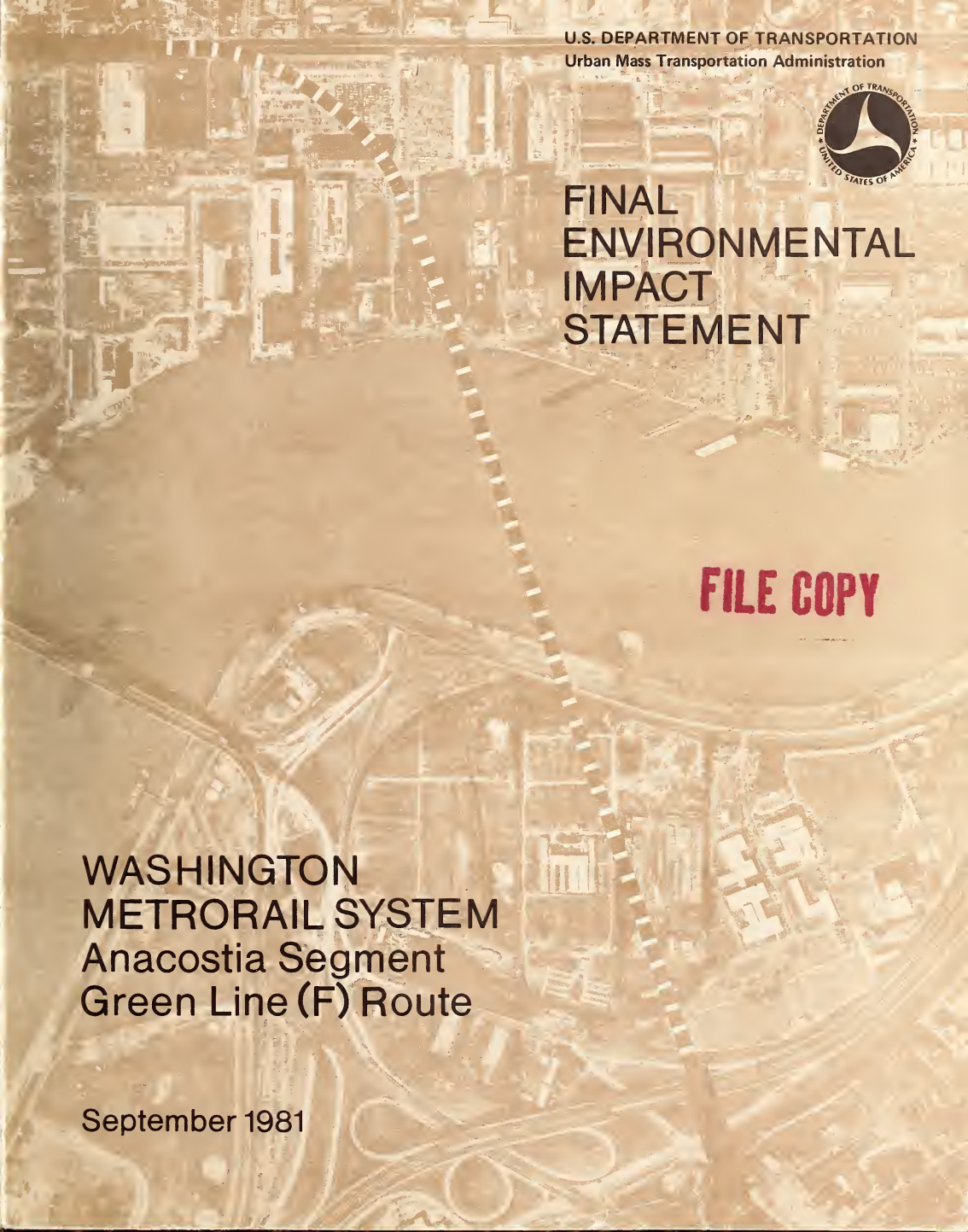

U.S. DEPARTMENT OF TRANSPORTATION
Urban Mass Transportation Administration

FINAL ENVIRONMENTAL IMPACT STATEMENT

WASHINGTON METRORAIL SYSTEM
Anacostia Segment
Green Line (F) Route

September 1981

DEPARTMENT OF TRANSPORTATION
URBAN MASS TRANSPORTATION ADMINISTRATION
WASHINGTON, D.C. 20590

FINAL ENVIRONMENTAL IMPACT STATEMENT AND SECTION 4(f) STATEMENT

WASHINGTON METRORAIL SYSTEM
GREEN LINE (F) ROUTE
ANACOSTIA SEGMENT

AUG 18 1981

Date

Franz K. Gimmler
Associate Administrator
for Transit Assistance

COVER SHEET

U.S. DEPARTMENT OF TRANSPORTATION
URBAN MASS TRANSPORTATION ADMINISTRATION

FINAL ENVIRONMENTAL IMPACT STATEMENT
AND SECTION 4(f) STATEMENT

Pursuant to Section 102(2) (c), PL91-190 of the National Environmental Policy Act of 1969, and Sections 3(d) and 14 of the Urban Mass Transportation Act of 1964, as amended, and Section 4(f) of the Department of Transportation Act of 1966.

Lead Agency

Urban Mass Transportation Administration

Cooperating Agency

The Washington Metropolitan Area Transit Authority

Title of Proposed Action

South Crossing–St. Elizabeths Alignment: Anacostia Segment, District of Columbia

Abstract

This Final Environmental Impact Statement (EIS) documents the impacts of the Anacostia Segment of the Washington Metrorail Green Line. It also responds to comments received on the Draft EIS for the same Metrorail Segment.

The segment studied extends from the existing Waterfront Station at 4th and M Streets, SW to approximately 1300 feet southeast of the intersection of Martin Luther King, Jr. Avenue and Suitland Parkway in Anacostia. One alignment, known as the South Crossing–St. Elizabeths Alignment, is proposed as an alternative to the ARS Alignment of the original 97.7 mile Metrorail System. This alternative utilizes an Anacostia River crossing south of that adopted in the ARS System, and includes an Anacostia Station beneath I-295 in the vicinity of Howard Road in Southeast Washington. The impacts of the proposed South Crossing–St. Elizabeths Alignment are compared to those of the No Build Alternative.

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The Final Environmental Impact Statement was made available on

SUMMARY

The Green Line (F Route) Anacostia Segment Final Environmental Impact Statement and Section 4(f) Statement has been prepared by the Urban Mass Transportation Administration (UMTA) in cooperation with the Washington Metropolitan Area Transportation Authority (WMATA) as a supplement to the 1975 "System-wide" EIS for the entire Washington Metrorail System.

The "System-wide" EIS included an analysis of environmental impacts of the original 97.7-mile Adopted Regional System, evaluating those impacts through comparison to a "no action" alternative. Since completion of that document several additional WMATA environmental studies have supported decisions to realign portions of the ARS system. This document addresses impacts of the proposed realignment of the Anacostia Segment of the Green Line. It has been prepared because impacts associated with the proposed realignment are substantially different from those identified for the ARS Alignment in the "System-wide" EIS.

The Draft EIS for the proposed Green Line realignment was circulated to various Federal, State, and local agencies, and to interested organizations and individuals in accordance with the regulations of the Council on Environmental Quality, the U.S. Department of Transportation and the Urban Mass Transportation Administration. That document addressed impacts of the Green Line extending from the Waterfront Station to two alternative terminuses in Prince George's County, Maryland, including the Anacostia Segment (Design Sections F3, F4 and F5) and the Branch Avenue/Rosecroft Segment (Design Sections F6, F7 and F8). UMTA received comments on the Draft EIS for 45 days after the official start of circulation on May 25, 1979.

This document is the Final EIS for the Anacostia Segment of the Green Line; the Final EIS for the Branch Avenue/Rosecroft Segment will be prepared as a separate document. The route has been divided into two segments for EIS preparation because of the difference in the current level of planning

and anticipated start of operation between the two segments. WMATA plans to commence operation of the Metrorail to the Anacostia Station in mid 1986; commencement of service to the route terminus along the Branch Avenue/Rosecroft Segment will be dependent upon the availability of construction funds. To allow for metrorail service along the Anacostia Segment WMATA proposes to operate the Anacostia Station as a temporary facility; at some time after the commencement of service into Prince George's County, the station may be changed to a through station.

In this document UMTA and WMATA have addressed all substantive comments received on pertinent issues related to the Anacostia Segment. Comments received pertaining to the continuation of the Green Line, the Branch Avenue/Rosecroft Segment, will be addressed in a second Final EIS. Responses to comments can be found in Chapter 6.0 while appropriate changes to the text, as a result of comments received, are indicated by vertical bars in the margin.

DEVELOPMENT OF ALTERNATIVES

The Green Line as included in the Adopted Regional System extends for approximately 8.6 miles from Gallery Place at 7th and G Streets, NW, in the District of Columbia, southeast to a terminus at Branch Avenue in Prince George's County, Maryland. It is comprised of three segments: 1) The Gallery Place to Waterfront Segment extending from the Gallery Place Station to the Waterfront Station at 4th and M Streets, SW; 2) the Anacostia Segment, extending from the Waterfront Station to the intersection of Good Hope Road and 17th Street, SE, in Anacostia; and 3) the Branch Avenue Segment, extending from the Anacostia Segment endpoint to the route terminus at Branch Avenue in Prince George's County.

The Gallery Place to Waterfront Segment has been constructed but remains inoperative; both the Anacostia Segment and the Branch Avenue Segment are still in the planning and design stage.

More detailed environmental studies of the ARS Alignment since completion of the "System-wide" EIS have revealed several major impacts of the original adopted route for the Anacostia Segment. Primary among these are: 1) the cost of mitigating vibration impacts in the Washington Navy Yard Historic District, 2) the disruptive impact of the Anacostia ARS Station on the Anacostia community, and 3) inadequate transit service to the transit dependent population in the Anacostia community.

In response to these findings WMATA has developed and studied numerous alternative alignments for the Green Line. Along the Anacostia Segment of the route four major alignment shifts have been considered. These included two alternative Anacostia River crossings as well as numerous alternative locations for the Anacostia ARS Station.

As a result of WMATA's alternatives analyses, the South Crossing-St. Elizabeths Alignment has been proposed as a reasonable alternative to the ARS Alignment. Supporting this conclusion are findings that the South Crossing-St. Elizabeths Alignment serves the most highly transit dependent population, has the highest patronage estimate, and results in the least displacement of structures and disruption to the Anacostia community. In addition it can be constructed with the least cost.

This Final EIS addresses impacts of the proposed route realignment and supports selection of the South Crossing-St. Elizabeths Alignment as the preferred alternative for the Anacostia Segment of the Green Line. For evaluation purposes the impacts of the proposed realignment are compared to those of the No Build Alternative.

DESCRIPTION OF ALTERNATIVES

A. South Crossing-St. Elizabeths Alternative

Description

The South Crossing-St. Elizabeths Alignment begins at the east end of the existing but inoperative Waterfront Station. Moving east it proceeds in two single track earth tunnels for approximately 2490 feet until entering the cut-and-cover Navy Yard Station, also located beneath M Street.

The Navy Yard Station consists of a center platform 600 feet in length. It is a walk-on station with two entrances; no park-ride, kiss-ride, or bus stalls are programmed for the facility.

Proceeding east from the Navy Yard Station, the alignment begins a southeasterly curve toward the Anacostia River, passing beneath the Washington Navy Yard Annex and the Anacostia River. River crossing construction will utilize either sunken tube or earth tunnel techniques.

From the south seawall of the Anacostia River the alignment passes beneath Anacostia Park and land belonging to the Architect of the Capitol. It then enters the Anacostia Station, located beneath I-295.

Facilities at the Anacostia Station include separate local and regional access areas. Local bus, kiss-ride and walk-on metro patrons are served by an area located on the block bounded by Howard Road, Firth Sterling Avenue, Suitland Parkway and Martin Luther King, Jr. Avenue. This area includes 26 kiss-ride spaces, 7 bus bays, and 10 motorcycle spaces. Access is from Howard Road, Martin Luther King, Jr. Avenue and Firth Sterling Avenue.

Regional parking facilities are located in Anacostia Park between I-295 and the Anacostia River. A structural parking facility provides parking for approximately 700 cars. An adjacent surface lot provides long-term parking for an additional 400 cars, short-term parking for 200 cars, 50 kiss-ride spaces, and bays for 19 buses. Access is from Suitland Parkway and I-295 on the existing ramp to Howard Road, from South Capitol Street following the existing ramp to Anacostia Drive, and from Good Hope Road.

Outbound of the Anacostia Station the alignment continues for approximately 1750 feet in cut-and-cover construction. This section includes a 250 foot double crossover and adequate track for storage of four eight-car trains.

The length of the entire South Crossing-St. Elizabeths Alignment is approximately 11,450 feet.

Operation

Construction of the Anacostia Segment as described will permit metrorail operation along the Green Line utilizing the Anacostia Station as a terminal facility. The design of this station will be such that transit operations can be efficiently and safely conducted in a manner which links the Segment with the total Metrorail System. The location and design of the Anacostia Station will also permit future construction along several alternative alignments to either a Branch Avenue or a Rosecroft terminus in Prince George's County, Maryland. However should such a future continuation be delayed or not constructed, the Metrorail could continue to operate from the Anacostia Station facility.

Estimated Cost

According to WMATA's June 1980 funding plan, the estimated cost of the South Crossing-St. Elizabeths Alignment is $431.9 million. Of this, $345.5 million is proposed to be Federal funds administered by UMTA.

Summary of Effects

Long-term beneficial effects of the South Crossing-St. Elizabeths Alternative include:

1. An additional 10,882,000 annual transit trips (1986) in the Green Line corridor.[1]

2. Peak hour (1990) metro ridership of 14,102 trips from the Waterfront, Navy Yard and Anacostia Stations.

3. A reduction of 41,063,100 annual vehicle miles (1986) travelled in the Green Line corridor.[1]

4. A reduction of 2590 automobiles and 97 buses crossing the Anacostia River bridges during the peak hour (1986).

5. Traffic volumes (1986) in the Green Line corridor consistent with local and regional transportation plans and programming for roadway improvements.

6. Walk-to metro service for a minimum of 10,700 transit dependents.

7. A reduction of 1,079,854 gallons in annual petroleum fuel consumption.[1]

8. Reduced traffic noise levels (1986), particularly during the peak hour, in the Green Line corridor.[1]

9. An annual reduction of 150,000 pounds of hydrocarbons, 1,735,000 pounds of carbon monoxide, and 56,000 pounds of nitrogen oxide resulting from combustion of petroleum fuels.[1]

10. Increased development potential in the vicinity of the Waterfront Station, Navy Yard Station, and Anacostia Station.

11. Metro access to the South Capitol Gateway Project, the Southeast Federal Center, and the Washington Navy Yard.

12. Enhancement of existing landscaping, grades, and visual setting in portions of Anacostia Park near the Douglass Bridge; addition of approximately 26.3 acres of active parkland to Anacostia Park.

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[1]When compared to the No Build Alternative.

Long-term adverse effects of the South Crossing-St. Elizabeths Alternative include:

1. Displacement of 18 occupied residential structures (24 residential units), 8 occupied commercial structures (9 businesses), and one fraternal lodge (private displacements).

2. Displacement of 12 unoccupied residential structures (12 residential units), and one unoccupied commercial structure (one business)(private displacements).

3. Displacement of three buildings in the Washington Navy Yard Annex, greenhouses belonging to the Architect of the Capitol, a helicopter hangar belonging to the U.S. Defense Intelligence School, and the Birney Elementary School Annex (public displacements).

4. "Encroachment," but "no significant encroachment" along 2600 feet of the Anacostia River Floodplain (as defined by DOT Order 5650.2 in response to E.O. 11988).

5. Increased traffic volumes on roadways in the vicinity of the Anacostia Station.

6. Annual electrical energy consumption for Metro operation of 37.4 million kwh.

7. Loss of small, highly stressed street trees along 1000 feet of M Street.

8. Loss of several small wooded areas totalling approximately one acre (south of the Anacostia River).

9. Use of approximately 29.3 acres of land owned by the National Park Service adjacent to Anacostia Park, including 4.2 acres from the District of Columbia Lanham Tree Nursery, 12.1 acres from the U.S. Botanic Garden, and 13.0 acres from the U.S. Defense Intelligence School.

10. Use of approximately 3400 square feet of land in Suitland Parkway for a fan shaft and portal.

11. Demolition of Buildings 137 and 167 in the Washington Navy Yard Annex, both considered eligible for the National Register of Historic Places.

12. Destruction of the National Register-eligible Howard Road Historic District.

Short-term construction impacts of the South Crossing-St. Elizabeths Alternative include:

1. Generation of 600,000 cubic yards of spoil from alignment and station construction, excluding the Anacostia River Crossing.

2. Generation of an additional 150,000 cubic yards of spoil (assuming earth tunnel construction of the river crossing) or an additional 300,000 cubic yards of spoil (assuming sunken tube construction of the river crossing).

3. Potential erosion and sedimentation from handling, storage and transport of spoil.

4. Water quality impacts on the Anacostia River in the area of dredging and dewatering effluent discharge (assuming sunken tube river crossing construction).

5. Disturbance to eight acres of lawn-like vegetation.

6. Destruction of benthic communities in the Anacostia River in the dredge area (assuming sunken tube river crossing construction).

7. Reduced roadway capacities in the vicinity of the Navy Yard Station and the Anacostia Station construction sites.

8. Increased traffic congestion along routes to be used by spoil disposal vehicles.

9. Local increases in surface emissions resulting from below-grade construction of 11,450 feet of alignment and handling of 750,000 to 970,000 cubic yards of spoil.

10. Local increases in airborne pollutants resulting from traffic congestion around the Navy Yard Station and Anacostia Station construction sites.

11. Local increases in airborne pollutants from construction and disposal vehicles.

12. Local increases in particulates and fugitive dust resulting from building demolitions.

13. Local increases in noise resulting from construction equipment, construction vehicles, and increased traffic congestion.

14. Disruption of approximately 31.1 acres of land owned by the National Park Service, including 4.0 acres within Anacostia Park and 27.1 acres within adjacent NPS properties (assuming earth tunnel river crossing construction); disruption of approximately 42.7 acres of land owned by the National Park Service, including 4.0 acres within Anacostia Park and 38.7 acres within adjacent NPS properties (assuming sunken tube river crossing construction).

15. Disturbance of approximately 3.5 acres of Suitland Parkway during construction of 1240 linear feet of cut-and-cover alignment.

B. No Build Alternative

Description and Operation

The No Build Alternative assumes that metro service will not be extended southward on the Green Line beyond the existing Waterfront Station at 4th and M Streets, SW. It also assumes that metro service will commence on the Green Line between the existing but inoperative Waterfront Station

and the route's northern terminus at Greenbelt in Prince George's County. Such operation assumes that all portions of the Metro System will be constructed, excluding segments of the Green Line south of Waterfront Station.

To make the Green Line operable between Waterfront and Greenbelt will require additional construction at and outbound of the Waterfront Station, as well as completion of design sections north of L'Enfant Plaza Station (excluding the Gallery Place and Archives Stations which have already been completed). The evaluation of the No Build Alternative as described in this Final EIS is based upon completion of improvements at the Waterfront Station; this document does not address impacts related to construction and operation of presently uncompleted portions of the Green Line north of L'Enfant Plaza Station.

Automatic train operation into Waterfront Station requires the following new work items in and outbound of Waterfront Station:

1. Conversion of the existing tie-breaker station in the lower level of the Waterfront Station east service area into a train control room.

2. Construction of an east vent shaft and emergency exit approximately 100 feet east of the Waterfront Station platform.

3. Cut-and-cover construction of a 300 foot double crossover with an integrated tie breaker station outbound of Waterfront Station.

4. Construction of approximately 1525 feet of two single-track earth tunnel running lines.

5. Construction of a fan shaft on the south side of M Street, approximately 100 feet east of 1st Street, SW.

The estimated cost of new work items at Waterfront Station required to make Metro operative as described in the No Build Alternative is $36.26 million. Of this, approximately 80 percent, or $29.0 million, would be Federal funds to be administered by UMTA.

Summary of Effects

Long-term beneficial effects of the No Build Alternative include:

1. Peak hour (1990) metro ridership of 4034 trips from the Waterfront Station.

2. Walk-to metro service for a minimum of 4700 transit dependents.

3. Increased development potential in the vicinity of the Waterfront Station.

Long-term adverse effects of the No Build Alternative include:

1. Loss of 10,882,000 annual transit trips (1986) in the Green Line corridor.[1]

2. An increase of 41,063,100 annual vehicle miles (1986) travelled in the Green Line corridor.[1]

3. An increase of 2590 automobiles and 97 buses crossing the Anacostia River bridges during the peak hour (1986).[1]

4. Higher traffic volumes (1986) in the Green Line corridor than those assumed in local and regional transportation plans and programming for roadway improvements.

5. Annual electrical energy consumption for operation of 4.3 million kwh.

6. An increase of 1,079,854 gallons in annual petroleum fuel consumption.[1]

7. Loss of small, highly stressed street trees along 500 feet of M Street.

8. Increased ambient noise levels, particularly during the peak travel hour, due to increased traffic in the Green Line corridor.[1]

9. An annual increase of 150,000 pounds of hydrocarbons, 1,735,000 pounds of carbon monoxide, and 56,000 pounds of nitrogen oxide resulting from combustion of petroleum fuels.[1]

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[1]When compared to the South Crossing Alternative.

10. No metro access to the South Capitol Gateway Project, the Southeast Federal Center, and the Washington Navy Yard.

11. Inconsistency with land use plans for Southeast Washington.

Short-term construction impacts of the No Build Alternative include:

1. Generation of 150,000 cubic yards of spoil material from construction of tail tracks at Waterfront Station.

2. Potential erosion and sedimentation from handling, storage and transport of spoil.

3. Increased traffic congestion in the vicinity of M Street between 3rd Street, SW, and South Capitol Street.

4. Increased traffic congestion along routes to be used by spoil disposal vehicles.

5. Local increases in surface emissions resulting from below-grade construction of 2000 feet of alignment and handling of 175,000 cubic yards of spoil.

6. Local increases in airborne pollutants from traffic congestion around the Waterfront Station construction site.

7. Local increases in airborne pollutants from construction and disposal vehicles.

8. Local increases in noise resulting from construction equipment, construction vehicles, and increased traffic congestion.

C. Evaluation of Alternatives

Several major differences exist between the two alternatives, including:

1. The South Crossing Alternative will take 41 privately-owned structures and nineteen publicly-owned structures; the No Build Alternative will not take any privately- or publicly-owned structures.

2. The South Crossing Alternative will displace approximately 75 residents, nine businesses, two small office buildings, and one fraternal lodge; the No Build Alternative will not displace any residents or businesses.

3. Construction of the South Crossing Alternative will require excavation and disposal of from 750,000 cubic yards (earth tunnel river crossing) to 900,000 cubic yards of spoil (sunken tube river crossing); the No Build Alternative will require excavation and disposal of only 175,000 cubic yards of spoil.

4. The South Crossing Alternative is consistent with local and regional transportation plans and programming for roadway improvements; the No Build Alternative is not consistent with transportation plans and programming.

   Reduced transit ridership and consequent increases in vehicle miles travelled in the Green Line corridor associated with the No Build Alternative will result in traffic volumes in excess of those assumed during preparation of transportation plans; increased traffic volumes at locations in the Green Line corridor may require improvements to roadways to retain existing levels of service (particularly the Anacostia River bridges) not recognized in current transportation plans.

5. Metro operation to Anacostia (South Crossing Alternative) will result in annual (1986) emission of approximately 1,940,000 fewer pounds of air pollutants from combustion of petroleum fuels than metro operation to Waterfront (No Build Alternative).

6. Metro operation to Anacostia (South Crossing Alternative) will require consumption of approximately 1,080,000 fewer gallons of petroleum fuel annually (1986) than metro operation to Waterfront (No Build Alternative).

7. Metro operation between L'Enfant Plaza and Anacostia (South Crossing Alternative) will consume 37.4 million kwh's of electrical energy annually; metro operation from L'Enfant Plaza to Waterfront Station (No Build Alternative) will consume 4.3 million kwh's of electrical energy annually.

8. Metro operation to Anacostia (South Crossing Alternative) will stimulate development in the vicinity of the Waterfront Station, the Navy Yard Station, and the Anacostia Station; Metro termination at Waterfront (No Build Alternative) will stimulate development only in the vicinity of the Waterfront Station.

   Metro operation to Anacostia (South Crossing Alternative) has also been assumed in preparing development plans for the South Capitol Gateway Project, the Southeast Federal Center, the Washington Navy Yard Annex, and the Bolling/ Anacostia Complex; metro termination at Waterfront (No Build Alternative) will be inconsistent with those plans, eliminating metro access for employees.

9. Metro facilities will require permanent use of approximately 29.3 acres of land owned by the National Park Service (adjacent to but not included in Anacostia Park) and approximately 3400 square feet of land in Suitland Parkway; the No Build Alternative will not require use of any NPS land or parklands.

10. The South Crossing Alternative will result in the addition of approximately 26.3 acres of active parkland to Anacostia Park; the No Build Alternative will not result in the addition of active parkland to Anacostia Park.

11. Construction of the Anacostia Station will contribute to the beneficial development of Anacostia Park through enhanced access, landscaping, and expansion of the existing park area; the No Build Alternative will not contribute to the enhancement of Anacostia Park.

12. The South Crossing Alternative will require demolition of two structures considered eligible for the National Register of Historic Places; the No Build Alternative will not affect any historic sites.

12. Destruction of the National Register eligible Howard Road Historic District.

13. Construction of the South Crossing Alternative will cost approximately $431.9 million; construction of improvements required to make Metro operable from Waterfront Station (No Build Alternative) will cost approximately $36.26 million.

D. Selection of the Locally Preferred Alternative

Environmental studies of the ARS Alignment, including the "System-wide" EIS, have revealed several major impacts of the original adopted route for the Anacostia Segment of the Metrorail Green Line. In response to findings of these studies WMATA has developed and studied numerous alternative alignments for the Green Line continuation from the Waterfront Station to and including the Anacostia Station. These alternative analyses have supported a decision by WMATA and the District of Columbia to realign the Anacostia Segment along the proposed South Crossing-St. Elizabeths Alignment.

The South Crossing-St. Elizabeths Alignment is proposed by WMATA and the District of Columbia as preferable to the alternative of taking no action. It has been selected as the preferred alternative despite several short-term adverse impacts associated with construction, as well as long-term impacts resulting from displacements and demolition of historic structures.

The benefits to be derived from the proposed action are considered greater than those of not taking the action. More generally these include benefits to be derived from completion of the Metro System to serve the Washington Metropolitan Area. Such a system will greatly increase accessibility within the region, thereby increasing land values, employment opportunities, labor pool availability, and mobility within the region for those who do not or cannot drive. Metro will decrease dependency upon the automobile for travel between downtown Washington and the outlying areas of the region. All of these effects can be characterized as enhancement of regional economic vitality, with accompanying social benefits. Environmental benefits will include improved air quality, reduced noise, and more efficient use of energy.

More specifically, major beneficial effects of the proposed Anacostia Segment of the Green Line will include the following:

1. Regional rapid-rail transit service will be available to the Southeast Washington area, increasing the mobility of the transit dependent population.

2. The number of motor vehicle miles travelled in the corridor will be decreased, improving air and water quality and decreasing traffic congestion.

3. Reliance upon the direct use of petroleum fuels for transportation will be reduced.

4. The economy of the area within metro station service areas will be stimulated as a result of improved accessibility to jobs and services.

AREAS OF CONTROVERSY

Substantive comments raised during the circulation of the Draft Environmental Impact Statement focused primarily on impacts related to historic and archeological sites, parklands, air quality, water quality, and fish and wildlife resources.

ISSUES TO BE RESOLVED

The ARS Alignment is the current Federally-approved alignment for the Anacostia Segment of the Washington Metropolitan Area Transit Authority's Adopted Regional System. The major issue to be resolved is whether to approve a change from the ARS Alignment, as studied in the "System-wide" EIS, to the South Crossing-St. Elizabeths Alignment, or to terminate the Green Line at the Waterfront Station.

REVIEW AND FINDINGS

As required by Section 14 of the Urban Mass Transportation Act of 1964, this Final Environmental Impact Statement represents a detailed statement on:

1. The environmental impact of the proposed project.

2. Adverse environmental effects which cannot be avoided should the proposal be implemented.

3. Alternatives to the proposed project.

4. Irreversible and irretrievable impact on the environment which may be involved if the proposed project should it be implemented.

Based on the information contained in this environmental impact statement and on consideration of the written and oral comments offered on the draft document, the Urban Mass Transportation Administration determines in accordance with Section 14 of the Act that:

1. Adequate opportunity was afforded for the presentation of views by all parties with a significant economic, social, or environmental interest, and fair consideration has been given to the preservation and enhancement of the environment and to the interest of the community in which the proposed project is located.

2. All reasonable steps have been taken to minimize adverse environmental effects of the proposed project and where adverse environmental effects remain, there exists no feasible and prudent alternative to avoid or mitigate such effects.

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Chapter 1
PURPOSE AND NEED FOR ACTION

The Washington Metro is the rail component of the National Capital Region's public transportation system. The Washington Metropolitan Area Transit Authority (WMATA), a public agency created in 1967 through a Congressionally-approved interstate compact, has responsibility for planning, developing, financing and operating Metro.

WMATA's decision-making body is a twelve-member Board of Directors comprised of delegates from Maryland, Virginia and the District of Columbia. The WMATA Board's adoption of a 97.2-mile regional Metro system in March 1968 was the culmination of nearly sixteen years of study and planning by Congress, the District of Columbia, the Commonwealth of Virginia, the State of Maryland, local jurisdictions and numerous public agencies concerned with transportation and development in the Washington metropolitan area.

The Adopted Regional System (ARS) is a seven-branch network serving the District of Columbia, Montgomery and Prince George's Counties in Maryland, and Arlington and Fairfax Counties and the Cities of Alexandria, Fairfax and Falls Church in Virginia (Figure 1.1). Although these branches were originally referred to as routes, designated by letters and/or terminal stations, users of the system will know them as lines, designated by color codes. Thus, for example, the Branch Avenue (F) Route is to be known as the Green Line.

The ARS was modified in January 1969 when the WMATA Board approved three changes:

1. The relocation of the Medical Center Station on the Red Line (A Route) south of the medical center near the National Institute of Health on Wisconsin Avenue;

2. The relocation of the Waterfront Station on the Green Line (F Route) from South Capitol and M Streets to 4th and M Streets, SW; and

3. The shifting of the Blue Line (C Route) westerly in the direction of Eisenhower Avenue.

These changes were among several proposed during hearings held in 1968 to solicit public opinion on the ARS.

In June 1970, the WMATA Board again modified the ARS by adopting the "Mid-City Alternative." The segment of the Green/Yellow Line (E Route) between Gallery Place and Kansas Avenue was realigned from Massachusetts Avenue-13th Street to 7th Street-"U" Street-14th Street, to better serve the northeast portion of downtown Washington.

The design and construction of the ARS was initially funded by direct Congressional appropriations combined with local funding at a two-thirds/one-third ratio. Although its actions were not subject to the provisions of the National Environmental Policy Act of 1969 (NEPA), WMATA prepared its own environmental studies on branches of the ARS to address the potential impacts of Metro.

A final Environmental Impact Statement (EIS) for the ARS was issued in 1975 after the District of Columbia requested that certain designated urban interstate highway segments be withdrawn to provide Federal funds for Metro. The transfer of funds from deleted, non-essential segments of the interstate highway system to transit systems within the same metropolitan area was made possible by an amendment to the Federal Aid Highway Act of 1973. Since the amendment specified that such substitution projects were subject to the legal and administrative requirements of the Urban Mass Transportation Administration (UMTA) Capital Assistance Program, UMTA prepared the 1975 "System-wide" EIS in cooperation with WMATA.[1]

A supplement to the "System-wide" EIS is prepared for Metro segments where changes are proposed which could have significant impacts other than those identified for the ARS in 1975. Since 1975, UMTA has prepared three supplemental EIS's in cooperation with WMATA (Figure 1.2).

The first UMTA supplemental EIS, finalized in 1977, was for the Red Line (A Route).[2] It addressed the potential impacts of a proposed 2.7-mile segment to extend the line from Rockville to Shady Grove. This segment will become operable in 1983.

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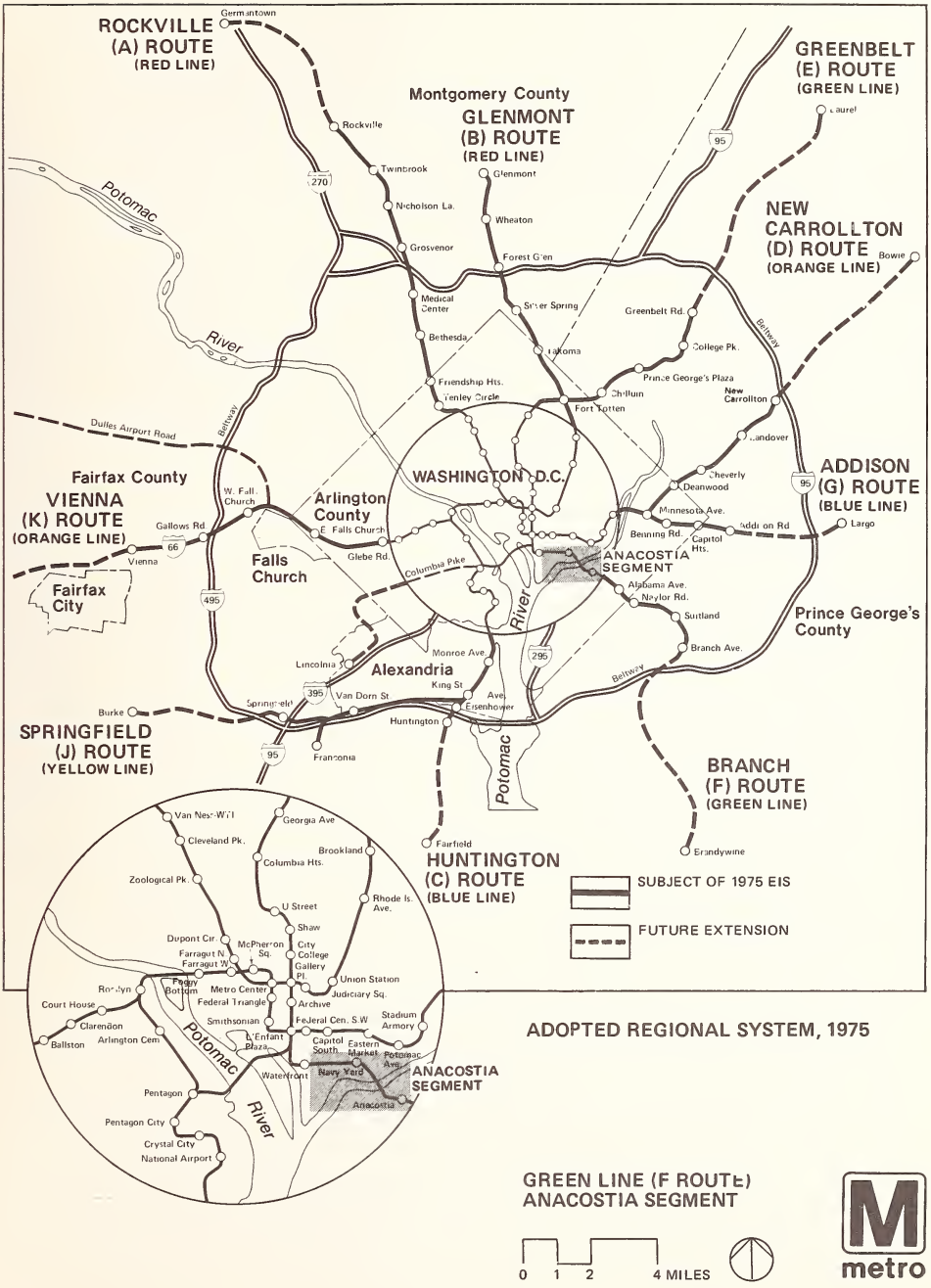
[1]U.S. Department of Transportation, UMTA. Final Environmental Impact Statement, Metropolitan Washington Regional Rapid Rail Transit System (Project DC-23-9001). August 1975.

[2]U.S. Department of Transportation, UMTA. Final Environmental Impact Statement, Washington Metrorail System, Rockville (A) Route. April 1977.

FIGURE 1.1



ADOPTED REGIONAL SYSTEM, 1975

GREEN LINE (F ROUTE)
ANACOSTIA SEGMENT

0 1 2 4 MILES

metro

The second supplemental EIS addresses the potential impacts of the proposed realignment of a segment of the Green Line (E Route) extending from the District of Columbia boundary to a point 2000 feet west of the Prince George's Plaza Station.[1] Approximately 8000 feet of the alignment and one station are included in the realigned segment. This supplemental EIS has not yet been finalized.

Proposed changes to the Green Line (F Route) are studied in a third supplemental EIS.[2] It addresses the proposed realignment of the ARS from a point beyond the Waterfront Station at 4th and M Streets, SW, to the route terminus in Prince George's County, Maryland. The change has been proposed to avoid impacts on the Washington Navy Yard Historic District to reduce impacts on the Anacostia community, to improve service to the transit dependent population in Southeast Washington, and to improve service to developable land in Prince George's County. Two WMATA environmental impact studies as well as the Draft EIS have documented these impacts and supported elimination of the ARS Alignment as a suitable Green Line alignment.[3,4]

This document is the Final EIS for the Anacostia Segment of the Green Line (F Route) as studied in the third supplemental EIS. It addresses impacts of the proposed route realignment extending from the existing Waterfront Station at 4th and M Streets, SW, to a point approximately 1300 feet south of the intersection of Martin Luther King, Jr. Avenue and Suitland Parkway in Anacostia. The Final EIS for the continuation of the Green Line (F Route) to a route terminus in Prince George's County will be prepared as a separate document.

The proposed construction of the Anacostia Segment as described in this Final EIS will permit metrorail operation along the Green Line utilizing the Anacostia Station as a terminal facility. The design of this station will be such that transit operations can be efficiently and safely conducted in a manner which links the segment with the total metrorail system. The location and design of the Anacostia Station as proposed will also permit future continuation along several alternative

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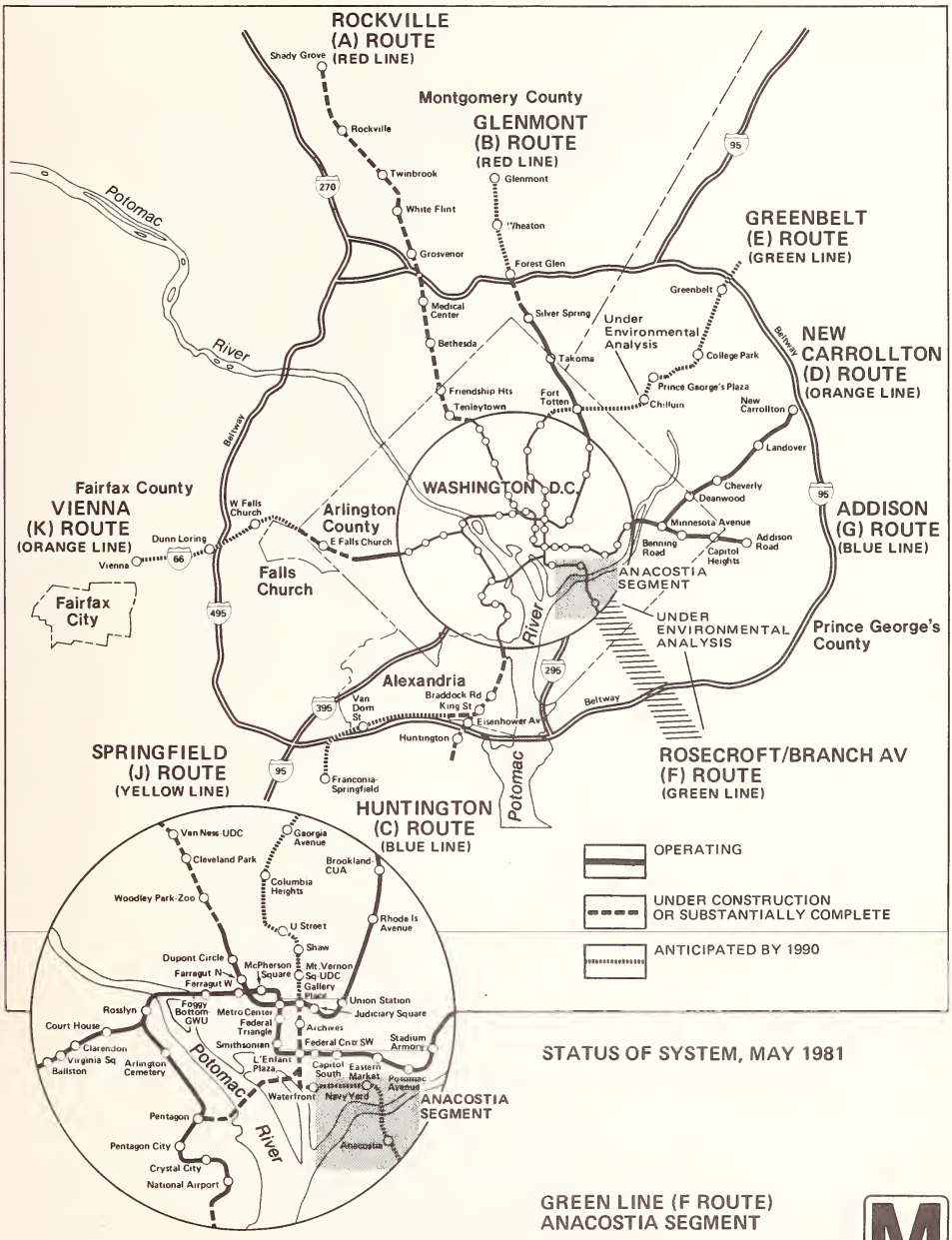
[1] U.S. Department of Transportation, UMTA. Draft Environmental Impact Statement, Washington Metrorail System, Green/Yellow Line (E Route) West Hyattsville Segment. October 1980.

[2] U.S. Department of Transportation, UMTA. Draft Environmental Impact Statement, Washington Metrorail System Branch/Rosecroft (F) Route. May 1979.

[3] Washington Metropolitan Area Transit Authority. Branch (F) Route Pre-Final Environmental Impact Study. September 1975.

[4] Washington Metropolitan Area Transit Authority. Environmental Impact Study Final Report, Branch (F) Route. August 1977.

FIGURE 1.2



STATUS OF SYSTEM, MAY 1981

GREEN LINE (F ROUTE)
ANACOSTIA SEGMENT

0 1 2 4 MILES

metro

alignments to either a Branch Avenue or a Rosecroft terminus in Prince George's County. Should such a future continuation not be constructed however, the Metrorail could continue to operate from the Anacostia Station facility as described in this document.

Chapter 2
ALTERNATIVES INCLUDING THE PROPOSED ACTION

The 1968 Adopted Regional System (ARS) includes an 8.6 mile route known as the Branch Route of the Green Line. This route extends from Gallery Place in the District of Columbia southeast to a terminus at Branch Avenue in Prince George's County, Maryland. Two segments remain unconstructed. The Anacostia Segment extends from the existing but inoperative Waterfront Station at 4th and M Streets, SW (Station Point 94+05) to the intersection of Good Hope Road and 17th Street, SE (Station Point 210+00) in Anacostia. The Branch Avenue Segment extends from Station Point 210+00 to the route terminus at Branch Avenue in Prince George's County (Station Point 450+00).

Since adoption of the 97.2-mile Regional Metro System in March 1968 numerous alternatives to the ARS Alignment have been studied for the Anacostia and Branch Avenue Segments of the Green Line corridor. Findings of these studies have supported a decision to realign the remaining unconstructed portions of the Green Line. This document addresses impacts of the proposed realignment for the Anacostia Segment; those of the realigned Branch Avenue Segment will be discussed in a separate document.

2.1.1 IDENTIFICATION OF ALTERNATIVES

A. ARS Alignment

The ARS Alignment of the Anacostia Segment is approximately 11,700 feet in length (Figure 2.1). Beginning outbound of the existing Waterfront Station at 4th and M Streets, SW, the alignment proceeds eastward in two single track earth tunnels to a point between 2nd and 3rd Streets, SE. It then enters a 1000 foot cut-and-cover section consisting of a crossover and the Navy Yard ARS Station.

The Navy Yard ARS Station is located beneath the intersection of 4th and M Streets, SE. It includes a 600 foot long center platform. A single entrance is located between 4th and 5th

Streets on the south side of M Street. The station is a walk-on station; there are no programmed vehicular parking or vehicular waiting areas.

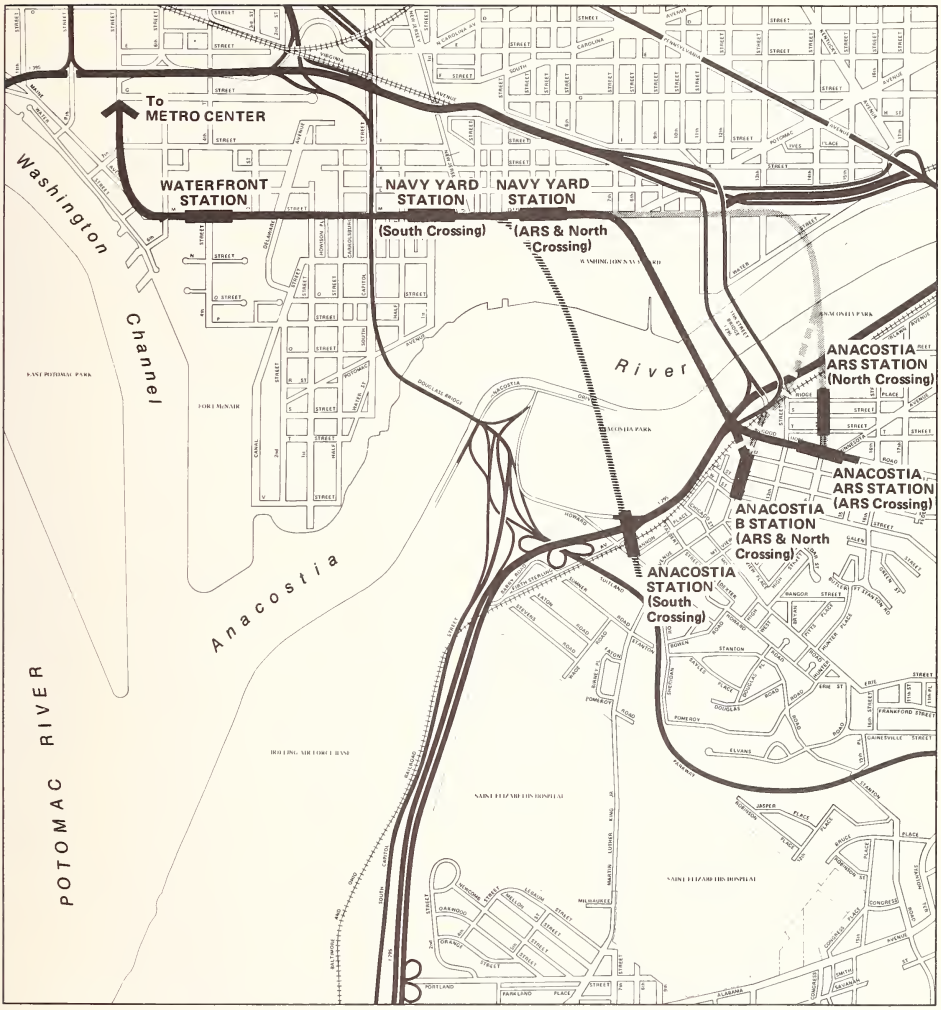
East of the Navy Yard Station the ARS Alignment remains subsurface using two single track earth tunnels. Curving southeast toward the Anacostia River it then passes beneath the Washington Navy Yard (including the Washington Navy Hard Historic District). Approximately 250 feet from the north seawall of the river the alignment re-enters a cut-and-cover double box transition section. From this section it crosses beneath the Anacostia River in sunken tubes for a distance of 740 feet, and then enters a similar transition section on the south side of the river.

The south side transition section is located approximately 300 feet south of the western span of the 11th Street Bridge and approximately 40 feet south of Anacostia Drive. Emerging from this section the ARS passes through Anacostia Park in cut and cover, and begins an easterly curve to line up with Good Hope Road. It then continues in two single track earth tunnels passing beneath I-295, the B&O Railroad, and Martin Luther King, Jr. Avenue. Approximately 200 feet east of the intersection of 13th Street and Good Hope Road, the alignment enters the Anacostia ARS Station.

The Anacostia ARS Station has a 600 foot platform and two station entrances. The first entrance is located on the east side of Good Hope Road at the corner of Minnesota Avenue and Good Hope Road; the second entrance is located to the east of Good Hope Road at the corner of 16th Street and Good Hope Road.

Two alternatives have been developed to accommodate the parking needs generated by the station's use as a terminal pending route continuation into Prince George's County. The first is an at-grade design which accommodates 2000 park-ride spaces, 250 kiss-ride spaces and commuter and feeder bus spaces. Vehicular access is provided from Minnesota Avenue (via Good Hope Road) and from I-295 and Suitland Parkway by a highway extension from the Parkway and Howard Road, SE. The access road goes through Anacostia Park, beneath the ramps of the 11th Street Bridge and into the station. The parking and passenger pick up/drop off area for the station covers the blocks bounded by Good Hope Road to the south, 17th Street to the east, a ramp to the 11th Street Bridge created by Martin Luther King, Jr. Avenue extended to the west, and an irregular line on the north generally bounded by the B&O Railroad, and Ridge Place to 16th Street, SE.

FIGURE 2.1



ARS CROSSING-
ARS ALIGNMENT

ARS CROSSING-
B ALIGNMENT

NORTH CROSSING-
B ALIGNMENT

NORTH CROSSING-
ARS ALIGNMENT

SOUTH CROSSING-
ST. ELIZABETHS ALIGNMENT

METRO STATION

SEGMENT ALTERNATIVE ALIGNMENTS

GREEN LINE (F ROUTE)
ANACOSTIA SEGMENT

0 600 1200 2400 FT

metro

The second alternative includes structural parking in a large 4-story parking garage. Access to this garage is identical to the surface lot access. The garage occupies the area bounded by Good Hope Road to the south, 13th Street extended to the west, S street to the north, and Minnesota Avenue to the east. In addition to this structure, additional kiss-ride spaces and bus stalls are provided by a small surface parking area. This facility occupies the southern half of the block bounded by Good Hope Road, Minnesota Avenue, T Street, and 17th Street.

B. Alternatives to the ARA Alignment

Preliminary environmental studies of the ARS Alignment have revealed several major impacts of the original adopted route for the Anacostia Segment.[1] Primary among these are:

1. The cost of mitigating vibration impacts in the Washington Navy Yard Historic District.

2. The disruptive impact of the Anacostia ARS Station on the Anacostia community.

3. Inadequate transit service to the transit dependent population in the Anacostia community.

In response to these findings WMATA has developed and studied numerous alternative alignments for the Green Line. Along the Anacostia Segment of the route four major alignment shifts have been considered (Figure 2.1):

1. ARS Crossing - B Alignment.
2. North Crossing - B Alignment.
3. North Crossing - ARS Alignment
4. South Crossing - St. Elizabeth Alignment.

The ARS Crossing - B Alignment coincides with the ARS Alignment from the Waterfront Station to just below I-295 on the south side of the Anacostia River. At that point the alignment turns southwesterly to proceed beneath Martin Luther King, Jr. Avenue until intersecting with V Street, where it enters the cut-and-cover Anacostia B. Station. The program

[1]Washington Metropolitan Area Transit Authority. Branch (F) Route Pre-Final Environmental Impact Study. September 1975.

for the station includes two surface parking areas. The smaller lot is located on the block bounded by Martin Luther King, Jr. Avenue, Chicago Street, Shannon Street, and W Street; it provides kiss-ride spaces, bus stalls, and spaces for bicycles and motorcycles. The larger lot is located in Anacostia Park with a pedestrian tunnel link to the station; it provides 2000 park-ride spaces, 250 kiss-ride spaces, and bus parking. Access to the station area is from Martin Luther King, Jr. Avenue and Howard Road, and from Suitland Parkway and I-295. An additional highway section is required to link Suitland Parkway and Howard Road with the station parking areas.

The North Crossing - B Alignment is identical to the ARS Alignment from the outbound end of the Waterfront Station through and including the Navy Yard ARS Station. East of the Navy Yard ARS Station the North Crossing Alignment diverges from the ARS and continues east beneath M Street in two single track earth tunnels. Approximately 700 feet from the end of M Street, it begins to surface as well as to curve south toward the Anacostia River. At the northern edge of Water Street and approximately 1500 feet east of 11th Street, it begins to cross the Anacostia River on an aerial structure. This bridge carries the alignment for 1100 feet, ending on the south side of the river approximately 1280 feet east of the eastern span of the 11th Street Bridge. From there it curves south, passing through Anacostia Park in retained fill and retained cut and beneath I-295 in cut and cover. Continuing in cut and cover it proceeds beneath the intersection of Good Hope Road and Martin Luther King, Jr. Avenue, and remaining skewed slightly west of Martin Luther King, Jr. Avenue, proceeds to the Anacostia B Station (as described above).

The North Crossing - ARS Alignment coincides with the North Crossing - B Alignment from the Waterfront Station to the northern edge of Water Street. While the river crossing location is essentially the same as for the North Crossing - B Alignment, there are some changes in the crossing design. The bridge carries the alignment for 1245 feet, ending approximately 1290 feet east of the eastern span of the 11th Street Bridge and 140 feet south of the river. From there it diverges significantly from the North Crossing - B Alignment, passing through Anacostia Park in retained fill and retained cut and beneath I-295 in cut and cover. South of I-295 it continues beneath 14th Street until entering the Anacostia ARS Station, located in the area beneath the intersections of 14th Street and Ridge Place and 14th Street and Good Hope Road. The parking facility alternatives for this Anacostia ARS Station are identical to those described for the Anacostia ARS Station (as described above).

The South Crossing - St. Elizabeths Alignment[1] coincides with the ARS Alignment from the Waterfront Station to approximately 60 feet east of the centerline of Half Street. At that point the alignment enters the cut-and-cover Navy Yard Station. This station extends eastward beneath the right-of-way of M Street for 800 feet. It is a walk-on station; there are no park-ride spaces, kiss-ride spaces, or bus stalls in the station program. Leaving the Navy Yard Station the alignment curves southeasterly beneath the Washington Navy Yard Annex (including the Washington Navy Yard Annex Historic District). It then passes under the Anacostia River for approximately 1500 feet in either earth tunnel or sunken tube construction. On the south side of the river it continues through Anacostia Park and land belonging to the Architect of the Capitol located beneath I-295.

Impacts of each of the four alternatives to the ARS Alignment have been studied in detail in environmental studies prepared by WMATA.[2,3] Findings of these studies indicate that potential disruptions to the Anacostia community and high construction costs do not support selection of any of the alternatives using the North Crossing or the ARS Crossing as the preferred alternative. Increased costs are associated with both mitigating vibration impacts in the Washington Navy Yard Historic District as well as with construction of either river crossing.

Instead the South Crossing Alignment has been found to serve the most highly transit dependent population, to have a high patronage estimate, and to result in the least displacement of structures and disruption to the community. In addition it can be constructed with the least cost. Consequently the South Crossing Alignment has been selected as the preferred alignment alternative for the Anacostia Segment of the Green Line continuation.

---

[1]To be referred to subsequently in this document as the South Crossing Alignment.

[2]Washington Metropolitan Area Transit Authority. Branch (F) Route Pre-Final Environmental Impact Study. September 1975.

[3]Washington Metropolitan Area Transit Authority. Environmental Impact Study Final Report, Branch F Route. August 1977.

2.1.2 SELECTION OF ALTERNATIVES

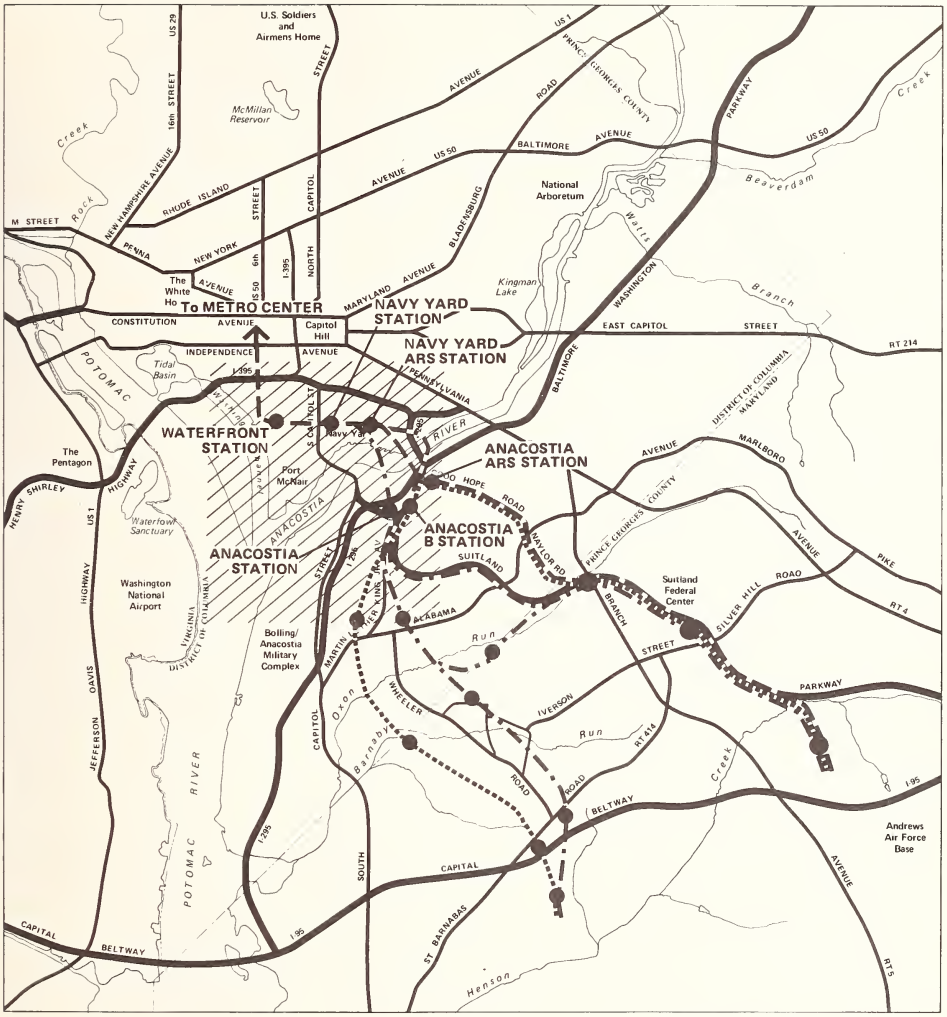
The preferred South Crossing Alignment for the Anacostia Segment has been chosen for study in this supplemental EIS. For evaluation purposes the impacts of the proposed alignment are compared to those of the No Build Alternative.

The following chronology of major events and decisions supports the selection of the South Crossing Alignment and the No Build Alternative for inclusion in this report.

March 1968	The WMATA Board adopted the seven-branch regional Metro system known as the ARS. The Anacostia Segment of the ARS proceeded east from the Waterfront Station beneath M Street, curved southeast beneath the Washington Navy Yard Historic District, the Anacostia River, and Good Hope Road to the Anacostia ARS Terminal Station between 13th and 14th Streets, SE.
December 1972	A consortium composed of the Anacostia Community Center, the Neighborhood Development Center #3, and the Southeast Neighborhood Development House, was formed to effect changes in alternative Green Line alignments.
February 1973	The D.C. and Prince George's County Governments, in conjunction with the WMATA staff, recommended that a study of alternatives to the ARS in the Green Line corridor should be studied.
August 1975	The "System-wide" EIS was issued by UMTA. This EIS addressed the impacts of the ARS, which included the ARS Alignment for the Anacostia Segment and addressed the No Build Alternative.
September 1975	The first environmental impact study for the Green Line was prepared by WMATA. This study evaluated the impacts of the ARS and alternative B Alignments in the Green Line corridor.

September 1975	Following instructions from Congress, UMTA requested WMATA to undertake an alternatives analysis of certain unbuilt segments of the Metrorail System as a condition of future federal support of system construction. The Green Line segment of the system included that portion extending from beyond the Anacostia Station to the route terminus in Prince George's County.
January 1976	The WMATA staff recommended to the WMATA Board that alternatives to the ARS Alignment for Design Section F3 be considered. This recommendation was based on anticipated cost overruns and potential adverse effects on the Washington Navy Yard Historic District.
December 1976	The D.C. Planning staff recommended that an alternative southern route be investigated for the Anacostia River crossing.
December 1976	The Anacostia Neighborhood Museum recommended that an alternative southern route be investigated for the Anacostia River crossing.
December 1976	The Department of the Navy indicated its preference for a Navy Yard Station located on M Street between 4th and 5th Streets, SE, and either the ARS or a northern crossing of the Anacostia River.
December 1976	The National Park Service indicated its preference for a southern crossing of the Anacostia River, providing that the I-295 Station terminal parking facilities in Anacostia Park would be temporary and providing that existing park facilities affected by Metro would be relocated.
January 1977	The WMATA Board resolved to study a new set of alternatives in an attempt to locate an alternative river crossing as well as an alignment through the Anacostia community which would provide better service to transit dependents with less disruption to the area. More specifically the WMATA Board directed that general plans be developed for a southern river crossing.

