

M-NCPPC



MONTGOMERY COUNTY DEPARTMENT OF PARK AND PLANNING

THE MARYLAND-NATIONAL CAPITAL  
PARK AND PLANNING COMMISSION

Agenda Date: July 30, 2001

9500 Brunett Avenue  
Silver Spring, Maryland 20901

Agenda Item 11

July 20, 2001

TO: Montgomery County Planning Board

VIA: Lester L. Straw, Deputy Director of Parks  
Michael F. Riley, Acting Chief, Park Development Division  
Doug Alexander, Supervisor, Design & Project Management

FROM: Rick D'Arienzo, Project Manager, Park Development Division

SUBJECT: Laytonia Recreational Park Facility Plan

**Recommendation**

Approval of the facility plan for Laytonia Recreational Park including the design layout and facilities, cost estimate, and consideration to place the project into the upcoming FY 2003-08 Capital Improvements Program.

The recommended layout includes 4 lighted and irrigated baseball fields, entrance and internal access roads and parking, hiker-biker trails, lighted inline roller hockey rink, lighted basketball court, restrooms, playground, two picnic shelters, and landscaping. A separate parcel of approximately 6 acres will be designated for a future County library.

**Background**

The proposed Laytonia Recreational Park is located in the northwest quadrant of the intersection of Muncaster Mill Road and Airpark Road in the Derwood, Maryland vicinity. The proposed park will have an ultimate acreage of 50.6± acres and will consist of three parcels including a 31.6± acre undeveloped surplus school site, a 16.6± acre parcel of land to be dedicated through the subdivision process, and an adjacent 2.3± portion of an adjacent church site (recently purchased by M-NCPPC).

A tenant house, barn and related outbuildings in poor condition are located on the surplus school site. A later 19<sup>th</sup> century corncrib, also in poor condition, is located on the former subdivision portion of the site. The remainder of the proposed park is undeveloped. These structures, lacking integrity and in advanced stages of deterioration, do not warrant additional historic preservation/mitigation efforts. A



portion of the proposed park site will also include a site for a future regional library for the Montgomery County Department of Public Libraries. The intersection of Muncaster Mill Road and Airpark Road is undergoing major improvements. As part of the improvements the State Highway Administration (SHA) will be constructing a sidewalk along Muncaster Mill Road, a Storm Water Management Pond located on

the proposed park (adjacent to Muncaster Mill Road and Airpark Road intersection), and landscaping.

### **Relationship to PROS & Upper Rock Creek Master Plan**

As established by the adopted 1998 Park, Recreation, and Open Space Master Plan, there is a need for 10 additional countywide (regional and recreational park) ballfields by the year 2010. Currently, there are only 9 regulation-sized baseball fields throughout Montgomery County. The proposed fields at Laytonia will help to alleviate the lack of regulation-sized fields and address the increasing popularity of baseball in the County.

The project site is located in the Upper Rock Creek Master Plan area and neither the park nor the library is addressed in the approved and adopted master plan. However, the master plan is undergoing a comprehensive update by the Community Based Planning Division and it will address the proposed park and library, and required sewer category change. Staff plans on discussing the proposed park and library with the Master Plan Advisory Committee at one of their scheduled meetings in the fall.

### **Major Issues, Opportunities and Constraints**

#### Regional Library

M-NCPPC staff, the Consultants, Facilities and Service, and Department of Public Libraries staff spent a considerable amount of time developing an understanding of the needs of the proposed library. As currently envisioned, the library building will be approximately 40,000 square feet, require 120 parking spaces, have high visibility from the street, and a full movement access point. Hours of operation are anticipated to be Monday through Thursday 9:00 a.m. to 9:00 p.m., Friday and Saturday 9:00 a.m. to 5:00 p.m., and Sundays 1:00 p.m. to 5:00 p.m. The operating hours of the library generally coincide with the peak times for the park, therefore shared parking is a not a realistic option.

The recommended alternative conceptually shows how the library could fit on the area being designated. The design of the library and related parking would be coordinated by the County DPW&T Facilities and Services staff sometime in the future. The stormwater management facilities will be sized and constructed to accommodate the library when the park is constructed. Staff recommends that M-NCPPC should be reimbursed by the County for a portion of the main access road and related improvements when the Library is constructed.

#### Vehicular Access

At the beginning of the facility planning stage a number of scenarios involving various access/entrance points were examined. Representatives of MDSHA and

MDPW&T were contacted to review these alternatives. A number of potential access points were eliminated thereby limiting access to two potential alternatives. For Muncaster Mill Road, the only acceptable access is a right-in and right-out only entrance. For Airport Road, the only full-movement access point that will be allowed is in the northern portion of the proposed park. Based upon a traffic analysis conducted as part of the facility planning process, the two proposed access points would adequately accommodate park and library traffic. The p.m. peak hour volumes warrant a traffic signal at the Airport Road/part access with build-out of the park site and adjacent Covenant Life Church expansion.

### Adjacent Churches

Two adjacent churches affect the facility planning for Laytonia, the New Life Seventh Day Adventist Church and the Covenant Life Church.

The New Life Seventh Day Adventist Church is located immediately adjacent on the west side of the Laytonia park site. The Covenant Life Church is located west of the Seventh Day Adventist Church.

A preliminary plan for New Life Seventh Day Adventist Church has been approved and is reflected on the plans for the park. Staff has met with the Pastor of the Church and he indicated his support for the recommended alternative. One of the concerns that he and some members of the Church had was the possible location of ballfields immediately adjacent to their property. The recommended alternative addresses those concerns by placing the landscaping, the internal access road, and parking area between the backstop areas of the baseball fields, which tend to be the "noisier areas", and the Church property. M-NCPPC recently purchased a 2.3± acre northern portion of the Seventh Day Adventist Church site primarily to accommodate a natural surface trail and to ensure that the Covenant Life Church can meet the requirement to obtain an access easement from their property to Airpark Road in order to accommodate their ultimate expansion.

A key facility planning issue was the future access easement requirement to Airpark Road prior to implementation of the final expansion plan for the Covenant Life Church. This condition was re-affirmed by the Planning Board in the fall of 1999 in the Revision to the Conditions of Approval for the Preliminary Plan.

Staff contacted the Church's representatives during the park facility planning process. They maintained that the Church was responsible for minimal work related to connecting their parking lot a future County road. They indicated that this position is based upon that fact the requirement for an access was originally developed when the 16.6± acres M-NCPPC will receive in dedication was proposed for a residential subdivision with a proposed public street.

Since this residential subdivision is no longer proposed, staff does not support this position. In order for the Covenant Life to receive an access easement the Church

should reimburse M-NCPPC for a portion of the cost of the acquisition of the 2.3 acres of the Seventh Day Adventist Church property, access road and related entrance improvements, and pay for all construction costs for the portion of the access road to be used solely by members of the church.

### **Montgomery County Airpark**

Although the proposed park is adjacent to the flight path for the Montgomery County Airpark, staff of the Montgomery County Revenue Authority indicated that they would have concerns only if there were high towers placed on the property or if the proposed ballfields lights were pointed upwards. The proposed alternative does not contain high towers or lighting that would affect the flight path. Revenue Authority staff have indicated that the ballfield lighting should not adversely affect the airpark since it is outside of the runway protect zone, and may in fact act as a landmark in the landing process. Revenue Authority staff are continuing to investigate if there are any forms that may be necessary to filed with the FAA District Office.

### **Facility Planning Process & Recommended Alternative**

The final recommendation and facility planning process is the result of a staff team comprised of representatives from Northern Region, Park Development, Community Planning, Natural Resources, Park Police, DPWT Facilities and Services, Department of Public Libraries, along with the Commission's consultants for the project, Lewis•Scully•Gionet, Inc. and Burgess Niple, URS Corporation, Wells & Associates, Inc, and Streetscapes, Inc. The group met on-site for both extensive site visits and on-site studies. Multiple meetings including representatives from senior management were conducted prior to developing the alternative selected. As part of the facility planning process a Natural Resources Inventory/Forest Stand Delineation, soil boring, architectural evaluation, and traffic study were completed.

In addition, on July 9, 2001 a public meeting was held to present the recommended alternative. A consensus was expressed at the meeting in favor of the recommended alternative. Issues raised included pedestrian access to the park and the scheduling of the park in the Capital Improvements Program. These have been addressed elsewhere in this report.

The recommended alternative reflects the efforts of the staff team, a public meeting, and the results of the special studies to accommodate the program of requirements for the park and library, taking into consideration the environmental constraints, the access constraints, and the potential access easement for the Covenant Life Church.

The recommended alternative reserves a separate area for the regional library and provides 2 lighted and irrigated regulation sized baseball fields with 90' baselines, 375' sidelines and 400' distance to centerfield, and 2 lighted and irrigated baseball fields with 75' baselines, 275' sidelines and 300' centerfield. Fields are planned with

bleachers, bench and warm-up areas. The larger baseball fields can accommodate baseball users from the eighth grade through college level and adults. The smaller baseball fields can accommodate little league play through the seventh grade. Originally, staff had proposed 60' baselines, however discussions with potential users resulted in the decision to recommend 75' baselines.

The layout of the ballfields is a modification of the traditional "hub" or "star" layout. It provides the same increased efficiency of maintenance while allowing park users to conveniently drop-off ball players and their related gear, and then park at a central parking lot. The central plaza of the ballfield area includes a combination restrooms, press box and vending area. The islands in the parking lot each contain an 8' pathway to allow park users to walk with maximum safety to the central plaza area. The islands also provide an area for shade tree planting.

One issue which will be studied during final design and engineering is that of limiting the impact of foul balls and homeruns on vehicles and park users. Foul balls along the third base line are an issue at the Shirley Povich field in Cabin John Regional Park. During the final design process staff will more thoroughly examine attractive and cost effective solutions to address the concern including fencing height and distance from the foul line to adjacent parking. Likewise, continued and additional coordination with potential users will also occur during the final design process to ensure that the baseball fields are of the highest caliber.

Similarly, further investigation during the design phase is required to efficiently locate the "stub out" of the major utilities to accommodate the construction of the library and to minimize disruption to park facilities, if these facilities are constructed at different phases.

Other proposed facilities include, a separate combination restroom, vending area, and press box, a small maintenance building, a lighted inline hockey rink, a playground, a lighted basketball court, two picnic shelters, extensive pathways, and landscaping. The active recreational facilities have been grouped together along with the second restroom below the southern loop of the parking circle. The picnic shelters are located on the northern loop of the parking circle. This will also accommodate trailhead parking to access the adjacent subdivisions and the Agricultural History Farm Park. Staff will also determine during the final design phase if a sand volleyball court is feasible in the vicinity of the picnic area. This request was received after the public meeting and these facilities are relatively inexpensive to build and maintain.

The extensive 8' paved trail system within the park would connect to an existing natural surface trail on the north side of the proposed park. The natural surface trail crosses Airpark Road on a shelf under an existing bridge and extends to the Agricultural History Farm Park. On the northwest side of the park the trail goes around the Pope Farm nursery and terminates at an adjacent development. The bridge underpass is under construction and should be completed by late summer.

One of the comments received during the public meeting was how pedestrians would reach the park after it was developed. PDD Staff will coordinate this pedestrian access issue with both the appropriate County and State agencies to ensure that safe pedestrian access to the park is available and to recommend possible improvements.

Staff recommends that the access road be developed to tertiary standards with ownership and maintenance responsibilities transferred to the County when both the Library and Covenant Life Church are constructed.

### **Construction Costs**

The total estimated project budget for this park including design is slightly more than \$8.3 million (\$8,339,625). This estimate includes all design fees; a contingency, construction management fees, and staff charge backs. The design fees include a limited amount of funding for 2-3 test wells to determine if irrigation by well water is feasible, and an additional limited traffic study to further assess a signal at the Airpark Road entrance. The possibility of using well water solely for irrigation or in combination with WSSC water service could have a significant impact upon the operating budget.

### **Capital Improvements Process**

Following Planning Board approval of the facility plan, staff will examine the potential for expenditures occurring over a number of years, and various scheduling issues. A recommended PDF will be presented to the Planning Board for approval, and then submitted to the County Executive, PHED Committee and County Council as part of the proposed upcoming FY 2003-2008 Capital Improvements Program.

### **Summary**

The staff recommendation will result in a well-designed park that is available to all residents of the county in an area that has high needs for additional ballfields. The design of the park will allow for construction of the library site in the future with minimal impact upon the park. Likewise, if in the future the Covenant Life Church wishes to expand, the construction of an access road from their property and modifications to the traffic circle within the park will have minimal impact to park operations. Additional community outreach and discussions with community groups and potential park users will occur prior to and during the early phases of final design to ensure that the project is a well designed and valued community asset.







POPE FARM NURSERY

PICNIC AREA

RESTROOM FACILITY

BASKETBALL COURT

INLINE ROLLER HOCKEY RINK  
FUTURE ROAD CONNECTION

TOT LOT

MAINTENANCE FACILITY

REFORESTATION

NEW LIFE SEVENTH DAY ADVENTIST CHURCH

COVENANT LIFE CHURCH

EXISTING UNPAVED TRAIL

REFORESTATION AREA  
RETAINED FOREST

STORMWATER MANAGEMENT POND  
ANIMAL SHELTER  
PARKING

UNPAVED TRAIL  
PROPOSED ANIMAL SHELTER

FIELD LIGHTS

PRESS BOX

PARKING

BASEBALL FIELD

375 SL / 400 CF

BASEBALL FIELD

275 SL / 300 CF

STORMWATER MANAGEMENT POND

--- FUTURE ROAD

--- PROPOSED ROAD

--- EXISTING TRAIL

--- PROPOSED TRAIL

●●● STREET TREES

●●● CANOPY TREES

●●● ORNAMENTAL TREES

●●● EVERGREEN TREES

▭ PICNIC SHELTER

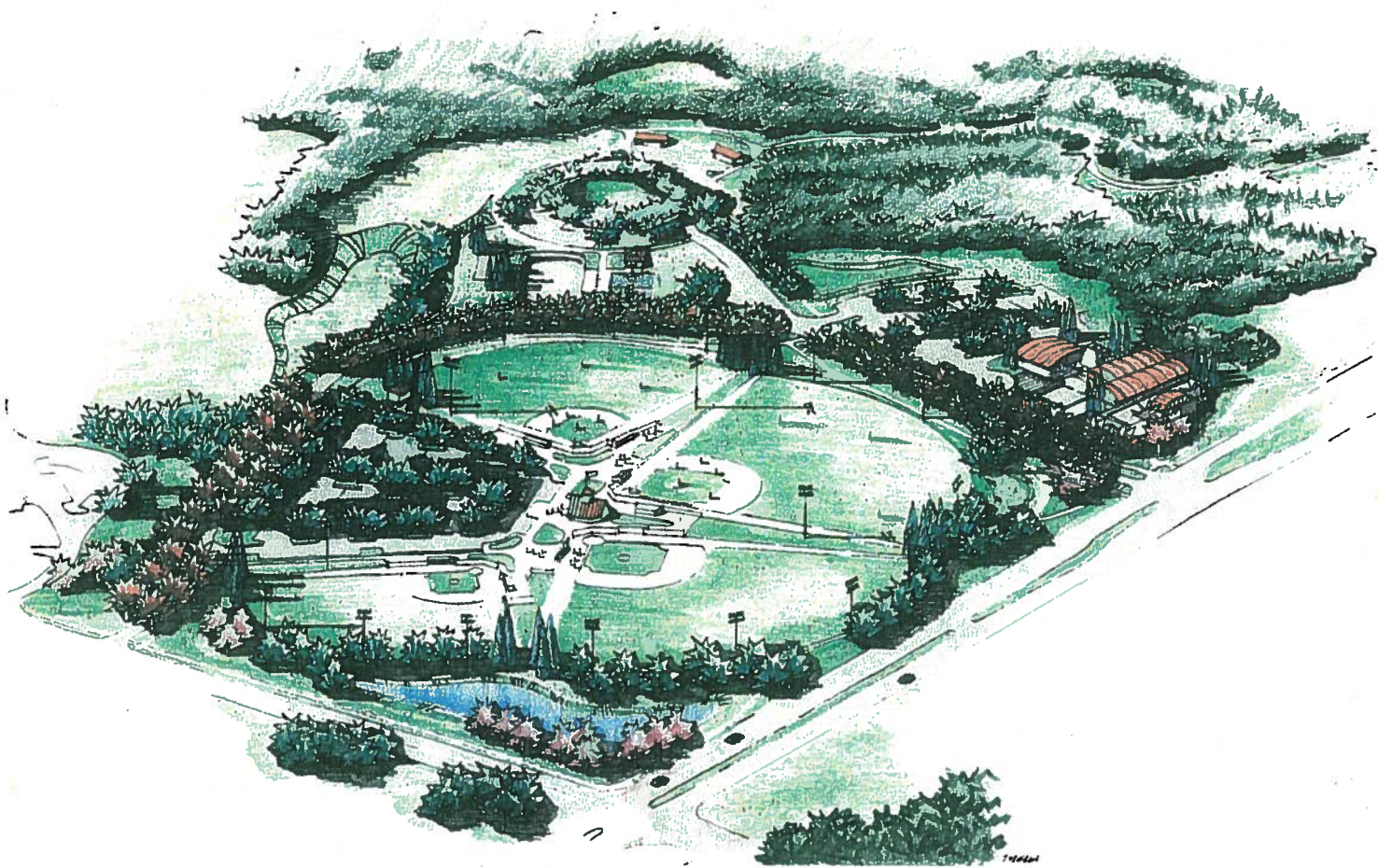
◆ RESTROOM FACILITY

ILLUSTRATIVE PARK PLAN - OCTOBER 2001

**LAYTONIA RECREATIONAL PARK**

MARYLAND-NATIONAL CAPITAL PARK AND PLANNING COMMISSION





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**Laytonia Recreational Park Facility Plan**  
**Montgomery County Department of Park and Planning**  
**October 2001**

Lewis • Scully • Gionet • Inc.  
Burgess & Niple, Ltd.  
Streetscapes, Inc.  
URS Corporation

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# **1. EXECUTIVE SUMMARY**

## **1.1. BACKGROUND**

The proposed Laytonia Recreational Park is located in the northwest quadrant of the intersection of Muncaster Mill Road and Airpark Road in the Derwood, Maryland vicinity. The proposed park (majority not currently owned by M-NCPPC) will have an ultimate acreage of 52.2946 acres and will consist of three parcels including a 31.507 acre undeveloped surplus school site, a 16.599 acre parcel of land to be dedicated through the subdivision process, and an adjacent 2.628 acre portion of an adjacent Seventh Day Adventist church site recently purchased by M-NCPPC. In addition, there is a narrow strip of land to the west of the western abutting property which extends down to Muncaster Mill Road, and which provides access to the Pope farm property to the north. This totals 1.5606 acres, and is called tracts "D, E, and F" on the Seventh Day Adventist plat.

A tenant house, barn and related outbuildings, all in poor condition, are located on the surplus school site. A later 19<sup>th</sup> century corncrib, also in poor condition, is located on the former subdivision portion of the site. These structures, lacking integrity and in advanced stages of deterioration, do not warrant any additional historic preservation/mitigation efforts. The remainder of the proposed park is undeveloped.

A portion of the proposed park site will also include a site/footprint for a future regional library for the Montgomery County Department of Public Libraries. The intersection of Muncaster Mill Road and Airpark Road is undergoing major improvements. As part of the improvements the State Highway Administration (SHA) will be constructing a sidewalk along Muncaster Mill Road, a Storm Water Management Pond located on the proposed park (adjacent to Muncaster Mill Road and Airpark Road intersection), and landscaping.

## **1.2. RELATIONSHIP TO PROS AND UPPER ROCK CREEK MASTER PLANS**

The adopted 1998 Park, Recreation, and Open Space Master Plan, established that 10 additional county-wide (regional and recreational park) ballfields are required by the year 2010. Currently, there are only 9 regulation-sized baseball fields throughout Montgomery County. The proposed fields at Laytonia will help to alleviate the lack of regulation-sized fields and address the increasing popularity of baseball in the County.

The project site is located in the Upper Rock Creek Master Plan area and neither the park nor the library is addressed in the approved and adopted master plan. However, the master plan is undergoing a comprehensive update by the Community Based Planning Division and it will address the proposed park and library, and required sewer category change.

## **1.3. MAJOR ISSUES, OPPORTUNITIES AND CONSTRAINTS**

### **1.3.1. Regional Library**

M-NCPPC staff, the Consultants, and Department of Public Libraries staff spent a considerable amount of time developing an understanding of the needs of the proposed library. As currently

envisioned, the library building will be approximately 40,000 square feet, require 120 parking spaces, have high visibility from the street, and a full movement access point from a major road (Airpark Road). Hours of operation are anticipated to be Monday through Thursday 9:00 a.m. – 9:00 p.m., Friday and Saturday 9:00 a.m. – 5:00 p.m. and Sunday 1 p.m. – 5 p.m. The operating hours of the library generally coincide with times of peak use for the park, therefore shared parking is a not a realistic option.

The recommended alternative shows conceptually how the library could fit in the area designated. The design of the library and related parking would be coordinated by the County DPW&T Facilities and Services staff sometime in the future. The stormwater management facilities will be sized and constructed to accommodate the library when the park is constructed. Staff recommends that M-NCPPC should be reimbursed by the County for a portion of the main access road and related improvements when the library is constructed.

### **1.3.2. Vehicular Access**

At the beginning of the facility planning stage a number of scenarios involving various access or entrance points were examined. Representatives of MDSHA and MDPW&T were contacted to review these alternatives. A number of potential access points were eliminated, limiting access to two principal points. From Muncaster Mill Road, the only acceptable access is a right-in and right-out-only entrance. From Airport Road, the only full-movement access point that will be allowed is in the northern portion of the proposed park. Based on a traffic analysis conducted as part of the planning process, the two proposed access points will adequately accommodate park and library traffic. The p.m. peak hour volumes warrant a traffic signal at the Airpark Road/site access with build-out of the park site and adjacent Covenant Life Church expansion.

### **1.3.3. Adjacent Churches**

Two adjacent churches affect facility planning for Laytonia, the New Life Seventh Day Adventist Church and the Covenant Life Church. The New Life Seventh Day Adventist Church is located immediately adjacent on the west side of the Laytonia site. The Covenant Life Church is located west of the Seventh Day Adventist Church. A preliminary plan for the Seventh Day Adventist Church has been approved and is reflected on the plans for the park. Staff has met with the Pastor of the Seventh Day Adventist Church and he indicated his support for the recommended alternative. One of the concerns that he and some members of the Church expressed was the possible location of ballfields immediately adjacent to their property. The recommended alternative addresses those concerns by placing the landscaping, the internal access road, and parking area between the backstop areas of the baseball fields, which tend to be the "noisier areas", and the Church property.

M-NCPPC recently purchased a 2.628 acre northern portion of the Seventh Day Adventist Church site, primarily to accommodate a natural surface trail and to ensure that the adjacent Covenant Life Church can meet a Planning Board requirement to obtain an access easement from their property to Airpark Road in order to accommodate their ultimate expansion plans. This stipulation was a key facility planning issue. This condition was re-affirmed by the Planning Board in the fall of 1999 in the Revision to the Conditions of Approval for the Preliminary Plan.

Staff contacted the representatives of the Covenant Life Church during the park planning process. The representatives maintained that the Church was responsible only for minimal work related to



connecting their parking lot to a future County road. They indicated that this position is based upon that fact the requirement for an access was originally developed when the 16.599 acres M-NCPPC will receive in dedication was proposed for a residential subdivision, with a proposed public street, stubbed out to provide access.

M-NCPPC staff does not support this position. In The Covenant Life should be granted an access easement if it agrees to reimburse M-NCPPC a portion of the cost of the acquisition of the 2.628 acres of the Seventh Day Adventist Church property, access road and related entrance improvements, and pay for all construction costs for the portion of the access road to be used solely by members of their church.

### **1.3.4. Montgomery County Airpark**

Although the proposed park is adjacent to the flight path for the Montgomery County Airpark, staff of the Montgomery County Revenue Authority indicated that they would have concerns only if there were high towers placed on the property or if the proposed ballfields lights were pointed upwards. The proposed alternative does not contain high towers nor lighting that would affect the flight path.

## **1.4. FACILITY PLANNING PROCESS AND RECOMMENDED ALTERNATIVE**

### **1.4.1. Planning Process**

The final recommendation and facility planning process is the result of a staff working group comprised of representatives from the Northern Region, Park Development, Community Planning, Natural Resources, Park Police, DPWT Facilities and Services, Department of Public Libraries, and the Commission's consultants for the project, Lewis • Scully • Gionet • Inc., with Burgess & Niple, URS Corporation and Streetscapes, Inc. The group met on-site for both extensive site visits and on-site studies. Multiple meetings including representatives from M-NCPPC senior management were conducted prior to developing the alternative selected for presentation at the public meeting. As part of the facility planning process, a Natural Resources Inventory/Forest Stand Delineation, historic architectural evaluation, geotechnical study and traffic study were completed. These are included in subsequent parts of this report.

### **1.4.2. Recommended Alternative**

The recommended alternative reserves a separate area for the regional library and provides two lighted and irrigated regulation sized baseball fields with 90' baselines, 375' sidelines and 400' distances to centerfield, and two lighted and irrigated baseball fields with 75' baselines, 275' sidelines and 300' distances to centerfield. Fields are planned with bleachers, player benches and warm-up areas. The larger baseball fields can accommodate baseball users from the eighth grade through college level and adults. The smaller baseball fields can accommodate little league play through the seventh grade. Originally, staff had proposed 60' baselines, however discussions with potential users resulted in the decision to recommend 75' baselines.

The layout of the ballfields is a modification of the traditional "hub" or "star" layout. It provides the same increased efficiency of maintenance while allowing park users to conveniently drop-off ball players and their related gear, and then park at a central parking lot. The central plaza area of the ballfield area includes restrooms, press box and vending area. The islands in the parking lot each contain an 8' pathway, offset to allow plantings of large trees to shade park users as they walk with maximum safety to the central plaza area.

Other proposed facilities include a separate restroom and vending area at the location of other developed park facilities, a small maintenance building, a lighted inline hockey rink, a playground, a lighted basketball court, two picnic shelters, extensive pathways, and landscaping. The active recreational facilities have been grouped together along with the second restroom, below the southern loop of the parking circle. The picnic shelters are located on the northern loop of the parking circle. This will also accommodate trailhead parking to access the Rock Creek Trail. Staff will also determine during the final design phase if a sand volleyball court is feasible in the vicinity of the picnic area. This request was received after the public meeting and these facilities are relatively inexpensive to build and maintain.

One issue that will be studied during final design and engineering is limiting the impact of foul balls and homeruns on vehicles and park users. Foul balls along the third base line are an issue at the Shirley Povich field in Cabin John Regional Park. During the final design process, staff will more thoroughly examine attractive and cost effective solutions to address this concern, including fence height and distance from foul line to adjacent parking. Likewise, continued coordination with potential users will also occur during the final design process to ensure that these baseball fields are of the highest caliber.

Similarly, further investigation during the design phase is required to efficiently locate and "stub out" the major utilities to accommodate the future library. Construction of the park should be phased to minimize the disruption to facilities that may be constructed at different phases, including the library.

An extensive 8' paved trail system within the park will connect to an existing natural surface trail on the north side of the proposed park. The natural surface trail crosses Airpark Road on a shelf under an existing bridge and extends to the Agricultural History Farm Park. On the northwest side of the park the trail goes around the Pope Farm nursery and terminates at an adjacent development. The bridge shelf is under construction and should be completed by late summer of 2001. One of the comments received during the public meeting was how pedestrians would reach the park after it was developed. PDD Staff will coordinate this pedestrian access issue with both the appropriate County and State agencies to ensure that safe pedestrian access to the park is available and recommend possible improvements.

### **1.4.3. Construction Costs and Capital Improvements Process**

The estimated construction cost for the complete park, in 2001 dollars, is approximately \$8,400,000. This does not include the cost of the library. A further discussion of costs is found in Part 7. Staff recommended adding additional funds in the design phase for test wells to determine if irrigation by well water is feasible. Such an approach or in combination with WSSC water service could have a significant impact upon the operating budget. Additional funds should also be considered for a full traffic warrant study to secure a signalized intersection at the main park entry off Airpark Road.

Following Planning Board approval, the facility plan and cost estimate will be presented to the PHED Committee and County Council in order to seek funding for both final design and construction in the Commission's Capital Improvements Program. As currently envisioned the design would occur in FY 2003 and be followed by construction in FY 2004/5.

#### **1.4.4. Approval**

The staff recommendation will result in a well-designed park that is available to all residents of the County in an area that has high needs for additional ballfields. The park plan accommodates future construction of the library site with minimal impact upon the park. Similarly, if the Covenant Life Church wishes to expand, the construction of an access road from their property and modifications to the traffic circle within the park will have minimal impact to park operations. The project was approved by the Montgomery County Parks Board on July 30, 2001.



## **2. FOREST STAND DELINEATION/ NATURAL RESOURCE INVENTORY**

On March 21, 23, and 26, 2001, URS Corporation performed a Forest Stand Delineation/ Natural Resource Inventory (FSD/NRI) at the proposed site of the Laytonia Recreational Park located in Montgomery County, Maryland (Figure 2.1.). The project area is bordered to the north by Pope Farm Nursery, to the east by Airpark Road, Rt. 115 (Muncaster Mill Road) to the south, and fallow land belonging to the Seventh Day Adventist Church to the west. Topography of the project area is characterized as gently rolling fallow fields and forested areas with steep slopes confined to the northeast portion of the project area. This forest stand delineation and natural resource inventory was conducted to document the existing conditions of the forest and identify streams and wetlands prior to the development of the proposed park and library facilities.

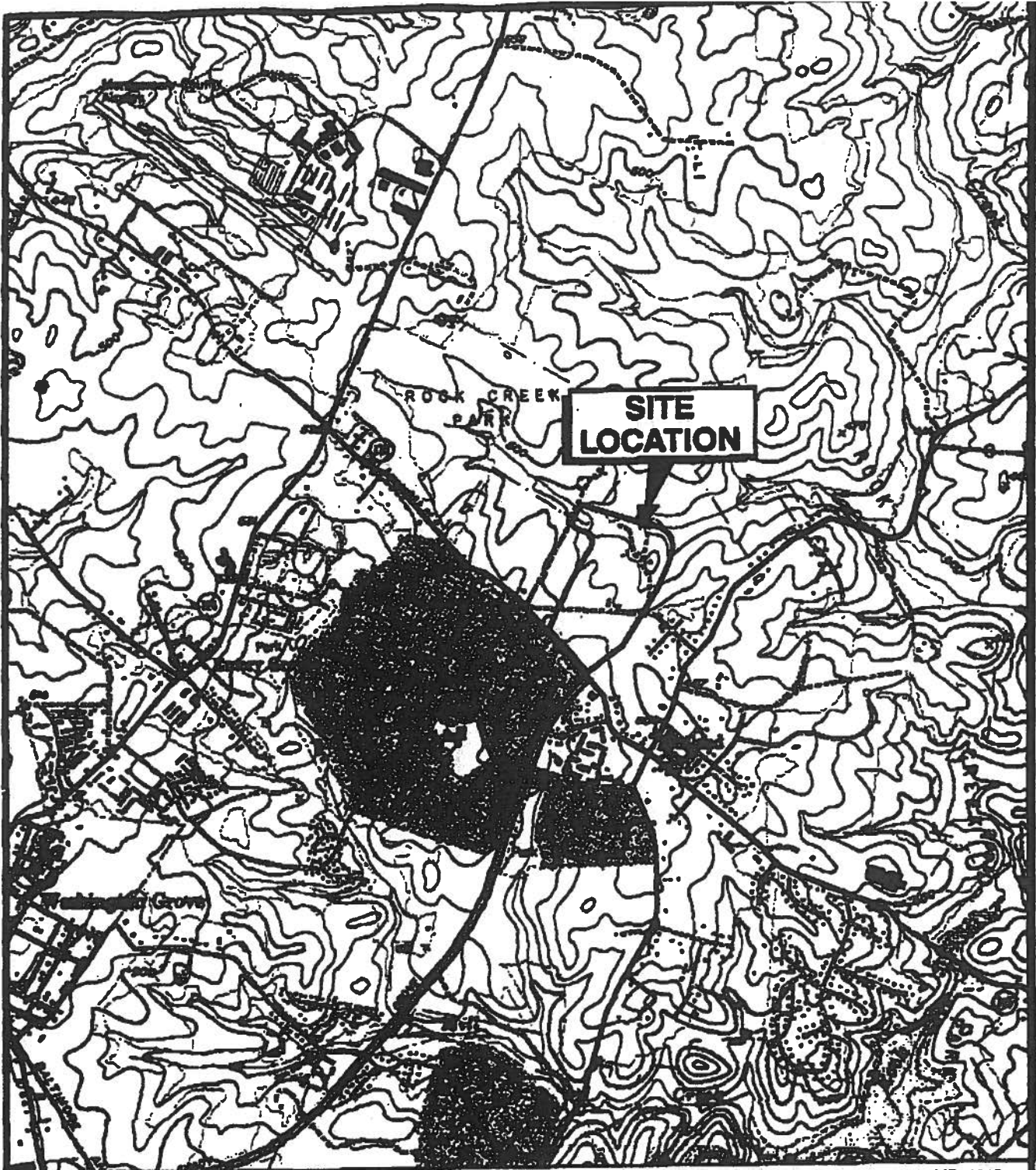
### **2.1. CURRENT AND EXISTING CONDITIONS**

The study area for this Natural Resource Inventory/Forest Stand Delineation consists of fallow fields, land leased for cattle grazing and firewood, and a mixed deciduous pioneer/mid-successional forest community in the northeastern portion. Two intermittent streams and one wetland system were visually identified during the field investigations. The approximate locations of wetlands and streams are shown on FSD/NRI Figure 2.4., and Field Sampling Data Sheets are in Appendix A.

