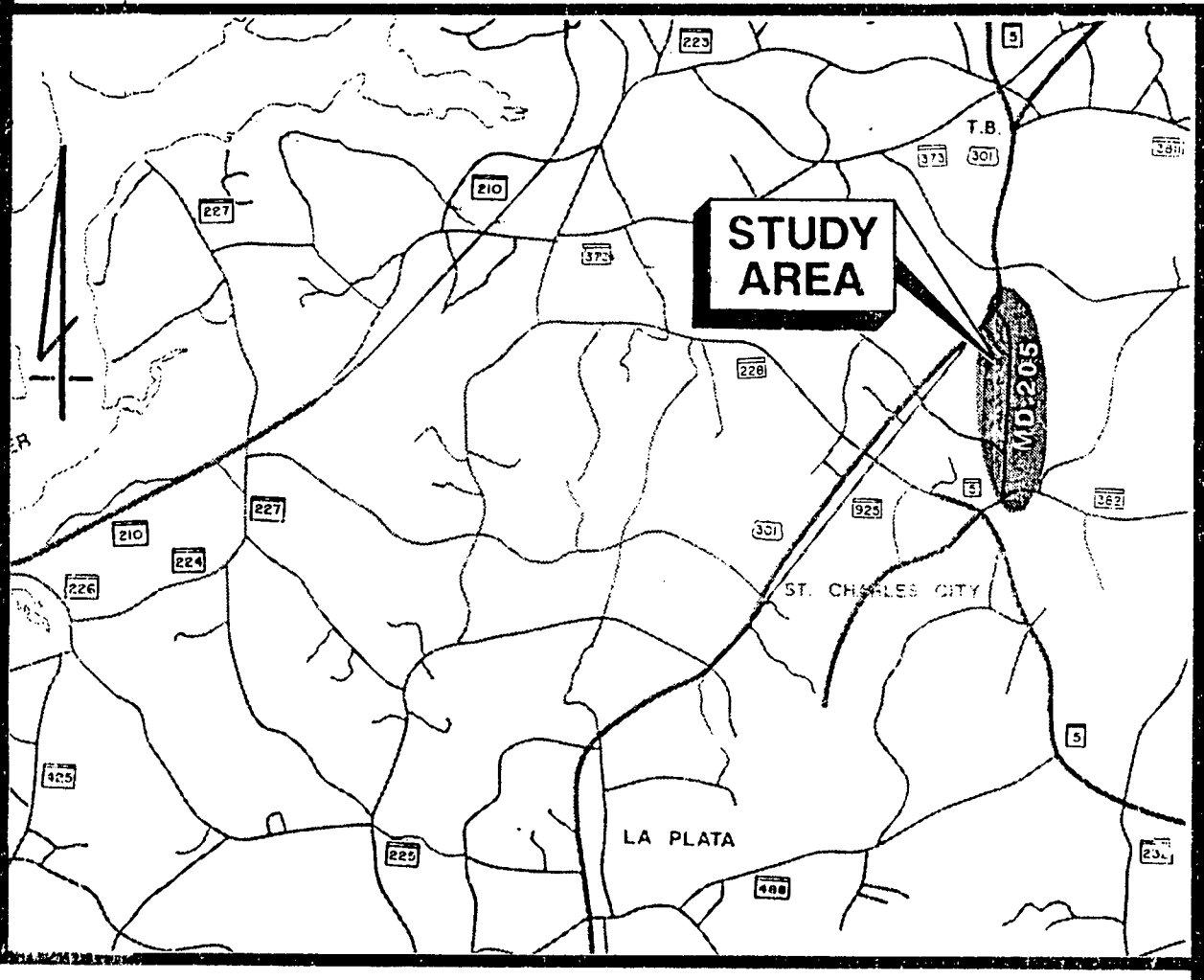
ENVIRONMENTAL ASSESSMENT

Contract No. CH 566-151-571

Proposed MD 5 Relocated (MD 205) From MD 5 To US 301/MD 5 And The Interchange At US 301/MD 5 Charles County, Maryland



prepared by
U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

and
MARYLAND DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION

Report Number: FHWA-MD-EA-90-01

Federal Highway Administration

Region III

Proposed MD 5 Relocated (MD 205) from
MD 5 to US 301/MD 5 and the
Proposed Interchange at US 301/MD 5
Charles County, Maryland

Administrative Action

Environmental Assessment

U.S. Department of Transportation
Federal Highway Administration

and

State of Maryland
Department of Transportation
State Highway Administration

Submitted pursuant to 42 U.S.C. 4332(2)(C), 23 CFR 771
and CEQ Regulations (40 CFR 1500 et seq.)

Hal Kassoff
Administrator

1/5/90
Date

by: Neil J Pedersen
Neil J. Pedersen, Director
Office of Planning and
Preliminary Engineering

1/19/90
Date

by: Herman Rodrigo
FOR Federal Highway Administration
Division Administrator

SUMMARY

SUMMARY

A. Administrative Action

( ) Environmental Impact Statement
(x) Environmental Assessment
( ) Section 4(f) Involvement

B. Additional information concerning this project may be obtained by contacting:

Mr. Louis H. Ege, Jr., Deputy Director
Office of Planning and Preliminary Engineering
State Highway Administration
707 N. Calvert Street
Baltimore, Maryland 21202
Hours: 8:15 a.m. to 4:15 p.m.
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W. 40th Street
Baltimore, MD. 21211
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Phone: 962-4440

C. Description of Action

The purpose of this study is to increase capacity and improve the safety to Existing MD 205 (Proposed MD 5 Relocated). This roadway is currently being used as a bypass of the congested Waldorf area connecting MD 5 with US 301/MD 5. It links several suburban communities, aides in the transportation of goods and services, and acts as highly important commuter route. The objective of the mainline alternates and interchange options proposed are to alleviate existing congestion and provide for continued safe and efficient operation into the future.

D. Alternates Description

Three (3) mainline alternatives for MD 205 and four (4) interchange options for the intersection of MD 205 with US 301/MD 5 are being considered:

o Alternate 1 (No-Build):

The No-Build Alternate would provide no significant improvement to MD 205. Spot safety and intersection improvements would still occur over time as part of normal highway maintenance and safety operations but no additional capacity would be added.

As traffic volumes continue to grow, traffic delays and the length of the peak hours will expand. Detailed traffic reveals that MD 205 will operate at peak hour level of service (LOS) F in the design year (2015). It can be expected that as the magnitude and derivation of congestion increase over time, the rate of accidents will also increase.

- Mainline Build Alternates

The project has been separated into three segments with interchangeable alternates within each segment. The first segment would begin at MD 5 (at the south) and extends to just south of Trinity Memorial Gardens Cemetery (±4000'), the second segment would match with Segment I and extend to just north of Trinity Memorial Gardens Cemetery (±3000'), and third segment would match with Segment II and extend to the terminus of MD 205 at the intersection of US 301/MD 5 (±10,400'). See Figure I-2.

Segment I begins at MD 5 (at the south) and extends to just south of Trinity Memorial Gardens Cemetery (±4000'). Within this segment, there are two alternates. Alternate 5 would follow the basic alignment of existing MD 205. Alternate 6 would be a relocation. A roadway on new location would split from MD 5 approximately 2400' south of the existing MD 5/MD 205 intersection and would match into the basic alignment of MD 205 by the end of the segment. The typical section for both Alternate 5 and 6 would include a 6-lane, divided roadway with an open median of 34'.

Segment II would match with Segment I and would extend to just north of Trinity Memorial Gardens Cemetery (±3000'). Within this segment, there would also be two alternates. Alternate 5/6 would widen to the west of the existing roadway and traverse through the cemetery. Alternate 5/6 Modified would widen to the east of the existing roadway. The typical section (for both alternates) would include a transition from the Segment I typical section to a 6-lane, divided roadway with a 20' curbed median.

Segment III would match with Segment II and would extend to the terminus of MD 205 at the intersection of US 301/MD 5 (±10,400'). Within the segment, there is one alternate. Alternate 5/6 (preferred) would follow the basic alignment of existing MD 205 with slight shifts to minimize right-of-way impacts. The typical section from Segment II would extend to just south of the railroad tracks. From the railroad tracks to the intersection with US 301/MD 5 a 4-lane, divided roadway with a 20' curbed median. Although this short (±700') 4-lane section would not adequately handle the design year (2015) capacity requirements, it is anticipated that an interchange option would be constructed prior to the need for 6 lanes.

Median openings would be provided at cross roads. A minimum spacing of 750' is required between openings. Sub-Station Road, Indian Lane, and Schlagle Road all tee into MD 205 within 400' of each other. Three options to provide adequate median opening spacings are available. The first option, Relocated Sub-Station Road Option 1, would relocated Sub-Station Road to the north (approximately 850'). A median opening would be placed at Relocated

Sub-Station Road and at Schlagle Road. Option 2 and 3 would each relocated Sub-Station Road to create a 4-way intersection with Schlagle Road. Indian Lane would not have a median opening with any option. A connection between Schlagle Road and the cul-de-sac on Indian Lane could be provided.

- Interchange Options

There are four interchange options for the intersection of MD 205 with US 301/MD 5. The interchange options will be built at a later date than the mainline alternates.

Interchange Option A would provide directional ramps between MD 205 and US 301 to the north. MD 205 would be relocated between the Pinefield Development and the rear of the Pinefield Shopping Center and would interchange with US 30' approximately 800' north of the existing intersection. Interchanging movements would only be provided for US 301 to and from the north via two-lane directional ramps. All traffic destined to and from US 301 to the south would use the existing signalized intersection.

Interchange Option B is very similar to Option A. It would also provide directional ramps between MD 205 and US 301 to the north. This option would differ along southbound US 301. The directional ramp to MD 205 would exist from the median. This would require southbound US 301 to be relocated to the west. The existing signalized intersection would remain, similar to Option A, for southbound US 301 and Western Parkway.

Interchange Option C would provide a flyover ramp from southbound US 301 to MD 205. The flyover ramp would travel behind the Chaney Building and bridge over US 301 at the existing signalized intersection location. This would require northbound MD 205 to be shifted slightly. Additionally, a service road network behind both shopping centers would be provided to replace certain existing access points that would be removed under this option.

Interchange Option D proposes a full movement trumpet interchange. The ramps to and from southbound US 301 would loop behind the Chaney Building. Additional directional ramps would be provided for all movements. A service road network, similar to Option C, would be provided behind both shopping centers.

E. Summary of Impacts

A "Comparison of Impacts" follows. The social and economic environment would generally be improved as a result of increased capacity and safer conditions. In localized areas, access may be changes or hindered. Several displacements of residents and commercial establishments will occur, including one possible displacement of a minority family. There are no 4(f) impacts. The number of displacements will vary dependent on the Alternate selected in each project segment and will range from a minimum of two (2) displacements to a maximum of six (6) displacements. Similarly, the proposed interchanges will produce displacements that vary by Option. A minimum of three (3) to a maximum of six (6) displacements will occur.

There is one area that meets and one area that exceeds the Federal noise abatement criteria. Generally, the alignments were shifted to minimize right-of-way impacts, thereby providing natural attenuation to the project noise levels.

There are no air quality sites that will exceed State or National Ambient Air Quality Standards (S/NAAQS).

No threatened or endangered species are known to be impacted by this project. Impacts to fish and wildlife would be minor with mitigation, as would effects to water quality and wetlands. New pavement would be constructed in floodplain areas under some alternates.

Construction impacts would include noise, dust, sedimentation, access and neighborhood disruption. Mitigation through careful construction timing, revegatation, sediment control, and other measures would minimize both short term and long term impacts. Table S-I summarizes specific impacts.

COMPARISON OF IMPACTS

Analysis Item	No-Build	Seg I Alt 5	Seg I Alt 6	Seg II Alt 5/6	Mod. Seg II Alt 5/6	Seg III Alt 5/6
Economic						
1. Residential Displacements	0	1	0	0	2	2
2. Minorities Relocated	0	0	0	0	0	0
3. Business Displacements	0	0*	0*	0**	1	2***
4. Total Properties Affected	0	8	9	16	15	42
5. Historic Sites Affected	0	0	0	0	0	0
6. Archeological Sites Affected	0	0	0	0	0	0
7. Public Recreational Lands	0	0	0	0	0	0
8. Effect on Residential Access	no	no	yes	no	no	no
9. Consistent w/Land Use Plans	yes	yes	yes	yes	yes	yes
Natural Environment						
1. Loss of Woodlands (acres)	0	2	2	2	1	8
2. Effect on Wildlife Population	0	0	0	0	0	0
3. Effect on Endangered Species	0	0	0	0	0	0
4. Stream Crossings	0	1	2	1	1	1
5. Wetland Areas Affected(ac.)	0	.75	2	0	0	1.4
6. 100 yr Floodplain Affect(ac.)	0	1	1	0	0	0
7. Prime Farmland Affected (ac.)	0	0	0	0	0	0
8. Air Quality Impacts (sites exceeding S/NAAQS)	0	0	0	0	0	0
9. Noise Sensitive Areas (NSA's exceeding Federal criteria or experiencing a 10dBA or greater increase	3	0	0	1	2	7

* A barn would be displaced
** A displacement of 1500 grave sites (125 occupied)
*** One displacement would be a church

COMPARISON OF IMPACTS CONT'D

Analysis Item	Reloc. Sub-Station Road OPT 1-2-3	INT OPT A	INT OPT B	INT OPT C	INT OPT D
Economic					
1. Residential Displacements	O-1-1	4	3	0	0
2. Minorities Relocated	0-1-0	0	0	0	0
3. Business Displacements	0-0-0	2	2	3	4
4. Total Properties Affected	4-2-2	18	17	22	19
5. Historic Sites Affected	0-0-0	0	0	0	0
6. Archeological Sites Affected	0-0-0	0	0	0	0
7. Public Recreational Lands	0-0-0	0	0	0	0
8. Effect on Residential Access	yes	no	no	no	no
9. Consistent w/Land Use Plans	yes	yes	yes	yes	yes
Natural Environment					
1. Loss of Woodlands (acres)	2.8.8-.6	1	1	2	2
2. Effect on Wildlife Population	0-0-0	0	0	0	0
3. Effect on Endangered Species	0-0-0	0	0	0	0
4. Stream Crossings	0-0-0	2	3	4	4
5. Wetland Areas Affected (ac.)	.4-0-0	.94	1.1	2.4	2
6. 100 yr Floodplain Affected (ac)	0-0-0	1.5	1.4	1.4	1.9
7. Prime Farmland Affected (ac)	0-0-0	.84	.52	.38	.35
8. Air Quality Impacts (sites exceeding S/NAAQS)	0-0-0	0	0	0	0
9. Noise Sensitive Areas (NSA's exceeding Federal abatement criteria or experiencing a 10dBA or greater increase	0-0-0	0	0	0	0

The following Environmental Assessment Form is a requirement of the Maryland Environmental Policy Act and Maryland Department of Transportation Order 11.01.06.02. Its use is in keeping with the provisions of 1500.4 (k) and 1506.2 and .06 of the Council of Environmental Quality Regulations, effective July 31, 1979, which recommend that duplication of federal, state, and local procedures be integrated into a single process.

The checklist identifies specific areas of the natural and social-economic environment which have been considered while preparing this environmental assessment. The reviewer can refer to this appropriate sections of the document, as indicated in the "Comment" column of the form, for a description of specific characteristics of the natural or social-economic environment which the potential impacts, beneficial or adverse, that the action may incur. the "No" column indicates that, during the scoping and early coordination processes, that specific area of the environment was not identified to be within the project area or would not be impacted by the proposed action.

ENVIRONMENTAL ASSESSMENT FORM

		Yes	No	Comments
A.	Land Use Considerations			
1.	Will the action be within the 100-year floodplain?	x		Pg. I-18
2.	Will the action require a permit for construction or alteration within the 50-year floodplain?		x	
3.	Will the action require a permit for dredging, filling, draining or alteration of a wetland?	x		Pg. IV-17
4.	Will the action require a permit for the construction or operation of facilities for solid waste disposal including dredge and excavation spoil?		x	
5.	Will the action occur on slopes exceeding 15 percent?		x	
6.	Will the action require a grading plan or a sediment control permit?	x		Pg. IV-12
7.	Will the action require a mining permit for deep or surface mining?		x	
8.	Will the action require a permit for drilling a gas or an oil well?		x	
9.	Will the action require a permit for airport construction?		x	
10.	Will the action require a permit for the crossing of the Potomac River by conduits, cables or other like devices?		x	
11.	Will the action affect the use of a public recreation area, park, forest, wildlife, management area, scenic river, or wildland?		x	

	Yes	No	Comments
12. Will the action affect the use of natural or man-made features that are unique to the county, state or nation?	____	x	____
13. Will the action affect the use of an archeological or historical site or structure?	____	x	Pg. IV-9
B. Water Use Considerations			
14. Will the actin require a permit for the change of the course, current, or cross-section of stream or other body of water?	____	x	____
15. Will the action require the construction, alteration, or removal of a dam, reservoir, or waterway obstruction?	____	x	____
16. Will the action change the overland flow of stormwater or reduce the absorption capacity of the ground?	x	____	Pg. IV-12 & IV-13
17. Will the action require a permit for drilling of a water well?	____	x	____
18. Will the action require a permit for water appropriation?	____	x	____
19. Will the action require a permit for the construction and operation of facilities for treatment or distribution of water?	____	x	____
20. Will the project require a permit for the construction and operation of facilities for sewage treatment and/or land disposal of liquid waste derivatives?	____	x	____
21. Will the action result in any discharge into surface or sub-surface water?	x	____	Pg. IV-13

		Yes	No	Comments
22.	If so, will the discharge affect ambient water quality parameters and/or require a discharge permit?	____	x	____
C.	Air Use Considerations			
23.	Will the action result in any discharge into the air?	x	____	Pg. IV-37
24.	If so, will the discharge affect ambient air quality parameters or produce a disagreeable odor?	____	x	Pg. IV-41
25.	Will the action generate additional noise which differs in character or level from present conditions?	x	____	Pg. IV-31 & IV-32
26.	Will the action preclude future use of related air space?	____	x	____
27.	Will the action generate any radiological, electrical, magnetic, or light influences?	____	x	____
D.	Plants and Animals			
28.	Will the action cause the disturbance, reduction, or loss of any rare, unique or valuable plant or animal?	____	x	Pg. IV-25
29.	Will the action result in the significant reduction or loss of any fish or wildlife habitats?	____	x	____
30.	Will the action require a permit for the use of pesticides, herbicides or other biological, chemical or radiological control agents?	____	x	____
E.	Socio-Economic			
31.	Will the action result in a preemption or division of properties or impair their economic use?	x	____	Pg.IV-1 & IV-2

		Yes	No	Comments
32.	Will the action cause relocation of activities or structures, or result in a change in the population density or distribution?	x		Pg. IV-3
33.	Will the action alter land values?		x	
34.	Will the action affect traffic flow and volume?	x		Pg. II-1 to II-6
35.	Will the action affect the production, extraction, harvest or potential use of a scarce or economically important resource?		x	
36.	Will the action require a license to construct a sawmill or other plant for the manufacture of forest products?		x	
37.	Is the action in accord with federal, state, regional and local comprehensive or functional plans, including zoning?	x		Pg. IV-8
38.	Will the action affect the employment opportunities for persons in the area?	x		Pg. IV-6
39.	Will the action affect the ability of the area to attract new sources of tax revenue?	x		Pg. IV-6 to IV-8
40.	Will the action discourage present sources of tax revenue from remaining in the area, or affirmatively encourage them to relocate elsewhere?		x	
41.	Will the action affect the ability of the area to attract tourism?		x	
F.	Other Considerations			
42.	Could the action endanger the public welfare, safety, or welfare?		x	

	Yes	No	Comments
43. Could the action be eliminated without deleterious effects to the public health, safety, welfare, or the natural environment?	____	x	Pg. II-1 to II-3
44. Will the action be of statewide significance?	____	x	____
45. Are there any other plans or actions (federal, state, county or private) that, in conjunction with the subject action could result in a cumulative or synergistic impact on the public health, safety, welfare or environment?	____	x	____
46. Will the action require additional power generation or transmission capacity?	____	x	____
47. This agency will develop a complete environmental effects report on the proposed action?	____	x*	____

*This environmental assessment has been prepared in accordance with the National Environmental Policy Act and 23 CFR, Part 771. It also satisfies the requirements of the Maryland Environmental Policy Act.

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I. DESCRIPTION OF PROPOSED ACTION

A. Project Location

Proposed MD 5 Relocated is located in the north central part of Charles County near Waldorf. The alignment follows along MD 205 (formerly Mattawoman-Beantown Road) from MD 5 (Waldorf-Leonardtown Road) to US 301/MD 5 (Blue Star Memorial Highway). MD 205 is currently being used as a bypass of the congested Waldorf area. Figures I-1 and I-2 depict the project location and the study area, respectively.

B. Project Description

MD 205 is currently a two-lane roadway which extends from MD 5 (Leonardtown Road) to US 301/MD 5. Access is uncontrolled and signalized intersections are located at the northern and southern terminus and at Pinefield Road. A box culvert on relocation was recently constructed over the tributary to the Jordan Swamp. This project proposes to provide a six lane divided roadway. Additionally a future interchange is proposed for the intersection of MD 205 with US 301/MD 5.

C. Existing Environment

1. Social Environment

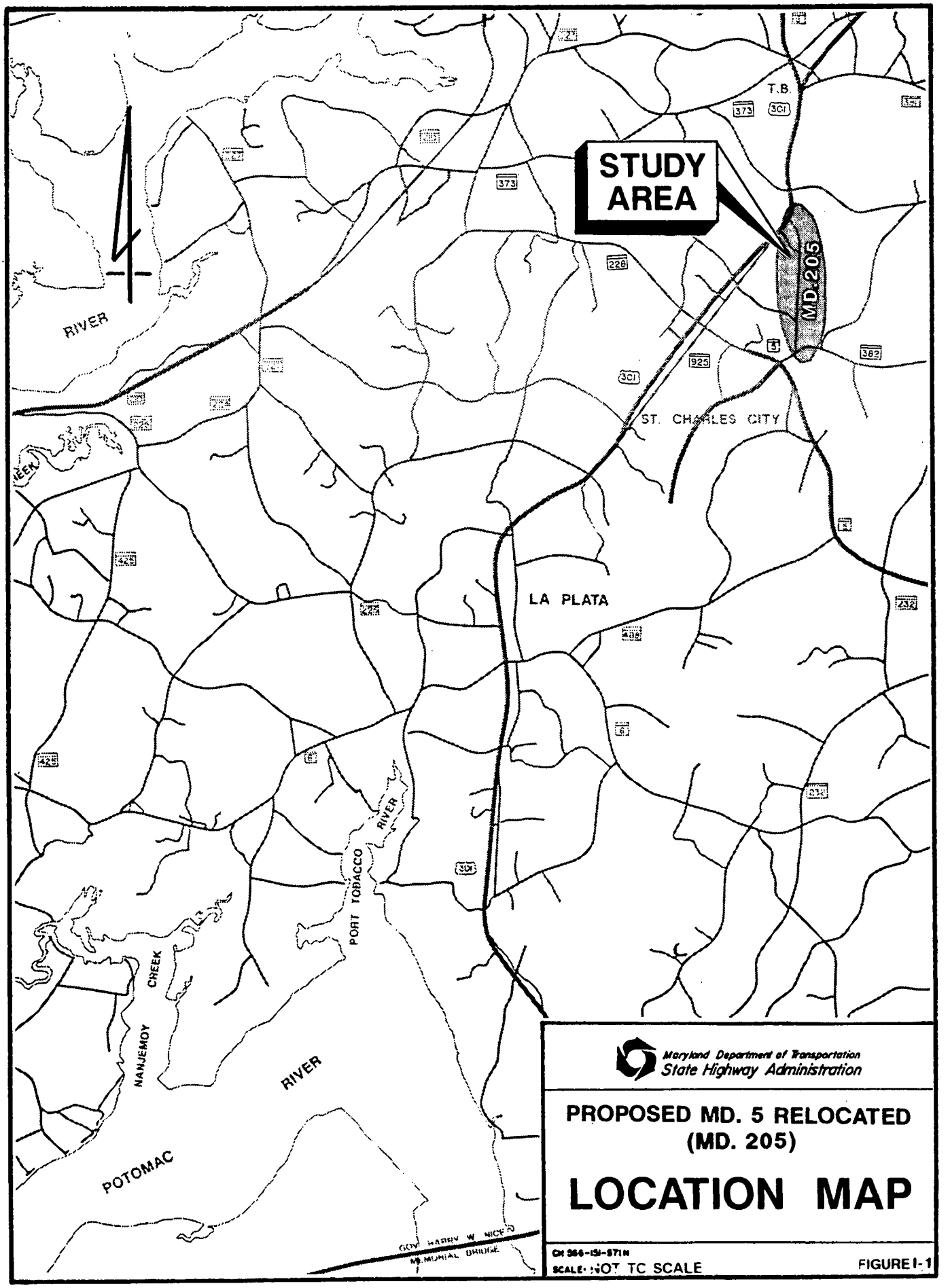
a. Population

Charles County

Charles County is centrally located in southern Maryland and is bordered by Prince George's County to the north, St. Mary's County to the south, the Potomac River to the west and Calvert County to the east. Because of the County's proximity to Washington, D.C., it is grouped in the Washington-Maryland-Virginia Metropolitan Statistical Area (MSA). For the purposes of this report, Charles County is discussed with respect to only the Maryland portion of this MSA. The Maryland portion of the MSA is comprised of the following counties: Calvert, Charles, Frederick, Montgomery and Prince Georges.

Charles is Maryland's eleventh most populated county and in recent years has been the scene of a flourishing economy and tremendous growth. Sizeable increases in the number of new residents, new buildings (residential and non-residential) and household incomes coupled with low unemployment rates has been the trend.

According to the 1988-89 Maryland Statistical Abstract, Charles County's population increased 53 percent from 1970 (47,678) to 1980 (72,751), and is projected for an additional 17.5 percent increase (to 85,470) between 1980 and 1985. This will make it the second fastest growing county in its MSA behind rural Calvert County, which is expected to experience an increase of 21% to 41,480 (1985) from 34,368 (1980). Future projections of population growth for Charles' MSA, prepared by the Department of State Planning (September 1987), show that by the year 2005 the population of Charles County will swell by 51% to 128,700 inhabitants. This growth rate will be second only to Calvert County which is forecasted to grow by 62% to 67,200 by 2005.



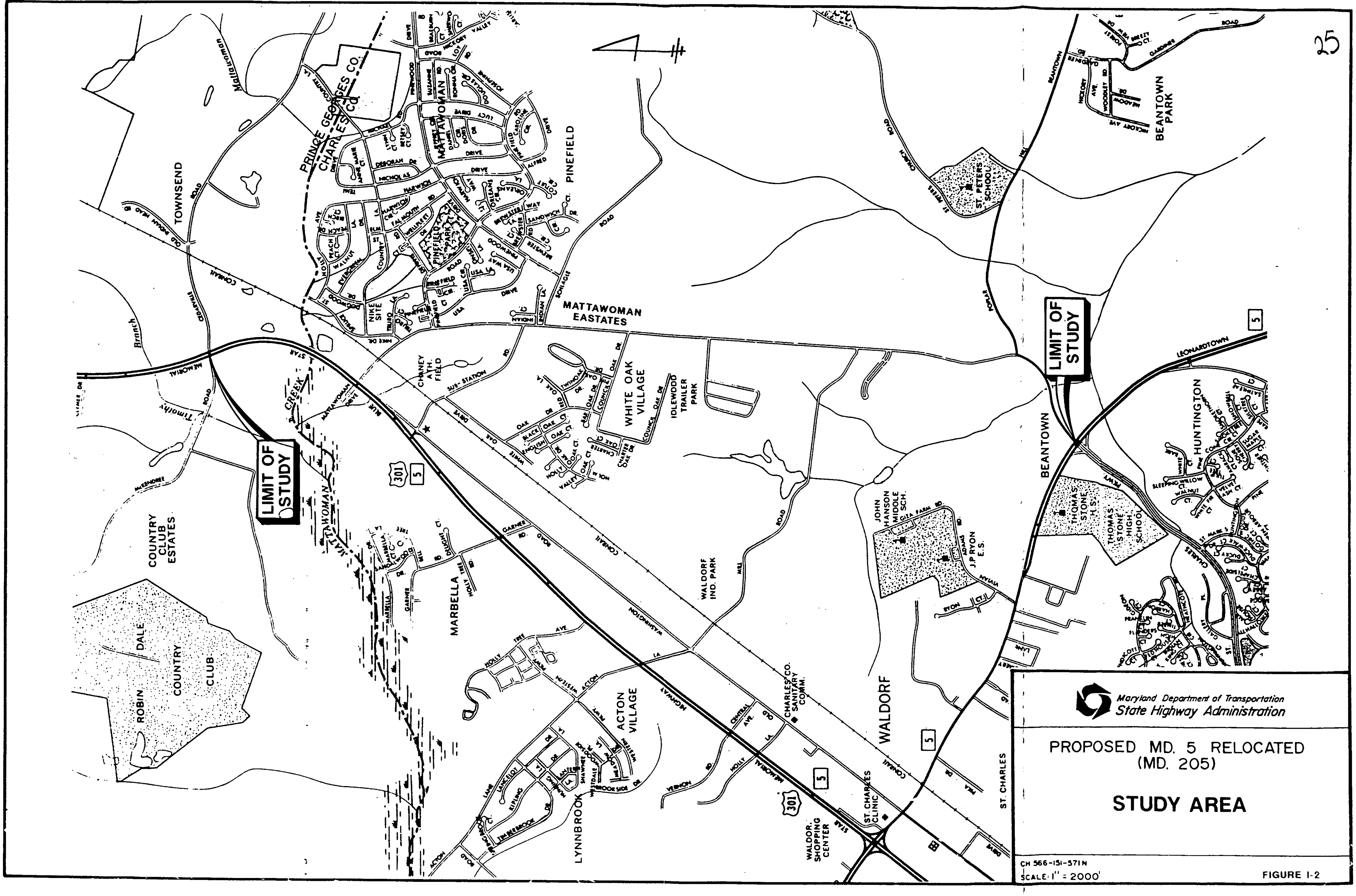
Maryland Department of Transportation
State Highway Administration

PROPOSED MD. 5 RELOCATED (MD. 205)

LOCATION MAP

CH 566-151-571 N
SCALE: NOT TO SCALE

FIGURE I-1



Maryland Department of Transportation
State Highway Administration

PROPOSED MD. 5 RELOCATED
(MD. 205)

STUDY AREA

CH 566-151-571N
SCALE: 1" = 2000'

FIGURE I-2

Study Area

The study area is located in the north central part of Charles County, Maryland near the County's northern political border with Prince Georges County, Maryland. It centers on MD 205 (formerly Mattawoman-Beantown Road) from its intersection with US 301/MD 5 at its northern terminus to its intersection with MD 5 at its southern end, and is situated within the Census Tract #8508 as shown in Figure I-3.

Data from the 1980 Census shows that the population of this tract (6,812 inhabitants or 9.4% of the County's total) is relatively young with a large available labor force. Population projections for 1985 and beyond for Census Tract # 8508 are not available. However; the number of inhabitants in the County is expected to grow tremendously. Therefore, it is anticipated that a population increase commensurate with developable land and zoning will occur in the future in this census test.

The majority of the population in Tract #8508 is comprised of individuals between the ages of 20 and 44. These figures are reflective of Charles County as a whole and indicate a thriving population, both now and in the years to come.

b. Ethnic Characteristics

Data collected from the 1980 Census reveals that the Census tract has a predominantly white population with blacks being the largest of the minority groups. The composition of the tracts population is 88% white, 10% black and 2% other minorities. However, there are no known concentrations of minorities, elderly or handicapped individual within the study area.

c. Neighborhoods

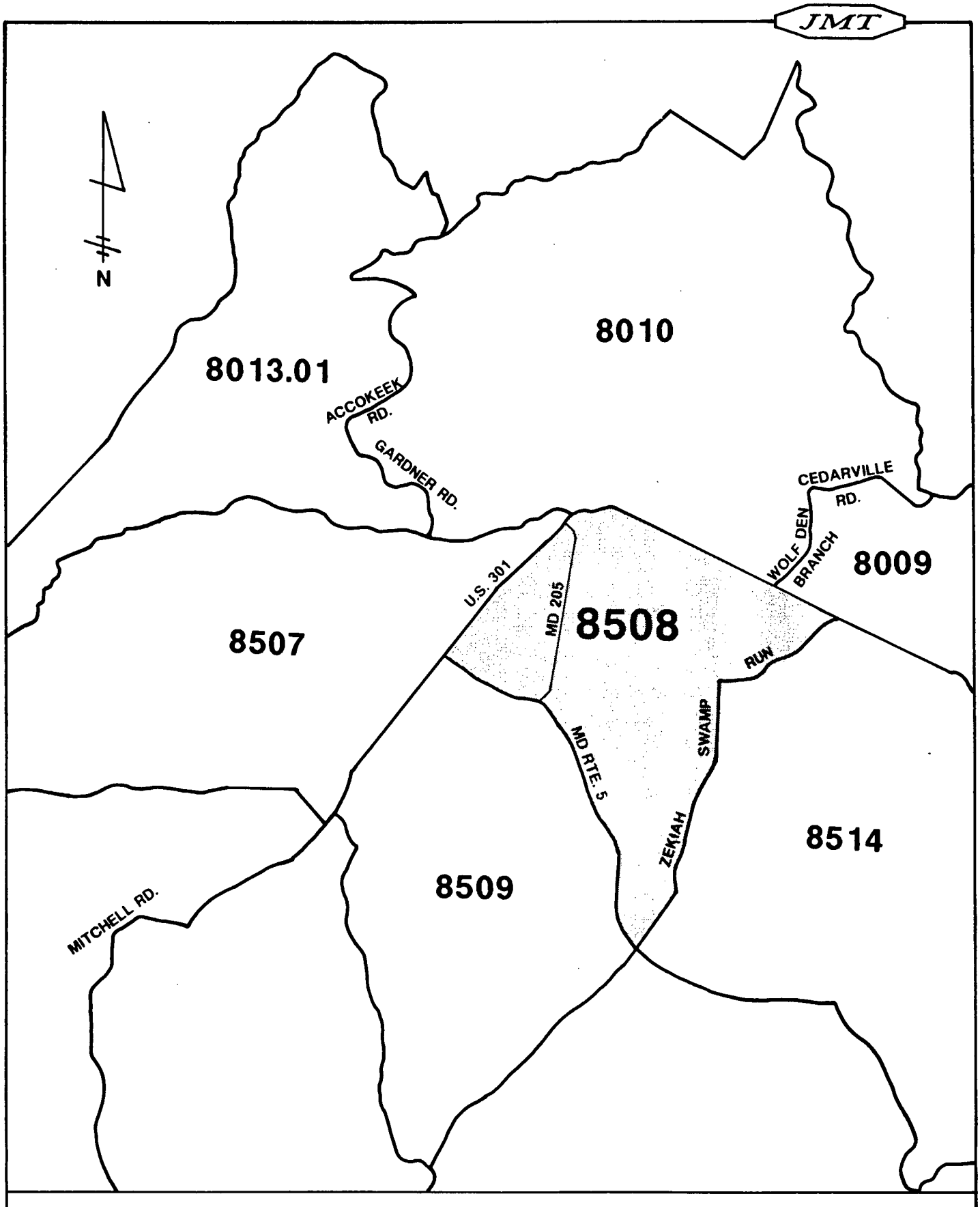
There are four neighborhoods within the study area: Pinefield, Mattawoman Estates, White Oak Village, and Idlewood Trailer Park. The planned town of St. Charles although not in the study area, is contiguous and located to the south.

Pinefield is the largest neighborhood within the tract and is located on the northeast side of MD 205 near its intersection with US 301. White Oak Village is slightly south of Pinefield on the west side of MD 205, just south of Sub-Station Road. In between these two neighborhoods on the east side is Mattawoman Estates. These three neighborhoods are comprised of single family detached homes. Idlewood Trailer Park is located south of White Oak Village on the west side of MD 205, near the Waldorf Industrial Park. St. Charles is a large development in close proximity to the study area with a combination of apartments, townhomes, and single family detached homes with multiple community centers.

d. Community Facilities and Services

Education

The location of facilities and services in or nearby the study area described below are depicted on Figure I-4.



STUDY AREA CENSUS TRACT

SCALE: 1"=2.6 MILES

FIGURE I-3

There are three public schools which are located in the immediate vicinity of the study area: J.P. Ryon Elementary, John Hanson Middle and Thomas Stone High. J.P. Ryon and John Hanson are adjacent to each other near the southwestern portion of the study area below Charles County Sand and Gravel mining operations, and north of MD 5. Thomas Stone, also found in the southwestern portion, is on the southern side of MD 5 and closer to the intersection of MD 5 and St. Charles Parkway.

Although no parochial schools are within the study area, one school, St. Peter's, is located nearby to the southeast of the study area. St. Peter's, which is situated in the northeastern quadrant of the intersection of St. Peter's Church Road and Poplar Hill Road (formally MD 382) is a primary and secondary Catholic school.

The are several pre-school centers in the Waldorf area. The Happy Faces Early Learning Center is located in the study area opposite the Pinefield development close to the crossing of MD 205 with the Conrail Railroad tracks. A second center, ABC Child Care, Inc., is in the immediate vicinity to the southwest near J.P. Ryon and John Hanson.

Emergency Facilities

Emergency facilities and services for the study area include the Charles County Sheriff's Department, the MD State Police ("Barrack H"), and the Waldorf Volunteer Fire Company. Of these, only the State Police Barrack is located within the study area at the intersection of Old Washington Road and Sub-Station Road.

Churches

There are two churches directly within the study area: Messiah Lutheran and Trinity Baptist. The Messiah Lutheran Church is positioned along MD 205 on the west side, just north of the intersection of MD 205 and Sub-Station Road. The Trinity Baptist Church is just south of White Oak Village on the western side of MD 205 near the intersection of Council Oak Drive.

Cemeteries

There are two cemeteries within the study area, The Hunt Cemetery and Trinity Memorial Gardens Cemetery. Hunt Cemetery, which is relatively small, is located near the intersection of MD 205 and US 301/MD 5 behind and accessed by the Dash-In/Pinefield Liquors parking lot. Trinity Memorial Gardens Cemetery, which is a much larger facility and not yet fully occupied, is situated on the west side of MD 205 in the southern portion of the study area just south of the intersection of Mill Road and MD 205.

Health Care

There are no hospitals or health care facilities directly in the study area. However, throughout the County, the Charles County Health Department provides a wide range of services such as Allied Nursing, Mental Health, Alcohol Control, Drug Abuse, Environmental Health, and a County operated nursing home located in LaPlata. In addition, if residents of the study area are in need of hospital facilities, Physicians Memorial in LaPlata would be the closest to their residences. Another option would be

the Southern Maryland Hospital Center in Clinton, Maryland, which is a semi-regional hospital in southern Prince Georges County.

Parks and Recreation Facilities

There are no Federal, State or County operated parks within the project area. However, in the immediate vicinity there is the Pinefield Community Park. Positioned near the center of the community, this park is owned and operated by Charles County and provides a variety of recreational activities including a football/soccer field, two softball fields, a tot lot, picnic areas and a general purpose pavilion. Nearby the study area and east of the Pinefield subdivision is the Cedarville State Forest. This State run facility which straddles Charles County and Prince Georges County provides for the following activities: camping, hunting, fishing, hiking and picnicking.

Additional recreational areas include the Chaney Ball fields and the facilities that exist at the public schools previously mentioned. The John Hanson, J.P. Ryon and Thomas Stone schools offer recreational facilities such as baseball fields, basketball courts and tennis courts. In addition, the County Department of Recreation operates a public pool during the summer at Thomas Stone. The Chaney Ball fields area, which is in the northwestern portion of the study area, is a privately owned tract of land (Waldorf Restaurant, Inc.) that is west of MD 205 and accessed by Sub-Station Road near the intersection of White Oak Drive. This area provides seven softball/baseball fields that are used by various age groups and local leagues. Currently, approved use of this facility runs through summer 1989 only. Impacts to this area would not be considered a 4(f) impact.