FIGURE 2.2



ARS ALIGNMENT

1976 ENVIRONMENTAL IMPACT STUDY (WMATA)

1977 ENVIRONMENTAL IMPACT STUDT (WMATA)

METRO STATION LOCATION

FRAME OF REFERENCE

ROUTE ALTERNATIVE ALIGNMENTS

GREEN LINE (F ROUTE)
ANACOSTIA SEGMENT

0 2000 4000 8000 FT

metro

February 1977	The Southeast Metro Committee expressed full support for a southern crossing.
August 1977	The second environmental impact study for the Green Line was completed by WMATA. This study evaluated several alignments in the Green Line corridor, assuming three alternative river crossings - the ARS Crossing, the South Crossing, and the North Crossing.
December 1977	WMATA held a public hearing on the District of Columbia portion of the Green Line. Testimony of witnesses indicated a preference for the South Crossing - St. Elizabeths Alignment for the Anacostia Segment.
May 1978	The completed Metrorail Alternatives Analysis reconfirmed the need to finish the entire Metrorail System. The analysis recommended that the South Crossing - St. Elizabeths Alignment be constructed as the Anacostia Segment of the Green Line.
June 1978	The Joint Policy Steering Committee adopted a resolution recommending the preferred regional system for unbuilt portions of the Metrorail System. The Committee further recommended construction of the South Crossing - St. Elizabeths Alignment as the Anacostia Segment of the Green Line.
June 1978	The WMATA Board resolved that the Anacostia Segment of the Green Line should follow the South Crossing - St. Elizabeths Alignment.
June 1978	WMATA held a general plan public hearing on the Navy Yard portion of the proposed Metrorail Green Line continuation from Waterfront Station.
July 1978	WMATA held a general plan public hearing on the portion of the proposed Green Line continuation, including Anacostia Station and commuter parking facilities. WMATA agreed to coordinate further with the D.C. Department of Transportation and the National Park Service on the planning and design of the Anacostia Station access and parking systems.

	The NCPC gave its approval of the alignment and Anacostia Station location.
January 1979	The Covenant Baptist Church on South Capitol Street held a Public Forum to address the proposed parking facilities at Anacostia Station. The Advisory Neighborhood Commissioners were in general agreement on the proposed parking garage and temporary surface parking lots.
May 1979	WMATA completed the Draft EIS for the Branch-Rosecroft (F) Route, which included analysis of alternatives for the Anacostia Segment as well as those for the construction of the Green Line to its terminus in Prince George's County, Maryland. The preferred alternative for the Anacostia Segment was identified in the Draft EIS as the South Crossing-St. Elizabeths Alignment.
June 1980	The WMATA Board approved the financial plan for completion of the 101-mile Metrorail System, including the South Crossing - St. Elizabeths Alignment for Design Sections F3, F4, and F5.

2.2 DESCRIPTION OF ALTERNATIVES

2.2.1 SOUTH CROSSING ALTERNATIVE

A. Alignment and Station Description

The South Crossing Alternative begins at the east end of the existing but presently inoperative Waterfront Station at 4th and M Streets, SW (Station Point 94+05). To permit automatic train operation utilizing Waterfront as a through station, a vent shaft and emergency exit will be constructed approximately 100 feet from the east edge of the station platform.

Moving east from Waterfront Station the alignment continues in two single track earth tunnels for approximately 2490 feet. A fan shaft is located on the south side of M Street, 100 feet east of 1st Street, SW.

Approximately 60 feet east of the centerline of Half Street, the alignment enters the Navy Yard Station. The subsurface Navy Yard Station, to be built using cut-and-cover construction, extends beneath the M Street right-of-way for 800 feet to a point approximately 80 feet west of the centerline of New Jersey Avenue. The station consists of a center platform 600 feet in length. It is a walk-on station; no park-ride, kiss-ride, or bus spaces are programmed for the facility.

Two station entrances are proposed for walk-on and bus transfer patrons. The west entrance is located directly adjacent to and east of Half Street on the south side of M Street; the east entrance is located on M Street to the west of New Jersey Avenue.

Proceeding east from the Navy Yard Station, the South Crossing Alignment begins a southeasterly curve toward the Anacostia River, passing beneath the Washington Navy Yard Annex. Earth tunnel construction extends for 2100 feet from the station to the north seawall of the Anacostia River.[1] From the seawall the alignment continues southeast, crossing beneath the river. Two options are being considered for construction of the 1500 foot Anacostia River crossing, including sunken tube and earth tunnel (see D. Construction Schedule and Methods).

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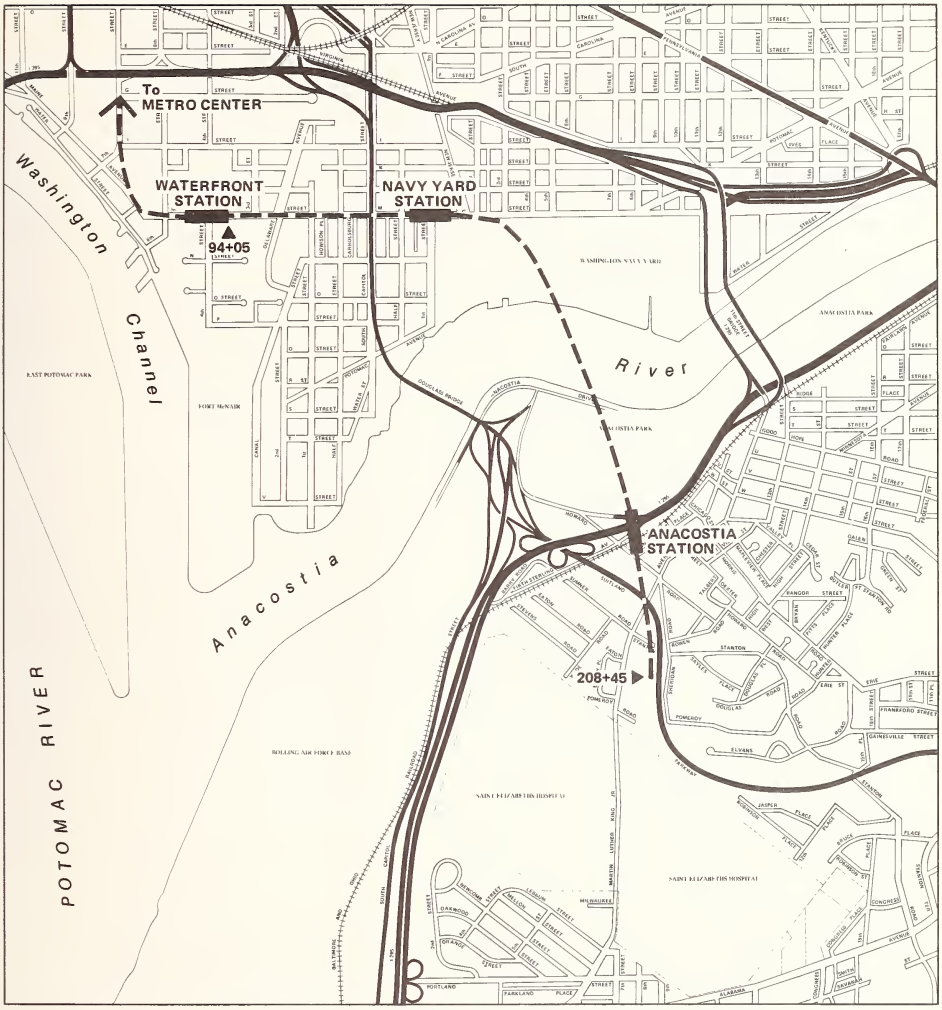
[1] A 450' cut-and-cover transition section will be required north of the River if sunken tube construction is used for the crossing.

FIGURE 2.3



SOUTH CROSSING ALIGNMENT

METRO STATION

STATION POINT

SOUTH CROSSING ALIGNMENT

GREEN LINE (F ROUTE) ANACOSTIA SEGMENT

0 600 1200 2400 FT

metro

At the south seawall of the Anacostia River the alignment enters either a cut-and-cover section or continues in earth tunnel.[1] After passing beneath Anacostia Park and land belonging to the Architect of the Capitol, it enters the Anacostia Station.

The Anacostia Station starts approximately 100 feet north of the centerline of the I-295 ramp to Howard Road and proceeds in cut-and-cover construction beneath I-295, Howard Road, and the Baltimore and Ohio (B&O) Railroad, to a point 170 feet south of the intersection of Howard Road and the B&O line.

Two areas are proposed for access and egress to the Anacostia Station. Local bus, kiss-ride, and walk-on metro patrons are served by a small parking area located on the block bounded by Howard Road, Firth Sterling Avenue, Suitland Parkway, and Martin Luther King, Jr. Avenue. This area includes 26 kiss-ride spaces, 7 bus bays, and 10 motorcycle spaces.[2] Automobile access is provided directly from Martin Luther King, Jr. Avenue and Howard Road. Bus access includes direct ingress from Martin Luther King, Jr. Avenue southbound; northbound bus ingress occurs from Sheridan Road and Martin Luther King, Jr. Avenue via a left turn immediately west of the United House of Prayer on the west side of the site; it then passes through the Martin Luther King, Jr. Avenue and Howard-Sheridan Roads intersection.

Regional facilities are located in Anacostia Park between I-295 and the Anacostia River. A structural parking facility provides parking for approximately 700 cars. An adjacent surface lot provides long-term parking for an additional 400 cars, short-term parking for 200 cars, 50 kiss-ride spaces, and bays for 19 buses.[2] Vehicular ingress occurs from Suitland Parkway and I-295 using the existing ramp to Anacostia Drive, and from Good Hope Road. Egress is provided from the existing ramp following Anacostia Drive to South Capitol Street and from Good Hope Road.

Outbound of the Anacostia Station the alignment continues for approximately 1750 feet in cut-and-cover construction to a portal approximately 1200 feet southeast of the intersection of Martin Luther King, Jr. Avenue and Suitland Parkway (Station Point 208+45). This section will include a 250 foot double crossover and adequate track for storage of two eight-car trains. The portal at Station Point 208+45 will be constructed as part of the proposed action but will be covered until such time as the Green Line is extended into Prince George's County.

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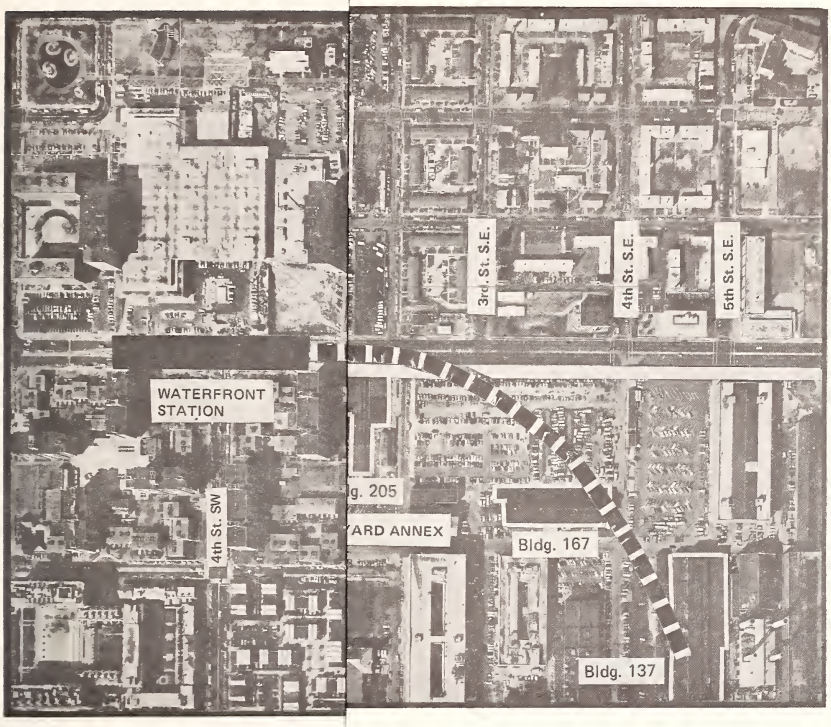
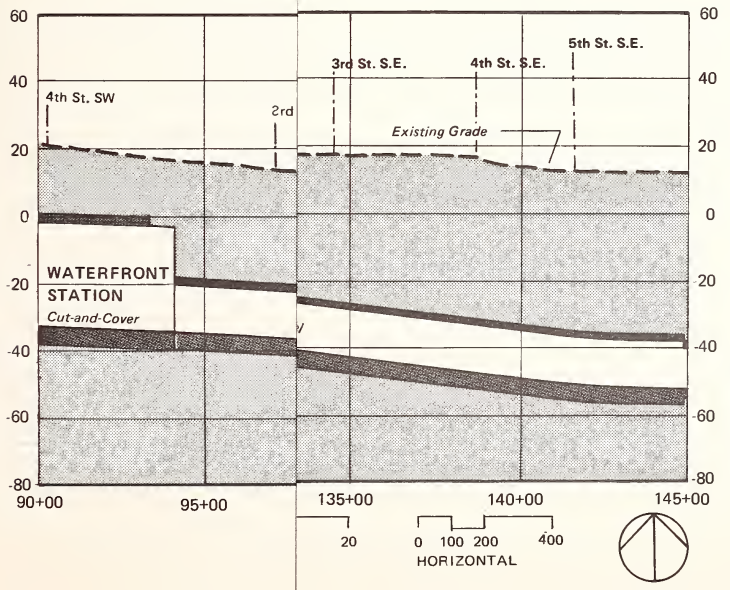
[1]Earth tunnel construction if an earth tunnel crossing is used; cut-and-cover construction if a sunken tube crossing is used.

[2]Specific parking program subject to modification during final design.

Figure 2.4a ALIGNMENT SHEET NO. 1





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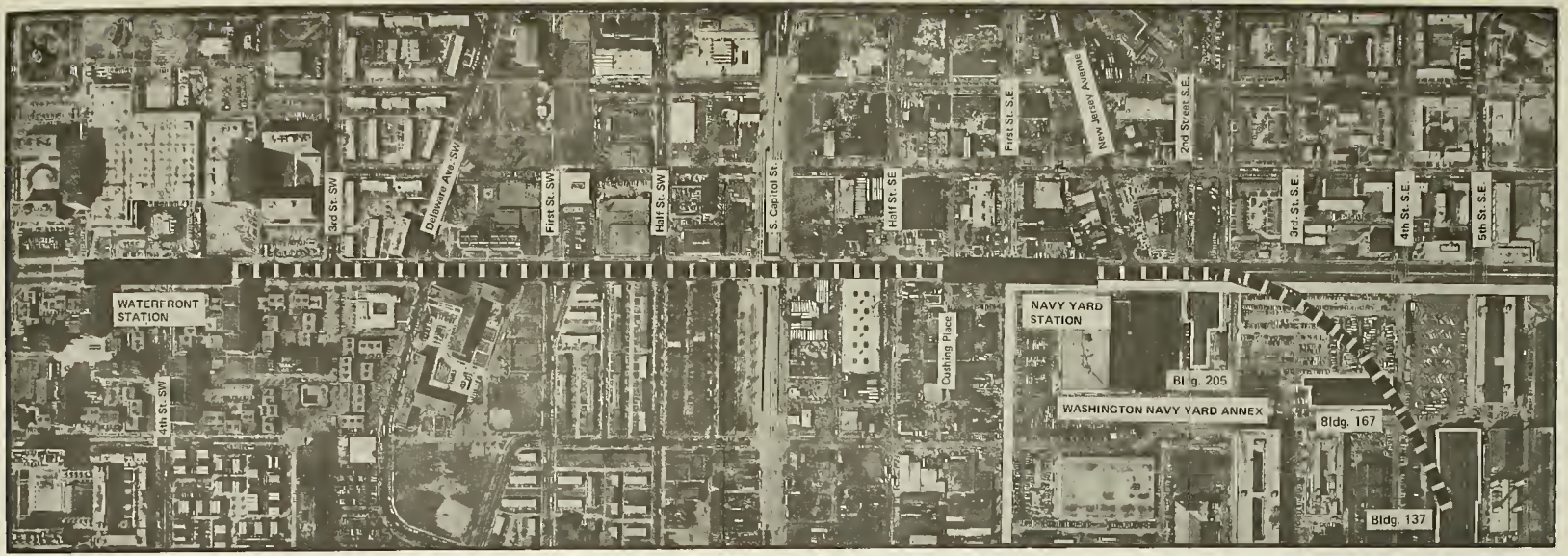
used: cut-and-cover construction if a sunken tube crossing

Figure 2.4a ALIGNMENT SHEET NO. 1



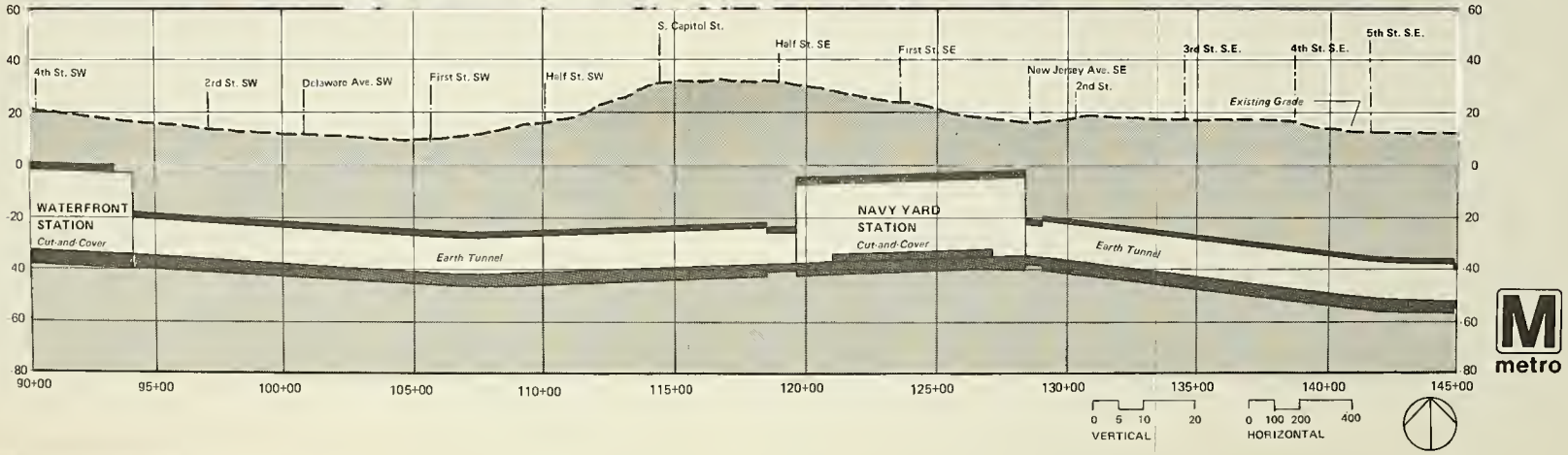


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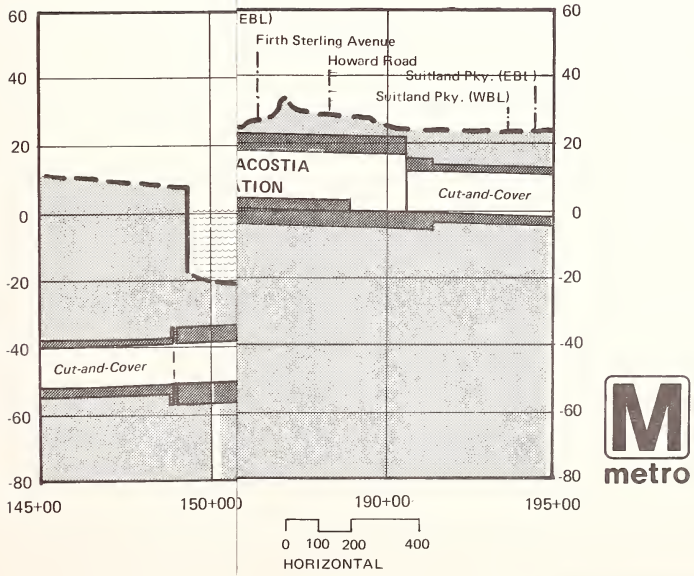
Figure 2.4b ALIGNMENT SHEET NO. 2

Figure 2.4b ALIGNMENT SHEET NO. 2

Figure 2.4b (con't) ALIGNMENT SHEET NO. 2



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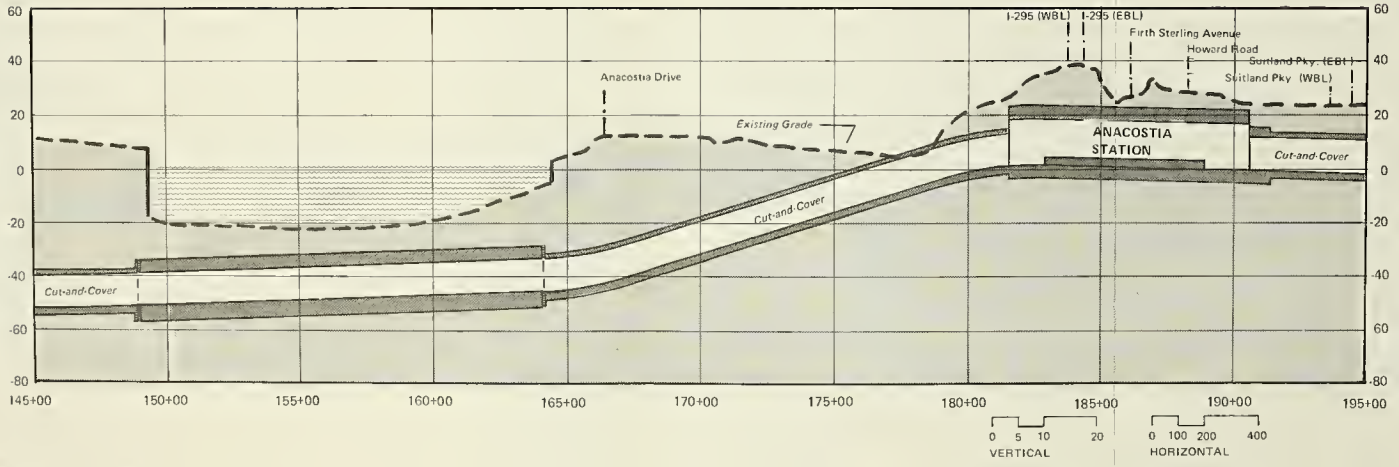


Figure 2.4c ALIGNMENT SHEET NO. 3

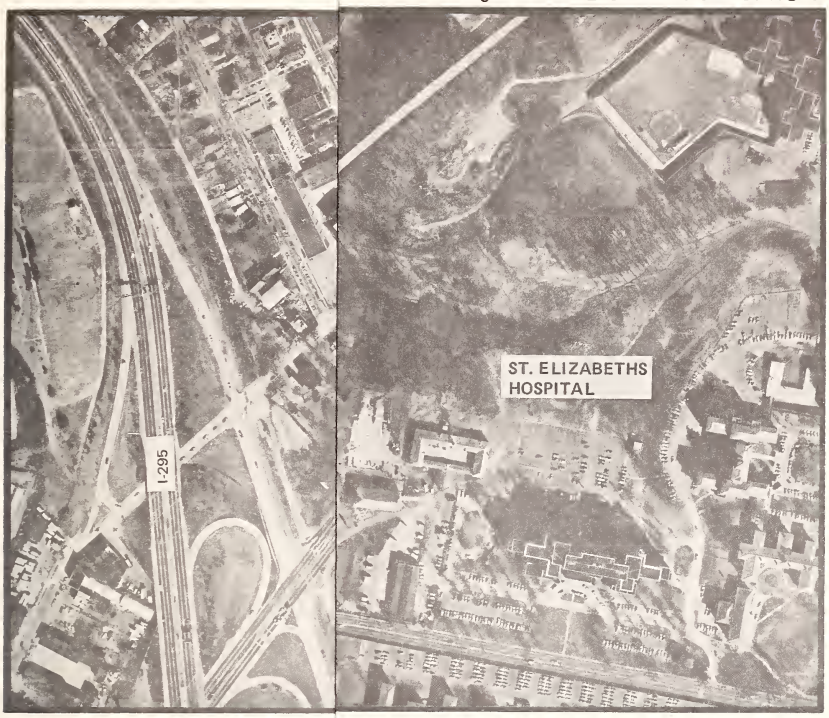
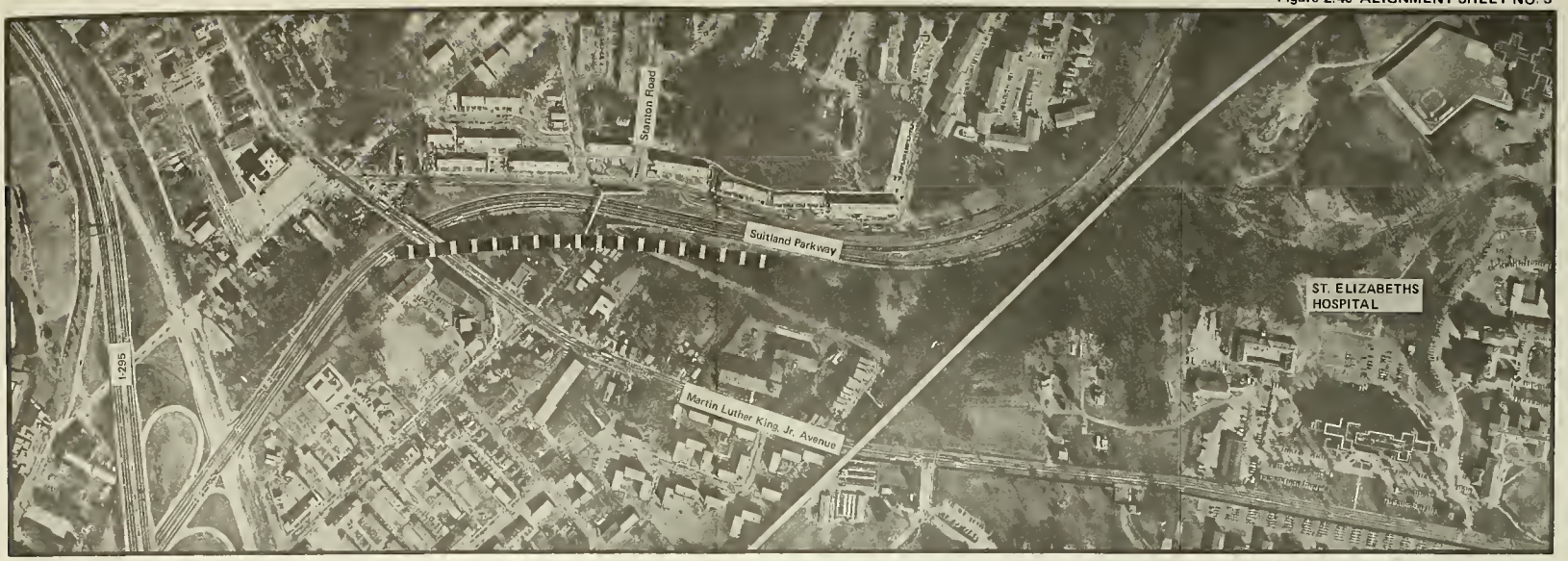
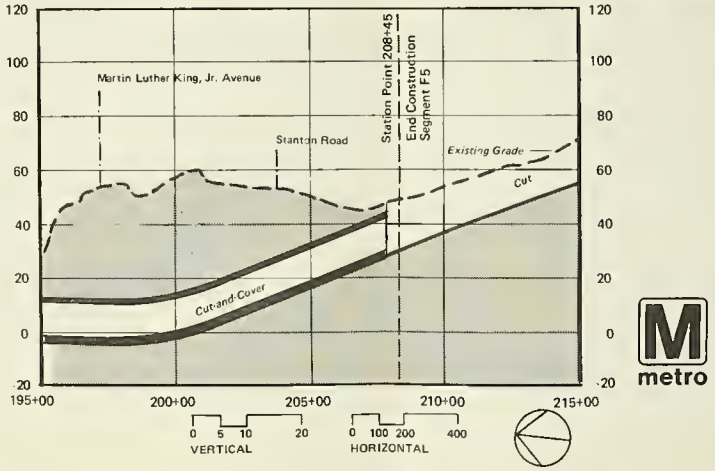


Figure 2.4c ALIGNMENT SHEET NO. 3





metro

B. Operation

Routing

A preliminary assessment of the Green Line between its northern terminus at Greenbelt and a southern terminus at Anacostia indicates that trains will operate in a manner compatible with service on other operating metro lines. Green Line operations will serve 16 passenger stations with normal rush-hour headways of six minutes and off-peak headways of 12 minutes.

In order to expedite morning start-up operations three trains will be stored on tail tracks outbound of the double crossover just beyond the Anacostia Station. Two trains will be stored on the inbound track and one train will be stored on the outbound track. These three trains will be dispatched from the Anacostia Station at 12-minute intervals with the fourth and subsequent trains being those which have completed revenue runs from the Greenbelt Yard and turned-back at Anacostia.

Turn-back maneuvers will be completed by outbound trains stopping at Anacostia Station to discharge passengers. Trains will cross from the outbound to the inbound track through the double crossover, then change control to the opposite end of the train, and return to the station platform on the inbound track to load passengers for the next inbound dispatch.

In addition to providing temporary car storage and crossing over, the tail tracks will provide for safe braking distance beyond the station. Criteria dictate that sufficient tail track be provided beyond a terminal station to permit the stopping of a train which has failed to respond to automatic station stop.

Although light car maintenance and daily testing could be performed in the tail track area, cars requiring exterior washing and repairs will be routed to one of the metro maintenance yards where facilities exist to perform those functions.

Hours of Operation

Hours of operation and frequency of service on the Green Line will be the same as those for the entire Metro system. Metro service currently operates on all days of the week. Metro operates between the hours of 6:00 AM and midnight on weekdays, between the hours of 8 AM and midnight on Saturday, and between the hours of 8:00 AM and 6:00 PM on Sunday. On holidays, Metro operates on either Saturday or Sunday schedules.

TABLE 2.1: SOUTH CROSSING PROJECTED RIDERSHIP (Peak Hour)

Metro Station	1986	1990
Waterfront Station[1]	827	2,481
Navy Yard and Anacostia Stations[2]	9340	12,621

[1]WMATA. "Waterfront Station Passenger and Revenue Estimates." May 1977.
[2]WMATA. "Analysis of Vehicle Mile Forecasts for the 'F' Route between Waterfront Station and Anacostia Station." February 1981.

Ridership

Projected transit ridership forecasts indicate total peak hour ridership for the first and fifth year of Metro operation on the Anacostia Segment (Table 2.1). Forecasts indicate that at commencement of Metro service to Anacostia in 1986, the total peak hour ridership will be approximately 10,170. By 1990 a 67 percent increase in ridership is anticipated, raising the total peak hour metro trips to approximately 15,100.

Interface with Other Modes

Prior to the opening of the Green Line, the WMATA staff, in coordination with local jurisdicational staffs, will prepare a plan and program for the interface of Metrorail and Metrobus service. The plan will be designed to maximize ridership through use of the combined Metrorail and Metrobus Systems.

In considering route changes, special emphasis will be given to:

1. Eliminating duplicate services where Metrorail would provide a speedier, more dependable, and more attractive service.

2. Providing bus-rail connections that would offer convenient transfer points.

3. Continuation of Metrobus routes where the rail system cannot adequately serve major destinations directly.

4. Provision for more frequent service to areas now served as well as extensions into communities where bus service is either non-existent or presently inadequate.

5. Coordination of Metrobus and Metrorail services so as to complement other modes of transportation being provided by private carriers, local jurisdictions, state, federal and other agencies.

For planning purposes WMATA has preliminarily identified bus routes serving the study area south of the Anacostia River assuming operation of the Anacostia Station as a terminal facility. Fourteen lines will provide bus service from neighborhoods in Southeast Washington south of the Anacostia River to the Anacostia Station. Many will be rerouted lines now using the Douglass, 11th Street, and Sousa Bridges to provide access to downtown Washington.

Fares

Fares on the Green Line will be established in accordance with fares on other Metrorail routes. Metro fares are currently based upon peak and off-peak periods, with special provisions made for senior citizens and handicapped persons.

Peak periods of Metro operation occur between 6:00 AM and 9:30 AM, and between 3:00 PM and 6:30 PM, Monday through Friday, excluding national holidays. Peak period fares are based upon the distance traveled, defined as a "composite" distance representing the average of the straight-line distance and the actual track distance. Fares are determined through the following fare structure:

1. 60 cents for the first three composite miles of travel, plus 12.5 cents for each additional mile (all fares rounded to the nearest 5 cents).

2. All fares to and from stations in the District of Columbia which are east of the Anacostia River will be adjusted downward by 10 cents (the Government of the District of Columbia and Prince George's County will reimburse the Authority for the revenue loss associated with the program).

3. Rail fares are equalized between the Rosslyn and Pentagon Stations and adjusted to and from Pentagon City, Crystal City, and National Airport Stations accordingly. This will continue until such time that service is provided via the south river crossing (Yellow Line).

4. There is a minimum peak period fare of 60 cents for trips between Virginia and the District of Columbia.

During all hours other than peak, off-peak fares are in effect, including all day on Saturday and Sunday. All Metrorail trips during the off-peak period are purchased at a flat rate of 60 cents.

During all times Metro fares for senior citizens and the handicapped are 20 cents for trips within the District of Columbia, 30 cents for trips within Maryland and Virginia, and 50 cents for interstate trips.

Fare Collection

Metro fares are collected through a mechanical system requiring farecards for entry to and exit from all Metro stations. Fares are determined from large Metro maps and fare information charts. Magnetically encoded farecards are purchased from farecard vending machines. Coins or one or five dollar bills are inserted into the appropriate slot, the value of the desired farecard set, and the card and change ejected. Farecard values can range from $.40 to $20.00.

After purchasing the farecard the passenger proceeds to the faregate and inserts the farecard. The point of entry is magnetically encoded on the farecard, the gate opens, and the card is returned to the rider.

After arriving at the Metro destination, the passenger proceeds to the exit faregate and inserts the farecard. The magnetic strip on the card is read to determine the entry point and to compute the price of the trip. If the trip cost is equal to or less than the value of the farecard, the exit gate opens. If the cost of the trip exceeds the value of the farecard, the passenger is directed to an addfare machine where the value of the card can be increased to permit exit. When the value remaining on a farecard is inadequate for an additional Metrotrip, the value can be increased on the farecard machine.

Safety and Security

Since the Metro system opened in March 1976 there has not been a single passenger injury caused by a subway train accident (collision, derailment, split/open switch, third rail or other traffic accident). The main cause of minor Metro-related passenger injuries are slips and falls on escalators, on board, and while boarding and alighting trains.

Metro's status as one of the safest subway systems in the country has been confirmed by a Rail Safety Report prepared by the U.S. Department of Transportation for 1978. This report indicated Metro's injury rate for passengers on board trains as .1072 per million passengers as compared with the average rate of .6235 per million passengers for the nation's 10 transit properties. Similarly the accident rate in Metro stations was .4073 per million passengers compared with 1.299 per million for the entire transit industry.

Safety measures during train operation include station platform signals indicating approaching trains, emergency intercom systems, and an automatic train control system with capacity for manual operation during emergencies. Along edges of all station platforms a row of footlights, embedded in a foot-wide strip of granite, pulsates to signal the imminent arrival of all trains. To reduce accidents on escalators, where most passenger injuries have occurred, Metro has added a yellow strip along the metal stair-like edge. In addition signs have been placed in stations telling passengers to step off escalators properly and to stay away from the side of escalators where clothing can be caught.

An electrically supervised, selective coded, closed circuit burglar/fire alarm system is provided at all points in substations, and train control and communication buildings requiring protection against unauthorized entry. Stations and substations are monitored by a closed circuit television surveillance system viewed from Central Control. Each metro car is also equipped with an emergency intercom system to provide communication with the train operator.

A metro security force, in coordination with appropriate law enforcement agencies and organizations, is responsible for providing suitable protection and security for the patrons, employees, properties, equipment, and revenue of the transit system. Memoranda of Understanding with each local police department along the alignment have been developed. In the agreements, the Metro Transit Police have assumed primary enforcement responsibility on the trains, tunnels, and fund-generating WMATA-owned property, while local police have assumed responsibility for stations and Metro parking lots.

Trains are operated by an Automatic Train Control (ATC) system comprised of three subsystems. An Automatic Train Supervision (ATS) system is programmed to "operate" trains on a fixed, predetermined schedule. ATS commands are monitored by an Automatic Train Protection (ATP) system. ATS and ATP operate simultaneously and independently and transmit orders to the Automatic Train Operation (ATO) system. In the event of ATC failure, trains are operated manually and

in accordance with visual speed indications subject to over-speed controls. When both the ATP and ATO systems are ineffective, trains operate at speeds of less than 15 mph, under the direction of the Train Control Supervisor.

In the event of emergency, all Metro alignments are equipped with emergency systems. Metro is equipped with emergency lighting and rechargeable emergency batteries for all stations and tunnel sections, designed to provide power for the full emergency lighting load for a continuous period of three hours. At emergency stations and other track locations, a party-line, common battery, emergency telephone system provides communication with Metro Central Control. The metro fire protection system consists of a closed circuit signalling system with ionization and temperature sensors at all passenger stations, substations, public buildings, yards, shops, and other readily accessible locations. Alarms are provided in station kiosks and at Central Control. Fire fighting equipment is located in all stations. Emergency access or egress from subsurface operation sections is provided from tunnel safety walks to either stations or access shafts at distances such that no point in the subway system is over 1,250 feet from a point of access or egress.

To prevent accidents caused by unauthorized access to the Metro alignment and trains outside of station areas, WMATA has placed security fencing along all above-ground portions of metro rights-of-way. The basic proposal for fencing is a chain link type fence, 6' high with 1' of barbed wire strands above. The fence is located just within the WMATA property line. It is required for two major security reasons: (1) the trains are powered by D.C. electric current supplied at grade level, and (2) the trains travel at a high rate of speed - up to 75 mph. In addition to fencing the right-of-way, WMATA is now adding fencing to existing parking lots on an individual basis to provide more secure all day parking facilities.

The following criteria has been developed for the selection of fence material:

1. Maximum protection for all concerned.
2. As unobtrusive as possible.
3. Structurally sound under unlimited site configurations (slopes, level, various soil types, vegetation, etc.).
4. Economy in terms of original cost and maintenance.
5. Ease of construction and reconstruction.
6. Durability.

TABLE 2.2: SOUTH CROSSING SCHEDULE (June 1980 Funding Plan)

Design Section	Design Start	Design Duration	Construction Start	Construction Duration	Operation Start
F-3	October 80	13 months	May 82	31 months	Mid 86
F-4	September 79	21 months	November 81	37 months	Mid 86
F-5	March 80	16 months	June 82	16 months	Mid 86

C. Capital Costs

Cost required to make the Green Line operative along the Anacostia Segment is projected at $431.9 million. This includes $25.1 in acquisition costs, $299.6 million in construction and staging costs, and $107.2 million in burdens. This assumes:

1. That attendent construction burdens, including administration, design, supervision, inspection and insurance, generally increase the cost of construction by 33 percent.

2. That Metro will operate on twelve minute headways on the Green Line.

3. That the two river crossing construction alternatives are competitive in terms of cost.

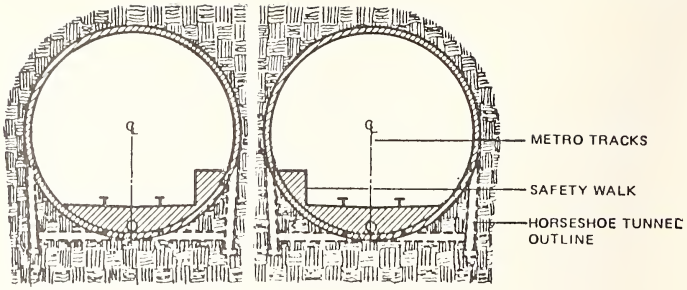
This estimate is consistent with the June 1980 Funding Plan which calls for a specific funding schedule involving the participation of Federal and local governments. This funding scheme is also compatible with a construction schedule which is several years in duration, having an estimated midpoint of February 1984.

D. Construction Schedule and Methods

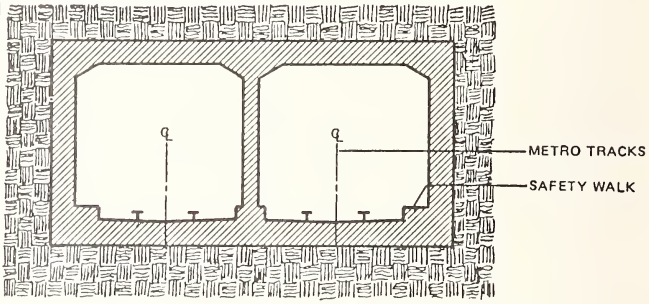
Construction Schedule

According to WMATA's June 1980 Funding Plan, construction of the Green Line Anacostia Segment is programmed to begin in late 1981 (Table 2.2). Construction will start initially on the Anacostia River crossing segment in November 1981, followed by commencement of work north of the river in May 1982 and south of the river in June 1982.

EARTH TUNNEL SECTION



CUT-AND-COVER SECTION



Red Line, outbound of the Dupont Circle Station, during construction through the Rock Creek Park west of Connecticut Avenue. A cut-and-cover section will connect with the twin earth tunnels in background, leading to the Woodley Park-Zoo Station
(WMATA photo by Phil Portlock)

SUBSURFACE CONSTRUCTION

GREEN LINE (F ROUTE)
ANACOSTIA SEGMENT

metro

Construction will extend through the beginning of 1986. Metro operation will commence following completion of the Anacostia Station in mid-1986.

Construction Methods

The Anacostia Segment of the Green Line will be constructed completely below grade. The subsurface alignment will be in circular earth tunnel and cut-and-cover sections (Figure 2.6). Allowances have been calculated to provide an adequate clearance envelope around the dynamic outline of the vehicle.

Earth tunnel sections will be generally excavated by mechanical tunnel boring equipment. Temporary supports may be provided using steel ribs and wood lagging. Permanent support is generally reinforced concrete; steel plate liner may be used occasionally. The tunnels are finished with smooth concrete, except where cast iron or steel plate liners are used.

Cut-and-cover sections are constructed by cutting or digging a trench to the proper depth, constructing two single boxes or a double box and backfilling the trench.

Two construction methods are under consideration for construction of the Anacostia River crossing:

1. Sunken Tube - Sunken tube construction utilizes concrete, steel-lined units approximately 300 to 350 feet in length which are placed beneath the river bottom. A trench is dredged across the river bottom (using clam shell dredging technique), the foundation is prepared and the tube units are submerged and locked together and to the foundation. They are then covered with suitable material to the elevation of the original channel bottom.

2. Earth Tunnel - An earth tunnel is mined with rotating cutters and conventional tunneling equipment. Material is removed from the excavation through a pipeline to the ground surface, filtered and disposed of. Water is kept from the excavation through compressed air or a slurry-face shield, allowing for construction of the steel or concrete liner.

2.2.2 SUMMARY OF IMPACTS - SOUTH CROSSING ALTERNATIVE

A detailed discussion of probable environmental impacts of the South Crossing Alternative is included in Chapters 4 and 5. The following is a summary of those impacts:

A. Short-Term Impacts

Physiography/Geology/Soil Impacts

1. Generation of 600,000 cubic yards of spoil from alignment and station construction, excluding the Anacostia River Crossing.

2. Generation of an additional 150,000 cubic yards of spoil (assuming earth tunnel construction of the river crossing) or an additional 370,000 cubic yards of spoil (assuming sunken tube construction of the river crossing).

3. Potential erosion and sedimentation from handling, storage and transport of spoil.

Hydrology Impacts

1. Potential erosion and sedimentation from handling, storage and transport of spoil.

2. Water quality impacts on the Anacostia River in the area of dredging and dewatering effluent discharge (assuming sunken tube river crossing construction).

Biotic Disturbance

1. Disturbance to eight acres of lawn-like vegetation.

2. Destruction of benthic communities in the Anacostia River in the dredge area (assuming sunken tube river crossing construction).

Traffic Congestion

1. Reduced roadway capacities in the vicinity of the Navy Yard Station and the Anacostia Station construction sites.

2. Increased traffic congestion along routes to be used by spoil disposal vehicles.

Air Quality Impacts

1. Local increases in surface emissions resulting from below-grade construction of 11,450 feet of alignment and handling of 750,000 to 970,000 cubic yards of spoil.

2. Local increases in airborne pollutants resulting from traffic congestion around the Navy Yard Station and Anacostia Station construction sites.

3. Local increases in airborne pollutants from construction and disposal vehicles.

4. Local increases in particulates and fugitive dust resulting from building demolitions.

Noise and Vibration Impacts

1. Local increases in noise resulting from construction equipment, construction vehicles, and increased traffic congestion.

Parklands

1. Disruption of approximately 31.1 acres of land owned by the National Park Service, including 4.0 acres within Anacostia Park and 27.1 acres within adjacent NPS properties (assuming earth tunnel river crossing construction); disruption of approximately 42.7 acres of land owned by the National Park Service, including 4.0 acres within Anacostia Park and 38.7 acres within adjacent NPS properties (assuming sunken tube river crossing construction).

2. Disturbance of approximately 3.5 acres of Suitland Parkway during construction of 1240 linear feet of cut-and-cover alignment.

B. Long-Term Impacts

Displacements

1. Displacement of 18 occupied residential structures (24 residential units), 8 occupied commercial structures (9 businesses), two small office structures, and one fraternal lodge (private displacements).

2. Displacement of 12 unoccupied residential structures (12 residential units), and one unoccupied commercial structure (one business)(private displacements).

3. Displacement of three buildings in the Washington Navy Yard Annex, greenhouses belonging to the Architect of the Capitol, a helicopter hanger belonging to the U.S. Defense Intelligence School, and the Birney Elementary School Annex (public displacements).

Hydrologic Impacts

1. "Encroachment," but no "significant encroachment" along 2600 feet of the Anacostia River floodplain (as defined by DOT Order 5650.2 in response to E.O. 11988).

Transportation Impacts

1. An additional 10,882,000 annual transit trips (1986) in the Green Line corridor (when compared to the No Build Alternative).

2. Peak hour (1990) metro ridership of 14,102 trips from the Waterfront, Navy Yard and Anacostia Stations.

3. A reduction of 41,063,100 annual vehicle miles (1986) travelled in the Green Line corridor (when compared to the No Build Alternative).

4. A reduction of 2590 automobiles and 97 buses crossing the Anacostia River bridges during the peak hour (1986)(when compared to the No Build Alternative).

5. Traffic volumes (1986) in the Green Line corridor consistent with local and regional transportation plans and programming for roadway improvements.

6. Walk-to metro service for a minimum of 10,700 transit dependents.

7. Increased traffic volumes on roadways in the vicinity of the Anacostia Station.

Energy Consumption

1. Annual electrical energy consumption for operation of 37.4 million kwh.

2. A reduction of 1,079,854 gallons in annual petroleum fuel consumption (when compared to the No Build Alternative).

Biotic Disturbance

1. Loss of small, highly stressed street trees along 1000 feet of M Street.

2. Loss of several small wooded areas totalling approximately one acre (south of the Anacostia River).

Noise and Vibration Impacts

1. Reduced traffic noise levels (1986), particularly during the peak hour, in the Green Line corridor (when compared to the No Build Alternative).

Air Quality Impacts

1. An annual reduction of 150,000 pounds of hydrocarbons, 1,735,000 pounds of carbon monoxide, and 56,000 pounds of nitrogen oxide resulting from combustion of petroleum fuels (when compared to the No Build Alternative).

Secondary Development

1. Increased development potential in the vicinity of the Waterfront Station, Navy Yard Station and Anacostia Station.

2. Metro access to the South Capitol Gateway Project, the Southeast Federal Center, and the Washington Navy Yard.

3. Consitency with land use plans for Southeast Washington.

Parklands

1. Use of approximately 29.3 acres of land owned by the National Park Service adjacent to Anacostia Park, including 4.2 acres from the District of Columbia Lanham Tree Nursery, 12.1 acres from the U.S. Botanic Garden, and 13.0 acres from the U.S. Defense Intelligence School.

2. Enhancement of existing landscaping, grades, and visual setting in portions of Anacostia Park near the Douglass Bridge; addition of approximately 26.3 acres of active parkland to Anacostia Park.

3. Use of approximately 3400 square feet of land in Suitland Parkway for a fan shaft and portal.

Historic and Archeological Sites

1. Demolition of Buildings 137 and 167 in the Washington Navy Yard Annex, both considered eligible for the National Register of Historic Places.

2. Destruction of the National Register eligible Howard Road Historic District.

2.2.3 NO BUILD ALTERNATIVE

The No Build Alternative assumes that metro service will not be extended southbound on the Green Line beyond the existing Waterfront Station at 4th and M Streets, SW. It also assumes that metro service will commence on the Green Line between the existing but inoperative Waterfront Station and the route's northern terminus at Greenbelt in Prince George's County. Such operation assumes that all portions of the Metro System will be constructed, excluding segments of the Green Line south of Waterfront Station (see Figure 1.2).

To make the Green Line operable between Waterfront and Greenbelt will require additional construction at and outbound of the Waterfront Station, as well as completion of design sections north of L'Enfant Plaza Station (excluding Gallery Place Station). The evaluation of the No Build Alternative as described in subsequent sections of this document is based upon completion of improvements at the Waterfront Station, with metro service operating on the Green Line between the Greenbelt and the Waterfront Stations, as described below. This document does not address impacts related to construction and operation of presently uncompleted portions of the Green Line north of L'Enfant Plaza Station.

A. Alignment and Station Description

Automatic train operation into Waterfront Station requires several new work items in and outbound of Waterfront Station including:

1. Conversion of the existing tie-breaker station in the lower level of the Waterfront Station east service area into a train control room.

2. Construction of an east vent shaft and emergency exit approximately 100 feet east of the Waterfront Station platform.

3. Cut-and-cover construction of a 300 foot double crossover with an integrated tie breaker station outbound of Waterfront Station.

4. Construction of approximately 1525 feet of two single-track earth tunnel running line.

5. Construction of a fan shaft on the south side of M Street, approximately 100 feet east of 1st Street, SW.

B. Operation

Routing

A preliminary assessment of the Green Line between its northern terminus at Greenbelt and its southern terminus at Anacostia indicates that trains will operate in a manner compatible with service on other operating metro lines. Green Line operations will serve 14 passenger stations with normal rush-hour headways of six minutes and off-peak headways of 12 minutes.

In order to expedite morning start-up operations three trains will be stored on tail tracks outbound of the double crossover just beyond the Waterfront Station. Two trains will be stored on the inbound track and one train will be stored on the outbound track. These three trains will be dispatched from the Waterfront Station at 12-minute intervals with the fourth and subsequent trains being those which have completed revenue runs from the Greenbelt Yard and turned back at Waterfront.

In addition to providing temporary car storage and crossing over, the tail tracks will provide for safe braking distance beyond the station. Criteria dictate that sufficient tail track be provided beyond a terminal station to permit the stopping of a train which has failed to respond to automatic station stop.

Although light car maintenance and daily testing could be performed in the tail track area, cars requiring exterior washing and repairs will be routed to one of the metro maintenance yards where facilities exist to perform those functions.

Hours of Operation

Hours of operation and frequency of service on the Green Line will be the same as those for the entire Metro System. Metro service currently operates on all days of the week. Metro operates between the hours of 6:00 AM and midnight on weekdays, between the hours of 8:00 AM and midnight on Saturdays, and between the hours of 10:00 AM and 6:00 PM on Sunday. On holidays, Metro operates on either Saturday or Sunday schedules.

TABLE 2.3: NO BUILD PROJECTED RIDERSHIP (Peak Hour)

Metro Station	1986	1990
Waterfront Station[1]	1001	3033

[1]WMATA. "Waterfront Station Passenger and Revenue Estimates." May 1977.

Ridership

Projected transit ridership forecasts indicate total peak hour ridership for the first and fifth year of Metro operation to and from Waterfront Station on the Green Line (Table 2.3). Forecasts indicate that at commencement of Metro service to Waterfront in 1986, the total peak hour ridership will be approximately 1010. By 1990 a 67 percent increase in ridership is anticipated, raising the total peak hour metro trips to approximately 3030.

Interface with Other Modes

The No Build Alternative assumes continuation of existing Metro bus service in the study area (see Section 3.5.3 and Figure 3.9).

C. Capital Costs

Estimated costs for improvements necessary to permit automatic train operation to and from the Waterfront Station are projected at approximately $36.26 million. This includes $20,000 in acquisition costs, $27.31 million in construction and staging costs, and $9.02 million in burdens. This assumes that:

1. The attendent construction burdens, including administration, design, supervision, inspection and insurance, generally increase the cost of construction by 33 percent.

2. That Metro will operate on twelve minute headways.

3. That construction will be several years in duration, having a midpoint in August 1982.

D. Construction Schedule

Preliminary estimates of design and construction duration indicate that approximately 40 months would be required for design, construction, and finish work before automatic train operation, including train reversal, could commence at Waterfront Station.

2.2.4 SUMMARY OF IMPACTS - NO BUILD ALTERNATIVE

A detailed discussion of probable environmental impacts of the No Build Alternative is included in Chapters 4 and 5. The following is a summary of those impacts:

A. Short-Term Impacts

Physiography/Geology/Soils

1. Generation of 150,000 cubic yards of spoil material from construction of tail tracks at Waterfront Station.

2. Potential erosion and sedimentation from handling, storage and transport of spoil.

Hydrologic Impacts

1. Potential erosion and sedimentation from handling storage, and transport of spoil.

Traffic Congestion

1. Increased traffic congestion in the vicinity of M Street between 3rd Street, SW, and South Capitol Street.

2. Increased traffic congestion along routes to be used by spoil disposal vehicles.

Air Quality Impacts

1. Local increases in surface emissions resulting from below-grade construction of 2000 feet of alignment and handling of 175,000 cubic yards of spoil.

2. Local increases in airborne pollutants from traffic congestion around the Waterfront Station construction site.

3. Local increases in airborne pollutants from construction and disposal vehicles.

Noise and Vibration Impacts

1. Local increases in noise resulting from construction equipment, construction vehicles, and increased traffic congestion.

B. Long-Term Impacts

Transportation Impacts

1. Loss of 10,882,000 annual transit trips (1986) in the Green Line corridor (when compared to the South Crossing Alternative).

2. Peak hour (1990) metro ridership of 4,034 trips from the Waterfront Station.

3. An increase of 41,063,100 annual vehicle miles (1986) travelled in the Green Line corridor (when compared to the South Crossing Alternative).

4. An increase of 2590 automobiles and 97 buses crossing the Anacostia River bridges during the peak hour (1986)(when compared to the South Crossing Alternative).

5. Higher traffic volumes (1986) in the Green Line corridor than those assumed in local and regional transportation plans and programming for roadway improvements.

6. Walk-to metro service for a minimum of 4700 transit dependents.

Energy Consumption

1. Annual electrical energy consumption for operation of 4.3 million kwh.

2. An increase of 1,079,854 gallons in annual petroleum fuel consumption (when compared to the South Crossing Alternative).

Biotic Disturbance

1. Loss of small, highly stressed street trees along 500 feet of M Street.

Noise and Vibration

1. Increased ambient noise levels, particularly during the peak travel hour, due to increased traffic in the Green Line corridor (when compared to the South Crossing Alternative).

Air Quality Impacts

1. An annual increase of 150,000 pounds of hydrocarbons, 1,735,000 pounds of carbon monoxide, and 56,000 pounds of nitrogen oxide resulting from combustion of petroleum fuels (when compared to the South Crossing Alternative).

Secondary Development

1. Increased development potential in the vicinity of the Waterfront Station.

2. No metro access to the South Capitol Gateway Project, the Southeast Federal Center, and the Washington Navy Yard.

3. Inconsistency with land use plans for Southeast Washington.

2.3 EVALUATION OF ALTERNATIVES

Table 2.4 summarizes and compares the impacts of the South Crossing Alternative and the No Build Alternative.

Several major differences exist between the two alternatives, including:

1. The South Crossing Alternative will take 42 privately-owned structures and nineteen publicly-owned structures; the No Build Alternative will not take any privately- or publicly-owned structures.

2. The South Crossing Alternative will displace approximately 64 residents, nine businesses, two small office buildings, and one fraternal lodge; the No Build Alternative will not displace any residents or businesses.

3. Construction of the South Crossing Alternative will require excavation and disposal of from 750,000 cubic yards (earth tunnel river crossing) to 900,000 cubic yards of spoil (sunken tube river crossing); the No Build Alternative will require excavation and disposal of only 175,000 cubic yards of spoil.

4. The South Crossing Alternative is consistent with local and regional transportation plans and programming for roadway improvements; the No Build Alternative is not consistent with transportation plans and programming.

   Reduced transit ridership and consequent increases in vehicle miles travelled in the Green Line corridor associated with the No Build Alternative will result in traffic volumes in excess of those assumed during preparation of transportation plans; increased traffic volumes at locations in the Green Line corridor may require improvements to roadways to retain existing levels of service (particularly the Anacostia River bridges) not recognized in current transportation plans.

5. Metro operation to Anacostia (South Crossing Alternative) will result in annual (1986) emission of approximately 1,940,000 fewer pounds of air pollutants from combustion of petroleum fuels than metro operation to Waterfront (No Build Alternative).

TABLE 2.4: COMPARISON OF ALTERNATIVES

Long-Term Impacts	South Crossing Alternative	No Build Alternative
Displacements	Displaces 18 occupied residential structures (24 residential units), 8 occupied commercial structures (9 businesses), 2 small office structures, and 1 fraternal lodge (private displacement).	No displacement of occupied privately-owned structures.
	Displaces 12 unoccupied residential structures (12 residential units), and 1 unoccupied commercial structure (1 business) (private displacements).	No displacement of unoccupied privately-owned structures.
	Displaces 3 structures in the Washington Navy Yard Annex, greenhouses belonging to the Architect of the Capitol, a helicopter hanger belonging to the U.S. Defense Intelligence School, the Birney School Annex, and the D.C. Lanham Tree Nursery (public displacements).	No displacements of publicly-owned structures.
Hydrologic Impacts	"Non-significant encroachment" along 2600 feet of the Anacostia River floodplain (as defined by DOT Order 5650.2 in response to E.O. 11988).	No "encroachment" on floodplains (as defined by DOT Order 5650.2 in response to E.O. 11988).
Transportation	Annual transit ridershop (1986): 27,857,000 transit trips.[1]	Annual transit ridership (1986): 16,975,900 transit trips.[1]
	Annual bus miles (1986): 5,581,500 miles.[1,2]	Annual bus miles (1986): 4,105,300 miles.[1,2]
	Annual automobile miles (1986): 22,339,300 miles.[1,2]	Annual automobile miles (1986): 64,878,600 miles.[1,2]
	Peak hour (1990) metro ridership: 14,102 trips.[3]	Peak hour (1990) metro ridership: 4,034 trips.[4]
	Walk-to metro service to transit dependents: minimum of 10,700 individuals.[5]	Walk-to metro service to transit dependents: minimum of 4,700 individuals.[5]
	Traffic volumes (1986) on roadways[1] consistent with local and regional transportation plans and programming for roadway improvements.	Traffic volumes (1986) on roadways[1] higher than those assumed in local and regional transportation plans and programming for roadway improvements.
	A reduction in the number of buses crossing the Anacostia River bridges during the peak hour (1986).	An increase of 2,590 automobiles and 97 buses crossing the Anacostia River bridges during the peak hour (1986) (improvements will be needed to maintain service levels).
	No increased bus traffic in the vicinity of Waterfront Station.	Increased bus traffic in the vicinity of Waterfront Station (no improvements needed to maintain service levels).
	Increased bus and automobile traffic in the vicinity of Anacostia Station (with roadway improvements to maintain service levels).	No change to traffic in the Howard Road area of Anacostia.
Energy Consumption	Annual metrorail electrical energy requirement: 37.4 million kwh.[6]	Annual metrorail electrical energy requirement: 4.3 million kwh.[7]
	Annual fuel consumption: 2,913,908 gallons.[1,2,3]	Annual fuel consumption: 3,993,762 gallons.[1,2,3]
Biotic Disturbance	Loss of small, highly stressed street trees along 1,000 feet of M Street.	Loss of small, highly stressed street trees along 500 feet of M Street.
	Loss of several small wooded areas, totaling approximately one acre.	No wooded areas disturbed.
Noise and	Diversion of riders to metro resulting in reduced traffic-related noise.[1]	Increased traffic-related noise associated with higher vehicle miles travelled.[1]

(continued)

TABLE 2.4 (continued)

Long-Term Impacts	South Crossing Alternative	No Build Alternative
Air Quality	Annual pollutants produced:[2] hydrocarbons: 131,303 pounds carbon monoxide: 1,292,253 pounds nitrogen oxide: 314,671 pounds	Annual pollutants produced:[2] hydrocarbons 281,270 pounds carbon monoxide: 3,027,305 pounds nitrogen oxide: 370,995 pounds
Secondary Development	Increased development potential in the vicinity of Waterfront Station, Navy Yard Station, and Anacostia Station.	Increased development potential in the vicinity of Waterfront Station.
	Metro access to the South Capitol Gateway Project, the Southeast Federal Center, and the Washington Navy Yard Annex.	No metro access to the South Capitol Gateway Project, the Southeast Federal Center, or the Washington Navy Yard Annex.
	Consistent with land use plans for Southeast Washington.	Not consistent with land use plans for Southeast Washington.
Parklands	Use of approximately 29.3 ac. of land owned by the National Park Service adjacent to Anacostia Park, including 4.2 ac. from the D.C. Lanham Tree Nursery, 12.1 ac. from the U.S. Botanic Garden, and 13.0 ac. from the U.S. Defense Intelligence School.	No use of 4(f) lands.
	Beneficial development of Anacostia Park through enhanced access, landscaping, and the addition of 26.3 acres of active parkland.	No beneficial impacts on Anacostia Park.
	Use of approximately 3400 square feet of land in Suitland Parkway for a fan shaft and portal.	
Historic and Archeological Sites	Takes Buildings 137 and 167 in the Washington Navy Yard Annex, both of which are eligible for the National Register of Historic Places.	No effects on historic resources.
	Destroys the National Register eligible Howard Road Historic District.	No effect on archeological resources.
Capital Costs	$431.9 million.[9]	$36.26 million.