Our field reconnaissance of the site indicates the forest in the northeast quadrant of the study area contains a significant accumulation of urban debris and litter. The 1980 Natural Resource Conservation Service soil survey (Figure 2.2.) shows two roads leading from the farmhouse to the northeast wooded area. These roads were probably used to transport and deposit the debris in the forest. The debris consists of garden hoses, silt fencing, construction rubble (cinder blocks and bricks), and household refuse (bottles and cans). The area bordering Sample Plot 2 contains 36 to 48 inch concrete pipes, Jersey walls and woody construction debris. Exotic invasive plants were common through out the forested areas. Typical representative exotic invasive plants include garlic mustard (*Alliaria officinalis*), devils tearthumb (*Polygonum perfoliatum*), multiflora rose bush (*Rosa multiflora*), the empress tree (*Paulownia tomentosa*), the tree of heaven (*Ailanthus altissima*) and wineberry (*Rubus phoenicolasius*). One Wisconsin style dairy barn, a pigpen and a feed bin/barn were also identified during the field investigations.

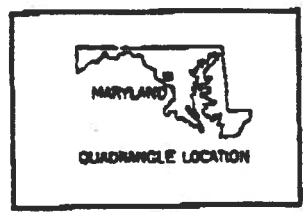
#### **2.1.1. Wetland and Streams**

One wetland and two streams were visually located while performing the FSD/NRI. The National Wetlands Inventory Map, Gaithersburg, MD 1979 Quadrangle, (Figure 2.3.) shows a palustrine emergent, narrow-leaved, persistent, temporarily/seasonally saturated (PEM5A/5C) wetland system borders the northern limits of the project area, but lays outside the project site. This wetland system is situated adjacent to an unnamed tributary to Rock Creek. Rock Creek is listed as a Class III water use by the Maryland Department of the Environment, and Montgomery County, Maryland. Consequently, the intermittent tributaries to Rock Creek in the geographic region of the project area, are protected by a 150 to 200 foot vegetated buffer zone based on the topographic gradient next to the intermittent streams. Slopes of less than 25 percent have a 150-foot vegetated buffer zone, whereas slopes next to the streams having slopes equal to or greater than 25 percent have a 200-foot buffer zone.



SOURCE: U.S.G.S. 7.5' Series Quad., Gaithersburg, MD, 1945, photorevised 1979.

0 2000 Feet  
SCALE



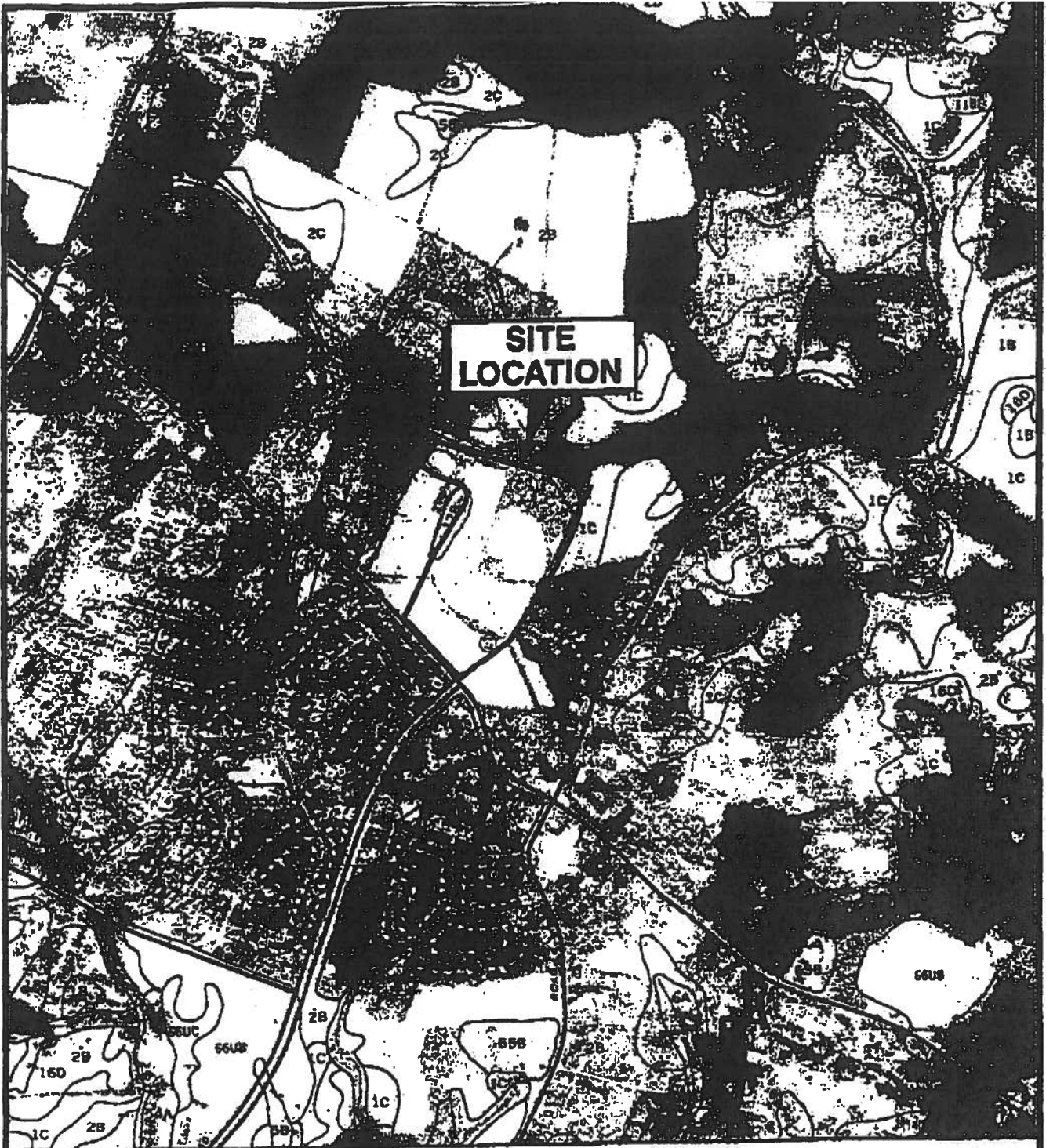
**FIGURE 1**  
**SITE LOCATION MAP**  
**LAYTONIA RECREATIONAL PARK**  
**MONTGOMERY COUNTY, MARYLAND**

P:\LAYTONIA PARK\LAYTONIA\LAYTONIA-1.CDR (03/20/01) SS



Figure 2.1 – Site Location Map.

P:\LAYTONIA PARK\LAYTONIA\LAYTONIA-2.COR (03/22/01) SS



**FIGURE 2**  
**NATURAL RESOURCE CONSERVATION**  
**SERVICE SOIL**  
**LAYTONIA RECREATIONAL PARK**  
**MONTGOMERY COUNTY, MARYLAND**



Figure 2.2 – Natural Resource Conservation Service Soil Map



Source: U.S.G.S. 7.5' Series Quads,  
Gathersburg, MD, 1945, photorevised 1979



QUADRANGLE LOCATION

**Key:**

	Site Location
	NWI Coverage
	L50W7H1
	PENR0WPH
	PENR0A
	PENR0AH
	PENR0B
	PENR0C
	PENR0E
	PENR0EH
	PFOV0R0E
	PFOV0R0A
	PFOV0R0C
	PFOV0R0E
	PFOV0R0A
	PFO1A
	PFO1C
	PFO1E
	PFOG0WPH
	POWZ1
	P0WZK
	P0V0R0A
	P0V0R0C
	P0V0R0E
	P0V0R0EH
	P0S1A
	P0S1C
	P0S1E
	P0BPH
	P0BAX
	U



**FIGURE 3  
NATIONAL WETLANDS INVENTORY MAP  
LAYTONIA RECREATIONAL PARK  
MONTGOMERY COUNTY, MARYLAND**

**URS**  
Dornes & Moore

Figure 2.3 – National Wetlands Inventory Map



The first stream is located near the western limits of the project area and originates on property belonging to the Seventh Day Adventist Church. The stream drains in a northerly direction before entering the palustrine emergent wetland system located north of the project boundary. This stream is characterized as a well-defined drainage feature bordered by an early seral woody fringe dominated by exotic vegetation. The second stream is located in the northeast quadrant of the forested area. This stream originates as a spring seep and develops a well-defined drainage pattern as it flows northward onto the Pope Farm Nursery property and the tributary to Rock Creek.

### **2.1.2. Archeological**

The project area contains several buildings that date to the mid 19<sup>th</sup> century and early 20<sup>th</sup> century. The first structure is a corncrib located in Stand 3 (see Figure 2.4.) that dates to the mid 19<sup>th</sup> century and is in fairly good condition. The M-NCPPC is considering relocating the building to an undetermined site. A dilapidated Wisconsin style dairy barn is located near the center of the study area. This structure dates to the early 20<sup>th</sup> century and is in a state of disrepair. Portions of the interior walls have been removed and the barn has been used to shelter livestock (hogs) in the past. A third structure identified as a caretaker's home is also located near the dairy barn. This structure also dates to the early 20<sup>th</sup> century and currently functions as the residence of the current caretaker. Part 3 of this report discusses the historic structures.

### **2.1.3. Rare, Threatened and Endangered Plants and Animals**

On April 6, 2001, URS contacted the Maryland Department of Natural Resources (MD DNR), Wildlife and Heritage Division, to determine if adverse impacts to Rare, Threatened and Endangered plants or animals would occur as a result of the proposed project. In a letter dated May 4, 2001, the MD DNR Wildlife and Heritage Division indicated there was a 1978 breeding record for the State designated threatened Sedge Wren (*Cistothorus platensis*) known to have occurred within the vicinity of the project area. The MD DNR Wildlife and Heritage Division also indicated two plant species of State concern could potentially occur in the project area. These plants are identified as bashful bulrush (*Scirpus verecundus*) and American chestnut (*Castanea dentata*). Bashful bulrush typically occurs in areas that are inundated or saturated for prolonged periods. American chestnut historically occurred along the eastern United States in mature upland forests. However, the American chestnut tree has been eradicated from its former range by the chestnut blight and now occasionally emerges as a sapling before it is killed by the fungus. Copies of the letters are found in Appendix B.

### **2.1.4. Soils**

According to the *Natural Resource Conservation Service Soil Survey of Montgomery County, Maryland* (USDA 1973), the study area is underlain by soils of Gaila silt loam (1C, 8-15% slope), Glenelg silt loam (2B, 3-18% slope), Occoquan silt loam (17B, 3-18% slope) and Blocktown silt loam (116D; 15-25% slope) soil series.

- Gaila silt loam is a very deep, well-drained soil that occurs in ridgetops and side slopes of uplands. They occur on smooth slopes that are dissected by small drainage ways and in areas that experience differential erosion. These soils are formed from residuum that weathered from quartz muscovite schist.

- Glenelg silt loam is very deep, well-drained soil that occurs on ridge tops and side slopes in uplands. The slopes are smooth and dissected by small drainage ways. Moderate permeability is the limiting factor for septic systems
- Occoquan loam is a deep and well-drained soil occurring on broad ridgetops and side slopes. The slopes are generally smooth but are dissected by small drainage ways
- Blocktown channery silt loam is a shallow, well-drained soil on side slopes in uplands. Slope, depth to bed rock, and rock out crops are the main limitations of the soils.

<b>Map Symbol</b>	<b>Soil Type</b>	<b>Percent Slope</b>	<b>Structural Limitations</b>	<b>Hydric Properties</b>	<b>'K' Value</b>
1C	Gaila silt loam	8-15	Moderate slope	non-hydric	0.30
2B	Glenelg silt loam	3-8	Moderate slope	non-hydric	0.30
17B	Occoquan loam	3-8	Moderate slope	non-hydric	0.37
116D	Blocktown channery silt loam	15-25	Moderate slope	non-hydric	0.24

The soils mentioned above are not on the National or State list of hydric soils.

## **2.2. PROCEDURES AND METHODOLOGY**

Environmental scientists from URS traveled to the Laytonia Recreational Park project area on March 21, 25, and 26, 2001, to conduct the Forest Stand Delineation/Natural Resource Inventory. The FSD/NRI was performed according to the procedures established in the *Trees, Approved Technical Manual* (Maryland-National Capital Park and Planning Commission 1992). URS sampled 0.1-acre fixed-radius plots throughout the site to characterize potentially impacted forest stands. Tree species within each fixed plot were identified, diameters at breast height (DBH) were measured, and the data was recorded on Field Sampling Data Sheets (Appendix A).

URS flagged sample plots and large trees using orange surveyor's ribbon and pin flags. A calibrated #10 basal area factor wedge prism was used to determine the basal area of the forest stands. Information describing understory and herbaceous vegetation, invasive species, canopy coverage, woody debris, and other pertinent data, were recorded on the Field Sampling Data Sheets (Appendix A). URS reviewed and analyzed the field data to rate the retention priority of each forest stand and produced the narrative describing the conditions of the forest areas and hedgerows. URS sampled ten plots in the entire study, of which four were fence line/hedge row plant communities. The field data was then incorporated into a Forest Stand Delineation/Natural Resources Inventory Site Plan (Figure 2.4.) showing sample plots, large trees and other environmental features, such as topography, streams and wetlands.



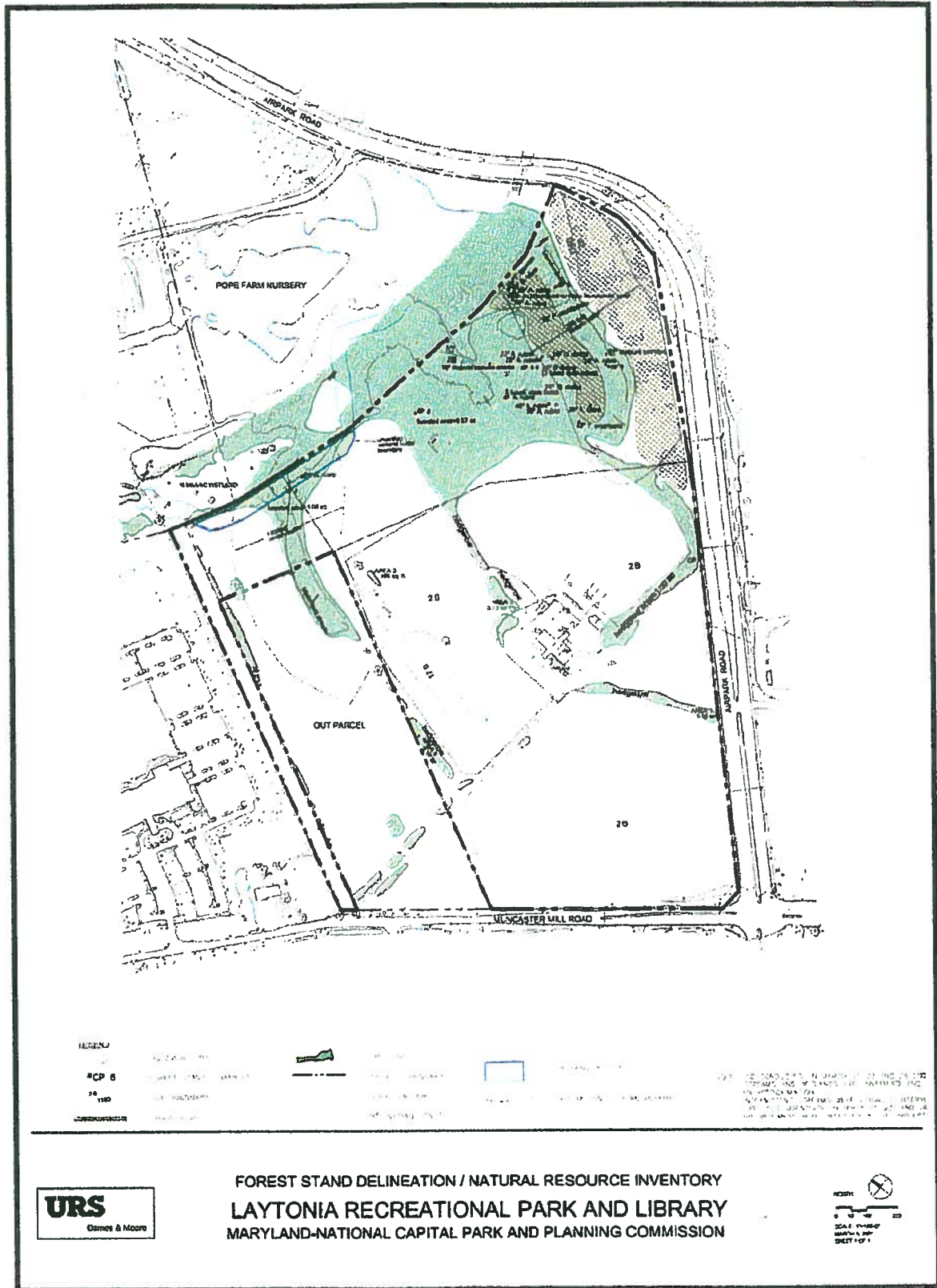


Figure 2.4. - Forest Stand Delineation/Natural Resources Inventory.



## **2.3. FOREST STAND DELINEATION RESULTS**

### **2.3.1. Sample Area Plots**

#### **Sample Areas 1 and 4 (Approximately 0.33 ac)**

The Forest Stand Delineation/Natural Resource Inventory Map (Figure 2.4) shows the approximate sample plot locations of the forest stand delineation/natural resource inventory for the project area. Sample Plot 1 is a pioneer plant community located approximately 1200 feet northeast of the Rte 115 and Airpark Road intersection and situated southwest of Airpark Road. Area 1 is bordered to northeast and southwest by fallow fields, to the east by Airpark Road and to the northwest by a gravel parking lot, a Wisconsin style dairy barn, and the caretaker's residence.

This Sample Area 1 is characterized as an isolated fence row vegetated by an early successional plant community approximately 20-30 years old in fair to poor health. *The Montgomery County Natural Resource Conservation Service* soil survey indicates Area 1 is underlain by Glenelg silt loam. The dominant overstory tree species is black cherry (*Prunus serotina*) in the 18-29.9 inch DBH size class. Younger trees in the study area consist of black cherry (*Prunus serotina*) in the 6-9.9 inch DBH size class and hackberry (*Celtis* sp.) in the 6-9.9 inch DBH size class. Several of the trees in Area 1 consist of multiple stemmed tree trunks. Identified exotic invasive plants consist of Japanese honeysuckle (*L. japonica*) as an herb and a vine. Multiflora rose (*Rosa multiflora*) was not in the sample plot, but was observed at various locations through out the length of the fence line and is a dominant component of the shrub layer. Fescue (*Festuca* sp.) is a dominant herbaceous plant located in the fields adjacent to the sample plot. Roadside litter (beer cans and food containers) was also observed within the hedgerow of Sample Plot 1.

Sample Area 1 was characterized as a fair to poor plant community based on the presence of exotic invasive plants, urban litter and the absence of good forest structure suitable for forest interior dependant wildlife. A structure analysis was not performed because of the limited width of the wooded area. Sample Area 4 has a similar plant community composition and is included in this plant community narrative.

#### **Sample Area 2 (Approximately 0.59 ac)**

Sample Area 2 is a narrow, wooded hedgerow located approximately 2400 feet north of the Rt. 115 (Muncaster Mill Road) and Airpark Road intersection. Sample Plot 2 is bordered to the east a pasture field used for cattle grazing, a fallow field to the west, Forest Stand 3 to the north and fallow fields and an abandoned pig pen to the south

This sample plot is characterized as an old fence vegetated by successional and fruit trees approximately 20-40 years old in fair to good health. *The Montgomery County Natural Resource Conservation Service* soil survey indicates Sample Plot 2 is underlain by Gaila silt loam. Sample Plot 2 is characterized as a narrow woody fringe approximately 30 feet wide. Therefore, data was gathered at this location to document the vegetative community and characterize the conditions surrounding this sample plot. The tree canopy of the wooded area is dominated by black cherry (*Prunus serotina*) and crab apple (*Malus angustifolia*). The herbaceous layer surrounding Sample Plot 2 was vegetated by fescue (*Festuca* sp.). There is an accumulation of debris and refuse immediately east and south of the sample plot.

The debris located within the sample plot consists of plastic soda bottles, coffee cans, 36-48 inch concrete pipes, jersey walls and tires. The abandoned pigpen located south of this sample plot has been used to store refuse material such as tires and rusting chicken wire. The pigpen is neglected and is decaying from a lack of maintenance. Sample Area 2 merges with Forest Stand 2 to the north.

We characterized Sample Plot 2 as a narrow woody fringe in good health. No exotic invasive plants, other than fescue, were observed at the time of the field reconnaissance. Urban debris, the narrow width of the tree line, and the absence of vertical vegetative forest structure limits utilization of Sample Area 2 for forest interior dependant wildlife.

### **Sample Area 3 (Approximately 0.23 ac)**

Sample Plot 3 is a wooded parcel of land located approximately 3,200 feet northwest of the Rt. 115 (Muncaster Mill Road) and Airpark Road intersection. Sample Plot 3 is bordered to the north, east, south and west by a pasture field used for cattle grazing. Rocky out crops are located throughout the length of the wooded parcel of land.

This sample plot is characterized as an isolated wooded parcel of land approximately 20-40 years old in fair to good health. No shrub layer was observed in the wooded area. *The Montgomery County Natural Resource Conservation Service* soil survey indicates Sample Area 3 is underlain by Occoquan silt loam. Data was gathered at this location to document the vegetative community and characterize the conditions surrounding this sample plot. Sample Area 3 is characterized as an isolated narrow woody fringe approximately 30 feet wide. The tree canopy of the wooded area was dominated by black cherry (*Prunus serotina*), and red maple (*Acer rubrum*). The surrounding herbaceous layer was vegetated by fescue (*Festuca* sp.) and pokeweed (*Phytolacca americana*).

This area also provides limited habitat for forest interior dwelling birds and does not function as a migration corridor to larger tracts of forested land for avifauna and small mammals.

## **2.3.2. Forest Stand Sample Plots**

### **Forest Stand 1 (Approximately 1.29 ac)**

Forest Stand 1 is transitional plant community located on an old abandoned farm road. This stand is located approximately 2400 feet northeast of the Rt. 115 (Muncaster Mill Road) and Airpark Road intersection. It is bordered by Airpark Road and a mowed grassy field to the east, a pasture field used by cattle to the west, Stand 6 to the north and fallow agriculture land to the south.

Forest Stand 1 is an early transitional forest underlain by Glenelg silt loam and has basal area of 110 square feet. The dominant overstory tree species is black cherry (*Prunus serotina*) in the 18-29.9 inch DBH size class. The codominant species include black locust (*Robinia pseudoacacia*), white mulberry (*Morus alba*), and red maple (*Acer rubrum*) in the 10-17.9 inch DBH size class. The common understory and shrub species include black cherry (*Prunus serotina*), flowering dogwood (*Cornus florida*), tartarian honeysuckle (*Lonicera tatarica*) and multiflora rose (*Rosa multiflora*). The shrub and herb layer is vegetated by the following exotic invasive plants; multiflora rose, Japanese honeysuckle, white mulberry (*Morus alba*) and tartarian honeysuckle (*Lonicera tatarica*). A population of the tree of heaven (*Ailanthus altissima*) was observed approximately 50-100 feet south of the sample plot. *Ailanthus* is an allelopathic, short-lived,

opportunistic pioneer species that aggressively colonizes disturbed areas. Over time *Ailanthus* forms monotypic communities that displace native flora and provides little value to the native wildlife.

Forest Stand 1 was assigned "Moderate Priority Retention" rating based on the presence of a good forest structure. However, exotic invasive plants form the forest structure in this stand. An accumulation of urban litter was observed throughout portions of this stand. Glenelg soils have slight erosion hazard and equipment limitations. The soil at this forest stand has a K factor of 0.30 percent.

### **Forest Stand 2 (Approximately 1.27 ac)**

Forest Stand 2 is located northwest of Sample Plot 2. It is bordered to the north by wetlands and the Pope Farm Nursery, to the east and west by fallow fields and to the south by property belonging to the Seventh Day Adventist Church.

Stand 2 is characterized as a mesic early to mid-successional box elder forest approximately 30-40 years old, underlain by Glenelg silt loam. This forest stand has a basal area of 1100 square feet per acre and has a codominant canopy shared by black cherry (*Prunus serotina*) in the 10-17.9 inch DBH size class, box elder (*Acer negundo*) in the 10-17.9 inch DBH size class, and red maple (*Acer rubrum*) in the 10-17.9 inch DBH size class. Average height of the overstory is estimated to be 30-40 feet. There are approximately 40 dead trees per acre. An understory layer was absent due to the early seral character of the forest community. A well-defined intermittent stream originating from the Seventh Day Adventist property drains through Stand 2 and into the emergent wetland system located north of the sample plot. Downed woody debris was observed throughout the forest stand and wrack deposits provide a visual clue to the amount of water conveyed through the intermittent stream. The intermittent stream loses its bed and bank characteristics and develops a braided drainage pattern as it approaches the property boundary. Fire logs and urban trash was observed in the southern margins of Stand 2. *Rosa multiflora* forms a significant portion of the shrub layer in the southern portion of the study area.

Forest Stand 2 was assigned a "High Priority Retention" rating due to the presence of the intermittent stream flowing through the sample plot, the emergent wetland system north of the property boundaries and the extended stream buffer. The overall health of this forest stand was characterized as fair. Glenelg soils have a slight erosion hazard and equipment limitations. The soil at this forest stand has a K factor of 0.30 percent.

### **Forest Stand 3 (Approximately 2.18 ac)**

Forest Stand 3 is a black cherry (*Prunus serotina*) community located approximately 1000 feet east of Forest Stand 2. It is bordered to the west by a fallow field, the Pope Farm Nursery and wetlands to the north, Forest Stand 4 to the east, a foundation to an old building, an abandoned barn and fallow fields to the south.

Forest Stand 3 is characterized as a monotypic, early successional black cherry forest approximately 30-40 years old underlain by Gaila silt loam. This forest stand has a basal area of 2300 square feet per acre and has a canopy dominated by black cherry (*Prunus serotina*) in the 10-17.9 inch DBH size class. Codominant trees include honey locust (*Gleditsia tricanthos*) in the 2-5.9 inch size class. Average height of the overstory is estimated to be 30-40 feet. There are approximately 140 dead trees per acre. Understory layer is vegetated by young black cherry trees in the 2-5.9 inch



DBH size class. Downed woody debris was observed throughout the forest stand. The herbaceous layer of the forest stand is colonized by mile-a-minute (*Polygonum perfoliatum*), wineberry (*Rubus phoenicolasius*), multiflora rose (*Rosa multiflora*), and Japanese honeysuckle (*Lonicera japonica*). All of the herbaceous plants in Stand 3 are exotic invasive plants that form monotypic vegetative communities and provide little wildlife value. The dense stand of black cherry trees suggests the saplings are competing for sunlight.

Forest Stand 3 was assigned a "Low Priority Retention" rating due to the low number of trees having a DBH greater than 7 inches in the sample plot. The overall health of this forest stand was characterized as fair because of the dense stand of black cherry trees resulting in sapling mortality and the absence of vegetative diversity. Glenelg soils have a slight erosion hazard and equipment limitations. The soil at this forest stand has a K factor of 0.30 percent.

#### **Forest Stand 4 (Approximately 2.82 ac)**

Forest Stand 4 is located approximately three hundred feet southeast of Stand 3. It is bordered by Stand 3 and an old barn to the northwest, the Pope Farm Nursery, wetlands and an intermittent stream to the north, steep descending slopes and Stand 5 to the east, and Stand 6 to the southeast.

Forest Stand 4 is characterized as an early to mid-successional 70-90 year old forest underlain by Glenelg silt loam. This forest stand has a basal area of 900 square feet per acre and has a canopy dominated by red maple (*Acer rubrum*) in the 18-29.9 inch DBH size class. Codominant trees include the empress tree (*Paulownia tomentosa*) in the 10-17.9 inch size class, black locust (*Robinia pseudoacacia*) in the 10-17.9 inch DBH size class, sycamore in the 6-9.9 inch DBH size class, and coffee tree (*Gymnocladus dioica*) in the 2-5.9 inch DBH size class. The understory, shrub and herbaceous layer is predominately vegetated by exotic invasive plants represented by multiflora rose (*Rosa multiflora*), blackberry (*Rubus* sp.), garlic mustard (*Alliaria officinalis*), wild onion (*Allium* sp.), wineberry (*Rubus phoenicolasius*), and wild strawberry (*Rubus illecebrosus*). Norway maple (*Acer platanoides*) was observed in the forest stand but not in the sample plot. Forest Stand 4 has a large accumulation of urban debris and appears to have been used as a depository for household trash (cans and bottles) and construction debris (cinder blocks). Health of the forest is characterized as fair. Several large trees were located in Stand 4. However, health of some of the large trees is characterized as poor because the canopy of the trees have either died or the trees are diseased and have heart rot.

Forest Stand 4 was assigned a "Moderate Priority Retention" rating based on the presence of large trees in the sample plot having a DBH greater than 7 inches. Glenelg soils have a slight erosion hazard and equipment limitations. The soil at this forest stand has a K factor of 0.30 percent.

#### **Forest Stand 5 (Approximately 2.38 ac)**

Forest Stand 5 is an early to mid-successional hardwood forest located on steep, east facing slopes. It is bordered on the west by Stand 4, an intermittent stream and the Pope Farm Nursery to the north, a first order intermittent stream and steep slopes to the east and Stand 6 to the south.

Forest Stand 5 is characterized as a mesic, early to mid-successional 30-40 year old forest underlain by Blocktown silt loam. This forest stand has a basal area of 1400 square feet per acre and 40 dead trees per acre. The forest canopy is dominated by green ash (*Fraxinus pennsylvanica*) in the 10-17.9 inch DBH size class. Codominant trees include red maple (*Acer rubrum*) in the 10-17.9 inch size class, black cherry (*Prunus serotina*) in the 10-17.9 inch size class, southern red

oak (*Quercus falcata*) in the 10-17.9 inch size class and tulip tree (*Liriodendron tulipifera*) in the 2-5.9 inch size class. The understory, shrub and herbaceous layer is predominately vegetated by exotic invasive plants, represented by multiflora rose (*Rosa multiflora*), blackberry (*Rubus* sp.) wineberry (*Rubus phoenicolasius*), garlic mustard (*Alliaria officinalis*), wild onion (*Allium* sp.) and Japanese honeysuckle (*Lonicera japonica*). The western portion of Forest Stand 5 has an accumulation of urban debris and appears to have been used as a depository for household trash and construction debris. Health of the forest is characterized as good. Large specimen trees were located in Stand 5, but not in the sample plot.

Forest Stand 5 was assigned a "High Priority Retention" rating based on the presence of steep slopes, healthy large trees, and the proximity of a first order intermittent stream and its extended buffer. Blocktown soils have a moderate erosion hazard and equipment limitations and are subject to severe wind throw hazard. The soil at this forest stand has a K factor of 0.24 percent.

### **Forest Stand 6 (Approximately 1.54 ac)**

Forest Stand 6 is located south of Stand 5. This stand is bordered to the north by Forest Stand 5, a first order intermittent stream and steep slopes to the east, Forest Stand 1 to the south and Forest Stand 4 to the west.

Forest Stand 6 is characterized as a mesic, early to mid-successional 30-40 year old forest underlain by Glenelg silt loam. This forest stand has a basal area of 1000 square feet per acre and has 10 dead trees per acre. The forest canopy is dominated by red maple (*Acer rubrum*) in the 18-29.9 inch DBH size class. Codominant trees include coffee tree (*Gymnocladus dioica*) in the 6-9.9 inch DBH size class and black cherry (*Prunus serotina*) in the 2-5.9 inch size class. The understory, shrub and herbaceous layer is predominately vegetated by exotic invasive plants represented by multiflora rose (*Rosa multiflora*), blackberry (*Rubus* sp.) wineberry (*Rubus phoenicolasius*), wild onion (*Allium* sp.) and Japanese honeysuckle (*Lonicera japonica*). The western portion of Forest Stand 6 has an accumulation of urban debris extending eastward from Stand 4. The headwaters for a well-incised intermittent stream is located along the eastern boundaries of this forest stand.

Forest Stand 6 was assigned a "High Priority Retention" rating due to the proximity of the intermittent stream, the extended stream buffer, good health of the forest, and trees having a DBH greater than 7 inches. Glenelg soils have a slight erosion hazard and equipment limitations. The soil at this forest stand has a K factor of 0.30 percent.

## **2.4. SUMMARY**

Based on the results of the Forest Stand Delineation performed by URS, six different forest communities occupy the Laytonia Recreational Park Study area. These forest stands were evaluated based upon stand composition, stand structure, and condition. Based upon evaluation, Forest Stands 2, 5 and 6 were determined to have the highest retention priority, Forest Stand 1 and 4 have a moderate retention priority and Forest Stand 3 has the lowest retention priority.