Libraries

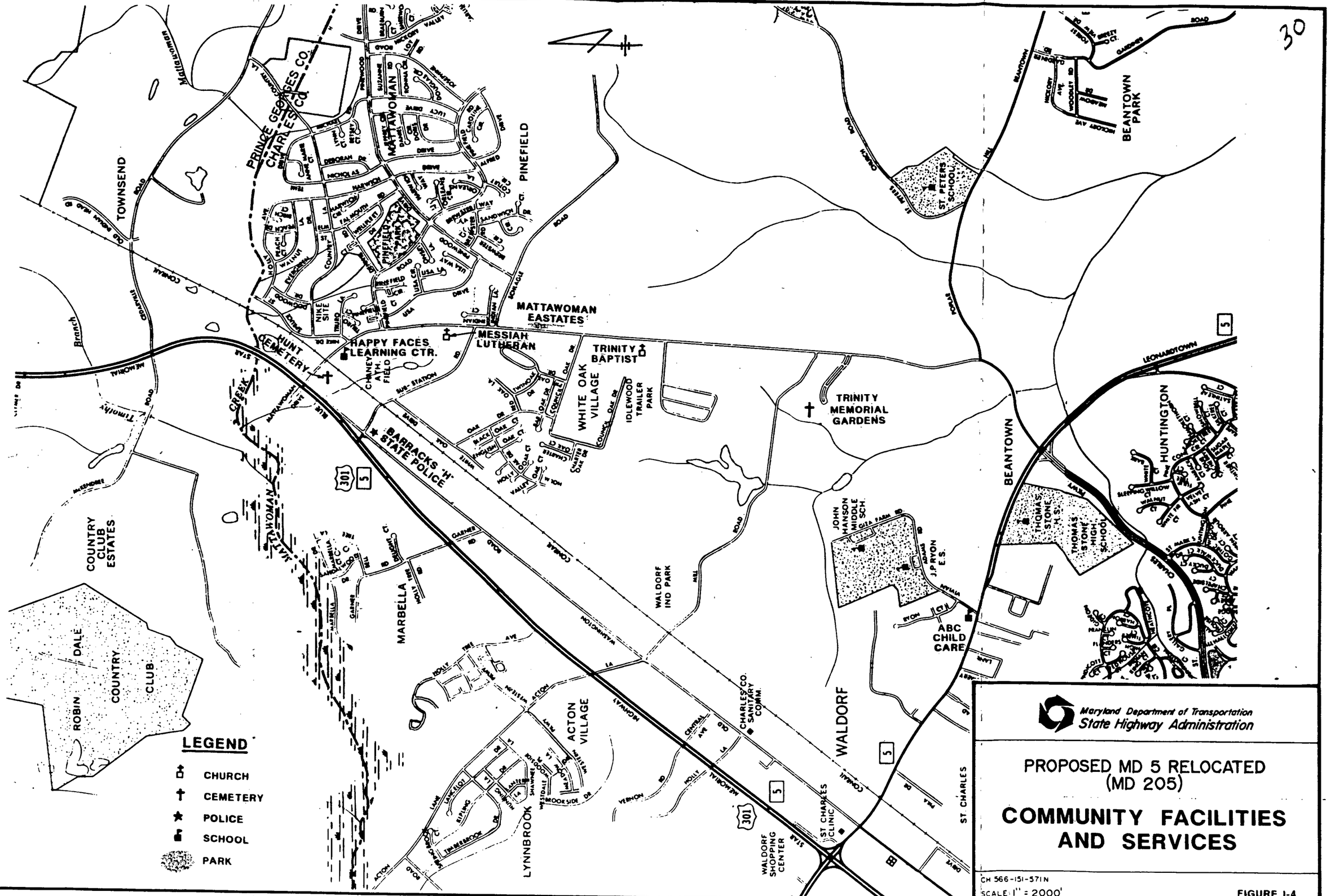
There are no libraries in the study area. However, there is a branch of the Charles County Public Library in St. Charles.

2. Economic Environment

a. Employment Characteristics

Charles County

According to Maryland Department of Economic Development (MDED) 88-89 Statistical Abstract, Charles County in 1986 had a total available labor force of 41,780 persons, of which 40,609 were actually employed, reflecting only 2.8% unemployment for that year. In comparison to the other four counties in its MSA, Charles County ranked second to the lowest behind Montgomery County (2.3%) for unemployment rates, and was 1.7% lower than the State's average of 4.5%. In addition, the County labor force in 1985 was 66.7% privately employed and 33.3% employed by the government (Federal, State, and Local, combined).



Maryland Department of Transportation
State Highway Administration

PROPOSED MD 5 RELOCATED (MD 205)

COMMUNITY FACILITIES AND SERVICES

CH 566-151-571N
SCALE: 1" = 2000'

FIGURE 1-4

Within the private sector, the three largest areas of employment were wholesale and retail (29.2%), miscellaneous services (15.5%) and construction (10.8%). According to the Charles County Economic Development Commission's Economic Analysis, the three fastest growing sectors of private employment from 1970 to 1984 were Finance, Insurance and Real Estate (+163.9%), Retail Trade (+134.6%) and Services (+84.1%).

The average gross household income for the County in 1985, according to MDED was $39,390, second in its MSA behind Montgomery County, which averaged $53,522 per household.

Study Area

Data from the 1980 U.S. Census reveals that Census tract #8508 had a total of 3,101 persons employed and 136 or 4.2% unemployed. Fifty-nine percent of those employed work for private industry and the remaining 41% work in the public sector. In addition, the largest area of those privately employed were "technical, sales and administrative support services" comprising 40.3% of the total. A breakdown for those publicly employed was not available on the census tract level.

The 1980 Census also shows that the average gross household income for the study area tract ($30,126) surpassed that of the County ($25,253) by 19.3%, and that the majority of the households earnings fell in the $25,000 to $35,000 range.

Families in the Census tract that were recorded as living at or below the federal poverty level in 1980 represented 46 of 1,807 families or 2.5% of the total. This percentage is notably lower than the County's total of 6.2% of the families.

According to 1960, 1970 and 1980 U.S. Census data, the percentage of workers who live in the County but work outside its borders has increased from 22.5% in 1960 to 41.0% in 1970 to 54.0% in 1980; a 31.5% increase since 1960. The predominant migratory pattern of County residents has been to the north, to Washington, D.C. and Prince Georges County. See Table 1 for a partial breakdown of the destinations of the County's commuters.

The Conrail tracks cross MD 205 in the northern segment near the intersection of US 301/MD 5. There is no economic benefit to the study area, as Conrail does not have any stops within the study area.

b. Commercial and Industrial Facilities

Commercial and industrial facilities within the study area are primarily located at the northern end at the intersection of US 301/MD 5 and north of the Conrail tracks. These facilities include fast food, general retail, automotive and a variety of other services. Additional facilities also exist within the study area at the south-central portion. Figure I-5 depicts the existing land use of the study area, and Table 2 provides a complete list of its commercial and industrial facilities.

TABLE 1

DESTINATION OF COMMUTERS

RESIDENCE	CHARLES	CALVERT	ST. MARY'S	WASHING-TON, DC	PRINCE GEORGES	MONT-GOMERY	STATE OF VIRGINIA
CHARLES	13,557 (48%)	173 (1%)	–	6,321 (22%)	6,063 (21%)	574 (2%)	1,710 (6%)
CALVERT	307 (3%)	5,651 (47%)	296 (2%)	1,574 (13%)	3,471 (29%)	515 (4%)	265 (2%)
ST. MARYS	1,274 (6%)	407 (2%)	18,491 (81%)	1,103 (5%)	1,181 (5%)	105 (<1%)	249 (1%)
PRINCE GEORGES	1,935 (1%)	186 (<1%)	–	119,388 (40%)	131,876 (44%)	27,532 (9%)	19,698 (6%)

Source: Maryland Statistical Abstract 1988-89.
Department of Economic and Employment Development.

TABLE 2

COMMERCIAL AND INDUSTRIAL FACILITIES

Northeast quadrant of MD 205 and US 301:

Chaney Building

Northwest quadrant of MD 205 and US 301:

Exxon	Waldorf Motel
McDonald's	Waldorf Apartments
Embassy Dairy	Jones Auto
Quality Spas	Philadelphia House Deli
Sammy's Auto Repair	Diamond Apartments
Chevron	Diamond Club

Southeast quadrant of MD 205 and US 301:

Wendy's	Oak Tree II
Quick Shop	Cap City
Pinefield Center	

Southwest quadrant of MD 205 and US 301:

Hardee's	Dash-In
Pinefield Liquors	Pinefield South Shopping Center
Hunt Cemetery	Lawn Mower Sales & Services

Southwest quadrant of MD 205 and Conrail:

Happy Faces Learning Center

Northwest quadrant of Sub-Station Road and MD 925:

Dunkin Donuts

Southeast quadrant of Sub-Station Road and MD 925:

United Bank

Southwest quadrant of Sub-Station Road and MD 925:

State Police

3. Land Use

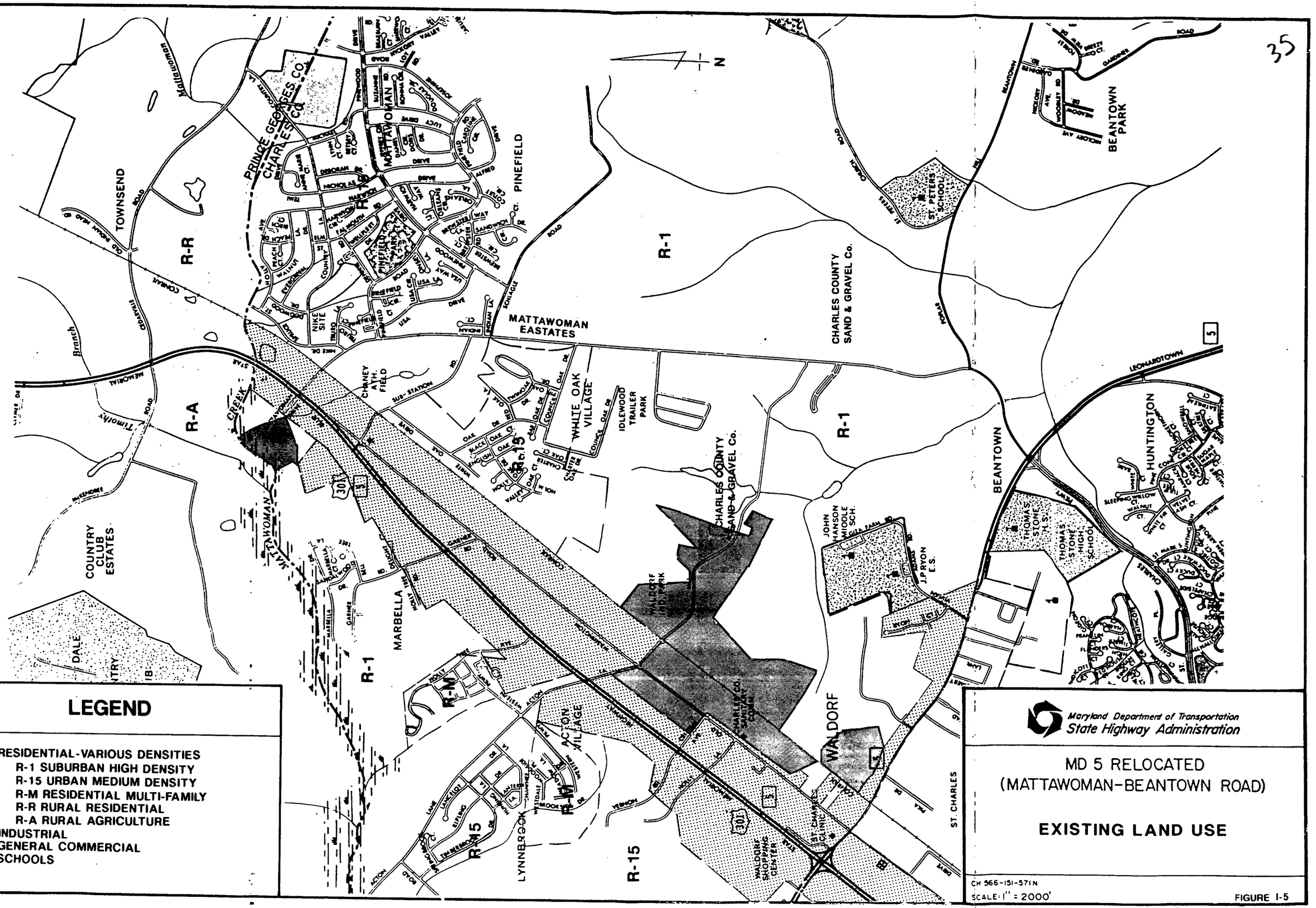
a. Existing Land Use

Figure I-5 depicts the general land use of the study area. The primary land use in the study area consists of residential and commercial uses. Residential development, the dominant of the two, occurs all along MD 205 in varying densities.

In general, the northern half of the study area (Idlewood Trailer Park to the Conrail Tracks) is densely developed with the neighborhoods previously mentioned in Section I(C). The remaining southern half is typically individual lots with single family detached homes with direct access off of MD 205. Some agricultural activity takes place in the southern portion near the intersection of MD 205 and Poplar Hill - Beantown Road. These operations are relatively small and isolated on the eastern and western sides of MD 205.

The commercial uses in the study area are predominantly found at the intersection of MD 205 and US 301/MD 5. Charles County has a well defined zone of commercial concerns through this area and to the south all based on US 301 as a corridor. To the east of US 301, the zones limits are the Conrail Tracks, and to the west the limits vary by development.

There are some industrial operations in and nearby the study area. The only operation in the study area is Embassy Dairy on the west side of the US 301/MD 205 intersection. Other industrial activities in the vicinity of the study area consist of mining by the Charles County Sand and Gravel Co. on the east and west sides of MD 205 near Mill Road, and an industrial park (Waldorf South) just east of the intersection of Conrail and Mill Road.



LEGEND

- RESIDENTIAL-VARIOUS DENSITIES
  - R-1 SUBURBAN HIGH DENSITY
  - R-15 URBAN MEDIUM DENSITY
  - R-M RESIDENTIAL MULTI-FAMILY
  - R-R RURAL RESIDENTIAL
  - R-A RURAL AGRICULTURE
- INDUSTRIAL
- GENERAL COMMERCIAL
- SCHOOLS

Maryland Department of Transportation
State Highway Administration

MD 5 RELOCATED
(MATTAWOMAN-BEANTOWN ROAD)

EXISTING LAND USE

CH 566-151-571N
SCALE: 1" = 2000'

FIGURE 1-5

b. Future Land Use

Figure I-6 depicts the future land use of the study area.

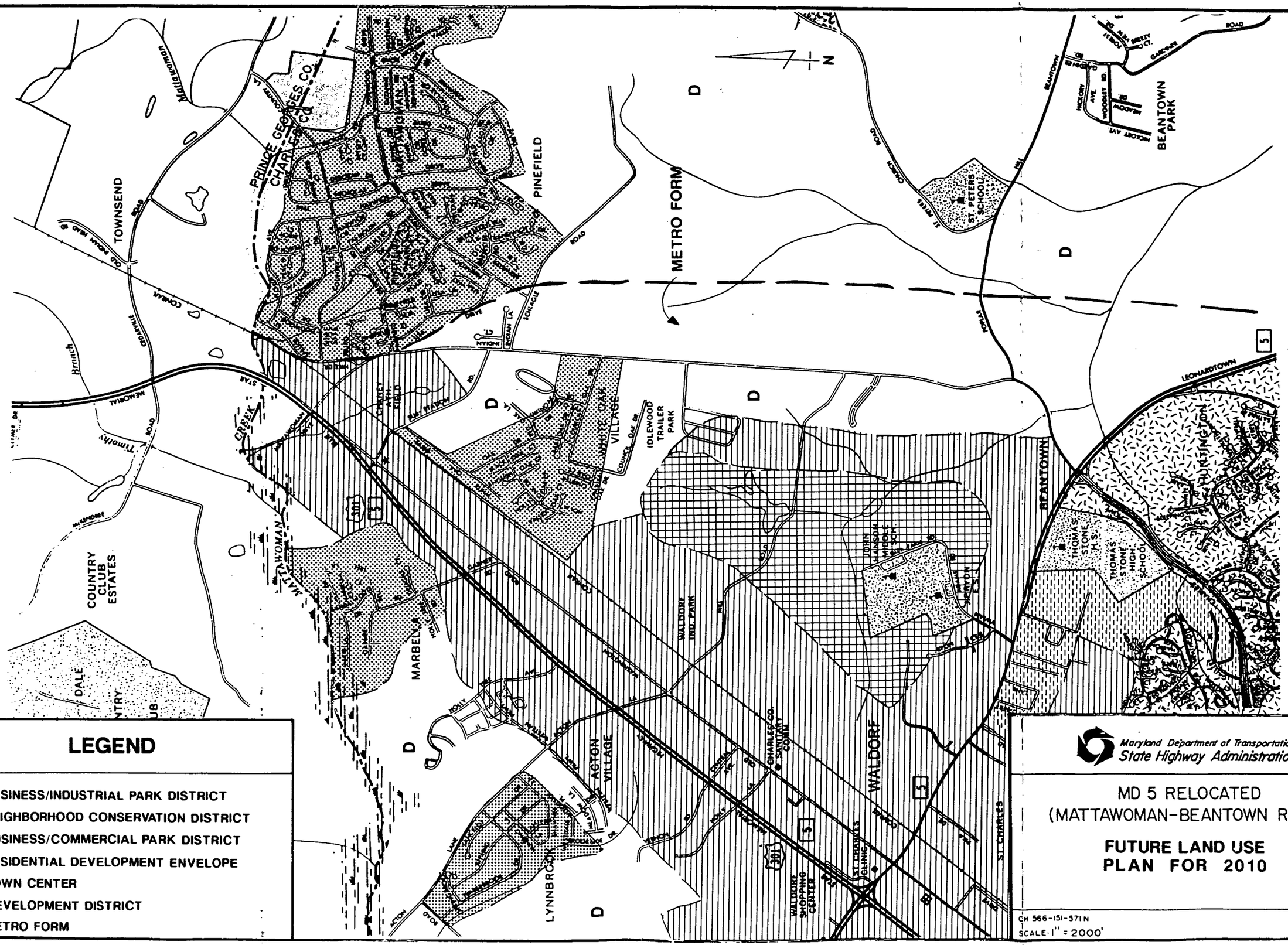
Charles County has recently developed a Comprehensive Land Use Plan that is intended to direct the growth and development of the County through 2010. Correspondence with the County's planning staff has revealed that this is the County's first Comprehensive Plan and that it has incorporated and supersedes the County's 1974 General Plan. Therefore, information relative to the future land use of the study area is derived from the County's Comprehensive Land Use Plan.

According to this plan the study area is almost entirely located within an umbrella sector known as "Metro Form". The purpose of the "Metro Form" designation is to outline areas whose functionality will parallel that of a metropolitan setting. The "Metro Form" area is characterized by a variety of development oriented districts that appears to be an effort to accommodate and consolidate increasing growth to specific areas in the county.

Within the "Metro Form" specific land use designations as shown on the Comprehensive Plan depicts the majority of the study area south of Sub-Station Road as "Development Districts". Other designations in the study area are "Neighborhood Conservation Districts" and "Business/Commercial Park Districts" which basically affect only Pinefield, Mattawoman Estates and White Oak Village. The "Business/Commercial Districts" are located adjacent to Pinefield and spread to the west to Sub-Station Road, and in the northwestern quadrant of the MD 205/MD 5 intersection.

4. Historical/Archeological Sites

Although Charles County is part of historic Southern Maryland and has a rich history as a county, there are no historic structures within the study area as verified by correspondence with the Maryland Historical Trust (see Comments and Coordination section page V-5). Although the Maryland Geological Survey (MGS) Division of Archeology, stated that the study area had a high potential for prehistoric archeological sites and moderate historic resource potential, a Phase I survey indicated that no prehistoric archeological sites were impacted in the project area. The Maryland Historic Trust concurs that the proposed project will have no effect upon significant archeological resources (see Comments and Coordination section page V-6). A copy of the Executive Summary for the Phase I survey is included in the Appendix B page VIII-1.



LEGEND

- BUSINESS/INDUSTRIAL PARK DISTRICT
- NEIGHBORHOOD CONSERVATION DISTRICT
- BUSINESS/COMMERCIAL PARK DISTRICT
- RESIDENTIAL DEVELOPMENT ENVELOPE
- TOWN CENTER
- D DEVELOPMENT DISTRICT
- — — METRO FORM

Maryland Department of Transportation
State Highway Administration

MD 5 RELOCATED
(MATTAWOMAN-BEANTOWN ROAD)

FUTURE LAND USE PLAN FOR 2010

CH 566-151-571N
SCALE: 1" = 2000'

FIGURE I-6

5. Natural Environment

a. Physiography/Topography, Geology, Soils

The study area is located in northeastern Charles County on the Western Shore of the Chesapeake Bay in the Coastal Plain Physiographic Province. The Western Shore is relatively low in elevation ranging from approximately 150 feet at the southern end of the study area to 200 feet towards the northern end of the area. The terrain in the study area is generally flat with a gentle slope of 0-2 percent except towards the southern end where slopes can reach 15 percent in the vicinity of streams.

The underlying rocks in the higher elevations of the Coastal Plain in Charles County are composed of easily eroded clays, sands, and gravels extensively dissected by the Potomac River and its tributaries, as well as other streams. The study area is mostly of the Upland Deposits Formation which consists of unconsolidated gravel, sand and silt deposits with a thickness of 0 to 50 feet. This formation is of the Cenozoic era; however, there is a discrepancy among geologists as to whether it is within the Miocene epoch in the Tertiary period or the Pliocene epoch within the Quaternary period. In addition, the southern end of the study area is underlain by the Calvert Formation. This formation was created from the first sediments deposited into the sea in the Miocene epoch when the eastern portion of Maryland was under water. The rocks are unconsolidated, ranging from medium to fine sands to materials largely in the clay size. Distance to bedrock in the study area is approximately 1,500 feet.

Mineral resources in Charles County are of comparatively little value. There are sands, clays, gravels, marls and diatomaceous earth that are available for mining. Charles County Sand and Gravel Company currently mines within the study area. However, due to the distance to major urban areas, mine yields are used locally for the most part.

Information concerning the soils in the County and study area was derived from the U.S. Department of Agriculture Soil Conservation Services (SCS), Soil Survey of Charles County 1972. The soils in the study area are diverse and fall under two (2) major associations, the Beltsville-Evesboro-Sassafras and the Leonardtown-Beltsville. The Beltsville-Evesboro-Sassafras soils range from moderately to excessively drained loamy and sandy soils, some of which are only moderately deep to a hard, dense fragipan with a level to moderate slope. The second association in the study area is the Leonardtown-Beltsville Association, which has a level to gentle slope and loamy soils which range from poorly drained to moderately well drained, with a hard fragipan at a moderate depth.

The soil associations are named for the major soils present in them although inclusions of minor soils are also present. Table 3 shows the various soil types that are present in the study area. The Soil Survey for Charles County, generally rated soils as fair to poor for highway construction. Table 4 describes each soil type and some of its principle features. Limitations include: a perched water table at or near the surface, high potential frost action and seepage problems for the Beltsville, the Bourne, and the Leonardtown Series; a seasonal high water table at a depth of 1-1/2 to 2-1/2 feet below the surface with a high potential for frost action for the Bibb, the Matawan, the Elkton, and the Woodstown series. Within the dominant Beltsville-Evesboro-Sassafras Association, the Beltsville soils have severe limitations for effluent disposal from septic systems, but have only moderate limitations for other non-farm uses. The Evesboro and Sassafras soils have limitations due to slopes, but none for foundations and basements due to soil wetness and few limitations for sewage disposal. However, because it is characteristic of these soils to be excessively drained, the potential for the contamination of groundwater is high. The Leonardtown-Beltsville Association also has moderate to severe limitations for non-farm usage. These soils are seldom cultivated but are suited to selective crops. Figure I-7 depicts these soils groups as they relate to the study area.

A preliminary assessment of the study area corridor indicates the presence of prime farmland and soils of statewide importance in both Charles and Prince George's County. When these soils are zoned for agriculture and are in agricultural use, any land use change must be coordinated with the U.S. Soil Conservation Service (SCS) by completing a Farmland Conversion Impact Rating, Form AD 1006. The necessary coordination has been completed with the SCS in both Charles and Prince George's Counties, and are attached in Appendix C. There is no impact to any prime farmland soils in Charles County.

TABLE 3

STUDY AREA SOILS

SOIL SERIES	SCS SYMBOL
Aura	AuC2, AuD2, AuD3
Beltsville	BlA, BlB2, BlC2, BlC3
Bourne	BrB2
Bibb	Bo
Croom	CrB2
Elkton	Ek
Evesboro	EvB
Galestown	GaB
Gravel and Borrow Pits	Gp
Leonardtown	Le
Matawan	Ms
Ochlockonee	OhA
Rumford	RdB2, RdC2, RgB2
Sandy Land	SaE
Sassafras	Sha, SgB2, SgC2
Wickham	WkC2, WmC3
Woodstown	WoA, WoB2

Source: U.S. Department of Agriculture, Soil Conservation Service (SCS) Soil Survey for Charles County 1974, and Prince Georges County 1967

TABLE 4

DESCRIPTIONS OF SOILS

SYMBOL	NAME
AuC2	Aura gravelly sandy loan, 5 to 10 percent slopes, moderately eroded
AuD2	Aura gravelly sandy loam, 10 to 15 percent slopes, moderately eroded
AuD3	Aura gravelly sandy loam, 5 to 15 percent slopes, severely eroded
B1A	Beltsville silt loam, 0 to 2 percent slopes
B1B2	Beltsville silt loam, 2 to 5 percent slopes, moderately eroded
B1C2	Beltsville silt loam, 5 to 10 percent slopes, moderately eroded
B1C3	Beltsville silt loam, 5 to 10 percent slopes, severely eroded
Bo	Bibb silt loam
BrB2	Bourne sandy loam, 2 to 5 percent slopes, moderately eroded
CrB2	Croom gravelly loam, 3 to 8 percent slopes, moderately eroded
EvB	Evesboro loamy sand, 0 to 8 percent slopes
GaB	Galestown loamy sand, 0 to 8 percent slopes.
Le	Leonardtown silt loam
Ms	Matawan loamy sand
OhA	Ochlockonee silt loam, local alluvium, 0 to 2 percent slopes
RdB2	Rumford loamy sand, 0 to 5 percent slopes, moderately eroded
RdC2	Rumford loamy sand, 5 to 10 percent slopes, moderately eroded
RgB2	Rumford gravelly sandy loam, 0 to 5 percent slopes, moderately eroded
SaE	Sandy land, steep
ShA	Sassafras sandy loom, 0 to 2 percent slopes
SgB2	Sassafras gravelly sandy loom, 2 to 5 percent slopes, moderately eroded
SgC2	Sassafras gravelly sandy loom, 5 to 10 percent slopes moderately eroded

TABLE 4 CONT'D

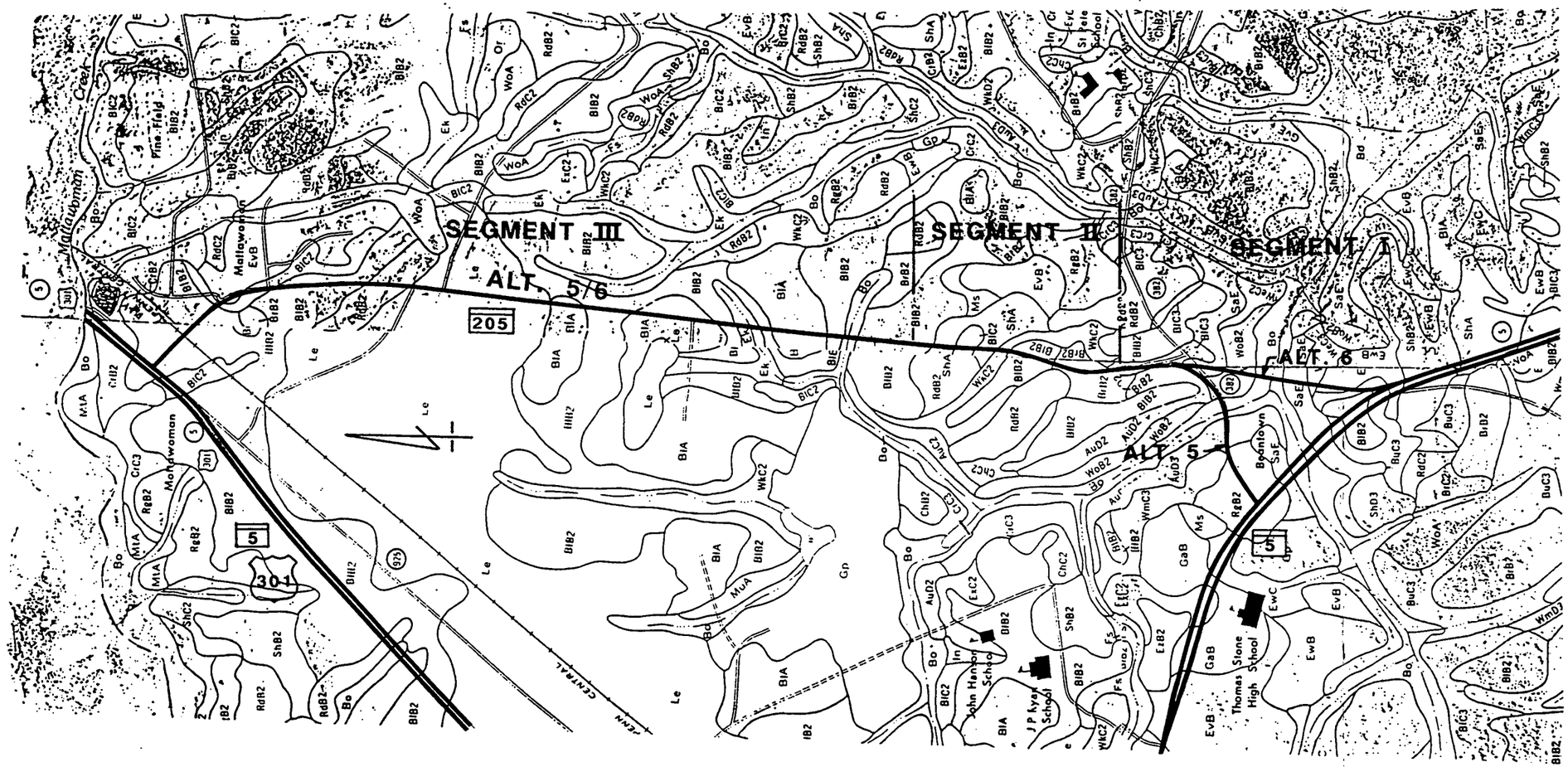
DESCRIPTIONS OF SOILS

SYMBOL	NAME
WkC2	Wickham fine sandy loam, 2 to 5 percent slopes, moderately eroded
WmC3	Wickham sandy clay loam, 5 to 10 percent slopes, severely eroded
WoA	Woodstown sandy loam, 0 to 2 percent slopes
WoB2*	Woodstown sandy loam, 2 to 5 percent slopes, moderately eroded

*Denotes prime farmland soils

Soil Legend

The first capital letter is the initial one of the soil name. A second capital letter, A, B, C, D, or E, shows the slope. Most symbols without a slope letter are those of nearly level soils but some are for land types have a considerable range of slope. A final number, 2 or 3, in the symbol shows that the soil is moderately eroded or severely eroded.



LEGEND

The first capital letter is the initial one of the soil name. A second capital letter, A, B, C, D, or E, shows the slope. Most symbols without a slope letter are those of nearly level soils but some are for land types have a considerable range of slope. A final number, 2 or 3, in the symbol shows that the soil is moderately eroded or severely eroded.

Maryland Department of Transportation
State Highway Administration

MD 5 RELOCATED
(MATTAWOMAN-BEANTOWN ROAD)

STUDY AREA SOILS

CH 566-151-571N
SCALE: 1"=1666' (1:20,000)

FIGURE I-7

b. Water Resources

Surface Water

The majority of the MD 205 study area is situated within the Zekiah Swamp Run drainage basin. The northern boundary of the basin crosses MD 205 at its intersection with Schlagle Road and includes the entire study area to the south of this line. The remaining portion of the study area is within the Mattawoman Creek drainage basin. Both basins drain into the Potomac River; Mattawoman Creek drains directly flowing in a westward direction, and the Zekiah indirectly flowing southwestward via Allens Fresh Run and the Wicomico River. Figure I-8 depicts the drainage basin boundaries of Mattawoman Creek and the Zekiah Swamp in the study area.

The streams in the study area consists of the Jordan Swamp Run and its tributaries, which drain into Zekiah Swamp Run to the south, and Mattawoman Creek which drains directly into the Potomac to the west. These streams have all been designated as Class I streams only.

The Maryland Department of the Environment classifies all surface waters of the State by four categories:

Class I - Water contact recreation, habitat for fish, other aquatic life and wildlife

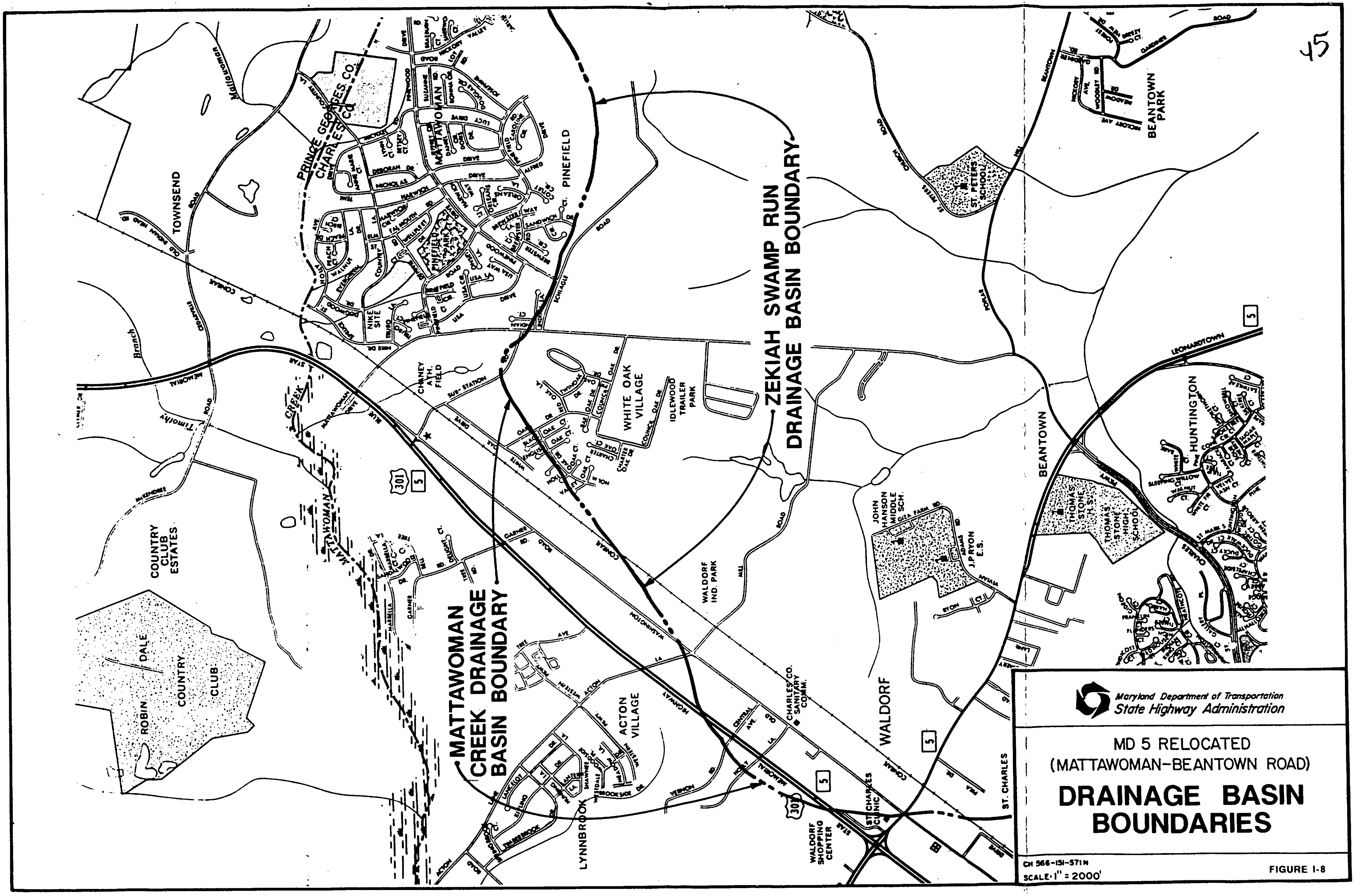
Class II - Shellfish harvesting

Class III - Natural trout waters

Class IV - Recreational trout waters

All of the waters in the State are designated as Class I with increased protection provided for higher classes.

The Department of Natural Resources has designated the Wicomico-Zekiah River System as a Scenic River which is to be managed for the protection and preservation of its natural values. The Scenic Rivers Act [8-402(f)], defines the criteria for a scenic river as "...a free flowing river whose shoreline and related land are predominantly forested, agricultural, grassland, marshland, or swampland with a minimum of development for at least 2 miles of the river length." [8-402(d)(2)]. Although the study area does not have direct contact with the Zekiah Swamp it is important to note that it does have indirect influence via the Jordan Swamp.



Maryland Department of Transportation
State Highway Administration

MD 5 RELOCATED
(MATTAWOMAN-BEANTOWN ROAD)

DRAINAGE BASIN BOUNDARIES

CH 566-151-571N
SCALE: 1" = 2000'

FIGURE I-8

There are several ponds in the study area; both natural and manmade. One large pond is adjacent to Mattawoman Creek on its south side, and to the east of US 301. There is also a sizable storm water management pond for White Oak Village between Bar Oak Drive, Twin Oak Drive, and Oak Drive. In addition, there are also several ponds of various sizes in the area currently being mined by Charles County Sand and Gravel Company on the west side of MD 205. A tributary to the Jordan Swamp flows directly through this area. Therefore, some of the ponds are natural while others were probably created from the effects of the mining activities with a high water table in this particular area. Two of these ponds are used as sludge ponds.

Groundwater

Normal annual precipitation is 44 to 47 inches, of which 30 to 40 percent infiltrates the groundwater reservoirs. Groundwater is available in nearly every part of the county, acquired by well drilling, digging, or in some areas springs. The groundwater is replenished by precipitation, and in some cases is drained by streams that have cut down through underlying deposits.

The public supply system that serves Waldorf and St. Charles is primarily derived from the Magothy Aquifer and in recent years, from the Patapsco Aquifer. Increasing demand has required the County to tap into the Patapsco in order to protect the Magothy supply from depletion. The Magothy Aquifer is the shallower of the two formations lying at depths of 600 to 700 feet below the surface compared to the Patapsco which is tapped at depths of 1400 to 1500 feet. Both aquifers yield between 400 to 500 gallons of water per minute.

The Magothy and Patapsco Formations are of the Cretaceous system from the Mesozoic era, made up of water-bearing sands. The unconsolidated Coastal Plain units of inter-layered clay, silt, sand, gravel, and shell beds dip gently beneath the area to the southeast. These are underlain by consolidated crystalline basement rock at depths from approximately 1,500 to 2,000 feet below sea level (Brown & Others, 1972 pl.5). The geologic units overlying this basement rock for the purpose of this study are Upland Deposits, the Calvert Formation, the Magothy Formation and the Potomac Group (Patapsco Formation).

There is a high potential for contamination of groundwater due to a perched water table and well drained soils in the area. Contaminant sources may be improper or illegal disposal techniques from industry and citizens, seepage from septic systems, and, to a lesser extent, petrochemical and salt runoff from the roadways. However, the potable sources of water are low risk due to the depths of the aquifers, and the confining geologic units above and below them.

Water Quality

The water quality of the Zekiah Swamp basin and Mattawoman Creek Basin is generally rated as good to excellent (U.S. Soil Conservation Service, 1985). In addition, verbal correspondence with the Maryland Department of the Environment (MDE) reveals that Southern Maryland is regarded as having the best groundwater in the State with respect to supply and quality.

Chemical analysis profiles of the public water supply wells are performed quarterly by the MDE to insure that State standards are being met. Water Quality data from two public supply wells in the Waldorf area that draw from the Magothy and the Patapsco Aquifers shows that State standards are being met and are listed below in Table 5.