[1] In the Green Line Corridor.

[2] Comparison based on base population of potential Metro patrons (see Section 4.2.6.).

[3] Including the Waterfront Station, Navy Yard Station, and Anacostia Station.

[4] Including the Waterfront Station.

[5] Based on data from the 1970 Census.

[6] Including metrorail operation from the L'Enfant Plaza Station to the Anacostia Station.

[7] Including metrorail operation from the L'Enfant Plaza Station to the Waterfront Station.

[8] Including bus, metrorail, and automobile petroleum fuel consumption.

[9] According to WMATA's June 1980 Funding Plan.

6. Metro operation to Anacostia (South Crossing Alternative) will require consumption of approximately 1,080,000 fewer gallons of petroleum fuel annually (1986) than metro operation to Waterfront (No Build Alternative).

7. Metro operation between L-Enfant Plaza and Anacostia (South Crossing Alternative) will consume 37.4 million kwh's of electrical energy annually; metro operation from L'Enfant Plaza to Waterfront Station (No Build Alternative) will consume 4.3 million kwh's of electrical energy annually.

8. Metro operation to Anacostia (South Crossing Alternative) will stimulate development in the vicinity of the Waterfront Station, the Navy Yard Station, and the Anacostia Station; Metro termination at Waterfront (No Build Alternative) will stimulate development only in the vicinity of the Waterfront Station.

   Metro operation to Anacostia (South Crossing Alternative) has also been assumed in preparing development plans for the South Capitol Gateway Project, the Southeast Federal Center, the Washington Navy Yard Annex, and the Bolling/Anacostia Complex; metro termination at Waterfront Station (No Build Alternative) will be inconsistent with those plans, eliminating metro access for employees.

9. Metro facilities will require permanent use of approximately 29.3 acres of land owned by the National Park Service (adjacent to but not included in Anacostia Park) and approximately 3400 square feet of land in Suitland Parkway; the No Build Alternative will not require use of any NPS land or parklands.

10. The South Crossing Alternative will result in the addition of approximately 26.3 acres of active parkland to Anacostia Park; the No Build Alternative will not result in the addition of active parkland to Anacostia Park.

11. Construction of the Anacostia Station will contribute to the beneficial development of Anacostia Park through enhanced access, landscaping, and expansion of the existing park area; the No Build Alternative will not contribute to the enhancement of Anacostia Park.

12. The South Crossing Alternative will require demolition of two structures considered eligible for the National Register of Historic Places; the No Build Alternative will not affect any historic sites.

13. The South Crossing Alternative will destroy the National Register eligible Howard Road Historic District.

14. Construction of the South Crossing Alternative will cost approximately $431.9 million; construction of improvements required to make Metro operable from Waterfront Station (No Build Alternative) will cost approximately $36.26 million.

2.4 SELECTION OF THE LOCALLY PREFERRED ALTERNATIVE

Environmental studies of the ARS Alignment, including the "System-wide" EIS, have revealed several major impacts of the original adopted route for the Anacostia Segment of the Metrorail Green Line. In response to findings of these studies WMATA has developed and studied numerous alternative alignments for the Green Line continuation from the Waterfront Station to and including the Anacostia Station. These alternative analyses have supported a decision by WMATA and the District of Columbia to realign the Anacostia Segment along the proposed South Crossing-St. Elizabeths Alignment.

The South Crossing-St. Elizabeths Alignment is proposed by WMATA and the District of Columbia as preferable to the alternative of taking no action. It has been selected as the preferred alternative despite short-term adverse impacts associated with construction, as well as long-term impacts resulting from displacements and demolition of historic structures.

The benefits to be derived from the proposed action are considered greater than those of not taking the action. More generally these include benefits to be derived from completion of the Metro System to serve the Washington Metropolitan Area. Such a system will greatly increase accessibility within the region, thereby increasing land values, employment opportunities, labor pool availability, and mobility within the region for those who do not or cannot drive. Metro will decrease dependency upon the automobile for travel between downtown Washington and the outlying areas of the region. All of these effects can be characterized as enhancement of regional economic vitality, with accompanying social benefits. Environmental benefits will include improved air quality, reduced noise, and more efficient use of energy.

More specifically, major beneficial effects of the proposed Anacostia Segment of the Green Line will include the following:

1. Regional rapid-rail transit service will be available to the Southeast Washington area, increasing the mobility of the transit dependent population.

2. The number of motor vehicle miles travelled in the corridor will be decreased, increasing air and water quality and decreasing traffic congestion.

3. Reliance upon the direct use of petroleum fuels for transportation will be reduced.

4. The economy of the area within metro station service areas will be stimulated as a result of improved accessibility to jobs and services.

Chapter 3
AFFECTED ENVIRONMENT

3.1 LOCATION

The Anacostia Segment of the Green Line is located entirely within the District of Columbia, providing transit service to the Navy Yard area and communities in Southeast Washington.

The study area for this analysis is primarily delineated as the composite of the proposed Navy Yard Station and Anacostia Station service areas of the South Crossing Alignment (Figure 3.1). However because impacts of the proposed action are compared to those of the No Build Alternative, the study area has been extended eastward to include the Waterfront Station service area; this assumes that as part of the No Build Alternative, Metro service will be initiated from the existing Waterfront Station.

Generally the study area includes the area bounded by G Street and I-395 on the north, Pennsylvania Avenue on the east, the Washington Channel and the Potomac River on the west, and Prince George's County on the south. The following neighborhoods are located within this area:

Anacostia	Douglass	Shipley Terrace
Barry Farms	Bellview	Washington Highlands
Navy Yard	Knox Hill	Garfield Heights
Carrollsburg	Woodland	Naylor Gardens
SW Washington	Good Hope	Randle Highlands
Buena Vista	Hillcrest	
Congress Heights	Floral Hills	

For more detailed analysis of potential direct Metro-related environmental consequences an impact analysis corridor has been defined which includes land located within 1000 feet of the Metro alignment as well as within 2000 feet of all stations (Figure 3.1).

3.2 LAND USE AND URBAN DEVELOPMENT

3.2.1 LAND USE

The Anacostia Segment study area is located primarily within Southeast Washington. As originally conceived by L'Enfant in his plan for the District of Columbia, Southeast Washington was to be a fashionable residential area at the eastern gateway to the Capitol. Several major land use activities however have developed which are inconsistent with this plan, with the result that Southeast Washington has emerged as an area of extremely mixed uses, many of which are government and transportation related. Today the area includes an excessive amount of land devoted to streets, an incompatible mix of residential and industrial uses, an inadequate number of recreational facilities, and an inadequate opportunity for centralized shopping.[1]

Major land uses near the South Crossing Alignment (Figure 3.1 - Frame of Reference) include Federal facilities, street rights-of-way, and residential activities. Federal facilities occupy approximately 30 percent of the land area (Figure 3.2a). The larger of these facilities include the Washington Navy Yard, the Bolling/Anacostia Complex, St. Elizabeths Hospital, Fort McNair, Anacostia Park (including the Defense Intelligence School), and property used by the Architect of the Capitol for nursery stock and greenhouses.

Major street rights-of-way include I-295 and Suitland Parkway. These in combination with arterials and local street rights-of-way occupy approximately 24 percent of the land near the alignment.

Residential uses occupy 38 percent of the area (Figure 3.2b). The majority of this development occurs as medium density row houses and garden apartments and is located south of the Anacostia River in the Barry Farms, Anacostia, and Congress Heights communities (Figure 3.3).

Commercial development is concentrated in three small areas (Figure 3.2b). In Anacostia, strip commercial development has spread along Martin Luther King, Jr. Avenue southwest from the 11th Street Bridge. North of the Anacostia River a node of commercial uses has developed between the Washington Navy Yard and South Capitol Street. A third area of commercial development occurs at the intersection of 4th and M Streets, SW.

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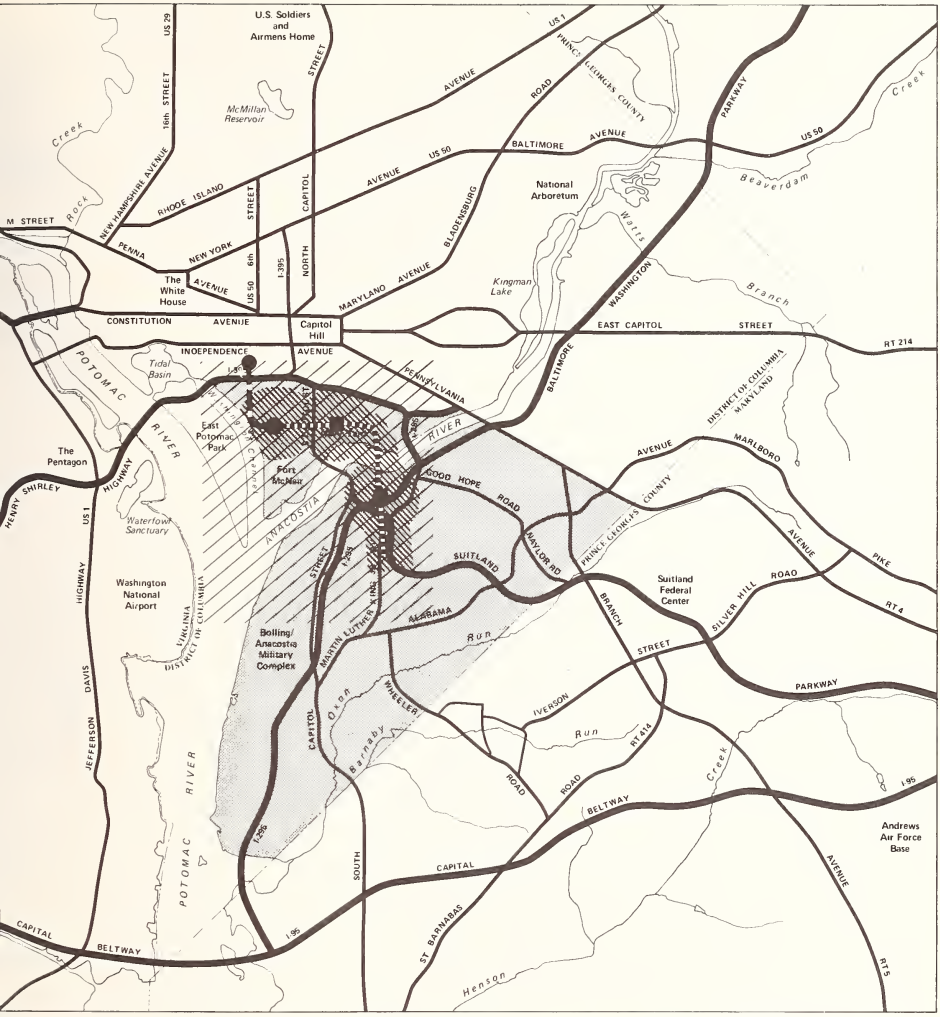
[1]National Capital Planning Commission. The Proposed Comprehensive Plan for the National Capital. February 1967.

FIGURE 3.1



STUDY AREA

EXISTING GREEN LINE ALIGNMENT

EXISTING METRO STATION

SOUTH CROSSING ALIGNMENT

PROPOSED METRO STATION

FRAME OF REFERENCE

IMPACT ANALYSIS CORRIDOR

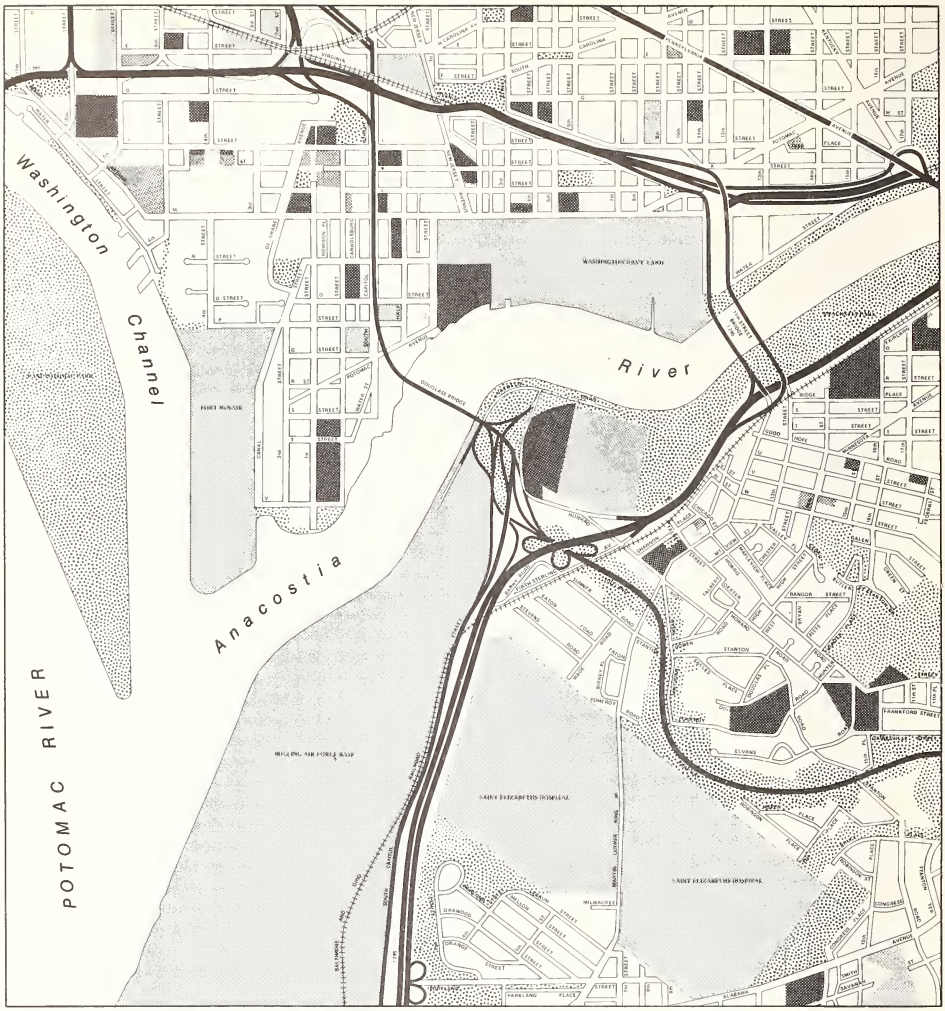
STUDY AREA

GREEN LINE (F ROUTE)
ANACOSTIA SEGMENT

0 2000 4000 8000 FT

metro

FIGURE 3.2a



LOCAL PUBLIC FACILITY

PRIVATE INSTITUTION

FEDERAL FACILITY

PARKLAND, OPEN SPACE AND CEMETERY

EXISTING LAND USE
INSTITUTIONS, GOVERNMENT FACILITIES AND PARKLANDS

GREEN LINE (F ROUTE)
ANACOSTIA SEGMENT

0 600 1200 2400 FT

metro

FIGURE 3.2b

RESIDENTIAL (Detached and Semi-Detached)

RESIDENTIAL (Multi Family)

COMMERCIAL (Office, Retail, Hotel)

INDUSTRIAL

EXISTING LAND USE
RESIDENTIAL, COMMERCIAL AND INDUSTRIAL

GREEN LINE (F ROUTE)
ANACOSTIA SEGMENT

0 600 1200 2400 FT

metro

North of the Anacostia River industrial uses are concentrated in the areas east and southwest of the Washington Navy Yard (Figure 3.2b). South of the river industrial activity occurs in the vicinity of the I-295 and Suitland Parkway interchange. Light manufacturing uses are also scattered within the strip commercial development along Martin Luther King, Jr. Avenue.

Major public parks within the impact analysis corridor (Figure 3.1) include portions of Anacostia Park and Suitland Parkway (Figure 3.3a). Nine smaller park and recreation areas are also located within this corridor:

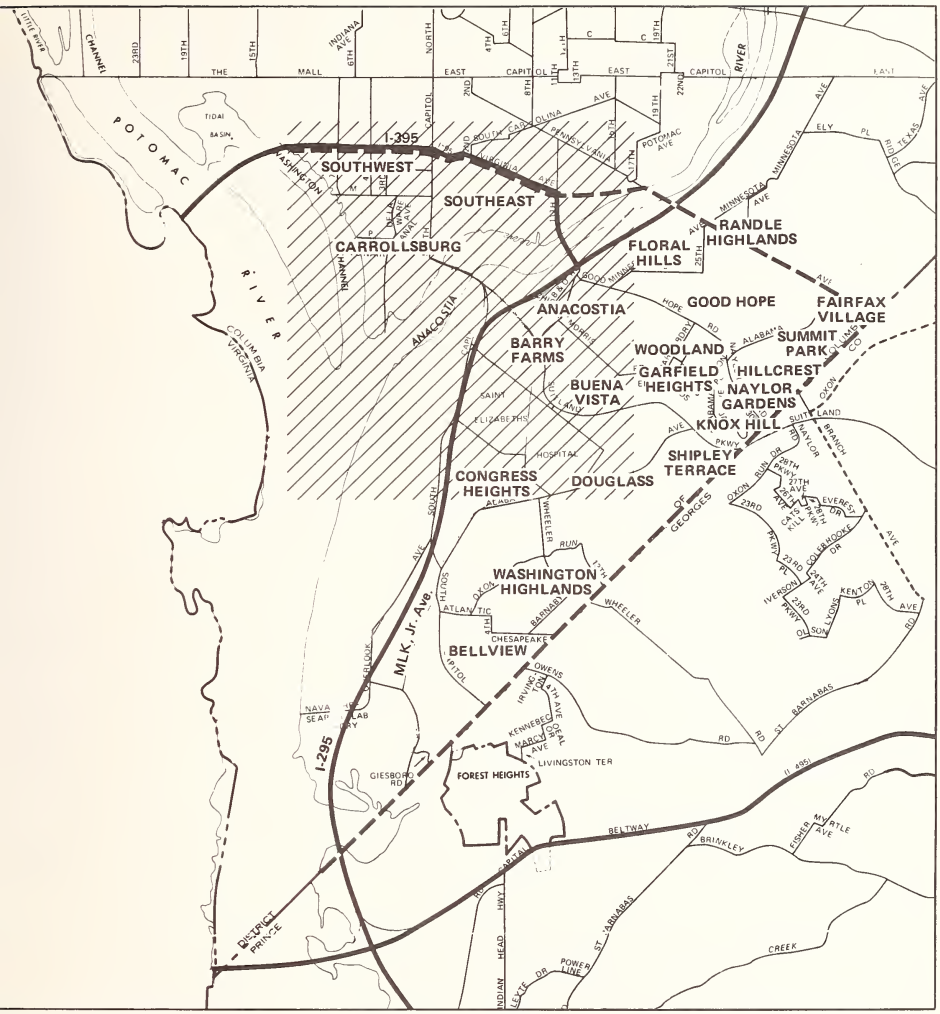
1. King-Greenleaf Recreation Center
2. Waterside Mall Plaza
3. Randall Recreation Center
4. Capper-Lincoln Recreation Center
5. Virginia Avenue Playground
6. Washington Marina
7. Savoy Playground
8. Barry Farms Recreation Center
9. Douglass Community Center

Anacostia Park is owned and maintained by the National Park Service; Suitland Parkway, the Washington Marina and Waterside Mall Plaza are owned by the National Park Service and maintained by the District of Columbia; the remaining parks and recreation areas are owned and maintained by the District of Columbia.

Socio-cultural institutions within the impact analysis corridor include:

1. Jefferson Junior High School
2. Amidon Elementary School
3. Temple Micah
4. St. Augustine's Episcopal Church
5. Southwest Library
6. Bethel Pentecostal Tabernacle of the Assemblies of God
7. Randall Community School
8. Delaware Avenue Baptist Church
9. Carron Baptist Church
10. St. Matthews Baptist Church
11. Mount Joy Baptist Church
12. Van Ness School
13. Perry School
14. Bowen School
15. Miracle Temple of Faith
16. Syphax School
17. Second Baptist Church, SW
18. Friendship Baptist Church

FIGURE 3.3



STUDY AREA BOUNDARY

FRAME OF REFERENCE

NEIGHBORHOODS

GREEN LINE (F ROUTE)
ANACOSTIA SEGMENT

0 2000 4000 8000 FT

metro

19. St. Phillips Church
20. Anacostia Neighborhood Museum
21. Nichols Avenue Elementary School
22. United House of Prayer
23. Campbell AME Church
24. National Capital Day Care Center
25. Birney Elementary School

3.2.2 ZONING

Zoning districts in the area near the South Crossing Alignment generally reflect existing land use (Figure 3.4). Residential zones, including low, medium and high density districts are mixed in the area south of the Anacostia River. North of the river medium and high density residential zones dominate in the area north of M Street and east of 2nd Street, SE.

General industry and light manufacturing districts dominate the areas east and west of the Washington Navy Yard. Two additional industrial zoned areas occur south of the Anacostia River generally between I-295 and the Baltimore and Ohio Railroad tracks.

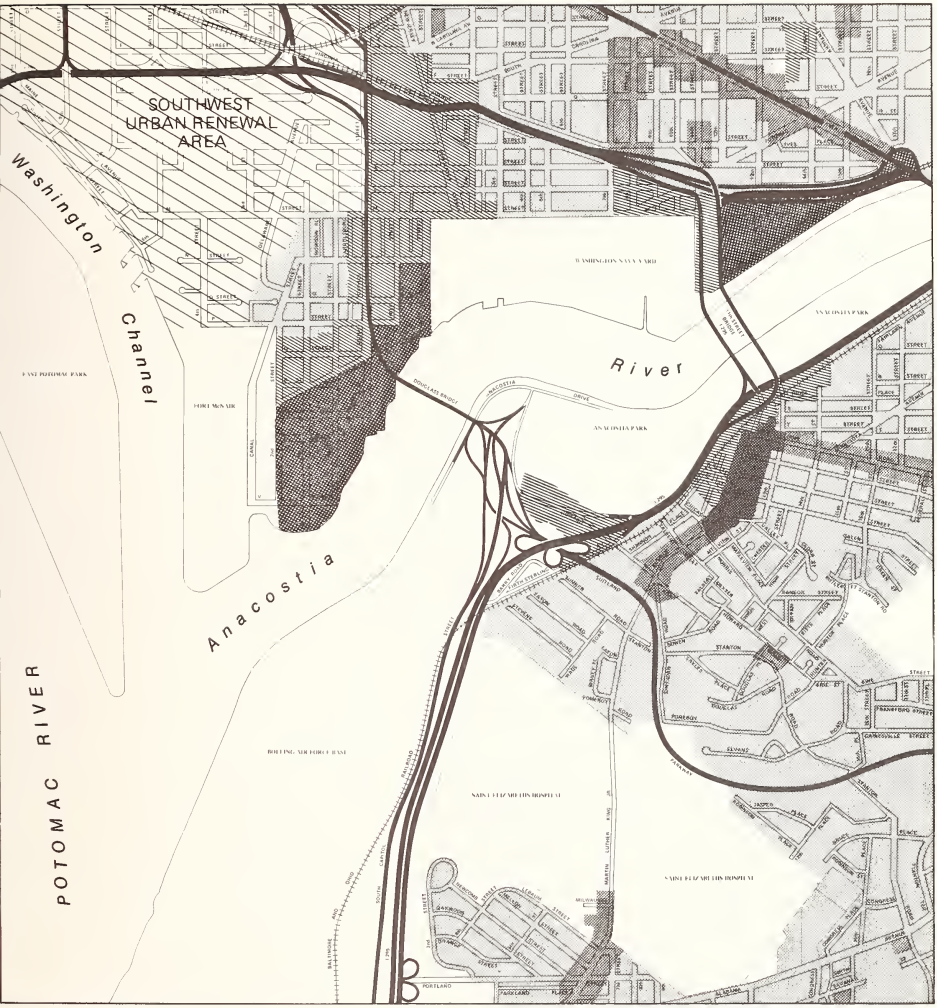
Two major commercial areas have been designated in the Anacostia area, one along Martin Luther King, Jr. Avenue and the other along Good Hope Road. Commercial uses are, however, also permitted within the light manufacturing districts.

Land areas which are not zoned primarily include those owned by the Federal Government and those located within the former Southwest Urban Renewal Area. Upon completion of the new comprehensive plan for the District of Columbia the area now designated as the Southwest Urban Renewal Area will be rezoned.

3.2.3 LAND USE PLANS

Responsibility for comprehensive land use planning in the District of Columbia is shared by the D.C. Department of Housing and Community Development (DHCD) and the Office of Planning and Development (OPD). Prior to 1978 three plans prepared by the National Capital Planning Commission applied to the study area, including:

FIGURE 3.4



RESIDENTIAL
R1B One Family Detached
R4 Row Dwelling
RSA Low Density Apt.
RSB Medium Density Apt.
RSD High Density Building

COMMERCIAL
C1 Neighborh'd Shopping
C2A Community Bus. Cntr.

COMMERCIAL
C3A Office

LIGHT MANUFACTURING
CM1 Low Bulk Comm.-Light Manufacturing
CM2 Medium Bulk. Comm.-Light Manufacturing

GENERAL INDUSTRIAL
M General Industry

URBAN RENEWAL
UR Urban Renewal

NOT ZONED

EXISTING ZONING, DECEMBER 1980

GREEN LINE (F ROUTE) ANACOSTIA SEGMENT

0 600 1200 2400 FT

metro

1. The Comprehensive Plan for the National Capital, 1969.

2. Draft Sectional Development Plan for South Capitol Street, June 1972.

3. Year 2000 Policy Plan, 1961.

Generally the land use objectives for the area near the South Crossing Alignment as presented in these plans focuses on integrating the large tracts of Federally-owned land with low to high density residential and commercial uses. A major town center was proposed in Anacostia between I-295 and Martin Luther King, Jr. Avenue, off the 11th Street Bridge. This center assumed an ARS alignment for the Anacostia Segment of the Green Line.

As of 1978 NCPC plans are no longer recognized as official land use plans.[1] At present the DHCD and the OPD are preparing a new comprehensive growth management plan for the District of Columbia. Until adoption of that plan provisions of the Zoning Regulations of the District of Columbia control the use of all private land within the study area, excluding that now designated as the Southwest Urban Renewal Area. In that area private development proposals are reviewed on a project-by-project basis during the building permit review process.

3.2.4 DEVELOPMENT ACTIVITY

Projections for land use and development in the District of Columbia will be made during preparation of the new comprehensive growth management plan. Projections at the census tract and block level or a comparable level of detail are not presently available. The WashCOG 185-district level land use projections for 1995, compiled cooperatively by its participant jurisdictions, are too general for use in this Final EIS. Consequently information on development activity in the South Crossing corridor has been obtained through interviews with Federal and local planning authorities, and public and private development groups.

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[1] Stephen Earle, Government of the District of Columbia. Personal communication. March 6, 1981.

A. Public Investment

Sites of anticipated major public development in the Anacostia Segment study area over the next twenty year period include the Capitol Gateway area, the Southeast Federal Center, the Washington Navy Yard, and the Bolling/Anacostia Complex.

Capitol Gateway Project

The Capitol Gateway Project is a mixed use development proposed by the District of Columbia that will occupy approximately 60 acres on the north shore of the Anacostia River. The site is bounded by South Capitol Street, M Street, SE, and the Southeast Federal Center. The Preliminary Development Concept Plan calls for a 500-room hotel, a 150-room motor inn, 840,000 square feet of office space, 145,000 square feet of commercial space, 63,050 square feet of community facility space, and 1,842 residential units.[1] In November 1980 City Council officially approved the Capitol Gateway Project Phase I Planning Study and authorized initiation of a second planning phase. The Capitol Gateway Project has also been designated as a Community Development Project under the D.C. Community Development Act of 1975.

Southeast Federal Center

The Southeast Federal Center is a major office complex proposed by the General Services Administration (GSA) on a 60.5 acre site located immediately east of the Capitol Gateway Project and west of the Washington Navy Yard. GSA issued its Draft EIS for the facility in December, 1977 following completion of its technical and planning studies in December 1976 and March 1977;[2,3] completion of the Final EIS and the new Master Plan is expected by mid-1982. In these plans GSA has proposed to develop nearly 3 million square feet of office space, including both new construction and renovation

[1]District of Columbia Department of Housing and Community Development. Detailed Summary of the Capitol Gateway Project Preliminary (Phase 1) Study. 1980.

[2]U.S. General Services Administration. Southeast Federal Center Draft Environmental Impact Statement. December 1977.

[3]U.S. General Services Administration. Final Technical Report. December 1976.

of existing structures. In addition, approximately 217,000 square feet of special purpose space and 170,000 square feet of storage space will be provided at the Center. The Southeast Federal Center will ultimately provide employment for 1,500 people.

Washington Navy Yard

The U.S. Department of the Navy, Chesapeake Division, is recommending that the space allocated for administrative uses in the Washington Navy Yard be increased by 750,000 square feet over a ten to twenty-five year period. The Master Plan for the Washington Navy Yard, released by the Navy in October 1979, proposes that this goal be achieved through renovation and adaptive reuse of existing structures. Full implementation of the Master Plan would double the present employment level to 10,000.[1]

Bolling/Anacostia Complex

The Bolling/Anacostia Complex is a 1000-acre military reservation located on the eastern shore of the Potomac River between the Douglass Bridge and the D.C.-Maryland boundary. The Complex contains the Bolling Air Force Base, the Anacostia Naval Air Station, and the Naval Research Laboratory and Photographic Center. The U.S. Department of Defense plans to double the number of residents and employees at the Complex over the next ten to twenty year period. Ultimately the Complex would provide 12,000 dwelling units and employ 16,000 people.[2]

B. Private Commercial and Residential Investment

According to the OPD and the Anacostia Economic Development Corporation (AEDC), small scale commercial and light industrial development activity is only expected at two locations in the Anacostia Segment area. OPD reports that the District is considering revitalizing the Waterside Mall, located at M and Fourth Streets, SW, a development originally undertaken as part of the former Southwest Urban Renewal Program. The AEDC, a non-profit tax-exempt business development organization designated under the Economic Opportunity Act of 1964, is involved in an effort to revive the shopping area along Martin Luther King, Jr. Avenue in Anacostia.

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[1]U.S. Department of the Navy, Chesapeake Division. Master Plan for the Washington Navy Yard. October 1979.

[2]U.S. Department of Defense. Bolling/Anacostia Master Plan (Prepared by Keyes, Lethbridge and Condon; Sasaki, Dawson, Demey Associates). 1972.

Aside from the residential development proposed within the Capitol Gateway Project, housing construction in the Anacostia Segment area is not expected to increase substantially over the next twenty years.[1,2,3] During the 1970's the District Department of Housing and Community Development reported no new major housing construction in the Navy Yard, Barry Farms, or Anacostia portions of the corridor. Thirteen new townhouses were built in the Carrollsburg community between South Capitol Street and Fort McNair.[4] The District also recently completed rehabilitation of the public housing complex at Half and P Streets, SW.

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[1]William Washburn, Anacostia Economic Development Corporation. Personal communication. March 4, 1981.

[2]Barbara Silverman, D.C. Department of Housing and Community Development. Personal communication. February 12, 1981.

[3]Lawrence Jones, D.C. Office of Planning and Development. Personal communication. February 5, 1981.

[4]District of Columbia, Office of the Mayor. Land in Washington: Ownership, Improvements, Sales and Zoning. March 1980.

3.3 SOCIO-ECONOMIC CHARACTERISTICS

The following description of socio-economic characteristics in the study area utilizes information from the 1970 Census. According to the WashCOG Information Center the 1980 tract statistics will not be available until May, 1981 and 1980 block statistics not until September, 1981.

To the extent possible, the description of socio-economic characteristics has been updated. Recent projections and surveys from various government agencies have been used to reflect more current conditions where they are available. These include projections prepared by the D.C. Office of Planning and Development (OPD), the D.C. Department of Housing and Community Development (DHCD), and the Metropolitan Washington Council of Governments (WashCOG).

3.3.1 POPULATION CHARACTERISTICS

The total population of the study area in 1970 was approximately 138,000 individuals.[1] Fourteen percent of the population was between 10 and 16 years of age, and five percent was over age 65. Approximately 85 percent of the population was non-white.

Population density in the study area is high. The most densely settled area (more than 100 persons per acre of residentially developed land) is located south of the Anacostia River between Morris Road and Suitland Parkway. The least densely settled area (less than 40 persons per acre of residentially developed land) is located in the eastern portion of the study area between Good Hope Road, Minnesota Avenue, Pennsylvania Avenue and Naylor Road (Figure 3.5). Most of the remaining area within the study area is characterized by 40 to 70 persons per residential acre.

WashCOG estimates of the 1980 population indicate that the population of the study area has decreased by approximately 8000 individuals, or six percent, over the past decade.[2] However WashCOG projections suggest that this trend will reverse and that by 1985 the population will have increased to 131,000, or 95 percent of its 1970 total.[3]

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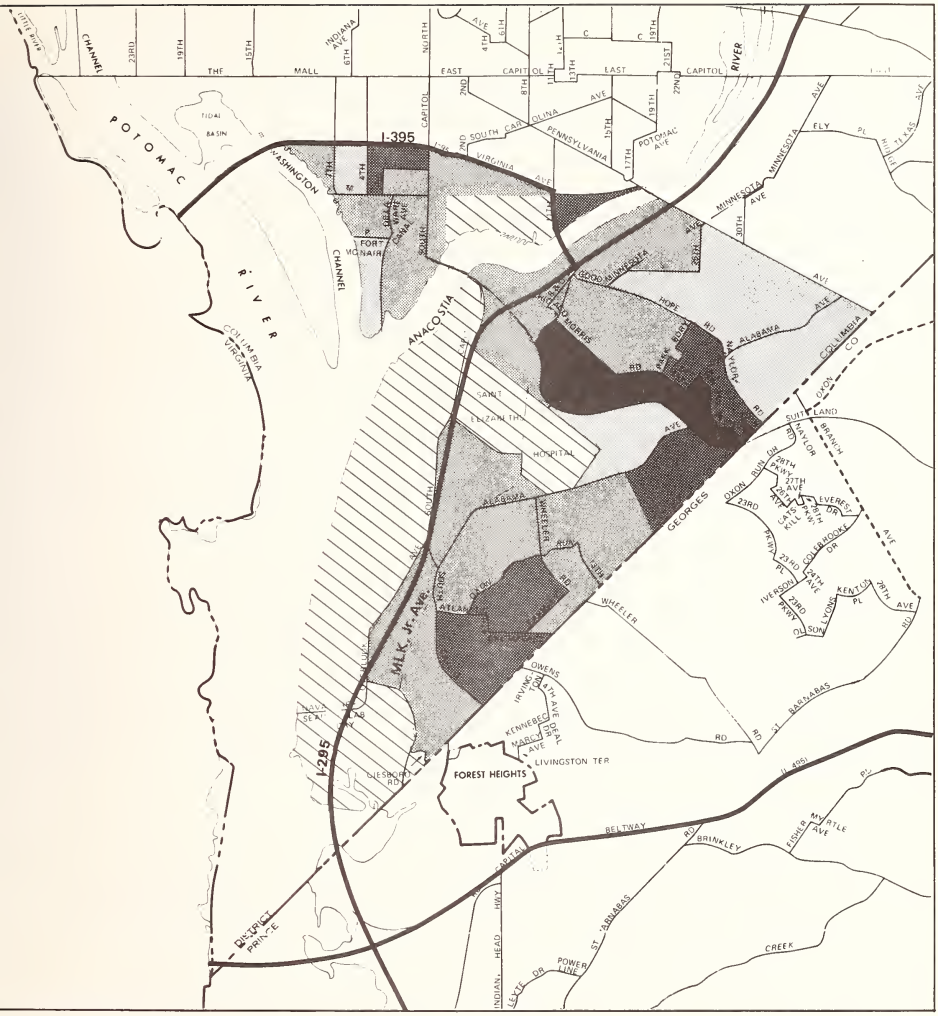
[1] U.S. Bureau of the Census. Census of Population and Housing 1970: Census Tracts Final Reports, Washington, DC-MD-VA SMSA.

[2] Metropolitan Washington Council of Governments. Round II Intermediate Forecasts: Population and Households by COG Analysis Zone. September 1980.

[3] Ibid.

FIGURE 3.5



1. Calculated from Total Population (U.S. Census, 1970) and Residentially Developed Land.

POPULATION DENSITY (1970)[1]

GREEN LINE (F ROUTE) ANACOSTIA SEGMENT

0 2000 4000 8000 FT

metro

3.3.2 HOUSING CHARACTERISTICS

In 1970 the study area contained 55,700 housing units. Approximately 30 percent of these units were single family units and 70 percent were multi-family units. Eighteen percent were owner-occupied and 78 percent were renter-occupied; the remaining four percent were vacant.

Generally 1970 housing values and monthly rents were slightly higher north of the Anacostia River than south of the river. On the north the 1970 median value of owner-occupied housing was $25,000, compared to $22,500 south of the river.[1] Similarly 1970 median monthly contract rent was $160 north of the Anacostia River compared to $100 south of the river.[2]

Estimates of 1978 housing units prepared by the D.C. OPD indicate that the total number of units in the study area has remained approximately the same[3] but that the percentage of single family units has declined from 30 percent to 17 percent.[4]

3.3.3 EMPLOYMENT AND INCOME CHARACTERISTICS

In 1970 approximately 51,300 employed individuals resided within the study area.[5] This represented 37 percent of the study area population. WashCOG employment estimates for 1980 indicate that the percentage of the population employed has increased to 41 percent.[6] This trend is expected to continue through 1985 when it is anticipated that 42 percent of the resident population will be employed.[7]

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[1] U.S. Bureau of the Census. Census of Population Housing 1970: Census Tracts Final Reports, Washington, DC-MD-VA SMSA.

[2] Ibid.

[3] D.C. Office of Planning and Development. 1978 Housing Unit Estimates. June 1980.

[4] D.C. Office of Planning and Development. Land in Washington: Ownership, Improvements, Sales and Zoning. March 1980.

[5] U.S. Bureau of the Census. Census of Population and Housing 1970: Census Tracts Final Reports, Washington, DC-MD-VA SMSA.

[6] Metropolitan Washington Council of Governments. Round II Intermediate Forecasts: Employment by COG Analysis Zone. September 1980.

[7] Ibid.

North of the Anacostia River income levels tend to be higher west of Delaware Avenue - generally more than $14,000 per year in 1978 in the area known as the Southwest - compared to 1978 annual incomes generally less than $9,500 in the area east of Delaware Avenue.[1] South of the Anacostia River 1978 incomes were generally less than $14,000, except in the Fairfax Village area.[2] Incomes were lowest, generally less than $9,500, in the Barry Farms, Douglass, and Washington Highlands areas, as well as portions of Anacostia.[3]

3.3.4 TRANSIT DEPENDENCY

The expression "transit dependent population" is used to describe a population that displays a number of characteristics that are generally considered good indicators of a need for public transportation. To identify the transit dependent population in the study area, 1970 census data were used to determine the number of people in each of the following four categories considered transit dependent:

1. Age 10 to 16.
2. Minimum age 65.
3. Households with 1970 incomes of less than three times the 1970 poverty level.
4. Households with no automobiles.

Transit dependency of each census tract within the study area was ranked from high to low on the basis of the total tract population included within the four transit dependent categories.

To indicate the possible locations of persons exhibiting transit dependency, each of the four transit dependent populations were mapped coincident with residential density. In areas of high residential density, it is expected that traffic congestion will be accompanied by an increase in preference and need for public transportation. From this analysis, concentrations of transit dependents have been identified.

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[1] D.C. Department of Housing and Community Development. Housing Problems, Conditions and Trend in the District of Columbia. June 1979.

[2] Ibid.

[3] Ibid.

Concentrations of highly transit dependent individuals occur throughout the study area. Neighborhoods exhibiting the most highly dependent characteristics include Carrollsburg, Southeast, Anacostia, Barry Farms, Douglass, Congress Heights, and Washington Highlands (Figure 3.4). The least transit dependent neighborhoods include Southwest, Good Hope, Randle Highlands, Shipley Terrace, and Bellview.

3.4 NATURAL ENVIRONMENT

3.4.1 GEOLOGY/PHYSIOGRAPHY

The study area lies entirely within the Coastal Plain Physiographic Province, a stretch of nearly level land which separates the Piedmont from the Atlantic Ocean. The topography is diverse due to the broad, level floodplains, irregular, nearly level terraces, linear watercourses, and wide, gently sloping uplands. Among the most prominent physiographic features are the steep bluffs which lie between the floodplains and uplands.

Landforms and drainage in the study area trend northeast to southwest. The physiography can be divided into three categories: (1) valley bottom, including alluvium and lower terrace, (2) valley slopes, and (3) upland.

1. The valley bottom includes the level tract which borders a stream and on which water-borne sediment is deposited. Once deposited, the sediment is known as alluvium. The lower terrace consists of a low platform which adjoins or occurs within a floodplain, sometimes less than ten feet higher than the floodplain.

2. Valley slopes are areas which have fairly regular downward sloping sides.

3. The former plateau, covered by gravel and sand, defines the uplands of the study area. Although the elevations vary, they generally exceed 200 feet and appear as broad, gently sloping plains.

The existing landscape of the study area is the result of years of geologic activity. Topographic features have originated from alternating periods of deposition and erosion, geologic uplift, stream downcutting, sea level fluctuation, and flooding near glacier edges. Most of the surface material is unconsolidated sands and gravels. The topographic diversity reflects the differential erodibility of the course fragment (sand, gravel) and fine-grained (clay) substrates. The highly permeable sands and gravels of the upper strata are more resistant to erosion than the deeper clays. Where exposed, these clays erode rapidly causing steep slopes between flat, sandy uplands, and flat, alluvium-covered floodplain terraces.

The basement complex underlying the entire study area is hard crystalline rock which lies so deep that it does not crop out. Five geologic formations overlying the basement complex crop out in the study area, all of which are Coastal Plain sedimentary deposits.[1] The deepest and oldest of these units is the Patapsco formation and Arundel clay which dates from the Upper Cretaceous period and is dominated by clay-sized particles. The Chesapeake Group is of Miocene age and is composed of particles of undifferentiated size. The youngest strata, the Sunderland, Wicomico and Pamlico formations, date from the Quaternary and are composed of gravel, sand and silt.

The unconsolidated materials in the study area may exhibit low bearing capacity. This is particularly prevalent in alluvial deposits and recent fill areas. Structures built on these materials may also settle due to swelling and recompression of subsurface clays, subsidence due to removal of groundwater, and consolidation from additional weight of overlying fill material.

3.4.2 SOILS

The soils of the study area are developed primarily from the underlying unconsolidated sediments. They are old, well developed (distinct layers), acidic, and colorful, often with clay layers beneath the surface. A significant amount of soil is deposited as floodplain alluvium or as fill materials. The predominant soil texture is sand, sometimes coarse but frequently fine-grained. Combinations of clay and sand also occur, as do floodplain soils of silt, gravel, clay and sand. Most are moderately to well drained loams, composed of a mixture of clay, silt, sand, and organic matter.

The sediments in the Anacostia River are developed mainly from the alluvial soils and fill materials on the floodplain that are subjected to periods of flooding and erosion and are deposited in the watercourse as suspended sediment. These sediments eventually settle out on the river bottom. The upper 13 feet of the sediment is dominated by clay and silt-sized particles. Below that depth the sand component increases significantly.

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[1]Cook, C.W. and E. Cloos, Maryland Department of Geology, Mines and Water Resources. "Geologic Map of Prince George's County, and the District of Columbia." 1951.

Due to the poor water quality of the Anacostia River, the river sediments have a corresponding level of contamination and pollution (Table 3.1). Heavy metals and trace elements have a high chemical affinity for the clay and silt particles that dominate the river sediment. High concentrations of chlorinated hydrocarbons such as chlordane, DDT, and PCB's are present in the river sediment. Other pollutants include iron, mercury and phenols.

3.4.3 HYDROLOGY

A. Groundwater Hydrology

Many of the unconsolidated sediments of the Maryland Coastal Plain are important sources of groundwater. Water enters the subterranean supply through porous sandy strata at points exposed along the Anacostia, Potomac, and Patuxent Rivers and through sand and gravel covered uplands. The water moves by gravity through the strata toward the southeast. As the water moves down and away from its source of entry, it meets a deeper impermeable clay layer which prevents further downward movement. Confinement by the clay causes pressure to increase. As a result, water is forced to the surface where wells penetrate the strata.

Although these water bearing geologic formations crop out in the study area, the principal area where river and rainwater enters the system (recharge area) is located further north in Prince George's County.

Small groundwater supplies are also available in localized areas where shallow sand and gravel caps, located 20 to 40 feet below the surface, hold small quantities of rainwater. These areas have little local and no regional value as a groundwater resource.

B. Surface Water Hydrology

Subsurface Water Features

The study area lies entirely within the Potomac River drainage basin. Most of the area is drained by the Anacostia River, a tributary to the Potomac, which flows from northeast to southwest across the area.

Much of the impact analysis corridor south of the Anacostia River is drained by Suitland Run, a major storm sewer paralleling Suitland Parkway. An intermittent stream, running

through St. Elizabeths Hospital, joins Suitland Run about 1400 feet south of the endpoint of the Anacostia Segment. Other smaller drainage swails which carry intermittent streams join Suitland Run along its course. Suitland Run outfalls into the Anacostia approximately 2100 feet north of Douglass Bridge.

Base 100-year floodplains located within the study area along the Anacostia and Potomac Rivers have been delineated by the Federal Insurance Administration. Major floodplain areas lie along the north bank of the Anacostia, in East Potomac Park, and along the south bank of the Anacostia to the east of the 11th Street Bridge (Figure 3.6).

Water Quality

The portion of the Anacostia River which flows through the study area has been designated a public health hazard by the District of Columbia Department of Environmental Services.[1] The Anacostia has extremely high concentrations of fecal coliform bacteria. Other pathogens are also present.

The Anacostia River is stressed by high fecal coliform and nutrient levels, sediment loading and low dissolved oxygen levels. These conditions are the result of wastewater treatment plant discharges, sewer overflows, and failing septic systems and other non-point source pollution. Tidal currents subject the Anacostia to the influence of the Blue Plains Wastewater Treatment Plant, the area's major regional sewage facility, located approximately 3.5 miles south of the Douglass Street Bridge.

Water quality analyses of the Anacostia River have indicated that iron and mercury are found in high average ambient concentrations.[2] Significant levels of chlorinated hydrocarbons such as chlordane, PCB's and DDT are also present. These hydrocarbons bond strongly to clay and silt particles and thus tend to be concentrated in the river sediments. In the summer months, the river also has low levels of dissolved oxygen, especially following storm events.

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[1]District of Columbia Water Pollution Control Regulations, as amended through April 6, 1978.

[2]Ecological Analysts, Inc. "Environmental Assessment of Physical/Chemical Impacts Related to the Dredging and Disposal of Spoil from the Proposed Trench Tube Crossing of the Anacostia River." March 1981.

TABLE 3.1: CONSTITUENT CONCENTRATIONS FOR ALL ANACOSTIA RIVER BULK SEDIMENT SAMPLES

Parameter	Mean ± 95% Confidence Interval	Parameter	Mean ± 95% Confidence Interval
Ammonia nitrogen (mg/kg)	486± 192	% sand	29.7±21.9
Nitrate-nitrite nitrogen (mg/kg)	2.7± 0.5	% silt	29.2± 9.6
Organic nitrogen (mg/kg)	4,240± 837	% clay	40.0± 13.7
Total kjeldahl nitrogen (mg/kg)	4,730± 957	% moisture content	42.8± 7.7
Filterable phosphorous (mg/kg)	20.9± 3.4	% organic content	9.5± 3.9
Organic phorphorus (mg/kg)	532.7± 153.4	Total volatile solids (mg/kg)	95.4± 38.6
Ortho-phosphorous (mg/kg)	8.0± 3.2	Gross beta (pC/g)	20.7± 4.4
Total phorphorous (mg/kg)	520.7±162.0	Radium 226 (pC/g)	0.681± 0.442
Total organic carbon (mg/kg)	14.5± 1.2	Strontium 90 (pC/g)	0.084± 0.028
Barium (mg/kg)	307.9± 80.5	Aldrin (ug/kg)	< 0.08*
Cadmium (mg/kg)	< 0.003*	Chlordane (ug/kg)	107± 114
Chromium (mg/kg)	0.05± 0.02	DDT (ug/kg)	201± 277
Chromium, hexavalent (mg/kg)	0.04± 0.02	Dieldrin (ug/kg)	< 0.3*
Copper (mg/kg)	59±24	Endrin (ug/kg)	< 0.4*
Iron (mg/kg)	19,300± 3,120	Heptachlor (ug/kg)	< 0.09*
Lead (mg/kg)	0.13± 0.07	Heptachlor, epoxide (ug/kg)	< 0.1*
Mercury (mg/kg)	0.62± 0.25	Kepone (ug/kg)	< 0.2*
Nickel (mg/kg)	0.03± 0.009	Lindane (ug/kg)	< 0.09*
Selenium (mg/kg)	0.04± 0.05	Methoxychlor (ug/kg)	< 4*
Silver (mg/kg)	0.106± 0.07	Mirex (ug/kg)	< 0.4*
Zinc (mg/kg)	301± 88	Polychlorinated biphenyls (ug/kg)	327± 351
Arsenic (mg/kg)	0.21± 0.36	Toxaphene (ug/kg)	< 10*
Cyanide (mg/kg)	< 0.05*	2,4-Dichlorophenoxy/ acetic acid (ug/kg)	< 0.7
Foaming agents (mg/kg)	0.0124± 0.0096		
Oil/Grease (mg/kg)	251± 189	2,4,5-trichlorophenoxy/ proprionic acid (Silvex)(ug/kg)	< 0.2
Phenols (mg/kg)	4.60± 1.17		
Sodium (mg/kg)	75± 31		
Chemical oxygen demand (mgO/kg)	159,700± 100,000		

ug: microgram
mg: milligram
*less than detection limits

Source: Ecological Analysts, Inc. "Environmental Assessment of Physical/Chemical Impacts Related to the Dredging and Disposal of Spoil from the Proposed Trench Tube Crossing of the Anacostia River." March 1981.

The fair to poor water quality of the Anacostia is not unlike that of many other tributaries to the Potomac. Many of these tributaries also exhibit high fecal coliform counts, low dissolved oxygen levels and other indicators of disturbance. Regional efforts are being made under the Metropolitan Washington Water Quality Management Plan[1] to reduce pollutant loading in rivers. However, the Anacostia River, under its present designation as a public health hazard, cannot be used for any activities which involve human contact with the water.

3.4.4 BIOTA

A. Flora

Vegetation within the portion of the impact analysis corridor north of the Anacostia River is limited principally to street trees and areas of successional growth or park-like vegetation in small open spaces. A number of small oaks, which appear to be considerably stressed by their urban environment, occur along M Street.

The area along the south bank of the Anacostia River, between the river and Anacostia Drive, is covered by lawn grasses and several widely spaced trees, including black willows, sycamores and silver maples. A number of nursery plots and greenhouses belonging to the Architect of the Capitol are located in Anacostia Park. Hollies, junipers, birches and azaleas have been planted along with other standard nursery stock. Narrow strips of lawn grasses and evergreens occur adjacent to I-295 and Firth Sterling Avenue.

A number of small forested areas dominated by tree species typical of the early and middle stages of forest succession occur within the impact analysis corridor east of I-295. Such areas are located along Suitland Parkway south of Stanton Road, just to the east of Sheridan Road between Stanton and Pomeroy Roads, at the intersection of Howard Road and Bowen Road, and at the intersection of Martin Luther King, Jr. Avenue and Talbert Road. Black locust, red maple, poplar, ash, elm, scarlet oak, box elder, ailanthus, sweetgum, sycamore and mulberry are among the tree species found in these areas.

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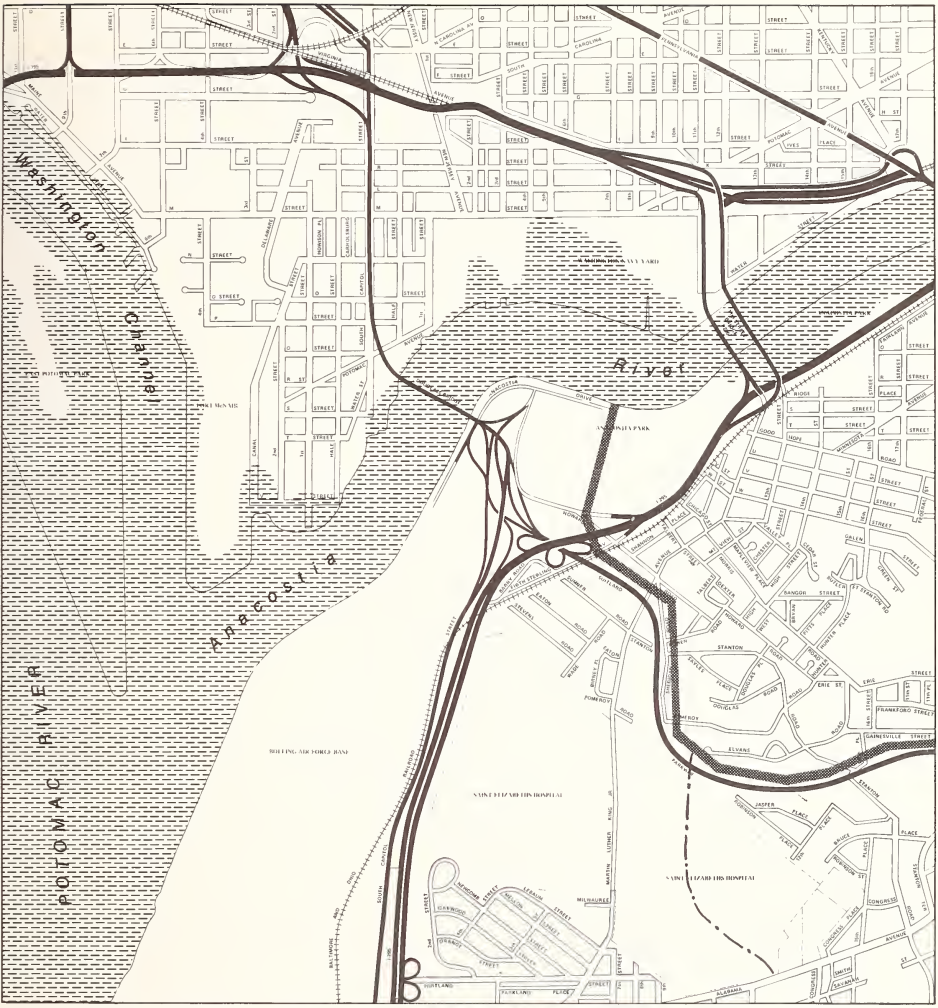
[1]Metropolitan Washington Council of Government. "Draft Metropolitan Washington Water Quality Management Plan." 1978.

FIGURE 3.6



FIA BASE (100-YEAR) FLOODPLAIN

SUITLAND RUN STORM SEWER

INTERMITTENT TRIBUTARY TO SUITLAND RUN

SURFACE WATER FEATURES

GREEN LINE (F ROUTE)
ANACOSTIA SEGMENT

0 600 1200 2400 FT

metro

The area bounded by Suitland Parkway, Howard Road and Firth Sterling and Martin Luther King, Jr. Avenues is covered by a forest community which is typical of wet soil conditions. Silver and red maple dominate in this area, with black locust, black cherry, elm, mulberry and willow also present.

Relatively large areas forested with upland hardwoods, including American beech, tulip poplar, red maple and red and white oak, are found along Suitland Parkway just to the east of the impact analysis corridor.

B. Fauna

Terrestrial

North of the Anacostia River, wildlife is constrained by the paucity of natural food sources. The Anacostia River provides habitat suitable for low densities of black duck and mallard.[1] Belted kingfisher, gulls and osprey may also be seen along the river. Wildlife habitats south of Anacostia are somewhat richer. Patches of trees may provide limited habitat for such bird species as mourning dove, bob-white quail and woodcock. Given the habitats available in the study area, several mammalian species could be present including racoon, cottontail, striped skunk, muskrat, red squirrel and eastern gray squirrel.

Aquatic

The majority of the aquatic fauna observed in the study area and vicinity are typically found in polluted waters with low dissolved oxygen levels. The benthic macroinvertebrate community is dominated by Oligocheata worms tolerant of low oxygen conditions. The chironomidae fly larvae have low populations and are dominated by the pollution tolerant *Procladius* species. The gastropods (snails) and pelecypods (clams) have low but significant populations. They are dominated by the pollution tolerant species *Musculium, Pisidium* and *Corbicular spp.*[2] Because of the polluted conditions and the hazard to public health, no shellfish harvesting beds are located in the study area.

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[1]U.S. Army Corps of Engineers. "Anacostia River O&M Dredging Prince George's County, Maryland and Washington, D.C." 1978.

[2]Conlin, D.Y. "Environmental Assessment of Benthic Macroinvertebrate Impacts Related to Dredging the Proposed Metro Tunnel Across the Anacostia River." 1981.

TABLE 3.2: FISH SPECIES REPORTED FROM THE ANACOSTIA RIVER AND ITS TRIBUTARIES

Common Name	Scientific Name
Cutlips minnow	*Exoglossum maxilingus*
Blacknose dace	*Rhinichthys atratulus*
Golden shiner	*Notemigonus crysoleucas*
Common shiner	*Notropis cornutus*
Rosyface shiner	*Notropis rubellus*
Satinfin shiner	*Notropis analostanus*
Spottail shiner	*Notropis hudsonius*
Swallowtail shiner	*Notropis procne*
Silvery minnow	*Hybognathus nuchalis*
American eel	*Anguilla rostrata*
Mumichog	*Fundulus heteroclitus*
Johnny darter	*Etheostoma nigrum*
Green sunfish	*Leponis cyanellus*
Bluegill	*Lepomis macrochirus*
Mosquitofish	*Gambusia affinis*
Eastern banded killifish	*Fundulus diaphanus*
Blueback herring	*Alosa aestivalis*
Gizzard shad	*Dorosoma cepedianum*
Chain pickerel	*Esox niger*
Goldfish	*Carassius auratus*
White catfish	*Ictalurus catus*
Black crappie	*Pomoxis nigremaculatus*
Largemouth bass	*Micropterus salmoides*
Yellow perch	*Perca flavescens*

Source: U.S. Army Corps of Engineers. "Environmental Assessment: Anacostia River O&M Dredging Prince Georges County, Maryland and Washington, D.C." 1978.

Three species of anadromous fish, alewife, blueback herring and American shad, have been observed in the area. White perch, considered semi-anadromous, has also been observed in the Anacostia. These species have spawning grounds upstream in the northeast and northwest branches of the river;[1] there are no spawning grounds located directly within the study area.

Resident fish species in the Anacostia River include more pollution tolerant species such as carp, golden shiner, silvery minnow, white sucker, sunfish, channel catfish and brown bullhead. In addition to these species, Table 3.2 lists those species found in the Anacostia and/or its tributaries in past fisheries samplings.

Except for occasional transient individuals, no Federally listed or proposed species under the jurisdiction of the U.S. Fish and Wildlife Service are known to exist in the study area.[2]

3.4.5 AIR QUALITY

The study area is located entirely within the National Capital Interstate Air Quality Control Region, one of several large metropolitan areas in the United States with a regional air pollution problem due to automobile traffic. According to current transportation control plans for the region, this problem is manifest in excessive concentrations of carbon monoxide (CO) and photochemical oxidants (NO_x, HC).

In 1979, the District of Columbia Bureau of Air and Water Quality maintained 10 air quality stations in the District to monitor ambient levels of those pollutants for which there is a national standard. Only three of these stations meet the most recent Environmental Protection Agency siting regulations governing acceptable locations for monitoring facilities.[3] Table 3.3 presents air quality data from one of these three stations.

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[1]U.S. Army Corps of Engineers. "Anacostia River O&M Dredging Prince George's County, Maryland and Washington, D.C." August 1978.

[2]John D. Green, U.S. Fish and Wildlife Service. Personal communication. March 10, 1981.

[3]Federal Register, 40 CFR Part 58. May 10, 1979.

TABLE 3.3: SUMMARY OF 1979 AIR QUALITY DATA AT THE WEST END LIBRARY MONITOR[1]

Pollutant	Parameter	National Ambient Air Quality Primary Standard	West End Library Reading	Number of Violations of Standard
Total Suspended Particulates (ug/m^3)	Annual Geometric Mean	75	61	0
	24-Hour (Highest/ Second Highest)	260	171/125	0
Sulfur Dioxide (ppm)	Annual Average	0.03	0.015	0
	Daily Average (Highest/Second Highest)	0.14	0.071/0.058	0
Carbon Monoxide (ppm)	8-Hour (Highest/ Second Highest)	9	19.8/18.9	12
	1-Hour (Highest/ Second Highest)	35	28.5/25.5	0
Nitrogen Dioxide (ppm)	Annual Average	0.05	0.033	0
Ozone (ppm)	1-Hour (Highest/ Second Highest)	0.12	0.085/0.080	0
Lead (ug/m^3)	3-Month (Highest/ Second Highest)	1.5	1.45[2]/0.93	0

[1]24th and L Street, N.W.

[2]Did not meet "criterion for completeness" for a quarterly average (12 samples per quarter).

Source: District of Columbia Bureau of Air and Water Quality. "Air Quality in Washington, D.C. 1979." 1979.

Ambient air quality modelling of background carbon monoxide in the vicinity of the Green Line Metro stations was performed as part of the 1976 Transportation Control Strategies Study by the Metropolitan Washington Council of Governments. 1977 1-hour and 8-hour background levels are presented in Table 3.4 for the two Metro stations in the study area.

The existing and modelled ambient levels of pollutants presented in Tables 3.3 and 3.4 indicate general compliance with Federal standards. Background CO levels modelled at the Metro station sites for 1977 were below applicable standards. Twelve violations of the CO-8 standard were reported at the West End Library monitor in 1979. Most of these violations occurred between November 18 and 22 when unusual atmospheric conditions resulted in a strong temperature inversion with very light winds.[1]

[1]District of Columbia Bureau of Air and Water Quality. "Air Quality in Washington, D.C. 1979." 1979.