<b>TABLE 2.2</b>	
<b>RELATIVE RETENTION PRIORITY</b>	
<b>Retention Priority</b>	<b>Forest Stand</b>
High Priority Retention	2, 5, 6
Moderate Priority Retention	1, 4
Low Priority Retention	3



### **3. ARCHITECTURAL EVALUATION**

#### **3.1. INTRODUCTION**

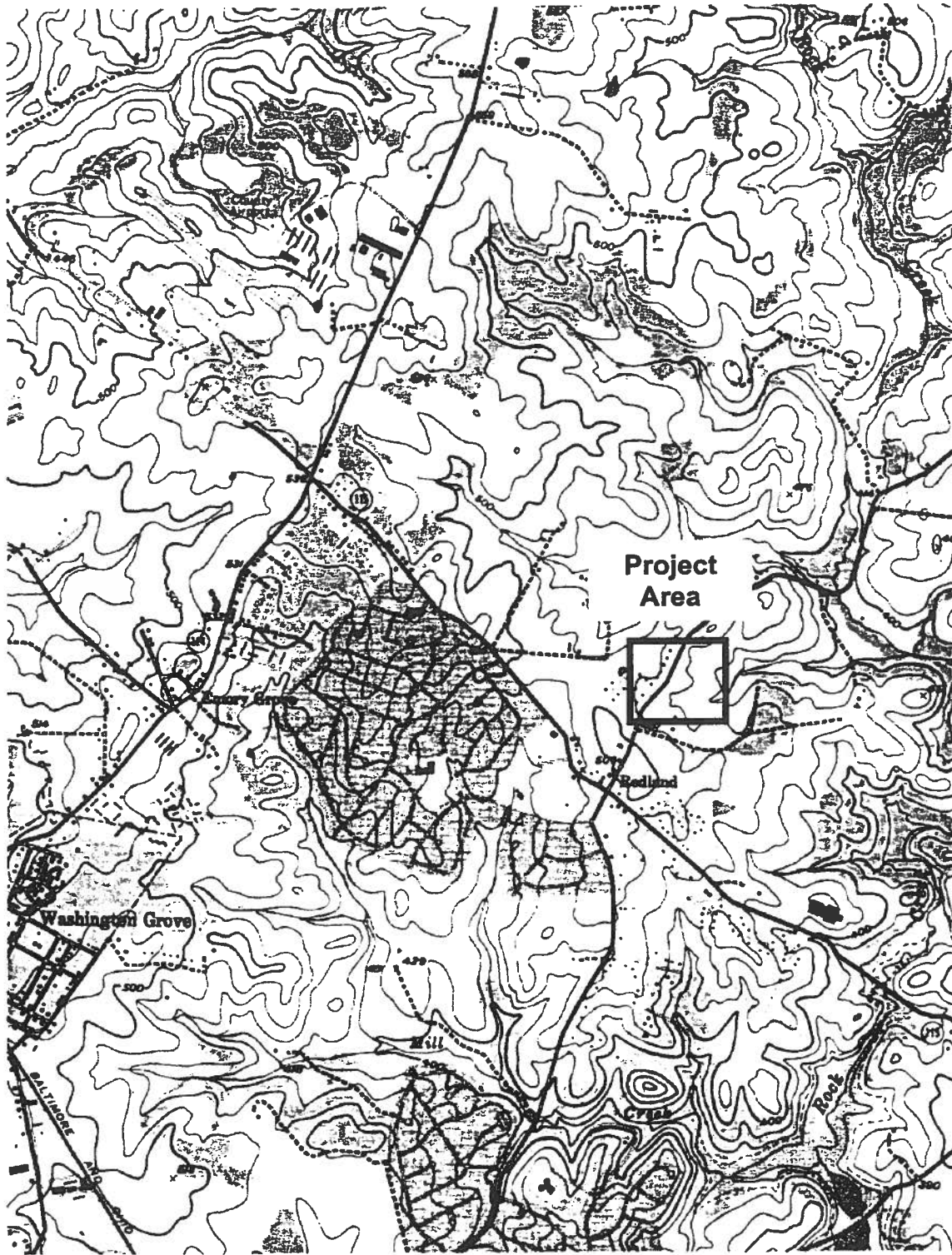
This report presents the results of an historic resource survey of two properties in the vicinity of Redland, Montgomery County, Maryland (Figure 3.1.). The survey was conducted on behalf of the Park Development Division (PDD) of the Maryland-National Capital Park and Planning Commission (M-NCPPC) to provide architectural services for the Laytonia Recreational Park. URS/Dames & Moore evaluated the significance and integrity of existing structures on the site and made the following recommendations.

The project is located in an area of Montgomery County northwest of Redland along Muncaster Mill Road that is becoming highly developed. The area north of Redland still retains its farm setting of agricultural lands and historic farmsteads located between the wooded areas of the Upper Rock Creek Park. The project area contains two historic properties already listed in the Maryland Inventory of Historic Places (MIHP). The two historic properties contain a total of three buildings: 1) The David Griffith Farm (MIHP 22-21) has a corn crib built between 1850 and 1900; and 2) The William Basil Mobley Property (MIHP 22-43) has a Wisconsin dairy barn built between 1936 and 1944, and a tenant house built ca. 1930. The Mobley Property is located about 1,500 feet north of Muncaster Mill Road on flat ground surrounded by pasture.

The Griffith Farm is located about 1,500 feet northeast of and adjacent to the Mobley property on abandoned farmland being reclaimed by the forest.

The survey was undertaken according to the *Standards and Guidelines for Architectural and Historical Investigations in Maryland* (Maryland Historical Trust 2000). Each resource was photographed in black and white and color (slides); the photographic documentation was completed in accordance with the Guidelines and will be submitted to the Maryland Historical Trust for accessioning into its library. The historic resources were evaluated using the historic context developed for the project area as a baseline to discuss significance (National Park Service 1995).





**Figure 3.1. - Project Location Map.**  
Adapted from U.S.G.S. Gaithersburg, MD quadrangle (7.5-minute series).





### **3.2. METHODOLOGY AND RESEARCH DESIGN**

This project was accomplished by conducting documentary research and fieldwork in accordance with standards published by the Maryland Historical Trust (2000). Research was conducted at local and state repositories to construct the historic contexts presented in this report. Preliminary background research aimed at identifying previously recorded historic reports included review of Maryland Inventory of Historic Places (MIHP) forms for the William Basil Mobley Farm (MIHP 22-43) and David Griffith Farm (MIHP 22-21) conducted at the Maryland Historical Trust, Crownsville, Maryland. Furthermore, Mr. Michael F. Dwyer, Historic Resources Manager, the Maryland-National Capital Park and Planning Commission, Needwood Mansion, Rockville was consulted. He provided additional MIHP materials available for the David Griffith Farm. Mr. Dwyer had documented the site, and completed a MIHP form for the David Griffith Farm in 1975.

The first stage of background research involved collecting historic cartographic materials. The collections of the Maryland Historical Society, the National Archives and the Library of Congress were visited to obtain historic maps illustrating the project area. Land records, probate records, and tax assessments were examined at the Maryland State Archives and Hall of Records, Annapolis, and at the Judicial Center in Rockville, Maryland. Vertical files on Griffith and Mobley family histories and local histories for Redland and Derwood were researched at the Montgomery County Library, Rockville Branch, and at the Maryland Historical Society, Rockville.

The field survey of the two properties included a thorough examination of the dairy barn and tenant house on the William Basil Mobley Farm and the corncrib on the David Griffith Farm. The site survey for each building recorded the structure's function, the types of construction materials used, the construction methods employed, and internal and external architectural configurations such as number of rooms and placement of windows and doors. Photographic documentation included black-white and slide photography of the three buildings. Currently, the Griffith property is abandoned. The site contains only one standing structure, a corncrib. The Mobley farm contains two buildings: a Wisconsin dairy barn that no longer functions as a dairying facility, but is used for storage, and the tenant house that is still occupied.

Each historic resource identified in the survey was evaluated for its eligibility for listing in the National Register of Historic Places, based on the Criteria for Evaluation in 36 CFR 60.4 (Table 3.1.). The National Register of Historic Places is a sort of "national census of historic properties" (National Park Service 1995:1). According to the National Park Service, the agency charged with administering the National Register of Historic Places, "The National Register Criteria for Evaluation provides guidance for decisions concerning properties that qualify for listing. These criteria are set forth herein.

<b>TABLE 3.1.</b>	
<b>NATIONAL REGISTER OF HISTORIC PLACES CRITERIA FOR EVALUATION</b>	
<b>Criterion</b>	<b>Description</b>
<b>A</b>	Buildings, sites, objects, and structures that are associated with events that have made a significant contribution to the broad patterns of our history.
<b>B</b>	Buildings, sites, objects, and structures that are associated with the lives of persons significant in our past.
<b>C</b>	Buildings, sites, objects, and structures that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction.
<b>D</b>	Buildings, sites, objects, and structures that have yielded, or may be likely to yield, information important in prehistory or history.

Adapted from **Title 36 Parks, Forests, And Public Property Chapter I – National Park Service, Department Of The Interior Part 60 – National Register of Historic Places (36 CFR 60 § 4, revised July 1999).**

### **3.3. HISTORIC CONTEXT**

The historic context focuses on Montgomery County's agricultural, commercial and transportation themes during the period of time represented by the historic resources documented during this survey. The historic resources documented in the survey area were built during the nineteenth and twentieth centuries on properties first developed during the years just prior to the outbreak of the Civil War.

#### **3.3.1. Early Montgomery County**

The area now known as Montgomery County was first settled during the last decades of the seventeenth century as the English expanded their agricultural frontier from the Chesapeake into the Maryland backcountry. Maryland's earliest colonists were a combination of yeoman farmers and tobacco planters. Slavery, by the eighteenth century, became the dominant labor pattern among tobacco planters (Sween 1984:19; Wilsatch 1931).

In the first half of the eighteenth century, German immigrants, as well as Pennsylvania Germans began to arrive from the Monocacy Valley moving eastward to farm the rich soils of the Piedmont region. This increase in population led to the creation of Frederick County in 1748. At that time, the territory of present-day Montgomery County was called the Lower District of Frederick County. In 1776, Montgomery County proper came into existence when the Lower District of Frederick County became an independent political entity when the colonists declared their independence from England. The County was renamed in honor of Richard Montgomery, an American patriot (Heibert and MacMaster 1976:3; Scharf 1882:640).

### **3.3.2. Agriculture**

Beginning in the eighteenth century, the agricultural economy throughout Maryland was primarily based on tobacco. After years of continuous tobacco cultivation, soil productivity became diminished as the land became depleted of nutrients. Many farmers abandoned their farms and migrated farther west to new territories and more fertile lands. The farmers who did remain organized agricultural groups, such as the Sandy Spring Farmers' Society, the American Board of Agriculture, and the Montgomery County Agricultural Society (established in 1846). The aim of these organizations was to bring new products and improved farming techniques to Montgomery County, introducing such as better breeds of farm animals, deep plowing, new fertilizers, and mechanized equipment (Heibert and MacMaster 1976: 119,127; Wesler et al. 1981:167,168).

The declining large tobacco plantations, dependent on slave labor, gave rise to small independent farms that practiced grain agriculture instead of tobacco farming. Eventually, the farmers' restorative agricultural techniques brought prosperity back to the depleted lands. The importance of agriculture in Montgomery County during the mid-nineteenth century is underscored by the amount of farmland in the county: 87.5 percent of the County's landmass was under cultivation or otherwise devoted to farming.

The end of the Civil War saw the advent of smaller farms in Montgomery County as agriculture became more diversified. Tobacco was still grown, but so were other crops such as corn and wheat. Agriculture was altered as the number of small farms increased. By 1880, Montgomery County had shifted from tobacco to become a major wheat producer ranking number four among wheat-growing counties in Maryland. Dairy farming in particular became important in eastern and southern regions of Maryland. Along the entire length of the Metropolitan Branch more than half of the farmers along the railroad were producing dairy products (Heibert and MacMaster 1976:241). Roads lead from the project area to railroad stations at Redland and Derwood.

### **3.3.3. Transportation**

#### **Land Routes**

The growth of Montgomery County was impeded by the lack of good roads. It was not until 1774 that the first roads were chartered by an act of the Maryland Assembly. The Assembly authorized construction of public roads from Watts Branch to the Georgetown-Frederick Road, and from Frederick to Georgetown. These roads leading to Georgetown were necessary because a water navigable route along the Potomac from Georgetown could not proceed past Great Falls (Thompson 1949:3; Wesler et al:1965).

In spite of the economic decline after the War of Independence, land transportation gradually improved in Montgomery County from the late eighteenth to the early nineteenth centuries. The first road for which there is any information was an old Indian trail from Washington to Frederick Town (Farquhar 1952:73). "The Great Road," present day Route 355, opened in 1750 as a tobacco "rolling road." It was an important avenue of transportation connecting local tobacco farmers in the vicinity of the project area with port facilities in Georgetown. The Great Road ran south from Frederick and passed to the south of the project area located at the junction of Seneca

Creek and the Great Road. Parallel to and east of the Great Road, the River Road roughly followed the Potomac River all the way to the mouth of the Monocacy to just north of Georgetown where it joined the Great Road.

### **Water Routes**

The opening of the Erie Canal in 1825 proved to be an impetus in Maryland to improve its water transportation system in the western part of the state with the intent of sending its goods to expanding western markets. In 1828, the Chesapeake and Ohio (C&O) Canal Company was created with the goal of making Baltimore competitive with the ports of Philadelphia and New York City by linking it up with the Ohio River. By 1850, 37 miles of the C&O Canal were completed as far north as Cumberland. The C&O Canal was an important factor in the development of the Potomac Valley and led to improvements in the agricultural economy of western Montgomery County. Because of the C&O Canal, for the first time local farmers in the project area had a profitable means of transportation to Georgetown. The agriculturally expanding region that included the project area sent grain products to Georgetown and in return received farm supplies and fertilizers (Sween 1984:50; Heibert and MacMaster 1976:101; Sanderlin 1946:59).

### **The Railroad**

In spite of the large investment, the C&O Canal never paid off commercially for its investors, in part because it was superseded by the railroad. Three years after the canal reached Cumberland in 1850, Georgetown merchants in Montgomery County organized the Metropolitan Railroad Company to build a railroad from Georgetown to Frederick and Hagerstown. Its purpose was cut the amount of time it took to travel between Washington, DC and the West. It was not until 1866, that the Baltimore and Ohio took over the Metropolitan charter and began to build the railroad. By 1872, the Metropolitan reached Rockville, and was completed in 1873. When finished, it linked Frederick and Georgetown and intersected the Baltimore and Ohio near the Monocacy Aqueduct in Frederick County (Heibert and MacMaster 1976:211).

The Metropolitan Branch had unforeseen consequences on the land and villages along its path including the project area which was part of a region of undeveloped wilderness. Remnants of that wilderness--Upper Rock Creek Park--are located northwest and northeast of the historic properties discussed in this report. Besides offering passenger service, the railroad provided farmers of upper Montgomery County access to Washington markets that needed agricultural products, but that access was limited to the immediate neighborhood of the Metropolitan Branch. Pine-covered lands along the length of the Metropolitan Branch were cut over to create agricultural fields. One immediate effect of the Metropolitan Branch of the B&O was to increase the number of dairy farmers who served the markets in Washington, DC. Eventually the Metropolitan Branch replaced the C&O Canal as the major cargo carrier in the region and kept the C&O Canal from being extended past Cumberland. Plagued by financial problems caused by competition from the railroad and from devastating floods, the C&O Canal eventually became technologically obsolete and was superseded by the railroad (Heibert and MacMaster 1976:101,105,210,211; Sanderlin 1946:284-5; Sween 1984:50).

### 3.3.4. Urbanization

Beginning in 1880, areas in Montgomery County close to Washington, DC, began to urbanize as federal workers settled in areas outside of the city. Eventually this process inexorably linked Montgomery County to the needs and future development of the nation's capitol. Land values increased five-to-ten fold by the 1880s as farmlands were developed along the Metropolitan Branch (Heibert and MacMaster 1976:101,105,210,211; Sanderlin 1946:284-5; Sween 1984:50). Between 1870 and 1900, the population of Montgomery County had increased by about 50 percent, from 20,563 to 30,541, as new towns and suburban areas developed. The rest of Montgomery County remained agricultural during the first quarter of the twentieth century. In 1912, it was estimated that there were 12,000 dairy cattle in the county, although most dairy farms were small with farmers raising cash crops as well (Wilson, n.d.:55,59; Hiebert and MacMaster 1976:241).

Road construction was not funded on a state level until 1904 when Maryland's general assembly enacted a bill to provide \$200,000 annually to the counties for the construction of macadam roads. Between 1905 and 1915, 1,305 miles of roads were constructed in the state, but lagged after this initial effort. The economic depression and World War I conditions made the resumption of road construction impossible until the early 1920s (Hiebert and MacMaster 1976:236,239; Boyd 1879:75; McGuckian 1986).

It was the arrival of a modern highway system and modern trucks that revolutionized agriculture in Montgomery County. The expanded and improved road system meant that all of Montgomery County's farmers now had access to Washington and suburban markets for various farm products regardless of the farm's proximity to the railroad (Hiebert and MacMaster 1976:239).

In 1924, the C&O Canal went out of business and with it the end of the canal era and the demise of canal towns (Shaw 1990:106-107; Sanderlin 1942:285). A devastating flood in 1924 closed the Canal for good. Today the C&O Canal extends for 184.5 miles along the northern bank of the Potomac River between Cumberland, Maryland, and Washington, D.C. It was placed under the control of the National Park Service in 1938. In 1961, it was established as a national monument, and became a national historical park in 1971. It remains today a major tourist attraction in the greater Washington, DC area.

After World War II, Montgomery County entered a new era as the population continued to increase with the post-war expansion of the federal government and veterans' housing programs. The number of farmers in Montgomery County decreased as middle and upper-income workers from the city moved into the farming areas. The suburbs of Washington encroached on the County's farmland with offices, apartment buildings, and shopping facilities. During the twentieth century the number of farms decreased nearly fifty percent from 1920 to 1959. By 1967, all farmland within 15 miles of Washington, DC had become marked for non-agricultural use, and, the County itself had become unalterably linked to the nation's capitol as the federal government moved into formerly the agricultural lands of southern Montgomery County (Sween 1984:135; Wilson n.d.: 61; Farquhar 1962:45-47, 210; P.A.C. Spero & Co. 1998).

### **3.4. PROJECT AREA HISTORIC CONTEXT**

The Mobley and Griffith properties are located north of the intersection of Muncaster Mill and Airpark roads. The rural communities of Redland and Derwood are the two closest population centers to the project area. Beginning in the eighteenth century, the surrounding countryside was devoted to farming enterprises.

#### **3.4.1. Property History for the David Griffith Farm**

A review of historic maps revealed that the region in which the project area is located was just beginning to be developed as farmland at the end of the eighteenth century. Research of probate records identified the chain of ownership of the two historic properties in the project area beginning in the late 1700s. The William Basil Mobley property originally had been part of the land owned by David Griffith.

The project area lies within the boundaries of the original 1,421 acres of Cooke's Inheritance patented in 1785 (Patent IC#E/331). Nathan Cooke was born near Gaithersburg in 1803, and died in 1869, having lived a life as a farmer in the Gaithersburg area north of the residence of Thomas Griffith. The earliest map of recorded farmsteads in Montgomery County was the 1794 Dennis Griffith *Map of the State of Maryland*. It shows that the land owned by Nathan Cooke in the project area was still undeveloped at the end of the eighteenth century.

In 1860, Nathan Cooke and his wife Mary Cooke sold tracts of Cooke's Inheritance to Thomas Griffith (Liber JGH 7, Folio 640). Thomas Griffith, and his wife Elizabeth Griffith, of Edgehill, Maryland, developed and farmed the land. During the Civil War, the Griffiths of the Laytonsville-Unity area were Confederate sympathizers. Four sons of Thomas and Elizabeth Griffith (Festus, Frank, Thomas, and David) joined the Army of the Confederate States of America. On May 15, 1862, eighteen men met in Richmond and organized Company A, First Maryland Cavalry. Ridgely Brown was Captain of Company A, with Thomas Griffith as 1<sup>st</sup> Lieutenant, and David Griffith as a Lieutenant (Lantz 1905). The 1865 Martenet and Bond *Map of Montgomery County* recorded lands that were being farmed and locates a structure in the project area next to the name "Th. Griffith". In 1866, Thomas Griffith sold 169 acres of Cooke's Inheritance to his son David Griffith (Liber EBP 2, Folio 446).

The two closest village communities to the project area were Redland and Derwood. Both of these communities saw increased development after the Metropolitan Branch of the Baltimore and Ohio Railroad was completed in 1873. By 1879, David Griffith had become an established farmer in the Redland area. He is also known to have served as Judge of the Orphans' Court in Montgomery County (Boyd 1879:139; *Biographical Cyclopedia of Representative Men of Maryland* 1879:203). David Griffith's residential farmstead was recorded in 1879 on the Hopkins' *Atlas of Fifteen Miles Around Washington* (1879) as the "David Griffith, Res." (Figure 3.2.)

A railroad station was built in Derwood in 1889 that functioned as a commuter stop and freight depot for local agricultural. Although Derwood had two railroad stations, the greatest number of passengers came from Gaithersburg and Rockville, urban centers that grew in response to the railroad. Ten trains per day left Derwood bound for Union Station in Washington, DC. In spite of their proximity to the railroad, neither Redland nor Derwood experienced the same kind of urban

growth as Rockville or Gaithersburg. They remained small farm oriented communities servicing local farms including the Griffith and Mobley farmsteads in the project area. By 1890, the Redland crossroads area had a population of fifty. Derwood's population in 1905 was 72 and grew to 225 by 1928. By the early 1900s, the automobile began to make inroads as a popular means of travel, and the truck liberated the farmer from dependency on the railroad for hauling farm products to markets, especially to Washington, DC (Darsie 1998; Seymour 1986:1,28).



Figure 3.2. - Project Area ca. 1879 (Adapted from Hopkins 1879).

### 3.4.2. Property History for the William B. Mobley Property

William Basil Mobley (1896-1974) was the great grandson of George Washington Mobley (1817-1881), and the son of Walter Washington Mobley (1869-1936) and wife Elizabeth Stone Griffith (1868-1957). William Basil Mobley, also known as Basil Mobley, was born on his father's farm at Derwood. He went to school in Washington, DC, and served in World War I. He went on to study agriculture at the University of Wisconsin in Madison, where he received a degree in 1928 (Montgomery County Historical Society Vertical File "Mobley Family").



In 1936, William B. Mobley acquired 452.8 acres of land from the heirs of David Griffith (Liber 652, Folio 250) and property from his father, Walter Mobley, who died that year. In his will, Walter Mobley stated that he and his son William, the tenant, ran the farm together where they grew wheat and operated a dairy. The will also states that Walter resided at the "mansion house on said farm" and that "My son has resided in his own home nearby," possibly in one of the tenant houses (Mobley will: Liber HGC 17, Folio 397, page 20). Mr. Jeff Young, who now leases the property, corroborated the existence of the mansion house. Mr. Young recalled that the house stood to the northeast of the present dairy barn and that it burned down approximately 30 years ago when he was a child (Mr. Jeff Young 2001: personal communication).

Tax assessments of William B. Mobley property in 1936 record a dwelling valued at \$2,000 and a barn valued at \$1,000, but tax assessments for 1944 list a complex of buildings that included a house (\$2,000), two tenant houses (\$1,000 and \$400), a cow barn (\$4,500), two silos (\$1,200), a barrack (\$200), and other unspecified buildings (\$200) located on approximately 424 acres for land. In 1944, the USGS map for the Gaithersburg quadrant records two structures on the Mobley property.

As a dairy farmer, William B. Mobley raised Holstein cows. He also served as vice-president of the Maryland-Virginia Milk Producers Association and he was a member of the boards of the Maryland National Bank and the Mutual Insurance Company of Sandy Spring (Montgomery County Historical Society Vertical File "Mobley Family").

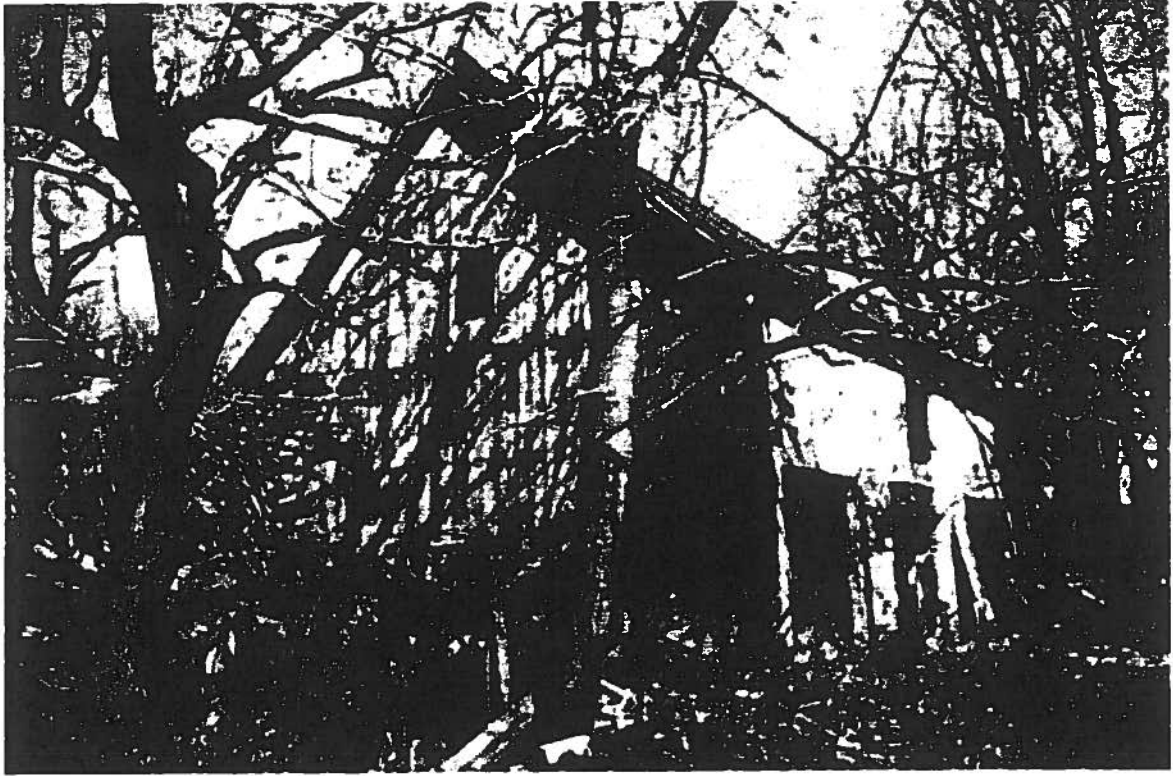
In 1961, William Basil Mobley sold the property containing 426 acres of land to Redland, Inc (Liber 2819, Folio 62). Two months later, Redland, Inc. sold the land to Saul M. Schwartzback and Paul Wartsman, joint tenants (Liber 2832, Folio 169), who held it until 1966 when they sold 31.5 acres to the Montgomery County Board of Education (Liber 2832, Folio 169); at that time the property was called the Laytonia High School Site. In 1996, Montgomery County acquired the land and buildings from the Board of Education (Liber 14440, Folio 234). At the time of the instant survey, Mr. Jeff Young was leasing the buildings and the surrounding pasturage. He runs a firewood business and raises beef cattle that are being held in a large fenced-in pen next to the barn. Mr. Young said that he, and his father before him, has leased the land for the past forty years (Jeff Young 2001: personal communication). Today the dairy barn, the tenant house, and a shed built by Jeff Young are the only structures standing on the property.

### **3.5. HISTORIC RESOURCE SURVEY**

The files of the Maryland Inventory of Historic Places (MIHP) list four buildings on two previously documented historic properties within the project area: the David Griffith Farm (MIHP 22-21); and the William Basil Mobley Property (MIHP 22-43). The MIHP files for the David Griffith site document a house, now demolished, and a corncrib, still standing. The MIHP files for the Mobley site document two standing structures, a dairy barn and a tenant house. The buildings in the project area represent farming structures built from approximately the mid-1800s to the 1940s.

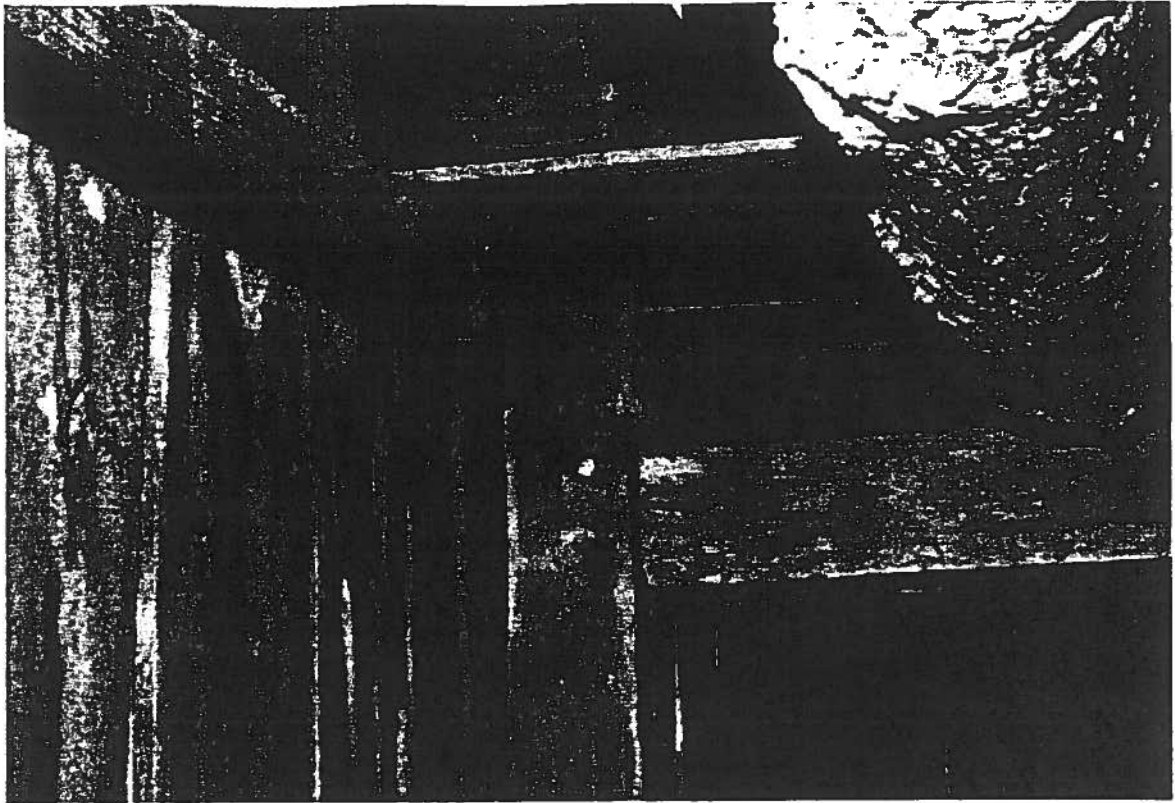
### **M:22-21    The David Griffith Farm Corncrib**

The David Griffith corncrib (Figure 3.3.) was built between approximately 1850 and 1900. This assessment is based on the type of construction and the treatment of the building materials used in the structure. The David Griffith corncrib is a two-story frame building constructed in part of hand hewn timbers and milled lumber joined by wooden pegs pounded into holes bored through mortise-and-tenon joints (Figure 3.4.)



**Figure 3.3. - David Griffith Corncrib.**

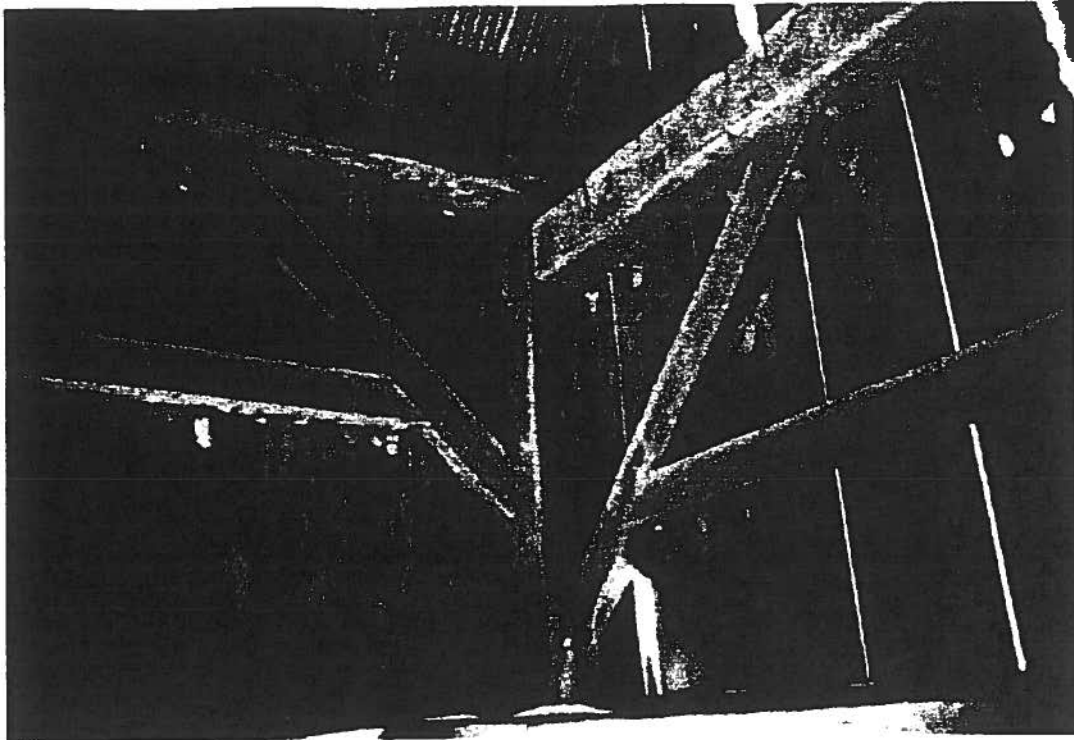
The hewn timbers are found as posts in the corners, in the sidewalls, and as cross beams. There are seven ceiling joists consisting of undressed timbers running the entire north-south length of the corncrib (Figure 3.7.). Most of the weight of the timbers rests on sawn tie beams connecting with a pair of hewn timbers in the middle of each sidewall. The ends of the joists are held up by wall bridging members in the gable ends (Figure 3.5.). The wall timber posts are about three feet apart and the area below the tie beams was used as a stanchion that has a plank floor.



**Figure 3.4. - David Griffith Corncrib: Wall Mortise-and-Tenon Joinery.**

In the loft, pegged mortise-and-tenon joints also hold posts, beams and braces together. (Figure 3.5.). The loft was used for storing hay and the bottom bays for storing corn, animals, and equipment (Mr. Jeff Young 2001: personal communication). The loading doors in the loft and the ground floor bay doors of the corncrib are missing, but photographic documentation of the Griffith corncrib carried out in 1972 by Michael F. Dwyer (Historic Resources Manager, Needwood Mansion, PDD M-NCPPC) shows that there were doors for all openings in the loft and the ground floor. According to Jeff Young, the corncrib was used to store hay in the loft and corn in the ground floor bays and gable end additions (Mr. Jeff Young, 2001).