TABLE 5

WATER QUALITY FOR PUBLIC SUPPLY

MAGOTHY

Parameter	Measurement
pH	7.6
Temperature	55°(F)
Hardness	60-70 (PPM)
Iron	.15-.2 (PPM)
Chlorine	4 (PPM)
Fluoride	.25 (PPM)

PATAPSCO

Parameter	Measurement
pH	7.8
Temperature	55°(F)
Hardness	50 (PPM)
Iron	0 (PPM)
Chlorine	3 (PPM)
Fluoride	1 (PPM)

Source: Maryland Department of the Environment

It should be noted that the chemical and mineral content of water varies from aquifer to aquifer and from place to place within the aquifer.

c. Floodplains

According to the Flood Insurance Rate Maps (FIRM) for Charles County, produced by the Federal Emergency Management Agency (FEMA), the only 100 year floodplains in the study area are those associated with the Jordan Swamp and Mattawoman Creek. The majority of the 100 year floodplain of Jordan Swamp is south of the study area. However, there is a small portion that crosses MD 205 approximately 1300 feet from its intersection with MD 5.

The 100 year floodplain associated with Mattawoman Creek is unaffected by the projects mainline alternates. However, the interchange options of MD 205 with US 301 will intrude into the floodplain with structural piers and associated earth fill. The floodplains are depicted on Figure I-9 and the alternates mapping.

6. Ecology

a. Terrestrial Habitat

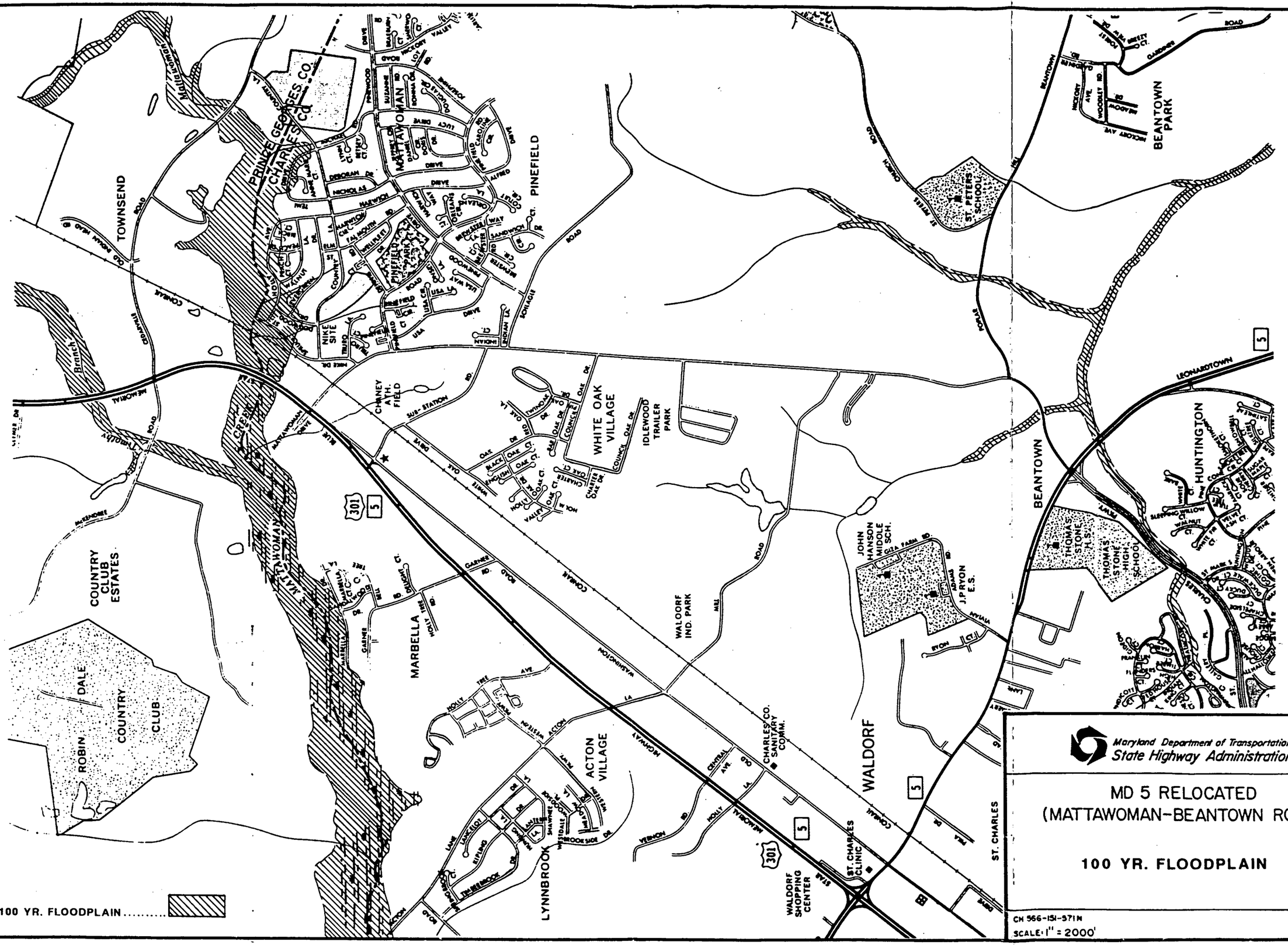
The native forestland of the study area is comprised of mixed upland hardwoods; mainly oak, scrub-type oaks, wetland hardwoods, and also some softwoods such as Virginia pine, loblolly pine, birch, willow, and pond pine are prevalent. The current forestland is regrowth and not virgin forestland due to the agricultural nature and history of the county. Early farming techniques left many fields abandoned for regeneration when soil nutrients were depleted from the crops. The woodlands which occur in the study area are found adjacent to the existing roadway throughout the study area. Forested areas are depicted on the Alternates mapping (Figures III-1 thru III-11) and identified by the standard topographic tree line symbol.

The forest communities known to exist in the study are subdivided by species into the following associations:

The Chestnut Oak - Post Oak - Blackjack Oak association is predominant throughout the study area from the MD 205 crossing of the tributary to Jordan Swamp north to US 301/MD 5. This associated is recognized by the presence of any two species of chestnut oak, post oak and or blackjack oak. Community associated species include eastern chinquapin, sassafras, virginia pine, red cedar and pitch pine.

The Willow Oak - Loblolly Pine association occurs from the MD 205 crossing of the tributary to Jordan Swamp to the south and west. The association is characterized by the presence of willow oak and loblolly pine. Commonly associated species include red maple, sweet gum, black gum, white oak and tulip poplar.

The River Birch-Sycamore Association occurs along major study all streams and associated tributaries. Besides river birch and/or sycamore representative species include slippery elm, green ash, spicebush, and poison ivy. Other common species include red maple, Virginia creeper, greenbrier, Japanese honeysuckle, southern arrowwood, tulip poplar, and black gum.



Maryland Department of Transportation
State Highway Administration

MD 5 RELOCATED
(MATTAWOMAN-BEANTOWN ROAD)

100 YR. FLOODPLAIN

CH 566-151-571N
SCALE: 1" = 2000'

FIGURE 1-9

Within the study area, there is edge habitat and agricultural land nearby to support rabbits, squirrels, deer, turkey, quail and other types of upland birds and small rodents. The wetlands in the area create a suitable habitat for raccoon, muskrat, rail, duck, geese and other waterfowl. Through correspondence with the Department of Natural Resources, Forest Park and Wildlife Service, a list of species which are known or expected to be found in the study area is enclosed as Appendix D.

b. Aquatic Habitat

The aquatic habitats of the study area include ponds, the Jordan Swamp Run and its tributaries, Mattawoman Creek and its tributaries, and are corresponding wetlands. Vegetation, algae and insects associated with the wetlands provide a good source of food for fish, wildlife and waterfowl. Tree cover and vegetation also provide cover for smaller species of wildlife. Spawning anadromous finfish are known to be present in the lower reaches of Zekiah Swamp Run and Jordan Swamp Run. The following fish species were identified by the Maryland Department of Natural Resources (DNR) as being known to inhabited these streams.

Scientific Name	Common Name
Erimyzon oblongus	Creek Chubsucker
Ictalurus nebulosus	Brown Bullhead
Ictalurus catus	White Catfish
Esox niger	Chain Pickerel
Lepomis machrochirus	Bluegill
Lepomis gibbosus	Pumpkinseed Sunfish
Semotilus corporalis	Fallfish
Clinostomus funduloides	Royside Dace
Mieropterus salmoides	Largemouth Bass
Perca flavescens	Yellow Perch
Morone americana	White Perch
Etheostoma Imstedi	Tesselated Darter

The existence of these species is considered indicative of good water quality and a healthy stream habitat according to the Maryland Department of Natural Resources. This list, however, does not constitute a complete inventory of fish and possible invertebrates for Zekiah Swamp Run or Jordan Swamp Run.

c. Wildlife

There is much diversity among the wildlife species within the study area which is indicative of a healthy ecosystem. The US Department of Agriculture, Soil Conservation Service has separated wildlife species into three general categories: Open land wildlife, woodland wildlife and wetland wildlife.

Open wildlife is attracted to cropland, pasture, meadows, lawns, and areas overgrown with grasses, herbs and shrubs. In Charles County, this type of habitat accommodates quail, pheasant, meadowlark, field sparrows, dove, cottontail rabbit, red fox and woodchuck.

Woodland wildlife get food and cover in stands of hardwood trees, coniferous trees, shrubs or a combination of these. Woodland wildlife supported in the County include ruffed grouse, woodcock, thrush, vireo, scarlet tanager, gray and red squirrels, gray fox, white-tailed deer, raccoon, and wild turkey.

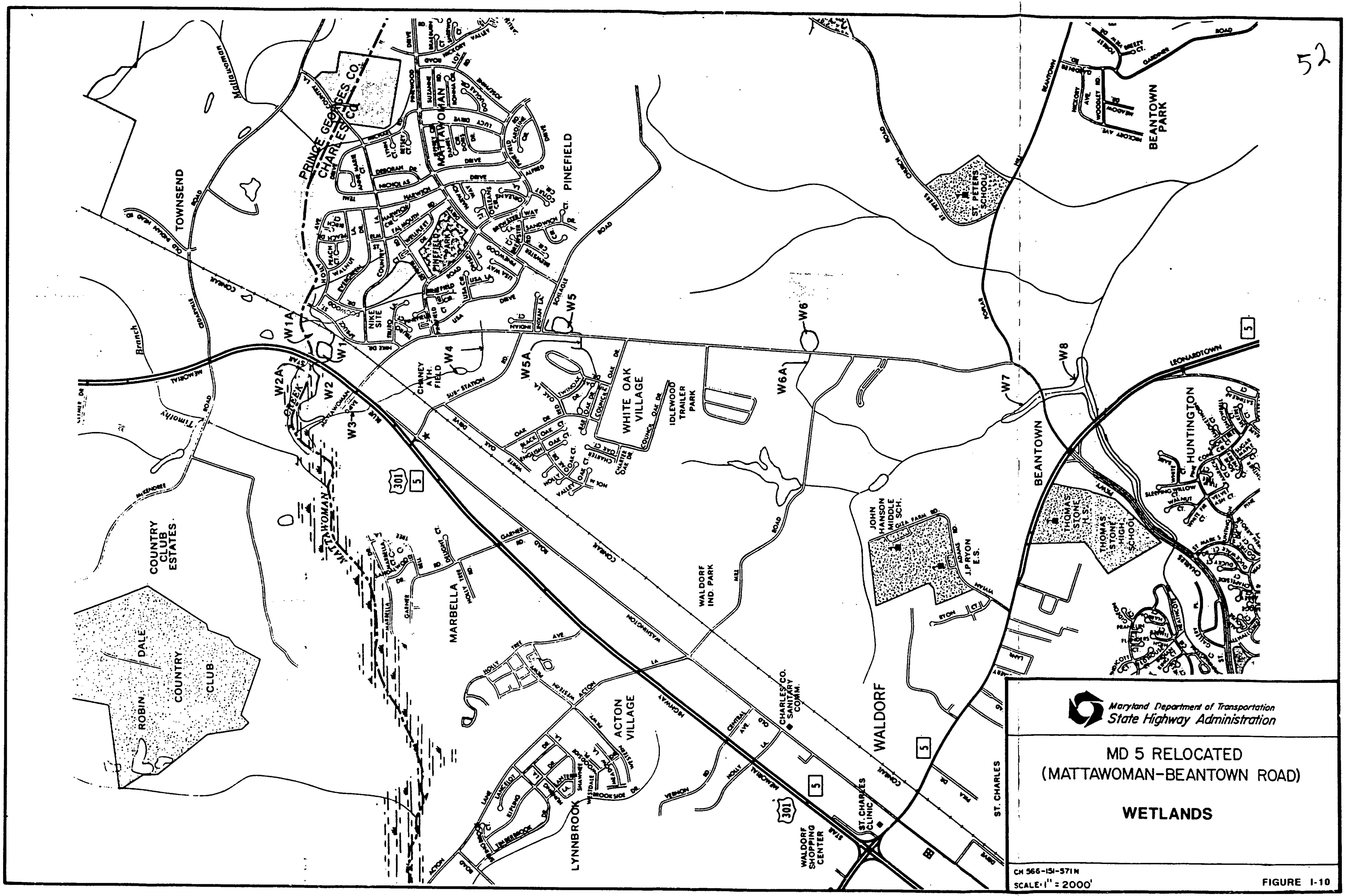
Ducks, geese, rails, herons, shore birds, and muskrats are among the wetland wildlife species in Charles County that need the swampy areas for survival. The wetland areas also give abundant food and cover for reptiles and amphibians such as frogs, lizards, salamanders, snakes, toads and turtles. During migration periods, Sora Rail, Wilson's Snipe, and Wood Warblers are known to inhabit the swamp area. Wilson's Snipe and the Wood Duck overwinter are in this area also. In the lower part of the Zekiah Swamp, the Bald Eagle is recorded as nesting.

The upper tributaries to Jordan Swamp are smaller and therefore, are less likely to support an abundance of fish and/or wildlife. However, they do play an important part in the food chain by carrying insects, leaf litter and algae downstream to the larger species of fish, wildlife and waterfowl.

d. Wetlands

In accordance with Executive Order 11990, wetlands within the study area have been identified (See Figure I-10 and Figures III-1 thru III-11) and the impacts produced by the proposed improvements have been quantified. The wetlands identified were field delineated on March 17, 1989 using the Unified Federal Method. A description of each site location and classification is given in Table 6.

The wetlands are considered to be of high quality with the exception of Site W-2. The dominant vegetation at each site along with the U.S. Army Corps of Engineers (C.O.E.) Wetland Regional Indicator Classification for each species, and the sites functional value is listed in Table 7. A field review with the U.S. Army Corps of Engineers (C.O.E.) was conducted on August 22, 1989 for concurrence with the March 17, 1989 findings. A concurrence was given for each site location and classification (see Comments and Coordination section V, pages V-1 to V-4).



Maryland Department of Transportation
State Highway Administration

MD 5 RELOCATED
(MATTAWOMAN-BEANTOWN ROAD)

WETLANDS

CH 566-151-571N
SCALE: 1" = 2000'

FIGURE I-10

TABLE 6

DESCRIPTION AND CLASSIFICATION OF WETLANDS

Wetland Number	Site Description	Classification
W-1	Pond adjacent to Mattawoman Creek on the east side of US 301 approximately 850' north of the intersection of MD 205 and US 301/MD 5.	PF00W1B
W-1A	Saturated wooded area contiguous to W-1 and Mattawoman Creek.	PF01E/R2SB2
W-2	Drainage swale which runs perpendicular to US 301 to the west into a small pond, approximately 450' north of the intersection of MD 205 and US 301/MD 5 Drainage is to the north into Mattawoman Creek.	PEM1F
W-2A	Similar to wetland W-1A, as it is the westward extension of the same ecosystem is located approximately 50' north of Wetland W-2.	PF01E/R2SB2
W-3	Tributary channel area behind the Chaney Building and on the north side of Embassy Dairy. Approximately 250' due west of the intersection of MD 205 and US 301/MD 5.	R2SB2
W-4	Meandering undefined channel that parallels MD 205 from the rear of the Pinefield South Shopping Center to a forested pond area adjacent to the Chaney ball fields. This channel then extends southward to the intersection of MD 205 and Sub-Station Road. In addition, there is a channel perpendicular to the west of Sub-Station Road that flows into the pond area behind the Chaney ball fields.	PF01B
W-5	An isolated, heavily wooded, marsh-like area on the east side of MD 205 and just south of the intersection of MD 205 and Schlagle Road. Drainage is to the west into the White Oak Village area which has been channelized due to recent construction activities.	PF01E

TABLE 6 CONT'D

Wetland Number	Site Description	Classification
W-5A	Vegetated Drainage channel approximately 5 feet wide. This channel is positioned on the west side of MD 205 across from site W-5 and receives the drainage from that site as well as the roadway.	PEM1C
W-6	Similar in size and composition to Site W-5 with the exception of extended areas of standing water. It is located on the east side of MD 205 is approximately 1000 feet north of the intersection of Md 205 and Mill Road.	PF01B
W-6A	Natural stream channel and adjacent flat area approximately 130' in width which traverses to the southwest. This is the sister site to site W-6 and it is located on the west side of MD 205.	PFO1B
W-7	Riverine wetland on the west side of MD 205 that has recently been disturbed due to improvements to MD 205 and its new crossing of the Jordan Swamp. It is located approximately 1300' north of the intersection of MD 205 and MD 5.	R25B2 R2SB2
W-8	A heavily wooded area with well defined meandering channel and adjacent seeps. This site is located on the east side of MD 205 and is basically the eastward extension of site W-7 into another tributary/wetland order. (This is also the location of the wetland mitigation site for the MD 382 bridge replacement project).	PF01E/R2SB2

As previously mentioned, the characteristics of wetland types are classified by the U.S. Fish and Wildlife Service Cowardin System. This system identifies the ecological system, the ecological subsystem, the class, the subclass, the water regime and water chemistry. The following is a description of the wetland types identified within the study corridor:

- PF00W - Palustrine, forested, open water
- PF01E - Palustrine, forested, broad-leaved deciduous and seasonally saturated.
- PF01B - Palustrine, forested, broad-leaved, deciduous and saturated.
- PEM1F - Palustrine, emergent, persistent, semipermanent impoundment.
- R2SB2 - Riverine, lower perennial, streamed with a sandy bottom.

TABLE 7

VEGETATION AND FUNCTIONAL VALUE OF WETLANDS

Site	Dominant Vegetation (Botanical/Common Name)	U.S. Army C.O.E Regional Indicator Classification	Functional Value
W-1	o Broad-leaved Cattail *Typha latifolia*	OBL	o Sediment Trapping (long & short term)
	o Pin Oak *Quercus palustrias*	FACW	o Habitat for aquatic wildlife
	o Red Maple *Acer rubrun*	FACW	o Flood desynchronization
	o Eastern Red Cedar *Juniperus virginiana*	FACU	
W-1A	o Broad-leaved Cattail *Typha latifolia*	OBL	o Habitat for aquatic wildlife
	o Common Greenbriar *Smilax rotundifolia*	FACW	o Nutrient retention
	o Pin Oak *Quercus palustris*	FACW	o Food chain support
	o Red Maple *Acer rubrum*	FACW	o Groundwater recharge
	o Eastern Red Cedar *Juniperus virginiana*	FACU	
W-2	o Broad-leaved Cattail *Typhus latifolia*	OBL	o Flood desychronization
	o Smooth Alder *Alnus serrulata*	OBL	o Sediment trapping (short term)
	o Queen Anne's Lace *Daucus carota*	---	
W-2A	o Broad-leaved Cattail *Typha latifolia*	OBL	o Habitat for aquatic wildlife
	o Common Greenbriar *Smilax rotundifolia*	FACW	o Nutrient Retention
	o Pin Oak *Quercus palustris*	FACW	o Food chain support
	o Red Maple *Acer rubrum*	FACW	o Groundwater recharge
	o Eastern Red Cedar *Juniperus virginiana*	FACU	

TABLE 7 CONT'D

Site	Dominant Vegetation (Botanical/Common Name)	U.S. Army C.O.E Regional Indicator Classification	Functional Values
W-3	o Smooth Alder Alnus serrulata	OBL	o Sediment trapping (short term)
	o Common Greenbriar Smilax rotundifolia	FAC	o Groundwater discharge o Flood desynchronization
	o Pin Oak Querus palustris	FACW	
W-4	o Pin Oak Quercus palustris	FAC	o Habitat for aquatic wildlife
	o Scrub Pine Pinus virginiana	FAC	o Nutrient retention (long & short term)
	o Eastern Red Cedar Juniperus virginiana	FAC	o Food chain support o Groundwater recharge
	o American Holly Ilex opaca	FAC	
W-5	o Pin Oak Quercus palustris	FAC	o Habitat for aquatic wildlife
	o Scrub Pine Pinus virginiana	FAC	o Nutrient retention (long & short term)
	o Eastern Red Cedar Juniperus virginiana	FAC	o Food chain support o Groundwater Recharge
	o American Holly Ilex opaca	FAC	
W-5A	o Jewel Weed Impactiens capensis	FAC	o Nutrient retention (long and short term)
	o American Holly Ilex opaca	FAC	o Groundwater recharge o Sediment trapping (short term)
	o Common Greenbriar Smilax rotundifolia	FAC	o Nutrient retention (short term)
W-6	o Pin Oak Quercus palustris	FAC	o Habitat for aquatic wildlife
	o Scrub Pine Pinus virginiana	FAC	o Nutrient retention (long & short term)
	o Eastern Red Cedar Juniperus virginiana	FAC	o Food chain support o Groundwater Recharge
	o American Holly Ilex opaca	FAC	

TABLE 7 CONT'D

Site	Dominant Vegetation (Botanical/Common Name)	U.S. Army C.O.E Regional Indicator Classification	Functional Values
W-6A	o Pin Oak Quercus palustris	FAC	o Habitat for aquatic wildlife
	o Scrub Pine Pinus virginiana	FAC	o Nutrient retention (long & short term)
	o Eastern Red Cedar Juniperus virginiana	FAC	o Food chain support o Groundwater Recharge
	o American Holly Ilex opaca	FAC	
W-7	Disturbed, riprap placed with new planting		o Groundwater discharge o Food chain support o Flood desynchorinzation
W-8	o Flowering Dogwood (adj. wood) Cornus florida (stream bed)	FAC	o Habitat for aquatic wildlife
	o Smooth Alder Alnus serrulata	OBL	o Nutrient retention (long & short term)
	o Jewelweed Impatiens capensis	FAC	o Food chain support o Groundwater recharge

e. Threatened and Endangered Species

According to the U.S. Fish and Wildlife Service no Federally listed endangered or threatened plant or wildlife species are present within the study limits. However, correspondence with the Maryland Department of Natural Resources, Forest Park and Wildlife Service has reported that the following rare birds exist within the vicinity of the study area: least bittern (Ixobrychus exilis) which is state listed as in need of conservation; common barn-owl (Tyto alba) which is on the Maryland Heritage's watchlist; and loggerhead shrike (Lanius ludovicianus) which is state listed as endangered and is a candidate for federal listing. None of the above species was observed during field reconnaissance activities. See Comments and Coordination Section V, pages V-8, V-10, V-17, V-18, and V-20.

f. Chesapeake Bay Critical Area Involvement

Correspondence with the Chesapeake Bay Critical Area Commission states that this project is not in the critical area for the Chesapeake Bay. This correspondence is attached in Section V, Comments and Coordination, pages V-20 and V-21.

7. Existing Noise Conditions

a. Noise Sensitive Area Description

The noise sensitive areas (NSA's) selected for the noise analysis are described in Table 8, depicted on the Alternates mapping in Section II and summarized on Figure IV-1. Thirteen (13) NSA's were identified for this analysis and are considered to emulate worst case conditions with respect to land use. The areas chosen consist of eleven (11) residential areas, one (1) churches and a preschool. These sites were field verified during study area visits.

b. Ambient Noise Level Measurements

A detailed technical analysis has been performed to determine the impact of the proposed project on noise. The results are summarized in Section IV. A copy of the technical analysis report is available at the State Highway Administration, 707 North Calvert Street, Baltimore, Maryland 21202.

In an acoustical analysis, measurement of ambient noise levels is intended to establish the basis of impact analysis. The ambient noise levels as recorded represent a generalized view of present noise levels. Variations with time of total traffic volume, truck traffic volumes, speed, etc., may cause fluctuations in ambient noise levels of several decibels. However, for the purposes of impact assessment, these fluctuations are usually not sufficient to significantly affect the assessment. The existing noise levels for this analysis were calibrated with the prediction model and found to be within 1-5 dBA of the actual existing levels.

TABLE 8

DESCRIPTION OF NSA'S

NSA NO.	ACTIVITY CATEGORY	DESCRIPTION/LOCATION
1	B	Residence, single family detached house on the west side of MD 205 approximately 450' south of Poplar Hill-Beantown Road.
2	B	Residence, single family detached house on the east side of MD 205 approximately 250' south of Poplar Hill-Beantown Road
3	B	Residence, single family detached house on the west side of MD 205, Box 191A MD 205.
4	B	Resident, single family detached house on the east side of MD 205 across from Site 3, Box 196A MD 205.
5	B	Residence, single family detached house on the east side of MD 205 approximately 250' north of Mill Road, Box 201A MD 205.
6	B	Resident, single family detached house on the west side of MD 205 approximately 650' north of the Idlewood Trailer Park, Box 211 MD 205.
7	B	Trinity Baptist Church, west side of MD 205, Box 212 Md 205.
8	B	Residence, single family detached house west side of MD 205, 518 Council Oak Drive, White Oak Village Subdivision.
9	B	Residence, single family detached house east side of MD 205, 101 Indian Lane, Mattawoman Estates Subdivision.
10	B	Residence, single family detached house east side of MD 205, Box 2003 MD 205 adjacent to Pinefield Subdivision.
11	B	Residence, single family detached house, Box 1907 MD 205 adjacent to Pinefield Subdivision.
12	B	Preschool, Happy Faces Learning Center, west side of MD 205, approximately 300' north of Nike Road.
13	B	Residence, single family detached house east side of Nike Road, 246 Nike Road adjacent to Pinefield Subdivision.

It was determined for all the noise sensitive areas, that the most typical noise conditions occur during the non-rush hour period (9:00 a.m. and 3:00 p.m.). During this time the highest noise levels are experienced for the greatest length of time.

The monitored and predicted ambient noise levels are presented in Table 9. A discussion of noise impacts from the proposed project is included in Section IV of this document.

The noise levels are expressed in terms of an Leq noise level or equivalent levels on an hourly basis. the leq noise level is the energy-averaged level for a given period of time. All ambient and predicted levels in this report are Leq exterior levels unless otherwise noted.

c. Noise Abatement Criteria

This project is subject to Federal Highway Administration (FHWA) Noise Abatement Criteria as outlined in Federal Highway Program Manual (FHPM) 7-7-3.

The FHPM establishes Federal Noise Abatement Criteria for various activity categories. This criteria is shown in Table 10. These levels are expressed in terms of an Leq noise level which is the energy averaged noise level for a given period of time.

TABLE 9

AMBIENT NOISE LEVELS

NSA	DESCRIPTION	MEASURED AMBIENT Leq	PREDICTED AMBIENT Leq
1	Residence	61	62
2	Residence	59	59
3	Residence	60	62
4	Residence	63	63
5	Residence	67	68
6	Residence	67	66
7	Church	60	62
8	Residence	72	73
9	Residence	70	66
10	Residence	68	69
11	Residence	69	68
12	School	67	65
13	Residence	63	60

TABLE 10

NOISE ABATEMENT CRITERIA

ACTIVITY CATEGORY	DESIGN NOISE LEVELS-dBA Leq (h)	DESCRIPTION OF ACTIVITY
A	57 (Exterior)	Lands on which serenity and quiet are of extraordinary significant and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B	67 (Exterior)	Picnic areas, recreation areas, playground, active sports areas, parks, residences, motels, hotels, schools, churches, libraries, and hospitals.
C	72 (Exterior)	Developed lands, properties, or activities not included in Categories A or B above.
D	--	Undeveloped lands.
E	52 (Interior)	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, and auditoriums.

Source: FHPM 7-7-3

8. Existing Air Quality

The project area is located in Maryland's Air Quality Control Area V (Southern Maryland). This project is in an area where the State Implementation Plan (SIP) does not contain any transportation control measures. The study area is located in a CO attainment area within Area V (ie. Charles County). Therefore, the conformity requirements of 23 CFR 770 do not apply to this project.

A detailed technical analysis has been performed to determine the impact of the proposed project on CO. The results are summarized in Section IV. A copy of the technical analysis report is available at the State Highway Administration, 707 North Calvert Street, Baltimore, Maryland 21202.

II. NEED FOR PROJECT

II. NEED FOR THE PROJECT

A. Purpose

The purpose of this study is to increase capacity and improve the safety to Proposed MD 5 Relocated (Existing MD 205). This roadway is currently being used as a bypass of the congested Waldorf area connecting MD 5 with US 301/MD 5. It links several suburban communities, aides in the transportation of goods and services, and acts as highly important commuter route. The objective of the mainline alternates and interchange options proposed are to alleviate existing congestion and provide for continued safe and efficient operation into the future. The proposed improvements will also enhance the existing MD 5 corridor as additional traffic will be diverted away.

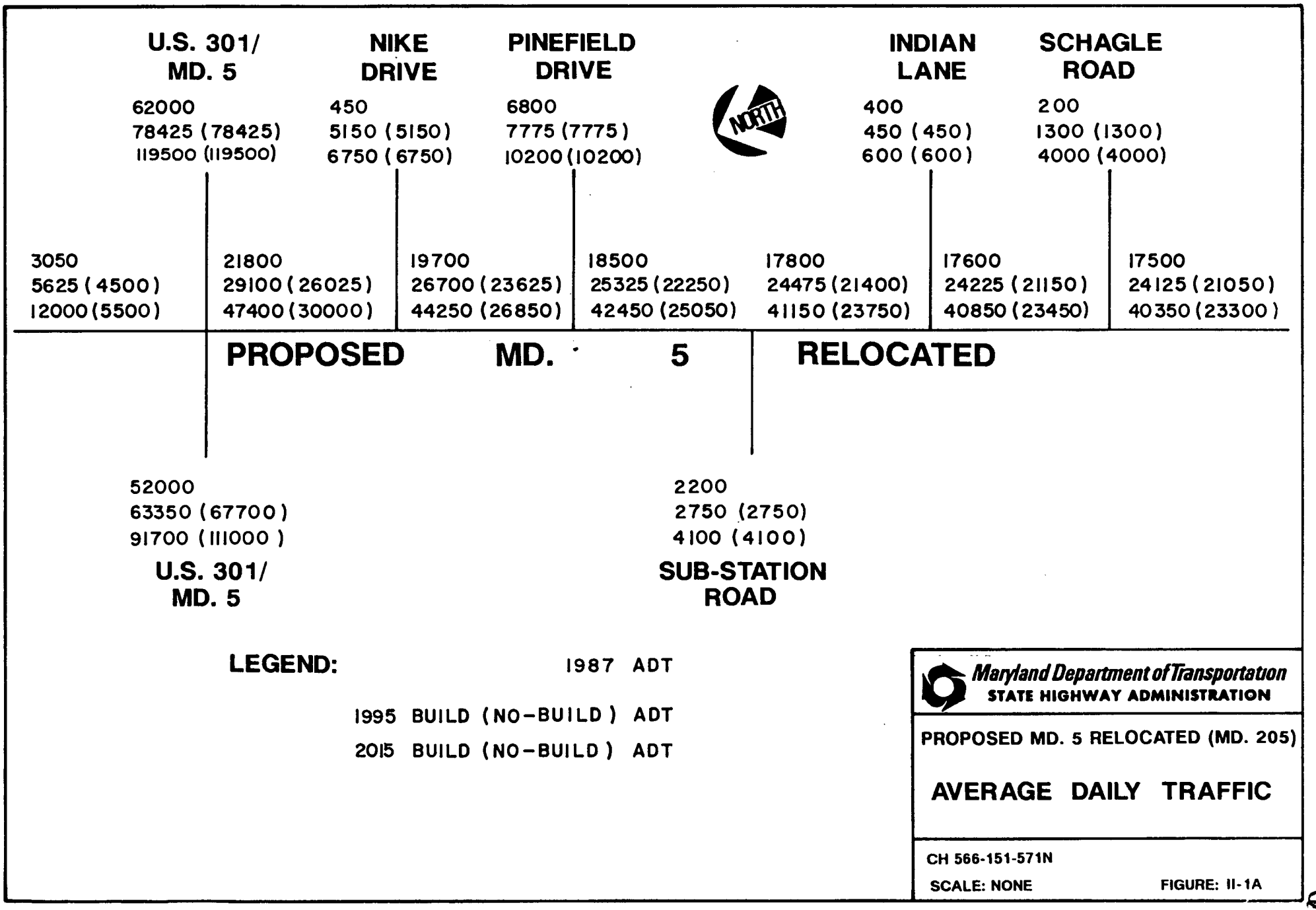
B. Project Background

Proposed MD 5 Relocated is currently signed as MD 205. It has recently been transferred to the State Highway Administration from Charles County when it was signed Mattawoman-Beantown Road. This project is currently included in the Maryland Department of Transportation's Consolidated Transportation Program (FY 1989-1994) for planning and engineering and in the Highway Needs Inventory. This project is also included within the Charles County, Maryland Comprehensive Land Use Plan (1988). These improvements are consistent with other planned or design projects within the vicinity.

C. Existing and Projected Traffic Conditions

MD 205 is currently a two lane, uncontrolled access road that connects MD 5 with US 301/MD 5. This road functions as a urban minor arterial and acts as a bypass of the MD 5/US 301 intersection in Waldorf. It currently has three signalized intersections. The first signal is at the southern terminus at MD 5. The second signal is near the northern end at the intersection with Pinefield Road (the access route to the Pinefield subdivision). The third signalized intersection is at the northern terminus of MD 205 at US 301/MD 5. This intersection is heavily developed in all four quadrants. There are 65 driveways located on the roadway.

Currently this road experiences congestion during peak periods (7 a.m. to 8 a.m. and 5 p.m. to 6p.m.). Daily delays occur today at the signalized intersections of MD 5 and US 301/MD 5 due to lack of capacity. This is expected to worsen as traffic volumes increase. A review of the Average Daily Traffic (ADT) (Figure II-1) reveals an approximate 40% increase between the 2015 No-Build and 1987 ADT in expected on the existing roadway. This will only exacerbate the existing congestion, delays, and accidents.



Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION

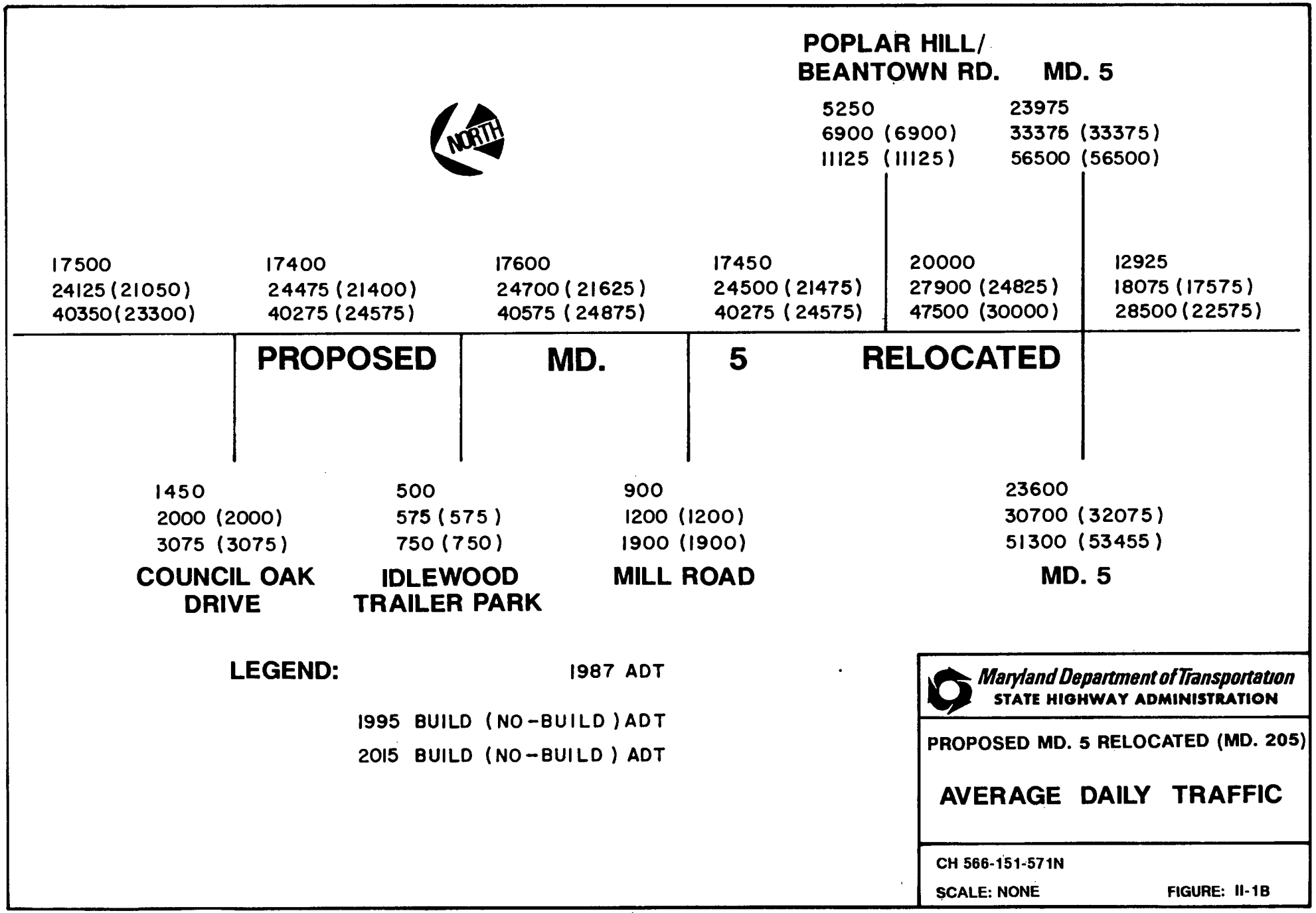
PROPOSED MD. 5 RELOCATED (MD. 205)

AVERAGE DAILY TRAFFIC

CH 566-151-571N

SCALE: NONE

FIGURE: II-1A


POPLAR HILL/
BEANTOWN RD.
MD. 5
NORTH
5250
6900 (6900)
11125 (11125)
23975
33375 (33375)
56500 (56500)
17500
24125 (21050)
40350 (23300)
17400
24475 (21400)
40275 (24575)
17600
24700 (21625)
40575 (24875)
17450
24500 (21475)
40275 (24575)
20000
27900 (24825)
47500 (30000)
12925
18075 (17575)
28500 (22575)
PROPOSED
MD.
5
RELOCATED
1450
2000 (2000)
3075 (3075)
COUNCIL OAK DRIVE
500
575 (575)
750 (750)
IDLEWOOD TRAILER PARK
900
1200 (1200)
1900 (1900)
MILL ROAD
23600
30700 (32075)
51300 (53455)
MD. 5
LEGEND:
1987 ADT
1995 BUILD (NO-BUILD) ADT
2015 BUILD (NO-BUILD) ADT
Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
PROPOSED MD. 5 RELOCATED (MD. 205)
AVERAGE DAILY TRAFFIC
CH 566-151-571N
SCALE: NONE
FIGURE: II-1B

The increase traffic volumes will affect the vehicle operating speeds. It is estimated that the traffic operating speeds for Proposed MD 5 Relocated will be:

1995	Peak	Off Peak
No Build	10 MPH*	40 MPH
Build	40 MPH	40 MPH
2015		
No Build	10 MPH*	40 MPH
Build	30 MPH	40 MPH

* A 10 MPH operating speed signifies a stop and go condition.

The intersection of US 301/MD 5 with MD 205 and MD 5 with MD 205 are currently "High Accident Intersections". This will only worsen as traffic congestion increases in length and volume. Improvements at these intersections include increased capacity and exclusive turn lanes. These improvements along with the addition of through lanes on US 301 (construction is programmed to begin in FY 1990) will help to reduce the accident rate at this intersection. Improvements at intersection of MD 5 with MD 205 also include increased capacity and exclusive turn lanes. One alternative includes a relocation to bypass this intersection. This improvement will help reduce the accident rate at this intersection.