TABLE 3.4: SUMMARY OF 1977 BACKGROUND CARBON MONOXIDE LEVELS IN STATION IMPACT AREAS (ppm)

Station Area	1-Hour National Ambient Air Quality Primary Standard	Maximum 1-Hour	8-Hour National Ambient Air Quality Primary Standard	Maximum 8-Hour
Navy Yard	35.0	14.6	9.0	7.3
Anacostia	35.0	14.6	9.0	7.3

Source: National Capital Region Transportation Planning Board. "Transportation Control Strategies Study." 1976.

Levels of non-methane hydrocarbons above Federal standards were recorded frequently at the West End Library monitor during sporadic sampling in 1980.[1]

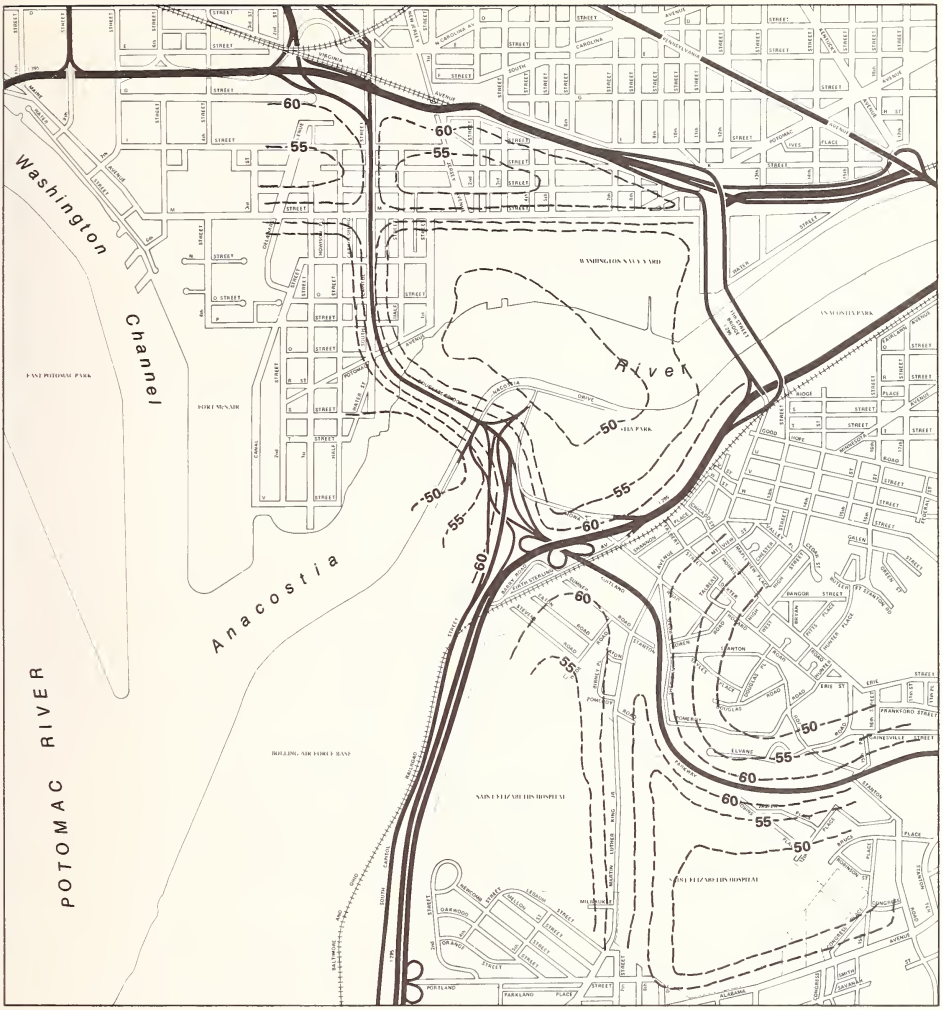
3.4.6 NOISE

In urban regions such as the study area, motor vehicles are typically the dominant source of noise. Except in the vicinity of airports, construction sites or railroads, road traffic is the major source of noise disturbance. These observations are consistent with the results of the noise survey for the study area (Figure 3.7).

Within the study area, traffic is by far the dominant source of noise, especially in regions near Suitland Parkway and Martin Luther King, Jr. Avenue. In the area near the intersection of Suitland Parkway and Martin Luther King, Jr. Avenue, there are a number of major surface streets as well as I-295. The large volume of traffic in this area is reflected in the measured noise levels. The combined evening night-time noise levels (L_{50}) are generally in the range of 55 to 65 dBA in the areas which are near major surface streets and close enough to I-295 to be influenced by the interstate traffic. At locations further away from I-295 and not near the major surface streets, levels of noise are lower.

[1] Sweeney, J., District of Columbia Bureau of Air and Water Quality. Personal communication.

FIGURE 3.7



APPROXIMATE COMBINED L_{50} NOISE LEVEL FOR EVENING AND NIGHTTIME NOISE SAMPLE*

AMBIENT NOISE*

GREEN LINE (F ROUTE)
ANACOSTIA SEGMENT

0 600 1200 2400 FT

metro

* L_{50} is the noise level which is equaled or exceeded 50% of the time at given location.

3.5 TRANSPORTATION

3.5.1 TRANSPORTATION POLICIES AND PLANS

Planning for transportation system improvements in the District of Columbia is the joint responsibility of the D.C. Department of Transportation (D.C. DOT) and the National Capital Region Transportation Planning Board (TPB) of which D.C. DOT is a member.

The State Implementation Plan,[1] prepared by D.C. DOT under the Federal-Aid Highway Act of 1970 and the Urban Mass Transportation Act of 1964, establishes transportation goals and policies for the District of Columbia. These include transportation goals and policies as adopted by the District in "Goals and Policies for the District of Columbia."[2] Two overall goals provide the basis for transportation policies:

Goal 1: Assure the movement of all residents, workers, and visitors throughout the City to support the effective functioning of all city activities.

Policy 1.1: To promote the maximum possible use of public transit for trips within the City.

Policy 1.2: To encourage the most efficient use of public transportation.

Policy 1.3: To promote parking facilities that support and complement the community activities of the City with minimum undesirable impacts on adjacent areas.

Goal 2: Efficient equitable movement of goods and services throughout the City.

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[1] D.C. Department of Transportation. State Implementation Plan FY 1980-85.

[2] District of Columbia Register. "Goals and Policies for the District of Columbia (Act 2-283)." October 18, 1978.

Policy 2.1: To encourage the location of freight terminus and service facilities in areas that efficiently serve the city and the region with minimum adverse impacts on their surroundings.

Policy 2.2: To encourage the development of efficient systems and schedule of goods and services delivery to reduce adverse impacts on neighborhoods, delivery areas, and traffic flows.

Completion of the Metrorail System is recognized by the District of Columbia as critical to achievement of the goals in the State Implementation Plan. Studies undertaken by the D.C. Department of Transportation of traffic conditions[1] and transportation improvement needs[2] in the District of Columbia Southeast, including the study area, have reaffirmed this conclusion.

Under the Federal Aid Highway Act of 1962 and the Mass Transportation Act of 1964, the TPB has responsibility for developing and implementing a comprehensive transportation planning process for the National Capital Metropolitan Area. On May 21, 1980, the TPB adopted its regional transportation plan.[3] This plan includes three major elements: (1) policy, (2) long-range improvements, and (3) transportation system management measures. The goals set forth in the Plan provide the general policy framework for continuing transportation system planning and implementation:

Goal 1: Develop a transportation system which supports the Region's Metropolitan Growth Policy of promoting a more compact development pattern to conserve air, water, land and energy resources.

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[1]D.C. Department of Transportation. A Study of Transportation Systems Management Programs for the Bolling/Anacostia Corridor. (Prepared by Barton-Aschman Associates, Inc.) March 1975.

[2]D.C. Department of Transportation. A Study of Freeway System Modifications at Barney Circle and Related Actions. March 1980.

[3]National Capital Region Transportation Planning Board. Transportation Improvement Plan for the Washington Metropolitan Area FY 1980-1985.

Goal 2: Develop and manage the transportation system to support the achievement of National Ambient Air Quality Standards.

Goal 3: Achieve management efficiency and productivity through coordinated operating, regulatory and service policies.

Goal 4: Provide improved transit accessibility and services to the transportation disadvantaged and dependent.

Goal 5: Develop a more rational allocation of flights among the three major carrier airports.

WMATA's proposed continuation of the Metrorail Green Line, including the South Crossing Alignment for the Anacostia Segment, is one of the Long Range Elements of the Plan.

The TPB in coordination with D.C. DOT, prepares a transportation improvement plan designed to achieve these goals on a five-year basis. The current Transportation Improvement Plan[1] (TIP) identifies specific transportation improvements for the region for the five-year period from 1980 to 1985. The largest item in the transit capital cost element is the Metrorail, including the South Crossing Alignment for the Anacostia Segment; this represents a continuing commitment to completion of the Metrorail System.

Major roadway improvements identified in the TIP and located within the study area include:

1. South Capitol Street (from Douglass Bridge to the D.C. line).

   Reconstruction of turning lane at Southern Avenue; intersection improvement at Martin Luther King, Jr. Avenue; resurfacing and repair, installation of signs, signals, markings and street lights.

2. Southern Avenue (from South Capitol Street to East Capitol Street).

   Extend and provide continuous four-lane roadway.

[1]National Capital Region Transportation Planning Board. Transportation Improvement Plan for the Washington Metropolitan Area FY 1980-1985.

3. Suitland Parkway (South Capitol Street to D.C. Line).

   Complete upgrading to meet current design and safety standards. Will include reconstruction of pavement sections, improvement of turning lanes and intersection ramps, construction of bikeways and walkways, installation of signs and markings and landscaping.

4. South Capitol Street Bridge over Oxon Run.

   Complete replacement of structure.

5. I-295 (from 11th Street Bridge to D.C. Line).

   Addition of two lanes.

This list assumes construction of the South Crossing Alignment for the Anacostia Segment of the Metro Green Line and associated highway traffic volumes in Southeast Washington.

3.5.2 ROAD NETWORK

Major roadways in the study area include the following:[1]

Interstates

1. I-295
2. I-395/I-695

Expressways

1. Suitland Parkway
2. South Capitol Street (north of Martin Luther King, Jr. Avenue)

Principal Arterials

1. Pennsylvania Avenue
2. Branch Avenue
3. South Capitol Street (south of Martin Luther King, Jr. Avenue)

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[1] D.C. Department of Transportation. A Study of Transportation Systems Management Programs for the Bolling/Anacostia Corridor. (Prepared by Barton-Aschman Associates, Inc.) March 1975.

Minor Arterials

1. Stanton Road
2. Sheridan Road (north of Stanton Road)
3. Howard Road
4. Mississippi Avenue
5. Southern Avenue
6. 23rd Street
7. 13th Street (north of Mississippi Avenue)
8. Atlantic Street
9. 1st Street
10. Martin Luther King, Jr. Avenue (south of South Capitol Street)
11. Joliet Street
12. 4th Street
13. 6th Street

Collectors

1. Minnesota Avenue
2. Good Hope Road
3. Naylor Road
4. Alabama Avenue
5. Martin Luther King, Jr. Avenue
6. Wheeler Road

Average daily traffic volumes on selected roadways near the Anacostia Segment are shown on Figure 3.8.

The heaviest use of the study area roadway system occurs during the peak commuter periods on South Capitol Street (Douglass Bridge), I-295 (11th Street Bridge), and Pennsylvania Avenue (Sousa Bridge). These three routes provide the only Anacostia River crossings for traffic approaching downtown Washington from portions of the District of Columbia and Prince George's County south of Pennsylvania Avenue.

All three bridges are currently operating very close to capacity. The Douglass Bridge and Sousa Bridge both carry 3,500 vehicles in the peak hour; the 11th Street Bridge is carrying approximately 5,600 vehicles in the peak hour.[1] Future increases in traffic volumes on these bridges would require capacity increases to maintain service levels.[2]

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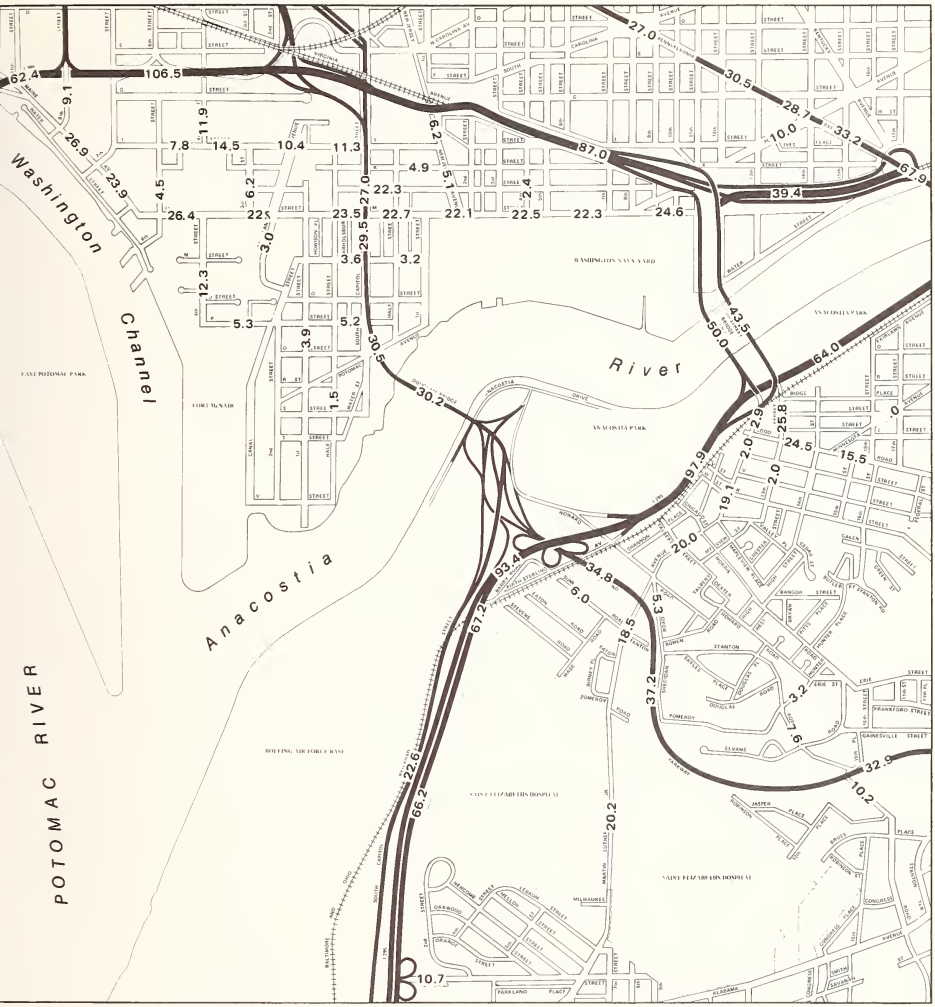
[1]R.H. Pratt Associates, Inc. "Transit Patronage Estimates and Traffic Impacts for the Washington Metropolitan Area Transit Authority "F" Route Environmental Impact Report." March 1977.

[2]Barton-Aschman Associates, Inc. "Analysis of Vehicle Mile Forecasts for the "F" Route Between Waterfront Station and Anacostia Station." February 1981.

FIGURE 3.8



EXISTING AVERAGE DAILY TRAFFIC
(1000 trips rounded to nearest hundred)

GREEN LINE (F ROUTE)
ANACOSTIA SEGMENT

0 600 1200 2400 FT

metro

3.5.3 REGIONAL TRANSPORTATION FACILITIES

A. Railroad and Air Service

No existing railroads or airports provide commuter or regional transit service to the study area.

B. Bus Service

Metrobus service currently extends to most portions of the study area. Three routes serve the area north of the Anacostia River; south of the river seven routes provide bus service. Almost all Metrobus routes provide access from the study area into downtown Washington. Coming from south of the Anacostia River routes utilize the Douglass Bridge, the 11th Street Bridge, and the Sousa Bridge. After crossing the river, all but two lines continue directly north out of the study area to downtown.

Routes serving portions of the study area located north of the Anacostia River include (Figures 3.9 and 3.3):

1. Route M-2,5 - operating to and from downtown and 2nd and V Streets, SW, via 4th Street, SW, serving the Carrollsburg and Southwest communities.

2. Route 60,70,71 - operating to and from downtown via 5th and 7th Streets, SW, serving the Carrollsburg and Southwest communities.

3. Route V-4,6 - operating to and from downtown using 11th Street, SE, M Street, and 6th Street, SW, serving the Southwest, Carrollsburg and Southeast communities, as well as providing access to the Washington Navy Yard and Southeast Federal Center.

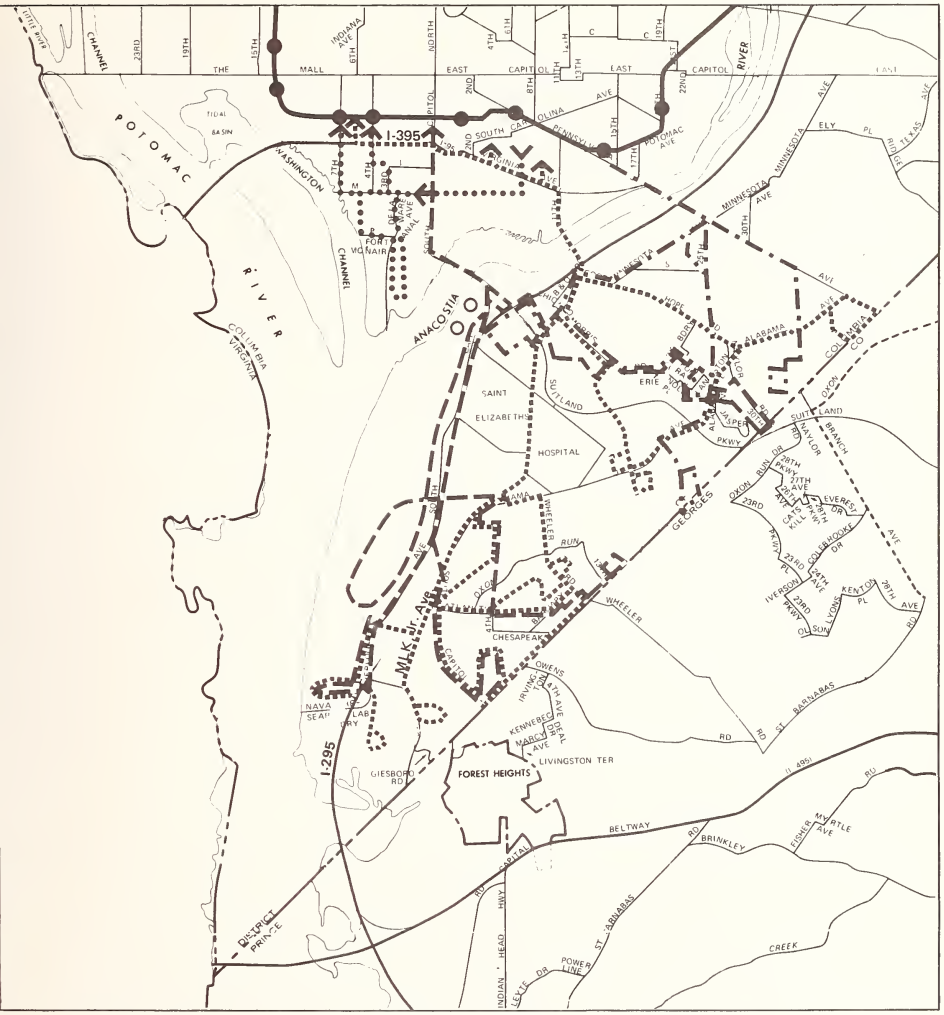
All routes north of the river provide access to the L'Enfant Plaza and Federal Center Metro stations.

Routes serving portions of the study area located south of the Anacostia River include (Figures 3.9 and 3.3):

Douglass Bridge

1. Route A-5,7,9 - providing service from the Bolling/Anacostia Complex and Congress Heights via South Capitol Street. All pass within walking distance of the Federal Center Metro station.

FIGURE 3.9



DOUGLASS BRIDGE RTS
A-6, 7, 9 and V-1, 3

11th STREET BRIDGE RTS
A-1, 2, 4, 6, 8 and V-5, 7, 9 and 92, 94

SOUSA BRIDGE RTS
B-2, 4, 5 and 32, 34, 36

RTS N. of the ANACOSTIA RIVER
M-2, 5 and 60, 70, 71 and V-4, 6

SOUTH CAPITAL STREET FRINGE PARKING

METRO ALIGNMENT

METRO STATION

EXISTING BUS NETWORK

GREEN LINE (F ROUTE)
ANACOSTIA SEGMENT

0 2000 4000 8000 FT

metro

2. Route V-1,3 - providing bus service from Congress Heights, and the Douglass and Buena Vista communities. Both pass within walking distance of the L'Enfant Plaza and Federal Center Metro stations.

11th Street Bridge

1. Route A-1,2,4,6,8 - providing service from the Congress Heights community, via Martin Luther King, Jr. Avenue, as well as access to and from St. Elizabeths Hospital. All pass within walking distance of the Federal Center and Capitol South Metro stations.

2. Route V-5,7,9 - providing service from Fairfax Village, Summit Park, Hillcrest, Good Hope and Floral Hills; providing service from Douglass, Buena Vista, Barry Farms, and Anacostia and; providing service from Congress Heights and St. Elizabeths Hospital. All provide access to the L'Enfant Plaza Metro Station.

3. Route 92,94 - providing service to study area communities northeast of Barry Farms and Anacostia. Both provide access to the Eastern Market Metro Station.

Sousa Bridge

1. Route B-2,4,5 - providing service to Buena Vista, Barry Farms, and Anacostia. All provide access to the Potomac Avenue and Stadium Armory Metro stations.

2. Route 32,34,36 - providing service to Shipley Terrace, Knox Hill, Garfield Heights, Naylor Gardens, Woodland, Summit Park, Good Hope, Randle Highlands, and Floral Hills. All provide access to the Potomac Avenue and Eastern Market Metro Stations.

Several additional bus routes operating to portions of Prince George's County both south and east of the study area pass through it using South Capitol Street, I-295 and Pennsylvania Avenue. These include lines of the D,P,W,S,H,B,J and K Routes.

Within the study area WMATA also provides express Metrobus service during the peak hour from two fringe parking facilities in the vicinity of the Suitland Parkway, I-295, and South Capitol Street interchange. The two lots link with Routes A-5,7,9, D-12, P-9, V-3, and W-12.

Chapter 4
ENVIRONMENTAL CONSEQUENCES

4.1 SHORT-TERM IMPACTS

4.1.1 PHYSIOGRAPHY/GEOLOGY/SOIL IMPACTS

A. No Build Alternative

Substrate Stability

The geologic materials in the area of the tail tracks outbound of Waterfront Station are often weak with low bearing capacity and high moisture content. Areas of fill are subject to settling, increasing the possibility that new structure foundations will crack and become unstable. Interception of lenses of single-sized sand grains during subsurface construction may cause the substrate to collapse and flow into excavation sites. Construction in these areas will therefore require special engineering measures such as dewatering and founding of structures in stable underlying material. Final design of these structures will be the responsibility of the WMATA Section Designer.

Earth Disturbance and Movement

Excavation for construction of tail tracks outbound of Waterfront Station will require removal of approximately 175,000 cubic yards of spoil.

Spoil material will be comprised of uncontaminated fill and alluvium dominated by plastic clay and silty sand with some gravel and boulders. The spoil will be suitable for deposal at locations throughout the region where fill is required. The actual disposal locations will be determined by WMATA contractors.

Spoil excavation, handling, and transportation of unstabilized soil will be conducted in conformance with both WMATA specifications and regulations of the District of Columbia (see Mitigating Measures). Despite compliance with these requirements, there may be short-term increases in erosion

and sedimentation in the vicinity of the construction site. These increases, however, will be within the acceptable limits of appropriate regulatory authorities.

B. South Crossing Alternative

Substrate Stability

The geologic materials in the area of the alignment are often weak with low bearing capacity and high moisture content. Areas of fill around the Navy Yard and Anacostia Stations are subject to settling, increasing the possibility that new structure foundations will crack and become unstable. In alluvium and lower terrace deposits, interception of lenses of single-sized sand grains during subsurface construction may cause the substrate to collapse and flow into excavation sites. Construction in these areas will therefore require special engineering measures such as dewatering and founding of structures in stable underlying material. Final design of these structures will be the responsibility of the WMATA Section Designer.

Earth Disturbance and Movement - Design Sections F3 and F5

Excavation for construction of Design Sections F3 and F5 of the Anacostia Segment (excluding the river crossing) will require removal of approximately 600,000 cubic yards of spoil.

The 600,000 cubic yards of material will be comprised of uncontaminated fill, alluvium and lower terrace deposits characterized by organic and plastic clays with varying amounts of sand, gravel and boulders. The spoil will be suitable for disposal at locations throughout the region where fill is required. The actual disposal locations will be determined by WMATA contractors.

Spoil excavation, handling, and transportation of unstabilized soil will be conducted in conformance with both WMATA specifications and regulations of the District of Columbia (see Mitigating Measures). Despite compliance with these requirements, there may be short-term increases in erosion and sedimentation in the vicinity of the construction sites. These increases, however, will be within the acceptable limits of appropriate regulatory authorities.

Earth Disturbance and Movement - Design Section F4

Two construction alternatives are proposed by WMATA for the below grade Anacostia River crossing (Design Section F4). These include earth tunnel construction and sunken tube construction. Selection of the preferred crossing design will be made on the basis of cost following receipt of bids from qualified contractors.

The earth tunnel alternative will require excavation of approximately 150,000 cubic yards of spoil. This material will be comprised of uncontaminated, highly consolidated clay with varying amounts of silty sand. It will be suitable for disposal at locations throughout the region where clean fill is required. The actual disposal locations will be determined by the WMATA contractor. If necessary, Prince George's County has given preliminary approval for the disposal of all the material at the Brown Station Road Landfill.

The sunken tube river crossing alternative will require dredging of approximately 300,000 cubic yards of spoil. Of this material, approximately 100,000 cubic yards will be contaminated, having high concentrations of chlorinated hydrocarbons, such as chlordane, DDT, and PCB's, as well as high concentrations of iron, mercury and phenols (see Sections 3.4.2, 3.4.3 and 4.1.2); the remaining 200,000 cubic yards of material will be comprised of uncontaminated clays and sands.

In conformance with Section 404 of the Clean Water Act, river crossing construction using a sunken tube design will require a permit from the U.S. Army Corps of Engineers. This permit will be necessary for river dredging as well as disposal of the dredged material. As part of this permitting process WMATA has obtained preliminary approval from the Army Corps for disposal of the dredged material (Figure 4.1). Acceptable disposal sites have been located for both the contaminated and uncontaminated material. The 100,000 cubic yards of contaminated spoil will be disposed of on land owned by the National Park Service (NPS) in the vicinity of the proposed Anacostia Station. Of the remaining 200,000 cubic yards of uncontaminated dredge material, that portion which is unsuitable for use by the NPS will be transported to other sites. Prince George's County has given preliminary approval for disposal of all the excess uncontaminated material in the Brown Station Road Landfill. To provide flexibility in delivery of the dredged material, however, additional suitable sites are being sought for the uncontaminated material, including the Arundel Asphalt site in Cheltenham, Maryland.

The 100,000 cubic yards of contaminated dredged material will be removed from the river and temporarily stored and dewatered on approximately nine acres of land now occupied by the District of Columbia Lanham Tree Nursery.[1] After drying, the material will be utilized to improve grades and elevations at the Anacostia Station site as well as for improvements to the Anacostia Park area surrounding the station. These improvements may include, but not necessarily be limited to:

1. Berms adjacent to I-295, Suitland Parkway, and approaches to the South Capitol Street Bridge.

2. Reinforcement of the Anacostia River levee system so as to provide for landscaped cover of the existing steel bulkhead.

3. Elevation of the 5 to 7 acres of lowland adjacent to the proposed station parking facilities.

Prior to reuse the dried material will be tested and supplemented as needed to ensure its capability to support landscaping and to provide adequate drainage.

Potential environmental impacts associated with the disposal method as proposed include both short- and long-term effects. The handling of spoil during dredging, transport to the dewatering site, dewatering, supplementation, and subsequent reuse will result in local increases in erosion and sedimentation as well as potential water quality impacts. Questions of potential long-term impacts have been raised, including the possibility of groundwater contamination by leachate from the contaminated river sediments.

Erosion and sedimentation will be controlled through erosion control measures and spoil handling and disposal methods as required by WMATA, the District of Columbia, the U.S. Army Corps of Engineers, and the U.S. Environmental Protection Agency (see Mitigating Measures below). Potential short- and long-term impacts on hydrologic resources and appropriate mitigating measures are described separately below in Sections 4.1.2 and 4.2.2.

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[1]The nursery will be relocated to a suitable replacement site (see Section 4.2.1).

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
6TH AND WALNUT STREETS
PHILADELPHIA, PENNSYLVANIA 19106

JUN 11 1981

Mr. R. A. Larsen
Parsons, Brinckerhoff,
Suerdrup & Associates
8720 Georgia Avenue
Silver Spring, MD 20910

Re: WMATA Section F004, Design Contract 3F0041, Disposal Areas

Dear Mr. Larsen:

We have reviewed the above referenced project and concur with the use of the Anacostia Park site as a rehandling area. It is our understanding that of the 400,000 cubic yards to be dredged, approximately 300,000 cubic yards is clean and could be used as land fill cover at the Brown Station Road landfill once dried. This would be a good use of the material and we would have no objections to its placement there or at an equivalent site.

Concerning the 100,000 cubic yards of organic spoils, the Park Service has proposed to use this material, once dried, on Park land. Provided there would be no problems with surface runoff or ground water, we would have no objections to this use.

While there are still some technical issues to be resolved, especially related to the configuration and design of the disposal area, we have no overall objections to the project. We will, however, recommend that all of the technical issues be resolved prior to issuance of a Section 404 permit.

If there are any questions on this project, please contact Mr. Bill Muir (215-597-9006) of my staff.

Sincerely yours,

John R. Pomponio
Chief
EIS & Wetlands Review Section

C. Mitigating Measures

Erosion Control and Spoil Disposal - Uncontaminated Material

Specific procedures for handling erosion, sedimentation, and spoil generation and disposal impacts are contained in the General Provision and Standard Specification and Special Provisions for Construction Projects. All WMATA contractors are required to comply with provisions of this document as well as all relevant local, state and federal laws. These will include at a minimum a Sedimentation and Erosion Control Permit from the D.C. Department of Environmental Services and a 404 permit for handling of material dredged from the Anacostia River.

The WMATA and District of Columbia criteria pertaining to soil erosion and sedimentation require that both be minimized by reducing runoff rates and volumes and by filtering and settling out suspended sediment from runoff water. Spoil handling and disposal must be performed so as to minimize soil loss and sedimentation. WMATA criteria require regular cleaning of construction vehicles used for transporting spoil, as well as care in loading, and transport and spill clean-up. Spoil disposal in an approved disposal site requires that the owner of the disposal site possess valid solid waste disposal permits from the appropriate state licensing agency. Approval of such refuse disposal permits requires agency review of existing conditions, grading plans, sedimentation and erosion control protective measures and maintenance procedures. The exact measures to be taken in spoil disposal, and the nature of the acceptable sites, will not be known until the construction methods and excavation techniques have been fully determined. The decisions as to construction and excavation techniques will dictate the quantities and nature of the spoil materials. The final responsibility for disposing of the spoil in a state approved disposal site will lie with the WMATA contractor.

Erosion Control and Spoil Disposal - Contaminated Material

Final approval of the disposal site and handling of contaminated dredge material will be dependent upon issuance of a 404 Permit by the Army Corps. This will require resolution of remaining technical issues related to the configuration and design of the disposal area as requested by the Army Corps and the National Park Service.

To address these issues WMATA is currently preparing detailed construction specifications for the scheduling of dredging operations, the removal of the dredged material from the river barges to the dewatering site, the dewatering operation, the testing and supplementing of dredge material prior to reuse, and the grading and relandscaping at the station and surrounding park areas to be improved. Specifications for the dredging scheduling and the dewatering operations will be subject to review by the Army Corps of Engineers prior to issuance of the 404 Permit; the National Park Service must approve specifications for the remaining items prior to approval of the General Plans for Design Section F4. Neither WMATA, the Army Corps nor the National Park Service anticipate any unresolvable problems with respect to meeting the remaining requirements for issuance of the 404 Permit.

A general description of the handling of material is described below in Section 4.2.2 Short-Term Hydrologic Impacts.

4.1.2 HYDROLOGIC IMPACTS

A. No Build Alternative

Anacostia River Channel Disturbance

The No Build Alternative will not require construction of a crossing beneath the Anacostia River. Consequently there will be no disturbance to the river bottom.

Dewatering

Due to the high water table in the M Street area, dewatering will be necessary prior to excavation in some areas along the tail tracks outbound of Waterfront Station. Where dewatering is extensive, it is likely to cause lowering of the water table in adjacent areas, followed by a greater probability of settling. In areas where water pressure is high and substrates are very permeable (sands and gravels), dewatering will be more difficult. Impacts from such engineering obstacles will be largely financial, resulting in increased construction costs.

Water produced from dewatering operations will contain suspended sediments and must be filtered and then disposed of in accordance with local, state and federal requirements.

Erosion and Sedimendation

The improper handling of large volumes of excavated spoil material can promote sedimentation and erosion, resulting

in the degradation of surface water quality. The handling of the approximately 175,000 cubic yards of spoil generated by cut-and-cover and earth-tunnel construction will be conducted in accordance with the sedimentation and erosion control requirements mentioned above. These permits and guidelines will serve to prevent sediment-rich runoff from entering drainage swales, storm sewers, and surface water features.

B. South Crossing Alternative

Anacostia River Channel Disturbance - Design Section F4

Construction of the Anacostia River Crossing (Design Section F4) using sunken tubes will require dredging of a trench along the river bottom. Approximately 300,000 cubic yards of river sediments will be removed from the river channel. Dredging will be accomplished using the clam shell technique.

The proposed dreding will result in the disturbance and removal of bottom sediments and the resuspension of a small fraction of the dredged particulate material in the water column. A detailed description of the physical and chemical characteristics of these sediments is included in Section 3.4.2 above.

A narrow turbidity plume will be created parallel to the direction of river or tidal flow. Localized areas will contain levels of suspended solids which would be unacceptable were they to prevail throughout the entire river.[1] These areas, or mixing zones, will be small enough however to comply with guidelines provided in the U.S. EPA Drinking Water Quality Criteria. These criteria are designed to prevent the creation of barriers to fish migration.

Dredging for sunken tube construction will also result in a local increase in the concentrations of both particulate-bound and dissolved pollutants in the water column. The concentrations of these pollutants will be highest immediately adjacent to the point of dredging, but will decrease away from that point as a result of redeposition, dilution and dispersion. The total concentrations of some chemical constituents will exceed Federal water quality criteria within the mixing zone. Outside the mixing zone, the dredging operation is not expected to further degrade the Anacostia River.

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[1]Ecological Analysts, Inc. "Environmental Assessment of Physical/Chemical Impacts Related to the Dredging and Disposal of Spoil from the Proposed Trench Tube Crossing of the Anacostia River." March 1981.

Water quality at the edge of the mixing zone will meet Federal water quality criteria except in the case of iron, mercury, chlordane, DDT and PCB's (Table 4.1). Of these constituents, iron and mercury are already present in high concentrations in the river. It is not therefore possible to meet the criteria for surface waters during dredging because of the high ambient concentrations of these two constituents.

The projected high concentrations of chlordane, DDT and PCB's during dredging are due entirely to their high concentrations in the suspended solids fraction. These compounds are generally very strongly bound to silts and clays, and eventually settle from the water column. Their concentrations, nevertheless, will consistently fail to meet the Federal criteria at the edge of the mixing zone during the period of dredging. It should be noted, however, that both the loss rates at the dredge and the available dilution across the mixing zone were conservatively estimated during the modelling of expected impacts in order to provide an indication of worst-case conditions; consequently the degredation of existing conditions in the Anacostia is not expected to be as great as calculated.

The two water quality standards promulgated by the District of Columbia - minimum allowable dissolved oxygen and maximum allowable fecal coliform bacteria levels - will probably not be met at the dredging site during the period of dredging. Ambient dissolved oxygen levels are near or below the 3.0 mg/liter minimum during the summer months. The ambient fecal coliform levels during summer months also consistently fail to meet the criteria of a mean of 1000 MPN/100 ml. The dissolved oxygen problem will be intensified because of the high chemical oxygen demand created by the sediment dispersed during the dredging operation. Even during winter, some local dissolved oxygen problems might occur.

In general the dredging operations associated with the construction of a sunken tube crossing should have relatively minor impacts on the water quality of the Anacostia River.[1] Any dredge-related impacts will be limited essentially to the period of dredging.[2]

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[1]Ecological Analysts, Inc. "Environmental Assessment of Physical/Chemical Impacts Related to the Dredging and Disposal of Spoil from the Proposed Trench Tube Crossing of the Anacostia River." March 1981.

[2]Ibid.

TABLE 4.1: RELATIONSHIP OF PLUME CONCENTRATIONS TO FEDERAL REQUIREMENTS

Constituent	Concentration 250 mg/l[1]	Concentration 80 mg/l[2]	Federal Water Quality Criteria	Multiple of Criteria 250 mg/l[1]	80
Iron (mg/l)	8.77	3.35	1.0	8.8	3.
Mercury (ug/l)	1.66	1.48	0.05	33.2	29.
Chlordane (ug/l)	0.054	0.024	0.01	5.4	2.
DDT (ug/l)	0.086	0.030	0.001	86.0	30.
PCBs	0.17	0.08	0.001	170.0	80.

[1]Sample prepared by combining bottom sediment and river water at a ratio of 250 mg of sediment/liter of water.

[2]Sample prepared by combining bottom sediment and river water at a ratio of 80 mg of sediment/liter of water.

Source: Ecological Analysts, Inc. "Environmental Assessment of Physical/Chemical Impacts Related to the Dredging and Disposal of Spoil from the Proposed Trench Tube Crossing of the Anacostia River." March 1981.

Dewatering - Design Sections F3 and F5

Due to the high water table along portions of the Anacostia Segment included within Design Sections F3 and F5, some areas will require dewatering prior to excavation. Where dewatering is extensive, it is likely to cause lowering of the water table in adjacent areas, followed by a greater probability of settling. In areas where water pressure is high and substrates are very permeable (sands and gravels), dewatering will be more difficult. Preliminary study has indicated that the areas near the north and south transitions to the Anacostia River crossing possess these characteristics. Impacts from such engineering obstacles will be largely financial, resulting in increased construction costs.

Water produced from dewatering operations will contain suspended sediments and must be filtered and then disposed of in accordance with local, state and federal requirements.

Dewatering - Design Section F4

Assuming sunken tube construction of the Anacostia River crossing (Design Section F4), approximately 300,000 cubic yards of river sediments must be disposed of at suitable locations throughout the region. At present, WMATA proposes to transport the 200,000 cubic yards of uncontaminated material directly from the river barges to the disposal location; the remaining 100,000 cubic yards of contaminated material will be dewatered on the nine acres now occupied by the D.C. Lanham Tree Nursery and then, as described above in Section 4.1.1, be reutilized in the Anacostia Station area.[1]

The disposal and drying of uncontaminated spoil will result in some hazard of increased erosion and sedimentation during handling, transport, and disposal. These activities however will be conducted in accordance with sedimentation and erosion control plans as described in Section 4.1.1. These permits and guidelines will serve to prevent sediment-rich runoff from entering drainage swales, streams and rivers.

Unlike the drying of uncontaminated material, the dewatering of the 100,000 cubic yards of contaminated spoil will result not only in the potential for increased erosion and sedimentation but also in possible surface water pollution from runoff and leachate potentially high in pollutants.

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[1]Final grading plans will determine the volume of material which can be handled at the National Park Service site. It is possible that part of the 200,000 cubic yards of uncontaminated material can also be handled at the NPS site. This however would require supplementation of the material so as to ensure its ability to support plant life.

To avoid potential water quality impacts, and in compliance with Section 404 of the Clean Water Act, WMATA has developed a preliminary dewatering plan. This plan calls for off-loading the contaminated dredge material from the river barges to a conveyor system for transport to the nine acre dewatering site. Once on the site the material will be moved initially by bulldozers and later by drag lines, plows, and drag scrapers. Because of the relatively low water content, the material will be worked immediately to create drainage channels which will promote drying of the material and conveyance of surface runoff. It is anticipated that the dredge spoil will consolidate quickly, and as further drying occurs, a relatively impervious crust will form on the surface. To facilitate rapid dewatering runoff from precipitation will be removed from the crust. In addition, to promote drying the material will be worked with a drag line or plow. Turning the material will allow moist material to mix with drier material as well as expose moist material to atmospheric drying.

The entire dewatering site will be isolated from the surrounding area by an impermeable berm. Water collected from the surface drainage system will be conveyed to a polishing pond. Detention of water in the pond will allow settlement of sediment. Following detention the material will be discharged into the Anacostia River, providing such discharge will be in compliance with Federal Dunking Water Criteria.

At present, it is assumed[1] that the effluent will be suitable for discharge. This conclusion is based upon results of elutriate tests and low estimates of the total volume of effluent to be discharged. While these tests indicate violations of phenol and iron Federal Drinking Water Standards as well as several criteria of the Virginia State Water Control Board (Table 4.2), the small discharge expected from the disposal area when mixed with the river water can be expected to result in water quality at the edge of the permitted mixing zone conforming to the water quality criteria. This mixing zone allows for use of 10 percent of the river cross section for the dispersal of effluent in the river before application of the criteria.

Potential impacts on groundwater resources associated with the downward movement of water through the contaminated material are considered long-term and are discussed below in Section 4.2.2.

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[1]Parsons, Brinckerhoff, Sverdrup & Associates. "Dredge Spoils Handling at Anacostia Park Site." June 1981.

TABLE 4.2: COMPARISON OF ANACOSTIA RIVER CONSTITUENT CONCENTRATIONS FROM ALL ELUTRIATE SAMPLES TO APPLICABLE STANDARDS

Parameters	Sampled Concentration Mean ± 95% Confidence Interval	Surface Waters Federal Water Quality Criteria (EPA, 1976)	Federal Drinking Water Criteria Applicable to Groundwater Discharges from Confined Disposal Sites	Virginia Water Control Board Interim Groundwater Standards
Ammonia nitrogen (mg/l)	8.39± 3.2	0.02 mg/l (unionized)	———	0.025 mg/l
Nitrate-nitrite nitrogen (mg/l)	0.78± 0.19	———	10.0 mg/l	0.025 mg/l
Organic nitrogen (mg/l)	2.2± 1.9	———	———	———
Total kjeldahl nitrogen (mg/l)	10.0± 3.6	———	———	———
Organic phosphorous (mg/l)	0.041± 0.013	———	———	———
Ortho phosphorous (mg/l)	0.030± 0.015	———	———	———
Total phosphorous (mg/l)	0.070± 0.023	———	———	———
Coliform bacteria (per 100 ml)	1900± 1940	———	1 per 100 ml	1 per 100 ml
Barium (ug/l)	59.4± 12.3	———	1 mg/l	1.0 mg/l
Cadmium (ug/l)	0.9 ± 0.4	12.0 ug/l	0.001 mg/l	0.4 ug/l
Chromium (ug/l)	8.3± 6.7	100 ug/l	0.05 mg/l	0.05 mg/l
Chromium, hexavalent (ug/l)	1.4± 0.4	———	———	———
Copper (ug/l)	< 30**	.1 x 96 hr LC 50*	1.00 mg/l	1.00 mg/l
Iron /ug/l)	567± 301	1.0 mg/l	0.30 mg/l	.30 mg/l
Lead (ug/l	9.9 ± 6.1	.1 x 96 hr LC 50*	0.05 mg/l	0.05 ug/l
Mercury (ug/l)	0.8 ± 0.2	0.05-0.10 ug/l	0.002 mg/l	0.05 ug/l
Nickel (ug/l)	9.2± 2.9	.01 x 96 hr LC 50*	———	———
Selenium (ug/l)	< 0.1**	.01 x 96 hr LC 50*	.01 mg/l	0.01 mg/l
Silver (ug/l)	< 0.2**	.01 x 96 hr LC 50*	.05 mg/l	0
Zinc (ug/l)	69± 36	.01 x 96 hr LC 50*	5.0 mg/l	0.05 mg/l
Arsenic (ug/l)	31.8± 29.3	100 ug/l	0.05 mg/l	0.05 mg/l
Cyanide (mg/l)	< 0.05**	5 ug/l	———	5.0 ug/l
Foaming agents (mg/l)	1.52± 0.52	———	———	0.05 mg/l
Oil/grease (mg/l)	6.17± 2.74	.01 x 96 hr LC 50*	———	———
Phenols (mg/l)	0.05± 0.15	———	0.001 mg/l	0.001 mg/l
Sodium (mg/l)	26.0± 20.5	———	———	270 mg/l
Chemical oxygen demand (mgO/l)	971± 153	———	———	———
Gross beta (pC/l)	2.96± 1.13	———	———	1000 pC/l
Radium 226 (pC/l)	0.240± 0.155	———	———	3 pC/l
Strontium 90 (pC/l)	0.265± 0.419	———	———	10 pC/l
Aldrin (ug/l)	< 0.0006**	0.003 ug/l	———	0.003 ug/l
Chlordane (ug/l)	< 0.1**	0.01 ug/l	———	0.01 ug/l
DDT (ug/l)	< 0.004**	0.001 ug/l	———	0.001 ug/l
Dieldrin (ug/l)	< 0.002**	0.003 ug/l	———	0.003 ug/l
Endrin (ug/l)	< 0.003**	0.004 ug/l	.002 mg/l	0.004 ug/l
Heptachlor (ug/l)	< 0.0007**	0.001 ug/l	———	0.001 ug/l
Heptachlor epoxide (ug/l)	< 0.0009**	———	———	0.001 ug/l
Kepone (ug/l)	< 0.04**	———	———	0 ug/l
Lindane (ug/l)	< 0.0007**	0.01 ug/l	0.004 mg/l	0.01 ug/l
Methoxychlor (ug/l)	< 0.03**	0.03 ug/l	0.1 mg/l	0.03 ug/l
Mirex (ug/l)	< 0.003**	0.001 ug/l	———	0 ug/l
Polychlorinated biphenyls (ug/l)	< 0.04**	0.001 ug/l	———	———
Toxaphene (ug/l)	< 0.08**	0.005 ug/l	0.005 mg/l	0 ug/l

ug: microgram mg: milligram

** less than detection limits

*LC 50 for sensitive aquatic resident species, marine or freshwater

——— not applicable, no standard exists

Source: Ecological Analysts, Inc. "Environmental Assessment of Physical/Chemical Impacts Related to the Dredging and Disposal of Spoil from the Proposed Trench Tube Crossing of the Anacostia River." March 1981.

Erosion and Sedimentation

The improper handling and storage of excavated spoil material can promote sedimentation and erosion, resulting in the degradation of surface water quality. The handling of the 600,000 cubic yards of spoil generated by cut-and-cover and earth tunnel construction along Design Sections F4 and F5 will be conducted in accordance with the sedimentation and erosion control requirements mentioned in Section 4.1.1 above. These permits and guidelines will serve to prevent sediment-rich runoff from entering drainage swales, storm sewers, and surface water features.

C. Mitigating Measures

Anacostia River Channel Disturbance

Proposed WMATA dredging activity in the Anacostia River will be subject to provisions of the 404 Permit from the U.S. Army Corps of Engineers as described above in Section 4.1.1. WMATA has coordinated closely with reviewing agencies involved in the 404 permitting process to identify potential water quality problems with respect to the dredging activity in the river. Existing data describing water quality, aquatic and benthic communities, and river sediments have been supplemented as requested by those agencies. All relevant data have been reviewed by them. No major impact problems have been identified with respect to activities in the river.

To date, WMATA has agreed to at least the following three mitigating measures:

1. Clam shell dredging so as to minimize sediment loss and suspension. The clam shell will be kept in good working condition so as to ensure minimal loss of material during operation.

2. Dredging will not occur during fish spawning periods from March 1 to June 15. Special backfilling methods will be used during this period to limit impacts on fish spawning runs.

3. The turbidity plume will be limited to 10 percent of the river cross section as recommended by U.S. EPA guidelines. This will minimize the disruption of water quality in the mixing zone, as the dilution will be higher and fish migration will not be impeded.

When the remaining technical issues relevant to spoil disposal are resolved, all the detailed material pertaining to activities in the river will be officially submitted to the U.S. Army Corps of Engineers in WMATA's request for the 404 Permit.

Dewatering - Design Sections F3 and F5

WMATA dewatering operations for construction of Design Sections F3 and F5 (excluding the Anacostia River crossing) will comply with all requirements of the District of Columbia Department of Environmental Services and the U.S. Environmental Protection Agency. These will require the filtering of all effluent from dewatering activities prior to discharge into a storm sewer or surface water body. Such filtering will eliminate potential short-term sedimentation impacts on surface water resources.

Dewatering - Design Section 4

Proposed dewatering of the contaminated dredge spoil on the National Park Service site will also be subject to provisions of the 404 Permit from the U.S. Army Corps of Engineers. Specifically WMATA must demonstrate that discharges from the dewatering site will not result in violations of the Federal Drinking Water Criteria.

To demonstrate this WMATA is preparing a submission for the 404 Permit application describing the proposed dewatering activities, the anticipated chemical composition of both the leachate and the surface runoff from the dewatering site, and provisions for testing the effluent prior to and following discharge. WMATA anticipates no problem in being able to comply with applicable water quality criteria.

Erosion and Sedimentation Control

All WMATA contractors are required to comply with the stipulations of the U.S. EPA and the D.C. Department of Environmental Services, Bureau of Design and Engineering with regard to sedimentation and erosion control measures. Construction operations must be conducted so as to minimize soil erosion and prevent silting and muddying of streams and storm sewers by conforming to such practices as:

1. Protecting borrow sites and material stockpiles from erosion.

2. Reducing suspended sediment by placing water from dewatering operations in settling basins prior to discharge into storm sewers.

3. Intercepting and diverting surface drainage away from excavations so as to prevent erosion both on- and off-site.

4. Maintenance of construction sites and equipment.

4.1.3 BIOTIC DISTURBANCE

A. No Build Alternative

The No Build Alternative will have no substantial short-term impact on biotic resources.

B. South Crossing Alternative

Approximately eight acres of lawn-like vegetation south of the Anacostia River will be disturbed by cut-and-cover construction of the South Crossing Alignment. This includes approximately two acres presently included within Anacostia Park.

Should sunken tube construction techniques be employed to cross the Anacostia River, some short-term biotic impacts will result. Benthic organisms will be destroyed in dredged areas. Benthic communities immediately adjacent to the dredge site will also be adversely affected by the deposition of dredge-related suspended sediment. It is anticipated that benthic biota will be able to recolonize dredged areas following construction. Modelling has indicated that the mixing zone of dredge-related suspended sediment will occupy less than 10 percent of the river's cross section and thus fall within the U.S. EPA water quality criteria designed to prevent barriers to fish migration.[1]

C. Mitigating Measures

Lawn-like areas disturbed by cut-and-cover Metro construction can be relatively quickly revegetated with species similar to those which inhabited these areas prior to disturbance. All revegetation plans will be prepared in coordination with and be subject to approval by the District of Columbia.

Clamshell dredging techniques will be employed in order to minimize the suspension of sediment in the water column during dredging. Dredging will not be performed during fish spawning periods. Special backfill techniques intended to minimize the suspension of sediment will be used during the spawning period.

[1]Ecological Analysts, Inc. "Environmental Assessment of Physical/Chemical Impacts Related to the Dredging and Disposal of Spoil from the Proposed Trench Tube Crossing of the Anacostia River, Data Report." March 1981.

4.1.4 TRAFFIC CONGESTION

A. No Build Alternative

Construction Sites

Construction required to make Metro operative from the Waterfront Station will temporarily affect capacity of M Street in two locations:

Cut-and-Cover Double Crossover

1. M Street, between Delaware Avenue and 4th Street, SW.

M Street Fan Shaft

1. M Street, between 1st Street, SW and Howison Place.

During initial excavation and installation of street decking through traffic will be maintained along M Street, although at reduced capacity. Following installation, temporary street decking will continue to slow traffic, although less severely. The result will be increased congestion on M Street and diversion of traffic to adjacent local streets. Following construction decking will be removed, and the M Street surface replaced, returning it to its original capacity.

Construction Vehicle Traffic

Removal of approximately 175,000 cubic yards of spoil from the construction site will increase local truck traffic. Material delivery and construction activities will also add to traffic increases. The construction vehicles will utilize the most cost-effective and efficient route to the disposal site. However because the WMATA contractor has not as yet been selected, the spoil disposal site and the most efficient route to it has not been determined; the WMATA contractor will be responsible for the disposal site selection, procuring the required permits, and the subsequent compliance with mandated regulations.

Although it is not possible to identify the specific disposal vehicle routes at this time, it can be assumed that the most suitable routes will be those which maximize travel on major roadways; consequently, traffic from the M Street construction site is likely to flow as directly as possible to I-695, I-295 and other major roadways.

Construction traffic will avoid peak hour traffic to maximize efficiency and be cost-effective. Hours of transport will also depend on the operating hours of the disposal sites, as regulated by State and local licensing agencies, as well as provisions of the contract specifications

B. South Crossing Alternative

Construction Sites

Construction of the South Crossing alignment will temporarily affect capacity of seven roadways:

Navy Yard Station

1. M Street between Van Street and New Jersey Avenue, SW.

Anacostia Station

1. Firth Sterling Avenue, in the vicinity of Howard Road.
2. Howard Road between Suitland Parkway and Firth Sterling Avenue.
3. Martin Luther King, Jr. Avenue between Sumner Road and Howard Road.
4. I-295 between South Capitol Street and Good Hope Road (11th Street Bridge).
5. Suitland Parkway in the vicinity of Martin Luther King, Jr. Avenue.
6. Howard Road.

Street decking will be used to maintain traffic flows on major roadways where required. During initial excavation and installation of street decking, through traffic will be maintained although at reduced capacity. Following installation, temporary street decking will continue to slow traffic, although less severely. The result will be increased congestion and diversion of traffic to adjacent local streets, where alternate routes exist. Following construction decking will be removed and surfaces replaced, returning the affected roadways to their original capacity or, in some locations, to a locally improved capacity.

Construction Vehicle Traffic

Removal of excavation spoil from Metro construction sites will increase local truck traffic. North of the Anacostia River approximately 500,000 cubic yards of material will be

removed from construction sites along M Street and at the north seawall of the river in the Washington Navy Yard; south of the river, spoil generated from the river crossing and Anacostia Station construction (varying from 250,000 to 470,000 cubic yards, depending upon river crossing construction method) will be removed from a construction site in Anacostia Park.[1]

The construction vehicles will utilize the most cost-effective and efficient route to the disposal site. However because the WMATA contractor for the South Crossing has not as yet been selected, the spoil disposal site and the most efficient route to it has not been determined; the WMATA contractor will be responsible for selection of an approved disposal site, procuring the required permits, and the subsequent compliance with mandated regulations.

Although four potential disposal sites have been identified (Section 4.2.2), it is not possible to identify the specific disposal vehicle routes to them at this time. However, it can be assumed that the most suitable routes will be those which maximize travel on major roadways. Consequently, traffic from the M Street construction site is likely to move as directly as possible to I-695, I-295, and other major roadways. Spoil hauling vehicles from the Anacostia Park site are likely to move as directly as possible to I-295 via Anacostia Drive or Good Hope Road.

Construction traffic will avoid peak hour traffic to maximize efficiency and be cost-effective. Hours of transport will also depend on the operating hours of the selected disposal site, as regulated by State and local licensing agencies.

C. Mitigating Measures

Transportation system management techniques will be utilized in order to promote movement during the construction period. Such measures will probably include:

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[1]It should be noted that should sunken tube construction be used for the river crossing, barge hauling will be considered as a potential means of conveyance of the spoil material dredged from the Anacostia River (370,000 of the 470,000 cubic yards)(Section 4.1.1). This has the potential to reduce construction-related traffic impacts in the immediate area of the Anacostia Park construction site.

1. Temporary street decking to maintain traffic over areas of cut and cover construction.
2. Appropriate signage, signalization, barricades and personnel to maintain and direct traffic movement.
3. Transportation of materials during off-peak hours when possible (when permitted by working-hour restrictions).

The WMATA contractor will be required to comply with the WMATA Safety Provisions. The contractor will also be subject to rules, regulations and provisions of the local, County, State and Federal authorities having jurisdiction.

4.1.5 AIR QUALITY IMPACTS

A. No Build Alternative

Cut-and-cover and tunnel construction along the tail tracks outbound of Waterfront Station will result in surface emissions from exposed excavation sites and from handling, storage, and transport of large volumes of spoil material.

Construction-related traffic congestion, likely to occur along M Street during tail track construction, may cause local increases in the levels of airborne pollutants.

B. South Crossing Alternative

Cut-and-cover and tunnel construction of the Anacostia Segment will result in surface emissions from exposed excavation sites and from handling, storage and transport of large volumes of spoil material.

Construction-related traffic congestion is likely to occur along several roadways:

Navy Yard Station Area

1. M Street between Half Street and New Jersey Avenue, SW.

Anacostia Station Area

1. Firth Sterling Avenue in the vicinity of Howard Road.
2. Howard Road between Suitland Parkway and Firth Sterling Avenue.

3. Martin Luther King, Jr. Avenue between Sumner Road and Howard Road.
4. I-295 between South Capitol Street and Good Hope Road (11th Street Bridge).
5. Suitland Parkway, in the vicinity of Martin Luther King, Jr. Avenue.

Traffic congestion along these routes may cause localized increases in levels of airborne pollutants.

Demolition of buildings along the alignment (Section 4.2.1) will result in increased particulates and fugitive dust.

C. Mitigating Measures

Several mitigating measures can be utilized to reduce short-term air quality impacts associated with construction.

The extent of the Metro (F) Route impact on suspended particulates will depend greatly upon precautions taken during construction. If existing construction regulations are enforced, the impact will be minimized. The following are suggested primary measures that can be taken:

1. Restriction of vehicle flow on unpaved surfaces.

2. Watering twice a day during periods of high winds and construction activity.

3. Minimizing the period during which cleared and regraded lands are exposed.

4. Minimizing the period when spoils are stored in the immediate vicinity of the construction site.

Where the demolition of existing buildings that contain asbestos material is necessary, precautions should be taken in accordance with Federal regulations outlined in Federal Register No. 66, Vol. 38, April 6, 1973.

Although several sites of congestion in and around the outskirts of an already highly congested city make a relatively small contribution to total congestion-related emissions in the region, efforts to reduce congestion at construction sites will mitigate the contribution the sites do make to regional emissions of carbon monoxide and non-methane hydrocarbons. Mitigating measures include scheduling activities so that the largest construction vehicles are not in operation during peak periods in combination with well-designed traffic control measures.

4.1.6 NOISE AND VIBRATION IMPACTS

A. No Build Alternative

Construction equipment, including jack hammers, trucks, bulldozers, and other internal combustion vehicles, will create localized short-term noise impacts during the construction of tail tracks outbound of Waterfront Station. Construction noise could result in disturbance to the community over a substantial period of time; however, it can be controlled and is not a permanent feature of the Metro System. Short-term noise impacts may also be associated with increased traffic congestion during construction.

B. South Crossing Alternative

Construction equipment, including jack hammers, trucks, bulldozers and other internal combustion vehicles, will create localized short-term noise impacts during the construction of the Anacostia Segment. Construction noise can result in disturbance to the community over a substantial period of time; however, it can be controlled and is not a permanent feature of the Metro System. Short-term noise impacts may also be associated with increased traffic congestion during construction.

C. Mitigating Measures

WMATA contracts include measures to reduce noise and vibration created by Metro construction. Specifications are based on WMATA Design Criteria and require the contractor to comply with the following guidelines:

1. The contractor shall take every possible action to minimize noise caused by his operation, complying with noise criteria and scheduling as specified by WMATA.

2. The contractor shall provide, where necessary, working machinery and equipment fitted with efficient noise suppression devices.

3. The contractor shall be responsible for any damage caused by vibration due to blasting or other operations.

4. The contractor shall provide such equipment, sound deadening devices, and take such noise abatement measures that are necessary to comply with the requirements of WMATA.

5. Sound levels from mobile equipment shall comply with acceptable WMATA criteria, determined on the basis of length of equipment use, scheduling, and adjacent land uses.

6. Powered equipment exceeding maximum sound levels adopted by WMATA shall not be used during construction operations.

4.2 LONG-TERM IMPACTS

4.2.1 DISPLACEMENTS

For any portion of the Metro System permanent and temporary real property interests are required for the rail right-of-way, station facilities, ancillary facilities (such as electrical power substations) and construction sites. Locations of ancillary facilities and construction sites are not finalized until approximately 40 percent of final design is completed. Since final design does not begin until after the General Plans Public Hearings, acquisitions and relocations specified for alternatives under consideration are considered preliminary and subject to change when the hearings are held. All property owners and tenants of those properties within 100 feet from the outer limits of any planned Metro facilities are notified of the public hearing 30 days in advance by individual mailings and by physically posting a notice of the hearing on each property. Should the preliminary real estate requirements be changed after the public hearings, affected property owners and tenants are contacted promptly.

Two general plan public hearings have been held for the Anacostia Segment of the Green Line, one for the alignment north of the Anacostia River (Design Section F3) in June 1978, the other for the alignment south of the Anacostia River (Design Section F5) in July 1978. Final design on the two sections began following those hearings. As of March 1981 approximately 30 percent of final design has been completed on Design Section F3 and 70 percent completed on Design Section F5. Consequently the projected acquisitions and associated displacements have been identified for portions of the route south of the Anacostia River, but remain preliminary for the portion north of the river. The location of the east Navy Yard Station entrance remains the primary design question for Design Section F3; until the preferred alternative entrance design is selected acquisitions for Design Section F3 will remain preliminary.