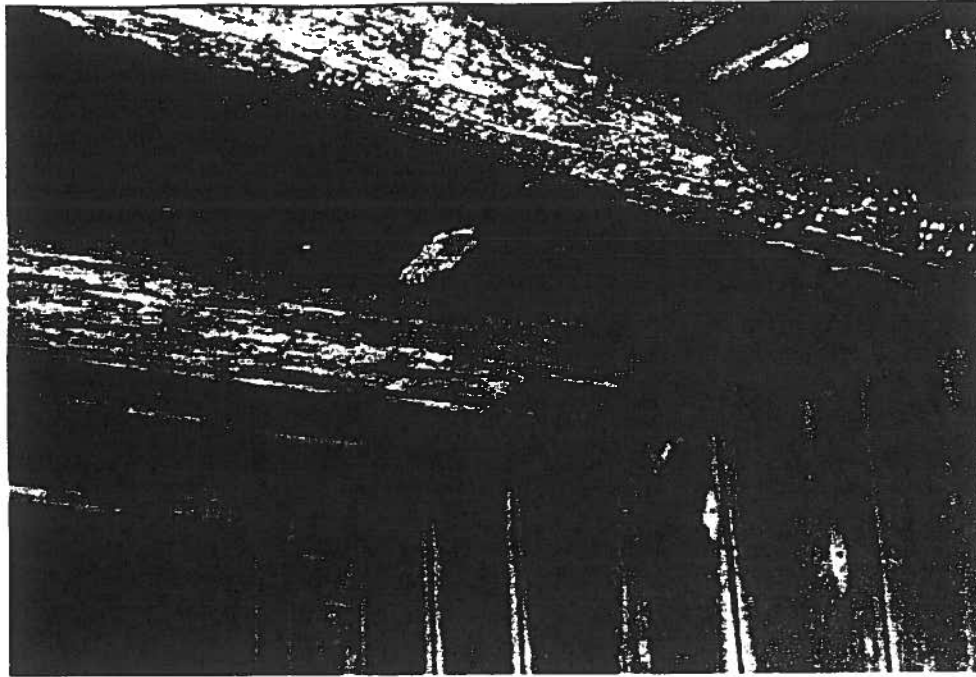
The north end and east side of the Griffith corncrib sit on the ground and the west side and north gable end addition are set off the ground on fieldstones (Figure 3.6.). Corncribs were built in various styles and sizes. Some architectural historians suggest that the reason for this may be that the progress of agricultural practice throughout the mid-Atlantic was uneven; consequently, while a particular style of corncrib was being discontinued in one region, an earlier style was being resurrected in another region but with modern refinements (Lanier and Herman 1997:191-193). It may also be that the use of corncribs was not dictated by strict style choices, that any suitable structure would do for storing corn. This may explain the construction of the Griffith corncrib, where the main members of the framing structure, consisting of hand-hewn timbers, were either recycled from another building or the structure was renovated at a point in time when milled lumber had become more readily available.



**Figure 3.5. - David Griffith Corncrib: Loft Joinery Detail.**



**Figure 3.6. - David Griffith Corncrib: Foundation Detail.**



**Figure 3.7. - David Griffith Corncrib: Joists and Wall Detail.**

### **M:22-43 William Basil Mobley Dairy Barn**

The type of dairy barn found on the William Basil Mobley property is known as a Wisconsin Dairy Barn (Figure 3.8.). Based on tax assessments for the Mobley property, the dairy barn was constructed between 1936 and 1944. The Wisconsin Dairy Barn originated at the Wisconsin Agricultural Experiment Station at Madison, Wisconsin, during the second decade of the twentieth century; it remained a popular agricultural building form into the 1930s. It was designed to provide an efficient structure for dairy farming. In contrast to other barn types in the United States, the diffusion patterns of the Wisconsin Dairy Barn occurred more eastward throughout the Dairy Belt than westward of Wisconsin, and included important concentrations in Virginia and Maryland including the region in which the project area is located. Local dairy industries are based on supplying milk to nearby urban consumers.

The dairy industry in southern Montgomery County served the urban markets of Washington, DC and the growing cities of Gaithersburg and Rockville. "Consequently, its [that is, dairy farming] distribution reflects those areas in which dairying is the most effective and prosperous type of agriculture, those areas where dairy income is highest" (Noble 1984:61). In 1975, between 10-25 percent of all barns in the western Chesapeake Bay region were Wisconsin Dairy Barns. Although the Wisconsin Dairy Barn was designed to better suit the growing dairy industry in Wisconsin, its many design advantages were appreciated in other regions of America's developing Dairy Belt, primarily in the northeastern portion of the country from the Great Lakes to the Atlantic Ocean (Noble 1984:60,61).

The Wisconsin Dairy Barn could accommodate cattle herds of various sizes. The Mobley barn exhibits the barn type's two main advantages: good interior lighting and ventilation. Because of the structure's relative narrowness, a large number of small windows were employed for excellent lighting conditions. The barn interior has two rows of stanchions along the sides for cattle. A central aisle runs from gable end to gable end, while a transverse aisle connects side doors midway along the barn. Ceiling height is about 8-9 feet in order to conserve heat generated by the animals. Ventilation, a concern during both winter and summer months, is dealt with by interior ventilator chutes and conspicuous ventilators placed on the peak of the roof. It is built with a gambrel roof held up by lumber-truss construction; the loft provides a very large space to store hay and animal feed. The loft area is reached by an earthen ramp at the southern end in order to load hay directly, and is large enough to store farm machinery (Noble 1984:45,46,60,61).

The William Basil Mobley dairy barn is oriented north-south at right angles to a dirt road extending eastward from Muncaster Mill Road. Concrete blocks form the barn's basement walls and there is concrete stanchion floor evident. The west and east sidewalls have rows of evenly spaced, double-hung windows with hog entries cut out below the windows (Figure 3.9.)

Extending from the concrete block walls is the loft area beneath a gambrel roof that is covered in standing-seam metal with flared eaves. The gambrel ends of the loft are covered with horizontal board siding. The loft area has two-tiers of loft doors at the south end earthen ramp. Three metal ridge ventilators project from the peak of the gambrel roof. They are of a type that was very popular in the twentieth century in livestock and dairying areas.



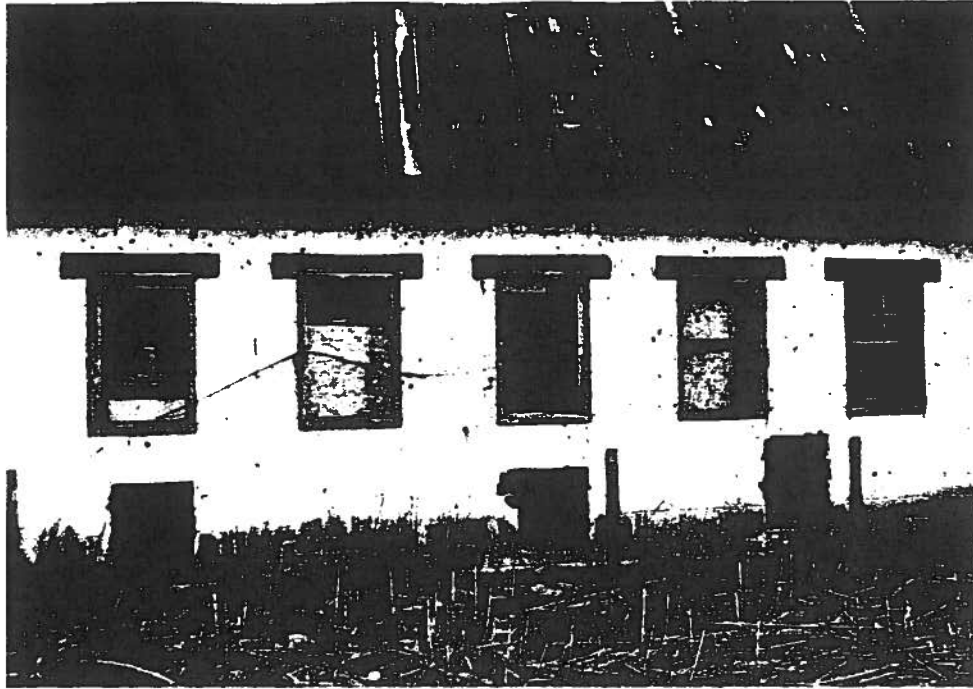


**Figure 3.8. - Mobley Farm: Dairy Barn.**

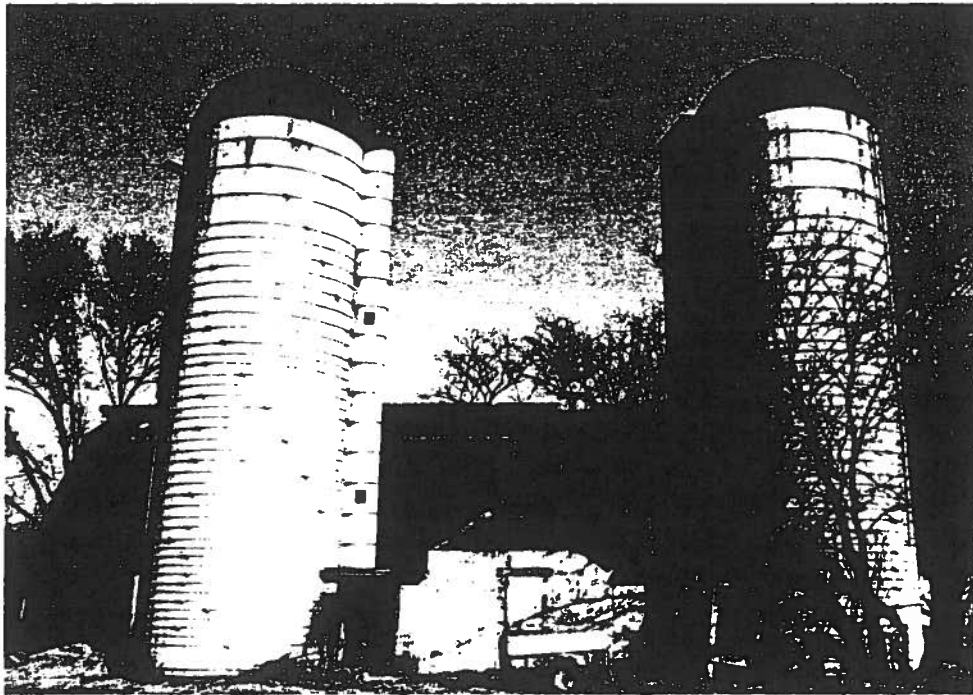
Two metal silos stand approximately 20 feet from the west wall midway along the barn. The silos are reinforced with iron bands and turnbuckles. Exterior metal ladders lead to entryways in the metal domed roofs of the silos. Each silo also has an enclosed silage chute that empties into a one-story gabled concrete block hut (Figure 3.10.). The hut connects to the barn and extends westward the barn's interior transverse aisle.

The east elevation of the barn also has an extension of the interior transverse aisle. Approximately 40 feet long, it is a one-story, concrete block wing with a gable roof. It was the dairy barn's milk parlor. The roof is covered with standing-seam metal and the gable peak has horizontal board siding. There are two small metal ventilators evenly spaced on the roof's peak (Figure 3.11.). There are four entries in the east wing. Three are on the wing's south side, and one is an off-center entrance through the east gable end. Currently, there is a shed in the corner formed by the barn and milk parlor. It extends from the east wing's breezeway and was constructed by Mr. Mr. Jeff Young approximately 20 years ago (Mr. Jeff Young 2001: personal communication).

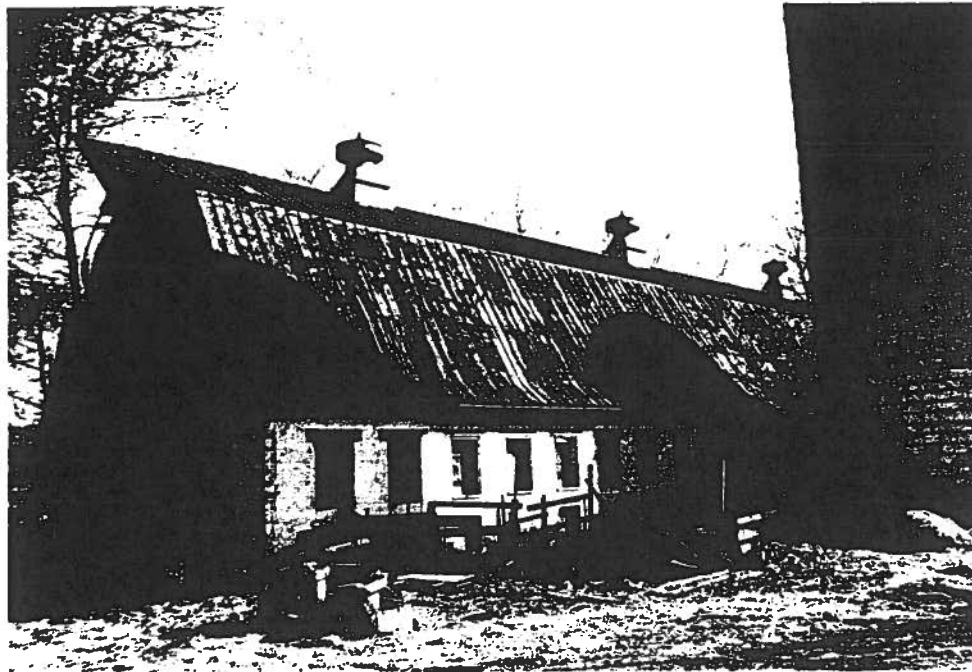




**Figure 3.9. - Mobley Farm Dairy Barn: Windows and Hog Entries.**



**Figure 3.10. - Mobley Farm Dairy Barn: Silos.**



**Figure 3.11. - Mobley Farm Dairy Barn: Exterior Details (ventilators, hay hood).**

### **The William Basil Mobley Farm Tenant House**

The William Basil Mobley tenant house is a single story, wood frame building (Figure 3.12.). It is a shotgun house with additions on both gable ends and along the east side (Figure 3.13.). This narrow house form became popular during the era of railroad expansion into the 1850s in urban settings, and eventually became "a dominant folk form well into the 20<sup>th</sup>-century" (McAlester 1984:90).

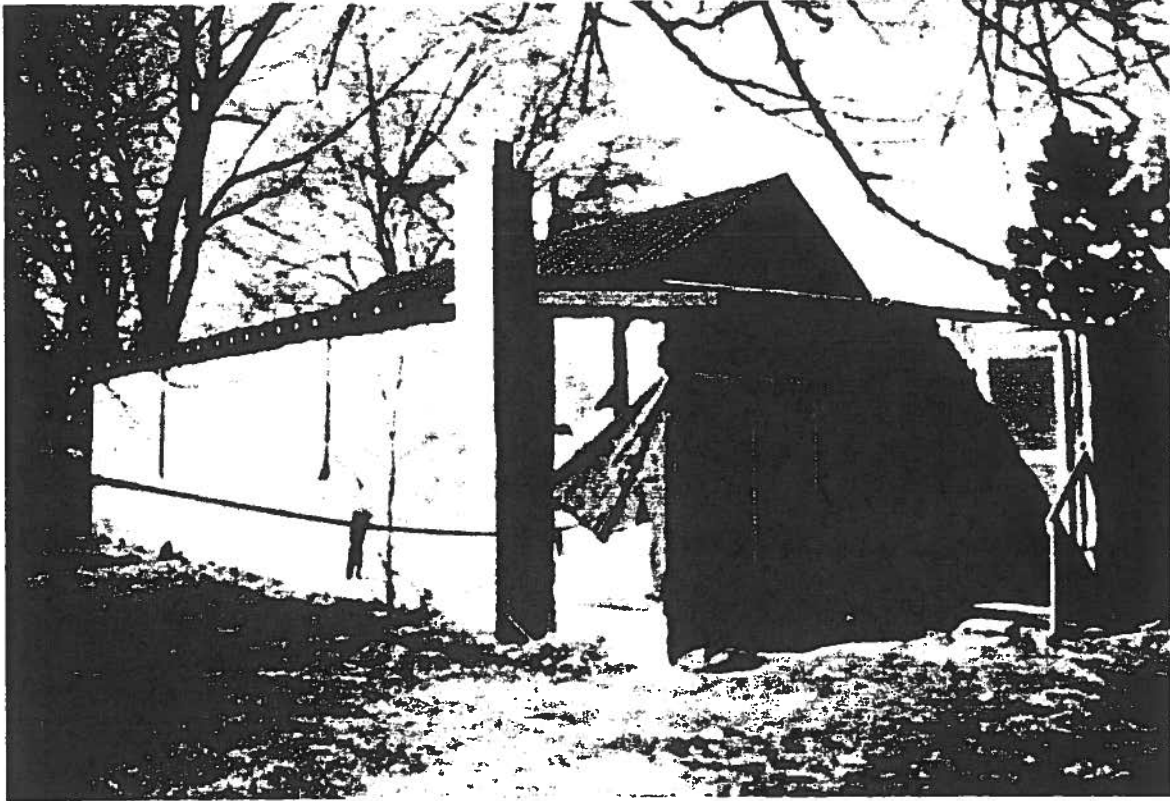
The tenant house is oriented in a north-south direction and is located about 100 feet east of the barn. It is a single-story wood frame building. The general design of the Mobley shotgun tenant house includes a parlor plan with the main entrance at the gable end. This one room wide building extended the living quarters back two rooms deep. One room is the living room, which also leads to the east side addition, and the second room contains the building's wood stove. Originally the shotgun house was designed to accommodate the narrow lots of cities, but in agricultural settings, the narrow gable-front house may have been one of a number of buildings vying for space within a farm's work area. It became a popular dwelling meant for less affluent occupants such as tenant farmers after the 1830s (Lanier and Herman 1997:16; Gottfried 1985:184-185).

Originally the one-story gable front house, approximately 16-by-30 feet, did not have a toilet or kitchen. With time, interior and exterior configurations expanded. The simple floor plan was elaborated to include toilet and bath, a kitchen in the north gable end shed addition, and an extra bedroom as an east side addition. The north addition has a shed roof and has been converted into a kitchen with a small covered porch entry. The south gable end addition with shed roof is an enclosed porch. The east side bedroom addition appears to have been built at the same time as the main block judging from the wooden materials used in the architrave of the door between the living room and the addition.

There are seven 6/6 double-hung windows in the house: one east of the porch addition on the front gable end; one on the south elevation of the eastern addition; two equally spaced windows on the west elevation of the main block; one on the north shed addition; and two on the east elevation of the eastern shed addition. There are two chimneys, one concrete block chimney located midway along the roof peak, and one exterior cinder block in the northeast corner of one of the north additions. The roof is covered in standing-seam metal, which extends over east side addition. The house is clad in sheets of asphalt with the south gable end left uncovered revealing wood siding. The house rests on a concrete-block foundation.



**Figure 3.12. - Mobley Farm: Tenant House (front elevation).**



**Figure 3.13. - Mobley Farm: Tenant House (rear elevation).**

### **3.6. NATIONAL REGISTER OF HISTORIC PLACES EVALUATION**

#### **3.6.1. The Corn Crib, Ca. 1850-1900**

The corncrib does not appear to be eligible for listing in the National Register of Historic Places. In the case of the David Griffith corncrib, the integrity of the building built in the late 1800s has been compromised by its deterioration (neglect) and its isolation from its historic agricultural landscape. Since the David Griffith farm was first documented, many of its buildings and structures have been razed. The corncrib is the last remaining standing structure from the David Griffith farmstead. Although the farmstead was typical of nineteenth century Montgomery County farms — important components in the region's economic and social history — there are other, better preserved examples eligible for listing in the National Register of Historic Places under Criterion A. The David Griffith farm does not appear to be eligible for listing in the National Register of Historic Places under Criteria A or B.

More specifically, the corncrib lacks integrity of materials because it is in dilapidated condition. The north gable end addition has collapsed and the south end gable addition is badly decayed along the bottom wall. The wood siding is deteriorated in spots throughout the structure. All original doors to the loft area and to the ground floor bays are missing. The David Griffith Farm, represented by its only surviving building, a corncrib, does not appear to be eligible for listing in the National Register of Historic Places under Criterion C.

### **3.6.2. William Basil Mobley Farm**

Two buildings comprise the William Basil Mobley Farm: a barn and a frame tenant house. The farm itself does not appear to be eligible for listing in the National Register of Historic Places under Criterion A or B. Although once an active twentieth century dairy farm, there are no distinguishing characteristics of this common vernacular agricultural property type that appear to meet the Criteria for Evaluation standards under Criteria A and B. Each of the two surviving buildings located at this farm do not appear to be eligible for listing in the National Register of Historic Places under Criterion C. They are discussed below. Furthermore, in 1999, this property was determined not eligible for listing in the National Register of Historic Places by the Maryland Historical Trust.

### **3.6.3. The Wisconsin Dairy Barn, Ca. 1936-1944**

The dairy barn lacks integrity of materials due to its dilapidated condition. The dairy barn has been modified by alterations such as the shed roof addition on the east side, hog entries have been knocked through the exterior side walls, and doorways on the west and east walls of the main block have been bricked in. The structure also suffers from neglect. Most of the 6/6 double-hung windows throughout the barn are missing and have been boarded up, either from the inside or from the outside. The metal roof is badly rusted and has a large hole at the south end. Beneath the opening in the roof, a significant portion of the loft floor is badly rotted. The entryways in the metal domes of the silos are open and are badly rusted. The barn no longer retains its historical integrity of setting, feeling, and association.

### **3.6.4. The Tenant House, Ca. 1930s**

The integrity of the tenant house, built ca. 1930, has been compromised by its deteriorated condition and loss of association with other outbuildings and the farmhouse, which is no longer standing. The house is a common frame vernacular type that has been altered by three additions to the north and south ends. The original siding has been covered by asbestos sheeting on three sides. A recent addition, an exterior chimney of cinder blocks, stands at the northeast corner of the house.

## **3.7. SUMMARY AND RECOMMENDATIONS**

URS/Dames & Moore conducted an historic resource survey of two properties in the vicinity of Redland, Montgomery County, Maryland. The David Griffith Farm and the William Basil Mobley Farm are located in an area slated for development by the Maryland-National Capital Park and Planning Commission. Both of the historic properties, initially identified by local preservationists during the 1970s (David Griffith Farm) and by a cultural resource management consultant (William Basil Mobley Farm), were determined to have substantially deteriorated in the intervening decades since the Maryland Inventory of Historic Properties forms first were completed documenting them. Both properties exhibited advanced neglect and deterioration, as well as the loss of previously documented buildings (houses and agricultural outbuildings). The two historic properties were documented through photography and historical research. Each was

evaluated for its eligibility for listing in the National Register of Historic Places. The Maryland Historical Trust previously (1999) determined one property, the William Basil Mobley Farm, not eligible for listing in the National Register of Historic Places. The David Griffith Farm was evaluated using the National Register Criteria for Evaluation and "Seven Aspects of Integrity" and it does not appear to be eligible for listing in the National Register of Historic Places.

Because the properties do not appear to be eligible for listing in the National Register of Historic Places (and, furthermore, do not appear to be locally significant), no additional history/architectural history work is recommended. The properties, both lacking integrity and in advanced stages of deterioration, do not warrant any additional historic preservation/mitigation efforts. Development of the proposed Laytonia Recreational Park should be allowed to proceed.



### 3.8. REFERENCES CITED

- Biographical Cyclopedia of Representative Men of Maryland and the District of Columbia.  
1879 Baltimore: National Biographical Publishing Co.
- Boyd, T.H.S.  
1879 *The History of Montgomery County, Maryland from its Earliest Settlement in 1650 to 1879.* T.H.S. Boyd, Clarksburg, Maryland.
- Darsie, Julie  
1998 Maryland Inventory of Historic Properties Form M:22-42 (PACS 9.1) ("Redland School Property"). Maryland Historical Trust, Crownsville, Maryland.
- Dwyer, Michael F.  
1975 Maryland Inventory of Historic Properties Form M:22-21 ("David Griffith Farm"). Crownsville, Maryland.
- Farquhar, Roger B.  
1952 *Old Homes and History of Montgomery County, Maryland.* Washington, DC: Judd & Detweiler, Inc.
- Gottfried, Herbert and Jan Jennings  
1985 *American Vernacular Design, 1870-1940: An Illustrated Glossary.* New York: Van Nostrand Reinhold Co.
- Griffith, Dennis  
1794 *Map of the State of Maryland.* Philadelphia: Engraved by J. Thackara and J. Vallance.
- Hiebert, Ray Eldon and Richard K. MacMaster  
1976 *Grateful Remembrance: The Story of Montgomery County, Maryland.* Montgomery County Government and Montgomery County Historical Society, Rockville, Maryland.
- Hopkins, G.M.  
1879 *Atlas of Fifteen Miles Around Washington Including the County of Montgomery, Maryland.* Philadelphia: G.M. Hopkins, C.E.
- Lanier, Gabrielle M. and Bernard L. Herman  
1997 *Everyday Architecture of the Mid-Atlantic: Looking at Buildings and Landscape.* Baltimore: The Johns Hopkins University Press.
- Lantz, Emily E.  
1905 "Griffith Family and Arms" *The Baltimore Sun*, February 12, 1905.



Martenet, Simon J. and Isaac Bond

1865 *Martenet and Bond's Map of Montgomery County, Maryland*, Baltimore: Schmidt & Trowe.

Maryland Historical Trust

2000 *Standards and Guidelines for Architectural and Historical Investigations in Maryland*. Maryland Historical Trust, Crownsville, Maryland.

McGuckian, Eileen

1986 "Road Wars Date Back to Colonial Conflicts." *The Gazette*, Oct. 1, 1986.

Montgomery County Historical Society

n.d. Vertical Files: "Cooke Family," "Mobley Family," "Derwood," "Redland"

Muncaster, William E.

1919 "Harriet Cooke Robertson" in *Year Book of the American Clan Gregor Society*. Containing the Proceedings of the Seventeenth and Eighteenth Annual Gatherings, 1926 and 1927. Richmond, Virginia: The American Clan Gregor Society.

National Park Service

1995 *How to Apply the National Register Criteria for Evaluation*. National Register Bulletin No. 15. National Park Service, National Register of Historic Places, Washington, D.C.

Noble, Allen G.

1984 *Wood, Brick, and Stone: The North American Settlement Landscape*. Vol. 2: *Barns and Farm Structures*. Amherst: The University of Massachusetts Press.

P.A.C. Spero and Company

1998 Maryland Historical Trust Addendum Sheet. Montgomery-Prince George's Short-term Congestion Relief. Maryland Inventory of Historic Properties Form M:22-22 ("Cooke's Range/Pope Farm") Crownsville, Maryland.

Sanderlin, Walter S.

1946 *The Great National Project: A History of the Chesapeake and Ohio Canal*. Baltimore: The Johns Hopkins Press.

Scharf, Thomas J.

1882 *History of Western Maryland*. Baltimore: Regional Publishing Co.

Shaw, Ronald E.

1990 *Canals for a Nation: The Canal Era in the United States, 1790-1860*. Lexington, Kentucky: The University Press of Kentucky.

- Seymour, Jo  
1986 *Derwood Days, April 26—May 4, 1986. Centennial Celebration.* Compiled from information provided by Carlos P. Avery and the Montgomery County Historic Preservation Commission. Derwood, Maryland.
- Sween, Jane C.  
1984 *Montgomery County: Two Centuries of Change.* Woodland Hills, California: Windsor Publications, Inc.
- Thompson, Norma  
1949 *Western Gateway to the National Capital.* Published by the author. Washington, DC.
- Wesler, Kit W., Gordon J. Fine, Dennis J. Pogue, Patricia A. Sternheimer, Aileen F. Button, E. Glyn Furguson, and Alvin H. Luckenbach  
1981 *The Maryland Department of Transportation Archaeological Resources Survey, Volume III: The Piedmont.* Maryland Historical Trust Manuscript Series 6, Annapolis, Maryland.
- Wilsatch, Paul  
1931 *Tidewater Maryland.* Indianapolis: The Bobbs-Merrill Co.
- Young, Jeff  
2001 Personal communication.



## **4. FACILITY MASTER PLAN**

### **4.1. DESIGN PROCESS**

#### **4.1.1. Location**

The Laytonia Recreational Park site is bounded on the south by Muncaster Mill Road, on the east by Airpark Road, on the north by the M-NCPPC Pope Farm nursery, and on the east by the New Life Seventh Day Adventist Church. West of this church, a small, narrow strip of land extends north to the park property. This access to the Pope Farm property is bounded on the west by the Covenant Life Church. As noted in the executive summary, the Laytonia Site consists of three components, a Montgomery County surplus school site of 31.507 acres, a subdivision dedication of 16.599 acres, and a small tract purchased from the adjacent Seventh Day Adventist Church, 2.628 acres. The site and its surrounding context are shown in the aerial photograph, Figure 4.1.

#### **4.1.2. Environmental Features**

The natural and cultural resource information identified in the studies described in Parts 2 and 3 respectively of this document. The site is predominantly rolling pasture, with forest cover limited to 9.63 acres in contiguous forest, in six forest stand types, and 1.66 acres in four fence line/hedgerow communities. No jurisdictional wetlands are located on site, although wetlands exist on the Pope Farm site, just north of the Laytonia Site, and their buffer extends into the Laytonia site. Two intermittent streams drain to the north of the site. The western stream, originating off-site, requires a 150' stream valley buffer. A stream originating as seep on the east part of site, and associated with steep slopes requires a 200' stream valley buffer. A summary of this information is shown on Figure 4.2. The Laytonia site contains two historic sites, although both have been determined to warrant no further historic preservation or mitigation. The David Griffith Farm (MIHP 22-21) consists of the original land holding and remains of an 1850-1900-era corncrib. The William B. Mobley Property (MIHP 22-43) includes a Wisconsin Dairy Barn constructed between 1936 and 1944 and a tenant house. The Maryland Historical Trust determined in 1999 that the William Basil Mobley Farm was not eligible for listing in the National Register of Historic Places. Similarly, based on National Register Criteria, the David Griffin Farm does not appear to be eligible for listing in the National Register of Historic Places. Both sites lack integrity, and are in advanced stages of deterioration.

#### **4.1.3. Access**

Access to the Laytonia Park site was one of the chief determinants of the eventual preferred plan. The planning team evaluated approximately six locations where some form of vehicular access might be possible. Their locations are shown in Figure 4.3.

Locations 1 and 2 are on the Airpark Road. Location 1 is approximately 2,500 feet north of the Muncaster Mill road intersection, and sited to provide adequate sight distance to the north and south. Based on discussions with Montgomery County Department of Public Works and Transportation, and the Maryland State Highway Administration, this is the preferred location for a median break and full vehicular accessibility. The second location, closer to the Muncaster Mill

intersection, and opposite a drive entrance, is too close to the intersection for a medial brake, according to County transportation officials. Options 3a and 3b are west of the median, to be constructed in Muncaster Mill Road as part of MSHA improvements. According to MSHA, only a right-in right-out entrance will be permitted.

Option 4 is the location of the existing strip of land providing access to the Pope Farm Nursery. Its narrow width (50 feet) and limitation to right-in, right-out access make it unsuitable except for possible maintenance vehicle use. Location 5 is the likely future exit point from the Covenant Life Church parking lot. Development conditions adopted in conjunction with the approval of the Church's expansion require the parking lot exit to Airpark Road. An unimproved road extends into the Pope Farm Nursery at Location 6, crossing the nearby stream at a culvert.

#### **4.1.4. Park Program**

While an initial program was included in the planning team's original scope of work, the team met with representatives from park facilities management and planning staff, to define a more detailed program of potential recreation components. Staff indicated that, as a "Recreational Park," the final program for Laytonia should focus on meeting active recreation needs.

- Tournament quality baseball field complex including at least some lighted fields;
- Other sports fields, specifically soccer, if these could be incorporated into the site;
- Playground;
- In-line skating facility (to establish spatial planning requirements, this was defined as a roller-hockey rink);
- Support maintenance facility;
- Access roads, parking and trails.

The planning team also met with the Montgomery County Department of Public Libraries to understand the potential library program for the site. Based on comparable development in the County, they recommended that plans accommodate a 35,000 - 40,00 square foot building, with approximately 100 - 120 parking spaces. The Department provided copies of architectural plans for a facility of comparable size. Typically such sites require from 6 to 8 acres of land.



