is very low and compared to the steady stream of traffic outside the center boundaries can only be called insignificant.

No significant emission sources related to construction were noted. No roadway paving activities were observed or are anticipated. No open burning is permitted on the center and natural fires are actively and quickly suppressed.

Laboratory fume hoods are a source of chemical emissions to the atmosphere however, in any laboratory situation at the center, the duration and composition of the emissions are sporadic and variable. Relatively small quantities of solvents and reagents are used in any given hood situation. While no mass balance for emissions from hoods was conducted, the levels anticipated from the practice are expected as insignificant.

Explosive testing at White Oak is confined to enclosed structures or "bomb proofs". Emissions generated from these activities are limited to the products of combustion or explosions resulting from small quantities of test material. The ability exists to test up to 50 lbs of explosive at any time in one structure. Given the quantities of material involved and the products of detonation, the impact from this activity on local air quality is probably imperceptible beyond the exhaust port of the structure. Predominant gaseous products expected from this operation are CO₂, H₂O, and NO_x (generally NO and NO₂).

No major chemical spills were identified from a review of the center current or historical operations. Given the types of materials used on a regular basis (acetone, alcohols, like solvents) and stored in large (>55 gallon) quantities, the likelihood of a significant air emergency is very low. No large storage systems containing toxic gasses were identified such as large volumes of chlorine or anhydrous ammonia. Toxic gasses are used but handled and stored in cylinders for laboratory use. No wastewater treatment facility has been operated at the center since the centers connection to the WSSC treatment system in 1982.

While the potential for a gas release is possible, the quantities and types of compressed gasses available in any given location suggests that the episode would be of short duration and of impact to the immediate (laboratory space, building area) only and of no significance to the surrounding environment or surrounding community. Flammable gasses are used throughout the center in laboratory quantities and in medium (200 gal) storage tanks for heating purposes. As the primary hazard from these materials is their flammability, the expected effects from a release of these materials will most likely occur in the form of a fire confined to the vicinity of the tank or building. Significant distribution of any of the gaseous products is unlikely as they would probably find a source of ignition before wide area dispersion could be accomplished. As the vapors from these gasses (propanes generally) are of very low toxicity, the environmental impact of such a release is expected to take the form of thermal rather than chemical toxic effects.

7.2.1.2. Soil and Groundwater

NAVSWC White Oak is connected entirely to municipally supplied water. No evidence was found for any practice at the center which requires the use of groundwater supplies for center activities.

No current surface or groundwater discharges were identified which result from any operational activity at the center. Interviews and site observations indicate the past presence of leaching fields used as discharge from a variety of buildings and operations. However all of these fields have apparently been out of service and disconnected for a number of years. All waste discharges are either connected to WSSC or captured and treated according to regulations.

Stormwater runoff is transported by drainage ditches, and culverts and ultimately discharges to the Paint Branch Creek System. At present five discharges from this system, shown in figure 5, are permitted under the NPDES system and monitored regularly for oil and grease. According to interviews with center personnel, these discharges have never exceed the discharge parameters of the Clean Water Act, National Pollution Discharge Elimination System (NPDES) permit. The environmental impacts associated with these discharges is limited to the possible increase in water volume discharged through Paint Branch Creek and its tributaries. Negative effects from discharge constituents pollutants were not observed or identified in interviews during this effort and are not considered significant. This is further verified by the fact that Paint Branch Creek supports a native population of brown trout which is highly sensitive to changes in water quality.