Presently WMATA is proceeding with preparation of appraisals for properties to be acquired. Once those appraisals are completed negotiations will commence with individual property owners.

A. No Build Alternative

Additional construction at the east end of Waterfront Station and the extension of tail tracks beneath M Street required to permit automatic train operation will not displace any residential, commercial, or publicly-owned structures.

B. South Crossing Alternative

Private Displacements

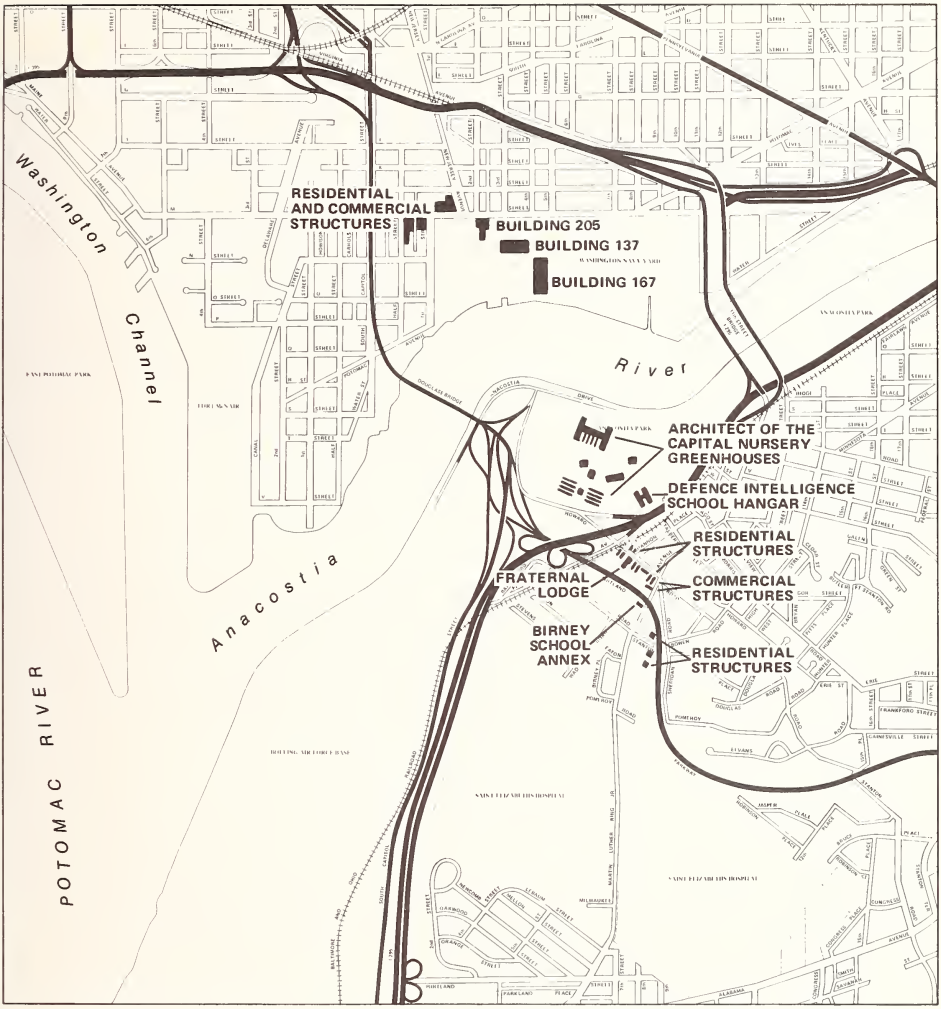
Based upon general plans for the Anacostia Segment, construction of the Green Line to Anacostia will require acquisition of 43 privately-owned structures. These acquisitions will result in relocation of 18 occupied residential structures (24 units), 8 occupied commercial structures (9 businesses), 2 small office structures, and 1 fraternal lodge. In addition 12 unoccupied residential structures (12 units) and 1 unoccupied commercial structure will be taken. Partial acquistions will be required from a church and storage yard.

Approximately 64 people will be displaced by takings. North of the river residential structures (14 dwelling units) will be taken in the 1200 block of Half Street, SE, the 100 block of M Street, SE, and the 1100 block of New Jersey Avenue, SE (Figure 4.2); of these only 5 structures are occupied. These takings will necessitate relocation of 16 people. Taking of 13 residential structures (19 dwelling units) south of the Anacostia River in the 1000 and 1100 blocks of Howard Road and the 2500 block of Stanton and Dunbar Roads, will require relocation of 48 people; the remaining 4 residential structures to be taken are currently unoccupied.

All residents to be displaced are black. Their income levels are generally low to moderate ($6,000 to $15,000 per year in 1980). Eight units are occupied by senior citizens living on fixed incomes. Four families are large, having 6 to 7 members. Seven units are owner-occupied; 17 units are tenant-occupied.

Metro construction will also require relocation of nine businesses, and two small office structures. North of the Anacostia River these include two auto repair shops, a cafeteria, a beauty shop, and two liquor stores, a carry-out, and the two office structures, along M Street between Half and 2nd Streets, SE. South of the river two businesses, including a gas station and a beauty salon will be taken in the 2500 block of Martin Luther King, Jr. Avenue; an additional vacant business unit will be taken.

FIGURE 4.2



SOUTH CROSSING STRUCTURE TAKINGS

GREEN LINE (F ROUTE)
ANACOSTIA SEGMENT

0 600 1200 2400 FT

metro

The majority of private takings will be required for construction of the Navy Yard Station and entrances, the Anacostia Station and parking facilities, and cut-and-cover alignment construction outbound of the Anacostia Station.

Public Displacements

Metro construction will displace several publicly-owned structures. Potential vibration effects will necessitate removal of Buildings 137, 167 and 205 in the Washington Navy Yard Annex. Construction of the Anacostia Station and parking facilities will require removal of structures associated with the District of Columbia Lanham Tree Nursery and the Architect of the Capitol's nursery as well as relocation of the helicopter hangar at the U.S. Defense Intelligence School. Cut-and-cover construction of tail tracks outbound of Anacostia Station will necessitate taking the Birney Elementary School Annex.

C. Mitigation

Requirements pertaining to land acquisition and relocations for projects funded by the Urban Mass Transportation Administration are described in UMTA Circular C4530.1.[1] The Manual contains guidelines relating to the necessity for, and means of preparation of: (1) the appraisal and acquisition of real property, (2) rendering relocation services, (3) moving, relocation and replacement housing payments, and (4) other expense payments when land acquisition and/or relocation is involved.

General WMATA guidelines pertaining to land acquisition and relocations are included in the "Relocation Guide for Business Concerns and Non-Profit Organizations" and the "Relocation Guide for Families and Individuals," published by the WMATA Office of Real Estate.[2] These are general guidelines subject to more specific regulations and laws of UMTA and WMATA as spelled out in the WMATA Policy and Procedure Manual of the Office of Real Estate.

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[1]U.S. Department of Transportation, Urban Mass Transportation Administration. "Land Acquisition and Relocation Assistance under the Urban Mass Transportation Act of 1965, as amended (Circular C4530.1)." March 1978.

[2]Washington Metropolitan Area Transit Authority, Office of Real Estate. "Relocation Guide for Business Concerns and Non-Profit Organizations" and "Relocation Guide for Families and Individuals." 1971.

Businesses

- WMATA will assist the property owners in finding vacant properties to meet owners' needs.

- Loans from the Small Business Administration will be available for certain businesses at low-interest, long-term rates.

- Business owners will be eligible for moving expense payments and relocation payments.

- In the case of an owner intending to cease operation of his/her business, he/she may be eligible to submit a claim for the actual direct loss of property to WMATA.

Families and Individuals

- WMATA will assist owners with help in purchasing a new home, rental house, or apartment.

- Relocation payments (expenses) are available to those persons eligible.

- If a homeowner is displaced by WMATA, he/she may receive a Relocation Housing Payment (if the amount he/she receives for the house is less than a comparable dwelling).

- Tenants are entitled to certain payments for relocation to comparable housing.

The Washington Metropolitan Area Transit Authority is constructing the Metro System in accordance with Public Law 91-646, The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970. Under this law, persons who would be displaced from their homes as a result of such construction may not be required to move unless the agency head is satisfied that suitable replacement housing is available from the law, so that adequate replacement housing will be assured for all displaced persons.

Public Law 91-646, Section 210 (3) provides that "....the head of a Federal agency shall not approve any grant to, or contract agreement with, a State agency, under which Federal financial assistance will be available which will

result in the displacement of any person on or after the effective date of this title, unless he receives satisfactory assurances from such State agency that....

(1) .....

(2) .....

(3) within a reasonable period of time prior to displacement, decent, safe, and sanitary replacement dwellings will be avilable to displaced persons in accordance with Section 205(c)(3)."

Public Law 91-646, Section 205(c)(3) provides that "Each relocation assistance advisory program required by subsection (a) of this section shall include such measures, facilities or services as may be necessary or appropriate in order to....

(1) .....

(2) .....

(3) assure that, within a reasonable period of time, prior to displacement there will be available in areas not generally less desirable in regard to public utilities and public and commercial facilities and at rents or prices within the financial means of the families and individuals displaced, decent, safe and sanitary dwellings as defined by such Federal agency head, equal in number to the number of and available to such displaced persons who require such dwellings and reasonably accessible to their places of employment, except that the head of that Federal agency may prescribe by regulation situations where such assurances may be waived...."

Under this law the General Manager of the Washington Metropolitan Area Transit Authority causes to be made studies of available housing, in a timely manner, to provide the basis for assurance that the requirements of the law will be met to assure the relocation of all displaced persons into decent, safe, and sanitary replacement housing as defined in the law.

This assurance for Design Sections F3 and F5 of the Anacostia Segment will be determined and given by the General Manager sufficiently in advance of the acquisition and displacement of families and individuals from the right-of-way selected to minimize the possibility of subsequent need to reply upon the following authority contained in Section 206(a) in order to comply with Section 206(b):

> "Section 206(a) - If a Federal project cannot proceed to actual construction because comparable replacement sale or rental housing is not available, and the head of the Federal agency determines that such housing cannot otherwise be made available, he may take such action as is necessary or appropriate to provide such housing by use of funds authorized for such project.
>
> Section 206(b) - No person shall be required to move from his dwelling on or after the effective date of this title, on account of any Federal project, unless the Federal agency head is satisfied that replacement housing, in accordance with Section 205(c)(3), is available to such persons."

In accordance with these requirements, WMATA has conducted a preliminary survey to more specifically identify replacement housing needs for residents to be displaced as a result of construction of Design Sections F3 and F5. Replacement housing requirements for the 23 households projected to be relocated consists of privately-owned housing units for sale and privately-owned housing units for rent (both subsidized and non-subsidized rentals). Bedroom requirements for most of the households will fall in the one, two, and three bedroom range; only four large families will require relocation.

The majority of households to be displaced have incomes qualifying them for federally subsidized low or moderate income housing. To determine the availability of subsidized units to meet these replacement needs, WMATA has consulted with the District of Columbia Housing Authority. Results of this coordination have revealed that there are sufficient subsidized rental units to provide assurance that displaced households in need of subsidized replacement housing can be relocated within the time frame allowed, particularly given the priority afforded displaced applicants.

To determine the availability of replacement housing for residents other than those qualifying for subsidized housing, a survey was conducted of available housing units to meet relocation needs. This survey identified units for sale or rent suitable to meet replacement needs within a two mile radius of the displacement sites.

During the months of April and May, 1981, available housing units were identified through newspaper classified ads and contacts with realtors. The survey revealed that the current market price for homes in the area ranges generally between $37,950 and $49,696. Unsubsidized rentals for apartments and houses range as follows:

1 bedroom	-	$143 - $294
2 bedroom	-	$162 - $345
3 bedroom	-	$186 - $348

During the survey period 37 rental units and 15 units for sale were identified to meet the replacement needs anticipated. These results, as well as the relocation assistance provided by Public Law 91-646, combined with the benefits of subsidized housing, support the conclusion that the replacement housing requirements of displacements in Design Sections F3 and F5 can be satisfied within the area surveyed. Also, experience has shown that personal preference of displacees results in selection of available replacement housing in some areas farther removed from the displacement sites, consequently increasing the available market of suitable replacement housing.

Public Facilities

WMATA will provide relocation assistance and/or reimbursement for all public facilities displaced by Metro construction:

1. Washington Navy Yard Annex, Buildings 137, 167, and 205

   WMATA is presently coordinating with the General Services Administration (GSA) to determine suitable reimbursement for structures to be taken as well as the use of land. GSA will assume responsibility for finding suitable replacement facilities for uses now housed in Buildings 137, 167, and 205.

2. District of Columbia Lanham Tree Nursery

D.C. has assumed responsibility for relocating the District of Columbia Lanham Tree Nursery at a new site.

3. Architect of the Capitol Nursery and Greenhouses

WMATA has agreed to find a relocation site for the Architect of the Capitol's nursery and greenhouses considered suitable by the Architect of the Capitol. Once the site is located, WMATA will cover costs for acquisition, relocation, and improvements.

Several potentially suitable relocation sites in Southeast Washington and adjacent portions of Prince George's County have been considered by WMATA in coordination with the Architect of the Capitol. Of the alternative locations, the Camp Simms tract in Southeast Washington has been selected as the preferred relocation site alternative.

Camp Simms is a 25 acre tract located on 15th Street between Alabama and Mississippi Avenues. The property is owned by the U.S. Government. Most recently it has been used by the D.C. National Guard as a motor pool facility for military vehicles; that function however has been relocated to the new reserve center at the Naval Air Station in the Bolling/Anacostia Military Complex. Presently the site remains primarily unused; two structures are being temporarily used by the Detective Division of the National Capitol Park Police and a third structure is in use as a transformer storage facility; the remaining six structures are not in use.

The U.S. Army Corps of Engineers has preliminarily determined that the Camp Simms tract is excess property. Consistent with that determination and at WMATA's request, the Army Corps has issued a temporary use permit for the Camp Simms site to the Architect of the Capitol. WMATA is currently preparing a master plan for the Architect of the Capitol which will provide for the rehabilitation of the 25 acre tract, including the nine structures. The Architect of the Capitol has provided a program to WMATA as a basis for this master plan to ensure that the recommended improvements provide for continuation of all functions operating at the existing Botanic Garden facility. Once the master

plan is approved by the Joint Committee on the Library, WMATA will make all recommended improvements to the site. The land would then be permanently transferred to the Architect of the Capitol.

Use of the Camp Simms tract as a relocation site for functions now occurring at the existing Botanic Garden would require renovation of most of the existing structures as well as soil improvements needed to support nursery operations. Uses to be relocated at Camp Simms would include greenhouses, offices, equipment storage, stone storage, nursery fields, and K-9 training facilities. Improvements to the existing road system and utilities would be required to support these uses.

Relocation of the Botanic Garden to Camp Simms would continue federal use of the property and preclude the potential for transfer of the property to private ownership. While this would be inconsistent with draft plans for the tract calling for mixed use private development, it would represent an improvement over the existing use of the property. Facilities would be rehabilitated and utilized rather than remain vacant and subject to vandalism. Renovations to the nine structures as well as soil improvements and plantings would enhance the visual setting of the site. None of the proposed uses would have an adverse impact upon the surrounding residential community; there would be no appreciable increase in local traffic, noise, or air pollution.

4. Defense Intelligence School Helicopter Hangar

WMATA has agreed to relocate the school's helicopter hangar.

5. Birney School Annex

The Birney School Annex is scheduled for closing prior to the scheduled WMATA demolition. The Authority will coordinate with the District of Columbia to determine suitable reimbursement for the structure.

4.2.2 HYDROLOGIC IMPACTS

A. No Build Alternative

Floodplain Encroachment

The No Build Alternative will not constitute an "encroachment" as defined by the Department of Transportation Order 5650.2, Floodplain Management and Protection (as promulgated in response to Executive Order 11988). The tail tracks outbound of Waterfront Station will not traverse the base (100-year) floodplain as delineated on the Federal Insurance Administration Flood Hazard Boundary Map of the area[1] (Figure 3.6).

Groundwater and Surface Water

The No Build Alternative, including the tail track construction outbound of Waterfront Station, will not produce any direct long-term impacts on groundwater or surface water resources. The projected increases in regional vehicles travelled (Section 4.2.3) in the area under the No Build Alternative could, however, result in indirect impacts associated with increased non-point source pollution. Pollutants would include oil, grease, gas chemicals, trash, debris, road salts and heavy metals.

B. South Crossing Alternative

Floodplain Encroachment

Construction of the South Crossing Alternative will constitute an encroachment as defined by the Department of Transportation (DOT) Order 5650.2, Floodplain Management and Protection (as promulgated in response to Executive Order 11988). An "encroachment" is described in that order as any action within the limits of the base floodplain.

Approximately 2600 feet of the Anacostia Segment will pass beneath the Anacostia River's base floodplain (100-year), including the Anacostia River channel, as delineated on the Flood Insurance Administration Flood Hazard Boundary Map of the area (Figure 3.6).[1] Because construction will be completely below ground, the only permanent structures to be erected in the base floodplain will include four fan shafts and a combined drainage pumping station and emergency access shaft.

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[1]Department of Housing and Urban Development, Federal Insurance Administration. "FIA Flood Hazard Boundary, Map No. H14." Revised October 10, 1975.

Application of DOT criteria indicate that while the proposed action constitutes an "encroachment", it is not a "significant encroachment." A "significant encroachment" is defined as an encroachment on the base floodplain which results in one or more of the following:

1. A substantial risk to human life.

2. Probable future damage that could be substantial in cost or extent.

3. A serious adverse impact on "natural and beneficial floodplain values."

4. Potential interruption or termination of service on a key transportation facility.

For purposes of this definition, "natural and beneficial floodplain values" include but are not limited to natural moderation of floods, water quality maintenance, groundwater recharge, fish, wildlife, plants, open space, natural beauty, scientific study, outdoor recreation, agriculture, and forestry.[1]

Metro construction and operation will not constitute or result in a risk to human life nor will it increase the hazard of future damages. Openings to metro ancillary facilities will be raised above the base floodplain level; therefore flooding should not present a risk to metro users, equipment or facilities. Metro construction should not result in increased flood hazard; the loss of flood storage capacity associated with construction of metro ancillary facilities will be more than compensated for by the removal of two Navy Yard Annex buildings within the base floodplain which together occupy an area of more than 140,000 square feet on the ground surface.

Metro construction will not have a serious adverse impact on "natural and beneficial floodplain values." There should be no long-term effect on streamflow during normal flow or flood flow periods. There should be no long-term impact upon water quality or groundwater recharge resulting from the action in the base floodplain. Because the area is already heavily urbanized, there will be no impact on other natural and beneficial floodplain values such as fish, wildlife, plants, open space, and natural beauty.

Metro construction will not result in the interruption or termination of service on a key transportation facility.

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[1]U.S. Department of Transportation. "Floodplain Management and Protection, Implementation of Executive Order 11988." June 22, 1978.

In further conformance with DOT Order 5650.2 Metro construction and operation will not "directly support" development in the base floodplain. While existing plans for both the Southeast Federal Center and the Capital Gateway Project areas are highly dependent upon metro access from the Navy Yard Station, there will be no new development in the base floodplain in the vicinity of the proposed Navy Yard Station. Plans for the Southeast Federal Center do not include any new structures in the base floodplain. Similarly portions of the Capital Gateway Project area on the base floodplain are now occupied by a District of Columbia sewage pumping station and an incinerator; the master plan for the area indicates the continuation of those uses with no new development.

Groundwater Impacts - Design Sections F3 and F5

Excavation for the Anacostia Segment will entail the disturbance of some ares in which the Patapsco Formation crops out. This formation is an important aquifer in the Prince George's County, Maryland area. However, the major recharge areas for this aquifer are located in the northern part of Prince George's County, not in the study area. Therefore, the long-term groundwater impact associated with this disturbance will be extremely limited.

The construction of the Anacostia Segment and its ancillary facilities, including stations, parking areas and new access roads, will increase the amount of impervious cover and cause a concomitant loss of infiltration and groundwater recharge. This will result in increases in storm water runoff. Pollution from paved areas is likely to enter storm sewers and be flushed into the Anacostia River. Pollutants will include oil, grease, trash, debris, road salts and heavy metals.

Groundwater Impacts - Design Section F4

The proposed disposal of 100,000 cubic yards of contaminated spoil material on the south shore of the Anacostia River in the Anacostia Station area has raised questions from federal and local reviewing agencies regarding the possibility of groundwater contamination. To address these questions, WMATA has prepared and evaluated geotechnical data describing the geologic and hydrologic characteristics of the proposed disposal location.[1,2,3]

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[1]Mueser Rutledge Johnston and Desimone. "Anacostia River Crossing Branch Route Subsurface Investigation (Report No.164)."

[2]Mueser Rutledge Johnston and Desimone. "Anacostia River Crossing Branch Route Subsurface Investigation (Report No.173)."

[3]Ecological Analysts, Inc. "Environmental Assessment of Physical/Chemical Impacts Related to the Dredging and Disposal of Spoil from the Proposed Trench Tube Crossing of the Anacostia River, Data Report." March 1981.

The ground surface in the vicinity of the Anacostia River crossing on the south shore of the river is underlain by miscellaneous fill materials mixed with organic clay. Their thickness is on the order of 10 feet though variable depending on the configuration of the previously existing erosional surface.

The fill is underlain by deposits of recent alluvial organic clays (A-1) upwards of 30 feet in thickness. Typically, they are described as soft to stiff mottled gray-brown slightly organic silty or sandy clay where located on land.

The A-1 clays are underlain by a relatively thin layer (typically less than 10 feet) of Pleistocene terrace materials consisting of bouldery sand and gravel (T-5).

The T-5 gravels are underlain by Cretaceous sediments of the Potomac Group which are clayey near the top (P-1) and appear to become somewhat coarser grained (P-2) or interlensed with sands at depth. The Potomac Group contains the most significant aquifers within the region, though it is somewhat limited as an aquifer in the immediate vicinity.

Results of the analysis of these sediments indicate that the potential for aquifer contamination resulting from the upland disposal of dredge spoil on the south shore of the Anacostia River appears to be limited.[1]

Leachate from the materials may enter the subsurface environment and/or zone of saturation within the fill horizon but would tend to be restricted in further vertical movement by the relatively impermeable (aquitard) A-1 horizon. Groundwater flow within the fill appears to be toward and discharging into the Anacostia River away from potential aquifer recharge areas.

In spite of the apparent impermeable character of the A-1 horizon, it remains suspect to some degree of leakage. Should leakage occur through the A-1, the potential for the migration and/or large-scale dispersion of contaminants within the underlying Potomac Group sediments appears limited as evidenced by the low permeability coefficients and well yields in the underlying horizons. The likelihood of significant quantities of leachate from the disposal of the dredged materials entering productive downdip artesian aquifers of the Potomac Group appears remote.

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[1]Results of the evaluation excerpted from the letter of June 10, 1981 from Ecological Analysts, Inc. to Wallace, Roberts and Todd.

Data and analyses supporting these conclusions have been preliminarily reviewed by the U.S. Environmental Protection Agency. No major unresolved questions have been raised subsequent to that review. All conclusions and supporting data and analyses will be submitted to the Army Corps of Engineers in the detailed 404 Permit application.

C. Mitigating Measures

Ground disturbance and the handling and transport of spoil material during metro construction will require special treatment to mitigate potential ground and surface water impacts. Such measures will include but not be limited to:

1. Specialized engineering techniques to protect structures adjacent to dewatering operations and excavations.

2. Extensive care to avoid sediment uptake during dewatering, not only to prevent sedimentation, but more importantly to avoid additional erosion.

3. Disposal of spoil in approved spoil disposal sites, particularly contaminated spoil (assuming a sunken tube river crossing).

Disposal of spoil material will be in accordance with provisions of a 404 Permit from the Army Corps of Engineers. The site identified in the permit will be approved by the U.S. Environmental Protection Agency as well as appropriate state and local agencies. The permit will only be issued for a disposal site where potential groundwater impacts can be controlled or mitigated so as to prevent contamination.

Long-term storm water management provisions will provide for the safe removal of storm flows from the Anacostia Station site through discharge into the 96" Suitland Run storm sewer. Such a connection will require permit review and approval by the Washington Suburban Sanitary Commission, the District of Columbia Department of Environmental Services, and the National Park Service. No storm water will be discharged directly onto parkland.

4.2.3 TRANSPORTATION IMPACTS

A series of forecasts describing transit patronage, automobile vehicle miles, and bus miles associated with the two alternatives for the Anacostia Segment in the first year of operation provide the basis for evaluating long-term transportation impacts. These forecasts have been developed using detailed modelling processes in a series of transportation system studies, including:

R.H. Pratt Associates, Inc. "Ridership and Revenue Study, Branch Avenue Route Alternative." June 1974.

R.H. Pratt Associates, Inc. "Technical Procedures Used in the Ridership and Revenue Study, Branch Avenue Route Alternatives." October 1974.

R.H. Pratt Associates, Inc. "Transit Patronage Estimates and Traffic Impacts for the Washington Metropolitan Area Transit Authority "F" Route Environmental Impact Report." February 1977.

Washington Metropolitan Area Transit Authority. Environmental Impact Study Final Report, Branch F Route. August 1977.

D.C. Department of Transportation. A Study of Transportation Systems Management Programs for the Bolling/Anacostia Corridor. (Prepared by Barton-Aschman Associates, Inc.) March 1975.

District of Columbia Department of Transportation. "Anacostia Metrorail Station Site Access and Area Roadnet Study." (Prepared by Barton-Aschman Associates, Inc.) August 1980.

Barton-Aschman Associates, Inc. Analysis of Vehicle Mile Forecasts for the "F" Route Between Waterfront Station and Anacostia Station. February 1981.

A. No Build Alternative

Transit Patronage Estimate

Transit ridership in the Anacostia Segment corridor for the No Build Alternative in 1986 is estimated at 16,975,900 annual transit trips.[1] This assumes that 48.48 percent of the transit riders utilizing Metro under the South Crossing Alternative (Section 4.2.3B) would be diverted to private automobiles and 51.52 percent would be diverted to local buses under the No Build Alternative.

Total peak hour Metro ridership in 1986 with service to the Waterfront Station is approximately 1010; by 1990 a 65 percent increase in ridership is anticipated, raising the total peak hour metro trips in the corridor to approximately 3030.[2]

Vehicle Miles Travelled

Total annual vehicle miles travelled for the No Build Alternative in 1986 is estimated at 68,983,900.[3] This includes 4,105,300 annual bus miles and 64,878,600 annual automobile miles.

Peak Hour Vehicle Estimates - Anacostia River Bridges

The heaviest use of the study area roadway system occurs during peak commuter periods on South Capitol Street (Douglass Bridge), I-295 (11th Street Bridge), and Pennsylvania Avenue (Sousa Bridge). These three bridges provide the only Anacostia River crossings for traffic approaching downtown Washington from portions of the District of Columbia and Prince George's County south of Pennsylvania Avenue. All three bridges are currently operating very close to capacity; the Douglass Bridge and Sousa Bridge both carry 3,500 vehicles in the peak hour; the 11th Street Bridge is carrying approximately 5,600 vehicles in the peak hour.[4]

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[1]District of Columbia Department of Transportation. "Anacostia Metrorail Station Site Access and Area Roadnet Study." (Prepared by Barton-Aschman Associates, Inc.) August 1980.

[2]Washington Metropolitan Area Transit Authority. "Waterfront Station Passenger and Revenue Estimates." May 1977.

[3]District of Columbia Department of Transportation. "Anacostia Metrorail Station Site Access and Area Roadnet Study." (Prepared by Barton-Aschman Associates, Inc.) August 1980.

[4]Barton-Aschman Associates, Inc. "Analysis of Vehicle Mile Forecasts for the "F" Route between Waterfront Station and Anacostia Station." February 1981.

Termination of the Green Line at Waterfront Station will result in 2,590 more automobiles and 97 more buses crossing the Anacostia River in the peak hour in 1986 than if metro service were terminated at the Anacostia Station.[1] To accommodate this increase and to maintain service levels on the bridges it will be necessary to increase their capacity.

For the normal engineering design service level (Level of Service C - defined as stable flow condition) 1.83 additional crossing lanes will be required; for the lowest level of service (Level of Service E - defined as unstable flow condition) 1.37 lanes will be required.[2]

This analysis assumes substantial transportation system management actions in the area of the bridges because: (1) the level of service calculations were made using maximum (i.e., freeway) flow rates, and (2) the additional automobiles were estimated using an occupancy of 1.75, which is substantially higher than normal and therefore assumes significant carpooling.[3]

Peak Hour Vehicle Estimates - Metro Station Areas

The Waterfront Station is a walk-on station; no park-ride, kiss-ride, or bus spaces have been or will be constructed in the area. However 97 feeder buses will provide access from Anacostia to the Metrorail station during the peak hour. It is not expected that the addition of bus movements to and from Waterfront Station will affect existing levels of service at intersections in the station vicinity.

Service to the Transit Dependent Population

Metro operation from the Waterfront Station will provide metro service within walking distance to the highly transit dependent population in the Carrollsburg and Southwest areas. The Carrollsburg neighborhood is one of the more highly transit dependent areas in the study area; in 1970 approximately 19 percent (2902 persons) of the population in census tracts surrounding Waterfront Station resided in households which did not own an automobile; similarly in 1970 31 percent (4696 persons) of the population resided in households with incomes less than three times the poverty level and 11 percent (1671 persons) was in the 10 to 16 age group.

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[1] Barton-Aschman Associates, Inc. "Analysis of Vehicle Mile Forecasts for the "F" Route between Waterfront Station and Anacostia Station." February 1981.

[2] Ibid.

[3] Ibid.

Transit dependent individuals residing in the study area outside of Carrollsburg and Southwest who desire to ride Metro will have to utilize one of the new feeder buses servicing the Waterfront Station or an existing bus now servicing other metro stations on the Orange Line. This will reduce accessibility to the Metrorail System for a large number of transit dependent individuals; in 1970 38 percent (51,214 persons) of the population living outside the walk-to area for Waterfront Station resided in households which did not own an automobile; similarly in 1970 48 percent (65,406 persons) of the population resided in households with incomes less than three times the poverty level, and 14 percent (18,627 persons) was in the 10 to 16 age group.

Compatibility with Existing Transportation Plans

Termination of the Metrorail Green Line at the Waterfront Station is not consistent with transportation plans prepared by the D.C. Department of Transportation (D.C. DOT) and the National Capital Region Transportation Planning Board (TPB). The Site Improvement Plan[1] identifies construction of the Green Line to Anacostia as one of the Long Range Elements of the Plan. Similarly the largest item in the transit capital cost element of the Transportation Improvement Plan[2] (TIP) for the five-year period from 1980 to 1985 is the Metrorail, including the Anacostia Segment.

Because funding plans for transportation improvements are determined on the basis of these plans, programmed roadway improvements identified in the current TIP for the Anacostia Segment study area (Section 3.5.1) do not assume higher vehicular volumes in the roadway network associated with the No Build Alternative. Of particular importance is the lack of any programmed improvements for the Anacostia Street bridges.

[1]D.C. Department of Transportation. State Implementation Plan FY 1980-85.

[2]National Capital Region Transportation Planning Board. Transportation Improvement Plan for the Washington Metropolitan Area FY 1980-85.

B. South Crossing Alternative

Transit Patronage Estimate

Transit ridership forecasts for the Anacostia Segment Corridor for the South Crossing Alternative in 1986, the first year of operation, is estimated at 27,857,900.[1]

Total peak hour Metro ridership in 1986 with service to the Waterfront, Navy Yard and Anacostia Stations is approximately 10,170; by 1990 a 67 percent increase in ridership is anticipated, raising the total peak hour metro trips in the corridor to approximately 15,100.[2]

Vehicle Miles Travelled

Total annual vehicle miles travelled for the South Crossing Alternative in 1986 is estimated at 27,920,800.[3] This includes 5,581,500 annual bus miles and 22,339,300 annual automobile miles.

Peak Hour Vehicle Estimates - Anacostia River Bridges

Termination of the Green Line at Anacostia Station will result in 2,590 fewer automobiles and 97 fewer buses crossing the Anacostia River in the peak hour in 1986 if metro service were terminated at the Waterfront Station.[4] This will eliminate the need for improvements to the Anacostia Bridges as described in Section 4.2.3A.

Peak Hour Vehicle Estimates - Metro Station Area

Assuming the South Crossing Alternative both the Waterfront and Navy Yard Stations will be walk-on faciliites; no park-ride, kiss-ride or bus spaces will be constructed. Because the Anacostia Station will be in operation, feeder buses will not operate to either station from Anacostia. Consequently commencement of metro service on the Anacostia Segment will not affect existing levels of service at intersections in the station vicinities.

The Anacostia Station program includes 1080 long-term parking spaces, 70 short-term parking spaces, 84 kiss-ride spaces, 49 bus stalls and 8 motorcycle spaces (Section 2.2). Long-term parking will be provided in a structural facility for 730 cars and on a surface lot for 350 cars.

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[1] Barton-Aschman Associates, Inc. "Analysis of Vehicle Mile Forecasts for the "F" Route between Waterfront Station and Anacostia Station." February 1981.

[2] Ibid.

[3] Ibid.

[4] Ibid.

Five intersections in the immediate vicinity of the station have been studied to evaluate Metro-related traffic impacts:

1. Martin Luther King, Jr. Avenue and Good Hope Road.
2. Martin Luther King, Jr. Avenue, Morris Road, and Chicago Road.
3. Martin Luther King, Jr. Avenue, Howard Road, and Sheridan Road.
4. Firth Sterling Avenue and Howard Road.
5. Firth Sterling Avenue and Suitland Parkway.

All of these intersections currently operate at an acceptable or better level of service (Levels of Service A, B, or C).

Modelling of traffic flow at these intersections for the afternoon peak hour indicates that without improvements all will operate at an unacceptable level of service in 1990 (Levels of Service E or F).

To minimize potential traffic impacts at intersections adjacent to the Anacostia Station, WMATA and D.C. DOT have revised the Anacostia Station site plan and access roads to reduce potential traffic conflicts.[1] A site access and roadnet study was undertaken by D.C. DOT in order to:

1. Maintain separation of local and regional traffic by diverting Metro-related traffic away from local streets.

2. Achieve safe and efficient routes of access so as to encourage use of regional kiss-ride and park-ride facilities.

3. Maintain acceptable levels of service at intersections and on highway interchange ramps.

4. Minimize conflicting traffic movement at ingress and egress points.

5. Minimize the amount of private real property and public parkland for the access systems and parking facilities.

6. Provide for continued access to adjacent existing and planned development.

7. Achieve compatibility with planned transportation improvements of D.C. DOT.

[1]Barton-Aschman Associates, Inc. "Analysis of Vehicle Mile Forecasts for the "F" Route between Waterfront Station and Anacostia Station." February 1981.

The following is a brief description of recommended improvements and traffic operation resulting from this study and as approved by WMATA and D.C. DOT (Figure 4.3):

1. A continuous roadway from Good Hope Road to the Douglass Bridge/South Capital ramp system (Roadway A). The access road will basically be a four lane divided facility immediately in front of the station facilities narrowing down to two lanes at either end. The roadway will serve as a major access point for the facilities located at the regional entrance. The design of the roadway fulfills this primary function while maintaining significant areas for development by the National Park Service.

2. A roadway connecting the new access roadway to Howard Road (Roadway B). This roadway will provide a means of directly accessing the surface parking facilities (commuter and short-term parking) as well as providing access to other station facilities via Roadways A and C.

3. Roadway C, a two lane facility serving to provide access to one of the two entrances to the garage and also serving as a means of egress from the commuter bus storage area.

4. Roadway D, a one-lane, one-way facility between the garage access road and Howard Road. Apart from serving as a means of egress to the local neighborhood area, this roadway also serves to complete an area for U-turns for westbound Howard Road traffic not wishing to cross the Douglass Bridge.

5. Roadway E, completing access to the garage by providing a second entrance to the commuter parking area as well as providing the primary access for short-term parking spaces located below the garage.

6. Roadway segment G, providing a realignment of the intersection of Anacostia Drive and Good Hope Road and access to station facilities via Roadway A.

7. Roadway segments F and J, providing a means of egress from the station area to South Capitol Street. This is achieved largely by realigning existing roadways and maintaining access to and from the northgate of the Bolling/Anacostia Complex.

8. Roadway segment H, tying the relocated intersection of Howard Road and the Suitland Parkway (off-ramp) with new roadway B and retaining access to the Douglass Bridge ramp system. The Suitland Parkway off-ramp to Howard Road is to be widened to provide access to the station roadways from the middle and right lanes. This widening and realignment should have the additional benefit of improving traffic flow on Howard Road.

9. Channelization at the South Capitol-Suitland Parkway divergence from the Douglass Bridge (Segment K). The recommended plan shows a barrier curb so traffic coming from the underpass beneath the Douglass Bridge/South Capitol Street ramp cannot weave across to South Capitol Street. Improvements also include realignment of Anacostia Drive for an improved connection to South Capitol Street.

10. Improvements to the intersection of Suitland Parkway and Firth Sterling Avenue. These improvements consist primarily of providing right-turn lanes and resurfacing.

11. Major improvements to the Howard Road ramp from Suitland Parkway and I-295 and major improvements to the Howard Road intersection for improved traffic flow.

12. Internal circulation is designed to give priority to buses through minimizing conflicts with autos. Private vehicle circulation is more circuitous but avoids adding vehicles to the intersection of Firth Sterling and Howard Road (currently a problem spot during peak hours). Additionally, adequate left turn storage is provided by relocating the major access point to the far west end of the site.

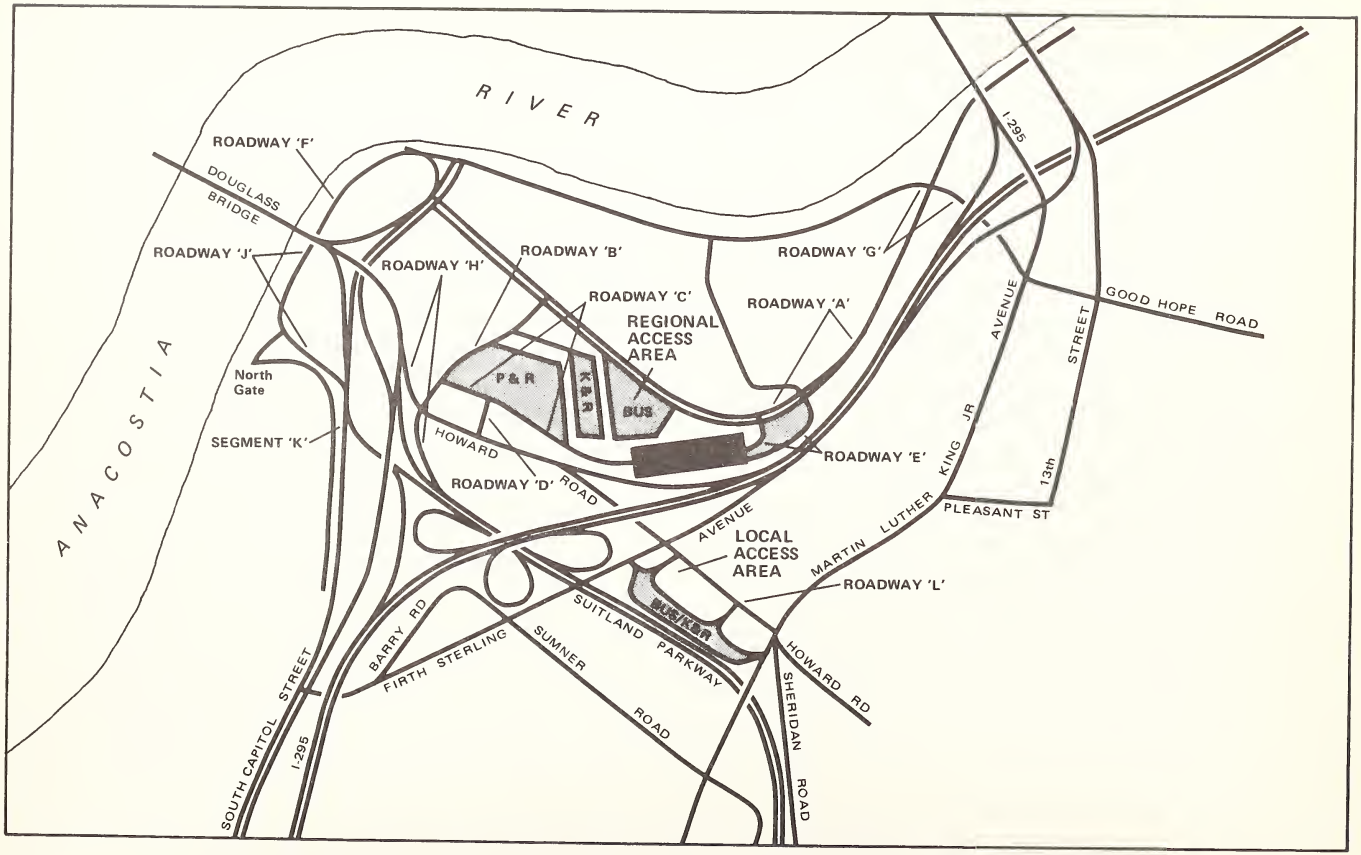

FIGURE 4.3 ANACOSTIA STATION

GREEN LINE (F ROUTE)
ANACOSTIA SEGMENT

13. Closing of the Suitland Parkway off-ramp to Sheridan Road. The elimination of this access point to the local kiss-ride area and the curb cut discouraging access to the local entrance for vehicles southbound on Howard Road serve to re-orient the site-related traffic on the Suitland Parkway from the local entrance to the regional entrance where there is a sufficient supply of kiss-ride spaces.

Service to the Transit Dependent Population

Extension of metro operation to Anacostia will provide walk-to metro service to transit dependents living in portions of the Carrollsburg, Southeast, Anacostia and Barry Farms neighborhoods. These areas include some of the highest concentrations of transit dependents in the study area; in 1970 approximately 37 percent (8957 persons) in census tracts within walking distance of the Waterfront, Navy Yard, and Anacostia Stations resided in households which did not own an automobile; similarly 45 percent (10,760 persons) of the population resided in households with incomes less than three times the poverty level and 14 percent (3460 persons) was in the 10 to 16 age group.

Transit dependents residing in the study area outside of these areas who desire to ride Metro will have to utilize one of the new feeder buses servicing the Anacostia Station or other metro stations on the Orange Line. While the trip to the Anacostia Station will be shorter than that to the Waterfront Station under the No Build Alternative, accessibility to the Metrorail System will be less for a large number of transit dependent individuals; in 1970 35 percent (45,159 persons) of the population outside the walk-to area for the Waterfront, Navy Yard, and Anacostia Stations resided in households which did not own an automobile; similarly 47 percent (59,342 persons) of the population resided in households with incomes less than three times the poverty level, and 13 percent (16,838 persons) was in the 10 to 16 age group.

Compatibility with Existing Transportation Plans

Construction of the South Crossing Alternative for the Anacostia Segment of the Metrorail Green Line is consistent with transportation plans prepared by D.C. DOT and the National Capital Region TPB. The State Implementation Plan[1] identifies continuation of the Green Line to Anacostia as one of the Long Range Elements of the Plan. Similarly the largest item in the transit capital cost element of the Transportation Improvement Plan[2] for the five-year period from 1980 to 1985 is the Metrorail, including the South Crossing Alignment for the Anacostia Segment.

C. Mitigating Measures

Mitigation of transportation impacts associated with the No Build Alternative will require at a minimum the following three actions:

1. Enhanced metrobus service between the study area and downtown Washington.

   This will be required to improve transit patronage, to reduce automobile vehicle miles travelled, and to enhance access to the Metrorail System for the transit dependent population.

2. Revision of transportation plans for both the District of Columbia and the National Capital Region as well as revision of transportation improvement plans to reflect those changes.

   This will be required to adequately plan for and accommodate future vehicular volumes in the study area roadway network.

3. Expenditure of public funds to maintain existing levels of service, to be spent not only on improving metrobus service and transportation planning, but also for specific highway improvements and implementation of transportation system management techniques.

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[1]D.C. Department of Transportation. State Implementation Plan FY 1980-85.

[2]National Capital Region Transportation Planning Board. Transportation Improvement Plan for the Washington Metropolitan Area FY 1980-85.

Of particular importance will be improvements to the Anacostia River Bridges and associated transportation system management techniques.

Potential transportation impacts associated with construction of the South Crossing Alternative have been mitigated through design solutions at the Anacostia Station.

4.2.4 BIOTIC DISTURBANCE

A. No Build Alternative

The 500 feet of cut-and-cover construction immediately outbound of Waterfront Station will result in the loss of street trees along M Street. These trees are relatively small, highly stressed and do not represent a significant biotic resource.

B. South Crossing Alternative

The 1000 feet of cut-and-cover construction in the vicinity of the Navy Yard Station will result in the loss of street trees along M Street. These trees are relatively small, highly stressed and do not represent a significant biotic resource.

Construction of the South Crossing alignment will also result in the paving or covering of approximately 22 acres for roads and parking facilities around the Anacostia Station. Nineteen of these 22 acres are not presently covered with impervious surfaces. These pervious areas are vegetated primarily with grasses and nursery stock. This vegetation will be permanently lost.

Approximately one acre of woodland south of the Anacostia River will be destroyed during cut-and-cover construction. This woody vegetation is composed principally of successional species, and is not as valuable a biotic resource as the upland hardwood communities located further up the Suitland Run valley.

Prior to excavation, some areas along the alignment will require dewatering to ensure adequate substrate stability. The lowered water table which may result from such activity could affect existing vegetation. Depth and duration of lowered water table, as well as age, species, and vigor of vegetation will determine how severe the impact will be.

C. Mitigation Measures

Areas vegetated with trees will be replanted with species similar to or of a higher quality than those already present. In those areas where dewatering is necessary, species used for revegetation will be selected so as to be compatible with hydrologic conditions.

All revegetation plans will be prepared in coordination with and be subject to approval by the District of Columbia.

4.2.5 NOISE AND VIBRATION IMPACTS

A. No Build Alternative

Because of the low speeds at which trains will be operating along the tail tracks outbound of Waterfront Station, no significant long-term noise or vibration impacts are anticipated from train operation;[1] noise from train operations will be within WMATA design criteria.[2]

Fan and vent shaft noise will be attenuated according to WMATA contract specifications to comply with applicable noise standards.

B. South Crossing Alternative

Long-term noise impacts of the Anacostia Segment will consist of possible noise disturbances from train operation and from the operation of ancillary facilities and fan and vent shafts. Vibration produced by metrorail trains operating below grade will be perceived only as a low pitch rumbling noise radiated inside nearby buildings.[3] In all cases, the estimated vibration levels created by metrorail trains operating below grade will be well below the threshold level at which vibration will be felt. Thus, there is no sensation of vibration or motion of buildings created by the subway train operations.

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[1]Steven Wolfe, Wilson, Ihrig and Associates. Personal communication. March 13, 1981.

[2]Wilson, Ihrig and Associates. "Noise and Vibration Analysis of WMATA Metro F Route." 1981.

[3]Including 2 structures remaining after completion of metro construction.

Ambient noise levels combined with projections of ground-borne noise resulting from metro passbys provides the basis for describing metro-related noise impacts. By comparing these projections to ambient noise levels and to WMATA noise criteria it is possible to identify locations along the alignment where, without proper noise mitigation, there is likely to be a noise impact.

Accurate projections of ground-borne noise levels can only be accomplished during the later phases of final design when alignment engineering and train speed data, as well as updated detailed land use information, have been more specifically determined. Continuing with the current WMATA procedure, projections of ground-borne noise are prepared at that time for the nearest occupied areas of all affected buildings adjacent to the metro alignment. These projections when compared to the WMATA noise criteria identify locations where mitigation may be or is likely to be required.

As of June, 1981, approximately 30 percent of final design had been completed on Design Section F3 and 70 percent completed on F5. Preliminary projections of ground-borne noise levels have been prepared for both sections; more detailed engineering and noise studies have been prepared only for Section F5.

Table 4.3 presents preliminary projections for Design Sections F3 (Station Points 94+05 to 144+72) and F5 (Station Points 169+56 to 208+45) for the nearest occupied area of affected buildings along the alignment. The projections utilize not only general plan information but general land use data not reflecting the specific location of uses within structures (i.e., church activities on a first or second flood); consequently more refined data could reveal less of a noise impact, or possibly in some areas, a greater noise impact.

Based upon this preliminary analysis, areas where the expected noise (with standard trackbed construction) meets the allowable noise level criteria should experience no significant intrusion or annoyance. In most cases, if the noise level criteria are achieved, there will be noise from street traffic, other occupants of a building, or other sources, which will create intrusion that is equivalent or greater in level than the noise from train passby.

The preliminary noise analysis however does indicate that using standard trackbed construction, ground-borne noise levels from train operation may exceed WMATA indoor criteria at nine residential structures, five churches, one school, and one firehouse between Waterfront Station and Anacostia Station (Table 4.3). In addition, the ground-borne noise analysis indicated there would be no impact upon either Anacostia Park or Suitland Parkway.

As part of final design for Design Section F5 WMATA has made a revised study of noise impacts at structures along the F5 alignment. The purpose of this analysis was to evaluate noise impacts on the basis of detailed engineering and land use data and to determine the most effective mitigation alternative for locations where without mitigation WMATA design criteria would be exceeded. Results of this analysis support findings of the preliminary noise and vibration study; without some type of mitigation, WMATA criteria will be exceeded at each of the two churches identified in the preliminary noise evaluation (Table 4.3).

Fan and vent shaft noise will be attenuated according to WMATA contract specifications to comply with applicable noise standards.

C. Mitigation Measures

WMATA will utilize mitigation techniques at locations where anticipated noise levels from metro passbys exceed WMAATA noise criteria. In certain locations, however, the existing ambient noise level, due to nearby heavily travelled roads, land uses, and/or other major noise producing sources, is already much higher than WMATA criteria; consequently in such areas, the introduction of noise from transit passby will have no significant effect and mitigating measures are not recommended as they would serve no useful purpose.

Alternative noise mitigation techniques include, but are not necessarily limited to, the installation of floating slab trackbed or the isolation of affected structures from vibration through some type of special structure.

During final design a decision is made as to which mitigation technique is most suitable for each affected area. In most cases cost will be the primary determinant of which alternative is selected.

Because final design has been 70 percent completed on Design Section F5, detailed information is available to determine specific mitigation solutions at the two churches where criteria will be exceeded. The church at Station Point 191+80, located near the heavily travelled Martin Luther King, Jr. Avenue, which carries a high volume of truck and bus traffic, has a high ambient noise level of 65 to 68 dBA. Because of the existing ambient noise, the church will not receive any appreciable increase in noise level from transit passby. Consequently, although the anticipated transit passby noise level (38-42 dBA) is slightly higher than WMATA criteria (30-35 dBA), WMATA is not planning to utilize any structure to mitigate

TABLE 4.3: GROUND-BORNE NOISE PROJECTIONS AS A RESULT OF TRAIN OPERATION

tation oint	Side of Track	Type of Structure	Distance from Tunnel to Nearest Building (ft)[1]	Approx-imate 1975 L50 Noise Levels (dBA)[2]	Criteria for Allowable Maximum Indoor Levels (dBA)	Expected Noise with Standard Trackbed (dBA)	Distance where Cri-terion Ful-filled with Standard Trackbed (ft)
3 93+30 to 93+70	Outbound	Residential	55	>60	40-45	33-37	
94+05 to 96+70	Outbound	Residential	75	55-60	40-45	30-34	
94+50 to 96+50	Inbound	Residential	190	50-55	40-45	10-14	
97+75 to 99+80	Inbound	Residential	40	>60	40-45	41-45	65
98+40 to 99+80	Outbound	Church	65	55-60	30-35	35-39	85
101+20 to 104+10	Outbound	Residential	35	>60	40-45	36-40	
102+25 to 104+50	Inbound	School	65	55-60	35-40	33-37	75
106+70 to 107+50	Outbound	Church	50	>60	30-35	38-42	75
107+60 to 109+60	Inbound	Firehouse	40	>60	40-45	38-42	60
108+30	Outbound	Residential	35	>60	40-45	41-45	65
109+30	Outbound	Residential	35	>60	40-45	41-45	65
110+60	Outbound	Residential	35	>60	40-45	42-46	65
111+70	Outbound	Residential	35	>60	40-45	41-45	65
112+70	Outbound	Residential	35	>60	40-45	40-44	60
110+90 to 112+40	Inbound	Commercial	45	>60	45-55	35-39	
113+00	Inbound	Commercial	125	>60	45-55	18-20	
115+15 to 116+10	Inbound	Church	30	>60	30-35	36-40	75
115+70	Outbound	Commercial	65	> 60	45-55	27-31	
116+50	Inbound	Residential	30	> 60	40-45	38-42	50
117+50	Inbound	Commercial	90	55-60	45-55	29-33	
117+20 to 118+70	Outbound	Metro Bus Garage	20	> 60	45-55	39-43	
120+50	Outbound	Commercial	75	55-60	45-55	25-29	
120+50	Inbound	Commercial	100	55-60	45-55	19-23	
121+50	Outbound	Commercial	35	> 60	45-55	41-45	
122+40	Inbound	Commercial	35	> 60	45-55	41-45	
122+75	Outbound	Residential	155	50-55	35-40	less than 20	
124+20	Inbound	Commercial	30	> 60	45-55	44-48	
124+20	Inbound	Residential	105	55-60	35-40	24-28	
124+90	Inbound	Commercial	95	55-60	45-55	21-25	
126+00	Inbound	Residential	35	>60	35-40	46-50	90
126+50	Inbound	Residential	35	>60	35-40	46-50	90
125+60 to 128+30	Outbound	Government	45	>60	35-45	34-38	

(continued)

TABLE 4.3 (continued)

Station Point		Side of Track	Type of Structure	Distance from Tunnel to Nearest Building (ft)[1]	Approximate 1975 L50 Noise Levels (dBA)[2]	Criteria for Allowable Maximum Indoor Levels (dBA)	Expected Noise with Standard Trackbed (dBA)	Distance where Criterion Fulfilled with Standard Trackbed (ft)
	127+00	Inbound	Residential	125	55-60	40-45	20-24	
	129+50	Inbound	Commercial	75	55-60	45-55	28-32	
	129+50	Inbound	Residential	130	55-60	40-45	18-22	
	130+00	Outbound	Government	35	>60	45-55	36-40	
	131+75	Outbound	Government	0	>60	45-55	38-42	
	132+00	Inbound	Commercial	105	55-60	45-55	21-25	
F5	191+80	Inbound	Church	90	>60	30-35	38-42	115
	192+50	Inbound	Commercial	175	>60	45-55	20-24	
	195+50	Inbound	Commercial	180	>60	45-55	10-14	
	196+40	Outbound	School	50	>60	35-40	30-34	
	198+60	Outbound	Vacant	75	>60	35-40	31-35	
	199+50	Outbound	Church	55	>60	30-35	33-37	75
	200+40	Outbound	Residential	75	>60	35-40	33-37	
	201+50	Outbound	Residential	140	>60	35-40	20-25	
	201+80	Outbound	Residential	100	>60	35-40	28-32	
	202+00	Outbound	Church	260	>60	30-35	less than 10	

[1]Measured plan distance from centerline of tunnel.

[2]Combined L50 noise levels for evening and nighttime.

Sources: Wilson, Ihrig and Associates. "Noise and Vibration Analysis of WMATA Metro F Route." 1981.
Wilson, Ihrig and Associates. "Noise and Vibration Study Alternatives for the Branch Route (F Route) Sections F-4, F-5, F-6, F-7, F-8 and F-9." 1977.

metro-related noise impacts on the church. The church at Station Point 199+50 will not need any mitigation since the existing underpinning piles will be retained, and the piles will act as a vibration isolation barrier for the church. Despite the preliminary nature of projected noise impacts along construction Segment F3, it is possible to determine if the potential impacts are of a magnitude which can be satisfactorily reduced through use of an available mitigation alternative. As shown in Table 4.4 the installation of floating slab trackbed, in the areas where violations of the noise criteria have been projected, will reduce train passby noise to levels within the established criteria range for all buildings along the Anacostia Segment. Therefore it will be possible to mitigate all anticipated noise impacts along the alignment by at least the use of floating slab. It should be emphasized however that the decision as to which alternative noise mitigation technique is most cost effective will be determined during final design.

4.2.6 AIR QUALITY IMPACTS

A. No Build Alternative

Regional Impacts

Analysis of regional air quality impacts is based on projections of annual transit ridership in the Green Line Corridor[1] for 1986 with the Anacostia Segment operating (Table 4.5).[2] The patrons responsible for this ridership are used as a "base population" for calculating vehicle miles travelled (VMT), and vehicle-related fuel consumption and air pollution with and without the Anacostia Segment. A comparison of the No Build Alternative VMT, fuel consumption and air pollution figures for this base population with estimates for the same parameters with the Anacostia Segment in operation provides an indication of the effects of the Segment.

Under a No Build Alternative, the base population accounts for over 4 million bus miles and almost 65 million automobile miles annually, consuming a total of almost 4 million gallons of fuel. About 280 thousand pounds of hydrocarbons, 3 million pounds of carbon monoxide and 370 thousand pounds of nitrogen oxides will be produced.[3]

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[1]For a delineation of the Green Route corridor see R.H. Pratt Associates, Inc. "Transit Patronage Estimates and Traffic Impacts for the Washington Metropolitan Area Transit Authority "F" Route Environmental Impact Report." 1977.

[2]Barton-Aschman Associates, Inc. "Analysis of Vehicle Mile Forecasts for the "F" Route Between Waterfront Station and Anacostia Station." 1981.

[3]Ibid.

TABLE 4.4: GROUND-BORNE NOISE MITIGATION POTENTIAL

Station Point	Side of Track	Type of Structure	Distance from Tunnel to Nearest Building (ft.)[1]	Approximate 1975 L50 Noise Levels (dBA)[2]	Criteria for Allowable Maximum Indoor Levels (dBA)	Expected Noise with Standard Trackbed (dBA)	Distance where Criterion Fulfilled with Standard Trackbed (ft)	Expected Maximum Noise with Floating Slab Trackbed (dBA)
F-3 97+75 to 99+80	Inbound	Residential	40	60	40-45	41-45	65	28-32
98+40 to 99+80	Outbound	Church	65	55-60	30-35	35-59	85	22-26
102+25 to 104+50	Inbound	School	65	55-60	35-40	33-37	75	21-25
106+70 to 107+50	Outbound	Church	50	>60	30-35	38-42	75	25-29
107+60 to 109+60	Inbound	Firehouse	40	>60	40-45	38-42	60	25-29
108+30	Outbound	Residential	35	>60	40-45	41-45	65	29-33
109+30	Outbound	Residential	35	>60	40-45	41-45	65	29-33
110+60	Outbound	Residential	35	>60	40-45	42-46	65	29-33
111+70	Outbound	Residential	35	>60	40-45	41-45	65	29-32
112+70	Outbound	Residential	35	>60	40-45	40-44	60	27-31
115+15 to 116+10	Inbound	Church	30	>60	30-35	36-40	75	23-27
116+50	Inbound	Residential	30	>60	40-45	38-42	50	25-29
126+00	Inbound	Residential	35	>60	35-40	46-50	90	32-36
126+50	Inbound	Residential	35	>60	35-40	46-50	90	32-36
F-5 191+80	Inbound	Church	90	>60	30-35	38-42	115	26-30[3]
199+50	Outbound	Church	55	>60	30-35	33-37	75	21-25[4]

[1]Measured plan distance from centerline of tunnel.

[2]Combined L50 noise levels for evening and nighttime.

[3]High existing ambient noise level; floating slab not required.

[4]No floating slab required as underpinning piles are to remain in place, and will serve as an isolation barrier.

Sources: Wilson, Ihrig and Associates. "Noise and Vibration Analysis of WMATA Metro F Route." 1981.
Wilson, Ihrig and Associates. "Noise and Vibration Study Alternatives for the Branch Route (F Route) Sections F-4, F-5, F-6, F-7, F-8 and F-9." 1977.

Local Impacts

The EPA HIWAY 2 model has been used to project CO levels at four receptor sites in the vicinity of Anacostia Station in 1985 (Figure 4.4). No violations of the CO-1 or CO-8 national ambient air quality standards are projected for any of the receptor sites under the No Build Alternative (Table 4.6).[1]

B. South Crossing Alignment

With the Anacostia Segment in operation, transit patrons in the Green Route Corridor (the base population) will account for over 5 million bus miles, about 1 million Metrorail miles and over 22 million automobile miles annually. This represents a total annual fuel consumption in 1986 of almost 3 million gallons of fuel. About 130 thousand pounds of hydrocarbons, 1.2 million pounds of carbon monoxide and 315 thousand pounds of nitrogen oxides will be produced (Table 4.5).[2]

Local Impacts

The Navy Yard Station will permit only walk-on patrons. The impact of Metro travel on CO levels in the vicinity of the station is therefore essentially zero. No assessment of metro related local air quality impacts has been undertaken around the Navy Yard Station.