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EXISTING AERIAL PHOTO  
**LAYTONIA RECREATIONAL PARK AND LIBRARY**  
MARYLAND-NATIONAL CAPITAL PARK AND PLANNING COMMISSION



**Figure 4.1. - Existing Aerial Photo.**

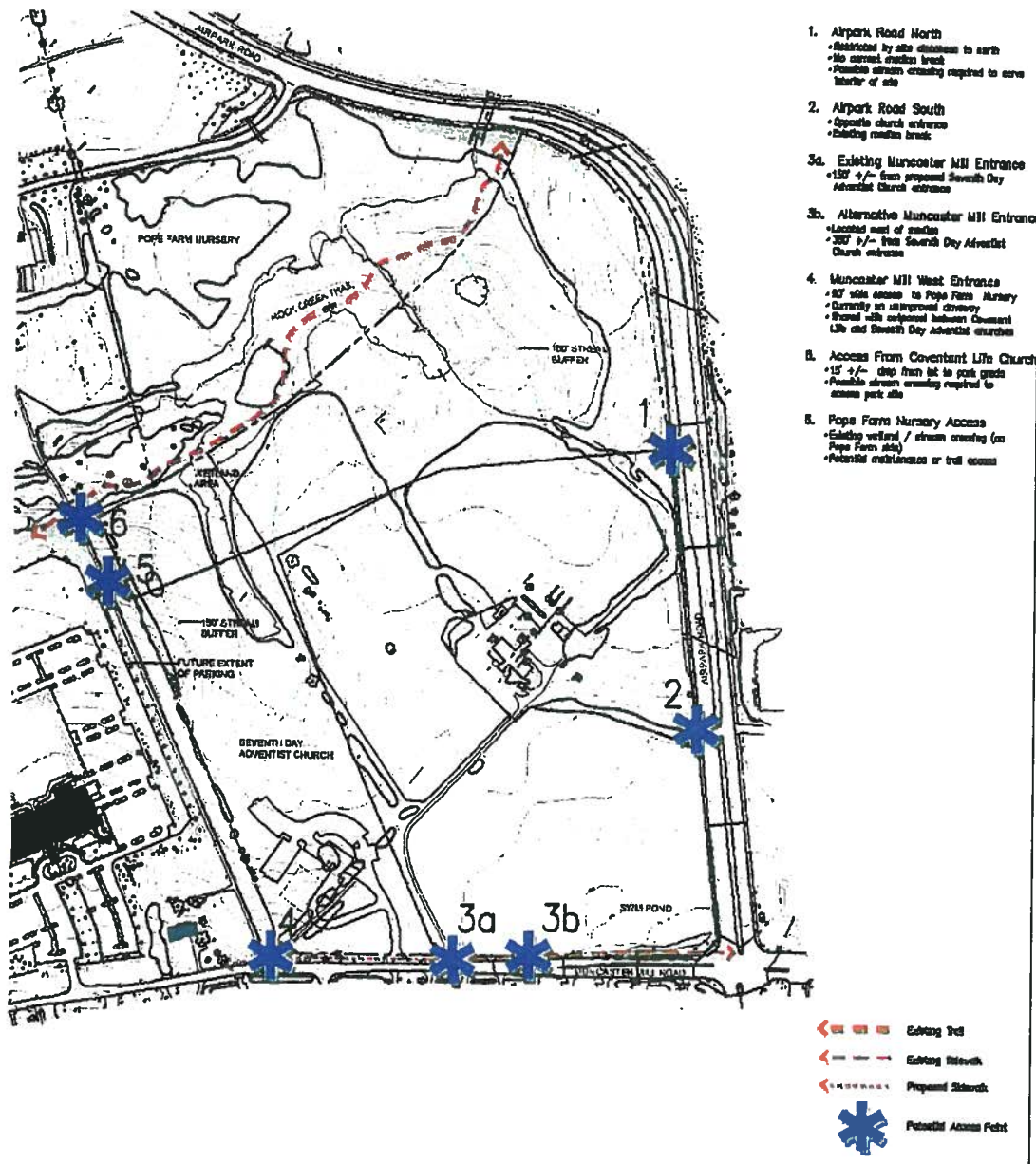


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SITE ANALYSIS  
**LAYTONIA RECREATIONAL PARK**  
 MARYLAND-NATIONAL CAPITAL PARKS AND PLANNING COMMISSION



Figure 4.2. - Site Analysis.



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SITE ACCESS ANALYSIS  
**LAYTONIA RECREATIONAL PARK**  
 MARYLAND-NATIONAL CAPITAL PARKS AND PLANNING COMMISSION



Figure 4.3. - Site Access Analysis.





#### **4.1.5. Planning Process**

Developing a successful master plan for a park requires that planners balance three major elements – what the site can physically support, what good system-wide planning indicates and what the community desires. As described in the initial parts of this study, the Laytonia site is relatively unencumbered by environmental or other factors, with the exception of limited access locations. Early on, however, the entire planning team and staff agreed on the preservation of forest cover contiguous to the adjacent Pope Farm property.

During the course of concept development and team review, staff periodically referred to ongoing planning for other facilities on a County-wide basis, to ensure that the final program for Laytonia would fulfill established needs. Earlier requests to include soccer fields were revised, and the number and quality of desired baseball fields was increased to meet current and projected needs. The adopted 1998 Park, Recreation, and Open Space Master Plan indicates a need for 10 additional countywide (regional and recreational park) ballfields by the year 2010. Currently, there are only 9 regulation-sized baseball fields throughout Montgomery County. A number of soccer fields have been added for both league play and County use through the development of South Germantown Recreational Park.

A series of five monthly staff level meetings were held, to review concepts and refine the program as the facility plan progressed. Later in the process, a publicly advertised meeting was held, including representatives from local elected officials and advisory boards. In general, community members were concerned that adequate non-vehicular access be provide to the park for local use. In addition, recreational ballfield users asked that concession facilities be included in the ballfield complex.

The planning team developed and discussed a series of six different concept plans, with later plans often representing iterative refinements of earlier recommendations. These alternatives were designed to explore a number of planning themes:

- Multiple access and circulation options
- Alternative land use schemes
- Variations in field sizes and locations
- Different relationships between open space and programmed uses

Illustrations of each of the concepts are shown in Figure 4.4.

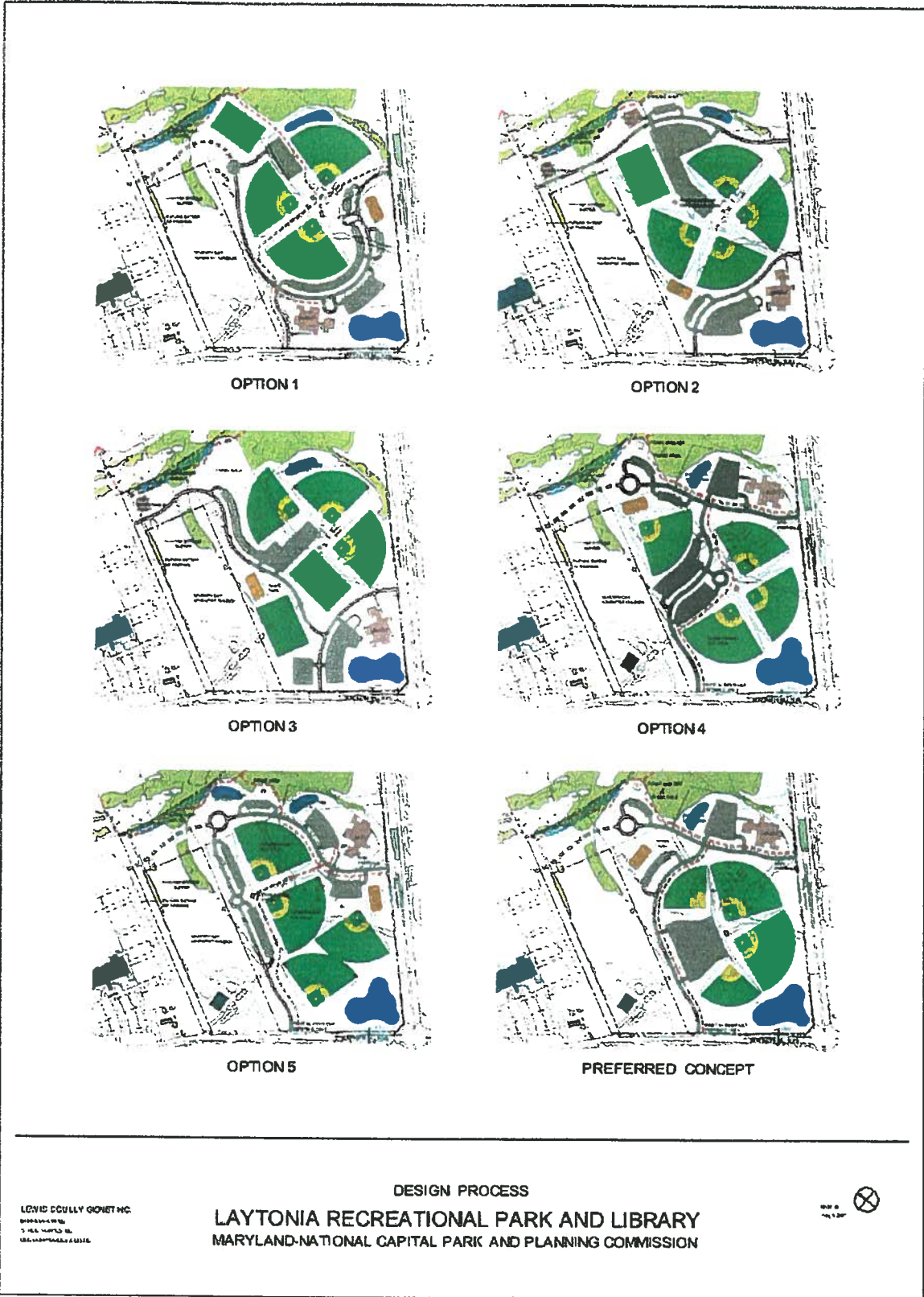


Figure 4.4. - Design Process.

## 4.2. PREFERRED ALTERNATIVE

### 4.2.1 Description

The preferred alternative, illustrated in Figures 4.5. and 4.6. was selected by staff and the planning team, as it satisfied the greatest number of program elements, while resulting in minimal environmental impacts. The plan provides a high-quality ballfield complex, other passive and active recreation activities and space for future regional library. This can be accomplished with the removal of approximately 2 acres of tree cover, nearly all hedgerow. The scheme results in minimal traffic impacts. The two proposed entrance locations are adequate for traffic, and vehicle queues accommodated at three local key intersections. Further, the PM peak volumes meet the warrant for a traffic signal at the main entrance (although additional warrants may be necessary to ensure the installation of a traffic signal). The proposed plan will result in minimal field lighting impacts. The closest home on Muncaster Mill Road to a proposed light location is a distance of approximately 22 feet. The closest home off Airpark Road is 400 feet from the nearest proposed light pole.

The proposed plan provides a main access off Airpark Road, with a 950-foot access road to a curved parking lot serving passive recreation to the north, and non-ballfield active recreation to the south. The intersection at Airpark will have a median break, left turn bays for drivers approaching from the south, will provide turning movements in both directions, and has the potential to be signalized in the future. Future access to Covenant Life Church will be via an extension of the main east-west access drive from a distance of approximately 850 feet. This will be constructed by the church. The proposed library is located to the north of the main access drive, immediately west of the entrance from Airpark Road. Further to the west, a "tee" intersection on the main drive accesses a secondary drive which extends south, serving the ballfield complex, and meeting Muncaster Mill Road at a right-in, right-out intersection.



Figure 4.5. - Preferred Alternative.

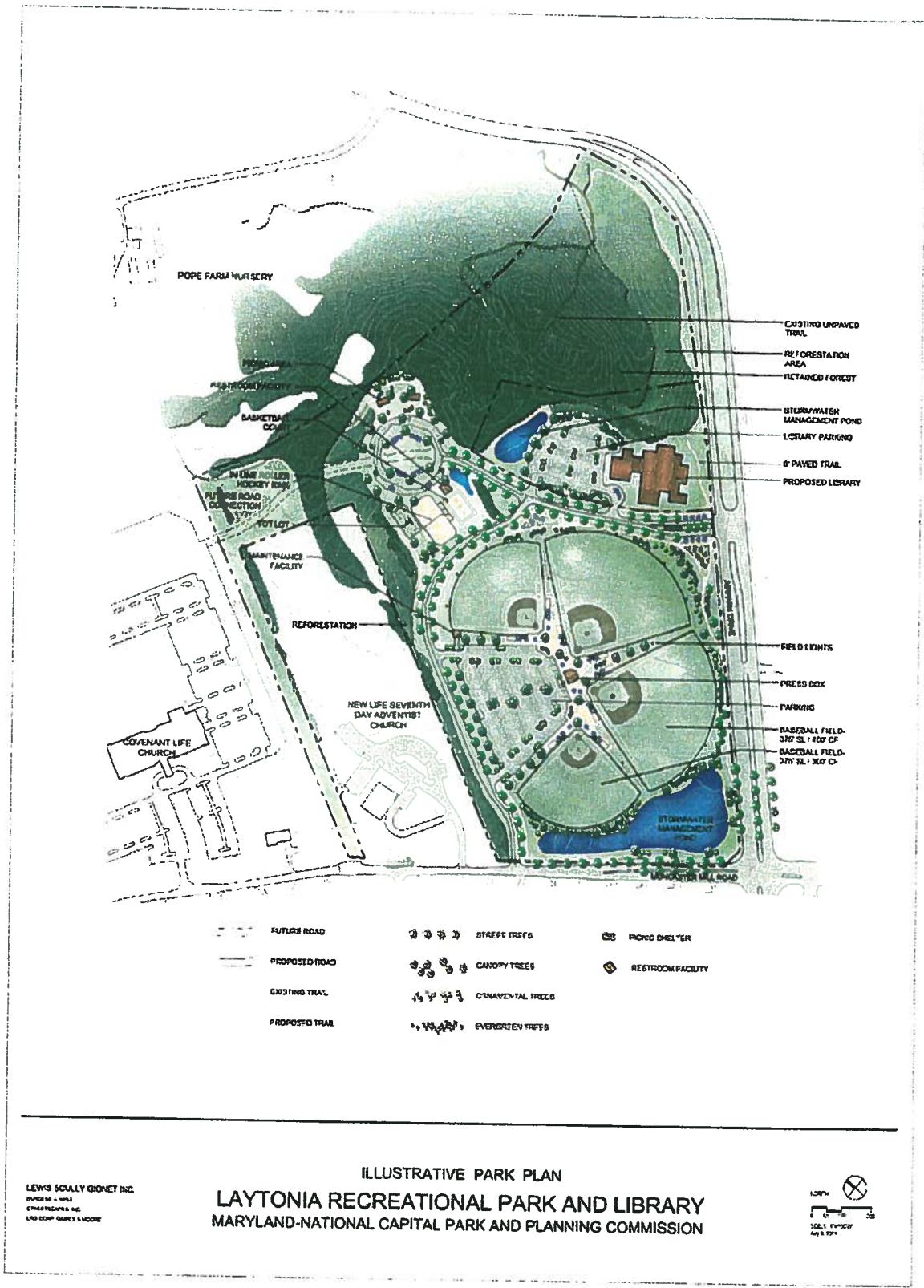


Figure 4.6. - Illustrative Park Plan.

The Library is sited in northeast corner of site, with direct visibility from Airpark Road. It is separated by the main access road from active facilities. The plan accommodates a 40,000 square foot footprint, with 120 parking spaces on an approximately 6-acre site.

The ballfield complex consists of 2 lighted, irrigated regulation sized baseball fields with 90' baselines, 375' sidelines and 400' distance to centerfield, and 2 lighted, irrigated baseball fields with 75' baselines, 275' sidelines and 300' distance to centerfield. The layout of the ballfields is a modification of the traditional "hub" or "star" layout. It provides the same increased efficiency of maintenance while allowing park users to conveniently drop-off ball players and their related gear, and then park at a central parking lot. The fields will be served by a central building with restrooms, a second story press box and a vending area. Parking will be provided at a ratio of 75 cars per field. A small storage/maintenance building sufficient for 2 tractor bays is planned off the northwest corner of the parking lot.

A second active recreation area is accessible from the main parking area and ball fields via a trail system. Alternatively, users can park at the circular lot at the end of the main access drive. This area will include a lighted basketball court, a lighted in-line skate facility, a tot-lot/playground, and restrooms. This is illustrated in Figure 4.7.



**Figure 4.7. - Second Active Recreation Area.**

Laytonia Recreational Park will also offer an number of passive recreation opportunities. North of the second active area, and west of the Library site, two group picnic shelters and additional tables will serve family and small group use. Trailheads will be located directing hikers and others to Pope Farm, the Agricultural History Farm Park, and adjacent residential communities. The surrounding area includes retained forest, the site of the corncrib and remnant foundation walls. Parking for 39 cars is located on the circle.

#### **4.2.2. Site Grading**

The proposed site grading has been designed to coordinate with the existing site grades in order to attempt to minimize the on-site cuts and fills. The site grading proposes to maintain the current ridge line high point at the front of the site, which is approximately 500' to 600' north of existing Muncaster Mill Road. The site slopes from this ridgeline south towards Muncaster Mill Road, to the existing stormwater pond. The remaining area of the site slopes to the north towards the existing stream and open woodlands.

The front half of the site, principally the ball field areas, will be predominately in cut. This material will be used to fill the future library pad, its associated parking and driveways and to accommodate the grading for a portion of the Air Park Road access drive. Borrow material will need to be imported onto the site to complete the total site grading, including the library pad site.

#### **4.2.3. Storm Drainage/Stormwater Management**

MSHA is completing improvements to the existing intersection and has constructed a stormwater pond on-site, adjacent to the intersection of Airpark Drive and Muncaster Mill Road. The stormwater pond provides stormwater control for the existing roadway and a portion of the proposed Laytonia Recreational Park site.

Current Montgomery County stormwater criteria requires that water quality be provided for the first one inch of impervious area. This requirement is proposed to be met by providing on-site bio-retention ponds. This will also serve to reduce the velocity of flows to the existing stream channel since the facilities will be sized to manage the one-year storm. In conjunction with this, if feasible, infiltration is proposed to provide stormwater recharge back into the ground.

A waiver will be sought for providing any additional stormwater control within the existing stormwater pond, for the front portion of the site. Since the proposed design maintains the existing drainage area to the pond, and the ground cover will continue to be grassed, the assumption used for the anticipated waiver is that the proposed runoff from the site to the pond will not increase. However, the existing pond slopes will be reconfigured and regraded as necessary to coordinate with the proposed ball field layouts.

On-site storm drainage is proposed by use of an enclosed, underground pipe system. This on-site storm drainage system will convey the on-site flows from the low points, bio-retention and infiltration facilities to points of discharge for safe conveyance to the existing stream system.

#### **4.2.4. Water and Sewer**

The site will be served by a private extension from a 12" public water and an 8" sanitary sewer within Muncaster Mill Road. A proposed on-site 8" sanitary sewer with 4" connections to the proposed park concession building and the future library building is anticipated. The future library building will require an ejector pump system to provide sewerage service below a 472 floor elevation. An on-site water system will be provided by a combination of 6" and 4" water lines to provide adequate fire and domestic service to this site. Based on the water table for the site, preliminary indications are that irrigation for the ball fields can be provided by installation of a well.





## **5. TRAFFIC ANALYSIS**

### **5.1 SUMMARY**

This part of the report presents a transportation analysis of the proposed Laytonia Recreational Park in Montgomery County, Maryland. As requested, the analysis concentrates on the operation of the proposed driveways and the adjacent intersection of MD Route 115 (Muncaster Mill Road)/Airpark Road/Shady Grove Road. As shown on Figure 5.1., the site is located in the northwest quadrant of the Muncaster Mill Road/Airpark Road/Shady Grove Road intersection.

In addition to baseball and multi-purpose fields, a picnic area, an in-line skate facility, a playground, trails for pedestrian and bicycle use, and a "pad" site preserved for a future public library, an internal roadway would serve the park uses and provide a connection for Covenant Life Church to Airpark Road.

Planning for the access and transportation facilities to serve the park site began with an April 11, 2001 meeting with Burgess & Niple, Greg Leck of the Montgomery County Department of Public Works, Greg Cooke of the Maryland State Highway Administration (SHA), and Wells & Associates. Sources for this analysis include site plans and information provided by Burgess & Niple, Maryland-National Capital Park and Planning Commission (M-NCPPC), Local Area Transportation Review Guidelines (LATR), the Institute of Transportation Engineers (ITE), Manual on Uniform Traffic Control Devices (MUTCD), Covenant Life Church Traffic Impact Study (TIS), and the files of Wells & Associates.

### **5.2 ROAD NETWORK**

#### **5.2.1. Existing Road Network**

Regional access to the site is provided by MD Route 124 (Woodfield Road) and Shady Grove Road. Airpark Road and Muncaster Mill Road provide local access. Muncaster Mill Road (MD Route 115) is a two-lane roadway characterized by narrow lane widths, narrow shoulders, and poor vertical and horizontal alignments.

Airpark Road is a four-lane, undivided roadway and intersects Muncaster Mill Road opposite Shady Grove Road. Airpark Road runs perpendicular and then parallel to Muncaster Mill Road and serves the Montgomery County Industrial Park with MD Route 124. Shady Grove Road is a four-lane, divided roadway with a posted speed limit of 45 miles per hour (mph). It is one of the primary commuter routes in Montgomery County.

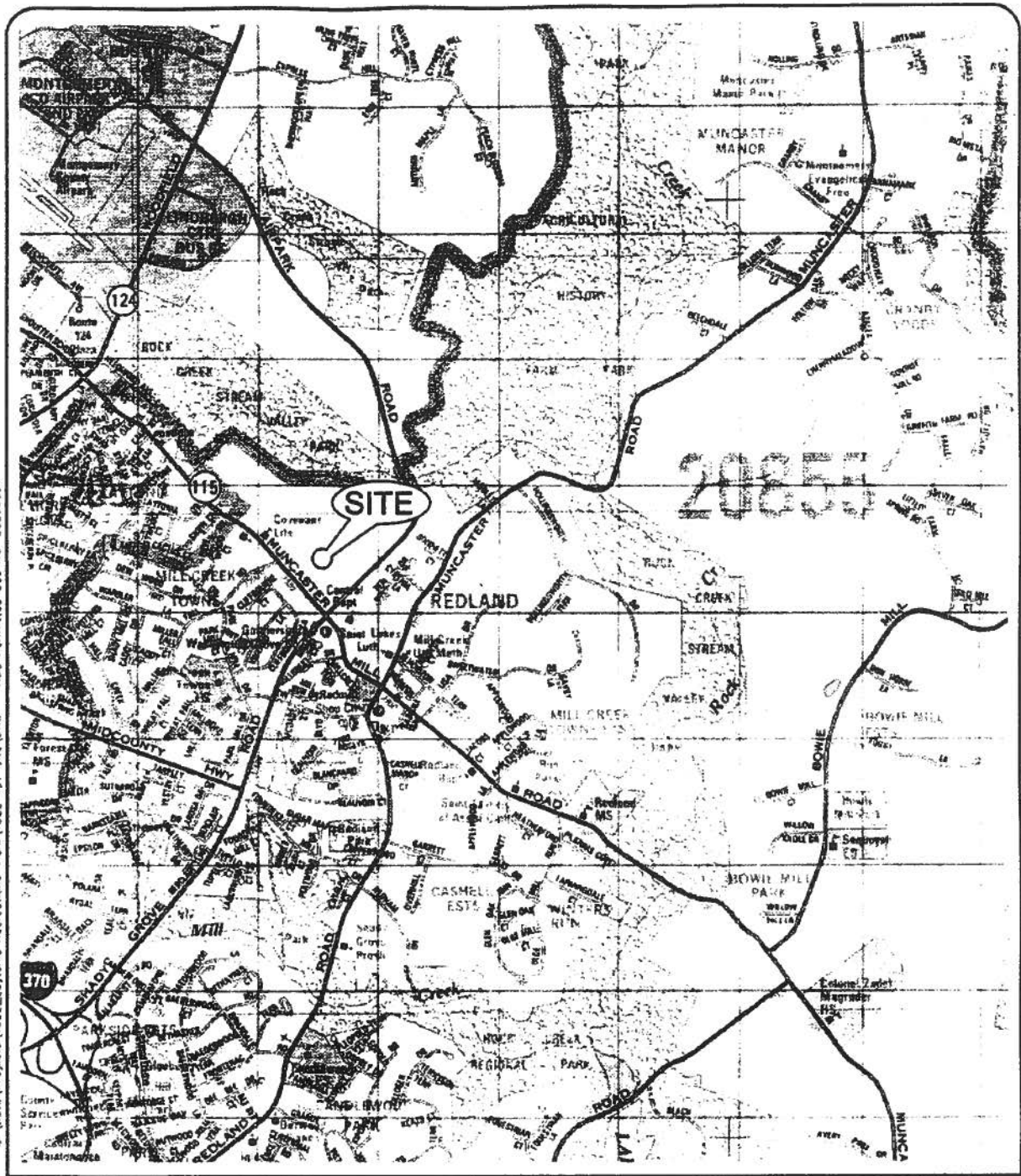


Figure 1  
Site Location Map



Laytonia Recreational Park  
Montgomery County, Maryland

**WELLS & ASSOCIATES, LLC.**  
TRAFFIC, TRANSPORTATION, and PARKING CONSULTANTS

Figure 5.1. - Site Location.

## **5.2.2 Planned Road Network**

SHA plans to improve the Muncaster Mill Road/Airpark Road/Shady Grove Road intersection by adding a second left turn lane from westbound Muncaster Mill Road to southbound Shady Grove Road and a separate right turn lane from eastbound Muncaster Mill Road to southbound Shady Grove Road. SHA also proposes to modify signal timings to reduce delay. These improvements were considered as part of this analysis. Figure 5.2. shows the lane use and traffic control in the site vicinity.

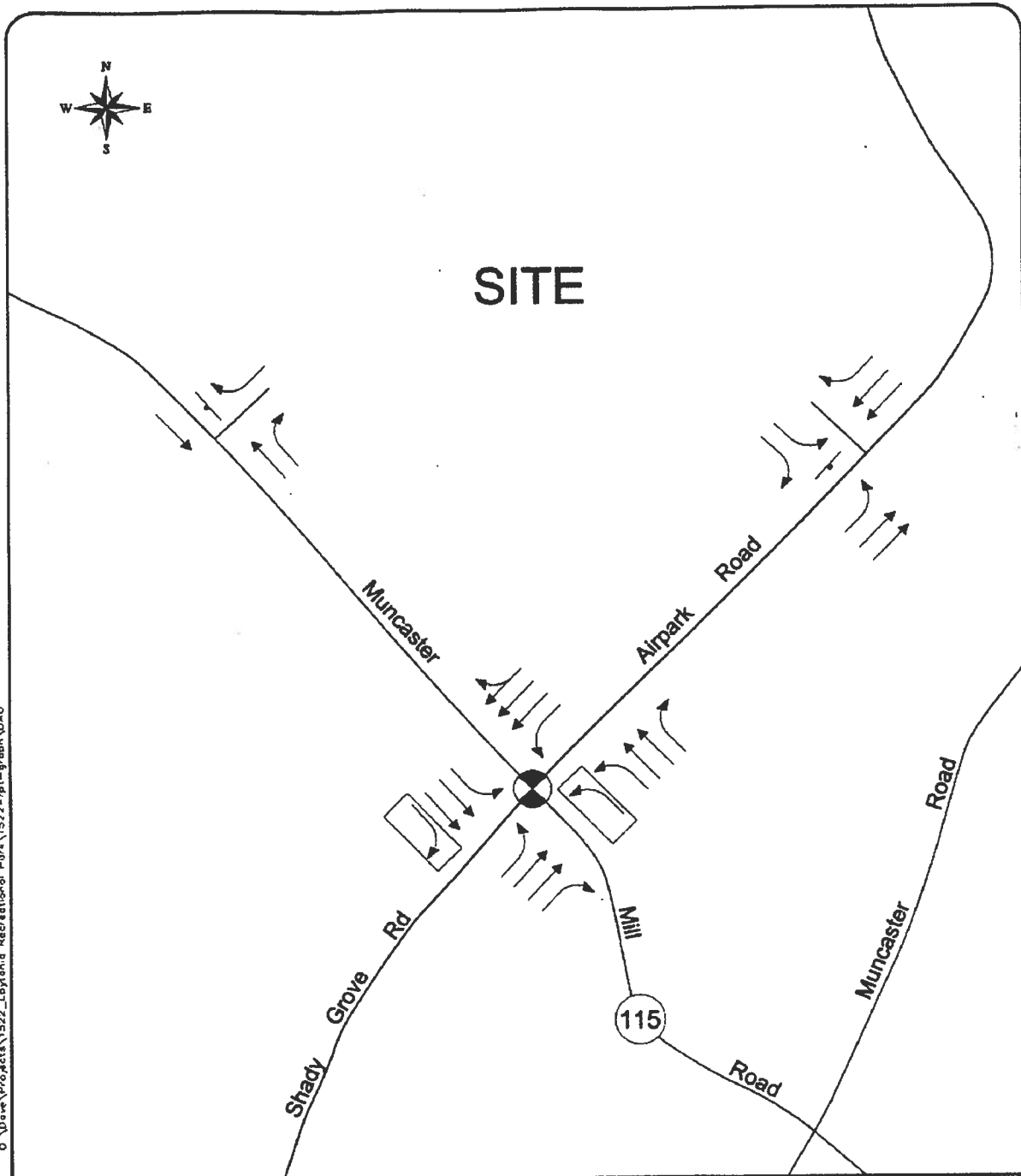
## **5.2.3. Site Access**

A full movement driveway on Airpark Road, near the eastern corner of the site, and a right-in/right-out driveway on Muncaster Mill Road, adjacent to the Seventh Day Adventist Church site at the western corner of the proposed park site, would provide access to Laytonia Recreational Park. The full movement driveway on Airpark Road would also provide future access for Covenant Life Church, if and when, they connect to the road system for Laytonia Recreational Park.

A northbound left turn lane and a southbound right turn lane from Airpark Road to the site were assumed as part of this study. Both turn lanes would be 250 feet in length with 150 foot tapers.

Other access locations were considered as part of this study. However, the illustrated access points were ultimately designated the selected locations as most functional for the proposed uses and preferred by SHA and Montgomery County Department of Public Works and Transportation (DPWT).





O:\Data\Projects\1522\_Laytonia Recreational Park\1522-01-graph\DAO

Figure 2  
Future Lane Use and Traffic Control

- ← Represents One Travel Lane
- ⊗ Signalized Intersection
- Stop Sign
- SHA Improvement

Laytonia Recreational Park Montgomery County, Maryland	<b>WELLS &amp; ASSOCIATES, LLC.</b> <small>TRAFFIC, TRANSPORTATION, and PARKING CONSULTANTS</small>
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Figure 5.2. – Future Lane Use and Traffic Control.



## **5.3 ANALYSIS**

### **5.3.1. Background Traffic Volumes**

Base traffic volumes were obtained from the New Life Covenant Life Church Traffic Impact Study (TIS). Traffic for Covenant Life Church was redistributed to reflect access to Airpark Road. These trips were added to the total background peak hour traffic forecasts obtained from the Covenant Life Church TIS to derive the base volumes for this analysis. The base traffic volumes are shown on Figure 5.3. See Appendix C for the background forecasts and Covenant Life Church trips redistributed.

### **5.3.2. Background Future Critical Lane Volumes**

For purposes of this analysis, the critical lane volumes (CLV's) for background conditions were obtained from the Covenant Life Church TIS. The commuter weekday a.m. and p.m. peak hours were considered to present a worse case scenario. The Airpark Road/Shady Grove Road/Muncaster Mill Road intersection is projected to operate at 1,584 and 1,563 CLV's during the a.m. and p.m. peak hours, with buildout of Covenant Life Church and the planned SHA improvements, and without a connection to Airpark Road. The LATR Congestion Standard for Derwood is 1,525 CLV.

### **5.3.3. Site Trip Generation Analyses**

Laytonia Recreational Park is proposed to contain ballfields, playgrounds, walking and bike trails, and a reserved area for a 40,000 S.F. public library. Institute of Traffic Engineers (ITE) provides trips generation rates/equations for public libraries but not for a recreational park of this size. After discussions with M-NCPPC, it was determined that logical assumptions would have to be made for the trip generation of the park.

For purposes of this analysis, the park was assumed to consist of four baseball fields, and that each player and coach would drive separately to the park. The baseball teams were assumed to be comprised of 15 players and 3 coaches, for a total of 18 persons per team, translating into 36 vehicle trips per field. As shown in Table 5.1., the Laytonia Recreational Park, including the public library, would generate 62 a.m. peak hour trips (41 inbound and 21 outbound) and 387 p.m. peak hour trips (189 inbound and 198 outbound).

The site-generated trips were distributed on the road network shown on Figure 5.4., based on similar directions of approach used in the Covenant Life Church Study. The site-generated trips and the directions of approach are shown on Figure 5.4.

### **5.3.4. Total Future Traffic Volumes**

The site-generated traffic volumes shown on Figure 5.4. were added to the base traffic volumes shown on Figure 5.3. to derive the total future traffic forecasts shown on Figure 5.5.



TABLE 5.1.									
SITE TRIP GENERATION SUMMARY									
Land Use	Land Use Code	Size	Units	AM Peak Hour		Total	PM Peak Hour		Total
				In	Out		In	Out	
Recreational Park (1)				7	7	14	72	72	144
Library (2)	590	40,000	S.F.	34	13	47	117	126	243
Total				41	21	62	189	198	387

Notes: (1) Proposed size : 50.66 Acres, including 4 ball fields.  
(2) Based on Institute of Transportation Engineers *Trip Generation, 6th Edition*.

### 5.3.5. Total Future Critical Lane Volumes

Total future CLV's were calculated based on: (1) the future lane use and traffic controls shown on Figure 5.2., (2) the total future traffic volumes shown on Figure 5.5., and (3) the CLV analysis procedures. The results are presented in Appendix D and summarized in Table 5.2.

Table 5.2. indicates that the Airpark Road/Site Access intersection would operate at 914 CLV during the a.m. peak hour and 1,094 CLV during the p.m. peak hour, with a shared left and right turn lane on the site access approach. The intersection, however, would operate at 839 CLV during the a.m. peak hour and 974 CLV during the p.m. peak hour, with a separate left turn lane and a separate right turn lane.

The Muncaster Mill Road/Site Access intersection would operate below the 1,525 CLV threshold.

The Airpark Road/Shady Grove Road/Muncaster Mill Road intersection would operate at 1,567 CLV during the a.m. peak hour and 1,634 CLV during the p.m. peak hour, considering the A planned improvements and redistribution of Covenant Life Church traffic. The a.m. peak hour CLV decreases by 17 movements (1.1 percent) and the p.m. peak hour CLV would increase by 71 movements (4.5 percent), when compared to the background future CLV's.