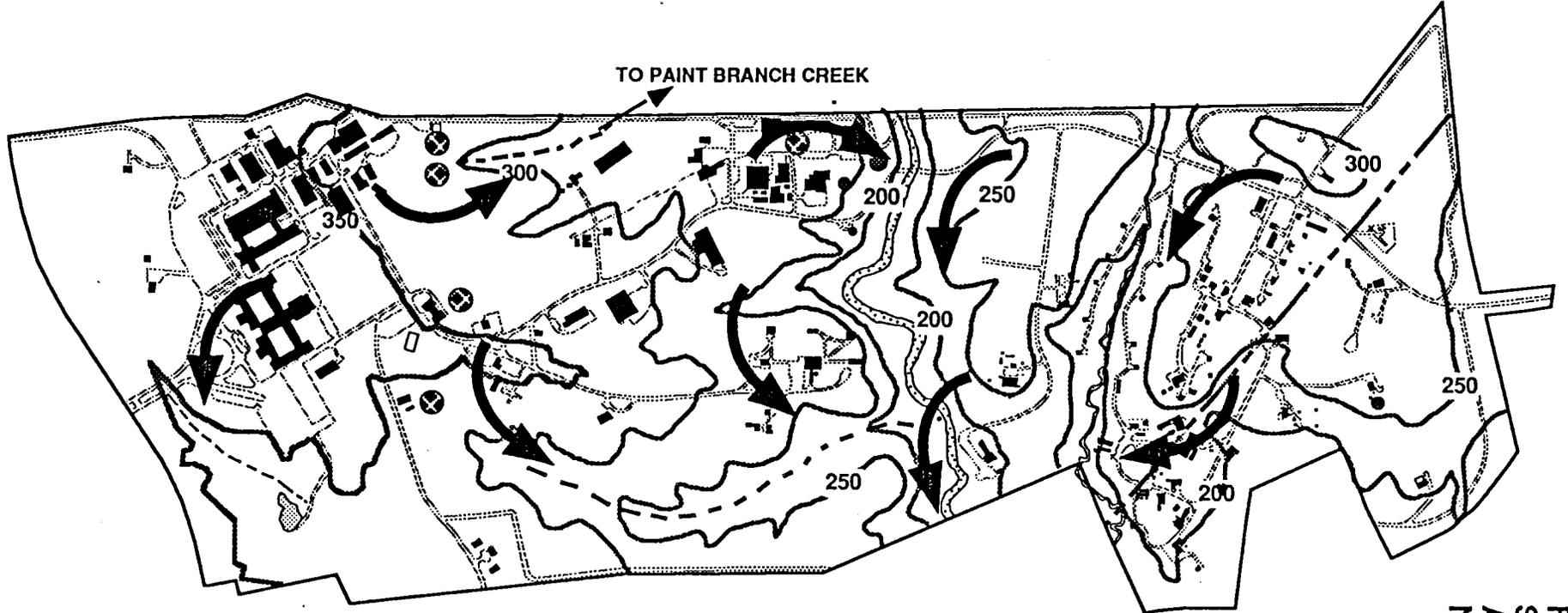
Other surface runoff (figure 5) is generated by the maintained areas of the center such as the lawn areas and golf course. As with the storm water collection system, there is no evidence of any impact on the surface or groundwater systems from these activities.

Areal spraying operations are periodically conducted for control of the Gypsy Moth at NAVSWC White Oak. These operations are conducted annually as required based on annual egg mass surveys conducted at the center. These operations are conducted with strict coordination and cooperation between local and state officials. No effect on the surface or groundwater systems resulting from these operations has been identified.

As with many industrial/chemical operations, past disposal practices have left a legacy of contaminated soil and groundwater. This is also the case at White Oak. In 1984, fourteen candidate disposal sites were identified in the Initial Assessment study conducted at White Oak by NEESA (Naval Energy and Environmental Support Activity). Of these sites, seven, shown in figure 6, were identified as significant requiring additional study under the Installation Restoration Program (IRP). These sites are currently the subject of a remediation program designed to assess the need for and technologies available to remove the site contaminants. At this writing, preliminary results regarding contaminant composition and transport characteristics have been developed. However, the data available has served more to identify gaps than provide concrete answers. Generally, however, evidence suggests contaminant distribution has not occurred to the degree of affecting the surface or groundwater system beyond the immediate confines of the subsurface spill. No present offsite impacts are noted at this time and the remediation phase of this study will further define the foreseeable environmental and health impacts from these sites.