The EPA HIWAY 2 model has been used to project CO levels at four receptor sites in the vicinity of Anacostia Station in 1985 (Figure 4.4). The receptor sites were placed at those locations where the impact would be most severe. No violations of CO-1 or CO-8 national ambient air quality standards are projected for any of the receptor sites with the Anacostia Segment in operation (Table 4.6).[3]

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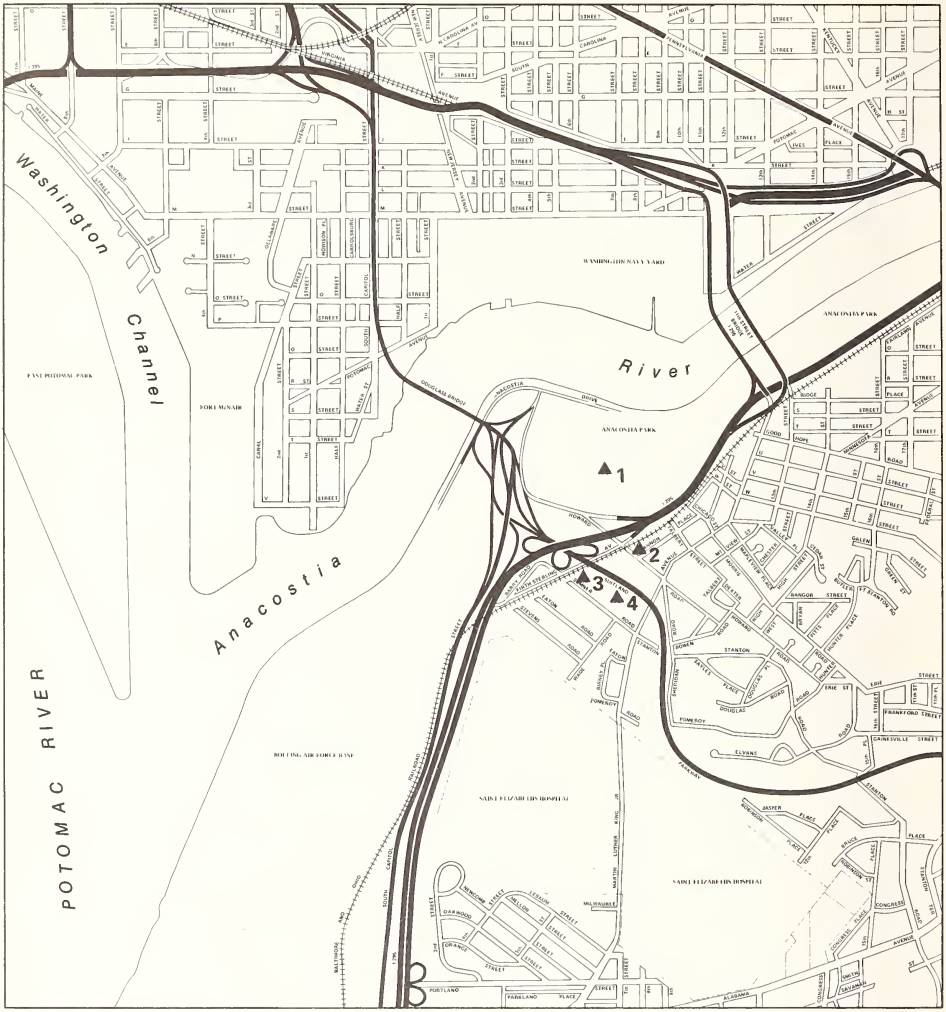
[1]Environmental Research and Technology, Inc. "Air Quality Assessment for the Proposed Anacostia Station: Metro Transit Route Segment F003." 1981.

[2]Barton-Aschman Associates, Inc. "Analysis of Vehicle Mile Forecasts for the "F" Route Between Waterfront Station and Anacostia Station." 1981.

[3]Environmental Research and Technology, Inc. Op.Cit.

FIGURE 4.4



▲ RECEPTOR SITE (see Table 4)

AIR QUALITY RECEPTOR SITES

GREEN LINE (F ROUTE)
ANACOSTIA SEGMENT

0 600 1200 2400 FT

metro

TABLE 4.5 REGIONAL AIR QUALITY PROJECTIONS

	South Crossing Alignment	No Build
Annual Transit Ridership[1]	27,857,900	16,975,900
Annual Bus Miles	5,581,500	4,105,300
Annual Metrorail Miles	939,400	—
Annual Automobile Miles:		
Access to Transit System	22,339,300	14,628,600
Due to Loss of Transit Ridership	—	50,250,000
Total Automobile Miles	22,339,300	64,878,600
Annual Fuel Consumption (gallons):		
Bus Consumption	1,594,718	1,172,953
Metrorail Consumption	394,916	—
Automobile Consumption	971,274	2,820,809
Total Fuel Consumption	2,913,908	3,993,762
Annual Pollutants Produced (pounds):		
Hydrocarbons:		
From Buses	45,674	33,594
From Metrorail	348	—
From Automobiles	85,281	247,676
Total	131,303	281,270
Carbon Monoxide:		
From Buses	332,295	244,411
From Metrorail	1,740	—
From Automobiles	958,218	2,782,894
Total	1,292,253	3,027,305
Nitrogen Oxide:		
From Buses	201,405	148,139
From Metrorail	36,531	—
From Automobiles	76,735	222,857
Total	314,671	370,995

[1]Forecast is for entire corridor (see text).

Source: Barton-Aschman. "Analysis of Vehicle Mile Forecasts for the "F" Route Between Waterfront Station and Anacostia Station." 1981.

TABLE 4.6: 1985 ANACOSTIA STATION CO PROJECTIONS (ppm)

Alternative	Receptor Site	Maximum 1-Hour CO Background	Maximum 1-Hour CO Total[1]	Maximum 8-Hour CO Background	Maximum 8-Hour CO Total[2]
No Build	1	6.8	7.9	3.4	4.0
	2	6.8	11.1	3.4	5.3
	3	6.8	12.5	3.4	5.9
	4	6.8	10.1	3.4	4.9
South Crossing	1	6.8	9.3	3.4	4.5
	2	6.8	11.2	3.4	5.4
	3	6.8	13.0	3.4	6.0
	4	6.8	10.2	3.4	5.0

[1]National Ambient Air Quality Standard: 35.0

[2]National Ambient Air Quality Standard: 9.0

Source: Environmental Research and Technology, Inc. "Air Quality Assessment for the Proposed Anacostia Station: Metro Transit Route Segment F003." 1981.

4.2.7 LAND USE AND SECONDARY DEVELOPMENT IMPACTS

The geographic range of secondary development impacts associated with a metrorail station is generally recognized as including land within a 2000-foot radius. Development outside this area cannot be clearly attributed to a metrorail station; rather it is primarily attributable to market forces.[1]

To evaluate land use and secondary development impacts associated with the Anacostia Segment Federal, District of Columbia and regional planning authorities and local economic development groups were consulted (Section 3.2.4).

A. No Build Alternative

Relation to Existing Land Use Plans

Termination of the Green Line at the Waterfront Station is not consistent with the existing goals and policies of the District of Columbia.[2] These goals and policies establish the underlying framework for the new comprehensive growth management plan (Section 3.2.3). Completion of the 101-mile Metro System, including the Anacostia Segment, has been recognized by the District as an important implementation element of the new plan (Section 3.5.1).

Secondary Development - Private Market

According to the D.C. Office of Planning and Development (OPD) the potential for development in the private market in the vicinity of the Waterfront Station is limited by recent development and existing land use and ownership patterns (Section 3.2.1).

Major land uses within a 2000-foot radius of the Waterfront Station include public facilities (Figure 3.2a) and residential development (Figure 3.2b). The public facilities include four schools and recreation centers, a library and a shopping center. Residential development consists predominantly of public housing constructed during the last twenty years.[3] The

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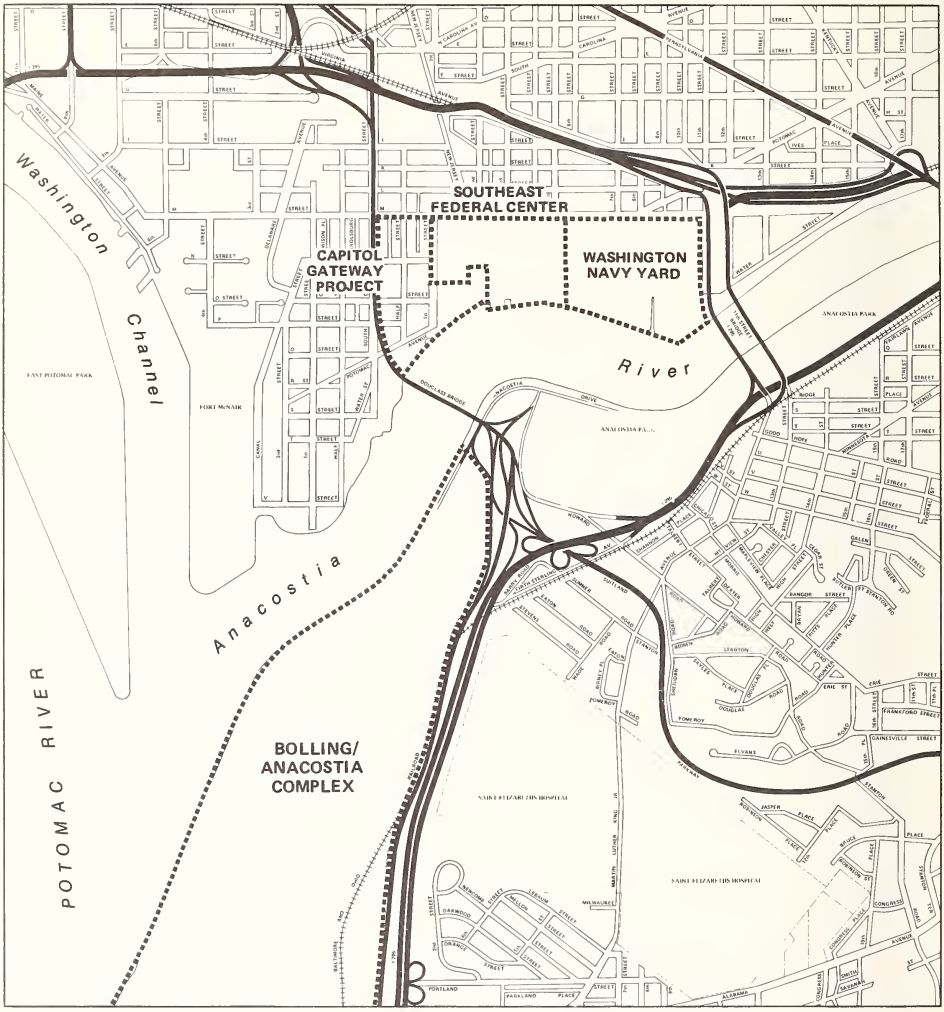
[1]Washington Metropolitan Area Transit Authority. "Transit Impact Study Phase Two - Interim Report." (Prepared by Development Research Associates, Team Four, Walton-Madden-Cooper) 1974.

[2]District of Columbia Register. "Goals and Policies for the District of Columbia (Act 2-283)." October 18, 1978.

[3]Washington Metropolitan Council of Governments. A Guide to Federally Assisted Housing in the Washington Metropolitan Area. 1979.

FIGURE 4.5



MAJOR PLANNED PUBLIC PROJECTS

GREEN LINE (F ROUTE)
ANACOSTIA SEGMENT

0 600 1200 2400 FT

metro

recency of residential development coupled with the high percentage of public land ownership are expected to continue to limit the potential for private development in the Waterfront Station area.

Secondary Development - Public Projects

No major public projects are being proposed for the Waterfront Station area. There are no plans to close any of the existing public facilities, mentioned previously. The OPD anticipates that operation of the Waterfront Station will enhance retail activity at the Waterside Mall, a shopping center originally planned to interface with the Waterfront Station. The District does not have any plans to expand the Mall.[1]

B. South Crossing Alternative

Relation to Existing Land Use Plans

Implementation of the South Crossing Alternative is consistent with existing goals and policies of the District of Columbia which will guide land use and development during preparation of the new comprehensive growth management plan (Section 3.2.3). Completion of the 101-mile Metro System, including the Anacostia Segment, has been recognized by the District as an important implementation element for the new plan. This is specifically mentioned in the "Goals and Policies Act"[2] that establishes the underlying framework for the new plan.

In addition, the Washington Metropolitan Council of Governments (WashCOG) [3] and the Anacostia Economic Development Corporation (AEDC) [4] have supported the goal of completing the 101-mile Metro System. These organizations recognize that improved mass transit access is an important public incentive to the revitalization of declining communities. The systems is expected to help promote more concentrated patterns of development and slow movement of city residents to the outer suburban fringe.

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[1]Lawrence Jones, Ward 2 Planner, District of Columbia Government. Personal communication. February 5, 1981.
[2]District of Columbia Register. "Goals and Policies for the District of Columbia (Act 2-283)." October 18, 1978.
[3]Washington Metropolitan Council of Governments. "Economic Development Policies Statement." December 1979.
[4]Anacostia Economic Development Corporation. "Current Trends and Community Events Newsletter." Winter 1980.

Secondary Development - Private Market

Development potential in the vicinity of the Navy Yard and Anacostia Stations in the private market, according to OPD and DHCD, is restricted by existing land use, ownership patterns and the condition of infrastructure.

The secondary development impact area of the Navy Yard Station is divided roughly in half by M Street, SE. The southern portion encompasses the three public projects discussed below. The northern portion consists predominantly of residential uses with many individual owners. This factor and the obsolete condition of extant structures and infrastructure are expected to continue to be strong disincentives to private development. [1] However, they do represent areas which can be considered relatively susceptible to change.

Similarly in the area surrounding the Anacostia Station, development potential in the private market is constrained by the relatively high cost of land assembly and preparation. The AEDC has determined that without major public incentives private development will not benefit greatly from operation of the Anacostia Station. [2]

Secondary Development - Public Projects

The major secondary developments attributed to the South Crossing Alternative include four large-scale public projects (Section 3.2.4). These include the Capitol Gateway Project, Southeast Federal Center and Washington Navy Yard in the area of the Navy Yard Station and the Bolling/Anacostia Complex adjacent to the Anacostia Station.

1. Capitol Gateway Project

Planning for the Capitol Gateway Project was initially undertaken in response to private development interest (Section 3.2.4). At the time the Navy Yard Station was located two blocks east of its presently proposed site. In 1976, WMATA shifted the station site in response to expected cost overruns and adverse impacts to historic buildings in the Washington Navy Yard Historic

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1D.C. Department of Housing and Community Development. "Potential Redevelopment in the South Capitol Street Area." (Prepared by Robert Groberg) 1975-1976.

2William Washburn, III, Anacostia Economic Development Corporation. Personal communication. March 18, 1981.

District associated with the original location (Section 2.1.2). Design of the new Navy Yard Station, in particular the pedestrian access facilities, was coordinated with OPD and DHCD in an effort to enhance the regional marketability of the Capitol Gateway Project. A subsequent market feasibility study completed in 1978 included the Navy Yard Station as an important on-site market support feature for the programmed development (Section 3.2.4).

A preliminary environmental impact analysis for the Capitol Gateway Project concluded that given the blighted nature of the development site, the project represented a positive improvement on existing conditions. It was also established that existing public facilities, including schools, fire and police protection services, would be able to accommodate the increased demand generated by the project. Measures to mitigate anticipated traffic impacts were adopted which assumed operation of the Navy Yard Station. [1]

2. Southeast Federal Center

The Southeast Federal Center, also known as the Washington Navy Yard Annex, is a major adaptive reuse project proposed by the General Services Administration (GSA) to provide new office space for federal agencies. At present GSA does not participate in the private office market due to statutory restrictions on allowable contract rents. According to GSA, the Southeast Federal Center will benefit from operation of the Navy Yard Station because of improved access for employees.

Environmental and community impacts associated with the Southeast Federal Center have been addressed in a Draft Environmental Impact Statement that was issued in 1978 (Section 3.2.4). Primary among the impacts identified is the adverse effect on historic structures eligible for inclusion in the National Register of Historic Places. During preparation of the Final Environmental Impact Statement, GSA will develop measures to mitigate project impacts in accordance with the National Environmental Policy Act of 1970.

[1] D.C. Department of Housing and Community Development. "Preliminary Environmental Assessment Summary for the Capitol Gateway Project." 1980.

3. Washington Navy Yard

In 1967, the U.S. Department of the Navy, following upon four years of planning analysis, issued a Master Plan for the Washington Navy Yard (Section 3.2.4). Largely because of high costs and the adverse impacts to historic structures included in the National Register of Historic Places, the high intensity development proposed in the Master Plan was not implemented. In 1979, a more modest plan was put forth proposing adaptive reuse of former industrial buildings and renovation of existing office space (Section 3.2.4). The 1979 Master Plan includes the Navy Yard Station as an off-site feature. Primary among the benefits expected from operation of the station is improved employee access.

Definitive information on the environmental and community impacts associated with expansion of office space in the Navy Yard will become available as its planning is finalized. A major impact anticipated at this time is increased traffic congestion since a large percentage of Navy Yard employees drive to work.[1]

4. Bolling/Anacostia Complex

The U.S. Department of Defense is proposing to expand the Bolling/Anacostia Complex over a twenty year period (Section 3.2.4). The Anacostia Station is an important element included in the Department's expansion proposals because of anticipated traffic congestion impacts to the I-295 and South Capitol Street transportation corridor. In coordination with the D.C. Department of Transportation (D.C.DOT) a study of alternative transportation systems management programs was commissioned (Section 3.5.1).[2] The purpose of the study was chiefly to develop alternative transportation control strategies to accommodate anticipated traffic congestion impacts associated with the expanded Complex. One of the strategies recommended is the operation of a shuttle bus between the Complex and the Anacostia Station. The study also evaluated the Bolling/Anacostia Complex in the context of the No Build Alternative for Anacostia Station. It was concluded that additional highway improvement would be needed in the I-295 and South Capitol Street transportation corridor to those already planned by D.C.DOT (Section 3.5.1).

[1]Frank Gerlak, U.S. Department of the Navy, Chesapeake Division. Personal communication. February 4, 1981.

[2]D.C. Department of Transportation. A Study of Transportation Systems Management Programs for the Bolling/Anacostia Corridor. (Prepared by Barton-Aschman Associates, Inc.) March 1981.

4.3 UNAVOIDABLE ADVERSE IMPACTS

4.3.1 NO BUILD ALTERNATIVE

Construction required to make Metro operable from the Waterfront Station will result in the following unavoidable adverse impacts:

Long-Term

Removal and disposal of 175,000 cubic yards of spoil material.

Loss of small, highly stressed street trees along 500 feet of M Street.

Short-Term

Traffic congestion in the vicinity of M Street between 3rd Street, SW, and South Capitol Street.

Increased levels of air borne pollutants near the construction site due to excavation, handling and removal of spoil, as well as emissions from construction and spoil disposal vehicles.

Increased ambient noise levels near the construction site due to construction activity and traffic congestion.

In addition termination of the Green Line at Waterfront Station will result in several adverse impacts which could be avoided by extension of metro service to Anacostia:

Loss of 10,882,000 annual transit trips (1986) in the Green Line corridor.

Loss of 10,100 peak hour (1990) trips in the Metrorail System.

An additional 41,063,100 annual vehicle miles (1986) travelled in the Green Line corridor.

Consumption of 1,079,854 additional gallons of petroleum fuels per year.

An additional 150,000 pounds of hydrocarbons, 1,735,000 pounds of carbon monoxide and 56,000 pounds of nitrogen oxide resulting annually from combustion of petroleum fuels.

An additional 2590 automobiles and 97 buses crossing the Anacostia River bridges during the peak hour (1986).

Higher traffic volumes (1986) in the Green Line Corridor than those assumed in local and regional transportation plans or programming for roadway improvements.

Loss of walk-to metro service for a minimum of 6000 transit dependents.

Loss of secondary development potential in the vicinity of the Navy Yard Station and Anacostia Station.

Loss of metro access to the South Capitol Gateway Project, the Southeast Federal Center, and the Washington Navy Yard.

Increased traffic noise levels, particularly during the peak travel hour, due to increased traffic in the Green Line corridor.

No enhancement of existing landscaping, grades, and visual setting in portions of Anacostia Park near the Douglass Street Bridge; no addition of active parkland to Anacostia Park.

4.3.2 SOUTH CROSSING ALTERNATIVE

Unavoidable adverse impacts associated with construction of the Anacostia Segment will include:

Long-Term

Displacement of 18 occupied residential structures (24 residential units), 8 occupied commercial structures (9 businesses), two small office structures, and one fraternal lodge (private displacements).

Displacement of 12 unoccupied residential structures (12 residential units), and one unoccupied commercial structure (one business)(private displacements).

Displacement of three buildings in the Washington Navy Yard Annex, greenhouses belonging to the Architect of the Capitol, a helicopter hangar belonging to the U.S. Defense Intelligence School, and the Birney Elementary School Annex (public displacements).

Removal and disposal of either 750,000 cubic yards of spoil (assuming earth tunnel river crossing construction) or 970,000 cubic yards of spoil (assuming sunken tube river crossing construction).

"Non-significant encroachment" along 2600 feet of the Anacostia River floodplain (as defined by DOT Order 5650.2 in response to E.O. 11988).

Demolition of Buildings 137 and 167 in the Washington Navy Yard Annex, both considered eligible for the National Register of Historic Places.

Destruction of the National Register eligible Howard Road Historic District.

Use of approximately 29.3 acres of land owned by the National Park Service adjacent to Anacostia Park, including 4.2 acres from the District of Columbia Lanham Tree Nursery, 12.1 acres from the U.S. Botanic Garden, and 13.0 acres from the U.S. Defense Intelligence School.

Use of approximately 3400 square feet of land in Suitland Parkway for a fan shaft and portal.

Loss of small, highly stressed street trees along 1000 feet of M Street.

Loss of several small wooded areas totaling approximately one acre (south of the Anacostia River).

Increased traffic in areas adjacent to the Anacostia Station.

Short-Term

Traffic congestion in the vicinity of metro construction sites along M Street, in the Washington Navy Yard Annex, in the vicinity of Howard Road and Anacostia Park, and along routes to be used by spoil disposal vehicles.

Increased levels of air borne pollutants near construction sites due to excavation, handling and removal of spoil, as well as emissions from construction and spoil disposal vehicles.

Increased ambient noise levels near construction sites due to construction activity and traffic congestion.

Disruption of approximately 31.1 acres of land owned by the National Park Service, including 4.0 acres within Anacostia Park and 27.1 acres within adjacent NPS properties (assuming earth tunnel river crossing construction); disruption of approximately 42.7 acres of land owned by the National Park Service, including 4.0 acres within Anacostia Park and 38.7 acres within adjacent NPS properties (assuming sunken tube river crossing construction).

Disturbance of approximately 3.5 acres of Suitland Parkway during construction of 1240 linear feet of cut-and-cover alignment.

Water quality impacts of the Anacostia River in the vicinity of dredging and dewatering effluent discharge (assuming sunken tube river crossing construction).

4.4 IRREVERSIBLE AND IRRETRIEVABLE RESOURCE COMMITMENTS

The construction and operation of the Metro System is an expensive and costly undertaking requiring an irretrievable commitment of certain natural and fiscal resources. Major resource commitments will include energy, land, money, construction materials, and labor. Impacts of using these resources should, however, be weighed against the benefits accruing to the region and the consequences resulting from taking no action at all.

4.4.1 ENERGY

Energy using during system construction and operation will represent an irretrievable commitment of resources. Energy requirements for construction will include electricity and petroleum products. Demand during this period will be highly variable and dependent upon the schedule, levels of activity and types of construction underway at various times during the construction period.

In 1975, the Metropolitan Washington Council of Governments estimated that 1.2 billion kilowatt-hours (kwh), or 4,200 billion Btu, will be required annually for the operation of the Metro System in 1992.[1] During system operation, electrical energy is used for traction as well as for station and maintenance facilities. Electricity requirements for traction will increase as the system is extended and as frequency of service is increased. Fixed electricity requirements for stations and maintenance facilities will remain constant.

Since Metro offers opportunities for using energy sources other than petroleum based fuel, Metro operation can reduce reliance upon the direct use of petroleum based fuel for transportation in the Washington Metropolitan area.

A. No Build Alternative

Based on WMATA's estimates, operation of a 4200 foot segment such as that extending from L'Enfant Plaza to the Waterfront Station, will require approximately 11.4 million kilowatt-hours (kwh) of electricity annually.

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[1] Metropolitan Washington Council of Governments. Essential Air Quality and Energy Data to Analyze the Local and Regional Impacts of the WMATA Rapid Rail System. June 1975.

In addition WMATA has estimated that 4.3 million kwh of electricity will be required for operations along tail tracks outbound of Waterfront Station.

Assuming vehicle travel estimates (Section 4.2.3) in the Anacostia Segment corridor with metro operation to Waterfront Station, the No Build Alternative will require approximately 3,994,000 gallons of fuel.

B. South Crossing Alternative

Based on WMATA's estimates, the operation of the 13,700 foot segment such as that extending from L'Enfant Plaza to the Anacostia Station, will require approximately 32.0 million kwh of electricity annually. In addition WMATA has estimated that 5.4 million kwh of electricity will be required for operations along tail tracks outbound of Anacostia Station.

Assuming vehicle travel estimates (Section 4.2.3) in the Anacostia Segment corridor with metro operation to Waterfront Station, the South Crossing Alternative will require approximately 348,000 gallons of fuel.

4.4.2 LAND, CAPITAL, CONSTRUCTION MATERIALS AND LABOR

Land is one of the major irretrievable commitments made during metro construction. Construction along the Anacostia Segment of the Green Line will be entirely below grade. Consequently land takings will be limited to areas needed for station facilities and ancillary facilities.

The capital invested in the construction of the Metro system will be permanently committed. While the commitment will be large, it is expected that over an extended period the initial investment should generate many times its original amount in expanded employment opportunities, increased mobility for the transit dependent, and user and non-user benefits through savings in both travel, time and money.

Construction materials irretrievably committed by Metro construction will include concrete aggregate, cement, lumber and steel. Most of these materials will not be obtained locally, although aggregates may be available from small quarries within Prince George's County.

The labor commitment necessary for the construction of the Metro system is not one that would be made elsewhere if it were not made to Metro. A decision is not being made as to whether to use a given labor force to perform one major job or another; rather the decision is whether or not to assemble the labor force necessary to perform the work. Many of the skills needed are skills in which there is substantial or fluctuating unemployment. Such a commitment would therefore be beneficial by causing increased employment of people with these skills.

A. No Build Alternative

The No Build Alternative will require acquisition of approximately 1460 square feet of private property for the construction of a vent shaft at the Waterfront Station. The cost of this real estate acquisition is estimated at $20,000.

The total cost of construction for improvements necessary to permit automatic train operation to and from the Waterfront Station are projected at approximately $36.26 million. This includes 20,000 in acquisition costs, 27.31 million in construction and staging costs, and 9.02 million in burdens. This assumes that attendant construction burdens including administration, design, supervision, inspection and insurance, generally increase the cost of construction by 33 percent. It further assumes a construction schedule which is several years in duration, having an estimated midpoint in August, 1982.

Major non-monetary potential costs of constructing the alignment, as previously suggested, include those associated with traffic volumes in Southeast Washington higher than those assumed in preparation of regional transportation plans; these include traffic congestion, traffic-related noise and air quality impacts, capital costs for improvements to the area's roadway network, and environmental impacts associated with new roadway construction. The major benefits of the alignment are that it would provide portions of Southeast Washington with access to a regional rail rapid system and would stimulate secondary development.

B. South Crossing Alternative

The South Crossing Alternative will require acquisition of approximately 192,400 square feet of private property. The capital cost of this acquisition is estimated at $25.1 million.

The total cost of construction for improvements necessary to make the South Crossing operative is projected at $431.9 million. This includes $25.1 million in acquisition costs, $299.6 million in construction and staging costs, and $107.2 million in burdens. This assumes that attendant construction burdens, including administration, design, supervision, inspection and insurance, generally increase the cost of construction by 33 percent. It does not include the costs of public land takings and relocations.

Major non-monetary potential costs of constructing the alignment, as previously identified, include residential, commercial and institutional displacements, and potential surface and groundwater impacts. Major benefits of the alignment are that it would provide Southeast Washington with access to a regional rail rapid system and would stimulate secondary development and traffic circulation and volumes consistent with regional transportation plans.

Chapter 5
HISTORIC PROPERTIES AND PARKLANDS ANALYSIS

5.1 SECTION 4(f) STATEMENT

5.1.1 BACKGROUND

Section 4(f) of the Department of Transportation Act of 1966 declares that it is a national policy to make a special effort to preserve the natural beauty of the countryside, public park and recreation lands, wildlife and waterfowl refuges, and any historic sites. Section 4(f) permits the Secretary of Transportation to approve a project requiring the use of such lands of national, state, or local significance only where it is shown that:

1. There is no feasible and prudent alternative to the use of such land; and

2. Such project includes all possible planning to minimize harm to the Section 4(f) land resulting from such use.

This section of the Anacostia Segment Final EIS contains supporting information as required by the Secretary of Transportation for the decision regarding use and impacts on 4(f) lands. Its purpose is to support, where appropriate, the determination that there are no feasible and prudent alternatives to the use of historic sites and public park and recreation areas by the South Crossing Alternative for the Anacostia Segment, and that all possible planning to minimize harm to 4(f) lands has been included in planning for the proposed route.

5.1.2 USE OF HISTORIC SITES

The South Crossing Alternative for the Anacostia Segment of the Green Line affects two historic sites (Figure 5.1):

1. The Washington Navy Yard Annex Historic District.

2. The Howard Road Historic District.

A. Washington Navy Yard Annex Historic District

Description and Significance of Property

The Washington Navy Yard Annex is located on the north shore of the Anacostia River. The 6015-acre Annex is bounded on the north by M Street, SE, on the east by Isaac Hull Avenue, on the south by the Anacostia River and on the west by 1st Street, N Place and 2nd Street, SE (Figure 5.2).

In conjunction with planning for expanding the office space in the Southeast Federal Center, GSA requested a determination of eligibility for the National Register for the Annex as an Historic District, incorporating Buildings 74, 137, 158, 159, 159E, 160, 167, 173, 187, 197 and 201.[1] In February, 1979, the Department of the Interior declared the Annex an historic district eligible for the National Register. Specifically incorporated in the designation were the eleven buildings listed above; these were identified as structures within the historic district contributing to its historic significance.

Proposed Use

Approximately 1800 linear feet of the Anacostia Segment passes beneath the Washington Navy Yard Annex (Figure 5.2). The alignment enters the Annex in earth tunnel at the southeast corner of 2nd and M Streets, SE. It arcs around the north and east sides of Building 205 and continues southeast to the seawall of the Anacostia River, passing beneath a parking lot and Building 167. Assuming earth tunnel construction of the river crossing the entire 1800 feet of alingment beneath the Annex will be in earth tunnel; however, if sunken tube construction is used for the river crossing, the 450 feet of alignment north of the river will be in cut and cover rather than earth tunnel.

Under the General Plans for the Anacostia Segment, Building 205 will be demolished during construction because of expected settling in the underlying fill where the earth tunnel section will be constructed (Section 4.1.1). Engineering and cost analyses were done by WMATA during preparation of general plans to determine the feasibility of underpinning the building. Demolition was recommended due to the high cost of underpinning resulting from the age of the building and the unstable geologic conditions.

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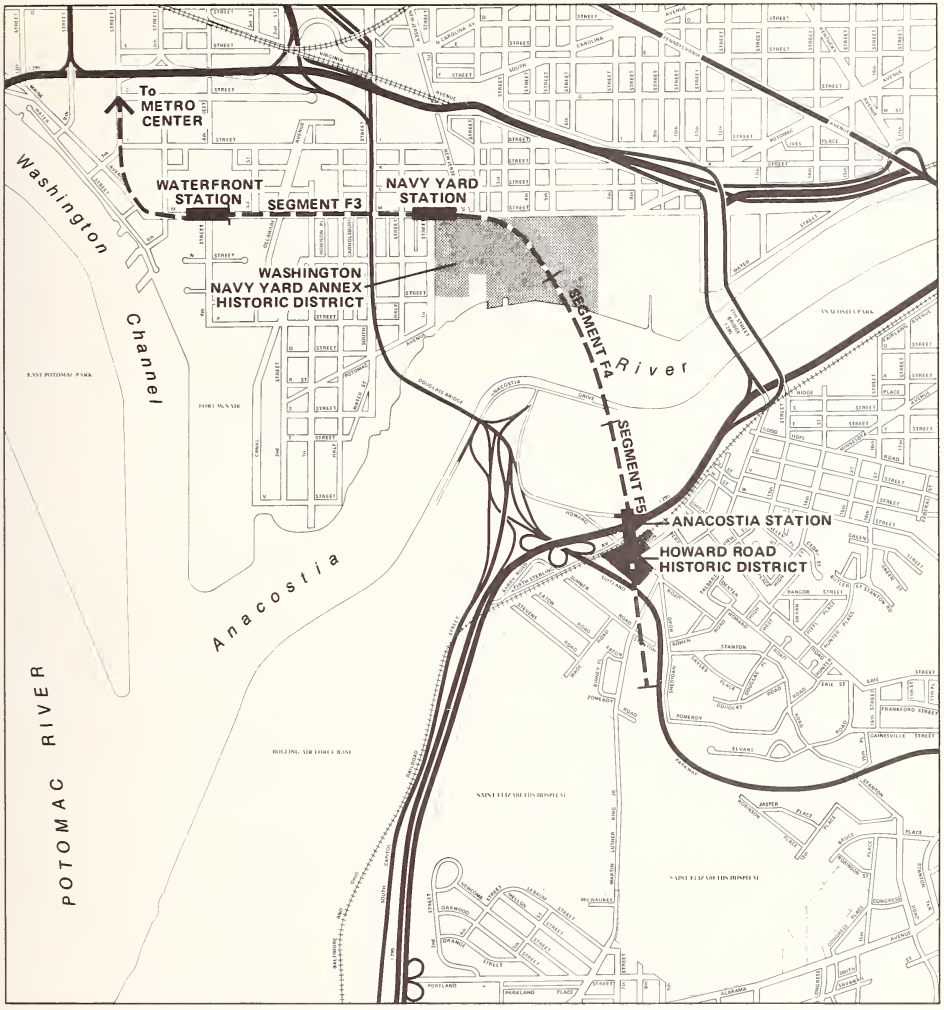
[1] General Services Administration. "Request for a Determination of Eligibility to the National Register of Historic Places for the Washington Navy Yard Annex." (Prepared by Building Conservation Technology, Inc.). November 1976.

FIGURE 5.1



WASHINGTON NAVY YARD ANNEX HISTORIC DISTRICT

HOWARD ROAD HISTORIC DISTRICT

SOUTH CROSSING ALIGNMENT

METRO STATION

AFFECTED HISTORIC & ARCHEOLOGICAL SITES

GREEN LINE (F ROUTE)
ANACOSTIA SEGMENT

0 600 1200 2400 FT

metro

The General Plans also indicate that Building 167 will be taken as a result of potential settling following earth tunnel construction. Preliminary studies indicate however, that unlike Building 205, underpinning may be possible. A final determination as to the feasibility of underpinning will be made during final design.

Alternatives

Alternatives to the Anacostia Segment which would avoid use of the Washington Navy Yard Annex Historic District include the No Build Alternative, horizontal shifts of the alignment, and changes in proposed construction techniques.

The following discussion of alternatives is intended to support the conclusion that there is no prudent or feasible alternative for the Anacostia Segment which would avoid adverse effects upon the Washington Navy Yard Annex Historic District.

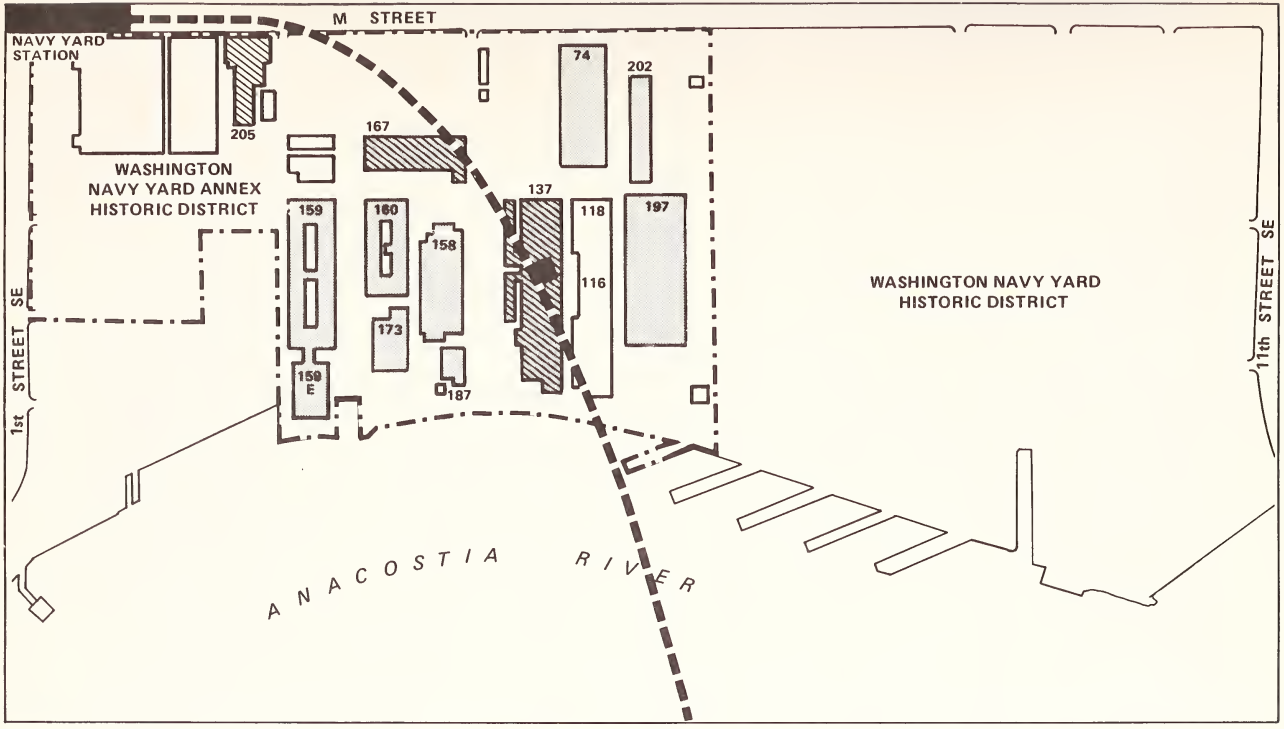
1. No Build Alternative

The No Build Alternative assumes that metro service will not be extended southward on the Green Line beyond the existing Waterfront Station at 4th and M Streets, SW. Automatic train operation would commence from the Waterfront Station through construction of a double crossover and 1525 feet of tail tracks beneath M Street; these additional work items would be required to permit train reversal and storage.

Despite fewer short-term impacts as well as fewer displacements and long-term impacts on historic sites and parklands, the alternative of taking no action is considered less preferable than that of extending the Green Line to Anacostia along the South Crossing alignment.

Extension of the Metro to Anacostia is consistent with local and regional transportation plans and programming for roadway improvements. Reduced transit ridership and consequent increases in vehicle miles travelled in the Green Line corridor associated with not extending the Metro will result in traffic volumes in excess of those assumed during preparation of transportation plans; increased traffic volumes at locations in the Green Line corridor may require improvements to roadways to retain existing levels of service (particularly the Anacostia River bridges) not recognized in current transportation plans (Section 4.2.3).

Extension of Metro to Anacostia is also consistent with local land use plans, particularly those prepared for the Capitol Gateway Project, the Southeast Federal Center, and the Bolling/Anacostia Complex. It is considered a major contributor to the revitlization potential of the Anacostia community.



NATIONAL REGISTER ELIGIBLE STRUCTURE

STRUCTURE TO BE TAKEN

WASHINGTON NAVY YARD ANNEX HISTORIC DISTRICT

METRO FANSHAFT AND PUMPING STATION

FIGURE 5.2: WASHINGTON NAVY YARD ANNEX & WASHINGTON NAVY HISTORIC DISTRICTS

GREEN LINE (F ROUTE)
ANACOSTIA SEGMENT

0 200 400 800 FT

metro

More specifically, termination of the Green Line at Waterfront Station will result in several adverse impacts which could be avoided by extension of metro service to Anacostia, including:

Loss of 10,882,000 annual transit trips (1986) in the Green Line corridor.

Loss of 10,100 peak hour (1990) trips in the Metrorail System.

An additional 41,063,100 annual vehicle miles (1986) travelled in the Green Line corridor.

Consumption of 1,079,854 additional gallons of petroleum fuels per year.

An additional 150,000 pounds of hydrocarbons, 1,735,000 pounds of carbon monoxide, and 56,000 pounds of nitrogen oxide resulting from combustion of petroleum fuels.

An additional 2,590 automobiles and 97 buses crossing the Anacostia River bridges during the peak hour (1986).

Higher traffic volumes (1986) in the Green Line corridor than those assumed in local and regional transportation plans or programming for roadway improvements.

Loss of walk-to metro service for a minimum of 6,000 transit dependents.

Loss of secondary development potential in the vicinity of the Navy Yard Station and Anacostia Station.

Loss of metro access to the South Capitol Gateway Project, the Southeast Federal Center, and Washington Navy Yard.

Increased traffic noise levels, particularly during the peak travel hour, due to increased traffic in the Green Line corridor.

No enhancement of existing landscaping, grades, and visual setting in portions of Anacostia Park near the Douglass Street Bridge; no addition of active parkland to Anacostia Park.

The Federal and District of Columbia governments, in view of these consequences, have recently reconfirmed the need to complete the entire 101-mile Adopted Regional Metrorail System.

2. Horizontal Alignment Shifts

Numerous alignment and station alternatives have been considered by WMATA for the Anacostia Segment of the Green Line. Many have been studied in detail in environmental studies prepared by the Authority;[1,2,3] others have been found infeasible on the basis of preliminary evaluation alone. In each case, the suitability of a proposed alternative has been considered in terms of maximizing benefits to be derived from construction of Sections F3, F4, and F5 as an operational unit of the Metrorail System (Figure 5.3).

Results of these environmental impact studies have revealed that the optimum location for the Navy Yard Station is at 1st and M Streets, SE, and that the preferred alignment beyond that point curves southeast toward the Anacostia River beneath the Navy Yard Annex (South Crossing Alternative). This alignment has been selected after studying several alignment and station alternatives to the southwest, west, and east. The conclusion is based upon the following findings:

1. The Navy Yard Station should not be located in the area south of M Street, and west of the Navy Yard Annex (1st Street, SE)(Figure 5.3).

   Alignment and station construction in the area west of the Navy Yard Annex would result in disturbance to the community. The pattern of property ownership, both public and private, as well as land use, would necessitate a large number of residential displacements and community disruption. In addition, considerable additional cost would be incurred as a result of noise and vibration mitigation requirements.

2. If the Navy Yard Station is constructed beneath M Street, it should not be located west of 1st Street, SE (Figure 5.3).

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[1]Washington Metropolitan Area Transit Authority. Branch (F) Route Pre-Final Environmental Impact Study. September 1975.

[2]Washington Metropolitan Area Transit Authority. Environmental Impact Study Final Report, Branch (F) Route. August 1977

[3]Metropolitan Washington Council of Governments. Metrorail Alternatives Analysis, F Route. (Prepared by Peat, Marwick, Mitchell & Company.) November 1977.

Movement of the Navy Yard Station to the west is constrained by the presence of a 15'6" combined sewer beneath Half Street. Movement of the station west would locate it between South Capitol Street and Half Street. This would place it within 1500 feet of the Waterfront Station as well as increasing the distance to it from the Washington Navy Yard and Washington Navy Yard Annex employment centers.

3. The alignment should not pass beneath or immediately adjacent to (beneath M Street) the Washington Navy Yard Historic District[1] (Figure 5.3).

   Preliminary engineering studies have revealed that vibration associated with any metro alignment passing beneath the Navy Yard Historic District would require underpinning structures nominated to the National Register of Historic Places.

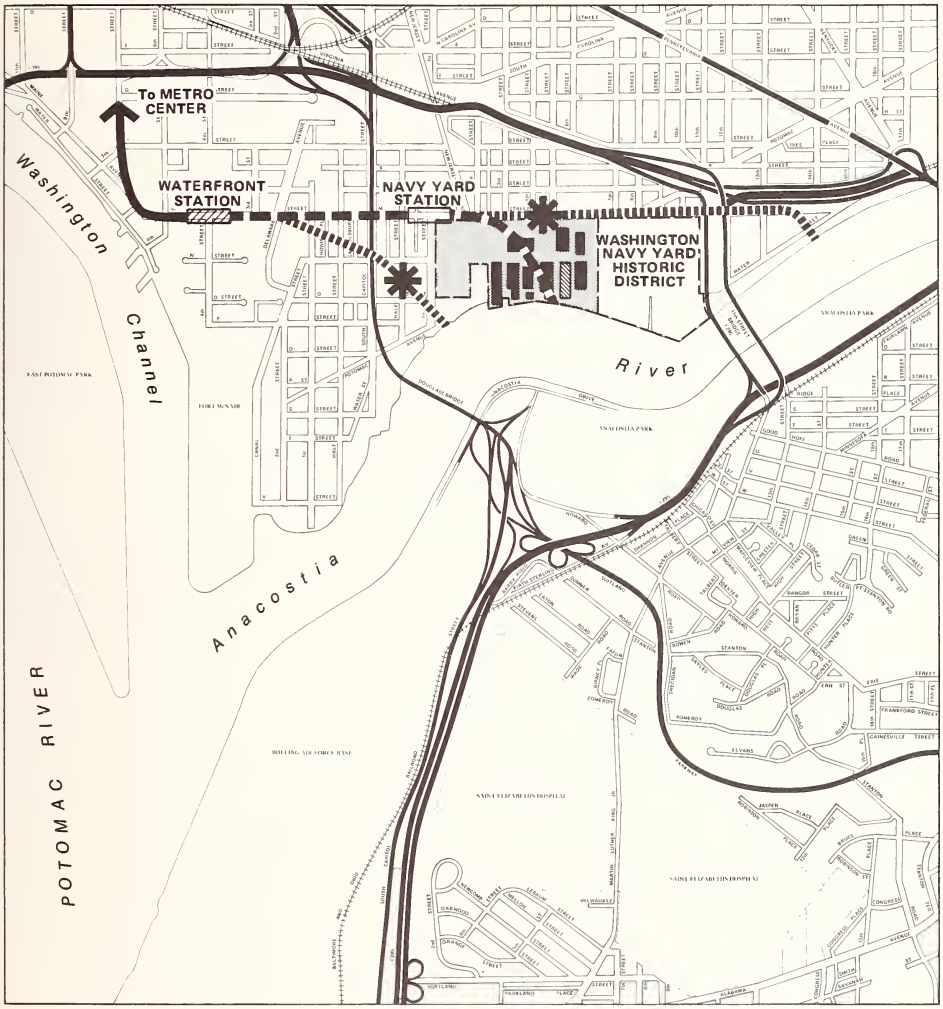
   To avoid additional underpinning costs and potential impacts on historic structures the Navy Yard Station must be located at a point permitting an alignment outbound of the station which passes west of Isaac Hull Avenue (the western Navy Yard Historic District boundary).

4. Assuming that the alignment should not pass beneath the Washington Navy Yard Historic District, the Navy Yard Station should not be located east of 1st Street, SE (Figure 5.3).

   Movement of the station east of 1st Street, SE, would require an alignment shift which would either take three structures (Buildings 74, 191 and 202) eligible for the National Register (as opposed to two takings for the South Crossing Alternative), or would take structures housing energy generation facilities for both the Navy Yard and the Navy Yard Annex (Buildings 116 and 118)(Figure 5.2).

[1]The Washington Navy Yard Historic District has been nominated to the National Register of Historic Places (Figure 5.2); it is an historic district, distinct from the Washington Navy Yard Annex Historic District, which is considered eligible for the National Register.

FIGURE 5.3



EXISTING GREEN LINE

EXISTING GREEN LINE STATION (Waterfront Sta.)

PREFERRED ALIGNMENT Green Line Segment F3

PREFERRED GREEN LINE STATION (Navy Yard Sta.- Segment F3)

ALTERNATIVE ALIGNMENT-Segment F3

ALTERNATIVE STATION SITE (Navy Yard Sta.- Segment F3)

WASHINGTON NAVY YARD ANNEX- National Register Eligible Structure

WASHINGTON NAVY YARD POWER PLANT

WASHINGTON NAVY YARD ANNEX

SEGMENT F3 ALTERNATIVES

GREEN LINE (F ROUTE) ANACOSTIA SEGMENT

0 600 1200 2400 FT

metro

5. Assuming a preferred Navy Yard Station location at 1st and M Streets, SE, an alignment taking Buildings 137 and 167 has the least impact upon historic structures and operations in the Navy Yard Annex (Figure 5.5).

   Alignments utilizing a greater radius arc could be accommodated east of that proposed without necessitating the taking of Buildings 137 and 167. These alignments however would either take three structures (Buildings 202, 74 and 191) eligible for the National Register or would take structures housing energy generation facilities for both the Navy Yard and the Navy Yard Annex (Buildings 116 and 118)(Figure 5.2).

   Alignments utilizing a tighter radius arc (assuming WMATA design criteria are exceeded), passing to the west of that proposed, would take four structures eligible for the National Register (Buildings 138, 160, 173 and 187).

As a result of these analyses it has been concluded that an alignment and station shift to the east, west, or south is not prudent or feasible. It is further recognized that if metroservice is to be provided to the Anacostia area of Southeast Washington, the linear nature of historic features along the north bank of the Anacostia River makes it extremely difficult to avoid all historic features. Only an alignment utilizing a more continuous arc from the Waterfront Station, and which results in a significantly larger number of residential takings, could be constructed without passing beneath Historic Districts. In addition, due to the high density of historic development in the two districts, it is apparent that minor shifts of the proposed alignment through the districts would not avoid all impacts to historic buildings.

Consequently it is concluded that the proposed South Crossing Alternative minimizes adverse impacts on the Navy Yard Historic District as well as the Washington Navy Yard Annex Historic District. This alternative can be constructed in accordance with WMATA design criteria and allows for construction of the route to several alternative Anacostia Station locations, including the preferred location beneath I-295 in the vicinity of Howard Road (see B. Howard Road Historic District, Alternatives, below).

Minimization of Harm

A memorandum of agreement (Figure 5.14) has been developed jointly by UMTA, WMATA, the D.C. HPO, and the Advisory Council. It sets forth provisions for the mitigation of adverse

effects of the Annex. In summary, the mitigation will consist of the architectural documentation of Buildings 137 and 167 according to the most current guidelines of the National Architectural and Engineering Record. In addition, one objective of final design will be to evaluate the feasibility of underpinning Building 167 to avoid taking the historic structure and to eliminate demolition and replacement expenses.

Coordination

WMATA has coordinated with the Advisory Council on Historic Preservation and the District of Columbia Historic Preservation Office to determine the effect of the proposed South Crossing Alternative on the Washington Navy Yard Annex Historic District. The result of this coordination is a signed memorandum of agreement (Figure 5.14) setting forth provisions for the mitigation of adverse effects on the Annex.

B. Howard Road Historic District

Description and Significance of Property

The Howard Road Historic District is located within the block of Howard Road between Firth Sterling Avenue, Shannon Place and Martin Luther King, Jr. Avenue. The Historic District comprises seventeen privately-owned lots. Six lots are vacant; elevan contain historic residential structures (Figure 5.6a).

The Historic District was declared elegible for the National Register on March 31, 1981. Eligibility was determined based on the comprehensive cultural resources reconnaissance conducted by WMATA's consultant, Soils Systems, Inc. (SSI).[1]

The Historic District's principal significance is its potential to yield information of importance to the history of the black population of the District of Columbia. The larger Barry's Farm/Potomac City area, in which the Howard Road Historic District is located, was a unique experiment in the establishment of ex-slaves as landowners by the Federal government. In the role of private landowner, ex-slaves were able to begin to establish themselves within the larger society

[1]Excerpted from: Washington Metropolitan Area Transit Authority. "Request for a Determination of Eligibility for Inclusion in the National Register of Historic Places: Howard Road Historic District, Anacostia, District of Columbia." (Prepared by Soil Systems, Inc.) February 1981.

immediately after the Civil War. The significant information on this historical development is present in the design and construction of the buildings, the layout of the lots, and the associated archeological remains.[1]

Proposed Use

Construction of the Anacostia Station and local access facilities between I0295 and Martin Luther King, Jr. Avenue in the vicinity of Howard Road will require taking of all structures located within the Howard Road Historic District (Figure 5.4b). Excavation and grading for construction will also require ground surface disturbance throughout the District.

Alternatives

Alternatives to the proposed South Crossing Alternative which would avoid adverse effects on the Howard Road Historic District include the No Build Alternative and horizontal shifts of the alignment.

The following discussion of alternatives is intended to support the conclusion that there is no feasible and prudent alternative for the Anacostia Segment which would avoid adverse effects upon the Howard Road Historic District.

1. No Build Alternative

The No Build Alternative would avoid adverse effects on the Howard Road Historic District by terminating the Green Line at the existing Waterfront Station at 4th and M Streets, SW. The impacts of terminating Metro at this point are described above in the alternatives discussion for the Washington Navy Yard Annex. Results of WMATA studies as described in that section support the conclusion that the alternative of taking no action is less preferable than that of extending the Green Line to Anacostia along the South Crossing Alignment.

2. Horizontal Alignment Shifts

Preliminary engineering studies as well as more detailed environmental impact studies have evaluated numerous alignment and station alternatives for Construction Segment F5. Each was considered in terms of its potential impacts on the Community, local and regional access, land availability, engineering feasibility, and cost. Engineering feasibility included considerations of station design as well as the relationship of the proposed alternative to the preferred alternatives for the Anacostia River crossing (Segment F4).

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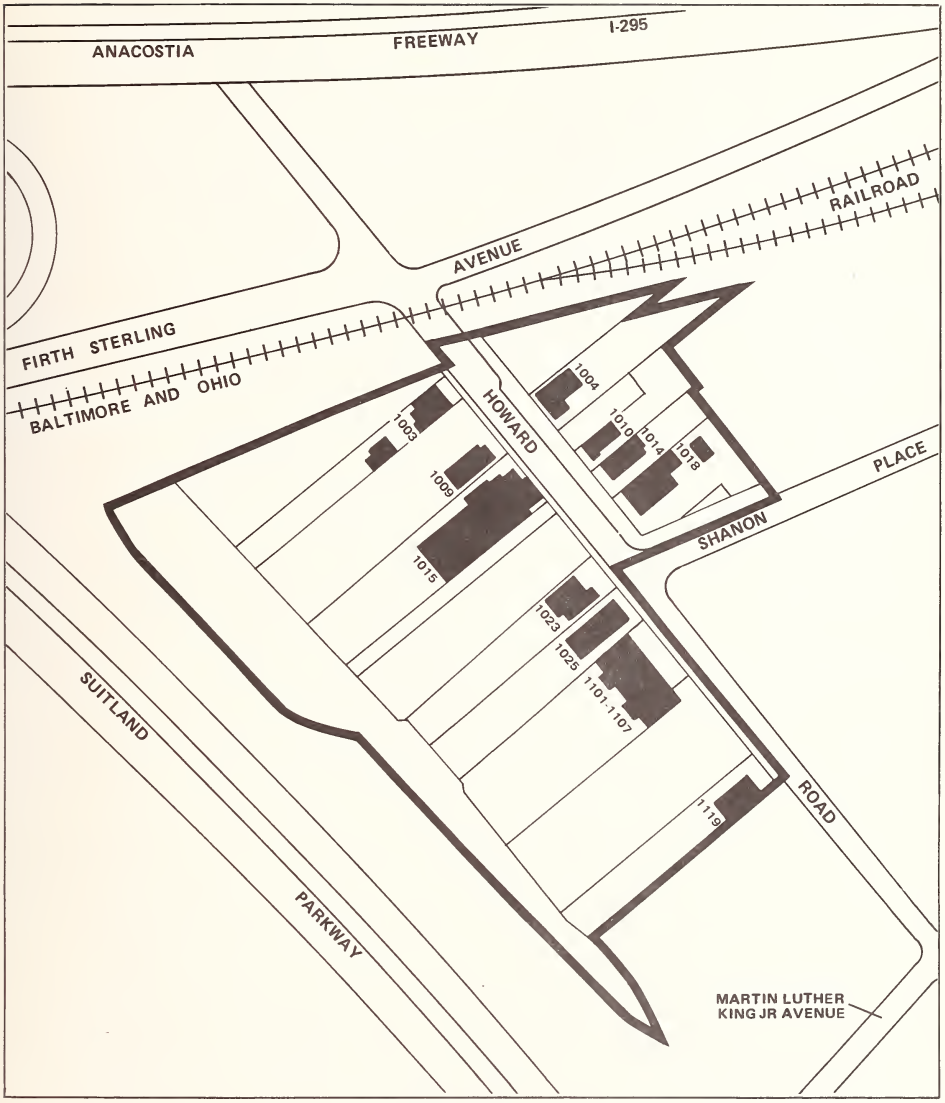
[1]Keeper of the National Register. "Determination of Eligibility Notification." March 31, 1981.

FIGURE 5.4 a



HOWARD ROAD HISTORIC DISTRICT

ARCHITECTURALLY SIGNIFICANT STRUCTURE

HOWARD ROAD HISTORIC DISTRICT

GREEN LINE (F ROUTE)
ANACOSTIA SEGMENT

0 50 100 200 FT

metro

Of particular importance was the selection of a station location which could provide both regional and local access, specifically local access to and from commercial areas along Martin Luther King, Jr. Avenue and regional access from the existing major roadways without costly highway improvements. The ability for the station to function as either a temporary terminal or a through station was also of particular importance in the event that construction of the Green Line continuation to a terminus in Prince George's County was delayed. Also considered was the potential for continuation of the Green Line (Sections F6, F7 and F8) to either of the two terminuses still under consideration in Prince George's County.

From the alternatives studied the preferred Anacostia Station site has been located beneath I-295 in the vicinity of Howard Road (Figure 5.5). The following discussion presents the general conclusions supporting elimination of five alternative locations:

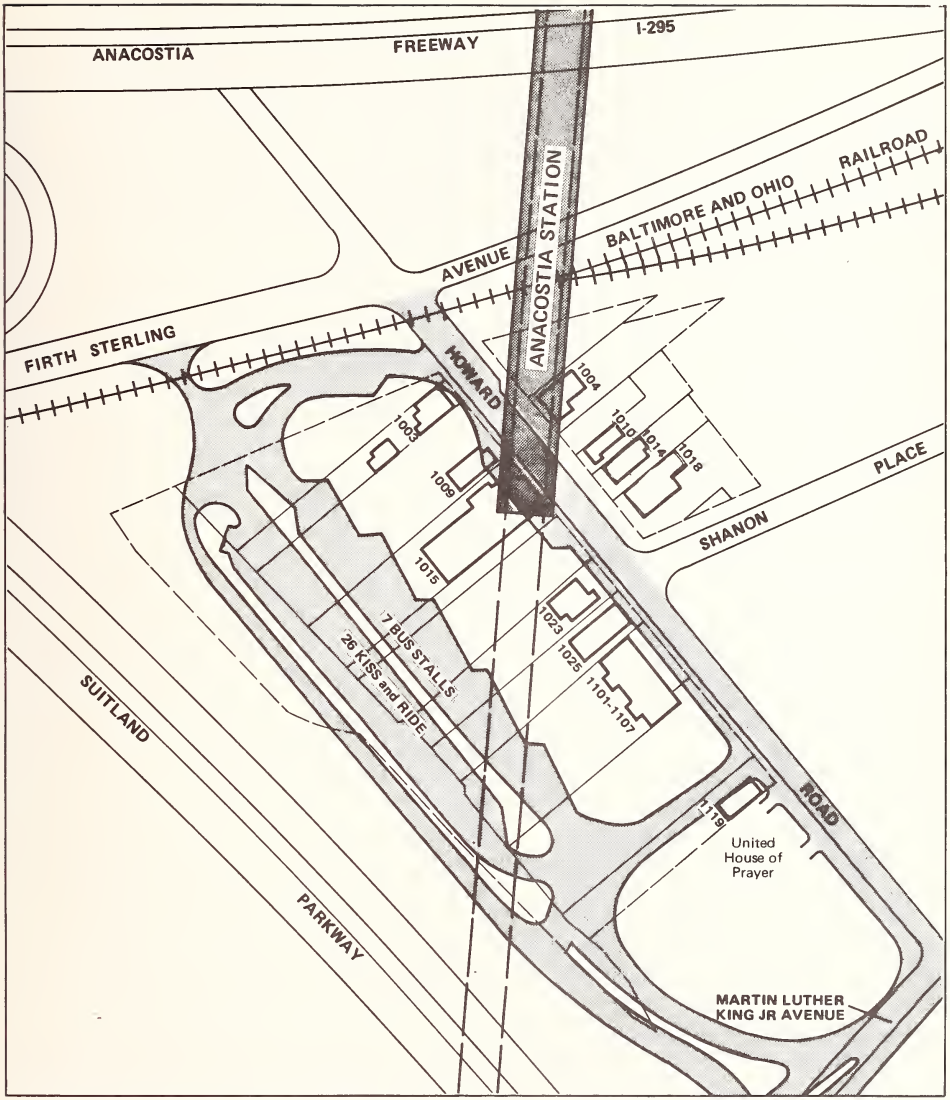
1. A station location in the vicinity of the north gate of the Bolling/Anacostia Complex is unsuitable for the following reasons (Figure 5.5 #1):

    a. Use of federal property would require designation of the approximately 25 acres, needed for the station and parking facilities, as excess property. The Department of Defense does not consider the area excess property and has included plans for its future use in the current master plan for the Bolling/Anacostia Complex.

    b. Local access, both vehicular and pedestrian, would be extremely difficult due to the pattern of major roadways in the station vicinity. The adjacent community is currently separated from the station site by South Capitol Street and I-295.

    c. Assuming the preferred South Crossing Alternative for Construction Segment F3, the engineering design for the river crossing (Segment F4) would be severely constrained.