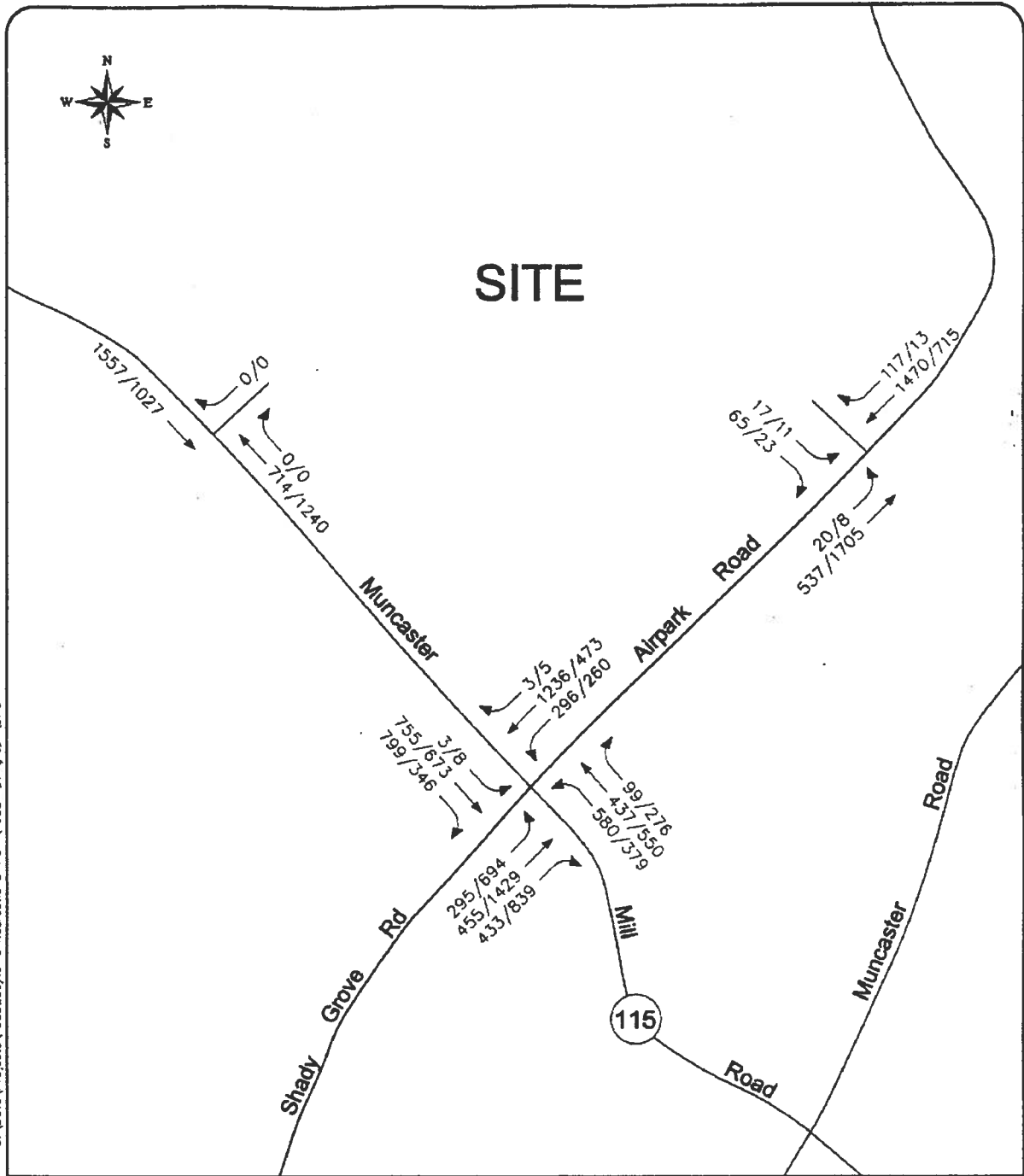


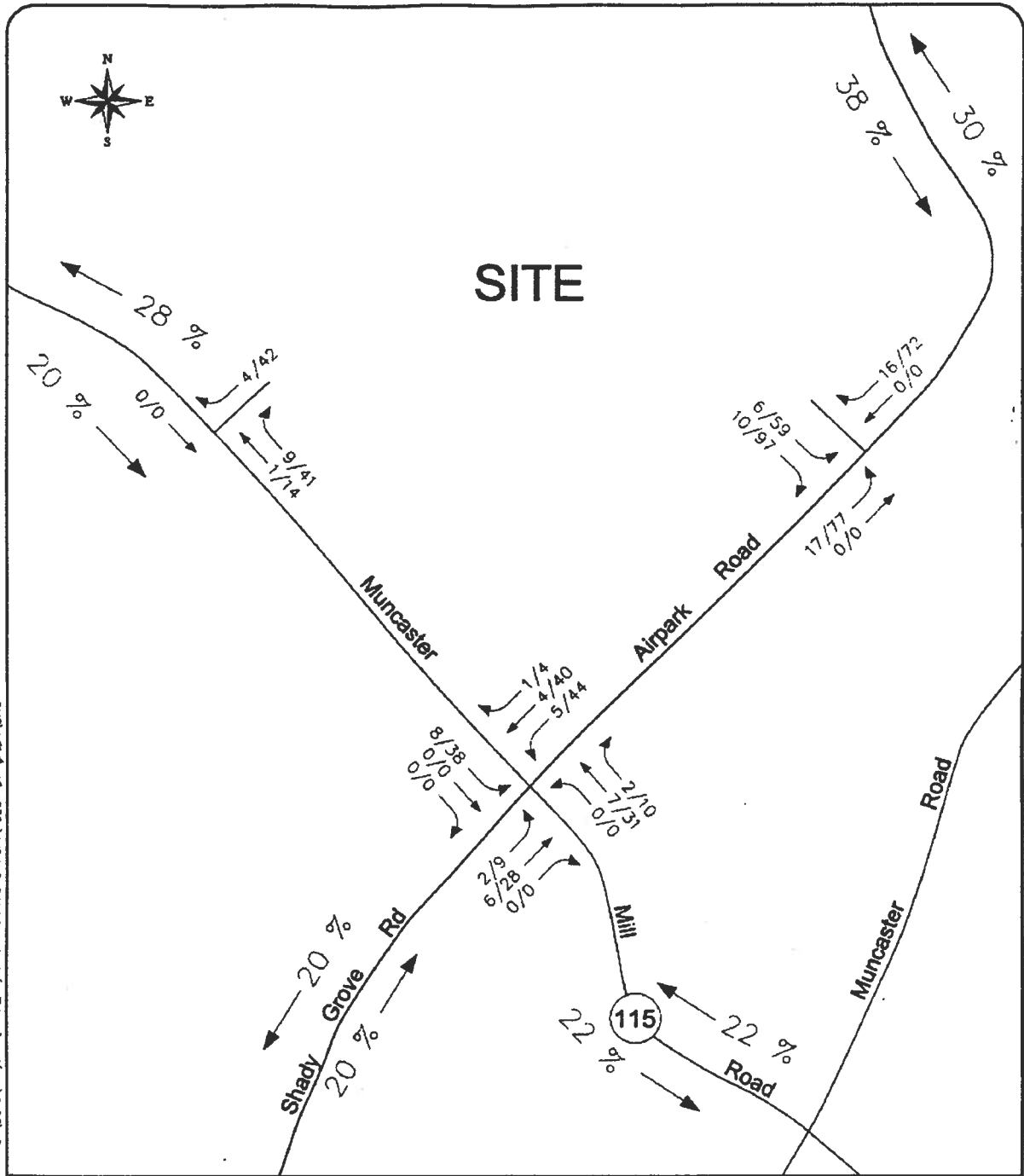
Figure 3  
Base Peak Hour Volumes

ALL PEAK HOUR  
VOLUMES IN  
000/000

Loytonia Recreational Park  
Montgomery County, Maryland

**WELLS & ASSOCIATES, LLC.**  
TRAFFIC, TRANSPORTATION, and PARKING CONSULTANTS

Figure 5.3. – Base Traffic Volumes.



C:\dow\p\p\acts\1522\_Laytonia Recreational Park\1522.rpt 9/26/00\DAO

Figure 4  
Site-Generated Traffic Assignments

ALL PEAK HOUR  
PER PEAK HOUR  
000/1000

Laytonia Recreational Park  
Montgomery County, Maryland

**WELLS & ASSOCIATES, LLC.**  
 TRAFFIC, TRANSPORTATION, and PARKING CONSULTANTS

Figure 5.4. – Site-Generated Traffic Volumes.

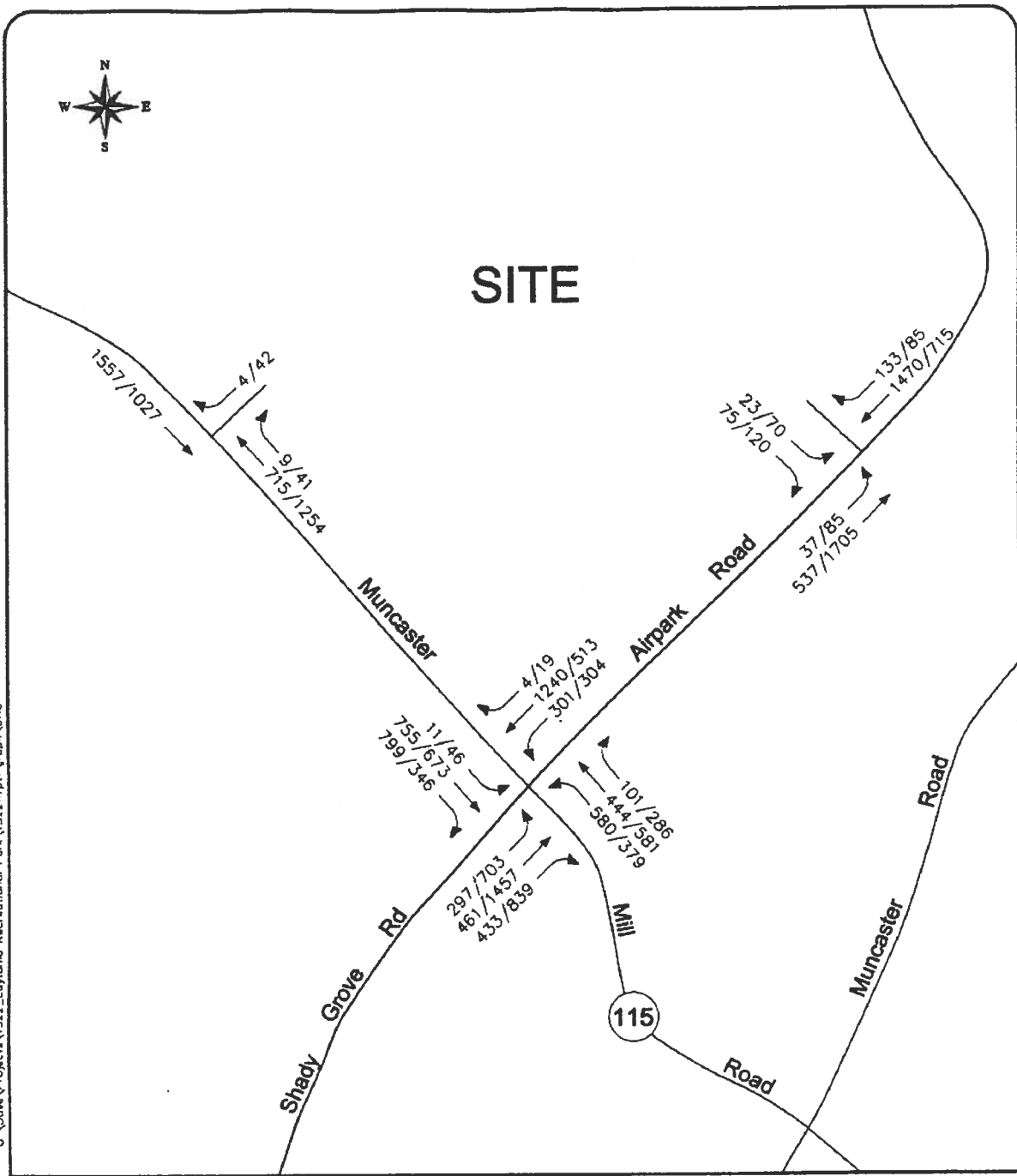


Figure 5  
Total Future Peak Hour Traffic Forecasts

AM PEAK HOUR  
PM PEAK HOUR  
000/000

Laytonia Recreational Park  
Montgomery County, Maryland

**WELLS & ASSOCIATES, LLC.**  
TRAFFIC, TRANSPORTATION, and PARKING CONSULTANTS

Figure 5.5.- Total Future Traffic Volumes.



<b>TABLE 5.2.</b>		
<b>CRITICAL LANE VOLUME ANALYSIS</b>		
<b>Intersection</b>	<b>Total Future</b>	
	<b>AM</b>	<b>PM</b>
<b>Airpark Road/Site Access</b>		
Single Lane EB Approach	914	1,094
Separate Left and Right Turn Lanes on EB Approach	839	974
<b>Airpark Road/Shady Grove Road/ Muncaster Mill Road</b>	1,567	1,634
<b>Muncaster Mill Road/ Site Access</b>	715	1,254

Note: CLV Threshold of 1,525 for Derwood.

#### **5.4. QUEUE ANALYSIS**

A queue analysis was conducted at the three key intersections based on total future traffic forecasts, future lane use and the SHA queue analysis procedures. The results are summarized in Table 5.3. and presented in Appendix E.

As shown in Table 5.3., with build out of Laytonia Recreational Park a 238 feet queue is anticipated for the eastbound, shared left/right turn lane on the site access approach of the Airpark Road/Site Access. If the site access approach contains a separate left turn lane and a separate right turn lane the eastbound left turn lane would realize an 88 foot queue. A 107 feet queue is anticipated for the northbound left turn movement from Airpark Road into Laytonia Recreational Park.

Queues on Airpark Road at the Airpark Road/Shady Grove Road/Muncaster Mill Road intersection would be adequately accommodated without blocking the access on Airpark Road. Further, the eastbound left turn from Muncaster Mill Road to Airpark Road and the southbound right turn from the Site Access to Muncaster Mill Road would be adequately accommodated based on the future lane use.

Vehicle queues, therefore, would be adequately accommodated at the three key intersections with Laytonia Recreational Park and the planned SHA improvements

<b>TABLE 5.3.</b>			
<b>QUEUE ANALYSIS SUMMARY</b>			
<b>Intersection</b>	<b>Approach</b>	<b>Lane</b>	<b>Queue Length (Ft)</b>
Airpark Road/Site Access	Site Access (1)	EBLR	238
		EBL	88
	Airpark Road	NBL	107
Airpark Road/Shady Grove Road/ Muncaster Mill Road	Airpark Road	SBL	380
		SBTR	576
	Muncaster Mill Road	EBL	58
Muncaster Mill Road/ Site Access	Site Access	SBR	53

Notes: The site access approach was considered as a single exit lane and as a two-lane exit section.

### **5.5. SIGNAL WARRANT ANALYSIS**

The peak hour volume warrant, outlined in the Manual for Uniform Traffic Control Devices (MUTCD), was investigated for the Airpark Road/Site Access intersection. Based on the total future traffic forecasts shown on Figure 5.5., the peak hour volume warrant is met during the p.m. The peak hour volume warrant is shown in Appendix F.

### **5.6. CONCLUSIONS**

The conclusions of this traffic analysis are as follows:

1. The two proposed driveways would adequately accommodate Laytonia Recreational Park traffic.
2. The Airpark Road/Shady Grove Road/Muncaster Mill Road intersection would operate at 1,567 CLV during the a.m. peak hour and 1,634 CLV during the p.m. peak hour, with the SHA planned improvements and the Covenant Life Church connection to Airpark Road.
3. Vehicle queues would be adequately accommodated at the three key intersections with Laytonia Recreational Park and the planned SHA improvements.
4. The p.m. peak hour volumes warrant a traffic signal at the Airpark Road/Site Access Driveway, with build out of Laytonia Recreational Park and the Covenant Life Church connection to Airpark Road.

## **6. GEOTECHNICAL REPORT**

### **6.1. SUMMARY**

The following is a general summary of the conclusions and recommendations contained in this report:

- Spread and column footings are considered feasible for building support with estimated allowable soil bearing pressure of 2000 psf for new compacted fill and suitable natural residual material. Some undercutting of soft or high plasticity natural soil and fill material may be necessary.
- Newly placed compacted structural fill and natural material may be expected for floor slab and pavement support. Undercutting of unsuitable soil may be necessary.
- On-site soils are generally considered suitable for re-use as compacted structural fill for building and pavement support. Some moisture conditioning should be expected.

Burgess and Niple, Inc. has completed the preliminary subsurface investigation and geotechnical engineering report for Laytonia Recreational Park project located in Montgomery County, Maryland. Services performed include the drilling of twelve (12) test borings, soil laboratory tests and preparation of this report. This geotechnical analysis and report includes the following:

- Evaluation of subsurface conditions
- Earthwork considerations
- Foundation support considerations
- Slab support considerations
- Pavement considerations
- Recommendations for additional services

Services with respect to final geotechnical recommendations, environmental matters, stormwater management facilities, detailed wetlands studies, cost or quality analysis, plans, and specifications are not included in our scope.

### **6.2. SITE DESCRIPTION AND PROPOSED CONSTRUCTION**

The site is an existing farm located at north corner of the intersection of Muncaster Mill Road and Airpark Road in Montgomery County, Maryland. Grass and woods cover most of the site with existing residential structures, a barn and other outbuildings. Existing grades vary across the site from elevation 480 at the south side to elevation 430 along the existing stream at the northeast corner. A storm water management pond has recently been constructed at the south corner near the roads.

The proposed construction consists of a municipal building, paved roads and parking lots, storm water management ponds, small outbuildings, and several athletic fields. Preliminary grading was not available at the time borings were completed. Cuts and fills of up to about 10 feet have been estimated.



### **6.3. GEOLOGIC SETTING**

The site lies in the Piedmont geological province of Montgomery County. The topography and surficial soils are related to the structural characteristics of the underlying rock. The natural soils found on the site are residual and were derived from in-place weathering of the underlying bedrock (Wissahickon Formation). These soils are generally composed of metamorphosed clayey sandstone, schist and phyllite. Residual quartz and mica gneiss are also commonly found within the soil profile.

### **6.4. SCOPE OF THE INVESTIGATION**

Conclusions and recommendations contained in this report are based on the results of twelve (12) soil test borings, and on the results of laboratory testing and evaluation of soil samples obtained from these borings. All field and laboratory testing was conducted by Burgess and Niple, Inc.

The test borings were utilized to provide both visual identification and engineering properties of soil underlying the site. Drilling for the test borings was accomplished with a CME 55D drill rig utilizing continuous 2-1/4" inside diameter hollow stem augers. Representative soil samples were obtained by means of the split-barrel sampling procedure according to ASTM D1586-84 methods. In the split-barrel sampling procedure, a 2" outside diameter split-barrel sampler is driven into the soil a distance of 18" by means of 140 lb. hammer falling freely a distance of 30". After an initial seating interval of 6", the number of blows required to drive the sampler through a 12" interval is termed the SPT resistance or N-value. Where hard driving is encountered, sampling has been terminated at 50 blows for 6" or less penetration. The N-value can be used to provide an indication of the in-place relative density of cohesionless soils or the consistency of cohesive soils.

Representative bulk and jar soil samples obtained from drilling operations were used in the field to visually classify the soil types, and later in our laboratory to conduct the Unified Soil Classification tests to help determine the index and strength properties of the various soil layers. All testing was performed in our laboratory in general accordance with ASTM standards.

A complete record of the test borings is shown on the Test Borings Logs contained in Appendix G. The logs contain the visual classification, Unified Soil Classification, and Standard Penetration Test (SPT) results. The group symbols indicated on the test borings represent the Unified Soil Classification (ASTM D2487) symbols. These are based on visual observations of the samples and may differ from the soil laboratory test description. The approximate locations of the borings are shown on the Test Borings Location Plan in Appendix H.

### **6.5. SUBSURFACE CONDITIONS**

#### **6.5.1. Stratification**

The generalized subsurface stratification was extrapolated from the results of 12 soil test borings. The reader is referred to the Test Borings Logs for the detailed subsurface conditions encountered within each of the borings and across the site. The various soil strata encountered on the site were in general compliance with the geological formation and history of the region. The major natural soil types encountered in the borings generally consist of silt and silty sand overlying weathered rock. Topsoil depths between 3 and 6 inches were noted below the existing grade.

### **Stratum A: Residual**

Stratum A generally consists of brown, gray, black and orange, red brown, and orange brown, SILT with sand (ML), Sandy SILT (ML), and Silty SAND (SM), with varying amounts of mica and weathered rock fragments. These fine to medium grained residual soils ranged in density from loose to dense and were encountered below topsoil to depths of more than 20 feet.

### **Stratum B: Weathered Rock**

Stratum B generally consists of gray and brown, WEATHERED ROCK. The Weathered Rock was very dense and was encountered in borings B-1, B-8, and B-9, below Stratum A. Weathered rock is defined as residual material with N-values greater than 60 blows per 1'.

It should be noted that the stratigraphy, inferred from the boring logs, is approximate. Actual changes between material types (strata) may occur abruptly, more gradually, or at slightly different elevations than those depicted. Soil, fill areas, and groundwater conditions between borings may vary from conditions observed at each boring location. Furthermore, the borings depict the conditions only during the time of their excavation. Some conditions, particularly groundwater levels, will fluctuate seasonally.

### **6.5.2. Groundwater**

Groundwater readings taken in the borings are shown on the individual boring log sheets. Groundwater was encountered in borings B-3, and B-4 at 18.5 and 13.5 feet, with end of day readings at 12.5 and 16.5 feet, respectively. Long-term water readings indicated groundwater in Boring B-2 at 15.5 feet. These borings were located at lower elevations and may be an indication of a groundwater table. Fluctuations in groundwater levels should be expected due to variations in factors such as seasons, precipitation, surface runoff, evaporation, construction activity, etc.

### **6.5.3. Soil Laboratory Testing**

Soil classification testing was performed on representative samples recovered from the test borings. Laboratory testing indicated Sandy SILT (ML) to SILT (ML) with sand, with 68.6 to 72.1 percent fines passing the #200 sieve, liquid limits from 34 to 37, and plasticity indexes from 9 to 10. Natural moisture contents ranged from 10.1 to 32.6 percent.

## **6.6. PRELIMINARY GEOTECHNICAL EVALUATION AND RECOMMENDATION**

Based upon the information derived from the field investigation and the site information provided to us, the following preliminary recommendations and observations are offered to assist in the proposed development.

### **6.6.1. Earthwork Considerations**

Grading plans were not available at the time of this report. However, cuts and fills of up to about 10 feet may be expected to reach pavement and building subgrades. Test borings indicated the material expected in possible cut areas of the site is generally considered suitable for pavement and building support. Soft and/or very moist soil may be encountered to depths of up to 3 feet or

more across areas of the site. When encountered, these soils shall be removed to medium dense soil, and replaced with compacted fill. For clearing, grubbing and stripping, test borings indicated about 4 to 6 inches of topsoil stripping should be expected. Stripping depths may be greater in low-lying swales, where wet or soft near surface soils may be encountered. Stripping operations should extend at least 10 feet outside building and pavement lines where fill will be placed.

After clearing and grubbing and prior to placement of fill, all fill subgrades shall be thoroughly evaluated by either proofrolling or probing and approved by the geotechnical engineer or their representative. Any soft, loose, wet or "pumping" soils shall be excavated and replaced with suitable compacted fill material.

The soils at the site are fine grained and moisture sensitive, and some deterioration should be expected during wet periods or due to construction activity. Depending on the time of year, some subgrade improvements such as drying and recompacting, or excavation and replacement may be required. To limit the effect of subgrade disturbance in building areas, it may be advantageous to grade about 6 inches above proposed grade to allow for construction disturbance if a waiting period is expected prior to further construction. Grading should be planned to limit ponding of water and soil disturbance.

Weathered Rock was encountered in three borings at about 19 feet below existing grade. The Weathered Rock, if encountered during building, pavement or utility excavation, should be excavatable and/or rippable with regular earthwork equipment, or a D-8 dozer with a single tooth ripper.

### **6.6.2. Foundation Support Considerations**

Proposed footing elevations were unknown at the time of this report. However, spread and/or column footings are expected to be feasible for support of the lightly loaded proposed buildings. Test borings indicate loose to medium dense natural material and possibly elastic silt and fill material may be encountered at or near footing subgrade and some lowering of footings or over excavation and replacement with new compacted structural fill may be expected. For planning purpose footings may be designed for an allowable bearing pressure of 2000 psf when founded on medium dense natural material or new compacted structural fill.

Exterior footing subgrades for the proposed buildings shall be constructed at a depth of not less than 2.5 feet below exterior grades for frost depth. A minimum footing depth of 4 feet below finished exterior grade is recommended if high plasticity soil (elastic silt) is encountered at exterior footing subgrade. Upon completion of all foundation excavations and approval by the geotechnical engineer, footing concrete should be placed as soon as possible to prevent possible deterioration of the subgrade, which may occur if the subgrade remains exposed to weather. The geotechnical engineer should evaluate by field testing that the exposed bearing material is suitable for the designated soil bearing capacity, and that loose, plastic or wet soils are not present beneath footings. If footings are excavated during cold weather or are subjected to freezing temperatures, they should be protected by adequate cover.

Settlement of foundations founded on natural residual material or new compacted fill is not expected to exceed 1 inch, with differential settlement to ½ inch or less, in accordance with standard engineering practice. Wall footings should be at least 18 inches in width and column footings at least 36 inches square for shear considerations.

### **6.6.3. Floor Slab Considerations**

Floor slabs on grade shall be supported on medium dense natural material or new compacted structural fill. In cut and at grade areas, all topsoil and soft, wet surface soils should be removed to proposed subgrade and evaluated by a geotechnical engineer or their representative. Where soft or high plasticity soil (elastic silt) is encountered at floor grade, these soils shall be undercut at a minimum of 2 feet, and replaced with new compacted fill. In fill areas, topsoil and unsuitable surface soil should be stripped to firm soil and compacted fill placed for floor support.

After approval by a geotechnical engineer, the area under all grade slabs shall be covered with a minimum 4-inch thick layer of compacted No. 57 stone (or equivalent) to act as a load distributing and drainage layer. Prior to placing the stone, the slab subgrades should be free of standing water or mud. The stone should then be covered with an impermeable plastic cover at least six mils in thickness to serve as a moisture barrier and prevent "damp floor" conditions. The slabs should be separated from walls and columns by isolation joints in order to prevent cracking caused by differential settlement of the footings. As a minimum, welded wire mesh should be placed within the slabs to maintain their integrity and minimize cracking due to concrete shrinkage. Structural design, thickness and proper isolation should be provided by the structural engineer retained for the project.

### **6.6.4. Pavement Considerations**

Pavement subgrades are expected to consist of natural soils, or newly placed compacted structural fill. Site soils are considered to be poor to fair with respect to pavement support, and susceptible to frost action, should water penetrate the overlying pavement. It is recommended that all unstable, yielding, and unsuitable materials be undercut and backfilled with approved structural fill in order to provide a buffer zone below pavement base course. After preparation, the subgrade should be proofrolled to locate any additional soft, unsuitable areas. Soft, unsuitable areas should be removed and replaced with properly compacted fill.

## **6.7. RECOMMENDATIONS FOR ADDITIONAL SERVICES**

A comprehensive geotechnical engineering analysis and report are recommended once final structure layout and site grades have been established. Additional test boring or test pits are expected to be necessary for a better evaluation of the subsurface conditions.

## **6.8. LIMITATIONS**

The analyses and preliminary recommendations of this report are based on the limited information made available to us at the time of the writing of the report and onsite conditions, surface and subsurface, that existed at the time the exploratory test borings were drilled. Further assumption has been made that the widely spaced exploratory test borings, in relation to both the aerial extent of the site and to depth, are representative of conditions across the site. If subsurface conditions are encountered which differ significantly from those reported herein, this office should be notified immediately so that the analysis and recommendations can be reviewed and/or revised as necessary.

We have prepared this report in accordance with generally accepted geotechnical engineering practices, and make no other warranties, either expressed or implied, as to the professional services performed under this Agreement.

Our recommendations are subject to confirmation or revision upon review of the final grades and plans covering all details of the proposed construction.

## 7. PROJECTED CAPITAL COSTS

### 7.1. CAPITAL COST ESTIMATE BY PROJECT AREA

The estimated capital cost to develop all facilities described within the Master Plan approaches \$8,400,000 in 2001 dollars. This total includes all new programmed facilities and access to the site. Development costs are summarized in Table 7.1. Detailed information is included in Appendix I.

1. Site Development and Utilities	\$1,528,500
2. Airpark Road Entrance <sup>1</sup>	\$131,935
3. Ballfield Complex <sup>2</sup>	\$3,561,583
4. Other Active Recreation Area	\$699,724
5. Picnic Area	\$278,734
A/E Services	\$744,056
Contingency	\$930,070
Construction Management	\$372,028
Staff Charge-backs	\$93,007
<b>Total</b>	<b>\$8,339,637</b>

1. Earthwork and utility costs for site access road are included in Item 1
2. 1,450' access road from Muncaster Mill Road is included in cost for Ballfield Complex
3. Costs do not include development of Library site
4. Costs do not include 845' access drive from Covenant Life Church



## **APPENDICES**

***Appendix A: Field Sampling Data Sheets***

***Appendix B: Agency Letters***

***Appendix C: Covenant Life Church Traffic Redistributed***

***Appendix D: Critical Lane Volume Analysis***

***Appendix E: Queue Analysis***

***Appendix F: Peak Hour Volume Warrant***

***Appendix G: Test Borings Logs***

***Appendix H: Test Borings Location Plan***

***Appendix I: Development Costs***





## **APPENDIX A**

### **Field Sampling Data Sheets**



# Field Sampling Data Sheet

<b>Property</b>	Property Name: <u>Laytonia Park</u>					
	Prepared by: <u>A. Farley / M. Rivera</u>					
	Stand # (From Forest Stand Map): <u>Sample plot 1</u>					
	Plot #:					
	Date of Survey: <u>03/19/01</u>					
<b>Tree species</b>	Tree Species	NUMBER OF TREES PER SIZE CLASS				
	(note dominant & co-dominant species)	2-5.9" dbh	6-9.9" dbh	10-17.9" dbh	18-29.9" dbh	>30" dbh
	<u>P. virginiana</u>	0	3	0	0	0
	<u>Celtis virginiana</u>	0	0	0	0	0
	Total Number of Trees per Class	2	4	1	1	
<b>Understory species</b>	(3-5 most commonly occurring): <u>Prunus virginiana</u>					
<b>Other</b>	Basal Area: <u>NA</u>					
	Number of Dead Trees per Plot: <u>NA</u>					
	Comments:					
<b>Forest Structure Analysis</b> <small>(at least one plot/stand)</small>	SAMPLE POINT					
		N1	E2	S3	W4	Sites
	% Canopy Coverage					85
	% Herbaceous Ground Cover					0
	% Downed Woody Debris					5
	% Invasive Plant Cover					80
	Number of Shrub Species (1/100m <sup>2</sup> plot)					3
	Forest Structure Value:					
	Comments:	<u>Shrubs = black cherry, blackberry, rose</u>				
		<u>invasive = honeysuckle</u>				

# Forest Stand Field Data Summary Sheet

Sample Plot 1, cont.

<b>Property</b>	Property Name:	A. Farley / M. Rivera		
	Prepared by:	Laytonia Park		
	Date:	03/19/01		
<b>Stand Field Data</b>	STAND NUMBER			
	Stand Variable:	1	2	3 etc.
	Forest Association (SAF cover type)			
	Average size class of dominant trees			
	Average # of trees/acre			
	Average # of tree species per acre			
	Basal area / acre			
	Average # of dead trees/acre	-		
	Forest Structure Value			
	Common understorey species:			
Comments: hedgerow ~30 ft wide, dominated by <i>Lonicera japonica</i> (herb, vine); early seral <del>plant</del> community dominated by blackberry + huckleberry; accumulation of urban debris (beer cans, food containers); adjacent borders + the hedgerow; poor - fair health				

# Field Sampling Data Sheet

<b>Property</b>	Property Name: <u>Laytonia Park</u>						
	Prepared by: <u>A. Farley / M. Rivere</u>						
	Stand # (from Forest Stand Map): <u>Sample Plot</u>						
	Plot #: <u>2</u>						
	Date of Survey: <u>03/19/01</u>						
<b>Tree Species</b>	Tree Species	NUMBER OF TREES PER SIZE CLASS					
	<small>(note dominant &amp; co-dominant** species)</small>	2-5.9" dbh	6-9.9" dbh	10-17.9" dbh	18-39.9" dbh	>39" dbh	
	<u>P. virginiana</u>	!!		!!			
	<u>C. n. apple (cluster)</u>	!!		!			
	Total Numbered Trees per Class	10		2	1		
<b>Understory Species</b>	<i>(3-5 most commonly occurring)</i>						
<b>Other</b>	Basal Area:						
	Number of Dead Trees per Plot:						
	Comments:						
<b>Forest Structure Analysis</b> <small>(for least one plot/stand)</small>	SAMPLE POINT						
		1	2	3	4	5	%Yes
	% Canopy Coverage						
	% Herbaceous Ground Cover						
	% Downed Woody Debris						
	% Invasive Plant Cover						
	Number of Shrub Species (1/1000c. plot)						
	Forest Structure Value:						
	Comments:						

# Forest Stand Field Data Summary Sheet

3/1 cont.