The average accident rate for MD 205 is 308 accidents for every one hundred million vehicle miles of travel (accident/100 MVM). This accident rate is considerably higher than the statewide average rate of 278 accident/100 MVM for similarly designed highways.

The collision types that exceeded their respective statewide averages rates were angle, rear end, and left turn collisions. These types of accidents are generally indicative of intersection and driveway conflicts, slower moving traffic, and periods of congestions. While there are no "High Accident Sections", the majority of these accidents are occurring in the northern segment from just north of Sub-Station Road to US 301/MD 5. These accidents resulted in a monetary loss to the motoring and general public of $2.2 million/100 MVM.

Providing a 6-lane divided highway would reduce the accident rate to 144 accidents/100 MVM. The accident cost resulting from either build alternate would be approximately $1.5 million/100 MVM, when compared to the existing conditions. The additional capacity will help reduce the angle and rear end collisions, while the use of protected left turn bays at median openings will help reduce left turn collisions.

Proposed MD 5 Relocated will be classified as an intermediate arterial by MSHA classifications or urban minor arterial by FHWA classification. Detailed traffic reveals an existing Average Daily Traffic (ADT) of 17,400 (at Council Oak Drive) to 21,800 (at US 301/MD 5) vehicles and a design year (2015) build ADT of 40,300 (at Council Oak Drive) to 47,400 (at US 301/MD 5) vehicles (Figure II-1). This is an increase of approximately 125% over existing traffic.

Quality of traffic flow along a roadway is measured in terms of levels-of-service (LOS). Level-of-service (LOS) is dependent upon highway geometry, highway capacity, and traffic characteristics and volumes. The Transportation Research Board's HIGHWAY CAPACITY MANUAL, defines level-of-service as follows:

- o LOS A: Free flow.
- o LOS B: Stable flow; the presence of others in the traffic stream begins to be noticeable.
- o LOS C: Stable flow; the presence of others in the traffic stream begins to significantly affect interactions.
- o LOS D: High density, stable flow; the presence of others in the traffic stream begins to severely affect speed and freedom to maneuver.
- o LOS E: Operating conditions at or near the capacity level. All speeds are reduced to a low, but relatively uniform value.
- o LOS F: Forced or breakdown flow.

Previous alternatives presented at the Public Workshop (November 22, 1988), provide for a 4-lane roadway. With the completion of detailed traffic, it was determined that the roadway would operate at a unacceptable LOS E in the design year (2015). A LOS summary (Table 12; page IV-6) for the various segments validate the necessity for the proposed mainline alternatives (6-lane roadway), intersection improvements, and interchange improvements.

III. ALTERNATES CONSIDERED

III. ALTERNATES CONSIDERED

A. Alternate 1 (No-Build)

The No-Build Alternate would provide no significant improvement to MD 205. Spot safety and intersection improvements would still occur over time as part of normal highway maintenance and safety operations but no additional capacity would be added.

As traffic volumes continue to grow, traffic delays and the length of the peak hours will expand. Detailed traffic reveals that MD 205 will operate at peak hour level of service (LOS) F in the design year (2015). It can be expected that as the magnitude and duration of congestion increases over time, the rate of accidents will also increase.

Under the No-Build Alternate there would be no right-of-way, relocation, or construction costs or impacts. There would be no disruption of traffic due to construction or other related impacts.

Other major study area transportation improvements that are programmed for planning, design and/or construction, regardless of the outcome of this study include:

- MD 5 (Waldorf-Leonardtown Road): This project will widen existing MD 5 to five lanes from US 301 to Post Office Road. Construction is programmed to begin in FY 1991.

- US 301 (Blue Star Memorial Highway): This project will widen existing US 301 to six lanes from south of Smallwood Drive to south of the US 301/MD 5 interchange at T.B. Construction is programmed to begin in FY 1990.

- MD 228 (Berry Road): This project will dualize existing MD 228 from US 301 to Bealle Hill Road and construct a new/relocated dual highway between MD 228 and MD 210. Construction is programmed to begin in FY 1992. Only the section in Charles County is programmed for construction.

- MD 5: This project will reconstruct MD 5 to: upgrade two at-grade intersections north of I-95; reconstruct interchanges at I-95 and US 301 and construct six new interchanges and two right-on/right-off partial interchanges. This project is not programmed past the planning phase.

- MD 210 (Indian Head Highway): This project will reconstruct existing MD 210 to a 6 lane divided highway from south of Old Fort Road to MD 414. This is a special project being completed today under the supervision of State Highway Administration District 3.

- US 301 (Blue Star Memorial Highway): A planning study is underway to widen and control access on existing US 301 from MD 5 at T.B. to US 50.

- Eastern Bypass Corridor Study: A planning study is underway for an eastern bypass of the Washington Metropolitan Area through part of Charles County.

- o US 301 (Blue Star Memorial Highway): A planning study is underway to provide interchanges along US 301 with Billingsly Road, Smallwood Drive, and MD 5/MD 228. This project is currently on hold.
- o Western Parkway (Charles County): This project will provide a new 4-lane divided roadway from Billingsly Road to MD 205.
- o Billingsly Road (Developers Road): This project will provide a new 2-lane roadway between US 301 and MD 5. Charles County will provide the roadway from MD 5 (7300') and the developer will provide the remainder.
- o US 301 bridge over Mattawoman Creek (Charles County): will improve this bridge upon completion of Western Parkway.
- o Middletown Road (Charles County): This project will ultimately provide a 4-lane improvement from Billingsly Road to MD 228.

B. Mainline Build Alternates

General Description

The project has been separated into three segments with interchangeable alternates within each segment. The first segment would begin at MD 5 (at the south) and extends to just south of Trinity Memorial Gardens Cemetery (±4000'), the second segment ties-in with Segment I and extend to just north of Trinity Memorial Gardens Cemetery (±3000'), and the third segment ties-in with Segment II and extend to the terminus of MD 205 at the intersection of US 301/MD 5 (±10,400'). The typical sections for the project are depicted on Figure III-1.

SEGMENT I

Segment I begins at MD 5 (at the south) and extends to just south of Trinity Memorial Gardens Cemetary. Within this segment there are two alternates. Alternate 5 (Figure III-2) would follow the basic alignment of existing MD 205. The typical section (Figure III-1) would include a 6-lane, divided roadway with an open median of 34'. The open typical section correspondes to the open typical section on MD 5. The existing traffic signal at MD 205/MD 5 would remain. Construction and approved site developments in three quadrants restrict major reconstruction of the intersection and leaves an unacceptable LOS F (Table 12; page IV-6). The box culvert over the tributary to Jordan Swamp would be extended.

Alternate 6 (Figure III-3) would be on relocation. A roadway on new location would split from MD 5 approximately 2400' south of the existing MD 5/MD 205 intersection, would bridge the tributaries to the Jordan Swamp, and would tie into the basic alignment of MD 205 by the end of the segment. The typical section (Figure III-1) would be the same as Alternate 5. The existing traffic signal at MD 205/MD 5 would remain, and a new signal, at the split, for the new southbound roadway and existing northbound MD 5 would be added. The relocation would obtain an acceptable intersection levels of service (Table 12; page IV-6) that Alternate 5 would not. This would eliminate any need for an interchange.

Additional studies are being investigated to reduce the wetland impacts in Segment I. The typical section for Alternate 5 would be revised to a 6-lane divided closed roadway with a 20' curbed median (similar to Segment II). The typical section for Alternate 6 would involve extending the closed typical section with a 20' median (similar to Segment II) through to the southern limits of the tributary to Jordan Swamp and then transition to an open section roadway for the proposed intersection with existing MD 5.

SEGMENT II

Segment II would tie into Segment I and would extend to just north of Trinity Memorial Gardens Cemetery (±3000'). Within this segment, there would also be two alternates. Alternate 5/6 (Figure III-4) would construct the new roadway to the west of the existing roadway and traverse through the cemetery. Alternate 5/6 Modified (Figure III-5) would construct the new roadway to the east of the existing roadway. The typical section for both alternates (Figure III-1) would include a transition from the Segment I typical section (6-lane open median) to a 6-lane, divided roadway with a 20' curbed median.

SEGMENT III

Segment III would tie into Segment II and would extend to the terminus of MD 205 at the intersection of US 301/MD 5 (± 10,400'). Within this segment, there is one alternate. Alternate 5/6 (preferred)(Figure III-6) would follow the basic alignment of existing MD 205 with slight shifts to minimize right-of-way impacts. The existing traffic signals at Pinefield Road and US 301/MD 5 would remain. The typical section (Figure III-1) from Segment II would extend to just south of the railroad tracks. From the railroad tracks to the intersection with US 301/MD 5 the roadway would include 4 lanes. This would minimize right-of-way impacts to the two shopping centers. Although this short (±700') 4-lane section would not adequately handle the design year (2015) capacity requirements, it will provide an adequate level-of-service past the year 2000. It is anticipated that an interchange option would be constructed prior to this as the US 301/MD 5 intersection will already have an unacceptable level-of-service.

Median openings would be provided at cross roads. A minimum spacing of 750' is required between openings. Sub-Station Road, Indian Lane, and Schlagle Road all tee into MD 205 within 400' of each other. Three options to provide adequate median opening spacings are available (Figure III-7). The first option, Relocated Sub-Station Road Option 1, would relocate Sub-Station Road to the north (approximately 850'). A median opening would be placed at Relocated Sub-Station Road and at Schlagle Road. Option 2 and 3 would each relocate Sub-Station Road to create a 4-way intersection with Schlagle Road. Indian Lane would not have a median opening with any option. A connection between Schlagle Road and the cul-de-sac on Indian Lane could be provided. Only one of the three options would be constructed.

C. Interchange Options

There are four interchange options for the intersection of MD 205 with US 301/MD 5. The interchange options will be built at a later date than the mainline alternates. The typical sections for the interchange options is shown on Figure III-8.

Interchange Option A (Figure III-9) would provide directional ramps between MD 205 and US 301 to the north. MD 205 would be relocated between the Pinefield Development and the rear of the Pinefield Shopping Center and would interchange with US 301 approximately 800 foot north of the existing intersection. Interchanging movements would only be provided for US 301 to and from the north via two-lane directional ramps. All traffic destined to and from US 301 to the south would use the existing signalized intersection.

Interchange Option B (Figure III-10) is very similar to Option A. It would also provide directional ramps between MD 205 and US 301 to the north. This option would differ along southbound US 301. The directional ramp to MD 205 would exit from the median. This would require southbound US 301 to be relocated to the west. The existing signalized intersection would remain, similar to Option A, for southbound US 301 and Western Parkway.

Interchange Option C (Figure III-11) would provide a flyover ramp from southbound US 301 to MD 205. This would eliminate the existing southbound double left turns. The flyover ramp would travel behind the Chaney Building and bridge over US 301 at the existing signalized intersection location. This would require northbound MD 205 to be shifted slightly. A connection from Sub-Station Road (at US 301) (MD 5) to Pinefield Road would allow for the remaining movements. Additionally, a service road network behind both shopping centers would be provided to replace certain existing access points that would be removed under this option.

Interchange Option D (Figure III-12) proposes a full movement trumpet interchange. The ramps to and from southbound US 301 would loop behind the Chaney Building. Additional directional ramps would be provided for all movements (replacing the connection from Sub-Station Road & Pinefield Road). A service road network, similar to Option C, would be provided behind both shopping centers.

D. Alternates Considered and Dropped

A number of alternates were considered and dropped from further consideration because they did not adequately handle operational requirements.

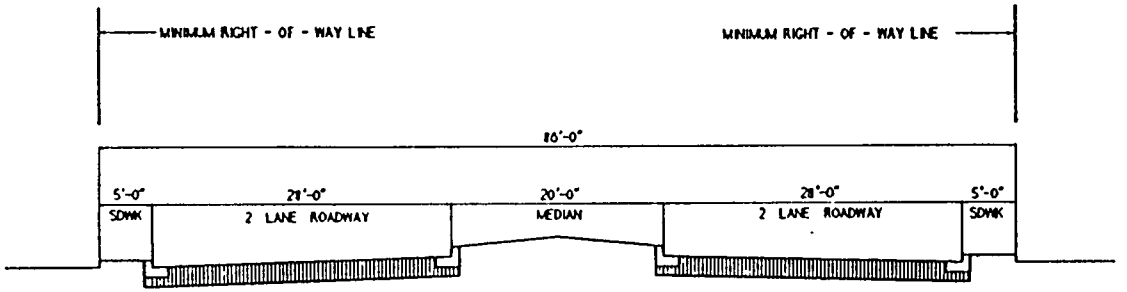
Alternate 2, as presented at the Public Workshop, was a 5-lane urban section. This alternate was dropped because it did not provide adequate capacity for future demands, increased the accident rate to 488 accident/100 MVM (state average accident rate is 202 accidents/100 MVM), and was deemed unsafe for pedestrians.

Alternate 3 and 4 as presented at the Public Workshop, were a 4-lane divided urban section with a 20' median, with varying networks of services roads. These alternates were dropped because they did not provide adequate capacity for future demands.

A modification of Interchange Option A was developed that avoided the relocation of two commercial establishments. This modification shifted the ramps further east towards the railroad tracks. This option was dropped because it impacted additional wetlands (approximately 1 acre) and created an additional crossing of Mattawoman Creek, and had increased construction costs.

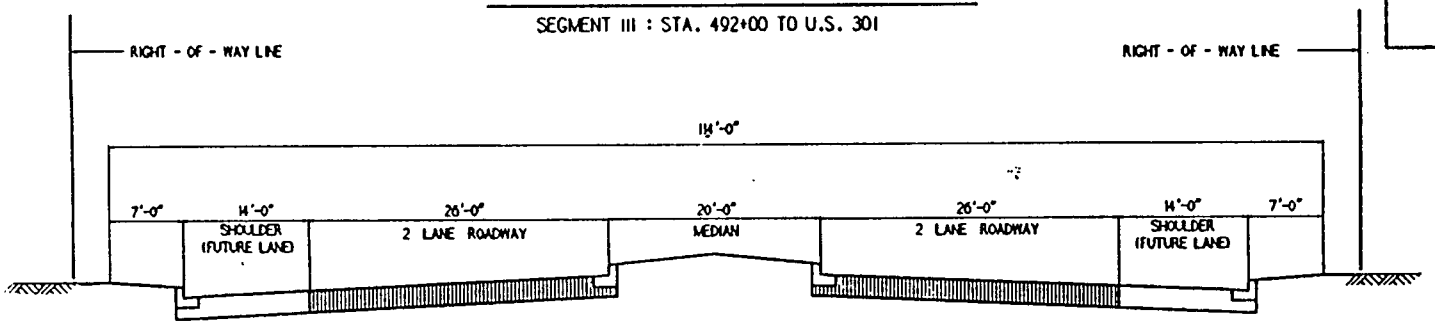
PROPOSED MD 5 RELOCATED

ALTERNATES 5 & 6



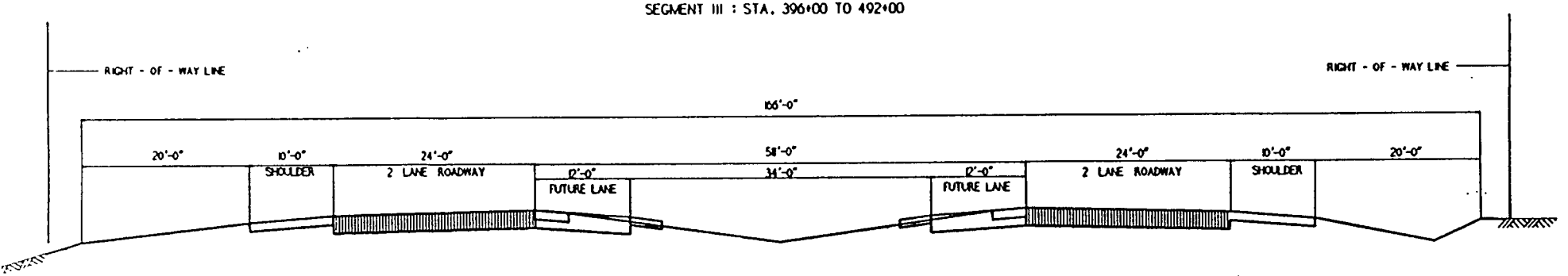
TYPICAL SECTION NO. 3

SEGMENT III : STA. 492+00 TO U.S. 301



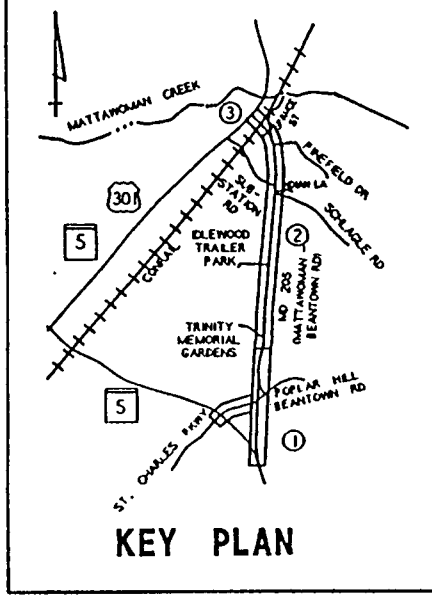
TYPICAL SECTION NO. 2

SEGMENT II : STA. 367+00 TO 396+00
SEGMENT III : STA. 396+00 TO 492+00



TYPICAL SECTION NO. 1

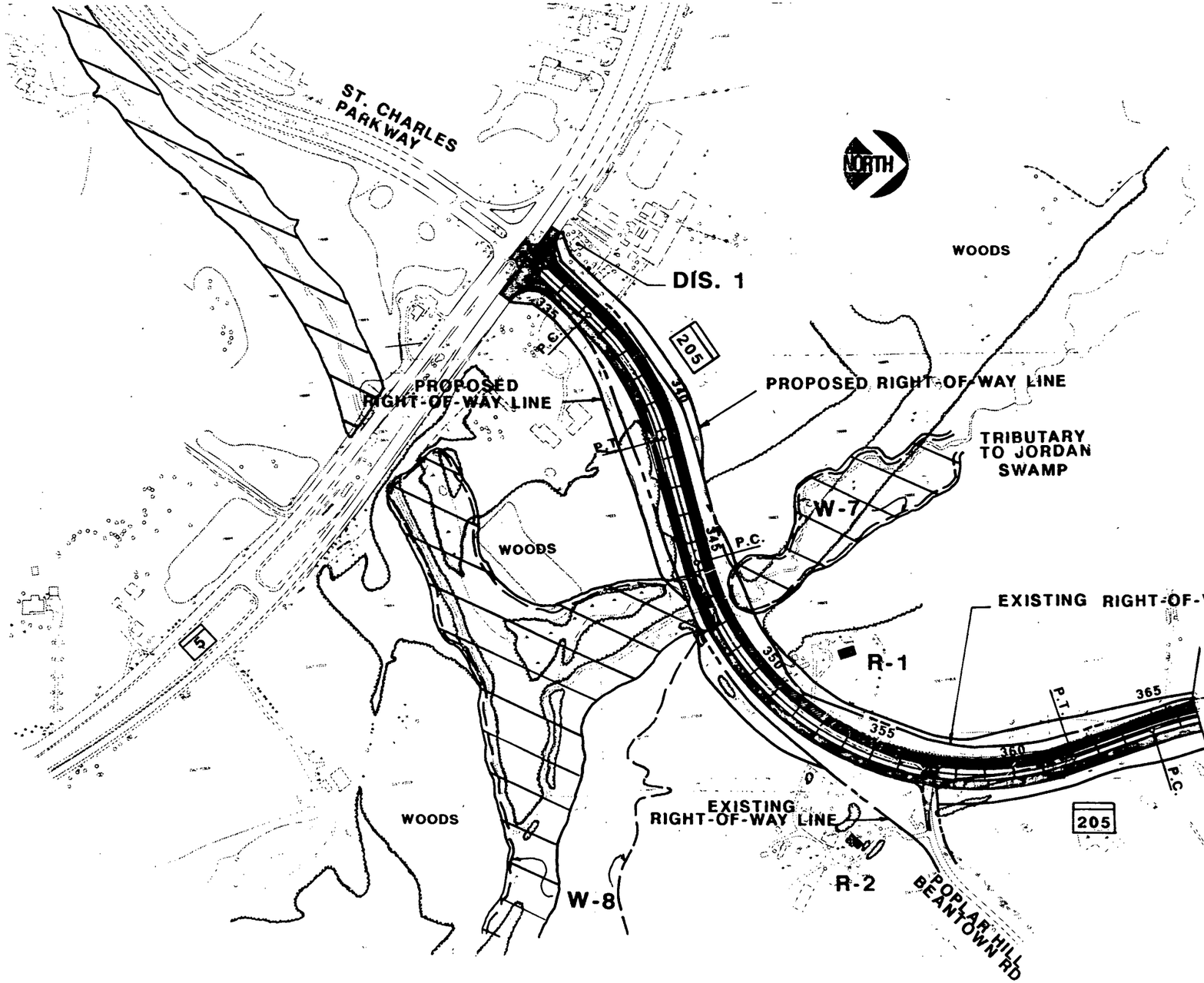
SEGMENT I : MD. 5 TO STA. 367+00



KEY PLAN

NOTE: THE DIMENSIONS SHOWN ARE FOR THE PURPOSE OF DETERMINING COST ESTIMATES AND ENVIRONMENTAL IMPACTS, AND ARE SUBJECT TO CHANGE DURING THE FINAL DESIGN PHASE.

FIGURE III-1



LEGEND

- PROPOSED ROADWAY
- EXISTING ROADWAY
- EXISTING RIGHT-OF-WAY
- PROPOSED RIGHT-OF-WAY
- R-11 ■ AIR/NOISE RECEPTOR SITES
- DIS. 7 □ DISPLACEMENT
- WETLANDS (W-1)
- FLOOD PLAINS
- PROPOSED U.S. 301 WIDENING

PROPOSED MD 5 RELOCATED

SEGMENT I
ALTERNATE 5

SCALE: 1" = 400' FIGURE III - 2

ST. CHARLES PARKWAY

NORTH

WOODS

EXISTING RIGHT-OF-WAY LINE

205

5

TRIBUTARY TO JORDAN SWAMP

W-7

WOODS

PROPOSED RIGHT-OF-WAY LINE

PROPOSED RIGHT-OF-WAY LINE

MATCH LINE, SEE SEGMENT II FIGURES

P.T. 395

P.C.

R-1

360

365

355

400

P.T.

205

EXISTING RIGHT-OF-WAY LINE

P.C.

P.T.

R-2

405

POPLAR HILL-BEANTOWN RD.

P.T. 115

110

P.C.

105

P.T.

195

185

P.R.C.

P.C.

P.T.

P.C. (100)

P.T. 350

345

P.C. (200)

W-8

LEGEND

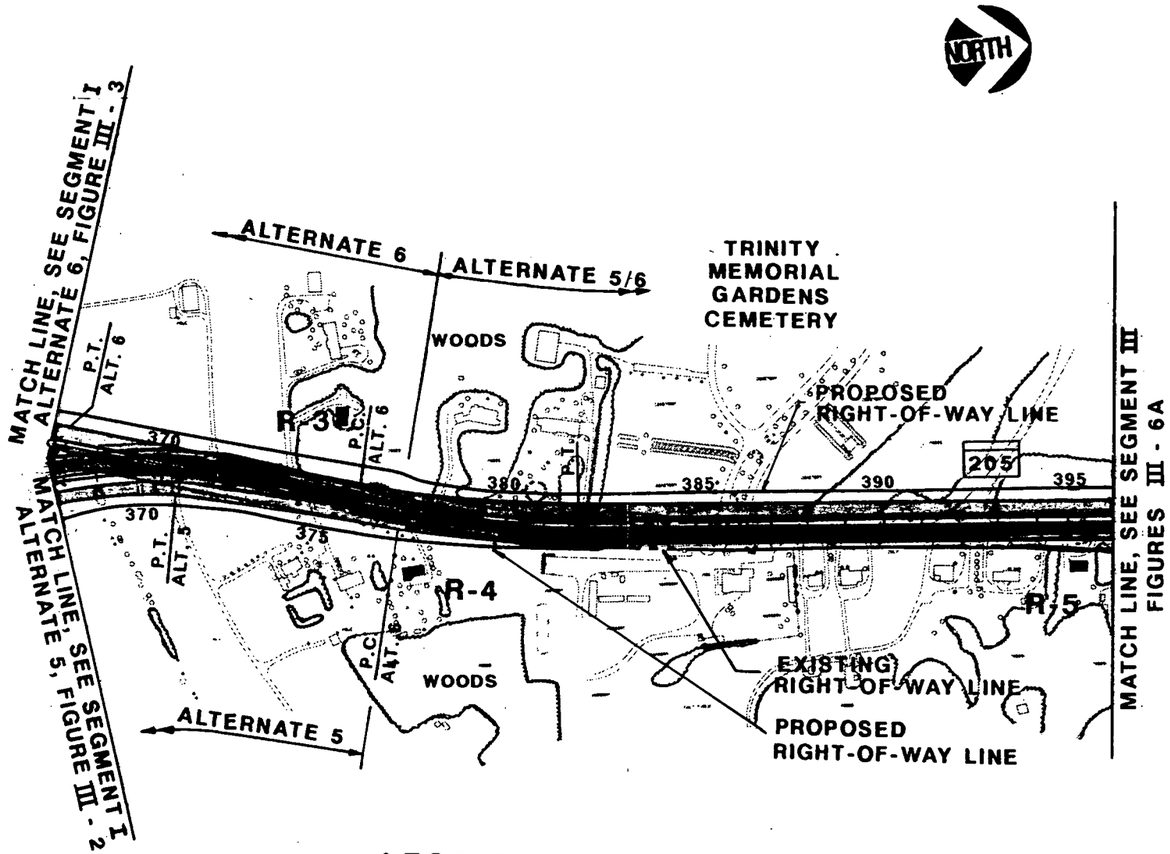
- PROPOSED ROADWAY
- EXISTING ROADWAY
- EXISTING RIGHT-OF-WAY
- PROPOSED RIGHT-OF-WAY
- R-11 ■ AIR/NOISE RECEPTOR SITES
- DIS. 7 □ DISPLACEMENT
- WETLANDS (W-1)
- FLOOD PLAINS
- PROPOSED U.S. 301 WIDENING

PROPOSED MD 5 RELOCATED

SEGMENT I

ALTERNATE 6

SCALE: 1" = 400' FIGURE III - 3



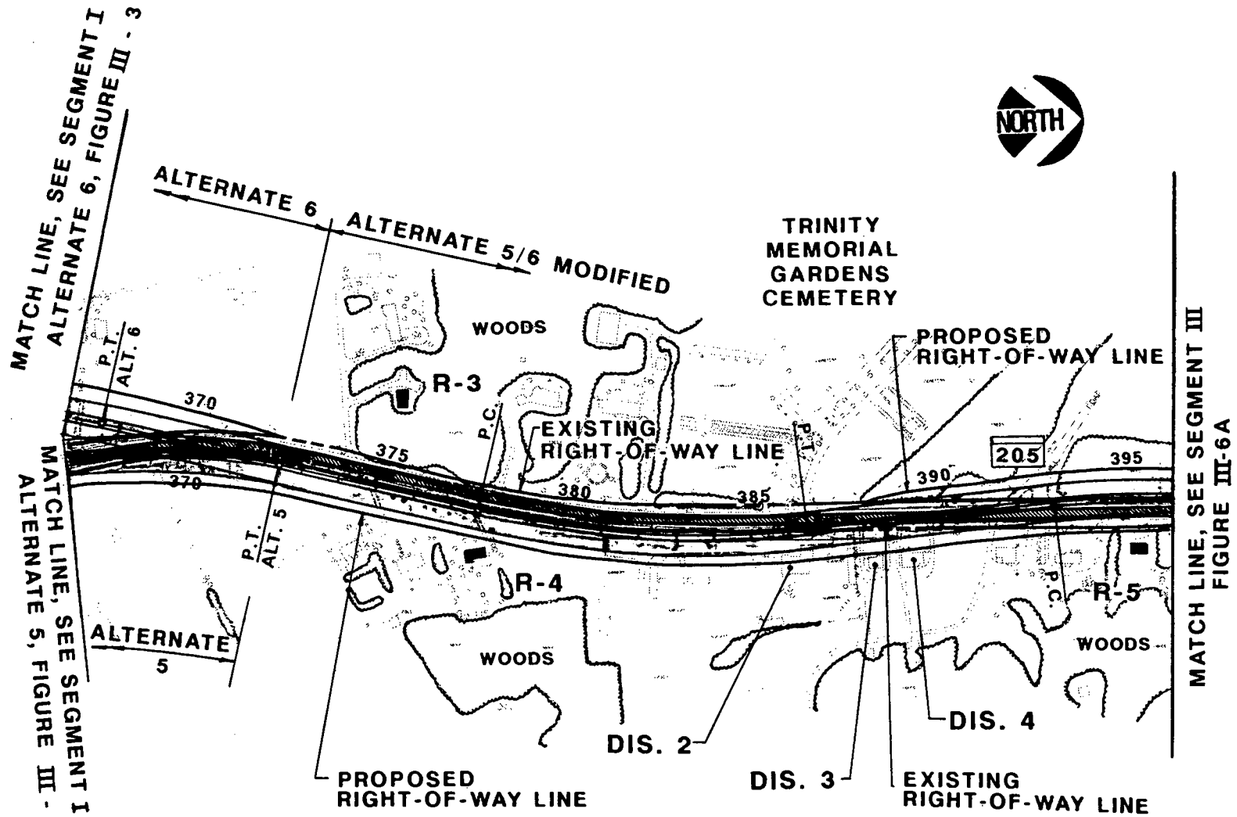
LEGEND

- PROPOSED ROADWAY
- EXISTING ROADWAY
- EXISTING RIGHT-OF-WAY
- PROPOSED RIGHT-OF-WAY
- R-11 ■ AIR/NOISE RECEPTOR SITES
- DIS. 7 □ DISPLACEMENT
- WETLANDS (W-1)
- FLOOD PLAINS
- PROPOSED U.S. 301 WIDENING

PROPOSED MD 5 RELOCATED

SEGMENT II
ALTERNATE 5/6

SCALE : 1"=400' FIGURE III - 4

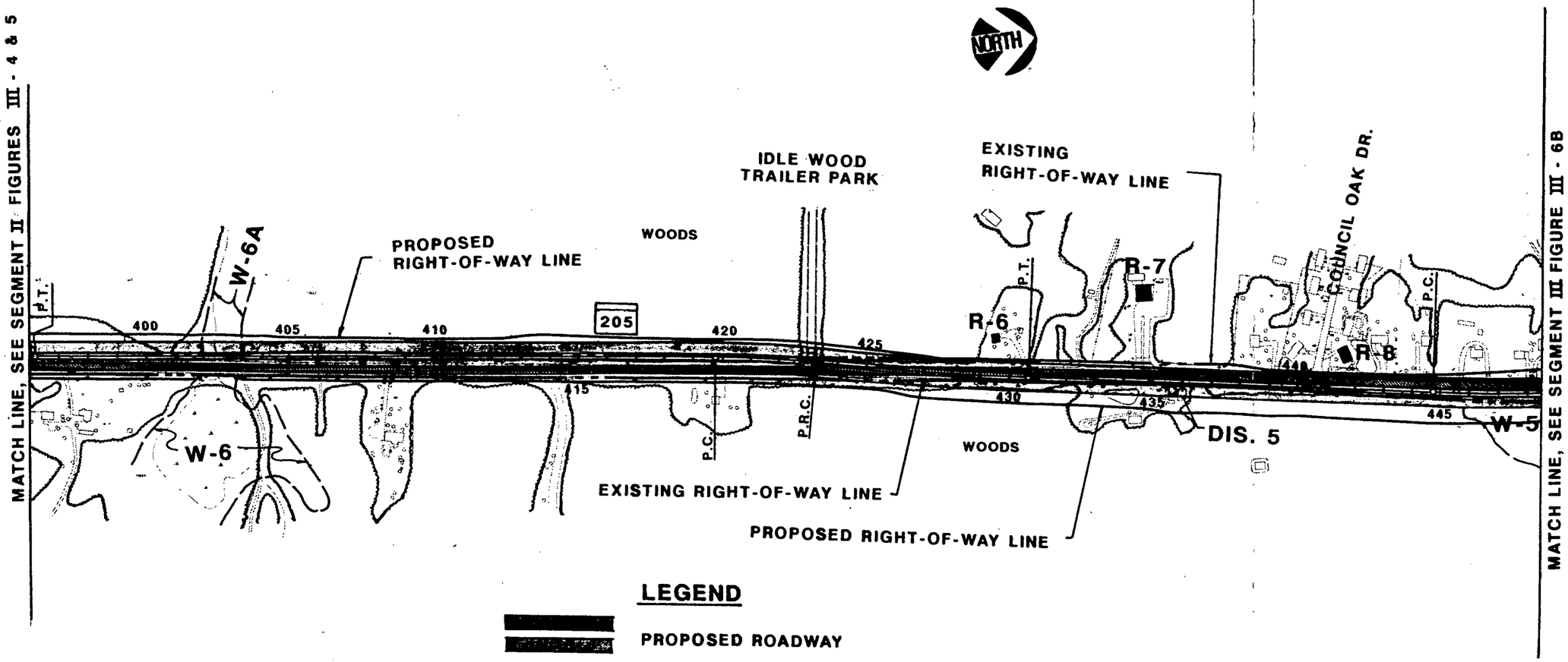


LEGEND

- PROPOSED ROADWAY
- EXISTING ROADWAY
- EXISTING RIGHT-OF-WAY
- PROPOSED RIGHT-OF-WAY
- R-11 ■ AIR/NOISE RECEPTOR SITES
- DIS. 7 □ DISPLACEMENT
- WETLANDS (W-1)
- FLOOD PLAINS

PROPOSED MD 5 RELOCATED
SEGMENT II
ALTERNATE 5/6 MODIFIED

SCALE: 1"=400' FIGURE III-5



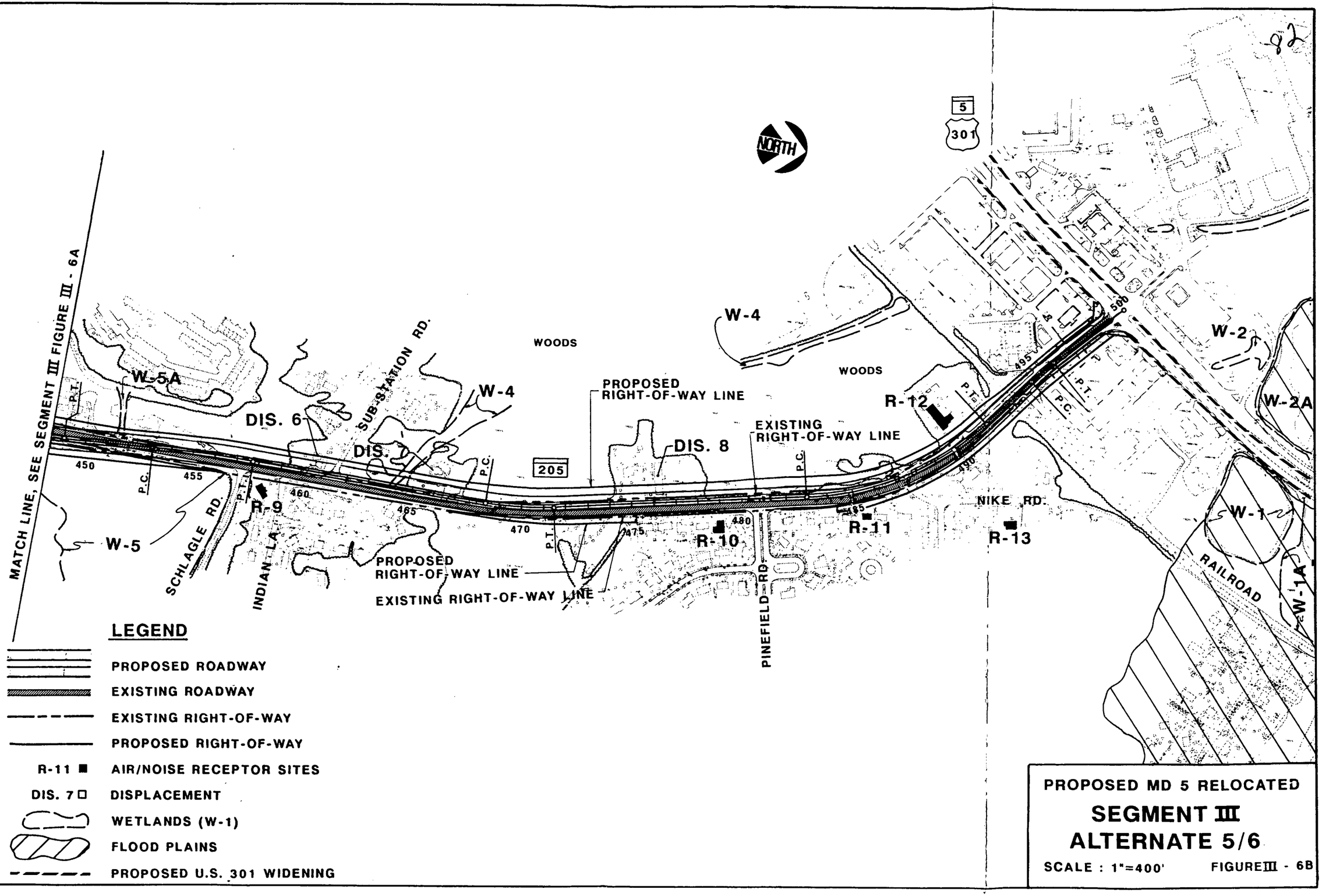
LEGEND

- PROPOSED ROADWAY
- EXISTING ROADWAY
- EXISTING RIGHT-OF-WAY
- PROPOSED RIGHT-OF-WAY
- R-11 ■ AIR/NOISE RECEPTOR SITES
- DIS. 7 □ DISPLACEMENT
- WETLANDS (W-1)
- FLOOD PLAINS
- PROPOSED U.S. 301 WIDENING

PROPOSED MD 5 RELOCATED

SEGMENT III
ALTERNATE 5/6

SCALE : 1"=400' FIGURE III - 6A



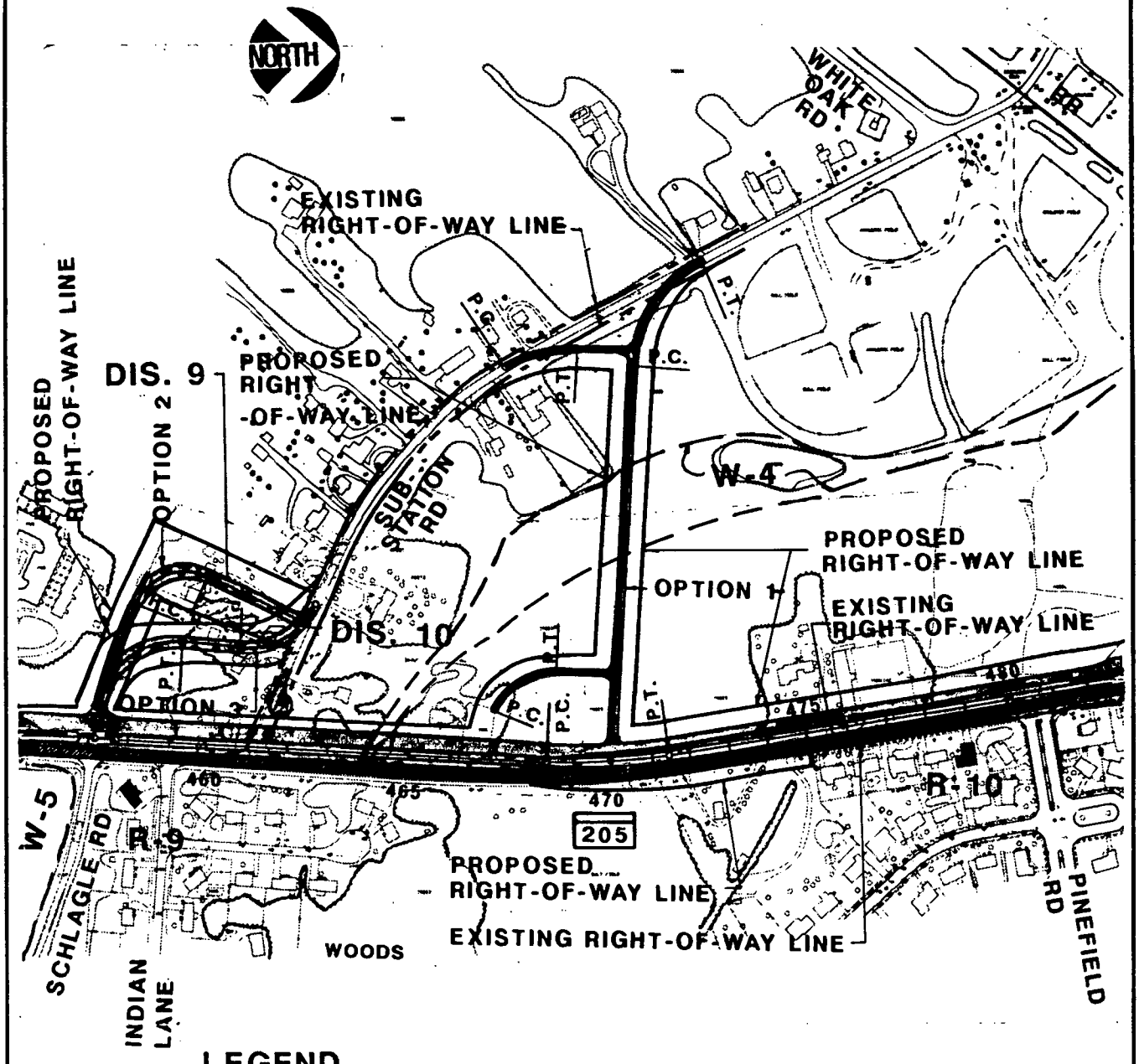
LEGEND

- PROPOSED ROADWAY
- EXISTING ROADWAY
- EXISTING RIGHT-OF-WAY
- PROPOSED RIGHT-OF-WAY
- R-11 ■ AIR/NOISE RECEPTOR SITES
- DIS. 7 □ DISPLACEMENT
- WETLANDS (W-1)
- FLOOD PLAINS
- PROPOSED U.S. 301 WIDENING

PROPOSED MD 5 RELOCATED

SEGMENT III
ALTERNATE 5/6

SCALE : 1"=400' FIGURE III - 6B



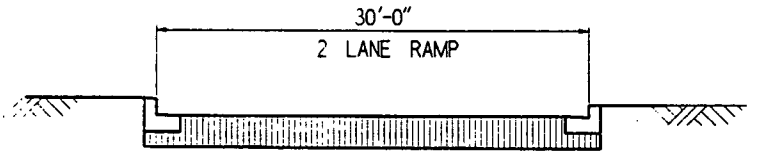
LEGEND

- PROPOSED ROADWAY
- EXISTING ROADWAY
- EXISTING RIGHT-OF-WAY
- PROPOSED RIGHT-OF-WAY
- R-11 ■ AIR/NOISE RECEPTOR SITES
- DIS. 7 □ DISPLACEMENTS
- WETLANDS (W-1)
- FLOOD PLAINS
- PROPOSED U.S. 301 WIDENING

PROPOSED MD 5 RELOCATED

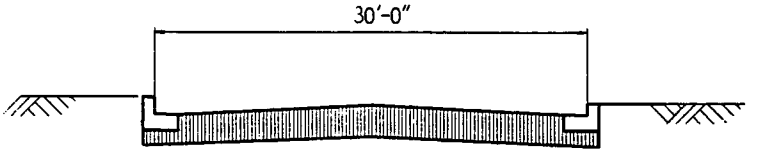
RELOCATED SUB-STATION ROAD

SCALE: 1" = 400' FIGURE III-7



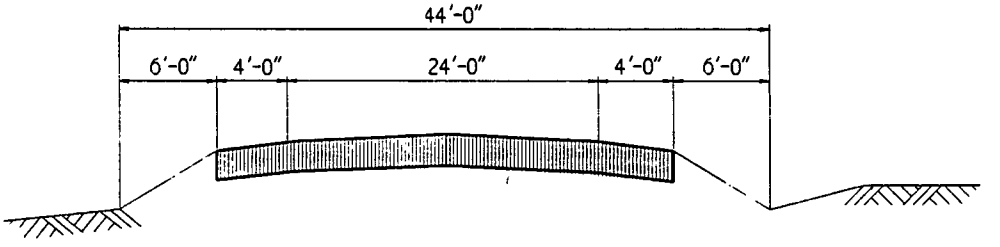
RAMPS

INTERCHANGE OPTIONS A, B, C, & D



SERVICE ROAD

INTERCHANGE OPTIONS C & D



PINEFIELD ROAD EXTENDED

INTERCHANGE OPTIONS C

NOTE:

THE DIMENSIONS SHOWN ARE FOR THE PURPOSE OF DETERMINING COST ESTIMATES AND ENVIRONMENTAL IMPACTS, AND ARE SUBJECT TO CHANGE DURING THE FINAL DESIGN PHASE.