7.2.2. Biological components

As Stated in previous sections, the activities at White Oak are generally compatible with the surround environment and center impacts on the surrounding biology of the area is no exception. This statement is made in the context of the alternative, eg the surrounding urban environment. Because of the nature of the activities at White Oak, safety demands and security requirements have promoted the preservation of much of the surrounding habitat in a relatively natural state. While White Oak operational requirements have converted segments of the White Oak land area for Navy use, the majority of the forest on the center is intact and productive habitat. Regarding the availability of



⊗ - NPDES DISCHARGE LOCATION



SCALE:

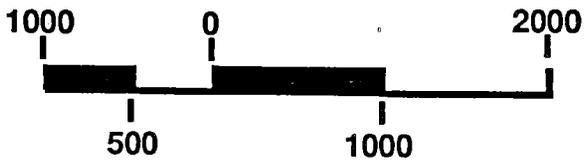
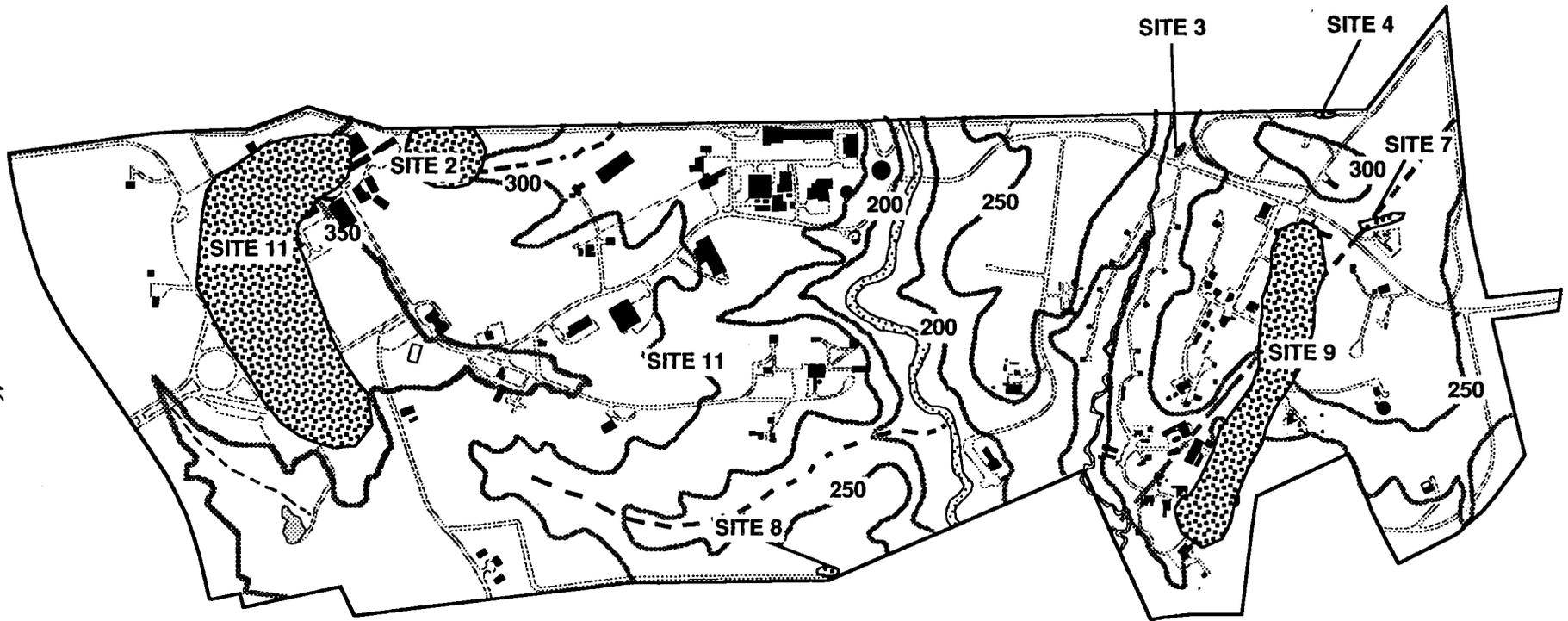