Property	Property Name: Laytonia Park			
	Prepared by: A. Farley / M. Rivira			
	Date: 03/19/01			
Stand Field Data	STAND NUMBER			
	Stand Variable	1	2	3 etc.
	Forest Association (SAP cover type)			
	Average size class of dominant trees			
	Average # of trees/acre			
	Average # of tree species per acre			
	Basal area / acre			
	Average # of dead trees/acre			
	Forest Structure Value			
	Common understory species:			
<p>Comments: old fence row ~ 20ft wide ;            significant accumulation of urban            trash (bottles, coffee cans, foam,            concrete pipes 36-48, Jersey walls,            rubble, downed woody debris, tires)            ③ portion of stand is bordered by            a pig-pen (abandoned) w/ rolls of            rusting chicken wire</p>				

# Field Sampling Data Sheet

\*no formal plot taken - on private property; did not meet size req.  
\*see comments

<b>Property</b>	Property Name:	Laytonia Park					
	Prepared by:	A. Farley / M. Rivera					
	Stand # (from Forest Stand Map):	Sample Plot 3					
	Plot #:						
	Date of Survey:	03/18/01					
<b>Tree Species</b>	Tree Species	NUMBER OF TREES PER SIZE CLASS					
	(note dominant & co-dominant species)	2-5.9" dbh	6-9.9" dbh	10-17.9" dbh	18-29.9" dbh	>30" dbh	
	Total Number of Trees per Class						
<b>Understory species</b>	(3-5 most commonly occurring):						
<b>Other</b>	Basal Area:						
	Number of Dead Trees per Plot:						
	Comments:						
<b>Forest Structure Analysis</b> <small>(at least one plot/stand)</small>	SAMPLE POINT						
		1	2	3	4	5	%Yes
	% Canopy Coverage						
	% Herbaceous Ground Cover						
	% Downed Woody Debris						
	% Invasive Plant Cover						
	Number of Shrub Species (1/100m <sup>2</sup> plot)						
	Forest Structure Value:						
	Comments:						



# Forest Stand Field Data Summary Sheet

411 cont

<b>Property</b>	Property Name: <u>Laybria Park</u>			
	Prepared by: <u>AF/mr</u>			
	Date: <u>03/10/01</u>			
<b>Stand Field Data</b>	STAND NUMBER			
	Stand Variable	1	2	3 etc.
	Forest Association (SAF cover type)			
	Average size class of dominant trees			
	Average # of trees/acre			
	Average # of tree species per acre			
	Basal area / acre			
	Average # of dead trees/acre			
	Forest Structure Value			
	Common understory species:			
	Comments:	<u>isolated forest stand in an</u> <u>agr. field ; ~30 feet wide / 150ft long ;</u> <u>dominated by Acer rubrum 10-18dbh ;</u> <u>bearberry = shrub ; minimal structure ;</u> <u>bordered by Phytolaca americana</u>		

# Field Sampling Data Sheet

<b>Property</b>	Property Name: <u>Laytonia Park</u>						
	Prepared by: <u>A. Farley / M. Rivera</u>						
	Stand # (from Forest Stand Map): <u>1</u>						
	Plot #:						
	Date of Survey: <u>03/19/01</u>						
<b>Tree species</b>	Tree Species	NUMBER OF TREES PER SIZE CLASS					
	( <i>tree dominant</i> & <i>co-dominant** species</i> )	2-5.9" dbh	6-9.9" dbh	10-17.9" dbh	18-29.9" dbh	>30" dbh	
	<i>P. virginiana</i>	'	''	'''	'		
	<i>Robiniopsis pseudo</i>	''	''	'''			
	<i>Maus rubra</i>	'''					
	<i>Cornus florida</i>	''					
	<i>Acer rubrum</i>			'			
Total Number of Trees per Class	9	6	9				
<b>Understory species</b>	(3-5 most commonly occurring):						
	<u>Pinus virginiana</u>						
	<u>C. Florida</u>						
<b>Other</b>	Basal Area: <u>110</u>						
	Number of Dead Trees per Plot: <u>1</u>						
	Comments:						
<b>Forest Structure Analysis</b> <small>(at least one plot/stand)</small>	SAMPLE POINT						
		N1	E2	S3	W4	center	
	% Canopy Coverage	60		85		90	60
	% Herbaceous Ground Cover	30		0		25	40
	% Downed Woody Debris	5		10		10	60
	% Invasive Plant Cover	30		5		10	60
	Number of Shrub Species (1/100sq. plot)	2		2		2	60
	Forest Structure Value:						
	Comments:	<u>INVASIVE = Rosa multiflora</u>					
		<u>Shrub = Rosa multiflora, Cornus florida</u>					
	<u>Maus rubra, Tartarian honeysuckle</u>						

# Forest Stand Field Data Summary Sheet

1/1 cont.

<b>Property</b>	Property Name:	L'Agloria Park		
	Prepared by:	A. Farley / M. Rivera		
	Date:	03/19/01		
<b>Stand Field Data</b>		STAND NUMBER		
	Stand Variable	1	2	3 etc.
	Forest Association (SAF cover type)			
	Average size class of dominant trees	12-299		
	Average # of trees/acre	250		
	Average # of tree species per acre	5		
	Basal area / acre	12,100		
	Average # of dead trees/acre	10		
	Forest Structure Value	8		
	Common understory species:	P. virginiana		
	Comments:	old farm road, compacted; dominated by exotic invasives; early seral; fair health; bordered to the (W) by cow pasture, (E) by airparked; accumulation of urban debris; (S) of plot is Ailanthus altissima stand		

# Field Sampling Data Sheet

<b>Property</b>	Property Name: <u>Laytonia Park</u>						
	Prepared by: <u>A. Farley / M. Rivera</u>						
	Stand # (from Forest Stand Map): <u>2</u>						
	Plot #: <u>1</u>						
	Date of Survey: <u>03/17/01</u>						
<b>Tree species</b>	Tree Species	NUMBER OF TREES PER SIZE CLASS					
	(most dominant & co-dominant species)	2-5.9" dbh	6-9.9" dbh	10-17.9" dbh	18-29.9" dbh	>30" dbh	
	<u>P. virginiana</u>		000	00			
	<u>Acer rubrum</u>	00	00	00			
	<u>Acer negundo</u>	00	00	00			
	Total Number of trees per Class	12	11	5			
<b>Understory species</b>	3-5 most commonly occurring: <u>none present</u>						
<b>Other</b>	Basal Area: <u>110</u>						
	Number of Dead Trees per Plot: <u>4</u>						
	Comments: <u>lots of fallen limbs present</u>						
<b>Forest structure Analysis</b> <small>(at least one plot/stand)</small>	SAMPLE POINT						
		N1	E2	S3	W4	5	Center
	% Canopy Coverage	100	85	95	92	95	100
	% Herbaceous Ground Cover	10	35	5	15	35	100
	% Downed Woody Debris	20	45	10	15	20	100
	% Invasive Plant Cover	0	0	0	0	0	0
	Number of Shrub Species (1/100ac. plot)	0	0	0	0	0	0
	Forest Structure Value:						
	Comments:						



# Forest Stand Field Data Summary Sheet

2/1 cont.

<b>Property</b>	Property Name:	Laytonia Park		
	Prepared by:	A. Farley / M. Rivera		
	Date:	03/16/01		
<b>Stand Field Data</b>		STAND NUMBER		
	Stand Variable	1	2	3 etc.
	Forest Association (SAP cover type)			
	Average size class of dominant trees	6-9.9		
	Average # of trees/acre	280		
	Average # of tree species per acre	3		
	Basal area / acre	1100		
	Average # of dead trees/acre	40		
	Forest Structure Value	10		
	Common understory species:			
Comments:	bordered to (N) by emergent wetland system, (E) (W) by fallow fields; early to mid-successional forest; significant accumulation of downed woody debris; ephemeral drainage pattern in middle of stand; accumulation of firewood (S); a significant amt. of trash is present			

~20-30yrs. old

# Field Sampling Data Sheet

<b>Property</b>	Property Name: <u>Lyttonia Park</u>																														
	Prepared by: <u>A. Farley / M. Rivera</u>																														
	Stand # (from Forest Stand Map): <u>3</u>																														
	Plot #: <u>1</u>																														
	Date of Survey: <u>03/16/01</u>																														
<b>* * Tree species</b>	Tree Species <span style="float: right;">NUMBER OF TREES PER SIZE CLASS</span>																														
	<small>(note dominant &amp; co-dominant species)</small>																														
	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td></td> <td style="text-align: center;">2-5.9" dbh</td> <td style="text-align: center;">6-9.9" dbh</td> <td style="text-align: center;">10-17.9" dbh</td> <td style="text-align: center;">18-29.9" dbh</td> <td style="text-align: center;">≥30" dbh</td> </tr> <tr> <td><u>Prunus virginiana</u></td> <td style="text-align: center;">☒☒</td> <td style="text-align: center;">☒☒☒☒</td> <td style="text-align: center;">☒</td> <td></td> <td></td> </tr> <tr> <td>" "</td> <td style="text-align: center;">!!</td> <td style="text-align: center;">☒</td> <td></td> <td></td> <td></td> </tr> <tr> <td><u>Honey locust</u></td> <td style="text-align: center;">!!</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td><b>Total Number of Trees per Class</b></td> <td style="text-align: center;"><b>39</b></td> <td style="text-align: center;"><b>31</b></td> <td style="text-align: center;"><b>8</b></td> <td></td> <td></td> </tr> </table>		2-5.9" dbh	6-9.9" dbh	10-17.9" dbh	18-29.9" dbh	≥30" dbh	<u>Prunus virginiana</u>	☒☒	☒☒☒☒	☒			" "	!!	☒				<u>Honey locust</u>	!!					<b>Total Number of Trees per Class</b>	<b>39</b>	<b>31</b>	<b>8</b>		
		2-5.9" dbh	6-9.9" dbh	10-17.9" dbh	18-29.9" dbh	≥30" dbh																									
	<u>Prunus virginiana</u>	☒☒	☒☒☒☒	☒																											
" "	!!	☒																													
<u>Honey locust</u>	!!																														
<b>Total Number of Trees per Class</b>	<b>39</b>	<b>31</b>	<b>8</b>																												
<b>Understory species</b>	<small>(3-5 most commonly occurring)</small> <u>Prunus virginiana</u>																														
<b>other</b>	Basal Area: <u>230</u>																														
	Number of Dead Trees per Plot: <u>14</u>																														
	Comments:																														
<b>Forest Structure Analysis</b> <small>(at least one plot/stand)</small>	SAMPLE POINT																														
	N1 E2 S3 W4 5 6Yes																														
	% Canopy Coverage																														
	% Herbaceous Ground Cover																														
	% Downed Woody Debris																														
	% Invasive Plant Cover																														
	Number of Shrub Species (1/100ac. plot)																														
	Forest Structure Value:																														
Comments: <u>invasive plants Polygonum perfoliatum, Lonicera japonica, winterberry, Rosa multiflora</u>																															
<u>&amp; note: ~ Eft N of project boundary, winterberry present</u>																															

# Forest Stand Field Data Summary Sheet

311 Cont

<b>Property</b>	Property Name: <u>Laytonia Park</u>			
	Prepared by: <u>AF/ML</u>			
	Date: <u>03/10/01</u>			
<b>Stand Field Data</b>	<b>STAND NUMBER</b>			
	Stand Variable                      1                      2                      3 etc.			
	Forest Association (SAF cover type)			
	Average size class of dominant trees	10-17.9		
	Average # of trees/acre	240		
	Average # of tree species per acre	1		
	Basal area / acre	2300		
	Average # of dead trees/acre	140		
	Forest Structure Value	11		
	Common understory species:			
Comments:	Pioneer plant community dominated by <i>P. virginia</i> ; abandoned foundation (S); abandoned barn / fallow field (E); fallow field (W); contiguous black cherry forest (N); shrub/herb layer dominated by <i>Rosa multiflora</i> <del>but</del> <i>Forsythia</i> sp.; significant accumulation of downed woody debris; accumulation of firwood (S)			

*Forsythia* sp.;  
wineberry

# Field Sampling Data Sheet

<b>Property</b>	Property Name:	Laytonia Park					
	Prepared by:	A. Farley / M. Rivera					
	Stand # (from Forest Stand Map):	4					
	Plot #:	1					
	Date of Survey:	03/19/01					
<b>Tree Species</b>	Tree Species	NUMBER OF TREES PER SIZE CLASS					
	(note dominant & co-dominant species)	2-5.9" dbh	6-9.9" dbh	10-17.9" dbh	18-29.9" dbh	>30" dbh	
	ACR rubrum				••		
	Polonia tonantla			••			
	Robinia pseudo.			•			
	Populus occident.		•				
	unknown	•					
Total Number of Trees per Class	1	1	4	2			
<b>Understory species</b>	(3-5 most commonly occurring):	Prunus virginiana					
		unknown					
<b>Other</b>	Basal Area:	90					
	Number of Dead Trees per Plot:	2					
	Comments:						
<b>Forest Structure Analysis</b> <small>(at least one plot/stand)</small>	SAMPLE POINT						
		N 1	E 2	S 3	W 4	center	total
	% Canopy Coverage	0	95	85	190	80	100
	% Herbaceous Ground Cover	20	15	15	0	25	100
	% Downed Woody Debris	20	15	10	25	0	100
	% Invasive Plant Cover	15	0	0	0	20	60
	Number of Shrub Species (1/100ac. plot)	1	1	1	1	1	100
	Forest Structure Value:						
	Comments:	shrub = Rosa multiflora, Rubus alleghaniensis invasives = Rosa multiflora, wild berries herbs = wild strawberry					
	Notes:	E: point next to a large trash hoop					



# Forest Stand Field Data Summary Sheet

4:1 cont.

<b>Property</b>	Property Name:	Lantonia Park		
	Prepared by:	A. Farley / M. Rivera		
	Date:	03/19/01		
<b>Stand Field Data</b>		STAND NUMBER		
	Stand Variable	1	2	3 etc.
	Forest Association (SAP cover type)			
	Average size class of dominant trees	1P-179		
	Average # of trees/acre	20		
	Average # of tree species per acre	5		
	Basal area / acre	900		
	Average # of dead trees/acre	20		
	Forest Structure Value	P		
	Common understory species:			
<p><b>Comments:</b> Pioneer community, upslope; heavily disturbed; significant accumulation of urban debris (crushed auto parts, tires, foam, concrete, bottles, oil containers, beer cans); fair - poor health (E) of barn (abandoned); (W) of Airport Rd.; (N) and (S) contiguous forest; old telephone pole present in the plot</p>				

# Field Sampling Data Sheet

<b>Property</b>	Property Name: <u>Laytonia Park</u>						
	Prepared by: <u>A. Farley / M. Rivera</u>						
	Stand # (from Forest Stand Map): <u>5</u>						
	Plot #: <u>1</u>						
	Date of Survey: <u>03/16/01</u>						
<b>Tree Species</b>	Tree Species	NUMBER OF TREES PER SIZE CLASS					
	(note dominant & co-dominant species)	2-5.9" dbh	6-9.9" dbh	10-17.9" dbh	18-29.9" dbh	>30" dbh	
	*Fraxinus penn	••	••	••			
	*Acer rubrum	••	••	••			
	*Prunus vig.		••	••			
	*Q. falcata			•			
	*L. tulipifera	•					
Total Number of Trees per Class	8	8	14				
<b>Understory species</b>	(3-5 most commonly occurring): <u>Prunus virginiana, Acer rubrum</u>						
<b>Other</b>	Basal Area: <u>140</u>						
	Number of Dead Trees per Plot: <u>4</u>						
	Comments:						
<b>Forest Structure Analysis</b> <small>(at least one plot/stand)</small>	SAMPLE POINT						
		N <sub>1</sub>	E <sub>2</sub>	S <sub>3</sub>	W <sub>4</sub>	center	
	% Canopy Coverage	85	90	90	85	86	100
	% Herbaceous Ground Cover	15	30	20	15	10	100
	% Downed Woody Debris	25	20	20	10	10	100
	% Invasive Plant Cover	3	25	20	25	10	100
	Number of Shrub Species (1/100ac. plot)	1	3	1	2	2	100
	Forest Structure Value:						
	Comments:	<u>Wineberry = shrub, invasive</u>					
		<u>honeysuckle = invasive</u>					
	<u>yellow mustard, wild onion = invasive</u>						
	<u>Rosa multiflora = shrub</u>						
	<u>Juniperus virginiana = shrub</u>						
	<u>Rubus alleghaniensis = shrub</u>						

# Forest Stand Field Data Summary Sheet

S/L cont.

<b>Property</b>	Property Name: <u>Laytonia Park</u>			
	Prepared by: <u>A. Farley / M. Rivera</u>			
	Date: <u>03/16/01</u>			
<b>Stand Field Data</b>	STAND NUMBER			
	Stand Variable	1	2	3 etc.
	Forest Association (SAF cover type)			
	Average size class of dominant trees	<u>1e-179</u>		
	Average # of trees/acre	<u>30</u>		
	Average # of tree species per acre	<u>5</u>		
	Basal area / acre	<u>1400</u>		
	Average # of dead trees/acre	<u>40</u>		
	Forest Structure Value	<u>19</u>		
	Common understory species:			
Comments: <u>Mesic forest on a steep (E) facing slope; shrub/herb layer dominated by exotic invasives; moderately dense shrub layer; Airport Rd (E); contiguous forest (N); mid-successional forest, ~20-30 yrs. old; evidence of human disturbance; wetland system is present (NE) of plot; <del>a well</del></u>				

(i.e. well incized channel)

# Field Sampling Data Sheet

<b>Property</b>	Property Name:	Laytonia Park				
	Prepared by:	A. Farley / M. Rivera				
	Stand # (from Forest Stand Map):	6				
	Plot #:	1				
	Date of Survey:	03/11/01				
<b>Tree Species</b> <small>*k</small>	Tree Species	NUMBER OF TREES PER SIZE CLASS				
	<small>(note dominant &amp; co-dominant species)</small>	2-5.9" dbh	6-9.9" dbh	10-17.9" dbh	18-29.9" dbh	>30" dbh
	Acer rubrum		••	••	•	
	Prunus virginiana					
	unknown	••	•			
	Total Number of Trees per Class	4	3	4	1	
<b>understory species</b>	<small>(3-5 most commonly occurring)</small>	Acer rubrum				
		unknown				
		Prunus virginiana				
<b>other</b>	Basal Area:	100				
	Number of Dead Trees per Plot:	1				
	Comments:					
<b>Forest Structure Analysis</b> <small>(at least one plot/stand)</small>		SAMPLE POINT				
					center	
		N 1	E 2	S 3	W 4	5
						%YES
	% Canopy Coverage	90	95	100	85	90
	% Herbaceous Ground Cover	25	25	15	35	25
	% Downed Woody Debris	20	0	0	20	25
	% Invasive Plant Cover	0	20	5	35	5
	Number of Shrub Species (1/100sq. plot)	1	2	2	1	1
	Forest Structure Value:					
Comments:	Shrubs = Lonicera japonica, winterberry INVASIVES = Rosa multiflora, Rubus alleghaniensis wild onion					

\* note: (E) print on property boundary

# Forest Stand Field Data Summary Sheet

6/1 cont

<b>Property</b>	Property Name: <u>Laytonia Park</u>			
	Prepared by: <u>A. Farley   M. Riveira</u>			
	Date: <u>03/19/01</u>			
<b>Stand Field Data</b>	STAND NUMBER			
	Stand Variable	1	2	3 etc.
	Forest Association (SAP cover type)			
	Average size class of dominant trees			
	Average # of trees/acre			
	Average # of tree species per acre			
	Basal area / acre			
	Average # of dead trees/acre			
	Forest Structure Value			
	Common understory species:			
	Comments: <u>bottomland forest community;</u> <u>mid-successional ~30-40yrs. old;</u> <u>⊖ border is a large drainage + Airport Blvd;</u> <u>⊙ border and ⊙ border contiguous forest;</u> <u>⊕ border is a narrow wooded corridor;</u> <u>moderate health; significant</u> <u>accumulation of urban debris ⊙</u>			

**APPENDIX B**

**Agency Letters**





April 6, 2001

Ms. Lori Byrne  
Maryland Department of Natural Resources  
580 Taylor Ave.  
Annapolis Maryland 21401

Re: Threatened and Endangered Species Survey  
Town of Derwood, Montgomery County, Maryland

Dear Ms. Byrne:

URS Corporation Inc. is in the process of conducting a Forest Stand Delineation/Natural Resource Inventory an approximate 52-acre tract of land located in Montgomery County, Maryland. We are seeking your assistance in determining the presence or absence of threatened and endangered species for the project site. The study area is located northwest of the Airpark Road-Muncaster Mill Road intersection, Montgomery County Maryland. Enclosed is a map showing the approximate location of the project site for your review.

Please contact us at (301) 652-2215 if you have any questions regarding this.

Sincerely  
URS Corporation

Michael Rivera  
Wetland Ecologist

CC: file







Parris N. Glendening  
Governor

Kathleen Kennedy Townsend  
Lt. Governor

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

Sarah J. Taylor-Rogers, Ph. D.  
Secretary

Stanley K. Arthur  
Deputy Secretary

May 4, 2001

Mr. Michael Rivera  
URS Corporation  
7101 Wisconsin Avenue, Suite 700  
Bethesda, MD 20814-4870

RE: Environmental Review for 52-Acre Tract Northwest of Airpark Road-Muncaster Mill Road Intersection, Town of Derwood, Montgomery County, Maryland.

Dear Mr. Rivera:

The Wildlife and Heritage Division's Natural Heritage database indicates that there is a 1978 breeding record for state threatened Sedge Wren (*Cistothorus platensis*) known to have occurred on the project site. There are also recent records for the following species of concern known to have occurred within the vicinity of the project site. These species could potentially occur on the project site itself, especially in areas of appropriate habitat. They are:

<u>Scientific Name</u>	<u>Common Name</u>	<u>State Status</u>
<i>Scirpus verecundus</i>	Bashful Bulrush	Rare
<i>Castanea dentata</i>	American Chestnut	Rare

Also, the forested area on the project site contains Forest Interior Dwelling Bird habitat. Populations of many Forest Interior Dwelling Bird species (FIDS) are declining in Maryland and throughout the eastern United States. The conservation of this habitat is strongly encouraged by the Department of Natural Resources. The following guidelines will help minimize the project's impacts on FIDS and other native forest plants and wildlife:

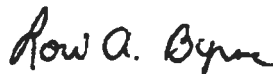
1. Concentrate development to nonforested areas.
2. If forest loss or disturbance is absolutely unavoidable, concentrate or restrict development to the perimeter of the forest (i.e., within 300 feet of the existing forest edge), particularly in narrow peninsulas of upland forest less than 300 feet wide.

Telephone: (410) 260-8540  
DNR TTY for the Deaf: 410-974-3683

3. Limit forest removal to the "footprint" of houses and to that which is absolutely necessary for the placement of roads and driveways.
4. Wherever possible, minimize the number and length of driveways and roads.
5. Roads and driveways should be as narrow and short as possible; preferably less than 25 feet and 15 feet, respectively.
6. Maintain forest canopy closure over roads and driveways.
7. Maintain forest habitat up to the edges of roads and driveways; do not create or maintain mowed grassy berms.
8. Maintain or create wildlife corridors (for details, see Critical Area Commission's Guidance Paper on Wildlife Corridors).
9. Do not remove or disturb forest habitat during May-August, the breeding season for most FIDS. This seasonal restriction may be expanded to February-August if certain early nesting FIDS (e.g., Barred Owl) are present.
10. Afforestation efforts should target (1) riparian or streamside areas that lack woody vegetation, (2) forested riparian areas less than 300 feet, and (3) gaps or peninsulas of nonforested habitat within or adjacent to existing FIDS habitat.

Please contact David Brinker, Central Regional Ecologist for the Wildlife and Heritage Division, at (410) 744-8939 to ensure that there are no impacts to rare species resulting from this project.

Sincerely,



Lori A. Byrne,  
Environmental Review Specialist,  
Wildlife & Heritage Division

ER# 2001.0760.mo  
cc: D. Brinker

## **APPENDIX C**

### **Covenant Life Church Traffic Redistributed**



Table 1A  
Laytonia Recreational Park  
Traffic Forecasts  
Alpark Road/Site Driveway

AM Peak HOUR

Scenario	In	Out	Alpark Road			WBR	WBT	WBL	Alpark Road			Site Access	
			SBR	SBT	SBL				NBR	NBT	NBL	EBR	EBT
Existing	-	-	-	1,372	-	-	-	-	-	484	-	-	-
Background w/o CLC Expansion	-	-	-	1,470	-	-	-	-	-	537	-	-	-
CLC Expansion	117	-	-	-	-	-	-	-	-	-	20	65	17
Laytonia Recreational Park	41	21	16	-	-	-	-	-	-	-	17	10	6
Total Future	133	1,470	-	-	-	-	-	-	-	537	37	75	23

Table 1B  
Laytonia Recreational Park  
Traffic Forecasts  
Alpark Road/Site Driveway

PM Peak HOUR

Scenario	In	Out	Alpark Road			WBR	WBT	WBL	Alpark Road			Site Access	
			SBR	SBT	SBL				NBR	NBT	NBL	EBR	EBT
Existing	-	-	-	641	-	-	-	-	-	1,625	-	-	-
Background w/o CLC Expansion	-	-	-	715	-	-	-	-	-	1,705	-	-	-
CLC Expansion	13	-	-	-	-	-	-	-	-	-	8	23	11
Laytonia Recreational Park	189	198	72	-	-	-	-	-	-	-	77	97	59
Total Future	85	715	-	-	-	-	-	-	-	1,705	85	120	70

**Table 2A**  
 Laytonia Recreational Park  
 Traffic Forecasts  
 Muncaster Mill Road/Airpark Road/Shady Grove Road **AM Peak HOUR**

Scenario	In	Out	Airpark Road		Muncaster Mill Road		Shady Grove Road		Muncaster Mill Road			
			SBR	SBT	SBL	WBR	WBT	WBL	NBR	NBT	NBL	EBR
Existing	3	1,170	199	71	268	535	407	410	206	723	673	3
Background w/o CLC Expansion	3	1,205	262	99	377	580	433	435	274	765	722	3
CLC Expansion	-	31	34	-	60	-	-	20	21	34	33	-
Laytonia Recreational Park	41	21	5	2	7	-	-	6	2	-	-	8
Total Future	4	1,240	301	101	444	580	433	461	297	799	755	11

**Table 2B**  
 Laytonia Recreational Park  
 Traffic Forecasts  
 Airpark Road/Site Driveway **PM Peak HOUR**

Scenario	In	Out	Airpark Road		Muncaster Mill Road		Shady Grove Road		Muncaster Mill Road			
			SBR	SBT	SBL	WBR	WBT	WBL	NBR	NBT	NBL	EBR
Existing	5	440	196	219	476	369	826	1,398	639	252	541	8
Background w/o CLC Expansion	5	467	243	276	532	379	839	1,421	685	341	657	8
CLC Expansion	-	6	17	-	18	-	-	8	9	5	16	-
Laytonia Recreational Park	189	198	44	10	31	-	-	28	9	-	-	38
Total Future	19	513	304	286	581	379	839	1,457	703	346	673	46

Table 3A  
Laytonia Recreational Park  
Traffic Forecasts  
Muncaster Mill Road/Site Access

Scenario	AM Peak HOUR													
	In		Out		Site Access		Muncaster Mill Road		0					
	In	Out	SBR	SBT	SBL	WBR	WBT	WBL	NBR	NBT	NBL	EBR	EBT	EBL
Existing			-	-	-	-	477	-	-	-	-	-	1,399	-
Background w/o CLC Expansion			-	-	-	-	654	-	-	-	-	-	1,490	-
CLC Expansion			-	-	-	-	60	-	-	-	-	-	67	-
Laytonia Recreational Park	41	21	4	-	-	9	1	-	-	-	-	-	-	-
Total Future			4	-	-	9	715	-	-	-	-	-	1,557	-

Table 3B  
Laytonia Recreational Park  
Traffic Forecasts  
Airport Road/Site Driveway

Scenario	PM Peak HOUR													
	In		Out		Site Access		Muncaster Mill Road		0					
	In	Out	SBR	SBT	SBL	WBR	WBT	WBL	NBR	NBT	NBL	EBR	EBT	EBL
Existing			-	-	-	-	1,120	-	-	-	-	-	801	-
Background w/o CLC Expansion			-	-	-	-	1,222	-	-	-	-	-	1,006	-
CLC Expansion			-	-	-	-	18	-	-	-	-	-	21	-
Laytonia Recreational Park	189	198	42	-	-	41	14	-	-	-	-	-	-	-
Total Future			42	-	-	41	1,254	-	-	-	-	-	1,027	-





## **APPENDIX D**

### **Critical Lane Volume Analysis**



file=CLVFL14a.WK1}  
 Subdivision Case:  
 Laytonia Park  
 Traffic Condition:  
 Not Future Buildout  
 Date:5'22'01

From NORTH (Southbound)  
 R Right Thru Left  
 ^ 133 1470 0 =VPH  
 R 1 2 0 =#Lanes  
 ONLY | | CLV(N):  
 for <- V -> 816  
 RTOR 3

<-Name of N-S Approach  
 Airpark Road  
 <-If Split Phase:N-S!!  
 Use "N","Y": no  
 Peak Hour or Period:  
 AM peak hour

From WEST (Eastbound)  
 Left 23 0 --^ S  
 Thru 0 1 --> |  
 Right 75 0 --v V  
 R CLV(W)= 98 3

2 <=[WB receiving lanes] /\  
 CLV(N-S)= 816  
 CLV(E-W)= 98  
 SU M CLV= 914 ok  
 LOS= A | EB==> 2  
 CLV(S): (ok-under 1,525)  
 285 <- ^ ->  
 | | |  
 #Lanes= 1 2 0  
 VPH= 37 537 0  
 Left Thru RightR

From EAST (Westbound)  
 #Lanes VPH R  
 NB^-- 0 0 Right  
 <-- 0 0 Thru  
 v-- 0 0 Left  
 CLV(E)= 23

Name of E-W Approach  
 Site Access  
 If Split Phase:E-W!  
 Use "N","Y":n  
 Date:12-Jun \*\*\*\*\*  
 By: Wells & Assoc.

From SOUTH (Northbound)

E2,N9,K19,A13 RTOR=R  
 If # Lanes=0, then  
 Rights use Thru Lane  
 Left Turnd use Thru L  
 MUST hit CALC-F9 >IBM  
 To Print Use: Alt "P"

```

{file=CLVFL14a.WK1}
Subdivision Case:
Laytonia Park
Traffic Condition:
at Future Buildout
ate:5'22'01
From NORTH (Southbound)
R Right Thru Left
^ 85 715 0 =VPH
R 1 2 0 =#Lanes
ONLY | | | CLV(N):
for <- V -> 464
RTOR 3
<-Name of N-S Approach
Airpark Road
<-If Split Phase:N-S!!
Use "N","Y": no
Peak Hour or Period:
PM peak hour
From WEST (Eastbound) 2 <=[WB receiving lanes] /\
VPH #Lanes CLV(N-S)= 904
Left 70 0 --^ S CLV(E-W)= 190 NB^--
Thru 0 1 -->| |----- <--
ight 120 0 --v V SU M CLV= 1094 ok v--
CLV(W)= 190 3 LOS= B | EB==> 2 CLV(E)= 70
CLV(S): (ok-under 1,525)
904 <- ^ ->
| | |
#Lanes= 1 2 0
VPH= 85 1705 0
Left Thru RightR
From SOUTH (Northbound)
E2,N9,K19,A13 RTOR=R
If # Lanes=0, then
Rights use Thru Lane
Left Turnd use Thru L
MUST hit CALC-F9 >IBM
To Print Use: Alt "P"
name of E-W Approach
ite Access
If Split Phase:E-W!
Use "N","Y":n
ate:12-Jun *****
By: Wells & Assoc.

```

```
{file=CLVFL14a.WK1}
Subdivision Case:
Laytonia Park
Traffic Condition:
Not Future Buildout
Date:5'22'01
```

```
From NORTH (Southbound)
R Right Thru Left
^ 133 1470 0 =VPH
R 1 2 0 =#Lanes
ONLY | | CLV(N):
for <- V -> 816
RTOR 3
```

```
<-Name of N-S Approach
Airpark Road
<-If Split Phase:N-S!!
Use "N","Y": no
Peak Hour or Period:
AM peak hour
```

```
From WEST (Eastbound)
VPH #Lanes
Left 23 1
Thru 0 0
Right 75 1
CLV(W)= 0
```

```
2 <=[WB receiving lanes] / \
CLV(N-S)= 816
CLV(E-W)= 23
SU M CLV= 839 ok
LOS= A | EB==> 2
CLV(S): (ok-under 1,525)
285 <- ^ ->
| | |
#Lanes= 1 2 0
VPH= 37 537 0
Left Thru RightR
```

```
From EAST (Westbound)
#Lanes VPH R
NB^-- 0 0 Right
<-- 0 0 Thru
v-- 0 0 Left
CLV(E)= 23
```

```
Name of E-W Approach
Site Access
If Split Phase:E-W!
Use "N","Y":n
Date:11-Jun *****
By: Wells & Assoc.
```

```
From SOUTH (Northbound)
```

```
E2,N9,K19,A13 RTOR=R
If # Lanes=0, then
Rights use Thru Lane
Left Turnd use Thru L
MUST hit CALC-F9 >IBM
To Print Use: Alt "P"
```

```
{file=CLVFL14a.WK1}
Subdivision Case:
Daytonia Park
Traffic Condition:
Not Future Buildout
Date:5'22'01
```

```
From NORTH (Southbound)
R Right Thru Left
^      85   715   0 =VPH
R      1     2     0 =#Lanes
ONLY  |     |     | CLV(N):
for <-   V     -> 464
RTOR
```

```
<-Name of N-S Approach
Airpark Road
<-If Split Phase:N-S!!
Use "N", "Y": no
Peak Hour or Period:
PM peak hour
```

```
From WEST (Eastbound) 2 <=[WB receiving lanes] /\
VPH #Lanes CLV(N-S)= 904
Left 70 1 --^ S CLV(E-W)= 70
Thru 0 0 --> | |
Right 120 1 --v V SU M CLV= 974 ok
CLV(W)= 0 3 LOS= A | EB==>
```

```
From EAST (Westbound)
#Lanes VPH R
NB^-- 0 0 Right
<-- 0 0 Thru
v-- 0 0 Left
CLV(E)= 70
```

```
Name of E-W Approach
Site Access
If Split Phase:E-W!
Use "N", "Y":n
Date:11-Jun *****
By: Wells & Assoc.
```

```
CLV(S): (ok-under 1,525)
904 <- ^ ->
| | |
#Lanes= 1 2 0
VPH= 85 1705 0
Left Thru RightR
From SOUTH (Northbound)
```

```
E2,N9,K19,A13 RTOR=R
If # Lanes=0, then
Rights use Thru Lane
Left Turnd use Thru L
MUST hit CALC-F9 >IBM
To Print Use: Alt "P"
```

```

file=CLVFL14a.WK1}
Subdivision Case:
Laytonia Park
Traffic Condition:
ot Future Buildout
ate:5'22'01

```

```

From NORTH (Southbound)
R Right Thru Left
^ 4 1240 301 =VPH
R 0 3 1 =#Lanes
ONLY | | | CLV(N):
for <- V -> 757
RTOR 3

```

```

<-Name of N-S Approach
Airpark/Shady Grove
<-If Split Phase:N-S!!
Use "N","Y": no
Peak Hour or Period:
AM peak hour

```

```

From WEST (Eastbound) 2 <=[WB receiving lanes] /\
VPH #Lanes CLV(N-S)= 757
Left 11 1 --^ S CLV(E-W)= 809
Thru 755 2 -->| |-----
ight 799 1 --v V SU M CLV= 1567 *
CLV(W)= 809 3 LOS= E | EB==>

```

```

From EAST (Westbound)
#Lanes VPH R
NB^-- 1 101 Right
<-- 2 444 Thru
v-- 2 580 Left
CLV(E)= 246

```

```

ame of E-W Approach
uncaster Mill
If Split Phase:E-W!
se "N","Y":n
ate:08-Jun *****
By: Wells & Assoc.