FIGURE 5.4 b



METRO ALIGNMENT

METRO STATION

PARKING AND ACCESS ROAD

HOWARD ROAD HISTORIC DISTRICT

STRUCTURE TO BE TAKEN

STRUCTURE TO REMAIN

HOWARD ROAD HISTORIC DISTRICT AND METRO FACILITIES

GREEN LINE (F ROUTE) ANACOSTIA SEGMENT

0 50 100 200 FT

metro

An s-curve would be required beneath the river. This would add to both construction and operation costs by lengthening the river crossing segment, reducing train speeds, and requiring additional maintenance. In addition it would eliminate the possibility of sunken tube river crossing construction, a potentially less costly construction alternative to earth tunnel construction.

d. Metro operation along an alignment in the vicinity of the I-295, South Capitol Street (Douglass Street Bridge) interchange could require costly structural modifications to existing roadways in the area.

e. The location would not allow for continuation of the Green Line along a preferred alignment for Sections F6, F7 and F8.

2. A station location in the area bounded by I-295, Suitland Parkway, Martin Luther King, Jr. Avenue, and St. Elizabeths Hospital is unsuitable as a result of potential community disruption and poor regional access (Figure 5.5 #2).

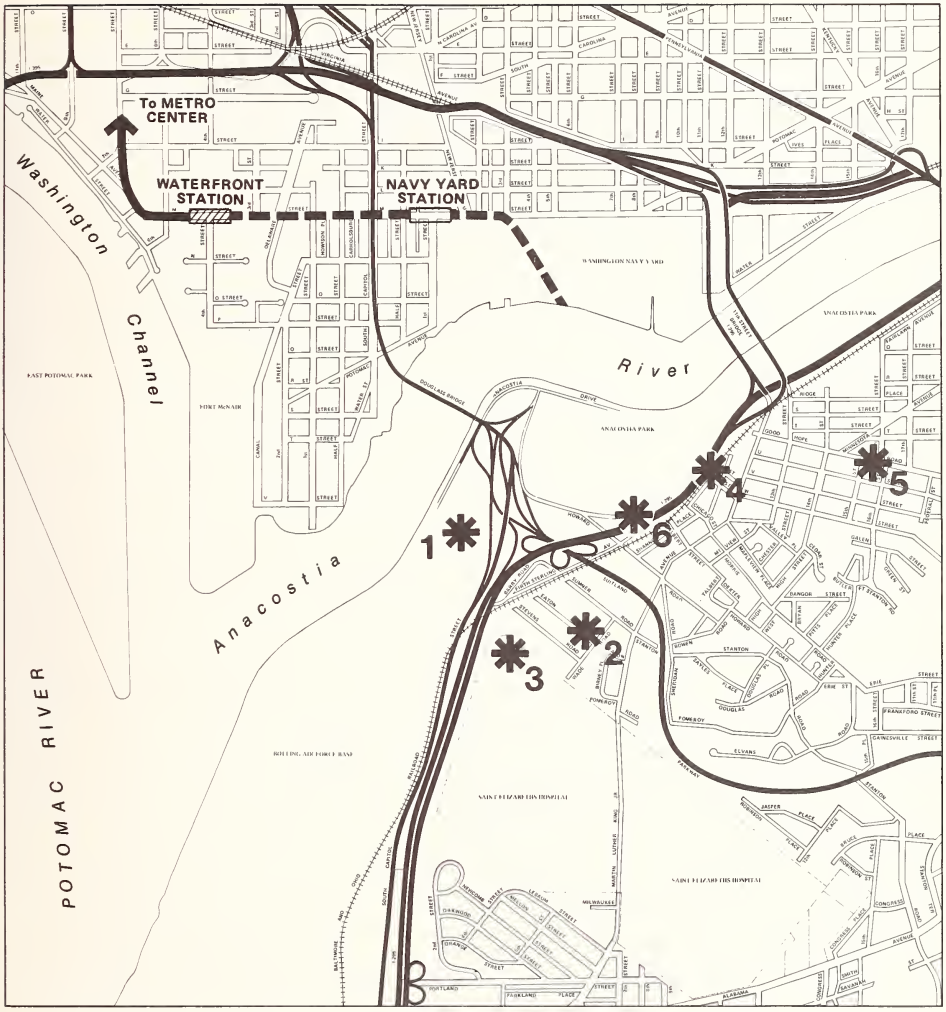
   Assuming construction of the station as a through station with 730 cars in a structural facility and kiss-ride facilities in a surface lot for 35 cars, approximately 150 residential units would be displaced; assuming construction of the station as a temporary terminal with an additional surface lot for 350 cars, approximately 350 residential units would be displaced.

   Regional access to the station would require construction of links to both I-295 and Suitland Parkway, resulting in additional cost and potential displacements. Local access to commercial and residential areas east of Suitland Parkway would be poor as a result of both distance and restricted road access due to the physical separation caused by the Suitland Parkway right-of-way.

3. A station location on unutilized portions of the St. Elizabehts Hospital tract west of Martin Luther King, Jr. Avenue is unsuitable for the following reasons (Figure 5.5 #3):

   a. Because St. Elizabeths Hospital has been determined eligible for the National Register of

FIGURE 5.5



EXISTING GREEN LINE

EXISTING GREEN LINE STATION (WATERFRONT STATION)

PREFERRED ALIGNMENT GREEN LINE SEGMENT F3

PREFERRED GREEN LINE STATION (NAVY YARD STATION-SEGMENT F3)

ALTERNATIVE ANACOSTIA STATION LOCATION

ANACOSTIA STATION ALTERNATIVES

GREEN LINE (F ROUTE)
ANACOSTIA SEGMENT

0 600 1200 2400 FT

metro

Historic Places use of hospital property would result in the taking of approximately 10 acres of 4(f) land (assuming a through station) or the taking of 25 acres of 4(f) land (assuming a temporary terminal).

b. Roadway improvements would be required for both local and regional access. Walk-on access to commercial areas east of Suitland Parkway would be very poor due to distance.

c. Steep terrain would make station design and construction difficult, particularly for a temporary terminal facility.

4. A station location in the vicinity of Martin Luther King, Jr. Avenue and V Street is unsuitable as a result of parkland impacts and regional access problems associated with construction of parking facilities, particularly for a temporary terminal facility (Figure 5.5 #4):

   a. Assuming a through station, construction of a 730 car structural parking facility would require taking five acres of land from Anacostia Park.

   b. Assuming a temporary terminal facility, construction of an adjacent 350 car surface parking lot would require an additional 15 acres of land from the National Park Service.

   c. Regional access to park-ride facilities would require modifications to the existing ramp systems of I-295 as well as construction of as much as 2500 linear feet of station access road through National Park Service property.

5. A station location in the vicinity of Good Hope Road and 13th Street, SE, is unsuitable as a result of potential community disruptions, difficulties of regional access, and local metro-induced traffic congestion (Figure 5.5 #5):

   a. Assuming construction of the station as a through station with 730 cars in a structural facility and an additional surface lot for kiss-ride patrons located in the block between Good Hope Road, T Street, 17th Street, and 13th Street, approximately 30 businesses and 70 residential units would be displaced.

b. Assuming construction of the station as a temporary terminal utilizing a large structural parking facility, approximately 120 additional residential units and 20 additional businesses would be displaced.

c. Regional access to a temporary terminal facility would require modifications to the existing ramp systems of Suitland Parkway and I-295.

d. Metro-induced traffic would cause severe congestion at intersections providing access to metro facilities off Good Hope Road, 17th Street, and Martin Luther King, Jr. Avenue.

e. The location would not allow for continuation of the Green Line along a preferred alignment for Sections F6, F7 and F8.

By comparison to these alternatives, the proposed station location beneath I-295 in the vicinity of Howard Road (South Crossing Alternative) is the most favorable station site. It offers the optimum regional access from I-295, South Capitol Street, and Suitland Parkway, without modification to existing ramp systems; local access from Martin Luther King, Jr. Avenue for patrons arriving by bus, car, or walking is good in terms of both distance and safety. Station facilities (including surface parking for 350 cars) can be constructed with displacement of only 19 residential units, three businesses, and one fraternal lodge. Publicly-owned land included in the site, now occupied by the Architect of the Capitol, can be made available in a timely fashion; both the District and the Architect of the Capitol are amenable to relocation on suitable replacement sites.[1,2] The National Park Service is amenable to the use of land from its properties for construction activity and station access roads.[3] In addition the

[1]Letter of Marth 16, 1981 from George White, Architect of the Capitol, to the Honorable Augustus Hawkins, Chairman, Joint Committee on the Library, Washington, D.C.

[2]General Plan Public Hearing No. 86 (Docket No. R78-2). "Portion of the Proposed Branch Route from the Anacostia River to the Vicinity of Suitland Parkway and Martin Luther King, Jr. Avenue, including the Anacostia Station." July 25, 1978.

[3]Letters of June 10, 1980 from NPS/NCR to WMATA and of January 28, 1981 from WMATA to NPS/NCR (Figure 5.8).

I-295 station location provides for the most cost-effective design alternative with respect to the preferred alternative for Construction Segment F3, in terms of both construction and operating costs for the Anacostia Segment. It also allows for future construction of the Green Line to either of the two terminuses still under consideration in Prince George's County.

Minimization of Harm

A memorandum of agreement (Figure 5.14) has been developed jointly by UMTA, WMATA, the District of Columbia Historic Preservation Office, and Advisory Council on Historic Preservation. It sets forth provisions for the mitigation of adverse effects on the Howard Road Historic District. The mitigation program will consist of two activities. First, it will provide for the archival preservation of affected historic structures in the District in conformance with the most current guidelines of the National Architectural and Engineering Record. Second, it will provide for the recovery and conservation of archeological resources in conformance with the most current guidelines of the Advisory Council on Historic Preservation, the District of Columbia Historic Preservation Office, and the U.S. Department of the Interior.

Coordination

WMATA has coordinated with the Advisory Council on Historic Preservation and the District of Columbia Historic Preservation Office to determine the effect of the proposed South Crossing Alternative on the Howard Road Historic District. The result of this coordination is a signed memorandum of agreement (Figure 5.14) setting forth provisions for the mitigation of adverse effects on the Annex.

5.1.3 USE OF PARKLANDS

The South Crossing Alternative for the Anacostia Segment of the Green Line directly impacts the following 4(f) parklands (Figure 5.6):

1. Anacostia Park (including adjacent land occupied by the Botanic Garden of the Architect of the Capitol, the District of Columbia Lanham Tree Nursery, and the U.S. Defense Intelligence School).

2. Suitland Parkway.

Because of the complicated interrelated ownership and use provisions of the first four of these properties, they are discussed under the same heading in the 4(f) analysis presented below. By comparison, the Suitland Parkway is a property distinct from the other four in terms of both use and ownership, and is accordingly discussed under a separate heading.

A. Anacostia Park, Botanic Garden of the Architect of the Capitol, District of Columbia Lanham Tree Nursery, U.S. Defense Intelligence School

Description and Significance of Properties

Public lands in the vicinity of the proposed Anacostia Station include the southernmost portion of Anacostia Park, the District of Columbia Lanham Tree Nursery, the Architect of the Capitol's Botanic Garden, and the U.S. Defense Intelligence School (Figure 5.9).

Anacostia Park is a riverfront park owned and managed by the National Park Service/National Capitol Region (NPS/NCR). The park extends along both banks of the Anacostia River from the Potomac River east to the District of Columbia-Maryland state line and south along the eastern bank of the Potomac River to the Woodrow Wilson Bridge. Anacostia Park includes neighborhood, city, and regional recreation facilities.

The park area in the vicinity of the Anacostia Station includes the southern park entrance from South Capitol Street. Local vehicular access to the affected portion is provided off Good Hope Roade and Howard Road; pedestrian access is not permitted through either of the two nurseries or the Defense Intelligence School.

No park facilities are located in the area officially included within Anacostia Park between South Capitol Street and the 11th Street Bridge. The area is very open, planted in grass with no facilities. While portions of Anacostia Park are currently experiencing heavy usage, this portion is underutilized, probably due to the lack of facilities and poor access, particularly poor pedestrian access.

Public lands adjacent to Anacostia Park include the D.C. Lanham Tree Nursery, the Architect of the Capitol Botanic Garden, and the Defense Intelligence School. The 18.4 acre Lanham Tree Nursery is located on land owned by the National Park Service for which jurisdiction has been transferred to the District of Columbia for development of the nursery; no other uses of the property are permitted by the transfer of jurisdiction agreement.

The 24.9 acre Botanic Garden is under control of the Architect of the Capitol, also as a result of a transfer of jurisdiction agreement with the National Park Service. While the Architect of the Capitol has authority over the land, the transfer of jurisdiction agreement is such that in the event the property is no longer needed for nursery use, it will revert to the National Park Service for park purposes.

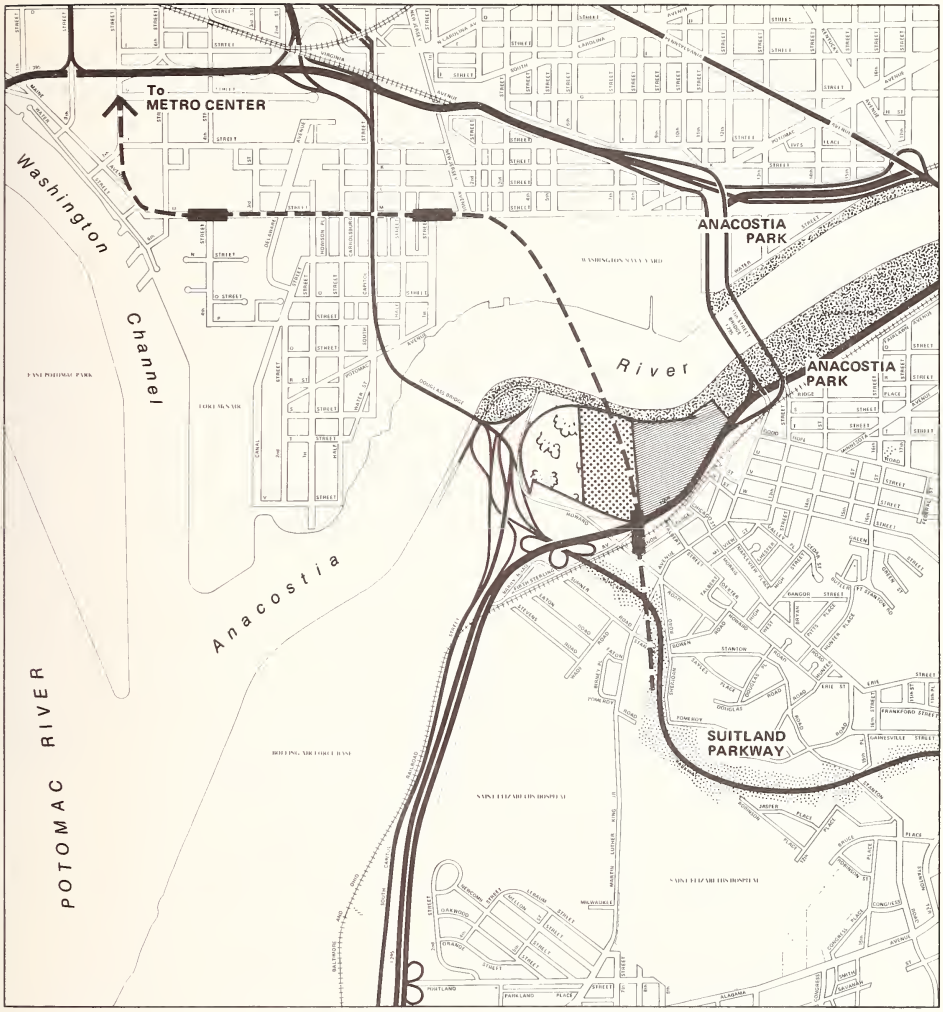
The 37.3 acre U.S. Defense Intelligence School has been developed under a permit from the National Park Service on land included within the boundaries of Anacostia Park. The parcel however is not open for public use or access in the area of the school campus itself; one ballfield is located east of the school itself and is available for public use as part of the Anacostia Park complex.

Proposed Use - Long-Term

WMATA proposes to construct regional access facilities for the Anacostia Station on portions of all of the four publicly owned parcels (Figure 5.8). These facilities include a structural facility providing parking for approximately 700 cars and an adjacent surface lot providing long-term parking for an additional 400 cars, short-term parking for 200 cars, 50 kiss-ride spaces, and bays for 19 buses. Vehicular access is from Suitland Parkway and I-295 using the existing ramp to Anacostia Drive, and from Good Hope Road. Egress is provided from the existing ramp following Anacostia Drive to South Capitol Street and from Good Hope Road.

The proposed construction will require relocation of both the District of Columbia Lanham Tree Nursery and the Architect of the Capitol's Botanic Garden. A helicopter hangar may also be taken at the Defense Intelligence School.

FIGURE 5.6



ANACOSTIA PARK

D.C. LANHAM TREE NURSERY

SUITLAND PARKWAY

SOUTH CROSSING ALIGNMENT

METRO STATION

U.S. DEFENSE INTELLIGENCE SCHOOL

ARCHITECT OF THE CAPITOL

4(f) PARKLANDS

GREEN LINE (F ROUTE)
ANACOSTIA SEGMENT

0 600 1200 2400 FT

metro

Permanent takings will include:

1. D.C. Lanham Tree Nursery - 4.2 acres.

2. Botanic Garden - 12.1 acres.

3. U.S. Defense Intelligence School - 13.0 acres.

Land from the Lanham Tree Nursery and the Botanic Garden will be required for construction of the surface park-ride, kiss-ride, and bus facilities; land from the U.S. Defense Intelligence School will be required for the structural parking facility and adjacent bus stalls, as well as construction of a regional access road from Good Hope Road. No land will be permanently required from Anacostia Park.

To permit this construction WMATA proposes the following:

1. Transfer of jurisdiction of land now included in the D.C. Lanham Tree Nursery back to the National Park Service (following relocation of the facility).

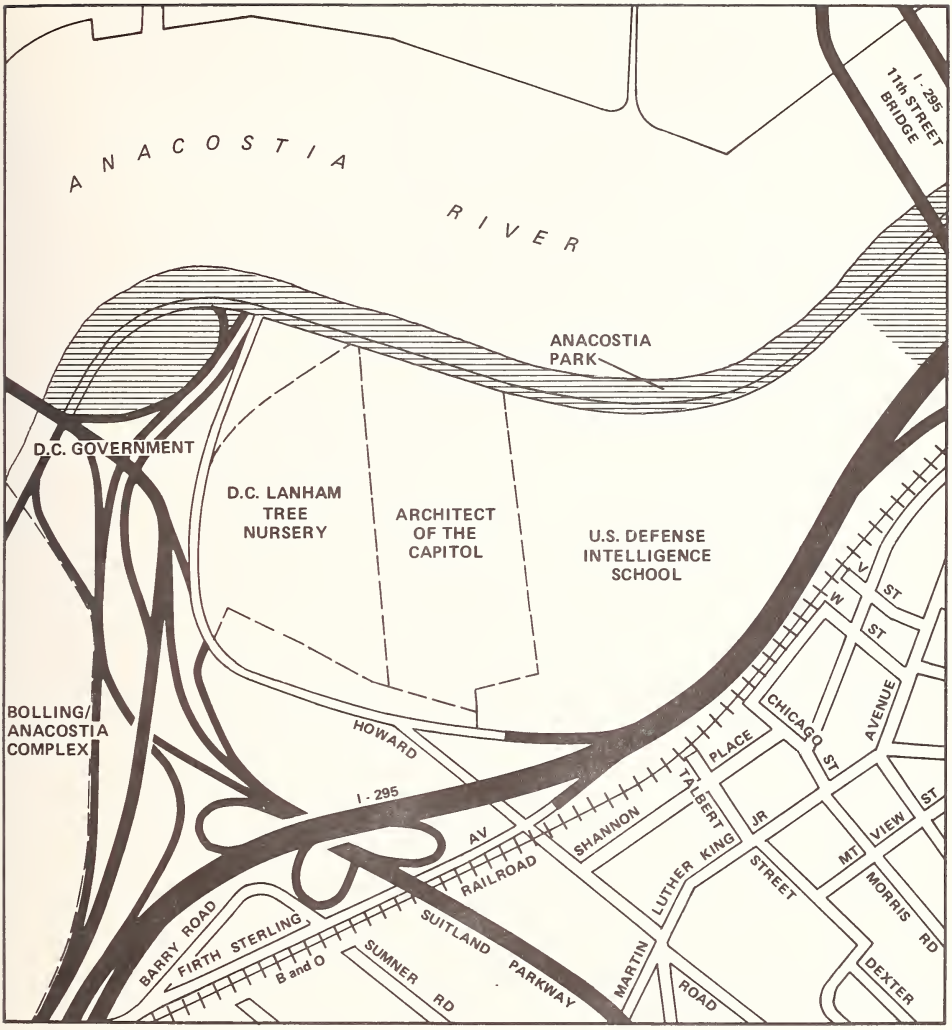
2. Transfer of control of land now included in the Architect of the Capitol's Botanic Garden to WMATA (following relocation of the facility).

3. Construction of metro facilities on land controlled by the National Park Service through normal permitting procedures. This permit would apply to land now included within the D.C. Lanham Tree Nursery, the Defense Intelligence School, and Anacostia Park needed for metro construction.

4. Construction of metro facilities on land controlled by WMATA presently included within the Architect of the Capitol's property.

Upon construction completion WMATA proposes to return excess land under its control, which is not needed for Metro, to the National Park Service. This will include land not used from the Architect of the Capitol's property. The surrounding land owned by the National Park Service will be upgraded in conformance with NPS-approved grading and landscaping plans. In addition, WMATA has agreed to reevaluate the need for the 400 car long-term surface parking facility at a point three years following the commencement of metro operation to Anacostia (Figure 5.9). This evaluation will be undertaken by WMATA in coordination with the National Park service and the D.C. Department of Transportation.

FIGURE 5.7



ANACOSTIA STATION
MAJOR PUBLIC LAND USES ADJACENT TO
PROPOSED REGIONAL FACILITIES

GREEN LINE (F ROUTE)
ANACOSTIA SEGMENT

0 150 300 600 FT

metro

In the event that ridership data and projections do not support the need for the additional parking, WMATA will remove the facility and transfer control of the land to the National Park Service.

Proposed Use - Short-Term

The extent of short-term construction impacts on Anacostia Park and adjacent public lands will depend upon the type of alignment construction used between the south seawall of the river and the Anacostia Station facility. This in turn will depend upon the construction method, either earth tunnel or sunken tube, which is selected for construction of the river crossing.

1. Earth Tunnel River Crossing Construction

Assuming earth tunnel construction of the Anacostia River crossing the area of ground surface disturbance in the vicinity of Anacostia Park will be limited to the sites of parking and station facilities and access roads. The alignment will be constructed from the south river seawall to the Anacostia Station using earth tunnel. Spoil from the tunneling activity will be removed from an entry point to be located on land now occupied by the Architect of the Capitol. The spoil material will be suitable for reuse in construction of metro facilities; it will not be suitable for use in the regrading and landscaping of parkland adjacent to the station. What material cannot be accommodated on the site will be removed to suitable disposal locations elsewhere in the region.

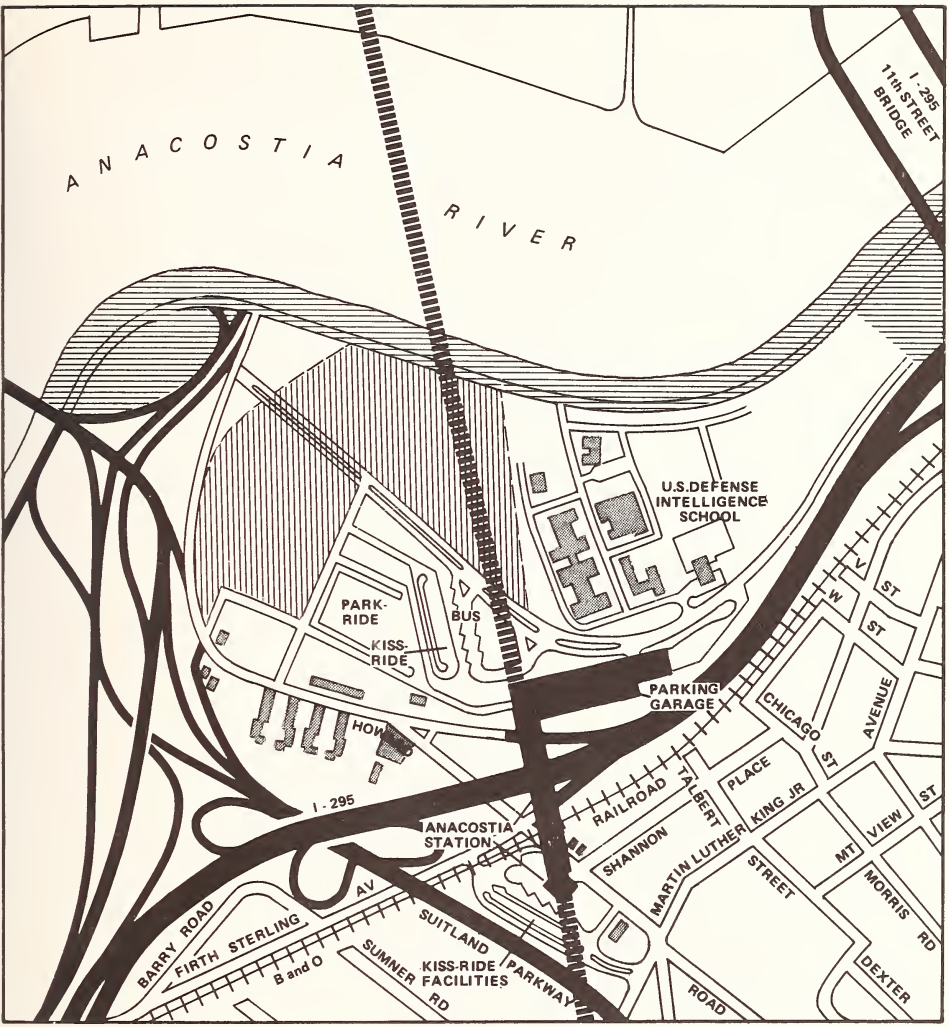
The approximate area to be included within short-term construction easements will include:

1. Anacostia Park - 4.0 acres.
2. D.C. Lanham Tree Nursery - 3.1 acres.
3. Botanic Garden - 15.0 acres.
4. U.S. Defense Intelligence School - 9.0 acres.

2. Sunken Tube River Crossing Construction

Assuming sunken tube construction of the Anacostia River crossing the area of ground surface disturbance will be much larger. It will include that required for dewatering of dredge material, for excavation of 2000 feet of cut-and-cover alignment (extending from the south seawall of the

FIGURE 5.8



ANACOSTIA PARK
(Existing)

ANACOSTIA PARK ADDITION
(1986)

ANACOSTIA STATION

GREEN LINE (F ROUTE)
ANACOSTIA SEGMENT

0 150 300 600 FT

metro

river to the station), for construction of all proposed metro facilities and access roads, and for disposal of dredged material (to be used for regrading adjacent park areas surrounding the station).

The approximate area to be included within short-term construction easements will include:

1. Anacostia Park - 4.0 acres.

2. D.C. Lanham Tree Nursery - 14.7 acres.

3. Botanic Garden - 15 acres.

4. U.S. Defense Intelligence School - 9 acres.

More specifically, the sunken tube river crossing alternative will require dredging of approximately 300,000 cubic yards of spoil. Of this material, approximately 100,000 cubic yards will be contaminated, having high concentrations of chlorinated hydrocarbons, such as chlordane, DDT, and PCB's, as well as high concentrations of iron, mercury and phenols; the remaining 200,000 cubic yards will be comprised of uncontaminated clays and sands.

In accordance with Section 404 of the Clean Water Act, WMATA has obtained preliminary approval for disposal of at least 100,000 cubic yards of contaminated material on National Park Service property in the Anacostia Station vicinity. The National Park Service has agreed to accept the material, subject to resolution of remaining technical issues; the Army Corps has indicated that the site is suitable for disposal of the material, also pending resolution of remaining technical issues. The National Park Service has also indicated that if additional spoil can be accommodated and it is suitable for landscaping, a portion of the remaining 200,000 cubic yards of uncontaminated dredge spoil can be disposed of on its property adjacent to the station.

Details of the disposal program are presently being worked out by WMATA. At present it is proposed that the dredge spoil be removed from the south shore of the Anacostia River by off-loading from barges to a conveyor system for transport to the appropriate disposal site. Uncontaminated material to be disposed of off the construction site will be removed by truck; contaminated material to be reused on the park site and for station construction will be transported to the current site of the Lanham Tree Nursery for dewatering. After drying, the material will be utilized to improve grades and elevations at the Anacostia Station site as well as for improvements to the Anacostia Park area surrounding the station. These improvements may in-

clude, but not necessarily be limited to:

1. Berms adjacent to I-295, Suitland Parkway, and approaches to the South Capitol Street Bridge.

2. Reinforcement of the Anacostia River levee system so as to provide for landscaped cover of the existing steel bulkhead.

3. Elevation of the 5 to 7 acres of lowland adjacent to the proposed station parking facilities.

Prior to reuse the dried material will be tested and supplemented as needed to ensure its capability to support landscaping and to provide adequate drainage. At present the disposal plan does not include the placement of topsoil over the dredge material. Topsoil is not considered necessary at this point for the following two reasons:

1. Preliminary tests indicate that the dredge material is basically suitable as a landscaping medium (recognizing that some minor supplementation, such as liming, may be necessary).

2. There are no significant public health hazards related to the use of the dredge material for landscaping and for recreational uses.[1]

Potential environmental impacts associated with the disposal method as proposed include both short- and long-term effects. The handling of spoil during dredging, transport to the dewatering site, dewatering, supplementation, and subsequent reuse will result in local increases in erosion and sedimentation as well as potential water quality impacts.

Erosion and sedimentation will be controlled through erosion control measures and spoil handling and disposal methods as required by WMATA, the District of Columbia, the U.S. Army Corps of Engineers, the U.S. Environmental Protection Agency, and the National Park Service.

To avoid potential water quality impacts, and in compliance with Section 404 of the Clean Water Act, WMATA is developing a preliminary dewatering and spoil handling plan. This plan describes the process by which material will be isolated from the surrounding park area for drying by an impermeable berm, the physical measures to be used to facilitate drying, and the precautions to be taken to prevent surface water

[1]Letter of July 28, 1981 from Ecological Analysts, Inc. to Wallace, Roberts and Todd.

contamination. While several technical issues remain to be resolved, no major problems are anticipated with respect to obtaining 404 Permit. Questions raised by the Environmental Protection Agency regarding surface as well as groundwater contamination have been resolved. It is anticipated that effluent discharges from the dewatering operation will be in compliance with the Federal Drinking Water Standards[1] and that the potential for groundwater contamination is remote.[2]

Data and analysis supporting these conclusions as well as the plans for dewatering, grading and landscaping on National Park Service property will be submitted to the Army Corps in WMATA's application for a 404 permit. The same material must also be reviewed and approved by the National Park Service and the District of Columbia.

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[1]Ecological Analysts, Inc. "Environmental Assessment of Physical/Chemical Impacts Related to the Dredging and Disposal of Spoil from the Proposed Trench Tube Crossing of the Anacostia River, Data Report." March 1981.

[2]Letter of June 10, 1981 from Ecological Analysts, Inc. to Wallace, Roberts and Todd.

Alternatives

Alternatives to the South Crossing Alternative have been evaluated to determine if there is a prudent and feasible alternative to the long-term use of Anacostia Park and adjacent public lands. These include the No Build Alternative as well as horizontal shifts of the alignment.

1. No Build Alternative

The No Build Alternative would avoid both short- and long-term use of Anacostia Park and adjacent public lands by terminating the Green Line at the existing Waterfront Station at 4th and M Streets, SW. The impacts of terminating Metro at this point are described above in the alternatives discussion for the Washington Navy Yard Annex. Results of WMATA studies as described in that section support the conclusion that the alternative of taking no action is less preferable than that of extending the Green Line to Anacostia along the South Crossing Alignment.

2. Horizontal Alignment Shifts

Preliminary engineering studies as well as more detailed environmental impact studies have evaluated numerous alignment and station alternatives for Construction Segment F5. Each was considered in terms of its potential impacts on the community, local and regional access, land availability, engineering feasibility, and cost. Engineering feasibility included considerations of station design as well as the relationship of the proposed alternative to the preferred alternatives for the Anacostia River crossing (Segment F4).

Results of these studies are summarized above in the alternatives discussion for the Howard Road Historic District. These findings support the conclusion that the proposed station location beneath I-295 in the vicinity of Howard Road is the most favorable station site.

Minimization of Harm

The practicality of three procedures to further reduce harm to Anacostia Park are discussed below. These procedures are:

1. Minor horizontal shifts of the alignment within Anacostia Park.

2. Measures to mitigate construction-related impacts.

3. Measures to mitigate impacts on Anacostia Park facilities.

1. Minor Horizontal Alignment Shifts

Assuming the preferred location of the Anacostia Station beneath I-295 there are no possible minor shifts of the alignment which will reduce impacts on Anacostia Park and adjacent public lands. The station cannot be move west without interferring with Suitland Parkway; it cannot be moved east without additional residential takings.

2. Mitigation of Construction-Related Impacts

Short-term construction impacts on Anacostia Park and adjacent public lands requiring mitigation include potential erosion, water quality, and construction traffic impacts. Specific procedures for handling erosion, sedimentation, and spoil generation and disposal impacts are contained in the General Provision and Standard Specification and Special Provisions for Construction Projects. All WMATA contractors are required to comply with provisions of this document as well as all relevant local, state and federal laws. These will include at a minimum a Sedimentation and Erosion Control Permit from the D.C. Department of Environmental Services and a 404 Permit for handling of material dredged from the Anacostia River. Construction traffic and construction staging areas will be located in such a way as to guarantee the continued use of all park roads during the construction period. (See Coordination below.)

3. Mitigation of Impacts on Anacostia Park

Following completion of metro construction WMATA will return the 12.1 acres of unused land from the Architect of the Capital's present property (Botanic Garden) to the National Park Service. Because activity on the Lanham Tree Nursery site will occur under permit from the National Park Service, without transfer of ownership to WMATA. there will be no need to officially return the remaining 14.2 acres to the NPS.

Combining the two parcels from the Botanic Garden site and the Lanham Tree Nursery site, there will be an increase of approximately 26.3 acres of land available for active or passive recreation in Anacostia Park (Figure 5.8). In addition, in the event that surface parking is removed some time after 1990, there will be a further increase in available parkland, the size of which will be determined by the area of parking eliminated.

The 26.3 acres to be returned to park use will be improved over their existing condition in terms of grading, landscaping, and access. Because these areas are presently not available for public use, their addition to the park itself represents a net increase in the amount of parkland in the Anacostia area. In addition to an increase in available parkland, metro construction will result in improvements to portions of Anacostia Park and the Defense Intelligence School adjacent to the station site. With NPS approval, WMATA will regrade and relandscape portions of these sites, improving their suitability for recreation uses and enhancing the overall visual setting of much of the area between the South Capitol Street Bridge and Good Hope Road. Metro construction will also greatly enhance access to the area and, consequently, will most likely result in an increase in user rates.

Coordination

Planning for the Anacostia Station facilities and access roads has been a joint effort of WMATA, the District of Columbia Department of Transportation, and the National Park Service/National Capital Region. Coordination has been undertaken to satisfy operational needs of the Metro System with the minimum impact on parkland and with the minimum expenditure of funds for highway improvements.

The result of this coordination has been development of a station site and access plan acceptable to all three parties. In addition WMATA has committed to several mitigation measures as requested by the National Park Service (Figure 5.9).

These measures provide for the following:

1. Design of access roads as park-like roadways.
2. Redesign of Anacostia Drive to more park-like standards.
3. Architectural review of WMATA structures by the National Park Service.
4. Major landscaping of all station facilities and regraded areas.
5. Removal of all facilities adjacent to the station site no longer in use as a result of metro construction.
6. An adequate station access from Good Hope Road.

7. Reestablishment of the flood control levee using spoil material.
8. Future evaluation of the need for surface parking facilities, with the reservation of funds for their removal if found unnecessary.

In addition the National Park Service has asked for enough information regarding WMATA's proposal to guarantee the orderly completion of construction with minimum disruption of activities at Anacostia Park and the Defense Intelligence School. More specifically the National Park Service has stated it will require the following items for its review of the WMATA proposal:

1. A grading plan for the Anacostia Station and surrounding public lands to be regraded.

2. A landscaping plan for station facilities, access roads, and public lands to be regraded.

3. A detailed description of the proposed dewatering of contaminated dredge spoil.

4. Specifications to guarantee that spoil to be used for regrading will be suitable for landscaping.

5. A plan for keeping Anacostia Drive open during construction.

WMATA is currently preparing these items requested. In addition, WMATA has assured the National Park Service that in the event that the dredge material is found unsuitable for reuse at the park site, it will be removed to an alternate disposal location.

Following resolution of these issues, the National Park Service will review the WMATA General Plans. It is anticipated by the Park Service at this point that construction of the metro facilities as currently proposed, with these issues resolved, will contribute positively to the development of Anacostia Park in a manner consistent with existing park plans.

B. Suitland Parkway

Description and Significance of Property

Suitland Parkway is a scenic transportation corridor encompassing 113 acres of land in the District of Columbia. It

February 24, 1981

Mr. Manus J. Fish
Regional Director
National Capital Region
National Park Service
1100 Ohio Drive, S. W.
Washington, D. C. 20242

Re: Metro Design Sections F-4 & F-5
NPS Reference A88-NCR (LUCE)

Dear Mr. Fish:

The National Park Service's letter of June 10, 1980 from Mr. Robert G. Stanton, Deputy Regional Director, was addressed to our General Manager, Mr. Richard Page, and has been the catalyst of considerable discussion and coordination. The result is this reply which we propose as indicating an agreement between the Authority and the National Park Service to be included in our final EIS statement. As such, this permits the Authority to proceed toward construction on sections critical to the schedule for the regional rapid transit system. The Authority is preparing a separate agreement with the District of Columbia Department of Transportation which will speak to the development of the road network and surface facilities in the vicinity of the Anacostia Station. That agreement will attempt to recognize the concerns expressed by the NPS.

We urge your concurrence with the resolution reached on the following points. Detailed coordination during the development of our final plans will, of course, continue.

1. The Authority agrees that the development and design of the primary ingress and egress to the Anacostia Metro Station will be as a park road with appropriate curbs, alignment, and entrance coordinated with the FHWA should they fund the design and construction.

2. The Authority will provide for the redesign of Anacostia Drive as a road with additional parking alcoves and a cul-de-sac.

3. The Authority will provide for the relocation and removal of all facilities under the jurisdiction of the Architect of the Capitol, thus permitting the subsequent transfer of the Architect's holdings to the National Park Service.

metro

4. The Authority recognizes that the architectural design of the parking garage at the Anacostia Station will set the tone for future design in the park. With this in mind, the design will be coordinated with appropriate agencies and submitted to the Commission of Fine Arts and the National Capital Planning Commission.

5. The Authority will design and contract for major landscaping for the Anacostia Station site and the proposed new ramp configurations to South Capitol Street, Suitland Parkway, I-295 and South Capitol Street Bridge.

6. The Authority has been assured by D. C. Department of Transportation that the Tree Nursery and its facilities will be removed. The Authority will provide landscaping of this area in conjunction with its overall landscaping project.

7. The Authority intends to construct a suitable connection between the Metro Station and Good Hope Road. This connection, now in the access plan, connects to Anacostia Drive. Correct signage can control traffic usage.

8. Reestablishment of the flood control levee (subject to Corps of Engineers' approval) can be constructed as an aid to disposal of suitable spoil from the river crossing construction. The Authority will furnish and place such excavated material as the Park Service will allow in an area to be coordinated with the Park Service during design. The finished construction will be seeded or sodded as necessary.

9. The regional surface parking area is shown on our general plans as having some 417 spaces. The Authority will commit funds for the removal of this surface parking area and will maintain this commitment for three years after the start of the Rosecroft line operations currently scheduled for July, 1987. The commitment, under our present schedule, will extend until July, 1990. A further commitment beyond that point will be subject to availability of funds. This commitment should allow time for all concerned parties to assess the viability of the parking lot and the need for its continuance or removal.

10. It is our understanding that the general agreement of all parties concerned is that the north gate of the Bolling/Anacostia complex is to remain; however, for purposes of gaining agreement, the Authority will commit funds sufficient for removal of all additional road systems constructed which could serve the north gate of the Bolling/Anacostia complex. This obligation will remain in effect until July, 1990 and can be implemented prior to that time by agreement of the parties concerned.

We feel that the foregoing constitute an essential agreement to your stipulations of June 10, 1980. Accordingly, it is our intention to use copies of our correspondence to show a coordinated stance in the F-3 through F-5 environmental impact statement.

Sincerely,

John S. Egbert

extends from the Douglass Bridge-South Capitol Street ramps southeast to the District of Columbia-Maryland state line (Figure 5.10). Owned by the District of Columbia, Suitland Parkway is operated by D.C. DOT as a four-lane, limited access freeway with landscaped medians and rights-of-way.

Suitland Parkway provides an important open space and natural resource in the densely developed Southeast Washington area. The vegetation in the parkway segment located within the impact analysis corridor is dominated by tree species typical of the early and middle stages of forest succession. Located further south within the Suitland Run valley, outside of the impact analysis corridor, are mature stands of hardwoods which constitute an important biotic and scenic resource.

Similarly used lands in the general area include Fort Drive of the Fort Circle Park System, owned by NPS/NCR.

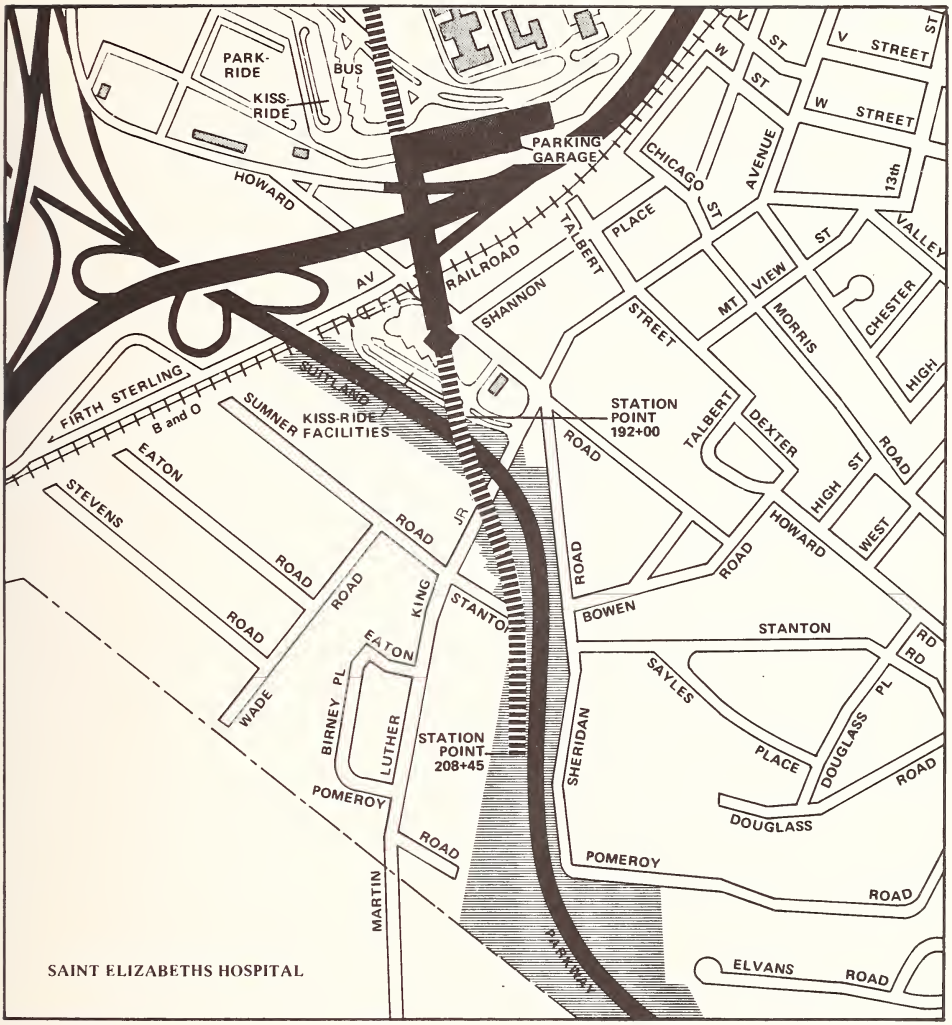
Proposed Use

Metro tail tracks outbound of the Anacostia Station proceed for approximately 1240 linear feet beneath Suitland Parkway from Station Point 192+00 at the edge of the station local access area to a portal in the parkway at Station Point 208+45. From the Anacostia Station the alignment proceeds for 340 feet, passing beneath the parkway right-of-way and landscaped medians and shoulder, before passing beneath the Birney School Annex and Martin Luther King, Jr. Avenue. South of Martin Luther King, Jr. Avenue, the alignment resumes it passage beneath parkway land, interrupted only briefly by passage beneath a small private property and the Stanton Road/Dunbar Road right-of-way, before reaching the portal at Station Point 208+45.

Construction beneath the parkway will occur in cut-and-cover sections at a depth of from five to forty-five feet. South of Martin Luther King, Jr. Avenue the construction area will be secured through fencing which will enclose approximately 2.9 acres of parkland; construction will be removed from the parkway and will not interfere with parkway traffic. North of Martin Luther King, Jr. Avenue the construction area will be confined to the immediate alignment area, (one-half acre) so as to minimize disruption of traffic on the parkway right-of-way.

During construction street decking will be used to maintain traffic flows on Suitland Parkway. During initial excavation and installation of decking, through traffic

FIGURE 5.10



SUITLAND PARKWAY

SOUTH CROSSING ALTERNATIVE

SUITLAND PARKWAY
(with Metro Tail Track Alignment)

GREEN LINE (F ROUTE)
ANACOSTIA SEGMENT

0 150 300 600 FT

metro

will be maintained, although at reduced capacity. Following installation temporary street decking will continue to slow traffic, although less severely. Following construction decking will be removed and the road surface replaced.

During construction landscaping and natural vegetation along the parkway will be disturbed. This will primarily affect lawn-like vegetation. Some small areas of successional vegetation will also be disturbed; these areas are dominated by tree species typical of the early and middle stages of forest succession, primarily including black locust, red maple, poplar, ash, elm, scarlet oak, box elder, ailanthus, and sweetgum. Following construction disturbed areas will be revegetated with plant species similar to or of a higher quality than those already present.

Metro facilities on the ground surface will include a fan shaft and emergency entrance approximately 180 feet south of Martin Luther King, Jr. Avenue (between Station Points 198+00 and 199+00) and a closed portal structure at Station Point 208+45).

Alternatives

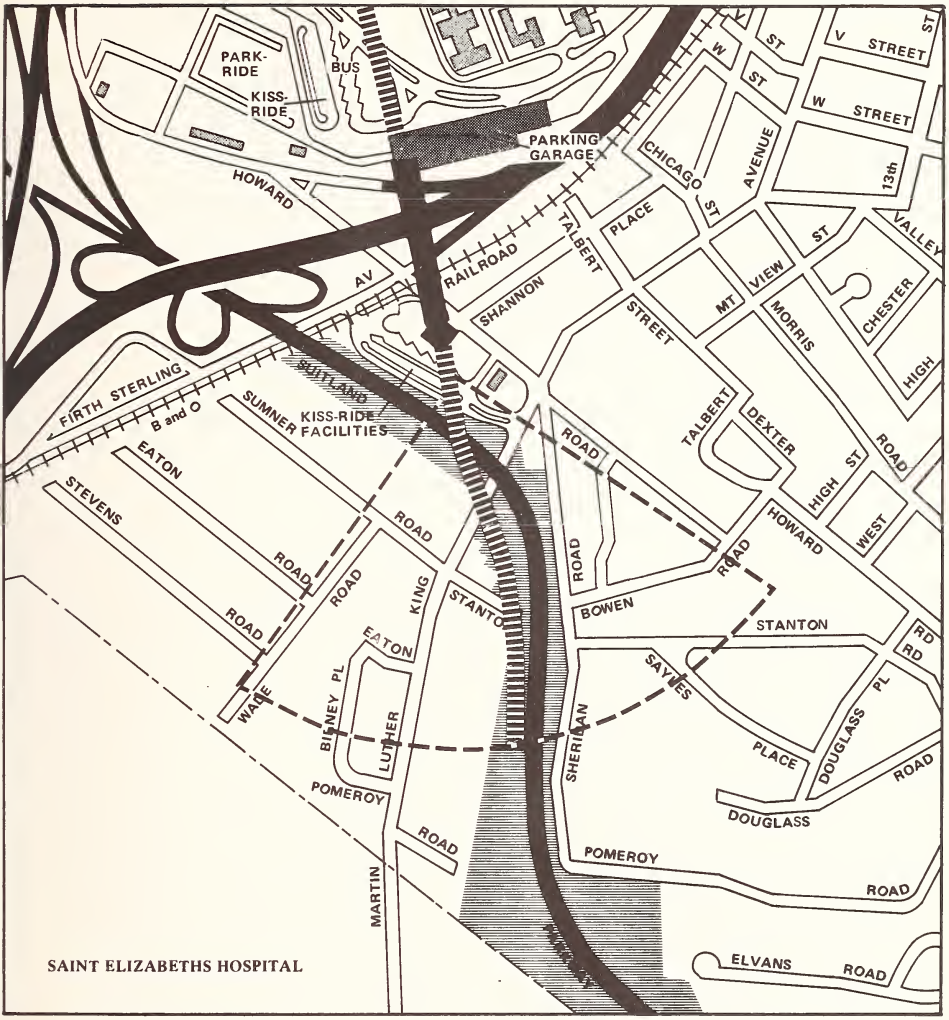
Alternatives to the South Crossing Alternative have been evaluated to determine if there is a prudent and feasible alternative to the use of Suitland Parkway. These include the No Build Alternative as well as horizontal shifts of the alignment.

The following discussion of alternatives is intended to support the conclusion that there is no feasible and prudent alternative to the use of Suitland Parkway.

1. No Build Alternative

The No Build Alternative would avoid both short- and long-term use of Suitland Parkway by terminating the Green Line at the existing Waterfront Station at 4th and M Streets, SW. The impacts of terminating Metro at this point are described above in the alternatives discussion for the Washington Navy Yard Annex Historic District. Results of WMATA studies as described in that section support the conclusion that the alternative of taking no action is less preferable than that of extending the Green Line to Anacostia along the South Crossing Alignment.

FIGURE 5.11



SUITLAND PARKWAY

AREA OF POTENTIALLY FEASIBLE TAIL TRACK ALTERNATIVES

SOUTH CROSSING ALTERNATIVE

TAILTRACK ALTERNATIVES

GREEN LINE (F ROUTE)
ANACOSTIA SEGMENT

0 150 300 600 FT

metro

2. Horizontal Alignment Shifts

Alternatives to the long-term use of Suitland Parkway for the metro alignment include horizontal shifts of the 1750 feet of tail tracks.

Assuming a preferred location for the Anacostia Station beneath I-295 in the vicinity of Howard Road, only an alignment shift to the east of that proposed could completely avoid taking of parkland. Outbound of the Anacostia Station possible alternatives to the east are constrained by the maximum allowable curve; as a result any alternative to the east of the parkway must proceed beneath Martin Luther King, Jr. Avenue to Sheridan Road (Figure 5.11). From that point the alignment can proceed for the remaining 1200 feet along a variety of routes in the area between Sheridan Road, Martin Luther King, Jr. Avenue and Howard Road (Figure 5.11). Because of poor substrate stability throughout this area, however, any of the alternative routes must be constructed utilizing cut-and-cover.

WMATA has studied the feasibility of a tail track alignment through this area. Results of these studies have supported a decision not to proceed with a route to the east of Suitland Parkway. The primary reason for this is the large number of displacements required for construction of any of the possible cut-and-cover alignments; preliminary studies have indicated that anywhere from 10 to 60 residential units as well as three commercial structures would be displaced in the area south of Martin Luther King, Jr. Avenue.

To avoid displacements associated with alignments to the east of Suitland Parkway, WMATA has studied the feasibility of alternatives to the west of the parkway. All required crossing beneath the parkway outbound of the Anacostia Station, just north of Martin Luther King, Jr. Avenue, as well as use of cut-and-cover construction (due to poor substrate stability). Only the South Crossing Alternative included passage beneath Suitland Parkway in the area south of Martin Luther King, Jr. Avenue; all the remaining alternatives were located between Wade Road and Martin Luther King, Jr. Avenue (Figure 5.11).

The results of feasibility studies for the western alternatives indicated that while no commercial displacements would be required, all of the alternatives would necessitate taking residential structures. Alternatives between Wade

Road and Martin Luther King, Jr. Avenue would displace anywhere from 20 to 40 residential units. By comparison, an alternative east of Martin Luther King, Jr. Avenue (South Crossing Alternative) would displace six residential units.

On the basis of differences in the degree of community disruption caused by alternative alignments for the Anacostia tail tracks, the South Crossing Alternative (Figure 5.11) has been selected as the preferred alternative. The permanent use of 3400 square feet of parkland is considered preferable to the taking of additional residential structures required by the other alternatives studied.

Minimization of Harm

The practicablity of two procedures to further reduce harm to Suitland Parkway are discussed below. These procedures include:

1. Measures to mitigate construction-related alignment impacts.

2. Measures to mitigate impacts on Suitland Parkway facilities.

Mitigation through minor shifts in the alignment has already been discussed in the alternatives section above.

Measures to mitigate construction-related alignment impacts primarily include those needed to maintain traffic flows on Suitland Parkway and those providing for suitable revegetation following construction completion.

During construction street decking will be used to maintain traffic flows on Suitland Parkway. During initial excavation and installation of decking, through traffic will be maintained, although at reduced capacity. Following installation temporary street decking will continue to slow traffic, although less severely. Following construction decking will be removed and the road surface replaced.

During construction landscaping and natural vegetation along the parkway will be disturbed. This will primarily affect lawn-like vegetation. Some small areas of successional vegetation will also be disturbed; these areas are dominated by tree species typical of the early and middle stages of forest successfion, primarily including black locust, red maple, poplar, ash, elm, scarlet oak, box

elder, ailanthus and sweetgum. Following construction disturbed areas will be revegetated with plant species similar to or of a higher quality than those already present.

Measures to mitigate impacts on Suitland Parkway facilities include those intended to maintain traffic on the Suitland Parkway right-of-way. There are no other facilities on the park property.

Coordination

WMATA has closely coordinated with the District of Columbia Department of Transportation, (D.C. DOT) during the planning of metro facilities in Design Section F5. The location and plan for the preferred Anacostia Station and access roads has been studied by D.C. DOT.[1] Throughout these consultations, reviews, and studies, the location of the preferred Anacostia Station beneath I-295 in the vicinity of Howard Road has assumed a tail track alignment beneath Suitland Parkway, using cut-and-cover construction.

A general plan public hearing for Design Section F5 has been held by WMATA. At that hearing plans for the Anacostia Station and tail tracks were favorably reviewed by the District of Columbia.[2]

5.1.4 SECTION 4(f) DETERMINATION

The proposed project will require the use of certain parklands and historic properties protected by Section 4(f) of the Department of Transportation Act. These include:

1. The Washington Navy Yard Annex Historic District.
2. The Howard Road Historic District.
3. Anacostia Park (including adjacent land

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[1]District of Columbia Department of Transportation. "Anacostia Metrorail Station Site Access and Area Roadnet Study." (Prepared by Barton-Aschman Associates, Inc.) August 1980.

[2]General Plan Public Hearing No. 86 (Docket No. R78-2). "Portion of the Proposed Branch Route from the Anacostia River to the Vicinity of Suitland Parkway and Martin Luther King, Jr. Avenue, including the Anacostia Station." July 25, 1978.

occupied by the U.S. Defense Intelligence School, the Botanic Garden of the Architect of the Capitol, and the District of Columbia Lanham Tree Nursery).

4. Suitland Parkway.

Based on the information contained in this Environmental Impact Statement, the Department of Transportation has determined in accordance with Section 4(f) that:

1. There is no feasible and prudent alternative to the use of such land.

2. The project includes all possible planning to minimize harm resulting from use of the land.

5.2 SECTION 106 DETERMINATIONS

5.2.1 AGENCY INVOLVEMENT

A. Authority

Pursuant to Section 106 of the National Historic Preservation Act of 1966, as amended, and Executive Order 11593, "Protection and Enhancement of the Cultural Environment," Federal agencies are required to determine the effects that their actions, and any project receiving Federal assistance or approval, may have on historic properties included in, eligible for or potentially eligible for inclusion in the National Register of Historic Places. Measures to minimize harmful effects and to mitigate unavoidable direct or indirect adverse effects may be required if such historic properties are identified within a project impact area. Compliance with these requirements is undertaken in consultation with the Advisory Council on Historic Preservation and the appropriate State Historic Preservation Officer.

The following section provides the information and documentation required to demonstrate that UMTA is in full compliance with Section 106 and Executive Order 11593 as implemented by procedures of the Advisory Council on Historic Preservation (36 CFR 800) and guidelines of the Department of the Interior (36 CFR 1210).

B. Identification of Historic Properties

To identify the historic properties located within the impact analysis corridor (Section 3.1) of the Anacostia Segment, WMATA consulted the National Register of Historic Places in coordination with the D.C. Historic Preservation Office (D.C. HPO). In addition the following authorities in local history, architecture and archeology were contacted:

1. National Capital Planning Commission.
2. Joint Committee on Landmarks of the National Capital.
3. Commission of Fine Arts.
4. Anacostia Neighborhood Museum, Smithsonian Institution.
5. Heritage Conservation and Recreation Service, U.S. Department of the Interior.
6. National Park Service/National Capital Region, U.S. Department of the Interior.
7. General Services Administration, Technical Librarian.
8. D.C. Office of Planning and Development.
9. U.S. Department of the Navy, Chesapeake Division.

WMATA also contracted with professionally qualified consultants for cultural resource reconnaissance and intensive surveys within the impact analysis corridor. The reconnaissance survey was conducted in two phases. Phase I consisted of the background, cartographic and archival research and field inspections necessary to locate known historic sites and to define sensitive areas requiring closer examination. Phase II followed with more intense archival research and field inspection, including selective archeological test excavations, an historical-architectural inventory and a geologic and pedologic analysis. The D.C. HPO and the Advisory Council were consulted to determine the need for and the locations of the intensive surveys. Intensive historical and archeological surveys were carried out in the Washington Navy Yard Annex and the Barry's Farm/Potomac City area.

Reports were prepared and submitted by WMATA to the D.C. HPO, the Advisory Council, and the National Register for consultation comments as listed below:

1. "Archival Investigations Concerning the Archeological Potential of the Proposed WMATA Line Between the Waterfront Station to Near Alabama Avenue and the Two Alternatives From Near Alabama Avenue to Near Auth Village and Rosecroft Raceway, Washington, DC and Prince George's County, Maryland." (Prepared by Thunderbird Research Corporation.) June 1979.

2. "Historical/Architectural Survey Report of the Area to be Impacted by the Proposed WMATA Line." (Prepared by Thunderbird Research Corporation.) November 1979.

3. "Field Reconnaissance of the Proposed WMATA Line Between the Waterfront Station to Near Alabama Avenue and Two Alternatives From Near Auth Village and the Rosecroft Raceway, Washington, DC and Prince George's County, Maryland." (Prepared by Thunderbird Research Corporation.) March 1980.

4. "Geologic and Pedologic Study of Metro Branch Route (F003 & F004)." (Prepared by Thunderbird Research Corporation.) March 1980.

5. "Request for a Determination of Eligibility for Inclusion in the National Register of Historic Places, Howard Road Historic District, Anacostia, District of Columbia." (Prepared by Soil Systems, Inc.) February 1981.

6. "Management Summary: Historical Archeological (and Architectural) Reconnaissance and Assessment, Barry's Farm, Washington, D.C." (Prepared by Soil Systems, Inc.) February 1981.

7. "Industrial Archeological Investigation, Washington Navy Yard Annex, Washington, D.C." (Prepared by Soil Systems, Inc.) March 1981.

8. "Historical Archeological and Architectural Reconnaissance and Assessment, Barry's Farm, Washington, D.C." (Prepared by Soils Systems, Inc.) April 1981.

These reports provided the information required under Section 106 and Executive Order 11593 to identify and evaluate the significance of the affected eligible and potentially eligible National Register properties, to assess project effects in terms of the criteria set forth in 36 CFR 800, to analyze the feasibility and prudence of alternatives, and to develop measures to mitigate unavoidable adverse effects.

It was determined through the Section 106 consultation process that the Anacostia Segment will pass through two Historic Districts that have been declared eligible for inclusion in the National Register (Figure 5.1):

1. Washington Navy Yard Annex Historic District.

2. Howard Road Historic District.

5.2.2 WASHINGTON NAVY YARD ANNEX HISTORIC DISTRICT

A. Description and Significance

The Washington Navy Yard Annex is located on the north shore of the Anacostia River. The 60.5-acre Annex is bounded on the north by M Street, SE, on the east by Isaac Hull Avenue, on the south by the Anacostia River and on the west by 1st Street, N Place and 2nd Street, SE (Figure 5.2).

Immediately to the east is the original Washington Navy Yard which was established in 1799 under Major L'Enfant's plan for the new capital city. It is presently a major administrative center of the U.S. Department of the Navy.

The Annex lands were acquired by the Navy between 1888 and 1902. During this time the Washington Navy Yard made the transition from a shipbuilding facility to a naval gun factory. The U.S. Navy transferred the Annex to the General Services Administration (GSA) in 1963, with the end of ordnance production activities at the Navy Yard and the Annex. The two installations have become major office facilities. GSA offers office and storage space to Federal agencies in the old manufacturing and industrial buildings in the Annex, which is now called the Southeast Federal Center.