FIGURE 5
SURFACE DRAINAGES
AND STORM WATER OUTFALLS
NAVSWC WHITE OAK



SCALE:

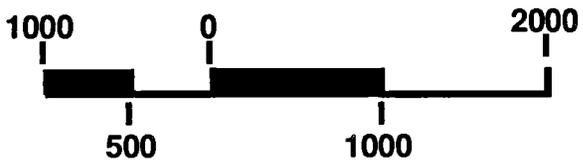


Figure 6
Installation Restoration Sites
NAVSWC White Oak

piedmont habitat in the White Oak area, surrounding development continues to convert remaining habitat to human uses such as dwellings and business areas. As this continues, White Oak forest areas will become increasingly isolated ecologically and more important to local wildlife species. This phenomena is common with military installations where urban encroachment has resulted in the creation of islands of habitat limited to the installation. Of course, when this occurs, free ranging species requiring relatively large home ranges are usually the first to become adversely affected.

A small deer herd is found at White Oak and from observations of the browse level and occasional sightings appears to be stressed. This is not unexpected given the general lack of predators and relatively localized nature of the available habitat. Doubtless, immigration and emigration to and from the center is minimal and aside from occasional poachers, automobile collisions, and wild dogs, factors limiting herd size are probably related to starvation and disease. Hunting of the herd has been curtailed and no active management program to limit herd size is currently underway. As has been demonstrated in numerous other urban situations, deer herd management has not only biological consequences but emotional consequences as well.

Biologically, herds tend to forage the area until food resources are depleted in the short term and with damage to the forage regenerative capacity in the long term. This results in the limiting of forest understory plant species which ultimately impacts the health and productivity of the forest ecosystem at large. In this respect, other wildlife species such as birds, small mammals, and insect populations, which also depend on the understory, are adversely impacted.

While no specific center activity was observed which directly impacts the deer herd, the island nature of the habitat and maintenance of forest areas by the Navy has created a situation the vigor of the deer population is directly related to the management activity conducted at the center.

Other wildlife species expected in the area benefit from the variety of habitats afforded by White Oak and the relative protection afforded under Navy stewardship. Active programs are conducted at the center which promote nesting, food plots, and general habitat maintenance in the form of forest management. In general, when compared to the surrounding community, White Oak will become increasingly important as a wildlife refugia in the area.

7.2.3. Socio-economic components

The economic, social and political (ESP) system of the Montgomery-Prince George's metroplex communities is highly developed across all standard dimensions. In particular, the immediate planning districts and policy analysis areas of Montgomery County (Colesville- White Oak-Fairland) and Prince George's County (Fairland-Beltsville) that surround NAVSWC reflect high density commercial and residential development.

Because of the characteristics of the M-PG County populations and the increasing public awareness of the dangers presented by safety and environmental hazards, strategic planning on political and social risk assessment should continue. While there are no organized groups that have been formed around any adverse reaction to any NAVSWC operational or environmental issues, the potential for political, public opinion and interest group mobilization is not to be discounted. An installation like NAVSWC is often expected to exist without harmful intrusion on local affairs and when a politically sensitive event occurs, criticism and public relations can deteriorate. Present and future areas of political uncertainty and sensitivity that exist between NAVSWC and the White Oak region warrant concern and contingency planning.

As emphasized in the social-political assessment, the system will continue to experience a high degree of social, economic and political stability. This highly-educated, politically- sophisticated set of citizens ignore NAVSWC operations until a problem occurs. There are risks attached to ignoring this social phenomena, especially in bedroom communities where NAVSWC ties are weak or non-existent.