PROPOSED MD 5 RELOCATED

INTERCHANGE OPTIONS TYPICAL SECTIONS

FIGURE III-8

LEGEND

- PROPOSED ROADWAY
- EXISTING ROADWAY
- EXISTING RIGHT-OF-WAY
- PROPOSED RIGHT-OF-WAY
- R-11 ■ AIR/NOISE RECEPTOR SITES
- DIS. 7 □ DISPLACEMENT
- WETLANDS (W-1)
- FLOOD PLAINS
- PROPOSED U.S. 301 WIDENING

NORTH

OLD WASHINGTON RD

WHITE OAK RD

SUB-STATION RD

EXISTING RIGHT-OF-WAY LINE

EXISTING RIGHT-OF-WAY LINE

RAILROAD

WOODS

W-4

W-3

W-2

W-2A

W-1

W-1A

DIS. 11

DIS. 12

DIS. 13

DIS. 14

DIS. 15

DIS. 16

R-10

R-11

R-12

R-13

NIKE RD

205

5

301

SEGMENT III MATCH TO ALTERNATE 5/6

PINEFIELD RD

EXISTING RIGHT-OF-WAY LINE

PROPOSED RIGHT-OF-WAY LINE

PROPOSED RIGHT-OF-WAY LINE

MATTAWOMAN CREEK

McKENDREE RD

CEDARVILLE RD

STA 710+57 ℄
STA 436+40

STA 461+91 ℄
STA 260+83
STA 300+00

P.C.
P.T.

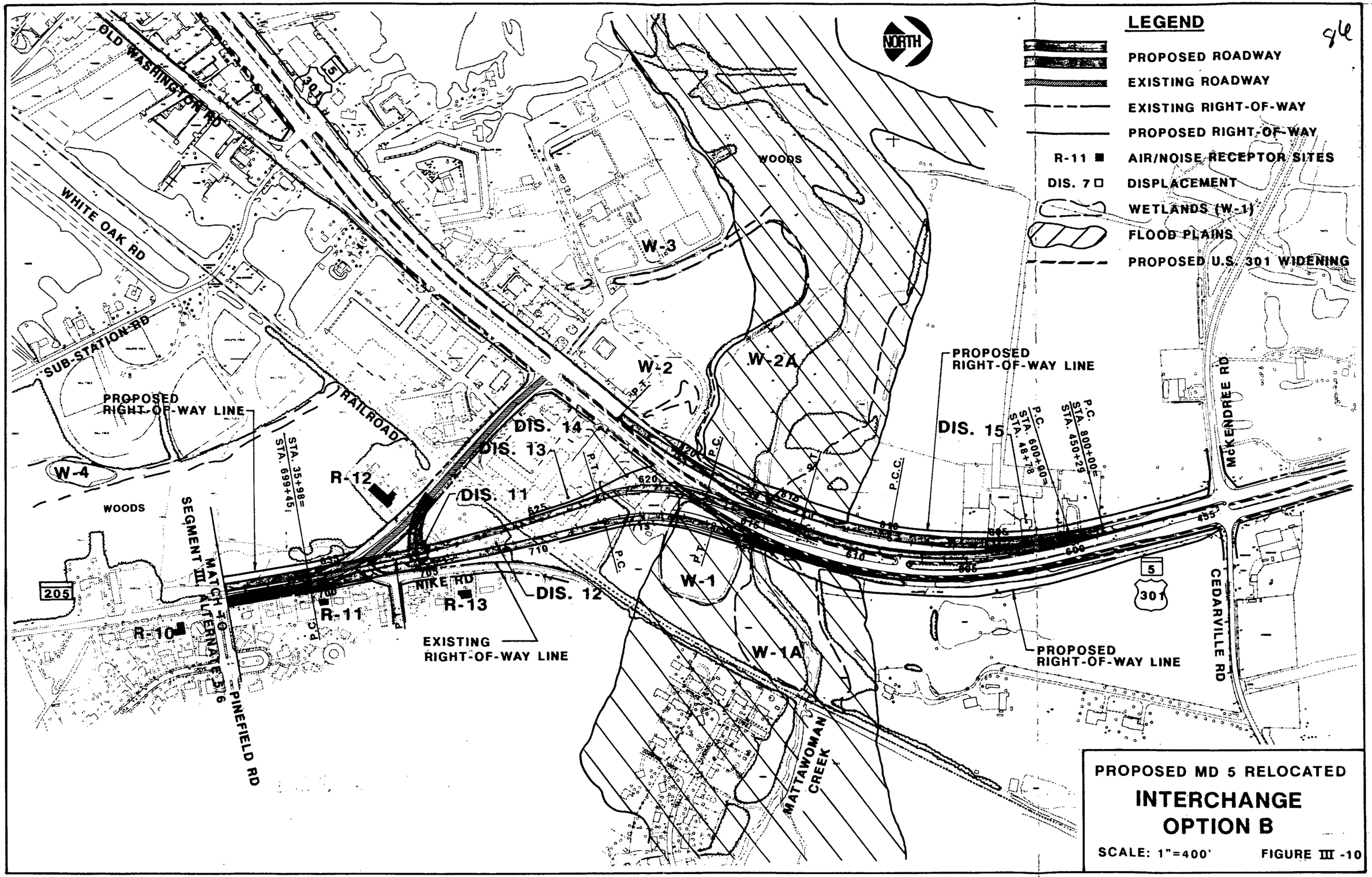
625
705
495
615
810
440
415
450

PROPOSED MD 5 RELOCATED

INTERCHANGE OPTION A

SCALE: 1"=400'

FIGURE III - 9



PROPOSED MD 5 RELOCATED

INTERCHANGE OPTION B

SCALE: 1"=400'

FIGURE III -10

LEGEND

- PROPOSED ROADWAY
- EXISTING ROADWAY
- EXISTING RIGHT-OF-WAY
- PROPOSED RIGHT-OF-WAY
- R-11 ■ AIR/NOISE RECEPTOR SITES
- DIS. 7 □ DISPLACEMENT
- WETLANDS (W-1)
- FLOOD PLAINS
- PROPOSED U.S. 301 WIDENING

NORTH

OLD WASHINGTON RD

PROPOSED RIGHT-OF-WAY LINE

EXISTING RIGHT-OF-WAY LINE

MATCH TO PROPOSED WESTERN PKWY

WHITE OAK RD

SUB-STATION RD

DIS. 18

DIS. 17

DIS. 16

EXISTING RIGHT-OF-WAY LINE

RAILROAD

WOODS

W-3

W-2

W-2A

W-4

R-12

MATCH TO SEGMENT III ALTERNATE 5/6

PROPOSED RIGHT-OF-WAY LINE

205

MATCH TO SEGMENT III ALTERNATE 5/6

R-11

R-10

NIKE RD

R-13

PINEFIELD RD

W-1

W-1A

MATTAWOMAN CREEK

PROPOSED RIGHT-OF-WAY LINE

EXISTING RIGHT-OF-WAY LINE

5

301

McKENDREE RD

CEDARVILLE RD

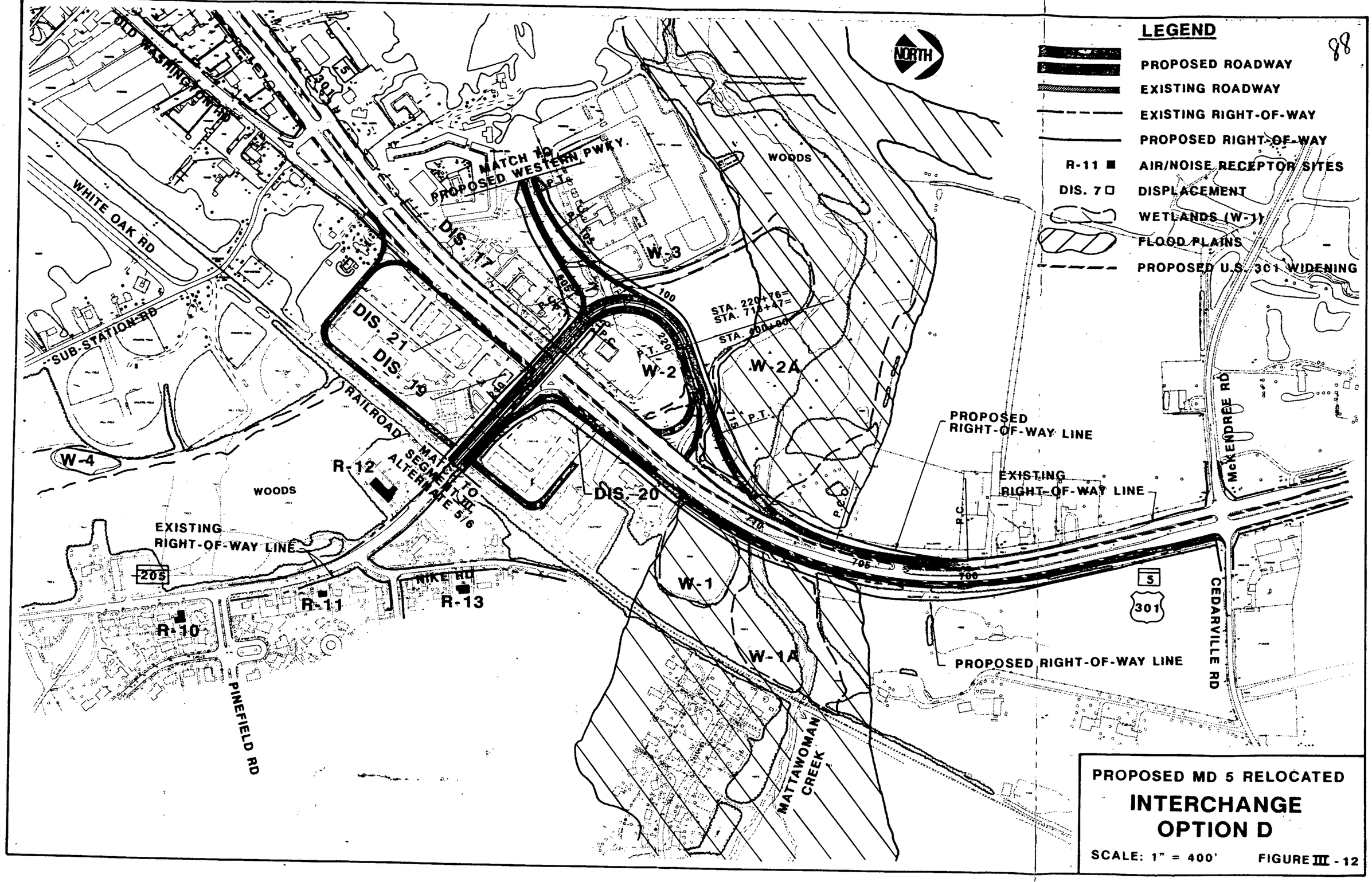
EXISTING RIGHT-OF-WAY LINE

PROPOSED RIGHT-OF-WAY LINE

PROPOSED MD 5 RELOCATED

INTERCHANGE OPTION C

SCALE: 1"=400' FIGURE: III.-11



PROPOSED MD 5 RELOCATED

INTERCHANGE OPTION D

SCALE: 1" = 400'

FIGURE III - 12

IV. ENVIRONMENTAL IMPACTS

IV. ENVIRONMENTAL IMPACTS

A. Social

1. Displacements

a. Relocation Process

Relocation of any individuals, families, or businesses displaced by this project would be accomplished in accordance with the Uniform Relocation Assistance and Acquisition Policies Act of 1970 and amendments of 1987 (Public Law 91-646 and Public Law 100-17), and could be affected in a timely and humane fashion. In the event comparable replacement housing is not available for displaced persons or available replacement housing is beyond their financial means, replacement "housing as a last resort" will be utilized to accomplish the rehousing. A summary of the Relocation Assistance Program of the State of Maryland is given in Appendix A of this document.

b. Description of Displacements

An analysis of the probable displacements that would be caused by the build alternates under consideration has been made by the State Highway Administration, Relocation Assistance Division. The centerline of the alternates has been shifted to minimize relocations. Pertinent information from this study is reproduced below and compared in Table 11 (Summary of Displacements). The relocations associated with each Alternate/Interchange Option are shown on the Alternates mapping (Figures III-2 thru III-12). The Relocation Report is available at SHA District 5 Office, 138 Defense Highway Annapolis, MD 21401.

Alternate 1 (No-Build)

Since the No-Build alternate will only include spot safety and intersection improvements, as needed no residential displacements will occur.

Segment I: Alternate 5

There would be one residential relocation (Dis.1) within this segment to the left of the intersection of MD 205 with MD 5. This will probably require "Housing of Last Resort"

Segment I; Alternate 6

There are no displacements within this segment.

Segment II: Alternate 5/6

There are no commercial or residential displacements within this segment. This alternate would impact the Trinity Memorial Gardens Cemetery and require the relocation of 1500 grave sites, 125 of which are entombed.

Segment II: Alternate 5/6 Modified

There would be one commercial relocation (Longwood Nursery) and two residential relocations within this segment. (Dis. 2, 3 and 4 respectively).

Segment III: Alternate 5/6

There would be one commercial relocation (Waldorf Jaycees) (Dis. 8), one church (Messiah Lutheran) (Dis. 7) and two residenial relocations (Dis. 5 and 6) within this segment. No known grave sites or tombs are present on the church's property.

Relocated Sub-Station Road

Option 2 and 3 would each have one residential relocation. (Dis. 9 and 10 respectively).

Interchange Options

Interchange Option A would relocate two commercial establishments (Cap City and Illusions Nite Club) (Dis. 13 and 14) and four residents (Dis. 11, 12, 15 and 16).

Interchange Option B would relocate the same two commercial establishments (Cap City and Illusions Nite Club) and three residents (Dis. 11, 12 and 15).

Interchange Option C would have three commercial relocations (Exxon, United Bank and Hardees) (Dis. 17, 18 and 19 respectively).

Interchange Option D would have four commercial relocations (Exxon Hardees, Quick Shop and Subway Shop) (Dis. 17, 19, 20 and 21 respectively).

c. Housing Availability

To ascertain the availability of replacement housing in the Study Area, local realtors were contacted and listings in The Washington Post were surveyed. The Study found sufficient housing to exist on the open market for the owner-occupants, but found the rental market to be somewhat restrictive, with limited numbers of dwellings and high monthly rentals. In the event that tenants displaced are paying below market rents for their housing, last resort housing funds may be necessary to provide adequate Decent, Safe and Sanitary housing.

According to the right-of-way/relocation report completed for this project, relocation sites are available within the vicinity of the study area for the church and commmercial establishments displaced. The right-of-way/relocation report is available for public review at the State Highway Administration's District 5 Office 138 Defense Highway, Annapolis, Maryland 21401.

2. Title VI Statement

It is the policy of the Maryland State Highway Administration to ensure compliance with the provisions of Title VI of the Civil Rights Act of 1964, and related civil rights laws and regulations which prohibit discrimination on the grounds of race, color, sex, national origin, age, religion, physical or mental handicap in all State Highway Administration program projects funded in whole or in part by the Federal Highway Administration. The State Highway Administration will not discriminate in highway planning, highway design, highway construction, the acquisition of right-of-way, or the provision of relocation advisory assistance. This policy has been incorporated into all levels

TABLE 11

SUMMARY OF DISPLACEMENTS

IMPACTS	SEG I ALT 5	SEG I ALT 6	SEG II ALT 5/6	SEG II ALT 5/6 MOD	SEG III ALT 5/6	REL S-S ROAD OPTION 1-2-3	INT OPT A	INT OPT B	INT OPT C	INT OPT D
DISPLACEMENTS										
Residential	1	0	0	2	2	0 - 1 - 1	4	3	0	0
Commercial	0*	0*	0**	1	2***	0 - 0 - 0	2	2	3	4
TOTAL	1	0	0	3	4	0 - 1 - 1	6	5	3	4
PROPERTIES AFFECTED										
Residential	7	8	14	12	34	4 - 2 - 2	14	13	6	4
Commericial	1	1	2	3	7	0 - 0 - 0	4	4	15	15
Church	0	0	0	0	1	0 - 0 - 0	0	0	0	0
Recreational	0	0	0	0	0	0 - 0 - 0	0	0	1	0
TOTAL	8	9	16	15	42	4 - 2 - 2	18	17	22	19
RIGHT-OF-WAY (ACRES)										
Residential	9	21	4	2	20	5 - 2 - 2	13	12	8	8
Commericial	1	1	1	3	1	0 - 0 - 0	7	6	8	9
Church	0	0	0	0	1	0 - 0 - 0	0	0	0	0
Recreational	0	0	0	0	0	0 - 0 - 0	0	0	5	0
TOTAL	10	22	5	5	22	5 - 2 - 2	20	18	21	17
RELOCATED GRAVES	0	0	125**	0	0	0 - 0 - 0	0	0	0	0
HISTORICAL/ARCHEOLOGICAL	0	0	0	0	0	0 - 0 - 0	0	0	0	0
RAILROAD CROSSINGS	0	0	0	0	1	0 - 0 - 0	1	1	2	1

* A barn would be displaced

** A displacement of 1500 grave sites would occur (125 occupied)

*** One displacement would be a church

of the highway planning process in order that proper consideration may be given to the social, economic, and environmental effects of all highway projects. Alleged discriminatory actions should be addressed to the Equal Opportunity Section of the Maryland State Highway Administration for investigation.

3. Effects on Minority, Elderly and Handicapped Individuals

There is one residential relocation which impacts a minority family within Segment III: Alternate 5/6. There are no effects to the elderly or handicapped.

4. Disruption of Neighborhoods and Communities

Since MD 205 is an existing facility that traverses between neighborhoods, the selection of any alternate or interchange option will not cause the separation of residents from other residents or community facilities, produce any adverse changes in social interaction, or disrupt community cohesion.

Dependent on the alternate selected, some residents will be displaced as discussed in Section (IV.A.b). The number and location of displacements varies by alternate and interchange. The majority of the residents in the study area will experience disruptions in the form of having portions of their property acquired for right-of-way for an interchange, the mainline and/or service roads. Table 11 provides a breakdown of residents affected. In addition, short term inconveniences with access to and from neighborhoods and businesses are anticipated during construction.

The circulation of traffic patterns for the study area residents will be significantly impacted by the build alternates and/or interchanges through the introduction of mainline medians, limited access points to the mainline, the use of service roads, the need for "U" turns by residents who need to perform roadway crossovers, and the new movements introduced by the selected interchange. See the description of alternates and interchange options in Section III for the proposed improvements and Figures III-1 thru III-12 for a graphical reference of each alternate and interchange option.

Alternate 1 (No-Build) does not address the need for additional capacity and as such will add to traffic congestion and the lengthening of peak hours thereby worsening travel time and safety to and from MD 205.

5. Parks and Recreation Facilities

None of the alternates will impact any public park or recreational area.

6. Effects on Access to Services and Facilities

The impacts on access to existing facilities and services produced by the alternates is a minor increase in travel distance, requiring patrons to execute "U" turns at median breaks which are generally provided every 750 to 1500 feet with the exception of the heavy commercial area at the US 301/MD 205 intersection. The selection of any alternate will not impede existing pedestrian mobility and the use of a median will provide a refuge for crossing pedestrians.

Alternate 1 (No-Build)

This Alternate does not address the existing or projected traffic congestion problems. As a result, peak hours would lengthen, access would become inhibited and commuters may seek an alternative route in an effort to avoid delays.

Mainline Alternates

The mainline alternates all have medians with a minimum cross over spacing of 750'. Access would be available but would require minor routing changes in the form of median "U" turns. With a mainline LOS 'C' and traffic signals at US 301/MD 5, Pinefield Drive, and MD 5, adequate spacing to provide for "U" turns will be available with minor delays.

Interchange Options A and B

Options A and B, which are very similar to one another, would introduce a minor change in accessing services in the US 301/MD 205 intersection quadrants. The change involved is that of a signalized "T" intersection that would be created with existing MD 205 and the approach to the interchange ramps east of the Happy Faces Early Learning Center south of the Conrail tracks. Commuters travelling northbound on MD 205 would now have to make a left turn to remain on MD 205 to access the businesses in the US 301/MD 205 intersection area.

Interchange Options C and D

Options C and D, which are similar to each other in function and design would produce impacts on access to the services in the US 301/MD 205 intersection area. Through the introduction of a structure over existing US 301 and complex directional movements a new traffic pattern would be developed.

Option C

This interchange options will produce the following changes in access to businesses:

- Direct access to Embassy Dairy from northbound MD 205 would be eliminated. Access to the dairy would now be from Western Parkway.
- Access from northbound US 301 to MD 205 would be moved south to the intersection of US 301 and Pinefield Road extended.
- The point of entrance to the Exxon Station from southbound US 301 would have to be moved further south on Exxon's property, and the existing entrance/exit on the north side of the station would be closed to allow for the required grading for the US 301 overpass.
- Direct access from northbound US 301 to the following businesses would be eliminated by the addition of an acceleration lane for traffic entering northbound US 301 from northbound MD 205: Pinefield Center, Wendy's, Quick Shop, Cap City and the Illusions Nite Club.
- Access from MD 205 to Dash-In, Pinefield Liquors, Pinefield South Shopping Center, Pinefield Center, Cap City and Illusions Nite Club would be changed to a four-leg signalized intersection approximately 60 feet north of the Conrail tracks.

Option D

This option would produce the displacement of the Quick Shop located in the Pinefield Center. The changes in access to study area facilities and services under this option are similar to Option C, with the exception of slip ramps being provided at the Pinefield South Shopping Center in lieu of extending Pinefield Road through the Chaney Ball fields to US 301.

7. Effects on Access to Emergency Vehicles

With Alternate 1 (No-Build) existing access will be unchanged, the selection of this Alternate is anticipated to worsen emergency response time as fewer lanes will be available for motorists to pull over, and congestion through the study area increases; especially during the peak hours.

The selection of any build alternate will restrict points of access for emergency vehicles through the introduction of medians (a minimum spacing of 750' between median openings is required) and/or service roads. However, improved response time is anticipated due to additional lanes for increased capacity. The additional lanes will enable emergency vehicles to arrive at the scene of an emergency quicker and safer as more room will be available to motorists.

The selection of any build interchange option would change emergency vehicle access in the northern end of the study area resulting in improved response time through the introduction of free-flow movements and a reduction in traffic congestion.

8. Effects on Traffic Operations

Alternate I (No-Build) would provide no major improvements to MD 205. As traffic volumes continue to grow, traffic delays and the length of the peak hours will expand. Detailed traffic reveals that MD 205 will operate at peak hour LOS F in the design year (2015). It can be expected that as the magnitude and duration of congestion increases over time, the rate of accidents will also increase.

A Level-of-Servide Summary (Table 12) for the various segments validate the necessity for the proposed mainline alternatives, intersection improvements and interchange improvements.

TABLE 12

LEVEL-OF-SERVICE SUMMARY

SEGMENT I

Mainline	2015
No Build	F
Build	C

TABLE 12 (CONT'D)

LEVEL-OF-SERVICE SUMMARY

Intersections: Alternate 5	2015 (AM/PM)
1) MD 205/MD 5	
No-Build	F/F
Build	E/F
2) MD 205/Poplar Hill-Beantown Road	
No-Build	D/E
Build	C/B

Intersections: Alternate 6	2015 (AM/PM)
1) Proposed MD 5 Relocated/MD 5	
No-Build	-/-
Build	B/C
2) Proposed MD 5 Relocated/ Poplar Hill-Beantown Road	
No-Build	-/-
Build	C/A
3) Existing MD 205/MD 5	
No-Build	F/F
Build	D/D

SEGMENT II

Mainline	2015
No-Build	F
Build	C

SEGMENT III

Mainline	2015
No-Build	F
Build	C/D*

* The mainline build LOS (2015) would be LOS C from Segment II to Idlewood Trailer Park and LOS D from Idlewood Trailer Park to the intersection of US 301/MD 5.

TABLE 12 (CONT'D)

LEVEL-OF-SERVICE SUMMARY

Intersection		2015 (AM/PM)
1)	Idlewood Trailer Park	
	No-Build	E/C
	Build	B/A
2)	Council Oak Drive	
	No-Build	E/C
	Build	C/A
3)	Sub-Station Road	
	No-Build	
	Build	F/E
	Option 1	B/A
	Option 2	C/B
	Option 3	C/B
4)	Pinefield Road	
	No-Build	F/F
	Build	D/A
5)	Nike Road	
	No-Build	F/F
	Build	D/A
6)	US 301-MD 5/MD 205	
	No-Build	F/F
	Build*	F/F

* The Build condition reflects a mainline build alternate and not an interchange build option. The interchange build alternate is represented within the "Interchange Options" following.

TABLE 12 (CONT'D)

LEVEL-OF-SERVICE SUMMARY

INTERCHANGE OPTIONS

Option A & B	2015 (AM/PM)
1) US 301-MD 5/205	
No-Build*	F/F
Build	F/F**
2) Proposed MD 5/MD 205	
Build	B/C
3) Merge: Proposed MD 5/US 301	
Build	E/B
4) Diverge: US 301/Proposed MD 5	
Build	A/B

* The no-build assumes that a mainline build alternate has been selected but no build interchange option was selected.

Option C	2015 (AM/PM)
1) Pinefield Road	
Build	B/C
2) Merge: Proposed MD 5/US 301	
Build	E/B
3) Diverge: US 301/Proposed MD 5	A/B

Option D	
1) Proposed MD 5/ Service Road	
Build	D/D
2) Merge: Proposed MD 5/US 301	
Build	E/B
3) Diverge: US 301/Proposed MD 5	
Build	A/B

** All intersections along US 301 will have a LOS F due to the anticipated traffic along US 301. A fourth lane along US 301 (in each direction) is needed to provide an adequate level-of-service.

B. Economic

1. Effects on Local Businesses

Alternate 1 (No-Build)

This alternate would result in increased congestion, traffic conflicts, and increased travel time for commuter access to and from local businesses. This could create a shift in travel demands to other roadways that could lure away customers.

Mainline Build Alternate

The selection of any build alternate would increase the mainline level of service inducing commutors to remain on this roadway rather than changing their traffic patterns and commercial activity. The limiting of median crossovers would have a negligible impact on local businesses.

The Waldorf Jaycees would be displaced by Segment III: Alternate 5/6. The Longwood Nursery would be displaced by Segment II: Alternate 5/6 Modified. Table 12 provides a summary of impacts identifying which business would be affected.

The railroad would continue to be crossed at-grade. Currently an average of two trains per day cross MD 205, with no plans for future increases.

Interchange Options

An interchange no-build option would not improve traffic congestion as existing movements at the intersection of US 301 and MD 205 would remain unchanged. Therefore as traffic congestion grows more pressure would be put on the signals at US 301 and MD 205 to distribute traffic. This will result in extended traffic delays and may cause motorists to seek undesired alternative routes. This option is viewed as counterproductive in the event a build alternate is selected.

Interchange Option A and B

The selection of either option would cause the displacement and property acquisition of two businesses: Cap City and the Illusions Nite Club. No other businesses would be affected. In addition, minor changes in access on MD 205 will occur as discussed in the previous Section IV A-5.

Overall, the affects on the local businesses is anticipated to be positive by increased traffic capacity and reduced congestion.

Interchange Option C

This option would not cause any displacements. However, several businesses will be impacted by right-of-way acquisitions thus reducing property size and parking capacities. In addition although this option would reduce traffic congestion at the US 301/MD 205 intersection, the changes in access are anticipated to result in some redistribution of patronage to areas where more parking and fewer traffic conflicts exist.

Interchange Option D

This option would produce the displacement of one (1) business: the Quick Shop which is located in the Pinefield Center near US 301. Also very similarly to Option C, several businesses will be impacted by right-of-way acquisition, changes in access and the potential redistribution of patrons to other areas.

2. Effects on Regional Business

Charles County is a growing part and southern extension of the Washington Metropolitan regional economy. As the County has continued to develop, it has become more dependent on US 301 and its connecting arterials to satisfy transportation needs in order to fuel the exchange of goods, services, and labor forces.

Alternate 1 (No-Build)

The No-Build Alternate would not help address the growing needs of the County and in particular, the study area. This alternate is anticipated to have a minor impact on regional business as additional traffic congestion and reduced safety would deter additional residential and business development in the study area and its southern vicinity, as well as help delay the exchange of goods and services.

Mainline Build Alternates

The selection of a Build Alternate would help address the growth needs of the County and have a positive effect on regional business activities. These alternates would alleviate congestion on MD 205 thereby reducing travel time to and from business districts and through movements, and increasing traffic safety.

No-Build Interchange Option

The selection of the No-Build Option would produce a minor impact on regional business activities as congestion at the US 301/MD 205 intersection would not be significantly improved. Additional congestion at this intersection would result in deficient signalization for traffic volumes thereby exacerbating current back-ups and delaying the exchange of goods and services. This option would also be counterproductive to the selection of a MD 205 Build Alternate.

Interchange Options A through D

These options would alleviate congestion at the US 301/MD 205 intersection and increase the effectiveness of a mainline build alternate. Therefore these options would have a positive effect on regional business through reduced travel time, increased traffic capacity, and the attraction of new development.

3. Effects on the Tax Base

Improvements to MD 205 as presented under the Build Alternates and Interchange Options would help encourage continued development in the study area and vicinity. Increased traffic capacity and safety would accommodate growth and relieve congestion problems. The expansion of residential and commercial areas would have a positive effect on the County's tax base and revenues.

The selection of the No-Build Alternate will only exacerbate existing traffic conditions and may have a detrimental effect on continued development in the study area and its vicinity.

C. Land Use

The selection of any Interchange Option and Mainline Build Alternate is consistent with the County's Comprehensive Land Use Plan (approved 1989) for the year 2010. This plan has designated the study area as a Metro Form development area mixing residential, commercial and industrial uses. Increased traffic capacity and safety will play a vital role in the future development plans for this area.

The selection of the No-Build Alternate would not be consistent with the County's future land use plans as increasing traffic congestion and service problems will help to restrict additional development and add delays to automotive mobility.

D. Historic/Archeological Sites

The Maryland Historic Trust (MHT) has reviewed the study area and stated that there are no historic sites in the study area. Consequently, there are no impacts to historic sites. See the letter from the MHT dated June 30, 1988 in the Comments and Coordination section, page V-6.

A Phase I archeological survey was conducted for this project. The results of the survey found that there were no significant archeological resources in the project area. Correspondence from the Maryland Historic Trust concurring with the findings of the survey are attached in section V, page V-7.

E. Natural Environment

1. Effects on Geology, Topography and Soils

The construction of any Mainline Build Alternates or Interchange Option will not produce an adverse impact to the study area's geology, topography or soils. However, given the erosion potential of the area soils and the perched water table, sediment control structures will be used to minimize erosion and sedimentation.

2. Effects on Water Resources

a. Surface Waters

The surface waters in the study area are all designated as Class I in accordance with the Maryland Department of Natural Resources, Water Resources Administration. Presently, there are three stream crossings with MD 205 and one with US 301 within the study area, each with a hydraulic structure. Beginning at the intersection of MD 205 and MD 5, and moving in a northbound direction, they are located as follows:

- MD 205 crosses on unnamed second order tributary to the Jordan Swamp, 900 feet south of its intersection with Poplar Hill-Beantown Road. The crossing is a triple cell culvert.
- MD 205 crosses an unnamed first order tributary 1000 feet north of Mill Road. The crossing is a single cell culvert.
- MD 205 crosses an unnamed first order tributary 1,100 feet north of Council Oak Drive. The crossing is a single cell culvert.
- US 301/MD 5 crosses Mattawoman Creek at the political boundary of Charles and Prince Georges counties. The crossing is two parallel bridges for the north and southbound lanes.

Impacts to each of the existing MD 205 stream crossings as well as new stream crossings that will occur from the proposed Alternates are described in Table 13.

TABLE 13

PROPOSED STREAM CROSSINGS

SEGMENT I ALTERNATE 5

- Unnamed tributary to Jordan Swamp crossing at Station 347+50 on mainline

SEGMENT I ALTERNATE 6

- Two unnamed tributaries to Jordan Swamp approximately 100 feet west of their confluence at Stations 342+40 and 343+50 on mainline.

SEGMENT II ALTERNATE 5/6

- Unnamed tributary to Jordan Swamp at Station 401+75 on mainline

SEGMENT III ALTERNATE 5/6

- Unnamed tributary at Station 451+20 on mainline

INTERCHANGE OPTION A

- Mattawoman Creek crossing at Station 704+35 on northbound Ramp.
- Mattawoman Creek crossing at Station 619+00 on southbound Ramp.

INTERCHANGE OPTION B

- Mattawoman Creek crossing at Station 716+50 on northbound Ramp.
- Mattawoman Creek crossing at Station 614+30 on southbound Ramp.
- Mattawoman Creek crossing at Station 815+00 on relocated US 301/MD 5

INTERCHANGE OPTION C

- Mattawoman Creek crossing at Station 113+20 southbound ramp from US 301/MD 5 mainline.
- Extension of existing bridge crossing of Mattawoman crossing at Station 307+00 on southbound Ramp.
- Unnamed tributary to Mattawoman Creek crossing at Station 307+00 on southbound Ramp to US 301/MD 5 overpass.
- Unnamed tributary to Mattawoman Creek crossing at Station 202+50 on Ramp to southbound Western Parkway.

TABLE 13 CONT'D

INTERCHANGE OPTION D

- Mattawoman Creek crossing at Station 709+80 on southbound ramp from US 301/MD 5 mainline.
- Extension of existing bridge crossing of Mattawoman Creek on US 301/MD 5 at Station 913+60, northbound lane.
- Unnamed tributary to Mattawoman Creek crossing at Station 605+40 on southbound ramp to US 301/MD 5 overpass.
- Unnamed tributary to Mattawoman Creek crossing at Station 102+10 on southbound ramp to Western Parkway.

The stream crossing of Mattawoman Creek will be affected by each of the interchange options under consideration. All of the option's impacts are similar inasmuch as they all provide for a new southbound structure over the creek, and the widening of the existing US 301 northbound structure or an additional, new, northbound structure. Stream crossings produced by each of the Interchange Options are also described in Table 13.

Short term impacts from the stream crossings are expected to be minor, and to occur in the form of temporary increases in turbidity, specific conductance, sedimentation and reduced water clarity from the disturbance of contiguous upland areas during construction of the roadway and hydraulic structure.

A hydraulic/hydrologic analysis will need to be performed in the final design phase to determine the necessary structural specifications and guidelines for the installation of new structures. The proposed improvements will require waterway construction permits and include plans for strict conformance for grading, erosion and sediment control, and stormwater management as required by the Maryland Department of Natural Resources, Water Resources Administration and the Maryland Department of the Environment.

Long term impacts are also expected to be minor and occur in the form of increased roadway runoff from the addition of new impervious surface. The updated impacts will be reduced by compliance with regulations from the Department of Natural Resources' Stormwater Management Regulations.

These regulations require stormwater management practices in the following order of preference:

- On site filtration
- Flow attenuation by open vegetation swales and natural depressions.
- Stormwater retention structures
- Stormwater detention structures

b. Water Quality

The Water Quality of the study area is not expected to be impacted by the addition of new impervious surface and an increase in roadway runoff. The general factors which influence the quantity and quality of highway runoff are: traffic volume and pattern, maintenance, and rainfall intensity. Typical pollutants found in highway runoff include:

- o Fine dust and dirt
- o Toxic materials (heavy metals and pesticides) from petrochemicals.
- o Salt and sand

In addition, the implementation of the aforementioned stormwater management regulations will negate water quality impacts.

c. Groundwater

Because of the high water table throughout the study area, and the numerous pockets of water seeps discovered during wetland delineation activities, the potential for minor contamination to shallow water sources from roadway runoff is high. However, given the high quality nature of the area's wetlands and their potential pollutant removal/reduction, the impacts associated with project's alternates and interchange options are expected to be minimal. No impacts to wells are anticipated due to diluting effects of filtration during percolation and an abundant groundwater supply, and the extreme depths at which potable water is found. Recharge to groundwater and the study area aquifers may be incrementally reduced due to the addition of new impernous surface area. However, given the widespread availibility of groundwater and the geologic structure of the study area, with respect to water beaing units, no impacts to groundwater or study area aquifers is anticipated.