In conjunction with planning for expanding the office space in the Southeast Federal Center, GSA requested a determination of eligibility for the National Register for the Annex as an Historic District, incorporating Buildings 74, 137, 158, 159, 159E, 160, 167, 173, 187, 197 and 202.[1] In February, 1979, the Department of the Interior declared the Annex an historic district eligible for the National Register. Specifically incorporated in the designation were the eleven buildings listed above; these were identified as structures within the historic district contributing to its historic significance. The Department of the Interior also stated that the Annex should be considered an Historic District separate from the adjacent Washington Navy Yard.[2]

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[1] General Services Administration. "Request for a Determination of Eligibility to the National Register of Historic Places for the Washington Navy Yard Annex." (Prepared by Building Conservation Technology, Inc.) November 1976.

[2] Lynn Beebe, National Register of Historic Places, U.S. Department of the Interior. Personal communication. March 1981.

The Annex derives historical significance from its role in the production of naval ordnance during the 19th and 20th centuries as part of the U.S. Navy's Washington Naval Gun Factory. The technological innovations introduced through ordnance research carried out at the Annex by Rodman, Dahlgren and others led to the production of the largest caliber naval guns ever produced in the United States. With the Navy's increased ordnance production activities, America's private industry was stimulated to make advances in steel, iron and brass founding and casting techniques. Developments in naval ordnance had far reaching influence on many fields of American construction and metals technology. Production of the high quality steel for the large 16-inch, 60 caliber naval guns during World Wars I and II led to availability of steel plates and beams used for the construction of American bridges. Post World War II weapons development in missiles and electronic equipment led to the gradual obsolescence of ordnance production activities in the Annex.

The architectural significance of the Annex is embodied in the eleven major buildings which are listed in the Federal Register as eligible for the National Register (Figure 5.2).

Two major types of industrial architecture are represented:

1. A multi-story, concrete post-and-beam manufacturing building designed to accommodate a variety of manufacturing operations.

2. A foundry building with large uninterrupted interior spaces created by the use of an interior steel frame and long span roof trusses.

Presently, the manufacturing buildings are leased by GSA for office space while the foundry buildings are used for warehouse and motor pool garages.

The Annex buildings are architecturally significant as good examples of typical industrial design. The buildings have an historical unity centering around their roles in naval ordnance production during World Wars I and II.[1]

B. Description of Project

Approximately 1800 linear feet of the Anacostia Segment passes beneath the Washington Navy Yard Annex (Figure 5.2). The alignment enters the Annex in earth tunnel at the southeast corner of 2nd and M Streets, SE. It arcs around the north and east sides of Building 205 and continues southeast to the seawall of the Anacostia River, passing beneath a

[1]Keeper of the National Register. "Determination of Eligibility Notification." December 17, 1977.

parking lot and Building 167. Assuming earth tunnel construction of the river crossing the entire 1800 feet of alignment beneath the Annex will be in earth tunnel; however, if sunken tube construction is used for the river crossing, the 450 feet of alignment north of the river will be in cut and cover rather than earth tunnel.

Under the General Plans for the Anacostia Segment, Building 205 will be demolished during construction because of expected settling in the underlying fill where the earth tunnel section will be constructed (Section 4.1.1). Engineering and cost analyses were done by WMATA during preparation of general plans to determine the feasibility of underpinning the building. Demolition was recommended due to the high cost of underpinning resulting from the age of the building and the unstable geologic conditions.

The General Plans also indicate that Building 167 will be taken as a result of potential settling following earth tunnel construction. Preliminary studies indicate however, that unlike Building 205, underpinning may be possible. A final determination as to the feasibility of underpinning will be made during final design.

Both Buildings 137 and 167 have been identified in the Federal Register as resources eligible for inclusion in the National Register of Historic Places. They are two of ten structures in the Annex which have been found to contain adequate significant architectural and industrial qualities to qualify the Annex as an historic district. A brief description of the principal architectural qualities of the two buildings is provided below:

1. Building 137 was constructed on the south side of Tingey Street, SE, between 1912 and 1914 as a general foundry. It measures roughly 602-feet long and 131-feet across with 2-stories. The third story is a clear height. The steel frame skeleton supports a monitor roof on a concrete foundation. The brick walls have simple sandstone trim (Figure 5.12).

Building 137 housed both brass and steel foundry operations until World War I when these operations were relocated to Building 158. The building is a well preserved example of the foundry-type constructed during the early 20th Century. Today it is used by GSA for storage.

2. Building 167 was erected in 1919 at the northeast corner of Tingey and 4th Streets, SE. It was originally used as a boilermaker's shop and measures 320-feet by 100-feet. The steel frame building has a 2-tiered monitor roof with brick curtain walls. The GSA Motor Pool uses the building today for a garage (Figure 5.13).

C. Determination of Effect

In consultation with the D.C. HPO, it has been determined that the demolition of Buildings 137 and 167 will be an adverse effect. This conclusion was drawn because these two buildings, as individual resources and components of the Annex Historic District, embody significant architectural elements and information.

Consultation with the D.C. HPO and the Advisory Council has determined that demolition of Building 205 is not considered an adverse effect. Located on the southwest corner of 2nd and M Streets, SE, the building was constructed in 1941, according to the construction contract records of GSA.[1] Building 205 is not one of the architectural properties recognized by the D.C. HPO or the National Register as a significant resource individually or as containing any of the qualities that qualify the Annex for the National Register. Consultation with NAER confirmed this opinion.[2]

Based on the results of an intensive archeological survey, WMATA has determined, in consultation with the D.C. HPO, that construction of the Anacostia Segment will have no effect on archeological resources. There are no archeological resources located within the 150-foot wide metro construction right-of-way that are eligible or potentially eligible for the National Register.

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[1]Trudy Dusell, Technical Librarian, General Services Administration. Personal communication. March 1981.

[2]Donald Jackson, National Architectural and Engineering Record. Personal communication. November 18, 1980.

Figure 5.12 WASHINGTON NAVY YARD ANNEX: BUILDING 137

D. Alternatives

Alternatives to the Anacostia Segment which would avoid adverse effects on the Washington Navy Yard Annex Historic District include the No Build Alternative, horizontal shifts of the alignment, and changes in proposed construction techniques.

The following discussion of alternatives is intended to support the conclusion that there is no prudent or feasible alternative for the Anacostia Segment which would avoid adverse effects upon the Washington Navy Yard Annex Historic District.

1. No Build Alternative

The No Build Alternative would avoid adverse effects on the Navy Yard Annex Historic District by terminating the Green Line at the existing Waterfront Station at 4th and M Streets, SW. The impacts of terminating Metro at this point are described above in the discussion of alternatives to the use of the Historic District as required by Section 4(f) of the Department of Transportation Act of 1966 (see Section 5.1.2 USE OF HISTORIC SITES, A. Washington Navy Yard Annex Historic District, Alternatives). Results of WMATA studies as described in that section support the conclusion that the alternative of taking no action is less preferable than that of extending the Green Line to Anacostia along the South Crossing Alignment.

2. Horizontal Alignment Shifts

Numerous alignment and station alternatives have been considered by WMATA for the Anacostia Segment of the Green Line. Many have been studied in detail in environmental studies prepared by the Authority; others have been found infeasible of the basis of preliminary evaluation alone. In each case, the suitability of a proposed alternative has been considered in terms of maximizing benefits to be derived from construction of Sections F3, F4, and F5 as an operational unit of the Metrorail System (Figure 5.3).

Results of these environmental impact studies have revealed that the optimum location for the Navy Yard Station is at 1st and M Streets, SE, and that the preferred alignment beyond that point curves southeast toward the Anacostia River beneath the Navy Yard Annex (South Crossing Alternative). This alignment has been selected after studying several alignment and station alternatives to the southwest, west, and east.

Figure 5.13 WASHINGTON NAVY YARD ANNEX: BUILDING 167

Findings supporting this conclusion are summarized above in the discussion of alternatives to the use of the Washington Navy Yard Annex Historic District as required by Section 4(f) of the Department of Transportation Act of 1966 (see Section 5.1.2 USE OF HISTORIC SITES, A. Washington Navy Yard Annex Historic District, Alternatives). These findings support the conclusion that the proposed South Crossing Alternative minimizes adverse impacts on the Navy Yard Annex Historic District as well as the Navy Yard Historic District.

3. Changes in Construction Methods

Four construction methods are used in the Metro System: at-grade, cut-and-cover, earth tunnel, and aerial structure (Section 2.2.1D). The Anacostia Segment, including the Navy Yard and Anacostia Stations, will be constructed entirely below grade either in cut and cover or earth tunnel.

Changing design of the metro alignment through the Annex to at-grade, aerial, or cut-and-cover construction would not eliminate the need for taking Buildings 137 or 167. In addition such a design change would increase the visual and audible effects resulting from metro operations, as well as disrupt vehicular and pedestrian circulation. Consequently a change in construction method does not represent a prudent and feasible alternative to the proposed action.

E. Mitigation

A memorandum of agreement (Figure 5.14) has been developed jointly by UMTA, WMATA the D.C. HPO, and the Advisory Council. It sets forth provisions for the mitigation of adverse effects on the Annex. In summary, the mitigation will consist of the architectural documentation of Buildings 137 and 167 according to the most current guidelines of the National Architectural and Engineering Record. In addition, one objective of final design will be to evaluate the feasibility of underpinning Building 167 to avoid taking the historic structure and to eliminate demolition and replacement expenses.

Advisory
Council On
Historic
Preservation

1522 K Street, NW
Washington, DC 20005

MEMORANDUM OF AGREEMENT

WHEREAS, the Urban Mass Transportation Administration (UMTA), Department of Transportation, in accordance with provisions of the Urban Mass Transportation Act of 1964, as amended, proposes to consider a grant to the Washington Metropolitan Area Transit Authority (WMATA) to extend the Metrorail System from the Waterfront Station to the Anacostia Station in Southeast Washington, D.C.; and,

WHEREAS, it has been determined that this undertaking as proposed would have an adverse effect upon the Washington Navy Yard Annex, and the Howard Road Historic District, Washington, D.C., two properties eligible for the National Register of Historic Places; and,

WHEREAS, pursuant to Section 106 of the National Historic Preservation Act of 1966 (16 U.S.C. Sec. 470f, as amended, 90 Stat. 1320) and Section 800.4(d) of the regulations of the Advisory Council on Historic Preservation (Council), "Protection of Historic and Cultural Properties" (36 CFR Part 800), UMTA has requested the comments of the Council; and,

WHEREAS, pursuant to Section 800.6 of the Council's regulations, representatives of the Council, UMTA, and the District of Columbia State Historic Preservation (SHPO) have consulted and reviewed the undertaking to consider feasible and prudent alternatives to avoid or satisfactorily mitigate the adverse effects; and,

WHEREAS, the National Architectural and Engineering Record (NAER) participated in the consultation process; and,

WHEREAS, WMATA was invited and participated in the consultation process;

NOW, THEREFORE, it is mutually agreed that there are no feasible and prudent alternatives to avoid the adverse effects of this undertaking and it is in the public interest to proceed with the undertaking in accordance with the following stipulations.

Stipulations

UMTA will insure that the following measures are carried out.

A. Washington Navy Yard Annex

1. Prior to the demolition of Buildings 137 and 167, the recording of the properties will be completed so that there will be a permanent record of their existence. All documentation must be accepted by NAER prior to demolition. Copies of the documentation will be provided to the SHPO.

2. An analysis of the feasibility of underpinning Building 167 and preserving it in place will be conducted during final project design. If UMTA and WMATA determine that underpinning and in-place preservation is feasible, the Council and the SHPO will be consulted concerning appropriate mitigation measures. If the analysis indicates that underpinning is not feasible, demolition may proceed.

B. Howard Road Historic District

1. A data recovery and recording program will be prepared based on the submitted research design and the standards of the NAER. It will be carried out prior to any demolition or construction activities that could affect either architectural or historic archeological resources within the Howard Road Historic District.

2. All historical, architectural, and archeological work called for in Stipulation B.1. will be conducted under the direct supervision of qualified personnel who meet, at minimum, the appropriate qualifications set forth in 36 CFR Part 66, Appendix C (Attachment 3).

3. All recordation work will be conducted in consultation with National Architectural and Engineering Record, National Park Service, Department of the Interior, Philadelphia, Pennsylvania.

4. To the extent feasible, arrangements will be made with the Anacostia Neighborhood Museum to allow for public volunteer participation and onsite visits during the field investigations.

5. All historic records, architectural records, and archeological materials, along with field notes, maps, drawings, and photographic records will be curated at a suitable repository agreed to by the SHPO. If possible, curation arrangements will be made with the Anacostia Neighborhood Museum.

6. Copies of the draft final technical report(s) of the data recovery and recording program will be submitted to the SHPO for review and comment. Any SHPO comments will be considered in the preparation of the final report(s). Copies of the final technical report(s) will be supplied to the SHPO, the Anacostia Neighborhood Museum, the Columbia Historical Society, and the Council. In addition, a copy will be furnished to Interagency Archeological Services (National Park Service, Department of the Interior, Washington, D.C. 20243), for possible submission to the National Technical Information Service (NTIS).

7. A brief, non-technical account in publishable brochure or booklet form of the results of the Howard Road Historic District investigation for use by the local community will be prepared in consultation with the SHPO. Arrangements will be made with the Anacostia Neighborhood Museum or a similar local institution for publication and local dissemination.

C. Additional Stipulations

1. No demolition of structures in either the Washington Navy Yard Annex or the Howard Road Historic District will take place sooner than 3 months prior to the scheduled start of construction. Within 90 days following demolition of any structures and in accordance with National Register procedures (36 CFR Part 1202), documentation will be forwarded to the Keeper of the National Register concerning the condition and significance of the eligible properties so that eligibility status and boundary changes will be kept current.

2. Failure to carry out the terms of the Agreement requires that UMTA again request the Council's comments in accordance with 36 CFR Part 800. If UMTA cannot carry out the terms of the Agreement, it shall not take or sanction any action or make any irreversible commitment that would result in an adverse effect with respect to the National Register or eligible properties covered by the Agreement or would foreclose the Council's consideration of modifications or alternatives to the project that could avoid or mitigate the adverse effect until the commenting process has been completed.

3. If any of the signatories to this Agreement determine that the terms of the Agreement cannot be met, or believes a change is necessary, that signatory shall immediately request the consulting parties to consider an amendment or addendum to the Agreement. Such an amendment or addendum shall be executed in the same manner as the original Agreement.

4. Within 90 days after carrying out the terms of the Agreement, UMTA shall ensure that a written report is provided to all signatories to the Agreement on the actions taken to fulfill the terms of the Agreement.

(date) June 1981
Executive Director
Advisory Council on Historic Preservation

(date) 6/23/81
District of Columbia State Historic
Preservation Officer

(date) June 29, 1981
Urban Mass Transportation Administration

Alexander Aldrich (date) 7/9/81
Chairman
Advisory Council on Historic Preservation

Concur:

(date) JUL 17 81
Washington Metropolitan Area Transit
Authority

5.2.3 HOWARD ROAD HISTORIC DISTRICT

A. Description and Significance[1]

The Howard Road Historic District is located within the block of Howard Road between Firth Sterling Avenue, Shannon Place and Martin Luther King, Jr. Avenue. The Historic District is comprised of seventeen privately-owned lots. Six lots are vacant; eleven contain historic residential structures (Figure 5.4a).

The Historic District was declared eligible for the National Register on March 31, 1981. Eligibility was determined based on the comprehensive cultural resources reconnaissance conducted by WMATA's consultant, Soils Systems, Inc. (SSI).

The historical significance of the Historic District is derived from its association with the establishment of the Barry's Farm/Potomac City settlement by the Federal government immediately following the Civil War. In 1867, in response to the critical housing needs of the growing number of blacks who had sought refuge in Washington, the Bureau of Freedman acquired a 375-acre tract of land from David Barry to establish a relocation settlement. Under Brigadier General Howard, the tract was subdivided into 1-acre lots and sold to freed slaves. The purchase of a lot included materials for construction of a standardized, one-on-one room, A-frame house. By 1870 the building standards were relaxed and by 1900 architectural styles reflected outside influences. The structures illustrate the evolution of the community from a small, outlying settlement to a part of urban Washington.

The Historic District's principal significance is its potential to yield information of importance to the history of the black population of the District of Columbia. The larger Barry's Farm/Potomac City area, in which the Howard Road Historic District is located, was a unique experiment in the establishment of ex-slaves as landowners by the Federal government. In the role of private landowner, ex-slaves were able to begin to establish themselves

[1]Excerpted from: Washington Metropolitan Area Transit Authority. "Request for a Determination of Eligibility for Inclusion in the National Register of Historic Places: Howard Road Historic District, Anacostia, District of Columbia." (Prepared by Soil Systems, Inc.) February 1981.

within the larger society immediately after the Civil War. The significant information on this historical development is present in the design and construction of the buildings, the layout of the lots, and the associated archeological remains.[1]

B. Project Description

Construction of the Anacostia Station and local access facilities between I-295 and Martin Luther King, Jr. Avenue in the vicinity of Howard Road will require taking of all structures located within the Howard Road Historic District (Figure 5.4b). Excavation and grading for construction will also require ground surface disturbance throughout the District.

The affected buildings are described below:

1. 1004 Hoard Road is a 2-story frame house built between 1870-1887, typical of the A-frame buildings built when Barry's Farm was first established as a freedman's settlement.

2. 1010 Howard Road is a 2-story frame house with a 2-bay facade, built c.1905, with well preserved decorative wood details on the front and rear porches.

3. 1003 Howard Road is a 2-story c.1905 3-bay side-hall plan frame house with cross-gabled facade.

4. 1009 Howard Road is a 2-story house built c.1902, with 2 bays having multi-planar facades and elaborate cornices with east-like influenced brackets.

5. 1014 Howard Road is a 2-story, 3 bay-frame house with gable end facade built c.1905. It has been significantly altered by recent renovations.

6. 1018 Howard Road is a 2-story frame and brick house with gable end facade, built c.1905.

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[1]Keeper of the National Register. "Determination of Eligibility Notification." March 31, 1981.

7. 1015 Howard Road is presently the J. Finley Wilson Memorial Lodge #1371. It is a 2-story brick structure with a 7-course common bond brick facade and decorative herringbone panels, built c.1905.

8. 1023 Howard Road is a 2-story double-pile frame house with a semi-octagonal projecting bay, built c.1905.

9. 1025 Howard Road is a 2-story brick house with 3 bays and side walls topped with ornamental cast-iron finials, built c.1905.

10. 1101/1107 Howard Road is a 2-story brick apartment building built in the 1940's. Typical of World War II period housing, it has brick quoining and other decorative brick elements.

11. 1119 Howard Road is a 2-story frame house built c.1905. The original German drop siding has been covered by stucco.[1]

C. Determination of Effect

In consultation with the D.C. HPO, it has been determined that the Anacostia Segment will have an adverse effect on the Howard Road Historic District. This will result from the demolition of the above described historic buildings and loss of associated historical-archeological resources.

D. Alternatives

Alternatives to the proposed South Crossing Alternative which would avoid adverse effects on the Howard Road Historic District include the No Build Alternative and horizontal shifts of the alignment.

The following discussion of alternatives is intended to support the conclusion that there is no feasible and prudent alternative for the Anacostia Segment which would avoid adverse effects upon the Howard Road Historic District.

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[1]Washington Metropolitan Area Transit Authority. "Request for a determination of Eligibility for Inclusion in the National Register of Historic Places, Howard Road Historic District, Anacostia, District of Columbia." (Prepared by Soil Systems, Inc.) February 1981.

1. No Build Alternative

The No Build Alternative would avoid adverse effects on the Howard Road Historic District by terminating the Green Line at the existing Waterfront Station at 4th and M Streets, SW. The impacts of terminating Metro at that point are described above in the discussion of alternatives to the use of the Historic District required by Section 4(f) of the Department of Transportation Act of 1966 (see Section 5.1.2 USE OF HISTORIC SITES, B. Howard Road Historic District, Alternatives).

Results of WMATA studies as described in that section support the conclusion that the alternative of taking no action is less preferable than that of extending the Green Line to Anacostia along the South Crossing Alignment.

2. Horizontal Alignment Shifts

Preliminary engineering studies as well as more detailed environmental impact studies have evaluated numerous alignment and station alternatives for Construction Segment F5. Each was considered in terms of its potential impacts on the community, local and regional access, land availability, engineering feasibility, and cost. Engineering feasibility included considerations of station design as well as the relationship of the proposed alternative to the preferred alternatives for the Anacostia River crossing (Segment F4).

Results of these studies are summarized above in the discussion of alternatives to the use of the Howard Road Historic District as required by Section 4(f) of the Department of Transportation Act of 1966 (see Section f.1.2 USE OF HISTORIC SITES, B. Howard Road Historic District, Alternatives). These findings support the conclusion that the proposed South Crossing Alternative minimizes adverse impacts on the Howard Road Historic District.

E. Mitigation

A memorandum of agreement (Figure 5.14) has been developed jointly by UMTA, WMATA, the District of Columbia Historic Preservation Office, and the Advisory Council on Historic Preservation. It sets forth provisions for the mitigation of adverse effects on the Howard Road Historic District. The mitigation program will consist of two activities. First, it will provide for the archival preservation of affected historic structures in the District in conformance with the most current guidelines of the National Architectural and Engineering Record. Second, it will provide for the recovery and conservation of archeological resources in conformance with the most current guidelines of the Advisory Council of Historic Preservation, the District of Columbia Historic Preservation Office, and the U.S. Department of the Interior.

Chapter 6
COMMENTS AND RESPONSES ON THE DRAFT ENVIRONMENTAL IMPACT STATEMENT

6.1 INTRODUCTION

The initial circulation period for the Branch/Rosecroft (F) Route Draft EIS began on May 25, 1979 and was scheduled to end on July 9, 1979. Several requests were received to extend the circulation period by 15 days. These were granted, resulting in the official end of circulation on July 24, 1979.

Thirty-nine commenting letters were received during the review period from the following Federal, state, regional, and local agencies, organizations and concerned citizens:

Federal Agencies:

National Capital Planning Commission (NCPC)

U.S. Department of the Army, Baltimore District, Corps of Engineers (Dept. of the Army, Baltimore District, Corps of Engineers)

U.S. Department of Commerce, Assistant Secretary for Science and Technology (DOC)

U.S. Department of Commerce, National Oceanic and Atmospheric Administration (DOC, NOAA)

U.S. Department of Health and Human Services, National Institute of Mental Health (HHS, NIMH)

U.S. Department of Health and Human Services, Office of the Secretary (HHS)

U.S. Department of Health and Human Services, Public Health Service (HHS, Public Health Service)

U.S. Department of Housing and Urban Development, Washington, D.C. Area Office (HUD)

U.S. Department of the Interior, Fish and Wildlife Service (DOI, FWS)

U.S. Department of the Interior, National Park Service (DOI, NPS)

U.S. Department of the Interior, Office of the Secretary (DOI)

U.S. Environmental Protection Agency (EPA)

State Agencies:

Maryland Department of Natural Resources, Water Resources Administration (MDNR, WRA)

Maryland Department of State Planning (MDSF)

Maryland Department of Transportation (MDOT)

Regional Agencies:

Maryland-National Capital Park and Planning Commission(M-NCPPC)

Local Agencies:

Prince George's County Council(PGC Gov)
Prince George's County Government(PGC Gov)

Organizations:

Auth Road Citizens Council
Briar Village Association
Camp Springs Civic Association
Citizens for the Branch Avenue Metro
Colonial Mortgage Service
Green Valley Civic Association
Hillcrest Heights Civic Association
Hillcrest Town Civic Association
Koones and Montgomery Realtors
St. Barnabas Church
Suitland Citizens Association
Suitland Civic Association
Woods Civic Association

Individuals:

John H. Camp
Marion L. Camp
Dorothy Glover
Anna M. Lenck
Rafael Lenck
Vera S. Lenck
William H. Lenck
James McClow
Anna Talbert Mistretta
Lorraine Morthimer
Marvin A. Morthimer
Salvatore A. Morthimer

Theodora Fisher Robertson
Esther Scruggs
Paul D. Scruggs
Joseph A. Silvester
Evelyn Swartz
Helen Swartz
Forace M. Thorne
Lawrence L. Ziemianski

Responses to all substantive comments pertaining to the Anacostia Segment (Design Sections F3, F4, F5) are included in this chapter; substantive comments pertaining to the Branch Avenue Segment (Design Sections F6, F7, F8) will be included in a separate Final EIS.

Two Final EIS's are being prepared because of the difference in the current level of planning and anticipated start of operation between the two segments. WMATA plans to commence operation of the Metrorail to the Anacostia Station in mid 1986; commencement of service to the route terminal along the Branch Avenue/Rosecroft Segment will be dependent upon the availibility of construction funds. To allow for metrorail service along the Anacostia Segment, WMATA proposes to operate the Anacostia Station as a temporary terminal facility; at sometime after the commencement of service into Prince Georges County, the station may be operated as a through station.

In this document UMTA and WMATA have addressed all substantive comments received on pertinent issues related to the Anacostia Segment. Comments received and their respective responses have been categorized according to subject matter. Due to their length, not all comments have been reproduced in their entirety. Special attention however, has been given to represent the original comment as accurately and completely as possible. In each case the source of the comment is identified.

Where necessary, the original material provided in the Draft EIS has been revised to reflect comments received during the review period. Substantive changes and additions to the text are identified by a vertical bar in the margin. Non-substantive changes and additions resulting from reorganization of the document to comply with organizational guidelines of the Council on Environmental Quality,[1] promulgated subsequent to distribution of the Draft EIS, are not identified by a bar.

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[1] Council on Environmental Quality. "Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act," 40 CFR Parts 1500-1508. November 29, 1978.

6.2 COMMENTS AND RESPONSES BY TOPIC

6.2.1 DEVELOPMENT OF ALTERNATIVES

Comment 1: An analysis of a no build alternative should be included in the EIS so as to provide baseline data against which to assess impacts of the proposed action. (EPA)

Response: The Final EIS has been revised to include a description and analysis of the No Build Alternative. The No Build Alternative assumes termination of the Green Line at the existing but inoperative Waterfront Station at 4th and M Streets, SW, with commencement of Metro operation utilizing Waterfront as a terminal facility. As part of the No Build Alternative, additional work items will be required outbound of Waterfront Station.

For evaluation purposes, impacts of the proposed South Crossing - St. Elizabeths Alternative are compared to the No Action Alternative throughout Chapters 4 and 5.

6.2.2 DESCRIPTION OF ALTERNATIVES

Comment 2: North arrows should be included in all graphics illustrating alignment plans and profiles. (MDOT)

Response: North arrows are included on all maps and alignment plans and profiles.

6.2.3 GENERAL CHARACTERISTICS OF THE GREEN LINE

Comment 3: Security fencing that has been placed around existing Metrorail facilities has often proven as aesthetically intrusive as a solid structure. Design solutions should be developed that present an aesthetically agreeable image rather than the harsh appearance of chain link and barbed wire. (DOI, NPS)

Response: A discussion of criteria supporting selection of security fencing at Metrorail facilities has been added to Section 2.2.1.

Comment 4: The Metrorail fare structure should be updated to reflect current effectuated changes. (MDOT)

Response: The Metrorail fare structure has been updated to reflect fares current as of March 1981 (Section 2.2).

Comment 5: The discussion of the fare collection system should present the minimum and maximum possible farecard values. (MDOT)

Response: The discussion of the fare collection system has been revised to indicate the current minimum farecard value of 40 cents and the current maximum farecard value of $20.00 (Section 2.2).

Comment 6: There is considerable discrepancy between estimated costs contained in the DEIS and those prepared by WMATA in June 1979. (MDOT)

Response: Cost estimates for uncompleted metro segments are revised regularly to include escalation due to inflation as well as to reflect changes in engineering design. Inflation combined with changes to the design of the Anacostia River crossing and the Anacostia Station parking facilities were responsible for the discrepancy between costs contained in the DEIS and those prepared by WMATA in June 1979.

Comment 7: A discussion of potential Metro-related accidents and injuries should be included in the EIS. These should include occupational and consumer incidents associated with operation of Metro trains, stations, buses, parking areas, etc. Measures to be incorporated into proposed facilities to reduce current accident rates associated with the system should be addressed. (HHS)

Response: Data available from WMATA describing Metro-related accidents and injuries has been added to Section 2.2.1.

6.2.4 EVALUATION OF ALTERNATIVES

Comment 8: The comparison of alternatives would be facilitated through presentation of measures of effectiveness in matrix form. (M-NCPPC)

Response: A comparison of alternatives using measures of effectiveness presented in matrix form is included in Table 2.4 of the Final EIS (Section 2.3).

6.2.5 LAND USE AND ZONING

Comment 9: Land use impacts of the proposed action should include an assessment of the environmental and community impacts that could result from accelerated development pressure in the Green Line Corridor. (EPA)

Response: A discussion of secondary development potential resulting from metro construction to Anacostia has been included in Section 4.2.7.

Comment 10: Funding for the proposed project should include the cost of any relocation required for geodetic control survey monuments disturbed or destroyed. (DOC, NOAA)

Reponse: No geodetic control survey monuments are located in the proposed development area of the Metro alignment or stations.

Comment 11: The plan "...on wedges and corridors" is outdated. (PGC Gov)

Response: The discussion of land use plans has been revised to reflect the current status of land use plans for the District of Columbia (Section 3.3.3).

6.2.6 POPULATION CHARACTERISTICS

Comment 12: Population estimates and characteristics should be updated. A summary analysis should be performed using the 1974 population estimates for the District of Columbia. (MDOT)

Response: The population estimates and characteristics (Section 3.3.1) have been updated where possible utilizing data from WashCOG, OPD and DHCD. According to OPD, the 1974 population estimates are only available for the entire District of Columbia and are not, therefore, at a scale appropriate to this Final EIS.

Comment 13: The EIS should include a population density map of the study area. (MDOT)

Response: A population density map has been added to Section 3.3 (Figure 3.5).

Comment 14: Residential displacements in the District of Columbia should be recalculated. (PGC Gov)

Response: Residential displacements described in Section 4.2.1 are based upon current acquisition requirements prepared by the WMATA Office of Real Estate. General plan public hearings have been held for the Anacostia Segment (Design Sections F4 and F5); as of March 1981 approximately 30 percent of final design has been completed on Design Section F3 and 70 percent completed on Design Section F5. Consequently the necessary acquisitions and displacements have been finalized for the portion of route south of the Anacostia River.

Metro construction will require taking of 24 occupied residential units along the alignment south of the Anacostia River. North of the river metro construction will require taking a maximum of 5 occupied residential units.

Comment 15: The income levels of displaced persons should be described in the Final EIS. (HUD)

Response: A recent WMATA survey (April 1981) of residents to be displaced in Design Sections F3 and F5 indicates that household incomes are generally low to moderate ($6,000 to $15,000).

6.2.7 PHYSIOGRAPHY/GEOLOGY/SOILS

Comment 16: Upper terraces along the Anacostia River, which are described in the DEIS as occurring between 140 and 215 feet above sea level, are hard to see on any USGS topographic map. (PGC Gov)

Response: No references to upper terraces within the study area appear in the Final EIS.

Comment 17: The probable spoil disposal sites, means of conveyance of the spoil material, transportation impacts, and possible mitigation measures should be addressed in the FEIS. (Dept. of the Army, Baltimore District Corps of Engineers)

Response: Uncontaminated spoil will be suitable for disposal throughout the region at locations where clean fill is required. The selection of disposal locations will be made by the WMATA contractors subject to approval by local, state, and federal reviewing authorities and in compliance with WMATA contract specifications. At present, Prince George's County has preliminarily indicated it will take as much as 200,000 cubic yards of uncontaminated material at the Brown Station Road Landfill.

Uncontaminated material will be transported by truck to the disposal sites selected. At present it is not possible to identify the specific disposal vehicle routes to those sites. However, it can be assumed that the most suitable routes will be those which maximize travel on major roadways. Consequently,

traffic from the M Street construction site is likely to move as directly as possible to I-695, I-295, and other major roadways. Spoil hauling vehicles from the Anacostia Park site are likely to move as directly as possible to I-295 via Anacostia Drive or Good Hope Road.

Construction traffic will avoid peak hour traffic to maximize efficiency and be cost-effective. Hours of transport will also depend on the operating hours of the selected disposal site, as regulated by state and local licensing agencies.

The location and method of disposal of contaminated material is discussed in detail in Sections 4.1.1 and 4.1.2. The proposed disposal site as described has received preliminary approval from the U.S. Army Corps of Engineers. Final approval will be dependent upon issuance of the 404 Permit for river dredging and disposal of dredged material. No major problems are anticipated at present with respect to issuance of that permit.

Comment 18: The magnitude of sediment contamination should be addressed, and proposed alternative disposal sites identified and evaluated in the FEIS. (DOI)

Response: Anacostia River sediments were analyzed for contamination.[1] These data are presented and discussed in Section 3.4.3. The proposed dredging of this material, disposal, and dewatering activities are described in Sections 4.1.1 and 4.1.2. The potential short- and long-term water quality impacts are described in Sections 4.1.2 and 4.2.2.

6.2.8 GROUNDWATER

Comment 19: The impact of construction upon water bearing geologic formations and any public or private groundwater supplies to the southeast should be

[1]Ecological Analysts, Inc. "Environmental Assessment of Physical/Chemical Impacts Related to the Dredging and Disposal of Spoil from the Proposed Trench Tube Crossing of the Anacostia River." March 1981.

discussed relative to potential contamination. The effect of removing overlying formations that help confine water bearing formations and protect them from possible surface contamination should also be addressed. A discussion of the effect of drainage alterations and facilities that may contribute to contamination of groundwater used by local residences or communities should be provided. (HHS Public Health Service, Center for Disease Control)

Response: The construction activities will encounter portions of the Patapsco Formation, which is not considered a productive aquifer in the study area, but which becomes increasingly significant as it extends to the southeast in Prince George's County. The major recharge areas for this aquifer occur in northern Prince George's County. It is likely that the prevailing hydraulic gradients within the aquifer would function to limit the migration of any contaminants introduced in the impact corridor toward the productive down-dip portions of the aquifer. The relatively large distances from the proposed construction to heavily pumped areas of the aquifer would also tend to reduce or negate potential impacts.

The potential for groundwater contamination from disposal of contaminated dredge spoils is discussed in Section 4.2.2. No groundwater resource impacts are anticipated due to a confining aquitard located beneath the disposal area.

6.2.9 SURFACE WATER

Comment 20: The Final EIS should include an analysis of the environmental impacts related to proposed dredging, stream channelization, culverting, and construction activity in stream channels and 100-year floodplains. This discussion should include, but not be limited to, an analysis of the effects of the project on water quality, stream flow, subsurface drainage, benthic organisms, and fish and wildlife.

The Final EIS should also explain why other alignments with fewer surface water impacts were not included. (EPA; DOI; NCPC)

More specifically the Final EIS should address in detail the environmental impacts of the two construction options under consideration for the Anacostia River crossing. The nature of the bottom sediments along the alignment, sediment related impacts on the aquatic environment, and possible mitigating measures should be described. (EPA; Dept. of the Army. Baltimore District, Corps of Engineers)

Response: No major stream channelization or culverting will be performed during the construction of the Anacostia Segment. Dredging and construction activity in stream channels and 100-year floodplains will be limited to that associated with the Anacostia River crossing.

To address potential impacts on hydrologic and wildlife resources associated with dredging in the Anacostia River (assuming a sunken tube crossing), WMATA has prepared an assessment of the physical and chemical impacts of dredging and dredge disposal. Information in this report related to water quality, stream flow, subsurface drainage, benthic organisms, and fish and wildlife have been incorporated throughout Chapter 4, particularly Sections 4.1.2, 4.1.3, 4.2.2 and 4.2.4. This material will be submitted in the detailed 404 Permit application to the Army Corps of Engineers.

A bridge crossing alternative for the Anacostia River was examined, but found to be far more expensive than a sunken tube or earth tunnel alternative. Alignment shifts necessary to allow a bridge crossing would also result in increased disruption to the Washington Navy Yard and the Navy Yard Annex.

Comment 21: The jurisdiction of the Army Corps of Engineers over stream channel modifications and encroachments upon floodplains and navigable or interstate waterways, where the drainage basin exceeds 400 acres, should be confirmed. (DOI; PGC Gov)

Response: This project is subject to regulation by the U.S. Army Corps of Engineers relative to Section 10 of the Rivers and Harbors Act of 1899 and Section 404 of the Clean Water Act.

Comment 22: A discussion of floodplain impacts should be included in the Final EIS. This discussion should be consistent with requirements of Executive Order 11988, "Floodplain Management and Protection." (EPA)

Response: Department of Transportation Order 5650.2, dated April 23, 1979, implements Executive Order 11988. The No Build Alternative does not constitute an "encroachment" as defined by Order 5650.2. The South Crossing Alternative constitutes an "encroachment but not a "significant encroachment" as defined by Order 5650.2 (Section 4.2.2).

Comment 23: The project will involve filling and other construction activities in U.S. waters and will require a permit from the Department of the Army pursuant to Section 404, Public Law 92-500 as amended. (Dept. of the Army, Baltimore District, Corps of Engineers; DOI)

Response: This project is subject to regulation by the U.S. Army Corps of Engineers relative to Section 10 of the River and Harbor Act of 1899 and Section 404 of the Clean Water Act.

Comment 24: The Final EIS should discuss measures of land restoration in areas where construction-related temporary or permanent water table changes may occur. (NCPC)

Response: Impacted areas vegetated with trees will be replanted with species similar to or of a higher quality than those already present. Impacted lawn areas will also be restored. In those areas where dewatering is necessary, species used for revegetation will be selected so as to be compatible with hydrologic conditions.

6.2.10 VEGETATION AND WILDLIFE

Comment 25: The Final EIS should include a description of vegetation and fish and wildlife resources in the project area, a discussion of impacts of the proposed action upon them, and a description of possible mitigating measures. Particular attention should be directed to impacts upon aquatic wildlife. (DOI; Dept. of the Army, Baltimore District, Corps of Engineers)

Response: Existing vegetation, fish and wildlife resources are described in Section 3.4.4. The impacts of the Metro project on biota are described in Sections 4.1.3 and 4.2.4. No major long term impacts on aquatic wildlife are expected from the construction and operation of the South Crossing Alignment.

6.2.11 AIR QUALITY

Comment 26: Projected violations of CO standards require further discussion in the Final EIS. These local violations are a concern, despite the regional air quality benefits of the Metro system as a whole. The FEIS must explore techniques that would eliminate such violations, including traffic control measures. (EPA)

Response: The only CO violations predicted in the Draft EIS for the Anacostia Segment occurred at Anacostia Station. Since the publication of the Draft EIS, alterations have been made in the planned road and parking configuration around Anacostia Station. Projections of CO levels in the vicinity of Anacostia Station under this new configuration indicate no violations of national ambient air quality standards (Section 4.2.6).

Comment 27: Relative comparisons are made on how many more vehicle miles traveled (VMT) one alternative will generate than another, but no reference is given to the reduction of existing VMT by the "optimal alternative", or any other alternative. The analysis approach should be revised to reveal the impact of each alternative upon existing and projected VMT with and without the project for each analysis year. (HHS, Public Health Service, Center for Disease Control)

Response: A comparison of 1986 projected VMT for potential Metro patrons under the No Build Alternative and the South Crossing Alternative is given in Section 4.2.6 and Table 4.4.

Comment 28: The Final EIS should include a more detailed discussion of the air quality analysis techniques (source of emission factors, traffic data, method used to project background levels, etc.) (EPA)

Response: Regional VMT, fuel consumption and air pollution estimates for the No Build Alternative included consideration of: (1) VMT by public buses, (2) VMT by private automobiles gaining access to public transit, and (3) private automobile VMT due to loss of transit ridership without the Anacostia Segment. Patronage and bus mile estimates, and the approximate percentage of potential Anacostia Segment patrons diverted to cars and buses, were derived from earlier studies.[1,2,3] Car occupancy rates, percent work trip versus non-work trip conversion factors, and average work and non-work trip lengths were assumed in order to provide an estimate of total automobile miles due to loss of transit ridership. Estimates of bus mileage with the segment were reduced proportional to projected patronage loss without the segment. Additional bus mileage was estimated to represent the transport of passengers to Waterfront Station. Conversion factors were assumed to provide estimates of fuel consumption and air pollution.

Regional estimates of VMT, fuel consumption and air pollution for the South Crossing Alternative included consideration of: (1) VMT by public buses and trains, and (2) VMT by private automobiles gaining access to public transit. Buses servicing the Anacostia Station were included in the analysis, as was the fuel consumed and air pollution produced by power generating plants serving the Anacostia Segment.

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[1]WMATA. "Environmental Impact Study Final Report." 1977.

[2]R.H. Pratt Associates, Inc. "Transit Patronage Estimates and Traffic Impacts for the Washington Metropolitan Area Transit Authority "F" Route Environmental Impact Report." 1977.

[3]Barton-Aschman Associates, Inc. "Anacostia Metrorail Station Site Access and Area Roadnet Study." 1980.

Patronage, bus mile and Metrorail mile estimates were derived from earlier studies.[1,2,3] Conversion factors were assumed to provide estimates of fuel consumption and air pollution. For Metrorail pollutants, the use of oil fired power plants was assumed.[4]

In order to provide estimates of local air quality impacts in the vicinity of the Anacostia Station, background maximum 1-hour and 8-hour CO concentrations near the station were estimated for 1985. These background projections were derived from a scaled down reduction of 1977 background levels to account for reductions in per vehicle emissions and regional increases in VMT.

The evaluation of 1977 background CO was essentially a two-step process: (1) determination of 8-hour background for the station impact area from the results of regional modeling performed for the 1976 National Capital Region Transportation/Air Quality Study and (2) estimation of the peak hour background by applying, to the 8-hour modeled concentrations, the ratio of the peak hour to the 8-hour CO level obtained from actual

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[1]WHATA. "Environmental Impact Study Final Report." 1977.

[2]R.H. Pratt Associates, Inc. "Transit Patronage Estimates and Traffic Impacts for the Washington Metropolitan Area Transit Authority "F" Route Environmental Impact Report." 1977.

[3]Barton-Aschman Associates, Inc. "Anacostia Metrorail Station Site Access and Area Roadnet Study." 1980.

[4]U.S. Environmental Protection Agency. "Compilation of Air Pollutant Emission Factors Third Edition, Including Supplements 1-7." 1977.

monitoring performed at a "representative" site in the study area vicinity.[1] In the 1976 National Capital Region Transportation/Air Quality Study, the Gifford-Hanna diffusion model was used to estimate the 1977 spatial distribution of background CO in the National Capital Interstate Air Quality Control Region.

For the No Build Alternative, the impact of traffic on adjacent streets and intersections and on I-295 was estimated for 1985 at 4 receptor sites.[2] These impacts were added to the background estimates to provide an estimate of 1985 CO concentrations under a No Build Alternative.

For the South Crossing Alternative, the impacts of the following factors were estimated for 1985 at 4 receptor sites:

- vehicles running or idling within Metrorail park-and-ride, kiss-and-ride, and bus facilities; and

- Metrorail related and non-Metrorail related traffic on adjacent streets and intersections and I-295.

The impacts of these factors were added to the background estimates to provide an estimate of 1985 CO concentrations with the South Crossing Alternative.

Comment 29: The air quality analysis should compare the proposed alternatives to a "no-action" alternative, rather than the St. Elizabeth-Southern Avenue-ARS Modified Alignment with the Naylor Road Station. Air quality projections for the no-build alternative should be considered the baseline figures for the comparison of alternatives. (EPA)

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[1]Environmental Research and Technology, Inc. "Air Quality Impact Analysis of Metro Branch ("F") Route Construction Segments F-3 Through F-8." 1977.

[2]Traffic data for air quality impact estimates in the vicinity of the proposed station were based on: Barton-Aschman Associates, Inc. "Anacostia Metrorail Station: Site Access and Area Roadnet Study." 1980.

Response: Comparisons between the air quality impacts of the No Build Alternative and South Crossing Alternative are given in Section 4.2.6.

Comment 30: Air quality analyses usually include data for the project's year of completion and design year. Such an approach should be used in comparing air quality impacts for the proposed action and the no build alternative. (EPA)

Response: 1979 air quality data for a monitoring station in the vicinity of the study area is given in Section 3.4.5. Projections of regional and local air quality impacts for 1985 and 1986 are given in Section 4.2.6.

Comment 31: To facilitate understanding of existing air quality conditions, the tabular display of air quality data in the Branch Route Corridor should include a display of existing national and local ambient air quality standards. (NCPC)

Response: National ambient air quality standards have been included in Tables 3.3 and 3.4.

Comment 32: If projected ridership numbers assume operation of feeder buses to and from the Anacostia Station, the air quality impacts associated with the operation of those buses should be described in the Final EIS. Conversely if projected ridership numbers do not assume operation of feeder buses to and from the Anacostia Station, the air quality impacts of increased auto traffic in the corridor should be described. (NCPC)

Response: Ridership figures presented for the No Build Alternative assume operation of feeder buses coming from other portions of the District to Waterfront Station. Ridership figures for the South Crossing Alternative assume operation of feeder buses from other portions of the District to Anacostia Station. Traffic impacts, and projections of regional and local air quality impacts, include consideration of the effects of these buses.

6.2.12 NOISE

Comment 33: The noise and vibration analysis should include a quantitative assessment of noise impacts associated with Metro operation. This assessment should include, in a tabular fashion, both present and projected noise levels for all sensitive receptors in the impact area, as well as appropriate noise criteria. (EPA)

Response: Table 4.3 provides data on (1) 1975 noise levels, (2) projected noise levels with the Anacostia Segment in operation, and (3) appropriate noise criteria at noise sensitive receptors along the alignment.

Comment 34: The Final EIS should identify mitigation measures required to meet appropriate noise standards. (HHS, Public Health Service, Center for Disease Control)

Response: Detailed engineering study of Design Section F5 indicates that WMATA passby noise criteria will be exceeded at two churches (Table 4.4). Treatment of these noise impacts is discussed in Section 4.2.5.

Despite the preliminary nature of projected noise impacts along Construction Segment F3, it is possible to determine if the potential impacts are of a magnitude which can be satisfactorily reduced through use of an available mitigation alternative. As shown in Table 4.4 the installation of floating slab trackbed, in the areas where violations of the noise criteria have been projected, will reduce train passby noise to levels within the established criteria range for all buildings along the Anacostia Segment. Therefore it will be possible to mitigate all anticipated noise impacts along the alignment by at least the use of floating slab. It should be emphasized however, that the decision as to

which alternative noise mitigation technique is most cost effective will be determined during final design. In making this decision, financial as well as social and environmental costs will be considered to determine the preferred mitigation technique.

6.2.13 TRANSPORTATION SYSTEM CHARACTERISTICS

Comment 35: The FEIS should include a map of existing bus routes in the study area. (MDOT)

Response: A map of existing bus routes has been added to Section 3.5 (Figure 3.9).

Comment 36: The programmed parking facilities at the Anacostia Station should be reevaluated. Specifically WMATA should reconsider the location of 1,465 temporary surface parking spaces on Federal land in Anacostia Park. (NCPC)

Response: As of March 1981, final design of Design Section F5, including the Anacostia Station, was approximately 70 percent completed. Plans currently call for construction of the station as a temporary terminal. The program for the station includes long-term parking for 1080 cars, short-term parking for 70 cars, 84 kiss-ride spaces, 49 bus stalls, and 8 motorcycle spaces. Long-term parking will be provided in a structural parking facility for 730 cars and on a surface lot for 350 cars.

With commencement of metro service to Prince George's County, the Anacostia Station will operate as a through station. At that time the demand for park-ride facilities may be reduced. Consequently at present, WMATA has a committment to the National Park Service to provide funds for removal of the 350 car surface parking lot for a period of three years beginning with the start of metro operations from Anacostia.[1]

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[1] Letter of January 28, 1981 from WMATA to NPS/NCR.

Comment 37: The cause of projected changes (1990) in levels of services at intersections adjacent to Metro stations should be identified. Changes in traffic flows should be described as Metro-related, through traffic-related, or resulting from a combination of both. (NCPC)

Response: A series of forecasts for transit partronage, automobile miles and bus miles associated with operation of the South Crossing Alternative provided the basis for evaluating changes in levels of service (LOS) at intersections adjacent to the Anacostia Station, which is the only station that will provide park-ride, kiss-ride and bus stall facilities.

The Anacostia Station access and area roadnet study provided by D.C. DOT, in cooperation with WMATA and NPS, included projected changes in LOS at intersections adjacent to the station.[1] The analysis of these changes in LOS included consideration of projected Metro-related and "through" non-site traffic volumes. Forecasts were made to 1985 and 1990 for a 7-8:00 AM peak hour and a 4:30-5:30 peak hour by access route to the station. The access routes analyzed included: South Capitol Street, Martin Luther King, Jr. Avenue, Morris Road, V Street, Good Hope Road, I-295, Suitland Parkway and Sheridan-Howard Road. These traffic volume estimates were combined in order to identify the intersections which will experience changes in LOS. D.C DOT identified five intersections which will experience decreases in LOS to below acceptable standards. These intersections and the mitigation measures proposed are detailed in Section 4.2.3.

[1] D.C. Department of Transportation, "Anacostia Metrorail Station Access Road and Area Roadnet Study" (Prepared by Barton-Aschman Associates, Inc., August 1980).

Comment 38: A general description of anticipated bus routes providing access to metro stations should be included in the FEIS. (NCPC)

Response: A general description of anticipated bus service providing access to metro stations has been added to Section 2.2.1 (South Crossing Alternative) and to Section 2.2.3 (No Build Alternative).

Comment 39: The assessment of impacts associated with off-street parking and access facilities are based on programmed improvements. WMATA however should consider reassessment of such impacts based upon enhanced parking assignments now under consideration. (PGC Gov)

Response: No enhanced parking assignments are under consideration for the Waterfront, Navy Yard, or Anacostia Stations.

Comment 40: If projected ridership numbers assume operation of feeder buses to and from the Anacostia Station, the transportation impacts associated with the operation of those buses should be described in the Final EIS. Conversely if projected ridership numbers do not assume feeder bus operation to and from the Anacostia Station, the transportation impacts of increased auto traffic in the corridor should be described. (NCPC)

Response: Ridership figures presented for the No Build Alternative assume operation of feeder buses coming from other portions of the District to Waterfront Station. Ridership figures for the South Crossing Alternative assume operation of feeder buses from other portions of the District to Anacostia Station. Traffic impacts, and projections of regional and local air quality impacts, include consideration of the effects of these buses.

6.2.14 PARKLANDS

Comment 41: The Draft EIS does not fully define the direct and indirect impacts upon parklands associated with the proposed Metro alignment, station facilities, and access roads. (DOI, NPS)

Response: Since circulation of the Draft EIS, WMATA has coordinated with NPS/NCR and D.C. DOT on the redesign of Anacostia Station, access roads and parking facilities. As described in Section 5.1.3, changes were incorporated into the station design to minimize and mitigate the impacts identified. The Section 4 (f) parklands statement was accordingly revised.

The District of Columbia has accepted General Plans for Design Section F5, including the use of land from Suitland Parkway for the metro alignment.

Comment 42: The linear nature of parks and the pattern of existing development in the Branch (F) Route corridor appear to preclude major shifts in alignment that would avoid the taking and/or use of parkland. However the Draft EIS does not clearly document that there are no prudent and feasible alternatives that would reduce the impacts on some 4(f) lands. The actual extent of impact upon these resources appears to be open to design level adjustment and mitigation. Consequently the Final EIS and Section 4(f) documentation should further explore minor changes in horizontal and vertical alignment in order to reduce the impacts on parklands to a minimum. (DOI, NPS)

Response: The Anacostia Segment alignment and Anacostia Station design were reevaluated by WMATA in response to the comments of D.C. DOT and NPS/NCR. Design level adjustments were made as described in Section 5.1. The access system and off-site road improvements agreed to are described in Section 4.2.3. The Section 4(f) statement in Section 5.1 has been expanded to document that there are no prudent and feasible alternatives and that all possible planning has been done to minimize impacts.

Comment 43: The Draft EIS is inadequate in its discussion of possible measures to minimize harm to parklands. It excessively relies upon the Cooperative Agreement between the National Park Service and WMATA. The revised EIS and 4(f) statement must provide clear evidence of site specific design level efforts to mitigate the impact on, and taking of, parklands through rail location modification, structural design consideration, and/or landscape design consideration. (DOI, NPS)

Response: Section 5.1.3 includes the measures adopted by WMATA at the request of the District of Columbia and NPS/NCR to mitigate impacts to 4 (f) parklands. These are itemized in a letter from WMATA to the NPS/NCR (January 28, 1981) (Figure 5.9).

Comment 44: The Final EIS and 4(f) documentation should support the conclusion that the proposed metro alignment and station designs represent the optimum solution with regard to lands under the jurisdiction of the Department of the Interior. WMATA must demonstrate consultation and joint planning with the National Park Service in the design of alignment details. Such coordination is essential to NEPA compliance for the interrelated action of an NPS right-of-way grant over lands under its jurisdiction. (DOI, NPS)

Response: Discussion of Section 4(f) compliance (Section 5.1) is based on the result of a coordinated design effort by WMATA, NPS and D.C.DOT. The Section 4(f) documentation has been revised to demonstrate that the South Crossing Alternative represents the optimum solution with regard to the use of Department of Interior lands.

Comment 45: Of special concern is the potential for increased noise in parklands where the alignment is on or above the ground surface. To accept, as a given, an increase in noise levels in parklands is unacceptable. Particularly in already stressed parklands such increases should be considered a serious "use." Consequently rather than contend that additional noise levels are justified by existing noise loads, the Final EIS should evidence that all increases in noise will be mitigated to the maximum extent possible. (DOI, NPS)

Response: The Metrorail sections which pass through Section 4(f) parklands will be placed underground (Section 5.1). Analyses of noise generated by operation of the South Crossing Alternative determined that there will be no significant noise impacts on parklands (Section 4.2.5).

Comment 46: The assessment of Metro-related impacts on parklands should address the collective industrial appearance of above-ground structures. (DOI, NPS)

Response: Final architectural design of the above-ground structures at Anacostia Station will be coordinated by WMATA, D.C. DOT and NPS (Section 5.1.3). Care will be taken to design structures that will enhance and not detract from the Anacostia Park. The NPS will have the opportunity to participate in the final architectural design and landscaping to assure achievement of the most appropriate visual qualities.

Comment 47: The preservation of wooded areas adjacent to Suitland Parkway should be considered a high priority if the scenic values of the parkway are to be preserved. Final alignment design and mitigating measures should consequently provide for significant preservation of existing tree and scenic values. (DOI, NPS)

Response: One acre of woodland adjacent to Suitland Parkway will be disturbed for construction of the South Crossing Alternative. These woodlands are composed primarily of species typical of the early and middle stage of forest succession, and are not as valuable a biotic or scenic resource as the upland hardwood communities located to the south of the impact analysis corridor.

Forested areas cleared during construction will be revegetated with tree species which are similar to or of a higher quality than those already present. The selection of species and their location will be coordinated with the District of Columbia.

Comment 48: Applicable regional policy of the National Park Service does not permit any discharge onto parkland that will result in an increase in stormwater flows above predevelopment levels. Accordingly the National Park Service will review the design of all stormwater systems, facilities, or modification to stream channels either through direct use of parkland or the indirect impact on parkland. Total stormwater management, through on-site water detention or retention systems based on a 15-year design storm at predevelopment discharge levels, will be required. (DOI, NPS)

Response: A general stormwater drainage plan is required for all Metro construction. Where appropriate, this plan will meet the standards of, and be approved by the NPS (Section 4.2.2). No runoff will be directly discharged on to National Park Service properly.

6.2.15 HISTORIC AND ARCHEOLOGICAL SITES

Comment 49: The Final EIS must fully document compliance with Section 106 of the National Historic Preservation Act, as implemented by 36 CFR 800. This should be done concurrently with the preparation of a revised Section 4(f) analysis. Documentation of all coordination should be included in the final report. (DOI)

Response: Full compliance with Section 106 of the National Historic Preservation Act is documented by a memorandum of agreement (MOA)(Figure 5.14) between UMTA, WMATA, the Advisory Council on Historic Preservation and the District of Columbia Historic Preservation Office. The MOA identifies actions to be taken by UMTA and WMATA to mitigate adverse effects upon the Washington Navy Yard Annex and the Howard Road Historic Districts.

Preparation of the Memorandum of Agreement was undertaken concurrently with preparation of the revised Section 4(f) analysis.

Comment 50: The impact of the proposed project on archeological resources cannot be determined until archeological surveys are completed. The revised statement should present the results of such surveys and should evaluate the significance of all finds. (DOI)

Response: Comprehensive cultural resources reconnaissance and intensive surveys have been completed for the project impact analysis corridor. These surveys are consistent with standards of the Advisory Council on Historic Preservation (36 CFR 800) and the guidelines of the Department of the Interior (36 CFR 1210). The survey reports (Section 5.2) have been reviewed by the D.C.HPO and the Advisory Council. The results of these surveys and the Section 106

consultation process are discussed in the revised Chapter 5.

Comment 51: Historic sites of local significant my also fall under the protection of Section 4(f). Consequently WMATA should consult with the D.C. Historic Preservation Office, as well as other local groups with historical expertise, so as to ensure identification fo such resources and potential impacts. (DOI)

Response: The U.S. Department of Transportation has established that Section 4(f) protection applies only to historic sites included in or declared eligible for inclusion in the National Register of Historic Places.

To ensure protection of potentially eligible locally significant resources, a comprehensive cultural resource survey was conducted. On the basis of findings of these surveys, the D.C. Historic Preservation Office and the Advisory Council on Historic Preservation identified the Howard Road Historic District as the only locally significant historic site not previously determined eligible for or nominated to the National Register.

Comment 52: The Draft EIS does not fully define the direct and indirect impacts upon historic sites associated with the proposed Metro alignment, station facilities, and access roads. (DOI)

Response: The discussion of the direct and indirect impacts upon historic sites within the impact analysis corridor has been expanded in order to fully reflect the concerns of the D.C.HPO and the Advisory Council (Sections 5.2.2 and 5.2.3).

Comment 53: Statements pertaining to the historical and architectural significance of Buildings 137, 167 and 205 in the Washington Navy Yard Annex should be clarified. A reference should be included supporting the statement that "there is no clearly defined relationship between the building and the process which gives the yard its historical significance, nor is the structure architecturally significant." (DOI)

Response: The description of historic resources in the Washington Navy Yard Annex has been revised and expanded. The statement of significance of structures located in the Historic District, including buildings to be taken by Metro construction, has also been expanded.

The original statement of significance for the structures to be taken was quoted from the "Request for a Determination of Eligibility to the National Register of Historic Places for the Washington Navy Yard Annex, "prepared by the General Services Administration (November, 1976).

LIST OF DRAFT EIS RECIPIENTS

Federal Agencies:

Office of Management and Budget

Interstate Commerce Commission

National Capital Planning Commission

U.S. Department of Agriculture

U.S. Department of Commerce
- Assistant Secretary for Science and Technology
- National Oceanic and Atmospheric Administration

U.S. Department of Defense
- Department of the Army, Corps of Engineers, Baltimore District
- Department of the Navy, Washington Navy Yard, Commandant

U.S. Department of Energy

U.S. Department of Health and Human Services
- National Institute of Mental Health
- Office of the Secretary
- Public Health Service

U.S. Department of Transportation
- Assistant Secretary for Policy and International Affairs
- Coast Guard
- Federal Highway Administration
- Federal Railroad Administration

U.S. Department of Housing and Urban Development, Washington, D.C. Area Office

U.S. Department of the Interior
- Advisory Council of Historic Preservation
- Architect of the Capitol
- Fish and Wildlife Service
- National Park Service
- Office of the Secretary

U.S. Environmental Protection Agency

State Agencies:

Maryland
- Department of Natural Resources
- Department of State Planning
- Department of Transportation
- State Historic Trust

Virginia
- Department of Highways
- Governor's Office

Regional Agencies:

Maryland-National Capital Park and Planning Commission

Metropolitan Washington Council of Governments

Northern Virginia Planning District Commission

Northern Virginia Transportation Commission

Washington Suburban Transit Commission

Local Agencies:

Alexandria City Council

Arlington City Council

District of Columbia
- City Council
- Department of Transportation
- Historic Preservation Office
- Mayor's Office

Fairfax City Council

Fairfax County Board of Supervisors

Falls Church City Council

Montgomery County Council

Prince George's County
- County Council
- County Executive
- Department of Public Works and Transportation

Libraries:

Anacostia Library

Ft. Davis Library

Hillcrest Heights Library

New Carrollton Library

Oxon Hill Library

Southeast Library

Southwest Library

Washington Highlands Library

Organizations:

Amalgamated Transit Union
American Oil Company
Anacostia Economic Development Corporation
Auth Road Citizens Association
Baltimore & Ohio Railroad
Baltimore Sun
Bishop Byrne Council Home, Inc.
Bowl America, Inc.
Briar Village Association
Camp Springs Civic Association
Citizens for the Branch Avenue Metro
Colonial Mortgage Service
Congress Heights Civic Association
Curtis Brothers Real Estate
First Stop Enterprises, Inc.
John T. Fisher and Sons, Inc.
Greater Southeast Community Hospital
Green Valley Civic Association
Greenwoods Transfer and Storage Co.
Hillcrest Heights Civic Association
Hillcrest Town Civic Association
International Brotherhood of Teamsters
Koones and Montgomery Realtors
Oxon Park Apartments, Inc.
Oxon Terrace Apartments, Inc.
Rosecroft Trotting and Pacing Association
St. Barnabas Parish
St. Paul Temple Church of God
Silver Hills Boys Club Development Corporation
Joseph Smith and Sons, Inc.

South Lawn Citizens Association
Suitland Citizens Association
Suitland Civic Association
Sullivan Brothers
Temple Hills Civic Association
Thirteen-O-Nine Alabama Avenue, SE Corporation
K.H. Thomas Associates
United House of Prayer
United Way National Capital Area
J.F. Finley Wilson Lodge
Woods Civic Association

Individuals:

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Quentin W. Banks
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Elsie J. and William Bryant
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