In particular, the White Oak area has upscale residential developments, an educated high-income citizenry and a political climate that demands government services and a safe environment along with economic growth. This pattern exists in communities where residential-commercial density co-exists with military installations. Such an environment creates a high probability that the local governments and citizen groups would be extremely sensitive to possible scenarios depicting a mishap or emergency. Community values that usually characterize the ESP (economic, sociological, political) attributes of the population and private sector corporations that inhabit the area make it probable that public opinion and key interest groups would react adversely to the suggestion that NAVSWC-White Oak operations were characterized by unacceptable levels of risk. A number of factors contribute to this assessment of socio-political risk and are discussed below.

7.2.3.1. EMERGENCY MANAGEMENT AND PUBLIC SAFETY

In both Montgomery and Prince George's Counties, emergency preparedness and public safety functions are taken very seriously. The public safety function includes four agencies responsible for protecting the life and property of M-PG citizens: the Police and Fire Departments, the Volunteer Fire Companies, and the Office of Emergency Preparedness. Reflecting the continuing commitment to the protection of its citizens, all public safety agencies now come under the supervision of a newly created Public Safety Director, who is responsible directly to the County Executive.

The Fire Department is responsible for fire prevention and suppression, fire and rescue communications, research and training, and coordination of the Volunteer Fire Companies. The Department also provides emergency medical services, including basic ambulance and rescue services and the County's Mobile Intensive Care Units (which provide advanced pre-hospital life support). Supplementing the current career staff of fire fighters and paramedics are more than 2,000 active volunteer fire fighters. In Prince George's County, FY 91 will add the following:

- Fifty-three additional fire fighters and 10 civilian positions.
- A larger staff of arson investigators and explosives technicians who will assist in the County's War on Drugs.
- A standard training program for new employees, to be established by the Communications Division, which will serve as a model for the State of Maryland.

The Office of Emergency Preparedness (OEP) is responsible for coordinating the emergency social service responses of the County government in connection with natural or man-made emergencies and disasters affecting both counties. The Office prepares contingency plans for disaster responses, responds 24 hours a day to emergency needs (such as shelter for fire victims) and coordinates State and Federal financial aid for residents after disasters. Both counties have a close relationship in emergency planning and have established elaborate operations plans to cope with emergency events. Each county has policy plans dealing with hazardous waste disposal, explosions, radiological contamination, fire and other man-made disasters.

In a confidential interview with the Director of the Prince George's Office of Emergency Preparedness, there is an apparent increased interest in achieving even greater coordination with Montgomery County. Both counties belong to the Emergency Information System (EIS). While it does not appear that NAVSWC operations are perceived as an immediate threat to public safety at this time, our conversation indicated an awareness that the potential for an accident was known. Both counties are planning and it should be expected that greater scrutiny of NAVSWC operations that involve the local public-private domain will occur.

7.2.3.2. ENVIRONMENTAL PROTECTION

Another key actor in the ESP environment is the Washington Suburban Sanitary Commission (WSSC). This agency is a bi-county unit serving both Montgomery and Prince George's Counties. It controls sewer line effluent flow and has regulatory authority over sewer hook-ups, connections and extensions. The WSSC permit system grants permissions dependent on the location and situation of sites in relation to the existing sewerage system. NAVSWC-White Oak is in compliance with all existing WSSC ordinances and regulations, including the Adequate Public Facilities Ordinance (APFO) adopted in 1973.

According to the Emergency Operations Plans of both counties, WSSC has a primary first line responsibility for the water and sewerage resource categories concerning anticipated emergency situations. In case of a NAVSWC sewer spill, both NAVSWC and County Fire Departments would be notified by WSSC (assuming NAVSWC was unaware of the incident.)

According to emergency procedures, the appropriate emergency response teams would take control and mitigation actions necessary to stabilize the incident. Once the emergency situation is stabilized, the Fire Department teams would be responsible for maintaining site safety during any product transfer and recovery operations. Final clean-up and recovery of the incident site is the legal and financial responsibility of the spiller (where identified). Where identity cannot be established, operations will be coordinated with the Maryland Department of the Environmental Protection as necessary to ensure timely clean-up and restoration of the site area.