3. Effects on Floodplains

The 100 year floodplains associated with Mattawoman Creek and the tributaries to the Jordan Swamp will be impacted in separate instances under the project's proposed improvements; i.e. mainline alternates vs. interchange options.

In accordance with the requirements of Executive Order 11988, any encroachment must be evaluated to determine its significance. A significant encroachment would involve one of the following:

- o A significant potential for interruption or termination of a transportation facility that is needed for emergency vehicles or for providing a community's only evacuation route;
- o A significant risk
- o A significant adverse impact on natural and beneficial floodplain values.

A summary of impacts to the study areas floodplains is presented in Table 14.

Segment I Alternates 6

This alternate will not have a significant impact on the Jordon Swamp floodplain as encroachment will be minimal through the implementation of parallel bridges instead of hydraulic structures.

Segment I Alternate 5

This alternate will not have a significant impact on the Jordan Swamp floodplain as encroachment will be minimal through the utilization of existing MD 205 and the widening of the existing hydraulic structure to accomodate the new roadway.

Interchange Options (A,B,C and D)

The proposed interchange options will not have a significant impact on the Mattawoman Creek floodplain as encroachment in the Mattawoman Creek floodplain is expected to be minimal due to the use of bridges instead of hydraulic structures. However, minimal earth fill and structural piers will reside in the floodplain.

TABLE 14

FLOODPLAIN IMPACT SUMMARY

Improvement	Encroachment Acreage
Segment I Alternate 5	1.0
Segment I Alternate 6	1.0
Segment II Alternate 5/6	0
Segment II Alternate 5/6 Modified	0
Segment III Alternate 5/6	0
Interchange Option A	1.5
Interchange Option B	1.4
Interchange Option C	1.4
Interchange Option D	1.9

To assure against increased flood risk, detailed surface hydrology and structure design studies would be conducted during the final design stages of the project. These studies would identify the quantity of fill to be placed within the floodplain and the resultant impact on the passage of floodwaters. The studies are normally part of the COE's Section 404 permitting process. Any floodplain encroachment will be reviewed and coordinated with the COE to determine the need for a Section 404 Permit.

All reasonable design measures would be incorporated to reduce flooding impacts. The use of standard design techniques for all waterway openings would dictate the size of a structure in order to limit upstream flood level increases and to approximate existing downstream flow rates. In accordance with the National Flood Insurance Program, this project would be designed to assure that the cumulative effect of the project, when combined with all existing and proposed development, would not increase the water surface elevation of the base flood more than one foot within the community.

Possible siltation due to construction of structures within the floodplain would be minimized by providing erosion-control measures along vulnerable portions of embankments in the floodplain. Use of up-to-date sediment and erosion-control techniques and stormwater management controls would minimize flood risks and impacts to the floodplains.

It has been determined that none of the floodplain crossings would constitute a substantial encroachment as a result of the Build Alternates.

4. Ecology

a. Terrestrial Habitat

Impacts to the study areas woodlands from the mainline alternates have been quantified and are listed in Table 15 by project segment. In addition, the anticipated impacts from each of the proposed interchanges are also quantified in Table 15.

According to the Natural Resources Article, Section 5-103 (State Reforestation Program) the forest area to be removed will have to be replaced at a 1 to 1 ratio (acre) at a cost not to exceed $500.00 an acre. The Reforestation Program prefers that replacement occur be on-site. If on-site replacement is not possible, off-site replacement within the same watershed sub-basin is permitted. In the event that no suitable off-site area is available, a contribution of $500.00 for each acre deforested is to be deposited in the Reforestation Fund of the Department of Natural Resources (DNR).

Due to the potential woodland takes associated with the project, coordination with the State Forester for his evaluation of the project and any subsequent approvals for on-site or off-site reforestation must be obtained before construction begins. According to the DNR watershed/sub-basin map for the Reforestation Program, the project site is located in the Lower Potomac River area watershed and is in sub-basin no. 1 (DNR designation 02-14-01).

TABLE 15

WOODLAND IMPACT SUMMARY (ACRES)

Improvement	Woodland Affected
Segment I Alternate 5	2
Segment I Alternate 6	2
Segment II Alternate 5/6	2
Segment II Alternate 5/6 Modified	1
Segment III Alternate 5/6	8
Relocated Sub-Station Rd:	
Option 1	2.8
Option 2	.8
Option 3	.6
Interchange Option A	1
Interchange Option B	1
Interchange Option C	2
Interchange Option D	2

b. Aquatic Habitat

Wetlands

As previously mentioned in Section IC of this report the aquatic habitat of the study area includes the surface waters and their corresponding wetlands. For the purpose of this section, the impacts to the study area's, aquatic habitat will focus on the impacted "functional values" of the areas wetlands due in part to the fact that impacts to surface waters is addressed separately in Section IV.

Construction of any of the mainline alternates and/or interchange options will require forest clearing and the placement of earth fill and/or structural piers in non-tidal wetland areas. As a result, the proposed project will adversely affect the functional values of the primarily in the following ways:

- o Reduction of habitat area; food and cover needs of birds, mammals, reptiles, etc.
- o Reduction of (short-term and long term) nutrient retention; cleared forest cover in the wetland reduces its retention abilities.
- o Reduction of flood desynchronization as existing drainage patterns are altered and wetland areas reduced.
- o Other functions such as sediment trapping and food chain support will be affected proportionately to the amount of wetlands lost.

A section 404 permit will be required from the U.S. Army Corps of Engineers (COE) if any of the mainline "build" alternates and/or interchange options are selected for final design. In addition, wetland replacement on a 1:1 basis will be studied. Depending on the final selection of the proposed improvements and its corresponding impacts, mitigation techniques will be employed in order to reduce the need for off site replacement, and the minimization of disruption to aquatic habitat.

c. Wetlands

The wetlands identified in the study area are listed and summarized in Tables 6 and 7 as to their location, classification, dominant vegetation and functions they perform. In addition, a summary of impacts for the Alternates and Interchange Options is provided in Table 16. The results of the field surveys and a review of the project's proposed alternates and Interchange Options revealed that 12 wetland areas are potentially impacted by the various alternates and interchange Options. The following is a brief description and functional assessment of the individual weland areas potentially affected by the proposed mainline improvements and/or Interchange Options.

TABLE 16

WETLAND IMPACT SUMMARY (ACRES)

Wetland Site #	Wetland Size	Segment I Alternate 5	Segment I Alternate 6	Segment II Alternate 5/6
6	6.51*	--	--	--
6A	N/A*	--	--	--
7	N/A*	--	--	--
8	N/A*	.64	2.01	--
TOTAL		.64	2.01	0

Wetland Site #	Wetland Size	Segment II Modified Alternate 5/6 Modified	Segment III 5/6	Reloc. Sub. Sta. Options 1-2-3
4	N/A*	--	.05	.36 -0-0
5	11.63	--	1.16	- - -
5A	.08	--	.02	- - -
6	6.51*	--	--	- - -
6A	N/A*	--	.21	- - -
TOTAL		0	1.44	.36-0-0

INTERCHANGE OPTIONS

Wetland Site #	Total Site Size (Acreage)	A	B	C	D
1	2.96	.48	.48	.55	.25
1A	5.35	.13	.13	.29	.29
2	.26*	--	.01	.26	.26
2A	N/A*	.33	.50	1.15	1.04
3	.48*	--	--	.12	.14
4	N/A*	--	--	.09	--
TOTAL		.94	1.12	2.46	1.98

* Denotes continuous non-isolated wetland site.

WETLAND SITE 1 (W-1)

This site is affected in varying degrees by all and only the Interchange Options associated with the proposed project. This wetland is located along the east side of US 301/MD 5 approximately 850 feet north of the intersection of MD 205 and US 301/MD 5. This wetland is approximately 3 acres in size and consists of a large open pond and a surrounding wooded area (PF00W1B). The primary functions of W-1 is habitat for wildlife and aquatic wildlife, flood desynchronization and sediment trapping and nutrient retention.

Interchange Option A

This option would impact approximately .48 acres of W-1 due to the northbound directional ramp from the proposed mainline to northbound US 301/MD 5. An alignment shift to the east to avoid this wetland would increase impacts to wetland site 1A by approximately 1.5 acres, and produce disruptions to the Conrail railroad which borders site W-1 to the east. In an effort to minimize impacts of the proposed alignment of the ramp, a structural crossing of this site is planned.

Interchange Option B

The impacts associated with this option are identical to Option A (.48 acres disrupted), as well as the techniques of avoidance and minimization.

Interchange Option C

This option would impact approximately .55 acres of W-1 due to the east side widening of northbound US 301/MD 5 to provide an acceleration lane for the proposed MD 5 to northbound US 301/MD 5 at-grade directional movement. An alignment shift to east of this lane widening to avoid W-1 would displace the Illusions night club and increase impacts to the adjacent wetland site W-1A by approximately 2 acres. In an effort to minimize the impacts of the proposed alignment of the acceleration lane, a structural crossing of this site is planned.

Interchange Option D

The impacts associated with this Option are identical to Option A. However, the impacts (.25 acres disrupted) are less, due to the similarity of the techniques of avoidance and minimization for this option to Option C.

WETLAND SITE 1A (W-1A)

This site is affected in varying degrees by all and only the Interchange options associated with the proposed project. This wetland is located along the east side of US 301/MD 5 approximately 1150 feet north of the intersection of MD 205 and US 301/MD 5 and is adjacent to the north side of site W-1. The site consists of Mattawoman creek and the marshy wooded area that surrounds the creek, and is approximately 5.4 acres in size. This site is classified as PF01R/R2SB2. The primary functions of this wetland is habitat for wildlife and aquatic wildlife, nutrient retention, food chain support, and groundwater recharge.

Interchange Option A

This Option would impact approximately .13 acres of site W-1A due to the northbound directional ramp from the proposed mainline to northbound US 301/MD 5. This wetland is unavoidable by an alignment shift to the east or west because Mattawoman Creek bisects US 301/MD 5 in a perpendicular fashion. In an effort to minimize impacts of the proposed alignment of the ramp, a structural crossing of this site is planned.

Interchange Option B

The impacts associated with this Option are identical to Option A (.13 acres disturbed) as well as the techniques of avoidance and minimization.

Interchange Option C

This Option would impact approximately .29 acres of W-1A due to the east side widening of northbound US 301/MD 5 to provide an acceleration lane for the proposed mainline (at grade) directional movement to northbound US 301/MD 5. Impacts to this wetland are unavoidable by an alignment shift to the east or west because Mattawoman Creek bisects US 301/MD 5 in a perpendicular fashion. In an effort to minimize impacts, a structural crossing of part of this site is planned.

Interchange Option D

The impacts associated with this Option are identical to Option C (.29 acres disturbed) as well as the techniques of avoidance and minimization.

WETLAND SITE 2 (W-2)

This site is affected only by Interchange Options C and D. This wetland is located on the west side of US 301/MD 5 approximately 450' north of the intersection of existing MD 205 and US 301/MD 5. This site consists of a drainage swale into a vegetated basin with riser piping to spill over into Mattawoman Creek. This site is man made for storm water management purposes of (PEMIF). This wetland is considered to be of low quality and its primary functions are that of flood desychronization and sediment trapping.

Interchange Option C

This Option would impact approximately .26 acres of W-2 due to the southbound ramp from US 301/MD 5 to MD 205. An alignment shift to the west avoid W-2 would increase impacts to the adjacent high-quality wetland of Site 2A (which is a westward extension of Mattawoman Creek and its wetland area), by .2 acres.

Interchange Option D

This Option would impact approximately .26 acres of W-2 due to the southbound ramp from US 301/MD 5 to MD 205 and the interior ramp from northbound 205 to US 301/MD 5 which provides for the west side of southbound and northbound access to US 301/MD 5. An alignment shift to the west to avoid this wetland would produce a westward shift in the exterior ramp (US 301/MD 5 southbound to MD 205) further into the adjacent high-quality wetland Site 2-A. This would increase the impacts to W-2A by .46 acres.

WETLAND SITE 2-A (W-2A)

This site is affected by all of the interchange options and is located just north of Site W-2 on the west side of US 301/MD 5. This site consists of Mattawoman Creek and the marshy wooded that surrounds it. This site is the westward extension of site W-1A, and is a continuous wetland system with drainage to the west. This wetland is classified as PF01E/R2SB2. The primary functions of this wetland is habitat for wildlife and aquatic wildlife, nutrient retention, food chain support and groundwater recharge.

Interchange Option A

This option would impact approximately .33 acres of site W-2A due to the southbound directional ramp from US 301/MD 5 to southbound MD 205. Impacts to this wetland are unavoidable by a ramp alignment shift to the west or east because Mattawoman Creek bisects US 301/MD 5 in a perpendicular fashion. In an effort to minimize the impacts of the proposed alignment on this site a structural crossing of the site is planned.

Interchange Option B

This option would impact approximately .50 acres of site W-2A due to the realignment of the southbound lanes of US 301/MD 5 to the west to provide room for a median take off and overpass of the northbound US 301/MD 5 lanes. The impacts associated with this Option are unavoidable due to the perpendicular bisecting of US 301/MD 5 and Mattawoman Creek. An alignment shift to the west would exacerbated the wetland impact and a shift further to the east is not possible as design standards could not be met.

Interchange Option C

This Option would impact approximately 1.15 acres of W-2A due to the southbound ramp from US 301/MD 5 to the overpass of US 301/MD 5 to MD 205. Impacts to this site are unavoidable given the perpendicular bisecting of the site with US 301/MD 5. An alignment shift to the west would increase impacts to the site, and a shift to the east would violate design standards of the ramp as it transitions to the loop behind the Chaney Building to overpass US 301/MD 5. In an effort to minimize impacts, a structural crossing of Mattawoman Creek is planned.

Interchange Option D

This Option would impact approximately 1.04 acres of W-2A due to the southbound ramp from US 301/MD 5 to the overpass of US 301/MD 5 to MD 205. This Option is very similar to Option C in design and as such the impacts to W-2A are unavoidable. As with Option C, in an attempt to minimize impacts, a structural crossing of Mattawoman Creek is planned.

WETLAND SITE 3 (W-3)

This site is affected almost identically and only by Interchange Options C and D. This wetland is a tributary with steep banks and is located west of the Chaney building and adjacent to the north side of Embassy Dairy; approximately 450 feet due west of the intersection of US 301/MD and MD 205. This wetland is approximately .48 acres in size and consist of a channel only (R2SB2). The drainage is to the west to a confluence with Mattawoman Creek. The primary functions of W-3 is sediment trapping and groundwater discharge.

Interchange Option C

This Option would impact approximately .12 acres of W-3 due to the southbound directional ramp to Western Parkway from the southbound loop ramp around the Chaney Building. An alignment shift of this ramp to the west would not avoid this site and would increase impacts to this site and Embassy Dairy. A shift to the east to avoid W-3 would violate the design standards of the ramp and not provide sufficient room for the opposite movement ramp which is adjacent, and to the south of this ramp.

Interchange Option D

This option would impact approximately .14 acres of W-3 due to the southbound directional ramp to Western Parkway from the southbound loop ramp around the Chaney building. Similarly to Option C, an alignment shift of the ramp to the west would not avoid this site and would increase impacts to the site and Embassy Dairy. A shift to the east to avoid W-3 would violate the design standards of the ramp and not provide sufficient room for the opposite movement ramp which is adjacent and south of this ramp.

WETLAND SITE 4 (W-4)

This site is affected by the mainline (Alternate 5/6 Segment III), the relocation of Sub-Station Road (Option 1), and Interchange Option C. This wetland is located on the south side of MD 205 and is in back of the Pinefield South Shopping Center and extends from the shopping center eastward in a parallel fashion to MD 205 for approximately 2400 feet before turning north to intersect MD 205 approximately 300 north of the intersection of MD 205 and Sub-Station Road. This wetland consists of a meandering, unnamed, intemittant stream which flows to the west, and a large ponded area just east of the Chaney Ball Fields and the surrounding marshy wooded area. This site is classified as PF01B. The primary functions of this wetland is habitat for wildlife and aquatic wildlife, nutrient retention, food chain support and groundwater recharge.

Alternate 5/6 Segment III

This alternate would impact approximately .05 acres of site W-4 due to widening of the southbound lanes of MD 205. An alignment shift to the east to avoid the wetland would cause the relocation of two residences in the Mattawoman Estates subdivision and require large property takes from four other homes for the required right-of-way. In an effort to minimize impacts the proposed alternate will maintain the existing northbound lanes of MD 205 through this area to minimize the widening to the south.

Relocated Sub-Station Road (Option 1)

This improvement would impact approximately .36 acres of this site due to the realignment of Sub-Station Road. The proposed alignment would relocate the tie-in point of Sub-Station Road to MD 205 to a point approximately 850 feet north of the existing tie-in. Under this option impacts to W-4 are unavoidable due to the parallel nature of W-4 to MD 205. An alignment shift to the east or west would not avoid or substantially improve impacts to W-4. There are two other options under consideration for this improvements which do not affect any of the projects' wetlands. However; these options would each produce one residential displacement.

Interchange Option C

This Option would impact approximately .09 acres of this site due to the extension of Pinefield Drive to the west of MD 205 to a tie-in with US 301/MD 5 which would replace the Sub-Station Road/US 301-MD 5 intersection. Impacts to this site are unavoidable as W-4 is continuous and parallel to MD 205 in this area and the proposed extension of Pinefield Road is perpendicular to MD 205 and W-4.

WETLAND SITE 5 (W-5)

This site is affected only by Alternate 5/6 in Segment III of the project. This wetland is located along the north side and adjacent to MD 205, just south of the intersection of MD 205 and Schlagle Road. This site consists of a heavily wooded marsh-like area with numerous water seeps. W-5 is approximately 11.6 acres in size and is classified as PF01E. The primary functions of this wetland are habitat for wildlife and aquatic wildlife, nutrient retention, food chain support.

Alternate 5/6 Segment III

This alternate would impact approximately 1.16 acres of site W-5 due to new alignment. An alignment shift to the west to avoid this site would increase impacts to the adjacent wetland site W-5A and cause the relocation of three (3) residences. A shift further to the east would increase the impacts to W-5 by .2 acres as the site becomes larger to the east.

WETLAND SITE 5A (W-5A)

This site is affected by only Alternate 5/6 in Segment III of the project. This wetland is located on the west side of and perpendicular to MD 205. The site consists of a vegetated drainage channel which is approximately five feet wide and is approximately .08 acres in size. The site is classified as PEM1C and it primary functions are flood desynchronization, sediment trapping and nutrient retention (short term).

Alternate 5/6 Segment III

This alternate would impact approximately .02 acres of site W-5A due to the new alignment. An alignment shift to the east to avoid site W-5A would increase impacts to site W-5 by nearly 3 acres. An alignment shift further to the west would increase the impacts to W-5A as well cause three (3) residential relocations.

WETLAND SITE 6 (W-6)

This site is located in Segment III of the project and will not be impacted by any of the planned improvements. This wetland is located on the east side of MD 205 approximately 1000 feet north of the intersection of MD 205 and Mill Road and lies directly opposite of wetland site 6A (W-6A). This site consists of a partly wooded marsh-like area of which a large portion has standing water. The site is classified as PF01B and it primary functions are habitat for wildlife and aquatic wildlife, nutrient retention, food-chain support and groundwater recharge.

WETLAND SITE 6A (W-6A)

This site is affected by only Alternate 5/6 in Segment III of the project. This wetland is located on the west side of MD 205 approximately 1000 feet north of the intersection of MD 205 and Mill Road and lies directly opposite of site W-6. The site consists of a natural stream channel and a flat, contiguous wooded are that is approximately 130 feet wide. Similarly to Site W-6, it is classified as PF01B. The primary functions of this site are habitat for wildlife and aquatic wildlife, nutrient and groundwater recharge.

Alternate 5/6 Segment III

This Alternate will impact approximately .21 acres of W-6A due to the proposed widening of the southbound lanes to the west. An alignment shift to the east to avoid this site would impact approximately .3 acres of site W-6 and cause the relocation of three (3) residences.

WETLAND SITE 7 (W-7)

This site is located in Segment I of the project and will not be impacted by any of the planned improvements. This wetland is located on the west side of MD 205 approximately 1300 feet north of the intersection of MD 205 and MD 5 and lies directly opposite of wetland site 8 (W-8). Site W-7 is a revenue wetland that is a tributary to the Jordan Swamp. The site is classified as R2SB2 and its primary functions are groundwater discharge, food chain support, habitat for aquatic wildlife and flood desynchronization.

WETLAND SITE 8 (W-8)

This site is affected by Alternate 5 and Alternate 6 in Segment I of the project. This wetland is located on the east side of MD 205 and is the eastward extension of Site W-7. This wetland consists of a well defined meandering stream channel, an adjacent marshy scrub area on the north side and a surrounding area of woodland. The site is classified as PF01E/R2SB2 and its primary functions are habitat for wildlife and aquatic wildlife, nutrient retention, food chain support and groundwater recharge.

Alternate 5 Segment I

This alternate will impact approximately .64 acres of W-8 due to the proposed widening of the northbound lanes of MD 205. An alignment shift to the west to avoid W-8 would impact approximately .64 acres of site W-7 and possibly cause the relocation of one resident and violate the design standards of the roadway. An alignment shift further to the east would increase impacts to site W-8 by approximately .9 acres. In an effort to minimize impacts to this site, a structural crossing of the stream channel (ie an extension of the existing structure to the east) is planned. Additionally, ongoing investigations into changing the typical section are continuing. A 6-lane divided curbed roadway, with a 20' median similar to Segment II is being studied. Altering the typical section from an open section to a closed section would reduce the wetland impact to approximately .40 acres.

Alternate 6 Segment I

This alternate will impact approximately 2.01 acres of W-8 due to the proposed realignment of MD 205 and new intersection with MD 5. Under this alternate, impacts site W-8 are unavoidable as the improvement would cross W-8 in a perpendicular fashion. This site is continuous to the west and east beyond the study area limits and is more sensitive as it traverses to the east to the Jordan Swamp. In an effort to minimize impacts to W-8 the crossing of the wetland was shifted to the east to a point where the wetland limits were narrower. Also, a structural crossing of the wetland is planned for both the north and southbound lanes. Additionally, ongoing investigations into changing the typical section are continuing. The typical section for Alternate 6 would involve extending the closed typical section with a 20' median (similar to Segment II) through to the southern limits of the tributary to Jordan Swamp and then transition to an open section roadway for the proposed intersection with existing MD 5. Altering the typical section from an open section to a closed section through the wetland would reduce the wetland impact to approximately 1.53 acres.

WETLAND SITES 4, 5, 5A, 6, 6A, 7 & 8

In addition to the wetland mitigation measures described above, a revision of the typical section to reduce wetland impacts was performed. A 30' median is preferred for this roadway, this was reduced to 20' (acceptable). The reduction of the median reduced the wetland impacts by approximately .54 to .56 (dependent on if Alternate 5 or Alternate 6 is selected) acres and also helped reduce right-of-way impacts.

d. Wildlife

Wildlife in the study area is not anticipated to be significantly impacted by the selection of a build Alternate and/or Interchange Option due to the abundance of habitat that exists in the study area. However, some withdraw in wildlife activity is expected as habitat areas are taken for roadway construction.

e. Threatened and Endangered Species

Correspondence from the U.S. Fish and Wildlife Service states that there are no known Federally or Maryland listed endangered or threatened plant or wildlife species present within the study limits. However, as stated in Section II-5 the presence of rare birds has been recorded in the vicinity of the study area, as reported by the Department of Natural Resources (DNR), Forest, Park and Wildlife Service.

As a result, DNR surveyed the study area on June 12, 1989 for the presence of the species mention in Section II-5. According to their findings, neither species was observed in or near the project area. In addition, DNR stated that they have "no comment" in regard to the project's impact on threatened or Endangered species. Correspondence with these agencies is attached in Appendix B.

f. Farmland Soils

Impacts to farmland soils will only occur under each of the interchange options. Impacts to prime farmland soils and soils of statewide importance are quantified and listed in Table 17. As stated in Section IC the necessary coordination with the SCS has been completed.

TABLE 17

FARMLAND IMPACT SUMMARY

Improvement	Prime (acre) Farmlands	Statewide (acre) Importance	Soil Class*
Interchange Option A			
	.71		OhA
	.13		SgB2
		.72	SgC2
		.27	B1B2
Interchange Option B			
	.39		OhA
	.13		SgB2
		1.1	SgC2
		1.28	B1B2
Interchange Option C			
	.27		OhA
	.11		SgB2
		.69	SgC2
		.78	B1B2
Interchange Option D			
	.25		OhA
	.10		SgB2
		.67	SgC2
		.51	B1B2

* Soil classes were taken from US Department of Agriculture, Soil Conservation Service Soil Survey of Charles County, 1974, and Prince Georges County 1967.

F. Noise

1. Prediction Methodology

The method used to predict the future noise levels from the proposed MD 5 Relocated improvements was developed by the Federal Highway Administration (FHWA) of the U.S. Department of Transportation. The FHWA Highway Traffic Noise Prediction Model (FHWA Model) incorporates data pertaining to normal traffic volume increases over time, utilizes an experimentally and statistically determined reference sound level for three classes of vehicles (auto, medium duty trucks, and heavy duty trucks), and applies a series of adjustments to each reference level to arrive at the predicted sound level. The adjustments include: 1) traffic flow corrections, taking into account the number of vehciles, average vehicle spped, and a specified time period of consideration; 2) distance adjustment comparing a reference distance and actual distance between receiver and roadway, including roadway width and number of traffic lanes; and 3) adjustment for various types of physical barriers that would reduce noise transmission from source (roadway) of receiver.

The prediction calculations were performed utilizing a computer program adaption of the FHWA Model, STAMINA 2.0/OPTIMA.

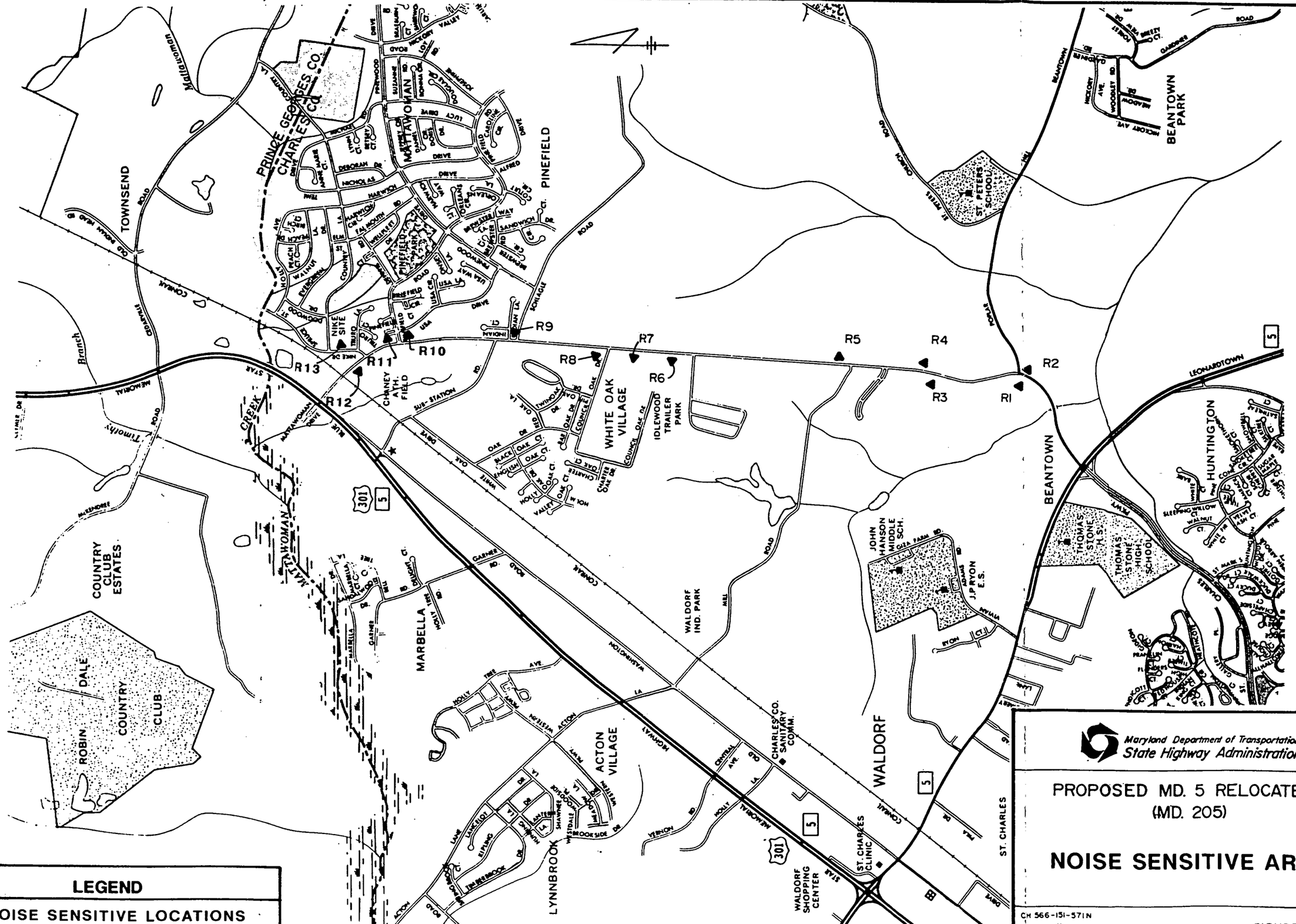
Both predicted Build and No-Build scenarios for the design year (2015) were modeled to assess future noise impacts. All noise predictions was performed with the STAMINA 2.0/OPTIMA Noise Barrier Cost Reduction Traffic Noise Prediction Model (Rep. No. FHWA-RD-77-108). Variables in the model include:

2. Prediction Results

Table 18 through Table 20 provide a breakdown of the ambient measurements taken, the predicted noise levels for existing condition as well as predicted noise levels for the Build and No-Build conditions. In the computations for the adjusted noise levels where attention is needed (ie. Leq with a noise barrier) the required barrier length and height, cost and the number of residences protected by the barrier.

3. Impact Analysis and Feasibility of Noise Control

The determination of environmental noise impact is based on the relationship between the predicted noise levels, the established noise abatement criteria, and the ambient noise levels in the project area. The applicable standard is the Federal Highway Administration's Noise Abatement Criteria/Activity Relationship published in 23 CFR 772. Noise impacts occur when the Federal Highway Administration Noise Abatement Criteria (FHWA NAC) are approached or exceeded (67 dBA for residential areas) and or when a substantial (10 dBA or more) increase over Ambient Level would occur.



LEGEND

▲ NOISE SENSITIVE LOCATIONS

Maryland Department of Transportation
State Highway Administration

PROPOSED MD. 5 RELOCATED
(MD. 205)

NOISE SENSITIVE AREAS

CH 566-151-571N
SCALE: 1" = 2000'

FIGURE IV-1

TABLE 18

NOISE ANALYSIS

SEGMENT I ALTERNATE 5

2015 YEAR

NSA	Description	Measured Ambient Leq	Predicted Ambient Leq	No Build	Build	Leq w/ Barrier	Barrier Length Height(ft)	Barrier Cost($x1000)	Residences Protected	Cost Per Residence ($x1,000)
1	Residence	61	62	58	63	--	--	--	--	--
2	Residence	59	59	56	61	--	--	--	--	--

SEGMENT I ALTERNATE 6

2015 YEAR

NSA	Description	Measured Ambient Leq	Predicted Ambient Leq	No Build	Build	Leq w/ Barrier	Barrier Length Height(ft)	Barrier Cost($x1000)	Residences Protected	Cost Per Residence ($x1,000)
1	Residence	61	--	--	62	--	--	--	--	--
2	Residence	59	--	--	62	--	--	--	--	--

TABLE 19

NOISE ANALYSIS

SEGMENT II ALTERNATE 5/6

2015 YEAR

NSA	Description	Measured Ambient Leq	Predicted Ambient Leq	No Build	Build	Leq w/ Barrier	Barrier Length Height(ft)	Barrier Cost($x1,000)	Residences Protected	Cost Per Residence ($x1,000)
3	Residence	60	62	59	64	--	--	--	--	--
4	Residence	63	63	61	65	--	--	--	--	--
5	Residence	68	68	65	69	65	380/16	164	1	164

SEGMENT II ALTERNATE 5/6 MODIFIED

2015 YEAR

NSA	Description	Measured Ambient Leq	Predicted Ambient Leq	No Build	Build	Leq w/ Barrier	Barrier Length Height(ft)	Barrier Cost($x1,000)	Residences Protected	Cost Per Residence ($x1,000)
3	Residence	60	--	--	63	--	--	--	--	--
4	Residence	63	--	--	67	63	360/16	156	1	156
5	Residence	68	--	--	69	65	380/16	164	1	164

TABLE 20

SEGMENT III ALTERNATE 5/6

2015 YEAR

NSA	Description	Measured Ambient Leq	Predicted Ambient Leq	No Build	Build	Leq w/ Barrier	Barrier Length Height(h)	Barrier Cost($x1,000)	Residence Protected($x1,000)	Cost Per Residence ($x1,000)
6	Residence	67	66	63	67	59	340/14	129	1	129
7	Church	60	62	60	60	--	--	--	--	--
8	Residence	72	73	71	68	61	385/14	146	2	73
9	Residence	70	68	67	70	62	760/12	246	6	41
10	Residence	68	69	68	70	65	480/14	182	6	30.5
11	Residence	69	68	66	68	63	635/14	240	6	40
12	School	67	65	65	70	65	230/16	200	1(=10 Residences)	20
13	Residence	63	61	61	64	--	--	--	--	

The factors which are evaluated when determining whether mitigation is considered reasonable and feasible are:

- o Whether a substantial noise increase would result from the highway project- minimum of 5 dBA increase of Build over No-Build levels in the design year of the project;
- o Whether a feasible method is available to reduce the noise;
- o Whether the noise mitigation is cost effective for those receptors that are impacted - approximately $40,000 per residence;
- o Whether the mitigation is acceptable to affected property owners; and
- o Whether the majority of the impacted residences were constructed before or after the opening of the highway.

For the purpose of comparison, a total of $27 per square foot is assumed to estimate total barrier cost. This cost figure is based upon current cost experience by SHA and includes the costs of panels, footings, drainage, landscaping and overhead.

Alternate 1 (No Build)

A total of 13 noise sensitive areas (NSA's) are associated with this alternate. None of the NSA's will experience an increase of 10dBA over ambient levels according to project 2015 Leq. noise levels. However noise abatement criteria would be exceeded at NSA's 8, 9 and 10.

Segment I Alternate 5

There are two NSA's associated with this alternate: NSA's 1 and 2. Neither NSA has a projected 2015 Leq. noise level over the noise abatement criteria or will experience a 10dBA increase over ambient noise levels.

Segment I Alternate 6

Similarly to Segment I Alternate 5, NSA's 1 and 2 are associated with this alternate. Neither NSA has a projected 2015 Leq. noise level over the noise abatement criteria or will experience a 10dBA increase over ambient levels.

Segment II Alternate 5/6

There are three (3) NSA's associated with this alternate: NSA's 3, 4, and 5. None of the NSA's associated with this alternate will experience a 10dBA increase over ambient levels. The projected 2015 Leq. noise levels for these NSA's indicate that NSA 5 will exceed the noise abatement criteria.

Segment II Alternate 5/6 Modified

Similarly to Segment II Alternate 5/6, there are three (3) NSA's associated with this alternate: NSA 3, 4 and 5. None of the NSA's associated with this alternate will experience a 10dBA increase over ambient levels. The projected 2015 Leq. noise levels indicate that NSA 5 will exceed the noise abatement criteria and NSA 4 approaches the criteria.

SEGMENT III ALTERNATE 5/6

There are 9 NSA's associated with this alternate: NSA's 6-14. None of the NSA's associated with this alternate will experience a 10dBA increase over ambient levels. The projected 2015 Leq. noise levels for this alternate indicate that NSA's 6, 8, 9, 10, 11, 12 and 13 will exceed the noise abatement criteria. The projected increases for the NSA's in this segment of the project generally reflect marginal increases over the ambient levels or decreases due to the nature of the proposed horizontal and vertical geometry. In many instances the proposed alignment shifts are widened away from the existing roadway and NSA's thereby providing natural attenuation to the predicted noise levels for the design year. The NSA's which benefit from this alternates design are NSA's 6, 7, 8, 9, 11, 12 and 14. In contrast, however, NSA 13 will experience the alignment being shifted or expanded towards them.

The following is a site by site discussion of NSA's that will experience noise level impacts as projected from the 2015 (design year) Build Alternate. Figure IV-1 depicts the location of the NSA's associated with this project.

NSA 4 (Segment II Alternate 5/6 Modified)

NSA 4 has a projected noise level which equals the noise abatement criteria of 67 dBA. Therefore, abatement measures were considered. This NSA will have frontage access onto the proposed alternate and is impacted by an alignment shift towards the NSA. This residence will be located 50 feet from the slope limits associated with Alternate 5/6 Modified thereby making the placement of an earth berm for noise attenuation unfeasible.

A barrier at this location as would an earth berm would have to be segmented to maintain the property's access to the proposed roadway. The barrier examined had a total length of 360 feet and was 16 feet tall resulting in a cost of $155,520. This barrier would reduce projected noise levels 4 dBA at the first floor and provide protection for only one home. The projected cost of $155,520 and noise reduction of only 4 dBA is not considered physically effective. Noise mitigation for this NSA is not considered feasible or reasonable.

NSA 5 (Segment II Alternate 5/6 Segment II Alternate 5/6 Modified)

NSA 5 has a projected noise level of 69 dBA which is 2 dBA above the noise abatement criteria of 67dBA, therefore noise abatement measures were considered. This NSA will have frontage access onto the proposed alternates. The effect of either alignment on this NSA is vertically identical. The possibility of a an earth berm was examined and was deemed unfeasible due to space restrictions for the required grading for an earth berm.

A noise barrier and an earth berm would have to be segmented to maintain the property's access to the proposed roadway. The barrier considered was segmented and had a total length of 380 feet and was 16 feet tall resulting in a cost of $164,160. This barrier would reduce the projected noise levels by 4 dBA at the first floor and provide protection for only one residence. This barrier would exceed the allowable limit of $40,000 per residence, and would not provide an adequate reduction in projected noise levels. Mitigation for this NSA is not considered to be feasible or reasonable.

NSA 6 (Segment III Alternate 5/6)

This NSA has a projected noise level which equals the noise abatement criteria of 67dBA, therefore noise mitigation was examined. This NSA will have frontage access onto the proposed alternate, but is not impacted by an alignment shift towards the NSA. The proposed alignment will actually be widened to the east side of existing MD 205 away from the NSA. The possibility of an earth berm for noise abatement was considered and deemed unfeasible due to space restrictions for the required grading of the berm.

A noise barrier and an earth berm would have to be segmented to maintain the property's access to the proposed roadway. The barrier examined was segmented and had a total length of 340 feet and was 14 feet tall resulting in a cost of $128,520. This barrier would reduce the project noise levels by 8 dBA at the first flood and provide protection for only one residence. This barrier is considered to be physically effective as it would provide the minimum 5 dBA reduction in projected noise levels. However, a barrier at this site is not considered to be reasonable as it provides noise attenuation for only one residence and exceeds the cost effective limit of $40,000 per residence.

NSA 8 (Segment III Alternater 5/6)

This NSA has a projected 2015 Leq. noise levels of 68 dBA which would exceed the noise abatement criteria of 67dBA; therefore, noise mitigation was considered. This NSA will have frontage access onto the proposed alternate. The proposed roadway by this NSA will be shifted to the opposite side (east side) of the NSA thereby helping to minimize noise impacts. An earth berm for noise mitigation at this NSA was considered and deemed unfeasible due to space restrictions for the required grading for on earth berm.

A noise barrier and an earth berm at this NSA would have to be segmented to maintain the property's access to the proposed roadway. A continuous barrier could potentially affect 3 points of access: 2 private resedential, 1 public resedential (Council Oak Drive). The barrier examined at this NSA was segmented and had a total length of 385 feet and was 14 feet tall resulting in a total cost of $145,530. This barrier would reduce the projected noise levels by 7 dBA at the first floor and provide protection for two residences.

Only two residences have projected 2015 noise levels that will exceed 67 dBA; both residences will receive the minimum 5 dBA reduction in projected noise levels. Therefore barrier is considered to be physically effective. However; a barrier at this site is not considered to be reasonable as it provides noise attenuation for only two residences at a cost of $72,765 per residence. This cost exceeds the cost effective limit of $40,000 per residence.

NSA 9 (Segment III Alternate 5/6)

This NSA has a projected 2015 Leq. noise level of 70 dBA which exceeds the noise abatement criteria of 67dBA; therefore noise mitigation was considered. This NSA which is known as the Mattawoman Estates subdivision would have access to the proposed roadway via Indian Lane. The proposed roadway by this NSA would be shifted to the opposite side of the NSA (west side of MD 205) thereby helping to minimize noise impacts.

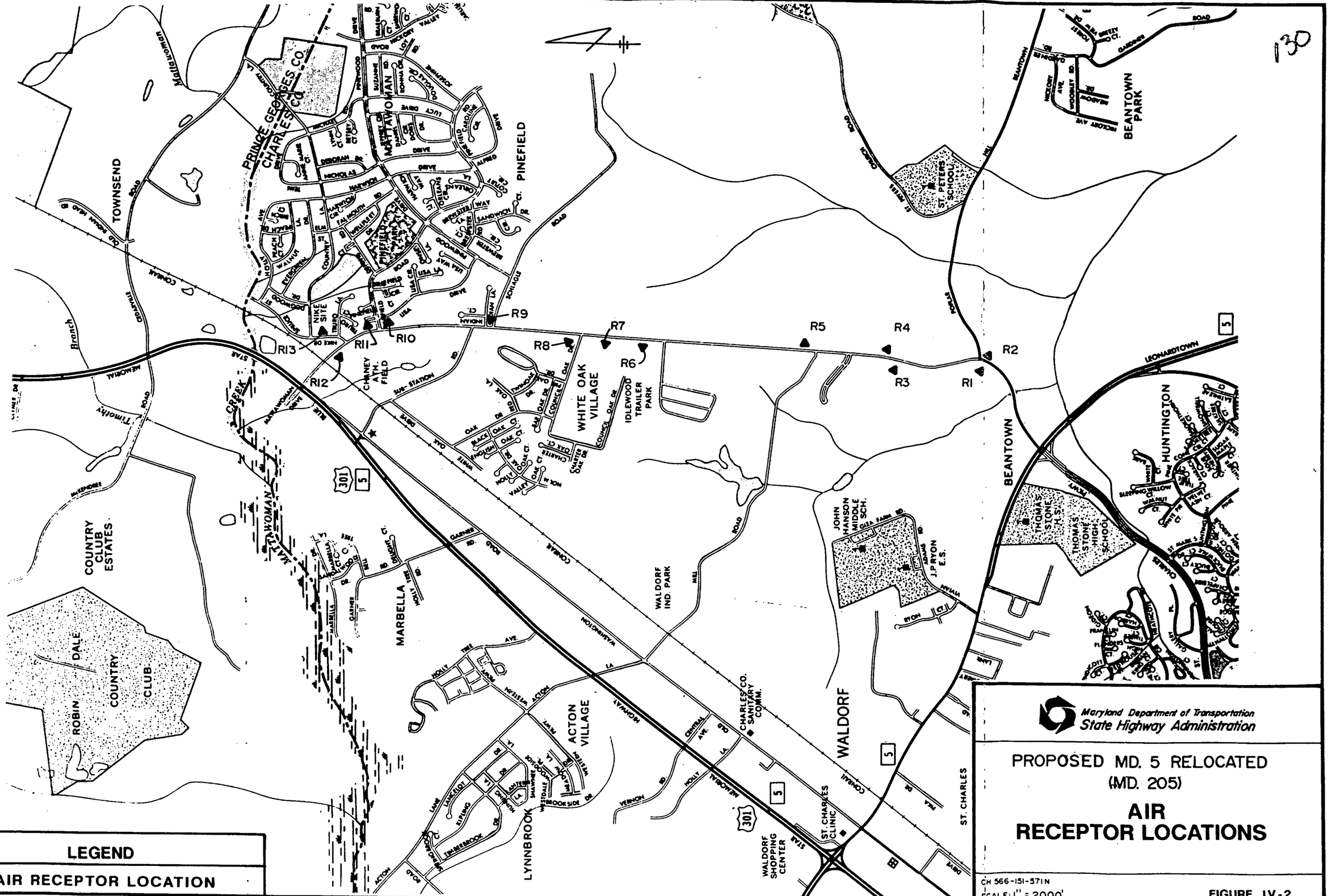
An earth berm at this NSA was considered and deemed unfeasible due to space restrictions required for the grading of the berm. A noise barrier and an earth berm at this NSA would have to be segmented at Indian Lane to maintain the subdivisions access onto the proposed roadway. The barrier considered at this NSA was segmented and had a total length of 760 feet and was 12 feet tall resulting in a total cost of $246,240. One residence has a projected 2015 noise level that will exceed 67 dBA, and six residences have 2015 projected noise levels which approach 67 dBA for a total of one impacted residence. The one impacted residence plus five of the six residences which approach 67 dBA will receive a reduction of 5 dBA or more in projected noise levels. This barrier is considered to be physically effective as it would produce the minimum 5 dBA reduction in projected noise levels, with a cost per residence of $41,040.

NSA 10 (Segment III Alternate 5/6)

This NSA has a projected 2015 Leq. noise level of 70 dBA which exceeds the noise abatement criteria of 67dBA; therefore noise abatement measures were considered. This NSA is a group of MD 205 frontage homes adjacent to the Pinefield sub-division south of Pinefield Road. The proposed roadway by this NSA would be shifted to the opposite side (west side of MD 205) thereby helping to minimize noise impacts.

An earth berm at this NSA was considered and deemed unfeasible due to space restructions required for the grading of the berm. A noise barrier as would an earth berm would have to be segmented several times at the residences driveways in order to maintain the properties access onto the proposed roadway. The barrier examined at this NSA was segmented and had a total length of 480 feet and was 14 feet tall resulting in a total cost of $181,440.

Six residences have projected 2015 noise levels that will exceed 67 dBA. Of the six impacted residences all six will receive the minimum 5 dBA reduction in projected noise levels from the above described barrier. Therefore; a barrier at this NSA is considered to be physically effective. This barrier would result in a cost of $30,240 per residence.



Maryland Department of Transportation
State Highway Administration

PROPOSED MD. 5 RELOCATED
(MD. 205)

AIR RECEPTOR LOCATIONS

CH 566-151-571N
SCALE: 1" = 2000'

FIGURE IV-2

NSA 11 (Segment III Alternate 5/6)

This NSA has a projected 2015 Leq. noise level of 68 dBA which exceeds the noise abatement criteria of 67dBA; therefore noise mitigation was considered. This NSA is a northerly extension of NSA 11; north of Pinefield Road. Similarly to NSA 11 this NSA will have frontage access onto the proposed road and is adjacent to the Pinefield subdivision. Also, the proposed roadway by this NSA is shifted to the opposite side (west of MD 205) thereby helping to reduce noise impacts. An earth berm at this NSA was considered and deemed unfeasible due to space restrictions for grading and the proximity of the NSA residences to the proposed roadway. A noise barrier as would an earth berm at this location would have to be segmented several times at the residences driveways in order to maintain the properties access onto the proposed roadway. The barrier considered at this NSA was segmented and had a total length of 635 feet and was 14 feet tall resulting in a total cost of $240,030.

Six residences have projected 2015 noise levels that will exceed 67 dBA. Of the six impacted residences all six will receive the minimum 5 dBA reduction in projected noise levels from the above described barrier. Therefore; a barrier at this NSA is considered to be physically effective. This barrier would result in a cost of $40,005 per residence.

NSA 12 (Segment III Alternate 5/6)

This NSA has a projected 2015 Leq. noise level of 70 dBA which exceeds the noise abatement criteria of 67dBA; therefore noise mitigation was considered. This NSA is the Happy Faces Learning Center, a preschool. This NSA also will have frontage access onto the proposed roadway; and will experience a noise level impact from the proposed roadway being shifted towards it (west side of MD 205).

An earth berm was considered at this site and deemed unfeasible due to space restrictions for grading and the proximity of the NSA to the proposed road. A noise barrier as would an earth berm at this location would have to be segmented at this NSA's entrance to maintain the property's access onto the proposed roadway. The barrier examined at this NSA was segmented and had a total length of 230 feet and was 16 feet tall resulting in a cost of $199,360. This barrier would enable the preschool to receive the minimum 5 dBA reduction in projected noise levels. Therefore this barrier is considered to be physically effective. In addition, this barrier is considered to be feasible as it would provide the necessary attenuation for the preschool which is the equivalent of 10 residences. This would result in a cost per residence of $19,936.

4. Construction Impacts

As with any major construction project, areas around the construction site are likely to experience varied periods and degrees of noise impacts. This type of project would probably employ the following pieces of equipment that would likely be sources of construction noise:

- o Bulldozers
- o Graders
- o front End Loaders
- o Dump and Other Diesel Trucks
- o Compressors

Construction activities are anticipated to occur during normal working hours on weekdays. Therefore, noise intrusion related to construction should not occur during critical sleep or outdoor recreation periods.

Measures which should be considered to help minimize increased noise levels during construction include the following:

- Equip internal combustion engines used for any purpose on or related to the job with properly operating mufflers;
- Conduct truck loadings, unloading, and hauling so that noise is kept to a minimum;
- Route construction equipment and vehicles in areas that will cause the least disturbance to nearby receptors where possible; and
- When feasible, place continuously operated diesel-powered equipment, such as compressors or generators, in areas far from or shielded from noise sensitive areas.

Summary

Noise barriers have been analyzed for this project. Based on the information available, it appears that barriers at NSA's 10, 11 and 12 may be reasonable and feasible and may be approved for construction. A final decision on each barrier will be made during the design phase of the project when more detailed design information will be developed.

Other Types of Mitigation

Noise mitigation measures other than noise barriers and earth berms were considered for this project. These measures included the possibility for traffic management (ie. truck restrictions), the alteration of the horizontal and vertical geometry of the proposed road and the acquisition of property or buffer zones.

Placing truck restrictions on the proposed roadway would be detrimental to the mining operations of Charles County Sand and Gravel. This company has mining and shipping activities on both the east and west sides of MD 205 in the vicinity of Mill Road.
MD 205 is this company's only outlet to other major transportation arteries. Also forcing truck traffic through the heart of Waldorf via MD 5 and MD 5/US 301 would exacerbate current traffic congestion on those roads. Therefore, placing truck restrictions on the proposed roadway is considered unfeasible.

Alterations to the horizontal and vertical geometry of the proposed roadway were also considered. As mentioned in the site by site discussions of the impacted NSA's the horizontal geometry was shifted away from noise sensitive areas to help minimize possible impacts. Alterations to the vertical geometry was considered and deemed unfeasible due to the potential extreme costs involved with potential residential relocations. In addition, public opposition to such an action is expected to be high.

G. Air Quality

1. Objectives and Type of Analysis

The objective of this report is to compare the carbon monoxide (CO) concentrations estimated to result from the traffic configurations and volumes of each alternate with the State and National Ambient Air Quality Standards (S/NAAQS). The NAAQS and SAAQS are the same for carbon monoxide: 35 PPM (parts per million) for a maximum 1-hour period and 9 PPM for a maximum 8-hour period.

A microscale carbon monoxide pollutant diffusion simulation analysis, based on free-flow conditions, was conducted. This analysis consisted of calculating 1 hour and 8 hour carbon monoxide concentrations resulting from automobile emissions at various receptor sites. All calculations were performed for 1995 (year of completion) and 2015 (year of design). The emission factors were calculated using the Environmental Protection Agency's (EPA) MOBILE 3 computer program. Line source carbon monoxide dispersion estimates were calculated using the fourth generation California Line Source Dispersion Model, CALINE 4.

2. Analysis Inputs

A summary of the analysis inputs is given below. More detailed information concerning these inputs is contained in the Air Quality Analysis Technical Report whichis available for review at the State Highway Administration, 707 North Calvert Street, Baltimore, Maryland 21202.

Backgound Levels

In order to calculate the total concentration of CO which occurs at particular receptor sites during worst-case meteorological conditions, background CO levels are considered in addition to the levels directly attributable to the facility under consideration.

Carbon monoxide concentrations occurring within the immediate vicinity of a street or highway are generally considered to be comprised of two components: (1) a concentration occurring from nearby roadways and (2) a background component that is attributable to other emission sources including more distant roadways. The CO background concentration used in this analysis were provided by SHA and were derived from the application of rollback methodology to on-site monitoring conducted by the Maryland Department of the Environment (MDE) Air Management Administration at their Suitland, MD monitoring site during the 1985 year. The background levels used are presented below in Table 21.

TABLE 21

BACKGROUND CARBON MONOXIDE (CO) PPM

YEAR	1 HR.	8 HR.
1995	9.9	3.0
2015	10.0	3.1

Traffic Data

The appropriate traffic data (dated February 1989) was utilized as supplied by the Project Planning Division of the State Highway Administration.

Emission Factors

EPA low altitudes emission factors were calculated using the EPA MOBILE 3 computer program. The appropriate traffic data was utilized with credit for a vehicle inspection and maintenance (I/M) emission control program included in the emission calculations. Mechanic training and a 20% stringency level were assumed for the I/M conditions. The I/M program was applied only the light duty gasoline vehicles and the type of I/M test selected was for vehicles in idle. No other alternative I/M credits were used.

Additional assumptions used were the MOBILE 3 national averages for Light Duty Vehicles (LDV) age distributions and tampering rates, no anti-tampering program and Federal Test Procedure (FTP) conditions for engine operating modes. The FTP classifies engine operating modes into the following categories:

- OF the non-catalytic converter equipped engines, 20.6 percent are assumed to be cold started, the remainder hot started (warmed-up).
- Of the catalytic converter equipped engines, 20.6 percent are assumed to be cold started, and 27.3 percent are assumed to be hot started, with the remainder being hot stabilized.

Meteorological Conditions

Meteorological conditions used in the analysis are the worst case conditions as prescribed in the Maryland State Highway Administration Standards for Specifications for Consulting Engineers, Vol. II issued by the Maryland State Highway Administration.

Worst-case meteorological inputs of 1 meter/second (2.2 MPH) wind speed and Pasquill-Gifford Stability Class F (stable conditions) were utilized for all peak hour CO dispersion analyses. For the 8-hour analysis, the above conditions were assumed for the peak hour and hours after 5 p.m. For the portion of the 8-hour period occurring prior to 5 p.m., wind speeds of 2 meters/second and Stability Class D were used. (The 8-hour analysis encompassed the period from 12 p.m. to 8 p.m.)

Since CO emissions are highest when temperatures are coldest, winter temperatures were utilized. Ambient temperatures of $20^{o}F$ and $35^{o}F$ were used in calculating emission factors for the peak 1-hour and peak 8-hour periods, respectively. The mixing height used was 305 meters (1000 ft).

The wind direction utilized as part of this analysis was selected in order to produce the maximum CO concentration at any given receptor. Wind directions varied for each receptor and were selected through a systematic scan of CO concentrations associated with worst-case wind directions.

3. Receptor Sites

The receptor sites selected for the microscale carbon monoxide pollutant diffusion analysis are described in Table 22, and are depicted on the Alternates mapping in Section III and summarized in Figure IV-2. Receptors were determined by proximity of roadway, types of adjacent land use, the presence of other augmenting factors and changes in traffic patterns on the roadway network.

Thirteen (13) receptor sites were selected for this analysis and are considered as being indicative of CO Concentrations in sensitive areas. The sites chosen consist of eleven (11) residences, one (1) church and a preschool. These sites were field verified during study visits.

TABLE 22
DESCRIPTION OF RECEPTORS

Site No.	Description/Location
1	Residence, single family detached house on the west side of MD 205 approximately 450' south of Poplar Hill-Beantown Road.
2	Residence, single family detached house on the east side of MD 205 approximately 250' south of Poplar Hill-Beantown Road.
3	Residence, single family detached house on the west side of MD 205, Box 191A MD 205.
4	Residence, single family detached house on the east side of MD 205 across from Site 3, Box 196A MD 205.
5	Residence, single family detached house on the east side of MD 205 approximately 250' north of Mill Road, Box 201A MD 205.
6	Residence, single family detached house on the west side of MD 205 approximately 650' north of the Idlewood Trailer Park, Box 211 MD 205.
7	Trinity Baptist Church, west side of MD 205, Box 212 MD 205.
8	Residence, single family detached house west side of MD 205, 518 Council Oak Drive.
9	Residence, single family detached house east side of MD 205, 101 Indian Lane.
10	Residence, single family detached house east side of MD 205, Box 2003 MD 205.
11	Residence, single family detached house, Box 1907 MD 205.
12	Preschool, Happy Faces Learning Center, west side of MD 205, approximately 300' north of Nike Road.
13	Residence, single family detached house east side of Nike Road, 246 Nike Road.

4. Results of Microscale Analysis

The results of the calculations of carbon monoxide concentrations at each of the receptor sites for the No-Build and Build Alternates are shown in Table 23. The values presented consist of predicted carbon monoxide concentrations that would be attributed to traffic on various roadway links plus projected background levels. A comparison of the values with the S/NAAQS shows that no violations are projected to occur for the No-Build or Build Alternates in 1995 or 2015 for the 1-hour or 8-hour concentrations of carbon monoxide. The projected carbon monoxide concentrations vary between alternates depending on receptor locations as a function of the roadway locations, traffic volumes and emission factors associated with each alternate.

Only interchange Option A and B were considered for analysis purposes since these options result in worse case concentrations for applicable receptors.

The Build alternate results in lower CO concentrations for 1 hour levels than the no-build alternate in 1995 or 2015. For 8 hour concentrations, the No-build and Build concentrations are similar (i.e. less than 1 PPM difference). In almost every case, the predicted concentrations consist mostly of background concentrations and remain well below the S/NAAQS.

In conclusion, the No-build and Build alternates will not result in violations of the 1 HR or 8 HR S/NAAQS for 1995 or 2015.

5. Construction Impacts

The construction phase of the proposed project has the potential of impacting the ambient air quality through such means as fugitive dust from grading operations and materials handling. The State Highway Administration had addressed this possibility by establishing Specifications for Materials, Highways, Bridges, and Incidental Structures, which specifies procedures to be followed by contractors involved in state work.

The Maryland Bureau of Air Quality Control was consulted to determine the adequacy of the Specifications in terms of satisfying the requirement of the Regulations Governing the Control of Air Pollution in the State of Maryland. The Maryland Air Management Administration found that the specifications are consistent with the requirements of these regulations. Therefore, during the construction period, all appropriate measures (Code of Maryland Regulations 26.11.06.03 D) will be taken to minimize the impact on the air quality of the area.

TABLE 23

MAXIMUM 1 AND 8 HOUR PREDICTED CO CONCENTRATIONS (PPM) *

SEGMENT I: ALTERNATE 5

	1995				2015			
	NO BUILD		BUILD		NO BUILD		BUILD	
REC.	1 HR.	8 HR.	1 HR.	8 HR.	1 HR.	8 HR.	1 HR.	8 HR.
1	13.4	3.6	11.1	3.7	13.5	3.7	11.8	4.0
2	14.5	3.7	11.5	3.8	14.2	3.8	12.3	4.2

TABLE 23 CONT'D

MAXIMUM 1 AND 8 HOUR PREDICTED CO CONCENTRATIONS (PPM)*

SEGMENT I: ALTERNATE 6

	1995				2015			
	NO BUILD		BUILD		NO BUILD		BUILD	
REC.	1 HR.	8 HR.	1 HR.	8 HR.	1 HR.	8 HR.	1 HR.	8 HR.
1	12.9	3.4	10.9	3.5	12.4	3.4	11.5	3.5
2	12.4	3.4	10.8	3.5	12.6	3.4	11.5	3.5

* Includes Background Concentrations

The S/NAAQS for CO: 1 - HR maximum 35 PPM
8 - HR maximum 9 PPM

TABLE 23 CONT'D

Maximum 1 and 8 hour predicted CO Concentrations (PPM)*

SEGMENT II: ALTERNATES 5/6 AND ALTERNATES 5/6 MODIFIED

	1995				2015			
	NO BUILD		BUILD		NO BUILD		BUILD	
REC.	1 HR.	8 HR.	1 HR.	8 HR.	1 HR.	8 HR.	1 HR.	8 HR.
3	14.8	3.5	10.9	3.6	12.5	3.4	11.7	3.6
4	18.7	3.9	11.7	4.0	14.5	3.7	13.0	4.1
5	13.8	4.1	11.4	4.0	13.7	3.6	12.5	3.9

SEGMENT III: ALTERNATE 5/6

	1995				2015			
	NO BUILD		BUILD		NO BUILD		BUILD	
REC.	1 HR.	8 HR.	1 HR.	8 HR.	1 HR.	8 HR.	1 HR.	8 HR.
6	13.4	3.7	11.0	4.0	14.5	3.6	12.8	3.9
7	11.7	3.4	10.5	3.5	12.3	3.3	11.5	3.5
8	13.7	3.9	11.1	4.2	14.9	3.7	13.1	4.0
9	16.9	4.0	12.7	4.1	15.6	3.7	13.6	4.2
10	18.6	4.2	13.0	4.4	17.0	3.9	14.7	4.5
11	19.9	4.5	13.1	4.7	18.6	4.1	15.0	4.7
12	19.6	4.5	13.0	4.6	18.7	4.1	14.9	4.7
13	16.7	4.1	12.1	4.2	16.5	3.8	13.5	4.2
14	15.1	3.8	11.7	3.9	15.1	3.6	12.6	3.8

* Includes Background Concentrations

The S/NAAQS for CO: 1 - HR maximum 35 PPM
8 - HR maximum 9 PPM

6. Conformity with Regional Air Quality Planning

The project area is located in Maryland's Air Quality Control Area V (Southern Maryland). This project is in an area where the State Implementation Plan (SIP) does not contain any transportation control measures. The study area is located in a CO attainment area within Area V (ie. Charles County). Therefore, the conformity requirements of 23 CFR 770 do not apply to this project.

V. COMMENTS AND COORDINATION

SUMMARY

1. An "Alternates Public Workshop" was held on November 22, 1988 between 5:00 p.m. and 9:00 p.m. at John Hanson Middle School in Waldorf, Maryland. A 5-lane roadway and 4-lane divided roadway were presented. Both alternates were discontinued upon the acquisition of detailed traffic that revealed an unacceptable level-of-service. Four interchange options were presented and retained for this document.

2. A "Quarterly Interagency Meeting" was held on October 18, 1989 at this Maryland State Highway Administration Headquarters. The roadway alternatives and interchange options as described in this document were presented.

3. The following pages is the comments and coordination of cooperating agencies throughout this project:

Maryland Department of Transportation
State Highway Administration

Richard H. Trainor
Secretary

Hal Kassoff
Administrator

September 14, 1989

MEMORANDUM

TO: Mr. Louis H. Ege, Jr.
Deputy Director
Office of Planning and
Preliminary Engineering

FROM: Cynthia D. Simpson CDS
Assistant Division Chief
Project Planning Division

SUBJECT: Contract No. CH 566-151-571
MD 5 Relocated, US 301 to MD 5
PDMS No. 082039
Wetland Field Review

An agency field review was held on August 22, 1989 to seek the Corp's concurrence with wetland boundaries and to discuss alternatives developed and impacts.

The following people were in attendance:

Paul Wettlaufer	U.S. Army Corps of Engineers
Victor Janata	SHA Project Planning
David Coyne	" " "
Barbara Allera-Bohlen	" " "
Fred Doerfler	SHA Highway Design
Susan Jacobs	" " "
David Pelton	" " "
Michael Rothenheber	Johnson, Mirmiran & Thompson
William Fletcher	" " "
Joyce Kimble	" " "
Charles Butler	" " "

Representatives of the Department of Natural Resources, the U.S. Fish and Wildlife Service and the Environmental Protection Agency were invited but did not attend the meeting.

The U.S. Army Corps of Engineers concurred with delineations of the following sites: 1, 1A, 2, 3, 4, 5A, 6 and 6A.

The U.S. Army Corps of Engineers reduced the northern delineation boundaries of sites 2A and 8.

My telephone number is (301) 333-1177

Teletypewriter for Impaired Hearing or Speech
383-7555 Baltimore Metro - 565-0451 D.C. Metro - 1-800-492-5062 Statewide Toll Free
707 North Calvert St., Baltimore, Maryland 21203-0717

On September 1, 1989 the U.S. Army Corps of Engineers inspected the delineation of site 7 and reinvestigated the delineation of site 5. They contacted Barbara Allera-Bohlen of the Environmental Evaluation Section and indicated concurrence with the existing delineations of these sites.

Attached are the minutes of the field meeting.

CDS:BA:cd
Attachments
cc: Attendees
Mr. Herman Rodrigo
Mr. Quasim Taherian
Mr. Michael Slattery
Mr. Pete Stokley
Mr. John Nichols
Mr. Bill Schultz
Mr. Elder Ghigiarelli
Mr. Charles Adams
Mr. Steve Silva
Mr. Ed Stein

Johnson, Mirmiran and Thompson, P.A.
PLANNERS ENGINEERS LANDSCAPE ARCHITECTS SURVEYORS

MEMORANDUM

TO: The File

FROM: Chuck Butler

DATE: August 23, 1989

SUBJECT: Corps of Engineers Wetland Field Review for MD 5 Relocated.

On Tuesday August 22, 1989, a field review of the delineated wetlands was held with the following persons in attendance:

Victor Janata	SHA, Project Planning
David Coyne	SHA, Project Planning
Barbara Allera-Bohlen	SHA, Environmental Management
Susan Jacobs	SHA, Highway Design
David Pelton	SHA, Highway Design
Fred Doerfler	SHA, Highway Design
Paul Wettloufer	US Army Corps of Engineers
Michael J. Rothenheber	Johnson, Mirmiran & Thompson, P.A.
William Fletcher	Johnson, Mirmiran & Thompson, P.A.
Joyce Kimble	Johnson, Mirmiran & Thompson, P.A.
Charles Butler	Johnson, Mirmiran & Thompson, P.A.

1. All persons in attendance were given an information handout for the field review which included a summary of impacts chart and 100 scale photogrammetric mapping of worst case impacts by the proposed mainline alternates and interchange options at each wetland site. All adjustments and concurrences made by the C.O.E. to the site delineation were referenced to this mapping.

2. This project contains twelve (12) individual wetland sites that are potentially impacted by four (4) interchange options and seven (7) mainline alternates. Of the 12 sites, eleven (11) were actually inspected by the C.O.E. The C.O.E. review of the wetland sites was limited to areas of proposed impact. The total boundary of each wetland delineated was not reviewed. The inspection resulted in the C.O.E. concurring with JMT's delineation for the following sites: 1, 1A, 2, 2A, 3, 4, 5A, 6 and 6A.

3. The C.O.E. reduced the northern delineation boundary of Site 2A. The original delineation encompassed a portion of the pasture adjacent to the northern bank of Mattawoman Creek. The C.O.E.'s delineation confined the wetlands to basically the streambank. The C.O.E. concurred with the delineation on the southern side of Site 2A.

810 GLENEAGLES COURT • SUITE 200 • BALTIMORE, MD. • 21204 • (301) 821-6500
FAIRFAX, VA. YORK, PA. FAX: (301)296-4707

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4. The C.O.E. was undecided about the delineation at Site 5, and stated that an additional trip would be made to review the site again.

5. The C.O.E. reduced the northern delineation boundary at Site 8 to follow just west of two utility poles on the southern side of MD 205 to a point near the intersection of two small tributaries and the second pole. The revised delineation will now continue from this point eastward along the 150 contour line as shown on the photogrammetric mapping used for the Alternates. The southern delineation boundary was acceptable to the C.O.E.

6. JMT raised a question with the C.O.E. about corps jurisdiction and the potential roadway impacts at Site 8, due to the fact that the current land use is agricultural and therefore is not under their jurisdiction. The C.O.E. stated that if the current land use is changed for construction of the proposed roadway then the Corps would have jurisdiction over the portion of wetland that would be affected by the right-of-way required for the proposed roadway.

7. The C.O.E. did not review Site 7 due to time constraints, but stated that an additional trip would be made to review the delineation on the same day that Site 5 is reinvestigated.

8. On September 1, 1989 the C.O.E. inspected the delineation at Site 7, and reinvestigated the delineation at Site 5 by themselves. As a result, the C.O.E. contacted Barbara Allera-Bohlen of SHA's Environmental Management Section with their concurrence on JMT's delineations at both sites.

cc: All Attendees
Daniel T. Cheng
Matt Wolniak

MARYLAND HISTORICAL TRUST

William Donald Schaefer
Governor

Jacqueline H. Rogers
Secretary, DHCD

June 30, 1988

Ms. Cynthia Simpson, Chief
Environmental Management
Maryland Department of Transportation
State Highway Administration
707 North Calvert Street
P.O. Box 717
Baltimore, Maryland 21203-0717

Re: Contract CH 556-151-571
Mattawoman-Beantown Road
Charles County, Maryland
PDMS 082039

Dear Ms. Simpson:

Thank you for your letter concerning the subject project. Our office concurs that neither the Pickerall House (#1) nor the Grove Tenant Farm (#2) appear eligible for inclusion on the National Register.

Sincerely,

George J. Andreve

George J. Andreve
Project Review and Compliance Administrator
Office of Preservation Services

GJA/AT./lm
cc: Ms. Rita Suffness
Mr. Paul Wettlaufer
Dr. Ralph Eshelman
Mr. George Dyson

MARYLAND HISTORICAL TRUST

William Donald Schaefer
Governor

Jacqueline H. Rogers
Secretary, DHCD

July 28, 1989

Mr. Louis H. Ege, Jr.
Deputy Director
Office of Planning and Preliminary Engineering
State Highway Administration
707 North Calvert Street
Baltimore, Maryland 21203-0717

Re: Contract No. CH 566-201-571
MD 5 Relocated (Mattawoman-Beantown Road)
from U.S. 301 to MD 5
PDMS No. 082039
Charles and Prince George's Counties, MD

Dear Mr. Ege:

Thank you for sending us a copy of the report on the Phase I archeological survey conducted for the above-referenced project. The report was prepared by Berger Burkavage, Inc.

The report presents the necessary documentation on the survey's goals, methodology and results. The level of investigations and resulting report are consistent with state and federal standards for archeological work. Based on the information in the report, we concur that construction of the proposed project will have no effect upon significant archeological resources. Further archeological investigations are not warranted for this project.

Thank you for your assistance.

Sincerely,

Elizabeth J. Cole

Elizabeth J. Cole
Administrator
Archeological Services
Office of Preservation Services

EJC/lm
cc: Ms. Rita Suffness
Dr. Ira Beckerman
Berger Burkavage, Inc.
Dr. Ralph E. Eshelman
Mr. George Dyson
Ms. Shirley Baltz
Mr. Joseph McNamara

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WALDORF RESTAURANT, INC.
P.O. Box 548
Waldorf, MD 20604

PROJECT DEVELOPMENT DIVISION
FEB 9 2 43 PM '89

February 3, 1989

RECEIVED
JUN 30 1989

Maryland Dept. of Transportation
State Highway Administration
707 North Calvert Street
Baltimore, MD 21203-0717

Attention: Louis H. Ege, Jr.
Deputy Director
Project Development Division

Re: Contract No. CH 566-101-571
MD 205 (MD 5 Relocated)
Charles County

Dear Sir:

In reply to your letter of January 18, 1989, please be advised as follows:

1. This area is private property owned by Waldorf Restaurant, Inc.

2. The property is used seasonally by the Waldorf Youth League (spring through summer).

3. The approved use of the ballfields is temporary (through the summer of 1989).

4. There is no written agreement with the Charles County Parks and Recreation Department.

5. As far as we know, there are no governmental bodies which have a proprietary interest in the land.

If you have additional questions, please advise.

Very truly yours,

WALDORF RESTAURANT, INC.

Francis H. Chaney, II

FHC,II:cmj

Maryland Department of Natural Resources

Tidewater Administration
Tawes State Office Building
580 Taylor Avenue
Annapolis, Maryland 21401

William Donald Schaefer
Governor

Torrey C. Brown, M.D.
Secretary

FEB 11 1989

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February 8, 1989

Mr. Charles Butler
Johnson, Mirmiran and Thompson, PA
810 Gleneagles Court
Suite 200
Baltimore, MD 21204

Dear Mr. Butler:

I have reviewed the correspondence which you enclosed with your 27 December 1988 letter to Mr. Larry Lubbers. The fisheries information in that correspondence is current and accurate.

You may wish to contact the Maryland Heritage Program in the Forest, Park and Wildlife Service concerning the potential presence of rare of sensitive aquatic plants and animals in Jordan Swamp. This Program can be reached at 974-2870 or by writing to the following address:

Tawes State Office Building (B-2)
580 Taylor Avenue
Annapolis, Md. 21401

If you need any additional information, please contact me at 974-2784.

Sincerely,

Elder A. Ghigiarelli
Chief, Project Review

EAG:MED:swp

Telephone: (301) 974-2784
DNR TTY for Deaf: 301-974-3683

United States Department of the Interior

FISH AND WILDLIFE SERVICE
DIVISION OF ECOLOGICAL SERVICES
1825 VIRGINIA STREET
ANNAPOLIS, MARYLAND 21401

PROJECT DEVELOPMENT DIVISION
FEB 24 11 50 AM '88

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February 23, 1988

Ms. Cynthia D. Simpson
Maryland Department of Transportation
707 North Calvert St.
Baltimore, MD 21203-0717

Dear Ms. Simpson:

This responds to your February 10, 1988 request for information on the presence of species which are Federally listed or proposed for listing as endangered or threatened within the area of Contract No. CH 552-101, Mattawoman Beantown Road widening, Charles County, Maryland. We have reviewed the information you enclosed and are providing comments in accordance with Section 7 of the Endangered Species Act (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.).

Except for occasional transient individuals, no Federally listed or proposed endangered or threatened species are known to exist in the project impact area. Therefore, no Biological Assessment or further Section 7 Consultation is required with the Fish and Wildlife Service (FWS). Should project plans change, or if additional information on the distribution of listed or proposed species becomes available, this determination may be reconsidered.

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

Thank you for your interest in endangered species. If you have any questions or need further assistance, please contact Judy Jacobs of our Endangered Species staff at (301) 269-5448.

Sincerely yours,

G. A. Mobr...

for Glenn Kinser
Supervisor
Annapolis Field Office

Maryland Department of Natural Resources

Tidewater Administration
Tawes State Office Building
580 Taylor Avenue
Annapolis, Maryland 21401

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William Donald Schaefer
Governor

Torrey C. Brown, M.D.
Secretary

February 29, 1988

MEMORANDUM

To: Cynthia A. Simpson, SHA

From: Larry Lubbers, Fisheries Division

Subject: Contract No. CH 552-101, Mattawoman Beantown Road between U.S. Route 301 and Maryland Route 5 including part of Maryland Route 382 in Charles County.

The attached letter to the Army Corps of Engineers reviews the information that we have already provided to both the Corps and SHA. As we pointed out in 1975 there are spawning runs of anadromous fish in the lower reaches of Zekiah Swamp.

LL/kb

Telephone: _____
DNR TTY for Deaf: 301-974-3683

Maryland Department of Natural Resources
Forest, Park and Wildlife Service
Tawes State Office Building
Annapolis, Maryland 21401

PROJECT DEVELOPMENT DIVISION
MAR 14 10 26 AM '88

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William Donald Schaefer
Governor

Torrey C. Brown, M.D.
Secretary

Donald E. MacLauchlan
Director

88-2-313

March 4, 1988

Cynthia D. Simpson, Chief
Environmental Management
Maryland Department of Transportation
State Highway Administration
707 North Calvert Street
Baltimore, Maryland 21203-0717

RE: Contr. No. CH 552-101
Mattawoman Beantown Road between
U.S. Route 301 and Maryland Rt. 5
including part of Md. Rt. 382
Charles County

Dear Ms. Simpson:

This is in response to your request of February 10, 1988 for information regarding the above referenced project. There are no known Federal or State threatened or endangered plant or wildlife species present at this project site.

If you have any questions regarding this matter please feel free to call me.

Sincerely,

James Burtis, Jr.
Assistant Director

JB:epm

cc: Therres
Boone

Telephone: _____
DNR TTY for Deaf: 301-974-3683

Maryland Department of Natural Resources

Tidewater Administration
Tawes State Office Building
580 Taylor Avenue
Annapolis, Maryland 21401

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William Donald Schaefer
Governor

Torrey C. Brown, M.D.
Secretary

March 9, 1989

Ms. Cynthia Simpson, Chief
Environmental Management
Maryland State Highway Association
707 N. Calvert Street
Baltimore, Maryland 21203-0717

RE: Wetlands at MD Rte 5/MD 382 Intersection just south of Mattawoman-Beantown Road, Jordan Swamp Run Drainage

Dear Ms. Simpson:

This is in response to a request made by staff of your office for a description of the functions and values of wetlands draining to Jordan Swamp Run, south of the terminus of Mattawoman-Beantown Road at MD 382. I visited the area on February 3, 1989. Please note that an area of wetland plantings exists adjacent to Jordan Swamp Run, to the south of the new MD 382.

Much of the area to the north and east of Jordan Swamp Run is currently agricultural field. To the south of Jordan Swamp Run and extending east from the agricultural field toward MD Rte 5, much of the land is forested. This area would best be described as a palustrine, forested, broad-leaved deciduous, temporarily to seasonally flooded (PFO1A-C) wetland with scattered patches of scrub/shrub and emergent wetland. In these more open patches, vegetation indicates historic disturbance (probably pasture). Several seeps were also evident here. The area exhibits a diversity of species general indicative of high quality, healthy wetland habitat.

Jordan Swamp Run is an anadramous finfish spawning and nursery waterway. Resident and anadromous fish species that are known to inhabit this stream include: Creek Chub (Erimyzon

Telephone: _____
DNR TTY for Deaf: 301-974-3683

oblongus), Fallfish (Semotilus corporalis), Rosyside Dace (Clinostomus funduloides), Largemouth Bass (Micropterus salmoides), Tesselated Darter (Etheostoma olmstedi), Yellow Perch (Perca flavescens), and White Perch (Morone americana). These species are generally indicative of good water quality and healthy stream habitat.

Jordan Swamp Run, its lower order streams and their associated floodplain/wetlands function in a water quality capacity by trapping sediments and toxics that might be bound to them, taking up excess nutrients that contribute to the eutrophication of higher order streams (and eventually the Bay), and moderating peak flows of water during storm events. The aforementioned seeps also serve a hydrologic recharge function and help to maintain appropriate stream temperatures. These wetlands are important habitat areas that are not quickly or easily replaced due to their lengthy maturation time. Lower order streams and drainage ways also serve as loci of energy and function in nutrient processing and cycling. They are production areas for large particles of allochthanous material that are processed by specialized consumers (mostly aquatic insects) that, in turn, provide food sources and nutrient inputs for organisms further downstream. So, these wetlands and streams are very important in terms of maintaining ecosystem function as a whole.

The entire watershed between topographical contours of 100 msl and 185 msl consist of Bibb silt loam and is nearly level. This soil unit is classified as a poorly drained hydric soil by the USDA. The water table is at or near the soil surface for long periods throughout the growing season, and undrained areas are seasonally ponded. These areas also flood when the streams overflow.

The pH of soils in this area is very strongly to extremely acidic, ranging from 5.0 to 4.5. Due to the acidic nature of these soils, grading activities could pose a substantial threat to stream water quality. Moreover, Bibb soil is poor substrata for roadway construction because of the high water table (0-1 foot) high potential frost action and flood hazard. These same constraints will affect the stability of box culverts since trenched and filled areas will be subject to slumping and low bearing strength.