Within the grounds of NAVSWC, the hazardous materials response authority would fall under Federal emergency, fire and safety correction orders, and U.S. statutory law.

There are four WSSC water treatment facilities and one pumping station with the WSSC Control Center located at the South Laurel facility. The hazardous materials-chemicals sections of both Montgomery and Prince George's County Plans fall under the requirements of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA, Title II). An objective of the planning effort is to provide hazards analysis of target facilities which manufacture, use or store hazardous chemicals. Prince George's County Hazardous Materials Emergency Planning Committee (LEPC) has developed a worksheet to provide County emergency personnel with a method to rate and prioritize materials target facilities within their first-due area. The worksheet is divided into three sections: Hazards Identification; Vulnerability Analysis; and Risk Analysis. By evaluating each facility across these three dimensions in a matrix, final risk and vulnerability ratings (from 1 to 5) are assigned.

In an NAVSWC hazardous sewer spill scenario, WSSC would act as the primary organization to initially react with County Fire Departments playing a support role at the behest of the internal Navy HAZ-MAT capability within NAVSWC. It is therefore critical that close coordination be maintained between NAVSWC and the WSSC.

Each County has a department dealing with environmental protection that is responsible for a wide-range of activities. These Departments oversee contracts with refuse collection firms, operate landfills, and are responsible for all refuse disposal activities. They develop and implement policies regarding recycling, water quality, stormwater and solid waste management, energy management, and other environmental issues. The Departments' licensing, permitting, and inspection staffs are responsible for enforcing a variety of County laws relating to construction standards; sediment and erosion control; housing and zoning code compliance; abandoned vehicle control; the Clean Lot, Anti-Litter, and Weed Ordinance; landlord-tenant affairs; and animal control. The Departments manage the development of the Tree Preservation Program, which requires the preservation of forested areas during site design and construction of new developments and provides penalties for clearing trees without a permit or in violation of an approved Tree Conservation Plan.

The adverse reaction of County governments and local citizen groups to prior public health dangers from hazardous waste sites points to heightened concern to potential dangers to public safety. A tough state hazardous waste remediation plan has been promulgated by the Maryland Department of Environmental Protection. The approach is preventative and outlines strong regulatory controls and comprehensive management of environmental impact. Clearly, the local political jurisdictions and citizenry will not tolerate unacceptable levels of public health danger of any type and can be expected to become activated once such risks become known.

7.2.3.3. IMPLICATIONS OF LOCAL CONCERNS ABOUT NAVSWC-WHITE OAK OPERATIONS

There appears to be little empirical evidence of specific community concern about NAVSWC operations or safety issues. Based on three interviews with environmental and emergency planning officials in each of the county governments, the NAVSWC-White Oak site is not currently embroiled in any political or safety-environmental controversies with local residents. Besides the usual problems associated with linking high volumes of traffic and commercial-residential density with normal experimental operations in a military R&D facility, NAVSWC-White Oak appears to be viewed by the localities in a neutral manner. The lack of extensive public opinion precludes a more complete picture of citizen attitudes.

1. NAVSWC-White Oak activities exist within a complex, highly developed economic, political and social system. While no major emergency or public safety crisis has occurred at NAVSWC-White Oak, the developed social, economic and political character of localities like Montgomery and Prince George's Counties will become highly sensitive to even the suggestion that operations are harmful or unsafe. A conservative approach to environmental or safety risk assessment would insure that a potentially adverse public-private sector political reaction could be managed. As a major employer in the area, NAVSWC would be held accountable by local officials and long-term public opinion could be galvanized against NAVSWC. In the actual event of a major problem, NAVSWC needs to have a decision-making package and a management program in place to deal with political and social repercussions emanating from Montgomery-Prince George's citizens and government officials. In the unlikely event of an accident or gross breach of Federal, State or local laws or ordinances, political repercussions could well be severe.

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