Jordan Swamp Run drains directly into Zekiah Swamp Run and, subsequently, into Zekiah Swamp. The Zekiah Swamp is the largest hardwood swamp in Maryland. It has been designated as an

Area of Critical State Concern by the Maryland Department of State Planning and is described in the Designation Report as being prime habitat for beaver, mink, osprey, herons, wood duck, Maryland Diamondback Terrapin, and overwintering Wilson's snipe, and for such rare species as the bald eagle, and red cockaded woodpecker (now classified as extirpated). The Smithsonian Institute's 1974 survey of ecologically important plants, animals, biotic communities, and natural areas of the Chesapeake Bay region determined that the Zekiah Swamp was the highest rated natural area of 232 areas in the Chesapeake Bay Region and was determined to be one of the most important remaining ecological areas of its type on the eastern seaboard. It is a general objective of the Maryland Coastal Zone Management Program to protect coastal terrestrial areas of significant resource value (Coastal Zone Management Program for the State of Maryland, 1978 p.84 (5)). These are areas that have particular scenic, scientific, geologic, hydrologic, biological, or ecosystem maintenance importance. The Zekiah Swamp and its associated headwaters are a prime example of such areas.

It is my understanding that a full interchange is being contemplated in the subject area. Due to the importance of the wetlands in this area, I urge SHA to thoroughly explore alternatives to the placement of fill in the wetlands for the construction of an interchange. It is imperative that wetland impacts within the Zekiah watershed be minimized. Potential additional stress to this ecosystem must be viewed in the context of existing stresses due to mining operations, roadway construction, and commercial and residential development currently occurring in the watershed. When viewed in this context, the potential impact on the Zekiah Swamp ecosystem is clearly understood.

I hope that what I have provided is sufficient to address your immediate needs. If you require further assistance, please contact me at (301) 974-2784.

Sincerely,

Michael E. Slattery,
Environmental Biologist
Power Plant and Environmental
Review Division

MES/db

References

Klein, Richard D. 1981. The Department of Natural Resources Compilation of Maryland's Fishery Resources. MD. Dept. Natural Resources, Annapolis, MD.

Smithsonian Institution Center for Natural Areas, Ecology Program 1974. Natural Areas of the Chesapeake Bay Region: Ecological Priorities. Washington, D.C.

United States Department of Commerce. 1978. Final Environmental Impact Statement Proposed Coastal Management Program for the State of Maryland. Office of Coastal Resource Management, NOAA, Washington, D.C. 463 pp.

Maryland Department of Natural Resources
Forest, Park and Wildlife Service
Tawes State Office Building
Annapolis, Maryland 21401

William Donald Schaefer
Governor

Torrey C. Brown, M.D.
Secretary

Donald E. MacLauchlan
Director

158

March 13, 1989

Mr. Charles P. Butler
JOHNSON, MIRMIRAN AND THOMPSON, PA
810 Gleneagles Court
Suite 200
Baltimore, MD 21204

Re: Upgrading of Mattowman Beantown Rd. -
Charles Co. , MD

Dear Mr. Butler:

This is in response to your request for information regarding the above referenced project. There are no known federal or state threatened or endangered plant or wildlife species present at this project site.

If you have any questions regarding this matter please feel free to call me at (301) 974-3195.

Sincerely,

James Burtis, Jr.
Assistant Director

JB:dec

cc: Robert Miller
Jonathan McKnight

89.02.060

Telephone: _____
DNR TTY for Deaf: 301-974-3683

Maryland Department of Natural Resources
Forest, Park and Wildlife Service
Tawes State Office Building
Annapolis, Maryland 21401

William Donald Schaefer
Governor

Torrey C. Brown, M.D.
Secretary

Donald E. MacLauchlan
Assistant Secretary

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RECEIVED
JUN 16 1989
87112.03
JOHNSON, MIRMIRAN & THOMPSON
Chuck
Mike R.

June 13, 1989

Mr. Charles P. Butler
JOHNSON, MIRMIRAN AND THOMPSON, P.A.
810 Gleneagles Court, Suite 200
Baltimore, MD 21204

Re: MD 205 in Charles Co.
JMT Job No. 87112.03

Dear Mr. Thompson:

I spoke with Ann Rasberry about the two lists she generated for your response to this information request and the fact that several species on Heritage's list showed up on her computer printouts. The two lists she gave you represent two different types of information: the atlas data are known observations; the wildlife database data are only potential occurrences. Therefore, the rare birds on the atlas printout are much more significant than the rare species on the second list.

The rare birds on the altas printout include least bittern (Ixobrychus exilis) which is State-listed as in need of conservation, common barn-owl (Tyto alba) which is on Heritage's watchlist, and loggerhead shrike (Lanius ludovicianus) which is State-listed as endangered and is a candidate for federal listing. These rare birds have been documented through the atlas project as being in the vicinity of the Mattawoman project site; however, it is unclear whether the project would directly impact these species since their exact locations are unknown. Unfortunately, we have not yet incorporated the atlas data into Heritage's database and had previously responded with a "no comment" on this project.

The possibility of loggerhead shrikes breeding on the project site are remote. However, since it is a State endangered species and a federal candidate, I feel it is important to determine its status in the area. I hope to survey the area within a week, both for this species and the others. I will send you a follow-up memo as soon as possible.

Telephone: _____
DNR TTY for Deaf: 301-974-3683

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If you have any questions regarding this please feel free to contact me at (301) 974-3195.

Sincerely,

James Burtis/dec

James Burtis, Jr.
Director

ENCLOSURE

Maryland Department of Natural Resources
Forest, Park and Wildlife Service
Tawes State Office Building
Annapolis, Maryland 21401

161

William Donald Schaefer
Governor

Torrey C. Brown, M.D.
Secretary

Donald E. MacLauchlan
Director

August 3, 1989

Mr. Charles P. Butler
JOHNSON, MIRMIRAN AND THOMPSON, P.A.
810 Gleneagles Court
Suite 200
Baltimore, MD 21204

Re: Proposed MD 5 Relocated (Mattawoman - Beantown Md.
Follow-up James Burtis memo of June 13, 1989
Presence of Rare Species at Mattawoman Creek

Dear Mr. Butler:

On June 12, 1989 Lynn Davidson surveyed the Mattawoman Creek project site for the least bittern (*Ixobrychus exilis*) and loggerhead shirke (*Lanius ludovicianus*). She did not find either of these species, or any other rare birds in the vicinity of the project site. Therefore, although we have general concerns about the impact on wetlands in this area, we still have "no comment" in regard to the project's impact on Threatened or Endangered species.

If you have any further questions regarding this matter please feel free to contact Ms. Lynn Davidson, Natural Heritage Program at (301) 974-2870.

Sincerely,

James Burtis, Jr.
Director

JB:dec

Telephone: _____
DNR TTY for Deaf: 301-974-3683

THE PRINCE GEORGE'S COUNTY GOVERNMENT

DEPARTMENT OF ENVIRONMENTAL RESOURCES

162

August 30, 1989

Mr. Louis H. Ege, Jr.
Deputy Director
Office of Planning and Preliminary Engineering
Maryland Department of Transportation
State Highway Administration
707 North Calvert Street
Baltimore, Maryland 21203-0717

Dear Mr. Ege:

Prince George's County has reviewed the site location of the relocation of MD Route 5 (Mattawoman-Beantown Road). We concur with the State Highway Administration's (SHA) determination that the site is not located within the County's Chesapeake Bay Critical Area.

Thank you for providing the County an opportunity to review the project location. We are pleased that SHA is considering the Chesapeake Bay Critical Area when planning and designing State roads.

Sincerely,

Eugene T. Lauer
Director

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JOHN C. NORTH, II
CHAIRMAN

STATE OF MARYLAND
CHESAPEAKE BAY CRITICAL AREAS COMMISSION
WEST GARRETT PLACE, SUITE 320
275 WEST STREET
ANNAPOLIS, MARYLAND 21401
974-2418 or 974-2426

SARAH J. TAYLOR, PhD
EXECUTIVE DIRECTOR

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Natural Resources
Ronald Kreitner
Planning

August 31, 1989

SEP 5 9 51 AM '89
PROJECT DEVELOPMENT DIV.

Mr. Louis H. Ege, Jr.
Deputy Director
Office of Planning and
Preliminary Engineering
State Highway Administration
707 North Calvert Street
Baltimore, Maryland 21203

Dear Mr. Ege:

Thank you for sending us notification of the State Highway Administration projects listed below. We concur with the determination of the Environmental Evaluation Section that these projects are not in the Critical Area, and are therefore not subject to Critical Area Commission review. The above-referenced projects are:

Contract No.	AA	936-151-570	MD 3 Reconstruction
"	" B	813-101-471	US 1 Silver Spring Road
"	" B	881-101-471	MD 45, MD 145
"	" CH	566-151-571	MD 5 Relocated
"	" H	888-101-471	US 1 Business
"	" H	899-101-471	MD 152, US 1
"	" H	873-101-470	US 1 Hickory/MD 23
"	" H	896-101-471	MD 161 Bridge Replacement
"	" H	887-101-471	MD 7, Stepney Road
"	" SM	752-251-271	MD 471, Bridge No. 18028
"	" S	365-101-171	MD 362 Extended

Again, we appreciate your consideration.

Sincerely,

Abi Rome

Abi Rome
Natural Resources Planner

AR:msl

cc: Cynthia Simpson, David Flowers, Thomas Osborne, Jackie Magness, Eugene Lauer, Jon Grimm, William Carroll, Ron Adkins

VI. SELECTED REFERENCES

SELECTED REFERENCES

1. DiLisio, James E. Maryland. Boulder, Colorado: Westview Press, 1983.

2. Flood Plain Management Study for Zekiah Swamp and Tributaries Charles and Prince George's County, Maryland. College Park, Maryland: U.S. Department of Agriculture, Soil Conservation Service, 1985.

3. Hopkins, Herbert T., Gary T. Fisher, and Laurence J. McGreevy. Reconnaissance of the Ground-Water, Surface-Water System in the Zekiah Swamp Run Basin, Charles County and Prince Georges Counties, Maryland. Towson, Maryland: Maryland Geological Survey, Tri-County Council for Southern Maryland, Coastal Resources Division of the Maryland Tidewater Administration, for the U.S. Geological Survey, 1986.

4. The Physical Features of Charles County. Baltimore, Maryland: State of Maryland Board of Natural Resources, Department of Geology, Mines and Water Resources, 1948.

5. Soil Survey of Charles County, Maryland. Washington, D.C.: United States Department of Agriculture, Soil Conservation Service, 1974.

6. Geologic Map of Maryland. Baltimore, Maryland: Maryland Geological Survey, 1968.

7. U.S. Bureau of the Census 1980 Census of Population and Housing. Washington, D.C.: U.S. Department of Commerce, Bureau of the Census, 1980.

8. "Charles County". Regardie's Regional Report. Washington, D.C., May, 1988.

9. The Guide to Charles County. La Plata, Maryland: Charles County Chamber of Commerce, 1988.

10 Map of Charles County, Maryland, Existing Zoning Map. La Plata, Maryland: Charles County Planning Commission, 1987.

11 Charles County Maryland Comprehensive Plan Land Use Concept Plan, 2010 La Plata, Maryland: Redman/Johnston Associates, Ltd. for Charles County Department of Planning and Zoning, 1988.

12. Maryland Statistical Abstract, 1988-89. Annapolis, Maryland: Office of Research, Maryland Department of Economic and Employment Development, 1988.

VII. APPENDIX A

SUMMARY OF THE RELOCATION ASSISTANCE PROGRAM

OF THE

STATE HIGHWAY ADMINISTRATION OF MARYLAND

All State Highway Administration projects must comply with the provisions of the "Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970" (Public Law 91-646 and Public Law 100-17) and amendments as published in the Annotated Code of Maryland entitled Real Property Article Subtitle 2, Relocation and Assistance Section 12-201 to 12-212. The Maryland Department of Transportation, State Highway Administration, Relocation Assistance Division, administers the Transportation Relocation Assistance Program in the State of Maryland.

The provisions of the Federal and State Law require the State Highway Administration to provide payments and services to persons displaced by a public project. The payments that are provided include replacement housing payments and/or moving costs. The maximum limits of the replacement housing payments are $22,500 for owner-occupants and $5,350 for tenant-occupants. Certain payment may also be made for increase mortgage interest costs and/or incidental expenses, provided that the total of all housing benefits does not exceed the above mentioned limits. In order to receive these payments, the displaced person must occupy decent, safe and sanitary replacement housing. In addition to the replacement housing payments described above, there are also moving expense payments to persons, businesses, farms and non-profit organizations up to 50 miles. Actual moving expenses for residences include actual moving costs or a schedule moving expenses payment, up to $1,050.

The moving cost payments to business are broken down into several categories, which include actual moving expense payments, fixed payments "in lieu of" actual moving expenses, limited to $20,000 and reestablishment expenses, limited to $10,000. The owner of a displaced business is entitled to receive a payment for actual reasonable moving and related expenses in moving his business, or persona, property; actual direct losses of tangible personal property; and actual reasonable expenses for searching, limited to $1,000, for a replacement site.

The actual reasonable moving expenses may be paid for a move by a commercial mover or for a self-move. Payments for the actual reasonable expenses are limited to a 50 mile radius unless the agency determines a longer distance is necessary. The expenses claimed for actual cost commercial moves must be supported by firm bids and receipted bills. An inventory of the items to be moved must be prepared in all cases. In self-moves, the State will negotiate an amount for payment, usually lower than the lowest acceptable bid obtained. The allowable expenses of a self-move may include amounts paid for equipment hired, the cost of using the business' own vehicles or equipment, wages paid to person who physically participate in the move, the cost of actual supervision of the move, replacement insurance for the personal property moved, costs of licenses or permits required, and other related expenses.

In addition to the actual moving expenses mentioned above, the displaced business is entitled to receive a payment for the actual direct losses of tangible personal property that the business is entitled to relocate but elects not to move. These payments may only be made after an effort by the owner to sell the personal property involved. The costs of the sale area also reimbursable moving expenses. If the business elects to move or discontinue it's operation the payment shall consist of the lesser of:

The fair market value of the item for continued use at the displacement site, less the proceeds from its sale; or

The estimated cost of moving the item, but with no allowance for storage.

They are also entitled to reasonable cost incurred in attempting to sell an item that is not to be relocated.

If an item of personal property which is used as part of a business or farm operation is not moved but is promptly replaced with a substitute item that performs a comparable function at the replacement site, the displaced person is entitled to payment of the lesser of:

The cost of the substitute item including installation costs at the replacement site, minus any proceeds from the sale or trade-in of the replaced item; or

The estimated cost of moving and reinstalling the replaced item but with no allowance for storage.

In lieu of the payments described above, the business may elect to receive a payment equal to the average annual net earnings of the business. Such payment shall not be less than $1,000 nor more than $20,000. In order to be entitled to this payment, the State must determine that the business cannot be relocated without a substantial loss of its existing patronage, the business is not part of a commercial enterprise having more than three other establishments in the same or similar business that is not being acquired, and the business contributes materially to the income of a displaced owner during the two taxable years prior to displacement. The business is not operated at the displacement site or swelling solely for the purpose of renting such dwelling or site to others.

Considerations in the State's determination of loss of existing patronage are the type of business conducted by the displaced business and the nature of the clientele. The relative importance of the present and proposed locations to the displaced business, and the availability of suitable replacement sites area also factors.

In order to determine the amount of the "in lieu of" moving expenses payment, the average annual net earnings of the business is considered to be one-half of the net earnings, before taxes during the two taxable years immediately preceding the taxable year in which the business is relocated. If the two taxable years are not representative, the State may use another two-year period that would be more representative. Average annual net earnings include any compensation paid by the business to the owner, his spouse, or his dependents during the period. Should a business be in operation less than two years, the owner of the business may stall be eligible to receive the "in lieu of" payment. In all cases, the owner of the business must provide information to support its net earnings, such as income tax returns, or certified financial statements, for the tax

years in question.

For displaced farms and non-profit organization, the actual reasonable moving costs generally up to 50 miles, actual direct losses of tangible personal property, and searching costs are paid. The "in lieu of" actual moving cost payments provide that the State may determine that a displaced farm may be paid form a minimum of $1,000 to a maximum of $20,000, based upon the net income of the farm, provided that the farm has been relocated or the partial acquisition caused a substantial change in the nature of the farm. In some cases, payments "in Lieu of" actual moving costs may be made to farm operations that are affected by partial acquisition. A non-profit organization is eligible to receive "in lieu of" actual moving cost payments, a payment in the amount of $1,000 to $20,000 based on gross annual revenues less administrative expenses.

A more detailed explanation of the benefits and payments available to displaced person, businesses, farms and non-profit organization is available in the "Your Land and Highway" brochure that will be distributed at the public hearings for this project and will also be given to displaced persons individually in the future.

In the event comparable replacement housing is not available to rehouse persons displaced by public projects or that available replacement housing is beyond their financial means, replacement "housing as a last resort" will be utilized to accomplish the rehousing. Detailed studies must be completed by the State Highway Administration before "housing as a last resort" can be utilized.

The "Uniform Relocation Assistant and Real Property Acquisition Policies Act of 1970" requires that the State Highway Administration shall not proceed with any phase of any project which will cause the relocation of any persons, or proceed with any construction project, until it has furnished satisfactory assurances that the above payments will be provided and that all displaced persons will be satisfactorily relocated to comparable decent, safe and sanitary housing within their financial means or that such housing is in place and has been made available to the displaced person.

VIII. APPENDIX B

MANAGEMENT SUMMARY
PHASE I ARCHAEOLOGICAL INVESTIGATIONS
OF MARYLAND ROUTE 5 RELOCATED
MATTAWOMAN - BEANTOWN ROAD,
FROM U.S. ROUTE 301 TO MARYLAND ROUTE 5
CHARLES AND PRINCE GEORGES COUNTIES, MARYLAND

STATEWIDE ARCHAEOLOGICAL SERVICES
CONTRACT NO. W 818-101-671(n)
PDMS NO. 032119

PREPARED FOR:

MARYLAND DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION

PREPARED BY:

THE CULTURAL RESOURCE GROUP
BERGER BURKAVAGE, INC.

APRIL 1989

This document summarizes the results of the Phase I archaeological survey of the proposed alternatives for Maryland Route 5 relocated Mattawoman-Beantown Road, from U.S. Route 301 to Maryland Route 5, Charles and Prince Georges Counties, Maryland. Included in the survey were Alternative 2,3,4 and 4-Modified, as well as Interchange Options A, B, C and D. Altogether the proposed improvements involve approximately three miles of roadway alignments. The Cultural Resource Group of Berger Burkavage, Inc. conducted this study for the Maryland Department of Transportation, State Highway Administration, under Contract Number W 818-101-671(N) PDMS No. 032119. A more detailed report covering these archaeological investigations will be completed by May 5, 1989, and will comply with the guidelines established by the Maryland Historical Trust and the Maryland Geological Survey's Division of Archaeology.

The Phase I investigative process was begun with archival research focusing on both prehistoric and historic resources. An examination of historical documents and maps, as well as, archaeological reports, was conducted at the Maryland Historical Trust, Annapolis; and the Maryland Geological Survey's Division of Archaeology, the Maryland Historical Society, and the Enoch Pratt Free Library, Baltimore. The purpose of this background effort was to determine if documented archaeological and historical sites were in the project boundaries, and furthermore, to help gain a preliminary perspective as to the distribution of known sites in the region from which to create a context for the interpretation of newly discovered site areas.

Based on the historic and prehistoric background studies the project area was divided into high, moderate and low probability segments with respect to the expected occurrence of archaeological sites. the areas of highest probability were seen as the crossing of the two streams located on both the northern and southern ends of the project corridor. In addition the pedestrian survey of the area revealed the presence of a series of small swamps and bogs in the flat, poorly drained divide between the two stream systems. The higher better drained sections around the swamp were also tested as the background research indicated that prehistoric sites are known to occur in these types of topographic setting. Shovel test transects were also placed across moderate to low probability areas. A total of 104 shovel tests units were distributed at seven areas along the project alignment.

The archaeological investigations for the project did not identify any prehistoric archaeological sites within the project corridor. Several twentieth century properties were tested - one was a recently burned down farmstead - but no buried archaeological remains were recovered. No historic archaeological resources, besides modern roadside trash deposits, were encountered within the confines of the project boundaries.

Based on the results of the background research and field investigations it appears as if the potential for archaeological resources is extremely low. No further fieldwork is recommended for this project.

IX. APPENDIX C

United States Department of Agriculture
Soil Conservation Service
P.O. Box 269
La Plata, MD 20646

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February 15, 1989

Mr. Charles Butler
Environmental Manager
Johnson, Mirmiran and Thompson, P.A.
810 Gleneagles Court
Suite 200
Baltimore, MD 21204

Dear Mr. Butler:

Enclosed you will find Charles County soil maps for the area you designated in your letter of January 13, 1989.

This route contains the following soils:

AuD3	BrB2	SaE
B1A	EK	WoB2
B1B2	LE	
B1C2	RdB2	
B1C3	RyB2	
Bo	ShA	

The soil units named ShA (sassafras) and WoB2 (woodstown) are listed as prime farmland soils for Charles County, Md.

The soil units named B1A (Beltsville), B1B2 (Beltsville), B1C2 (Beltsville), BrB2 (Bourne), RdB2 (Rumford) and RyB2 (Rumford) are listed as soils of statewide importance for Charles County, Md.

If I can be of any further assistance, please let me know.

J.H. Kimmons

cc: R. Dills (w/o encl.)

U.S. Department of Agriculture

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FARMLAND CONVERSION IMPACT RATING

PART I *(To be completed by Federal Agency)*	Date Of Land Evaluation Request
Name Of Project: Mattawoman-Beantown Road	Federal Agency Involved: USDA/SCS
Proposed Land Use: Highway	County And State: Charles County, Maryland
PART II *(To be completed by SCS)*	Date Request Received By SCS: March 21, 1989

Does the site contain prime, unique, statewide or local important farmland? *(If no, the FPPA does not apply – do not complete additional parts of this form).*	Yes ☐	No ☑	Acres Irrigated	Average Farm Size

Major Crop(s)	Farmable Land In Govt. Jurisdiction	Amount Of Farmland As Defined in FPPA
	Acres: %	Acres: %
Name Of Land Evaluation System Used	Name Of Local Site Assessment System	Date Land Evaluation Returned By SCS

PART III *(To be completed by Federal Agency)*	Alternative Site Rating			
	Site A	Site B	Site C	Site D
A. Total Acres To Be Converted Directly				
B. Total Acres To Be Converted Indirectly				
C. Total Acres In Site				
PART IV *(To be completed by SCS)* Land Evaluation Information				
A. Total Acres Prime And Unique Farmland				
B. Total Acres Statewide And Local Important Farmland				
C. Percentage Of Farmland In County Or Local Govt. Unit To Be Converted				
D. Percentage Of Farmland In Govt. Jurisdiction With Same Or Higher Relative Value				
PART V *(To be completed by SCS)* Land Evaluation Criterion Relative Value Of Farmland To Be Converted *(Scale of 0 to 100 Points)*				
PART VI *(To be completed by Federal Agency)* Site Assessment Criteria *(These criteria are explained in 7 CFR 658.5(b)*	Maximum Points			
1. Area In Nonurban Use				
2. Perimeter In Nonurban Use				
3. Percent Of Site Being Farmed				
4. Protection Provided By State And Local Government				
5. Distance From Urban Builtup Area				
6. Distance To Urban Support Services				
7. Size Of Present Farm Unit Compared To Average				
8. Creation Of Nonfarmable Farmland				
9. Availability Of Farm Support Services				
10. On-Farm Investments				
11. Effects Of Conversion On Farm Support Services				
12. Compatibility With Existing Agricultural Use				
TOTAL SITE ASSESSMENT POINTS	160			
PART VII *(To be completed by Federal Agency)*				
Relative Value Of Farmland *(From Part V)*	100			
Total Site Assessment *(From Part VI above or a local site assessment)*	160			
TOTAL POINTS *(Total of above 2 lines)*	260			

e Selected:	Date Of Selection	Was A Local Site Assessment Used? Yes ☐ No ☐

Reason For Selection:

e Instructions on reverse side)

Form AD-1006 (10-83)

United States Department of Agriculture

Soil Conservation Service

APR 25 1989

Chuck

177

April 20, 1989

Mr. Charles P. Butler
Environmental Manager
Johnson, Mirmiran and Thompson, P.A.
810 Gleneagles Court, Suite 200
Baltimore, MD 21204

Dear Mr. Butler:

Enclosed is the Farmland Conversion Impact Rating (AD-1006) for MD 205 Farmland Impacts, JMT Job No. 87112.03.

Please note that an AD-1006, with Part I completed, is to be sent to the Soil Conservation Service (SCS) along with the maps and other information. I had an extra copy of the form and filled in Part I for this project.

If you have any questions or need additional information, please contact me.

Sincerely,

Larry S. Holmes

Larry S. Holmes
District Conservationist

LSH:hmd

Enc.

The Soil Conservation Service is an agency of the Department of Agriculture

U.S. Department of Agriculture

FARMLAND CONVERSION IMPACT RATING

PART I *(To be completed by Federal Agency)*	Date Of Land Evaluation Request: 3-22-89
Name Of Project: MD 205 JMT Job No. 87112.03	Federal Agency Involved: FHwA
Proposed Land Use: Highway	County And State: Prince George's, Maryland
PART II *(To be completed by SCS)*	Date Request Received By SCS: 3-27-89

Does the site contain prime, unique, statewide or local important farmland? *(If no, the FPPA does not apply – do not complete additional parts of this form).* Yes ☒ No ☐

Acres Irrigated	Average Farm Size
None	98 acres

Major Crop(s)	Farmable Land In Govt. Jurisdiction	Amount Of Farmland As Defined in FPPA
Corn, Soybeans, Tobacco, Small Grain	Acres: 145621 % 46.7	Acres: 111,985 % 35.9

Name Of Land Evaluation System Used	Name Of Local Site Assessment System	Date Land Evaluation Returned By SCS
P.G. Co., Land Eval. System	FPPA	4-14-89

PART III *(To be completed by Federal Agency)*	Alternative Site Rating: Site A	Site B	Site C	Site D
A. Total Acres To Be Converted Directly	2.44	2.9	1.85	1.53
B. Total Acres To Be Converted Indirectly				
C. Total Acres In Site	2.44	2.9	1.85	1.53
PART IV *(To be completed by SCS)* Land Evaluation Information				
A. Total Acres Prime And Unique Farmland	.84	.52	.38	.35
B. Total Acres Statewide And Local Important Farmland	1.6	2.38	1.47	1.18
C. Percentage Of Farmland In County Or Local Govt. Unit To Be Converted	.001	.001	.001	.001
D. Percentage Of Farmland In Govt. Jurisdiction With Same Or Higher Relative Value	54	55	54.5	54.5
PART V *(To be completed by SCS)* Land Evaluation Criterion Relative Value Of Farmland To Be Converted *(Scale of 0 to 100 Points)*	63	59	60	60

PART VI *(To be completed by Federal Agency)* Site Assessment Criteria *(These criteria are explained in 7 CFR 658.5(b)*	Maximum Points	Site A	Site B	Site C	Site D
1. Area In Nonurban Use					
2. Perimeter In Nonurban Use					
3. Percent Of Site Being Farmed					
4. Protection Provided By State And Local Government					
5. Distance From Urban Builtup Area					
6. Distance To Urban Support Services					
7. Size Of Present Farm Unit Compared To Average					
8. Creation Of Nonfarmable Farmland					
9. Availability Of Farm Support Services					
10. On-Farm Investments					
11. Effects Of Conversion On Farm Support Services					
12. Compatibility With Existing Agricultural Use					
TOTAL SITE ASSESSMENT POINTS	160				
PART VII *(To be completed by Federal Agency)*					
Relative Value Of Farmland *(From Part V)*	100				
Total Site Assessment *(From Part VI above or a local site assessment)*	160				
TOTAL POINTS *(Total of above 2 lines)*	260				

Site Selected:	Date Of Selection	Was A Local Site Assessment Used? Yes ☐ No ☐

Reason For Selection:

X. APPENDIX D

The following is a list of species which may be found in the study area:

red-spotted newt	Notophthalmus viridescens
spotted salamander	Ambystoma maculatum
marbled salamander	Ambystoma opacum
northern two-lined salamander	Eurycea bislineata
four-toed salamander	Hemidactylium scutatum
redback salamander	Plethodon cinereus
eastern mud salamander	Pseudotriton montanus
northern red salamander	Pseudotriton ruber
eastern spadefoot	Scaphiopus holbrooki
American toad	Bufo americanus
Fowler's toad	Bufo fowleri
northern cricket frog	Acris crepitans
northern spring peeper	Hyla crucifer
gray treefrog	Hyla versicolor
chorus frog	Pseudacris triseriata
bullfrog	Rana catesbeiana
pickerel frog	Rana palustris
wood frog	Rana sylvatica

common snapping turtle	Chelydra serpentina
eastern mud turtle	Kinosternon subrubrum
painted turtle	Chrysemys picta
redbelly turtle	Chrysemys rubiventris
red-eared slider	Chrysemys scripta
spotted turtle	Clemmys gutta
eastern box turtle	Terrapene carolina
northern fence lizard	Sceloporus undulatus
ground skink	Scincella lateralis
five-lined skink	Eumeces fasciatus
six-lined racerunner	Cnemidophorus sexlineatus
eastern worm snake	Carphophis amoenus
northern black racer	Coluber constrictor
black rat snake	Elaphe obsoleta
eastern hog-nosed snake	Heterodon platyrhinos
mole kingsnake	Lampropeltis calligaster
northern water snake	Nerodia sipedon
eastern ribbon snake	Thamnophis sauritus
eastern garter snake	Thamnophis sirtalis

least bittern	Ixobrychus exilis
great blue heron	Ardea herodias
great egret	Casmerodius albus
snowy egret	Egretta thula
cattle egret	Bubulcus ibis

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green-backed heron	Butorides striatus
black-crowned night-heron	Nycticorax nycticorax
Canada goose	Branta canadensis
wood duck	Aix sponsa
American black duck	Anas rubripes
mallard	Anas platyrhynchos
hooded merganser	Lophodytes cucullatus
black vulture	Coragyps atratus
turkey vulture	Cathartes aura
osprey	Pandion haliaetus
northern harrier	Circus cyaneus
sharp-shinned hawk	Accipiter striatus
Cooper's hawk	Accipiter cooperii
red-shouldered hawk	Buteo lineatus
broad-winged hawk	Buteo platypterus
red-tailed hawk	Buteo jamaicensis
American kestrel	Falco sparverius
merlin	Falco columbarius
ring-necked pheasant	Phasianus colchicus
wild turkey	Meleagris gallopavo
northern bobwhite	Colinus virginianus
clapper rail	Rallus longirostris
Virginia rail	Rallus limicola
king rail	Rallus elegans
sora	Porzana carolina
common moorhen	Gallinula chloropus
American coot	Fulica americana
killdeer	Charadrius vociferus
greater yellowlegs	Tringa melanoleuca
lesser yellowlegs	Tringa flavipes
spotted sandpiper	Actitis macularia
American woodcock	Scolopax minor
laughing gull	Larus atricilla
ring-billed gull	Larus delawarensis
herring gull	Larus argentatus
Forster's tern	Sterna forsteri
rock dove	Columba livia
mourning dove	Zenaida macroura
black-billed cuckoo	Coccyzus erythropthalmus
yellow-billed cuckoo	Coccyzus americanus
common barn-owl	Tyto alba
eastern screech-owl	Otus asio
great horned owl	Bubo virginianus
barred owl	Strix varia
common nighthawk	Chordeiles minor
chuck-will's-widow	Caprimulgus carolinensis
whip-poor-will	Caprimulgus vociferus
chimney swift	Chaetura pelagica
ruby-throated hummingbird	Archilochus colubris
belted kingfisher	Ceryle alcyon
red-headed woodpecker	Melanerpes erythrocephalus
red-bellied woodpecker	Melanerpes carolinus

downy woodpecker	Picoides pubescens
hairy woodpecker	Picoides villosus
pileated woodpecker	Dryocopus pileatus
northern flicker	Colaptes auratus
eastern wood pewee	Contopus virens
acadian flycatcher	Empidonax virescens
willow flycatcher	Empidonax traillii
least flycatcher	Empidonax minimus
eastern phoebe	Sayornis phoebe
great crested flycatcher	Myiarchus crinitus
eastern kingbird	Tyrannus tyrannus
horned lark	Eremophila alpestris
purple martin	Progne subis
tree swallow	Tachycineta bicolor
northern rough-winged swallow	Stelgidopteryx serripennis
bank swallow	Riparia riparia
cliff swallow	Hirundo pyrrhonota
barn swallow	Hirundo rustica
blue jay	Cyanocitta cristata
American crow	Corvus brachyrhynchos
fish crow	Corvus ossifragus
Carolina chickadee	Parus carolinensis
tufted titmouse	Parus bicolor
red-breasted nuthatch	Sitta canadensis
white-breasted nuthatch	Sitta carolinensis
brown creeper	Certhia americana
Carolina wren	Thryothorus ludovicianus
house wren	Troglodytes aedon
winter wren	Troglodytes troglodytes
marsh wren	Cistothorus palustris
golden-crowned kinglet	Regulus satrapa
ruby-crowned kinglet	Regulus calendula
blue-gray gnatcatcher	Polioptila caerulea
eastern bluebird	Sialia sialis
veery	Catharus fuscescens
wood thrush	Hylocichla mustelina
American robin	Turdus migratorius
gray catbird	Dumetella carolinensis
northern mockingbird	Mimus polyglottos
brown thrasher	Toxostoma fufum
cedar waxwing	Bombycilla cedrorum
loggerhead shrike	Lanius ludovicianus migrans
European starling	Lanius ludovicianus
white-eyed vireo	Vireo griseus
solitary vireo	Vireo solitarius
yellow-throated vireo	Vireo flavifrons
warbling vireo	Vireo gilvus
red-eyed vireo	Vireo olivaceus
Nashville warbler	Vermivora ruficapilla
blue-winged warbler	Vermivora pinus
northern parula	Parula americana

yellow warbler	Dendroica petechia
chestnut-sided warbler	Dendroica pensylvanica
magnolia warbler	Dendroica magnolia
Cape May warbler	Dendroica tigrinae
black-throated blue warbl	Dendroica caerulescens
yellow-rumped warbler	Dendroica coronata cornata
black-throated green warbler	Dendroica virens
blackburnian warbler	Dendroica fusca
yellow-throated warbler	Dendroica dominica
pine warbler	Dendroica pinus
prairie warbler	Dendroica discolor
palm warbler	Dendroica palmarum
bay breasted warbler	Dendroica castanea
blackpoll warbler	Dendroica striata
black-and-white warbler	Mniotilta varia
American redstart	Setophaga ruticilla
prothonotary warbler	Protonotaria citrea
worm-eating warbler	Helmitheros vermivorus
ovenbird	Seiurus aurocapillus
northern waterthrush	Seiurus noveboracensis
Louisiana waterthrush	Seiurus motacilla
Kentucky warbler	Oporornis formosus
common yellowthroat	Geothlypis trichas
hooded warbler	Wilsonia citrina
Wilson's warbler	Wilsonia pusilla
Canada warbler	Wilsonia canadensis
yellow-breasted chat	Icteria virens
summer tanager	Piranga rubra
scarlet tanager	Piranga olivacea
northern cardinal	Cardinalis cardinalis
rose-breasted grosbeak	Pheucticus ludovicianus
blue grosbeak	Guiraca caerulea
indigo bunting	Passerina cyanea
rufous-sided towhee	Pipilo erythrophthalmus
American tree sparrow	Spizella arborea
chipping sparrow	Spizella passerina
field sparrow	Spizella pusilla
vesper sparrow	Pooecetes gramineus
grasshopper sparrow	Ammodramus savannarum
fox sparrow	Passerella iliaca
song sparrow	Melospiza melodia
white-crowned sparrow	Zonotrichia leucophrys
white-throated sparrow	Zonotrichia albicollis
dark-eyed junco	Junco hyemalis
bobolink	Dolichonyx oryziborus
red-winged blackbird	Agelaius phoeniceus
eastern meadowlark	Sturnella magna
common grackle	Quiscalus quiscula
brown-headed cowbird	Molothrus ater
orchard oriole	Icterus spurius
northern oriole	Icterus galbula

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evening grosbeak	Coccothaustes vespertinus
purple finch	Carpodacus purpureus
house finch	Carpodacus mexicanus
common redpoll	Carduelis flammea
pine siskin	Carduelis pinus
American goldfinch	Carduelis tristis
house sparrow	Passer domesticus

masked shrew	Sorex cinereus
pygmy shrew	Microsorex hoyi
short-tailed shrew	Blarina brevicauda
least shrew	Cryptotis parva
eastern mole	Scalopus aquaticus
star-nosed mole	Condylura cristata
little brown myotis	Myotis lucifugus
Keen's myotis	Myotis keenii
silver-haired myotis	Lasionycteris noctivagans
eastern pipistrelle	Pipistrellus subflavus
big brown bat	Eptesicus fuscus
red bat	Lasiurus borealis
hoary bat	Lasiurus cinereus
evening bat	Nycticeius humeralis
eastern cottontail	Sylvilagus floridanus
eastern chipmunk	Tamias striatus
woodchuck	Marmota monax
gray squirrel	Sciurus carolinensis
fox squirrel	Sciurus niger
red squirrel	Tamiasciurus hudsonicus
southern flying squirrel	Glaucomys volans
white-footed mouse	Peromyscus leucopus
meadow vole	Microtus pennsylvanicus
pine vole	Microtus pinetorum
muskrat	Ondatra zibethicus
southern bog lemming	Synaptomys cooperi stonei
Norway rat	Rattus norvegicus
house mouse	Mus musculus
meadow jumping mouse	Zapus hudsonius
red fox	Vulpes vulpes
eastern gray fox	Urocyon cinereoargenteu
raccoon	Procyon lotor
long-tailed weasel	Mustela frenata
mink	Mustela vison
striped skunk	Mephitis mephitis
white-tailed deer	Odocoileus virginianus

The following birds have been observed in breeding habitat in or immediately adjacent to the study area during their breeding seasons.

least bittern	Ixobrychus exilis
great blue heron	Ardea herodias
cattle egret	Bubulcus ibis
green-backed heron	Butorides striatus
Canada goose	Branta canadensis
wood duck	Aix sponsa
mallard	Anas platyrhynchos
black vulture	Coragyps atratus
turkey vulture	Cathartes aura
Cooper's hawk	Accipiter cooperii
red-shouldered hawk	Buteo lineatus
broad-winged hawk	Buteo platypterus
red-tailed hawk	Buteo jamaicensis
American kestrel	Falso sparverius
ring-necked pheasant	Phasianus colchicus
wild turkey	Meleagris gallopavo
northern bobwhite	Colinus virginianus
king rail	Laterallus jamaicensis
killdeer	Charadrius vociferus
American woodcock	Scolopax minor
rock dove	Columba livia
mourning dove	Zenaida macroura
black-billed cuckoo	Coccyzus erythropthalmus
yellow-billed cuckoo	Coccyzus americanus
common barn-owl	Tyto alba
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belted kingfisher	Ceryle alcyon
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red-bellied woodpecker	Melanerpes carolinus
downy woodpecker	Picoides pubescens
hairy woodpecker	Picoides villosus
pileated woodpecker	Dryocopus pileatus
northern flicker	Colaptes auratus
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eastern phoebe	Sayornis phoebe
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eastern kingbird	Tyrannus tyrannus
horned lark	Eremophila alpestris
purple martin	Progne subis
tree swallow	Tachycineta bicolor.
northern rough-winged swallow	Stelgidopteryx serripennis

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bank swallow	Riparia riparia
barn swallow	Hirundo rustica
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house wren	Troglodytes aedon
blue-gray gnatcatcher	Polioptila caerulea
eastern bluebird	Sialia sialis
wood thrush	Hylocichla mustelina
American robin	Turdus migratorius
gray catbird	Dumetella carolinensis
northern mockingbird	Mimus polyglottos
brown thrasher	Toxostoma rufum
cedar waxwing	Bombycilla cedrorum
loggerhead shrike	Lanius ludovicianus
European starling	Sturnus vulgaris
white-eyed vireo	Vireo griseus
yellow-throated vireo	Vireo flavifrons
warbling vireo	Vireo gilvus
red-eyed vireo	Vireo olivaceus
blue-winged warbler	Vermivora pinus
northern parula	Parula americana
yellow warbler	Dendroica petechia
yellow-throated warbler	Dendroica dominica
pine warbler	Dendroica pinus
prairie warbler	Dendroica discolor
cerulean warbler	Dendroica cerulea
black-and-white warbler	Mniotilta varia
American redstart	Setophaga ruticilla
prothonotary warbler	Protonotaria citrea
worm-eating warbler	Helmitheros vermivorus
ovenbird	Seiurus aurocapillus
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