```

```

CLV(S): *->over 1,525!!
545 <- ^ ->
| | |
#Lanes= 1 2 1
VPH= 297 461 433
Left Thru RightR
From SOUTH (Northbound)

```

```

E2,N9,K19,A13 RTOR=R
If # Lanes=0, then
Rights use Thru Lane
Left Turnd use Thru L
MUST hit CALC-F9 >IBM
To Print Use: Alt "P"

```



```
{file=CLVFL14a.WK1}
Subdivision Case:
Jaytonia Park
Traffic Condition:
ot Future Buildout
ate:5'22'01
```

```
From NORTH (Southbound)
R Right Thru Left
^ 19 513 304 =VPH
R 0 3 1 =#Lanes
ONLY | | | CLV(N):
for <- V -> 900
RTOR 3
```

```
<-Name of N-S Approach
Airpark/Shady Grove
<-If Split Phase:N-S!!
Use "N","Y": no
Peak Hour or Period:
PM peak hour
```

```
From WEST (Eastbound) 2 <=[WB receiving lanes] / \
VPH #Lanes
Left 46 1 --^ S
Thru 673 2 --> | |
Right 346 1 --v V
CLV(W)= 558 3
```

```
CLV(N-S)= 1076
CLV(E-W)= 558
SU M CLV= 1634 *
LOS= F | EB==> 2
CLV(S): *->over 1,525!!
```

```
From EAST (Westbound)
#Lanes VPH R
NB^-- 1 286 Right
<-- 2 581 Thru
v-- 2 379 Left
CLV(E)= 354
```

```
ame of E-W Approach
uncaster Mill
If Split Phase:E-W!
Use "N","Y":n
ate:08-Jun *****
By: Wells & Assoc.
```

```
1076 <- ^ ->
#Lanes= 1 2 1
VPH= 703 1457 839
Left Thru RightR
From SOUTH (Northbound)
```

```
E2,N9,K19,A13 RTOR=R
If # Lanes=0, then
Rights use Thru Lane
Left Turnd use Thru L
MUST hit CALC-F9 >IBM
To Print Use: Alt "P"
```

```

{file=CLVFL14a.WK1}
Subdivision Case:
Daytonia Park
Traffic Condition:
Not Future Buildout
Date: 5'22'01

From NORTH (Southbound)
R Right Thru Left
^ 4 0 0 =VPH
R 1 0 0 =#Lanes
ONLY | | | CLV(N):
for <- V -> 0
RTOR 3

<-Name of N-S Approach
Site Access
<-If Split Phase:N-S!!
Use "N","Y": no
Peak Hour or Period:
AM peak hour

From WEST (Eastbound) 2 <=[WB receiving lanes] /\
VPH #Lanes CLV(N-S)= 0 ||
Left 0 0 --^ S CLV(E-W)= 715 NB^-- 1 9 Right
Thru 0 0 --> | |-----<-- 1 715 Thru
Right 0 0 --v V SU M CLV= 715 ok v-- 0 0 Left
CLV(W)= 0 3 LOS= A | EB==> 2 CLV(E)= 715

CLV(S): (ok-under 1,525)
0 <- ^ ->
| | |
#Lanes= 0 0 0
VPH= 0 0 0
Left Thru RightR
From SOUTH (Northbound)

E2,N9,K19,A13 RTOR=R
If # Lanes=0, then
Rights use Thru Lane
Left Turnd use Thru L
MUST hit CALC-F9 >IBM
To Print Use: Alt "P"

```

```

{file=CLVFL14a.WK1}
Subdivision Case: Laytonia Park
Traffic Condition: at Future Buildout
ate:5'22'01
From NORTH (Southbound)
R Right 42 Thru 0 Left 0 =VPH
R 1 0 0 =#Lanes
ONLY | | | CLV(N):
for <- V -> 0
RTOR 3
<-Name of N-S Approach
Site Access
<-If Split Phase:N-S!!
Use "N","Y": no
Peak Hour or Period:
PM peak hour

```

```

From WEST (Eastbound) 2 <=[WB receiving lanes] /\
VPH #Lanes CLV(N-S)= 0
Left 0 0 --^ S CLV(E-W)= 1254 NB^-- 1 41 Right
Thru 0 0 --> | |----- <-- 1 1254 Thru
Right 0 0 --v V SU M CLV= 1254 ok v-- 0 0 Left
CLV(W)= 0 3 LOS= C | EB==> 2 CLV(E)= 1254

```

```

Name of E-W Approach
uncaster Mill
If Split Phase:E-W!
Use "N","Y":n
ate:11-Jun *****
By: Wells & Assoc.
CLV(S): (ok-under 1,525)
0 <- ^ ->
| | |
#Lanes= 0 0 0
VPH= 0 0 0
Left Thru RightR
From SOUTH (Northbound)
E2,N9,K19,A13 RTOR=R
If # Lanes=0, then
Rights use Thru Lane
Left Turnd use Thru L
MUST hit CALC-F9 >IBM
To Print Use: Alt "P"

```

## **APPENDIX E**

### **Queue Analysis**



**Maryland SHA Queue Length Formula**

Site Access EB at Airpark Road

$$Q = \frac{\text{Surge Factor} * \text{Vehicle Length} * \text{Vehicles Per Hour} * \text{Lane Use Factor}}{\text{cycles / hour}}$$

Surge Factor = 1.5

Vehicles Per Hour = 98

Vehicle Length = 25

Lane Use Factor = 1

Cycle Length = 120

Movement: EBLR AM

Queue Length = 122.50 feet
----------------------------

---

Surge Factor = 1.5

Vehicles Per Hour = 190

Vehicle Length = 25

Lane Use Factor = 1

Cycle Length = 120

Movement: EBLR PM

Queue Length = 237.50 feet
----------------------------

**Maryland SHA Queue Length Formula**

Site Access EBL at Airpark Road

$$Q = \frac{\text{Surge Factor} * \text{Vehicle Length} * \text{Vehicles Per Hour} * \text{Lane Use Factor}}{\text{cycles / hour}}$$

Surge Factor = 1.5

Vehicles Per Hour = 23

Vehicle Length = 25

Lane Use Factor = 1

Cycle Length = 120

Movement: EBL AM

Queue Length = 28.75 feet
---------------------------

---

Surge Factor = 1.5

Vehicles Per Hour = 70

Vehicle Length = 25

Lane Use Factor = 1

Cycle Length = 120

Movement: EBL PM

Queue Length = 87.50 feet
---------------------------

**Maryland SHA Queue Length Formula**

Site Access EB at Airpark Road

$$Q = \frac{\text{Surge Factor} * \text{Vehicle Length} * \text{Vehicles Per Hour} * \text{Lane Use Factor}}{\text{cycles / hour}}$$

Surge Factor = 1.5

Vehicles Per Hour = 37

Vehicle Length = 25

Lane Use Factor = 1

Cycle Length = 120

Movement: NBL AM

Queue Length = 46.25 feet
---------------------------

---

Surge Factor = 1.5

Vehicles Per Hour = 85

Vehicle Length = 25

Lane Use Factor = 1

Cycle Length = 120

Movement: NBL PM

Queue Length = 106.25 feet
----------------------------



**Maryland SHA Queue Length Formula**

SBL Airpark Road at Muncaster Mill

$$Q = \frac{\text{Surge Factor} * \text{Vehicle Length} * \text{Vehicles Per Hour} * \text{Lane Use Factor}}{\text{cycles / hour}}$$

Surge Factor = 1.5

Vehicles Per Hour = 301

Vehicle Length = 25

Lane Use Factor = 1

Cycle Length = 120

Movement: SBL AM

Queue Length =	376.25 feet
----------------	-------------

---

Surge Factor = 1.5

Vehicles Per Hour = 304

Vehicle Length = 25

Lane Use Factor = 1

Cycle Length = 120

Movement: SBL PM

Queue Length =	380.00 feet
----------------	-------------

**Maryland SHA Queue Length Formula**

EBL Muncaster Mill at Shady Grove/Airpark

$$Q = \frac{\text{Surge Factor} * \text{Vehicle Length} * \text{Vehicles Per Hour} * \text{Lane Use Factor}}{\text{cycles / hour}}$$

Surge Factor = 1.5

Vehicles Per Hour = 11

Vehicle Length = 25

Lane Use Factor = 1

Cycle Length = 120

Movement: EBL AM

Queue Length = 13.75 feet
---------------------------

---

Surge Factor = 1.5

Vehicles Per Hour = 46

Vehicle Length = 25

Lane Use Factor = 1

Cycle Length = 120

Movement: EBL PM

Queue Length = 57.50 feet
---------------------------

**Maryland SHA Queue Length Formula**

SBTR Airpark Road at Muncaster Mill

$$Q = \frac{\text{Surge Factor} * \text{Vehicle Length} * \text{Vehicles Per Hour} * \text{Lane Use Factor}}{\text{cycles / hour}}$$

Surge Factor = 1.5

Vehicles Per Hour = 1244

Vehicle Length = 25

Lane Use Factor = 0.37

Cycle Length = 120

Movement: SBTR AM

Queue Length = 575.35 feet
----------------------------

---

Surge Factor = 1.5

Vehicles Per Hour = 532

Vehicle Length = 25

Lane Use Factor = 0.37

Cycle Length = 120

Movement: SBTR PM

Queue Length = 246.05 feet
----------------------------

**Maryland SHA Queue Length Formula**

SBR Access on Muncaster Mill

$$Q = \frac{\text{Surge Factor} * \text{Vehicle Length} * \text{Vehicles Per Hour} * \text{Lane Use Factor}}{\text{cycles / hour}}$$

Surge Factor = 1.5

Vehicles Per Hour = 4

Vehicle Length = 25

Lane Use Factor = 1

Cycle Length = 120

Movement: SBR AM

Queue Length = 5.00 feet
--------------------------

---

Surge Factor = 1.5

Vehicles Per Hour = 42

Vehicle Length = 25

Lane Use Factor = 1

Cycle Length = 120

Movement: SBR PM

Queue Length = 52.50 feet
---------------------------

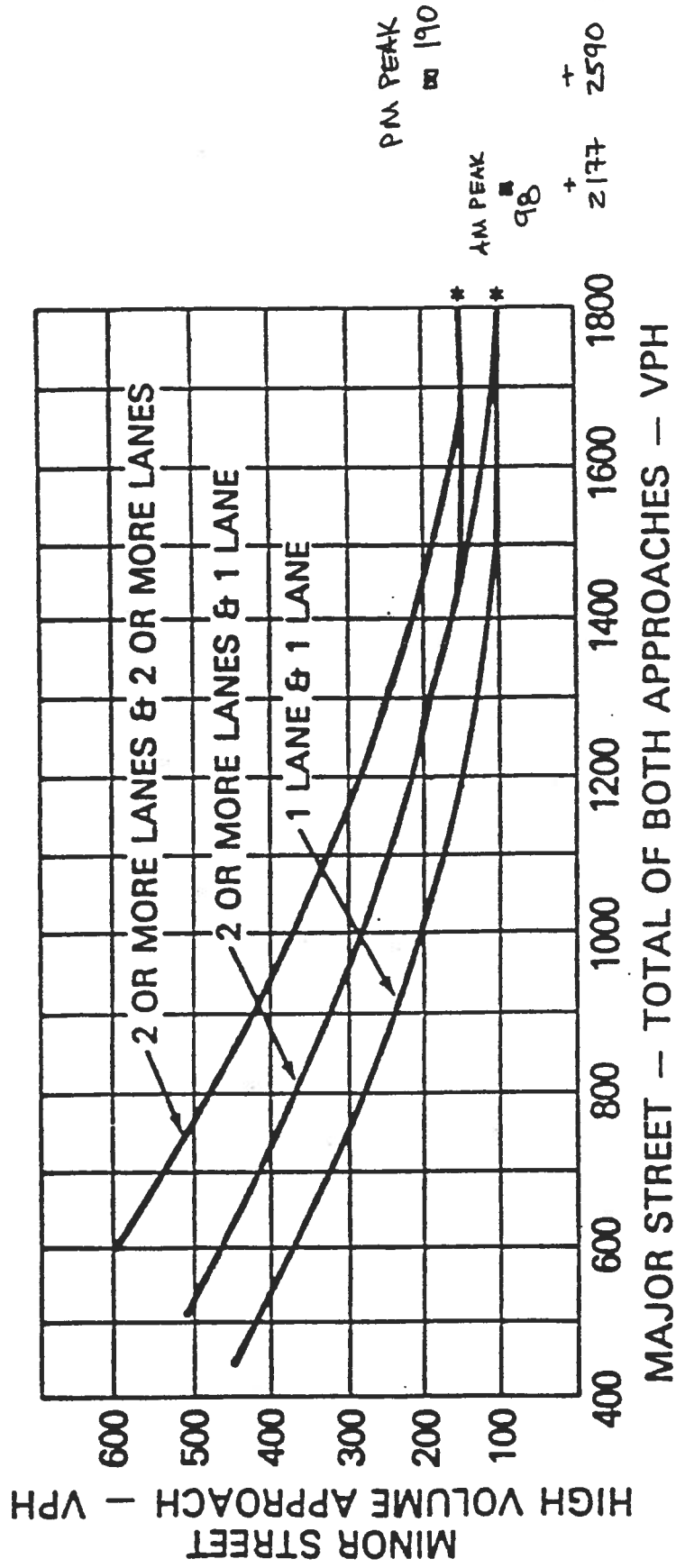


**APPENDIX F**

**Peak Hour Volume Warrant**



**FIGURE 4.5. PEAK HOUR VOLUME WARRANT**



\*NOTE: 150 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACH WITH TWO OR MORE LANES AND 100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.





**APPENDIX G**

**Test Borings Log**





PROJECT NAME: Laytonia Recreational Park		PROJECT NUMBER: 29234-690			BORING NUMBER: B-1	
CLIENT NAME: Lewis, Scully, Gionet, Landscape Architects		CLIENT PROJECT NUMBER:			SHEET 1 OF 1	
DRILLER: D Floyd		LOCATION: See boring location plan			ELEVATION: 476.6	
WATER LEVELS ENCOUNTERED:		DATE	TIME	DEPTH	CAVED	DATE START: 07-02-01
BEFORE CASING PULLED:		07-02-01	12:18	Dry	18.5'	DATE FINISH: 07-02-01
AFTER CASING PULLED:		07-02-01	12:27	Dry	17.0'	DRILLING METHOD: 2 1/4" HSA
LONG TERM:		07-02-01	1:03	Dry	16.5'	EQUIPMENT USED: CME 55
						REVIEWER: T Harlow

ELEVATION	LEGEND	USCS	CLASSIFICATION	DEPTH	BLOWS PER 6 INCHES	RECOVERY (INCHES)	SAMPLE #	MOISTURE CONTENT	REMARKS
476.6 476.3		T	Topsoil 4"	0					Bulk sample from 1-7' See laboratory results
					2 3 4	12	1		
				4	7 7 8	18	2	21.2	
		ML	Brown Sandy SILT, trace mica and gravel, moist		3 3 3	18	3		
				8	3 3 3	6	4		
				12					
464.6		SM	Brown Silty SAND, trace mica, moist		8 11 14	18	5		
				16					
457.6		W	Gray WEATHERED ROCK, moist		20 45 50/5	16	6		
456.7				20					
									Bottom of boring at 19.9'

Notes:



PROJECT NAME: Laytonia Recreational Park		PROJECT NUMBER: 29234-690			BORING NUMBER: B-2	
CLIENT NAME: Lewis, Scully, Gionet, Landscape Architects		CLIENT PROJECT NUMBER:			SHEET 1 OF 1	
DRILLER: D Floyd		LOCATION: See boring location plan			ELEVATION: 466.4	
WATER LEVELS ENCOUNTERED:		DATE	TIME	DEPTH	CAVED	DATE START: 07-02-01
BEFORE CASING PULLED:		07-02-01	10:56	Dry	18.5'	DATE FINISH: 07-02-01
AFTER CASING PULLED:		07-02-01	11:07	16.0'	18.0'	DRILLING METHOD: 2 1/4" HSA
LONG TERM:		07-02-01	12:50	15.5'	17.5'	EQUIPMENT USED: CME 55
						REVIEWER: T Harlow

ELEVATION	LEGEND	USCS	CLASSIFICATION	DEPTH	BLOWS PER 6 INCHES	RECOVERY (INCHES)	SAMPLE #	MOISTURE CONTENT	REMARKS
466.4 466.1		T	Topsoil 4"	0					
		ML	Brown Sandy SILT, trace mica and gravel, moist	2 2 2	18		1		
				4 5 5	18		2		
460.9		SM	Gray brown Silty SAND, trace mica, moist	7 11 14	18		3		
				12 12 14			4		
				16 25 33	18		5		Possible rock outcrop from 14'-15'
				5 5 13	18		6		
446.4				20					Bottom of boring at 20.0'

Notes:



PROJECT NAME: Laytonia Recreational Park		PROJECT NUMBER: 29234-690			BORING NUMBER: B-3	
CLIENT NAME: Lewis, Scully, Gionet, Landscape Architects		CLIENT PROJECT NUMBER:			SHEET 1 OF 1	
DRILLER: D Floyd		LOCATION: See boring location plan			ELEVATION: 462.8	
WATER LEVELS ENCOUNTERED:		DATE	TIME	DEPTH	CAVED	DATE START: 06-28-01
BEFORE CASING PULLED:		06-28-01	10:45	18.5'		DATE FINISH: 06-28-01
AFTER CASING PULLED:		06-28-01	10:53	17.4'	18.5'	DRILLING METHOD: 2 1/4" HSA
LONG TERM:		-6-28-01	11:08	12.5'	14.0'	EQUIPMENT USED: CME 55
		Backfilled				REVIEWER: T Harlow

ELEVATION	LEGEND	USCS	CLASSIFICATION	DEPTH	BLOWS PER 6 INCHES	RECOVERY (INCHES)	SAMPLE #	MOISTURE CONTENT	REMARKS
462.8		T	Topsoil 4"	0					
462.5		ML	Brown Sandy SILT, trace mica, sand, gravel, and organics, moist		1	10	1	26.0	
					2				
460.3		ML	Brown SILT with sand, trace mica, moist	4	2	18	2	24.0	
					3				
					5				
454.8		ML	Gary brown Sandy SILT, trace mica, moist	8	3	18	3		
					3				
					4				
					4				
		ML	Gary brown Sandy SILT, trace mica, moist	12	2	18	4		
					4				
					4				
		ML	Gary brown Sandy SILT, trace mica, moist	16	4	18	5		
					5				
					12				
		ML	Gary brown Sandy SILT, trace mica, moist	20	12	18	6		Trace weathered rock fragments at 18'
					20				
					26				
442.8				20					Bottom of boring at 20.0'

Notes:



PROJECT NAME: Laytonia Recreational Park		PROJECT NUMBER: 29234-690			BORING NUMBER: B-4	
CLIENT NAME: Lewis, Scully, Gionet, Landscape Architects		CLIENT PROJECT NUMBER:			SHEET 1 OF 1	
DRILLER: D Floyd		LOCATION: See boring location plan			ELEVATION: 460.6	
WATER LEVELS ENCOUNTERED:		DATE	TIME	DEPTH	CAVED	DATE START: 06-28-01
BEFORE CASING PULLED:		06-28-01	9:30	13.5'		DATE FINISH: 06-28-01
AFTER CASING PULLED:		06-28-01	9:42	17.4'	18.5'	DRILLING METHOD: 2 1/4" HSA
LONG TERM:		Backfilled				EQUIPMENT USED: CME 55
						REVIEWER: T Harlow

ELEVATION	LEGEND	USCS	CLASSIFICATION	DEPTH	BLOWS PER 6 INCHES	RECOVERY (INCHES)	SAMPLE #	MOISTURE CONTENT	REMARKS
460.6		T	Topsoil 4"	0					Possible FILL to 5.0'
460.3		ML	Brown Sandy SILT, trace mica, and organics, moist		2 2 3	16	1	24.0	
457.6		ML	Brown SILT with sand, trace gravel, sand, and mica, moist	4	2 4 5	18	2	19.5	
455.1		MR	Brown Sandy Elastic SILT, trace mica, moist	8	3 4 4	18	3	32.6	
					3 4 4	12	4		
448.6		SM	Black and orange Silty SAND with quartz fragments, moist	12	20 26 21	16	5		
				16					
					23 19 10	16	6		
440.6				20					

Notes:



PROJECT NAME: Laytonia Recreational Park		PROJECT NUMBER: 29234-690			BORING NUMBER: B-5	
CLIENT NAME: Lewis, Scully, Gionet, Landscape Architects		CLIENT PROJECT NUMBER:			SHEET 1 OF 1	
DRILLER: D Floyd		LOCATION: See boring location plan			ELEVATION: 475.3	
WATER LEVELS ENCOUNTERED:		DATE	TIME	DEPTH	CAVED	DATE START: 07-02-01
BEFORE CASING PULLED:		07-02-01	9:26	Dry	18.5'	DATE FINISH: 07-02-01
AFTER CASING PULLED:		07-02-01	9:33	Dry	17.5'	DRILLING METHOD: 2 1/4" HSA
LONG TERM:		07-02-01	12:41	Dry	16.0'	EQUIPMENT USED: CME 55
						REVIEWER: T Harlow

ELEVATION	LEGEND	USCS	CLASSIFICATION	DEPTH	BLOWS PER 6 INCHES	RECOVERY (INCHES)	SAMPLE #	MOISTURE CONTENT	REMARKS
475.3 474.0		T	Topsoil 4"	0					Possible FILL to 4.0'
		ML	Red brown Sandy SILT, trace sand, gravel, and mica, moist		3 4 5	16	1		
471.3		ML	Brown Sandy SILT, trace mica, moist	4	3 4 4	18	2		
				8	3 4 3	16	3		
				12	3 4 4	18	4		
				16	3 4 4	18	5		
457.3		SM	Brown Silty SAND, moist		5 7 10	18	6		
455.3				20					Bottom of boring at 20.0'

Notes:





PROJECT NAME: Laytonia Recreational Park		PROJECT NUMBER: 29234-690			BORING NUMBER: B-7	
CLIENT NAME: Lewis, Scully, Gionet, Landscape Architects		CLIENT PROJECT NUMBER:			SHEET 1 OF 1	
DRILLER: D Floyd		LOCATION: See boring location plan			ELEVATION: 481.7	
WATER LEVELS ENCOUNTERED:		DATE	TIME	DEPTH	CAVED	DATE START: 06-28-01
BEFORE CASING PULLED:		06-28-01	1:18	Dry	18.5'	DATE FINISH: 06-28-01
AFTER CASING PULLED:		06-28-01	1:26	Dry	17.0'	DRILLING METHOD: 2 1/4" HSA
LONG TERM:		Backfilled				EQUIPMENT USED: CME 55
						REVIEWER: T Harlow

ELEVATION	LEGEND	USCS	CLASSIFICATION	DEPTH	BLOWS PER 6 INCHES	RECOVERY (INCHES)	SAMPLE #	MOISTURE CONTENT	REMARKS
481.7 481.4		T	Topsoil 4"	0					
		ML	Red brown Sandy SILT, trace weathered rock fragments, sand, and mica, moist		2 3 3	18	1	17.6	
478.7		ML	Orange brown Sandy SILT, trace weathered rock fragments, moist	4	3 4 6	18	2	14.6	
		ML	Orange brown Sandy SILT, trace weathered rock fragments, moist	8	6 6 5	18	3		
		SM	Orange brown Silty SAND, trace mica, moist	12	4 4 6	18	4		
469.7		SM	Orange brown Silty SAND, trace mica, moist	16	13 20 29	12	5		
		SM	Orange brown Silty SAND, trace mica, moist	20	18 20 14	14	6		
461.7				20					Bottom of boring at 20.0'

Notes:



PROJECT NAME: Laytonia Recreational Park		PROJECT NUMBER: 29234-690			BORING NUMBER: B-6	
CLIENT NAME: Lewis, Scully, Gionet, Landscape Architects		CLIENT PROJECT NUMBER:			SHEET 1 OF 1	
DRILLER: D Floyd		LOCATION: See boring location plan			ELEVATION: 476.9	
WATER LEVELS ENCOUNTERED:		DATE	TIME	DEPTH	CAVED	DATE START: 06-28-01
BEFORE CASING PULLED:		06-28-01	8:23	Dry	18.5'	DATE FINISH: 06-28-01
AFTER CASING PULLED:		06-28-01	8:33	Dry	16.5'	DRILLING METHOD: 2 1/4" HSA
LONG TERM:		06-29-01	8:39	Dry	14.7'	EQUIPMENT USED: CME 55
						REVIEWER: T Harlow

ELEVATION	LEGEND	USCS	CLASSIFICATION	DEPTH	BLOWS PER 6 INCHES	RECOVERY (INCHES)	SAMPLE #	MOISTURE CONTENT	REMARKS	
476.9		T	Topsoil 3"	0					With weathered rock fragments from 13'-15'	
476.7		ML	Red brown Sandy SILT, trace sand, quartz fragments, and mica, moist		5 5 3	18	1			
473.9		ML		Brown Sandy SILT, trace mica, moist	4	5 8 10	18	2		
					8	6 6 8	14	3		
						4 8 8	14	4		
					12	7 10 14	14	5		
456.9				16						
				20	5 6 9	16	6			
									Bottom of boring at 20.0'	

Notes:



PROJECT NAME: Laytonia Recreational Park		PROJECT NUMBER: 29234-690			BORING NUMBER: B-8	
CLIENT NAME: Lewis, Scully, Gionet, Landscape Architects		CLIENT PROJECT NUMBER:			SHEET 1 OF 1	
DRILLER: D Floyd		LOCATION: See boring location plan			ELEVATION: 472.5	
WATER LEVELS		DATE	TIME	DEPTH	CAVED	DATE START: 06-29-01
ENCOUNTERED:		06-29-01		None		DATE FINISH: 06-29-01
BEFORE CASING PULLED:		06-29-01	9:15	Dry	20.0'	DRILLING METHOD: 2 1/4" HSA
AFTER CASING PULLED:		06-29-01	9:20	Dry	17.5'	EQUIPMENT USED: CME 55
LONG TERM:		Backfilled				REVIEWER: T Harlow

ELEVATION	LEGEND	USCS	CLASSIFICATION	DEPTH	BLOWS PER 6 INCHES	RECOVERY (INCHES)	SAMPLE #	MOISTURE CONTENT	REMARKS
472.5 472.1		T	Topsoil 5"	0					
		ML	Brown SILT, trace sand, quartz, and mica, moist		3 3 2	14	1		
469.5		ML	Gray brown Sandy SILT, trace mica, moist	4	5 6 6	13	2		
		ML	Gray brown Sandy SILT, trace mica, moist	8	6 7 9	18	3		
		SM	Gray brown Silty SAND, trace mica, moist	12	4 6 6	16	4		
459.5		SM	Gray brown Silty SAND, trace mica, moist	16	12 18 20	18	5		
453.5		W	Gray brown WEATHERED ROCK, moist	20	16 35 50/5"	14	6		
452.5				20					Bottom of boring at 20.0'

Notes:



PROJECT NAME: Laytonia Recreational Park		PROJECT NUMBER: 29234-690			BORING NUMBER: B-9	
CLIENT NAME: Lewis, Scully, Gionet, Landscape Architects		CLIENT PROJECT NUMBER:			SHEET 1 OF 1	
DRILLER: D Floyd		LOCATION: See boring location plan			ELEVATION: 484.9	
WATER LEVELS ENCOUNTERED:		DATE	TIME	DEPTH	CAVED	DATE START: 06-29-01
BEFORE CASING PULLED:		06-29-01	10:30	Dry	18.5'	DATE FINISH: 06-29-01
AFTER CASING PULLED:		06-29-01	10:37	Dry	16.5'	DRILLING METHOD: 2 1/4" HSA
LONG TERM:		Backfilled				EQUIPMENT USED: CME 55
						REVIEWER: T Harlow

ELEVATION	LEGEND	USCS	CLASSIFICATION	DEPTH	BLOWS PER 6 INCHES	RECOVERY (INCHES)	SAMPLE #	MOISTURE CONTENT	REMARKS	
484.9		T	Topsoil 6"	0						
484.4		ML	Brown SILT, trace sand, quartz, and mica, moist		2	13	1	21.0		
						2				
							18			
481.9			ML	Brown Sandy SILT, trace weathered rock fragments, moist	4	3	9	2	10.1	
						5				
						8	7	13	3	
						7				
						7				
					8	3	11	4		
					4					
					4	13	5			
					5					
465.9		W	Brown WEATHERED ROCK, moist	16	8	14	6			
464.9				20	11				Bottom of boring at 20.0'	
					13					

Notes:



PROJECT NAME: Laytonia Recreational Park		PROJECT NUMBER: 29234-690			BORING NUMBER: B-10	
CLIENT NAME: Lewis, Scully, Gionet, Landscape Architects		CLIENT PROJECT NUMBER:			SHEET 1 OF 1	
DRILLER: D Floyd		LOCATION: See boring location plan			ELEVATION: 485.2	
WATER LEVELS		DATE	TIME	DEPTH	CAVED	DATE START: 06-27-01
ENCOUNTERED:		06-27-01		None		DATE FINISH: 06-27-01
BEFORE CASING PULLED:		06-27-01	11:30	Dry	18.5'	DRILLING METHOD: 2 1/4" HSA
AFTER CASING PULLED:		06-27-01	11:41	Dry	14.5'	EQUIPMENT USED: CME 55
LONG TERM:		06-29-01	8:18	Dry	14.8	REVIEWER: T Harlow

ELEVATION	LEGEND	USCS	CLASSIFICATION	DEPTH	BLOWS PER 6 INCHES	RECOVERY (INCHES)	SAMPLE #	MOISTURE CONTENT	REMARKS
485.2 484.9		T	Topsoil 4"	0					Bulk sample from 1-7' See laboratory results
		ML	Reddish orange brown SILT, trace gravel and mica, moist		2 2 4	18	1		
482.2		ML	Reddish orange brown SILT with sand, trace weathered rock fragments and mica, moist	4	10 15 8	18	2	19.8	
					6 7 11	18	3		
477.2		ML	Orange brown Sandy SILT, trace mica and weathered rock fragments, moist	8	4 4 5	16	4		
				12					
					4 8 10	18	5		
				16					
					6 9 11	18	6		
465.2				20					Bottom of boring at 20.0'

Notes:



PROJECT NAME: Laytonia Recreational Park		PROJECT NUMBER: 29234-690			BORING NUMBER: B-11	
CLIENT NAME: Lewis, Scully, Gionet, Landscape Architects		CLIENT PROJECT NUMBER:			SHEET 1 OF 1	
DRILLER: D Floyd		LOCATION: See boring location plan			ELEVATION: 481.0	
WATER LEVELS ENCOUNTERED:		DATE	TIME	DEPTH	CAVED	DATE START: 06-27-01
BEFORE CASING PULLED:		06-27-01	12:40	Dry	18.5'	DATE FINISH: 06-27-01
AFTER CASING PULLED:		06-27-01	12:48	Dry	15.0'	DRILLING METHOD: 2 1/4" HSA
LONG TERM:		06-29-01	8:32	Dry	15.0'	EQUIPMENT USED: CME 55
						REVIEWER: T Harlow

ELEVATION	LEGEND	USCS	CLASSIFICATION	DEPTH	BLOWS PER 6 INCHES	RECOVERY (INCHES)	SAMPLE #	MOISTURE CONTENT	REMARKS
481.0		T	Topsoil 4"	0					
480.7		ML	Reddish orange brown SILT, trace sand and mica, moist		2 2 3	12	1		
478.0		ML	Brown Sandy SILT, trace weathered rock fragments and mica, moist	4	2 2 5	18	2		
				8	2 3 5	14	3		
					5 6 6	18	4		
469.0		SM	Brown Silty SAND, trace mica, moist	12					
					6 6 9	18	5		
				16					
					4 8 7	18	6		
461.0				20					Bottom of boring at 20.0'

Notes:



PROJECT NAME: Laytonia Recreational Park		PROJECT NUMBER: 29234-690			BORING NUMBER: B-12	
CLIENT NAME: Lewis, Scully, Gionet, Landscape Architects		CLIENT PROJECT NUMBER:			SHEET 1 OF 1	
DRILLER: D Floyd		LOCATION: See boring location plan			ELEVATION: 487.5	
WATER LEVELS ENCOUNTERED:		DATE	TIME	DEPTH	CAVED	DATE START: 06-27-01
BEFORE CASING PULLED:		06-27-01	1:22	Dry	18.5'	DATE FINISH: 06-27-01
AFTER CASING PULLED:		06-27-01	1:34	Dry	17.0'	DRILLING METHOD: 2 1/4" HSA
LONG TERM:		06-29-01	8:26	Dry	15.1'	EQUIPMENT USED: CME 55
						REVIEWER: T Harlow

ELEVATION	LEGEND	USCS	CLASSIFICATION	DEPTH	BLOWS PER 6 INCHES	RECOVERY (INCHES)	SAMPLE #	MOISTURE CONTENT	REMARKS
487.5 487.3		T	Topsoil 3"	0					
		ML	Orange brown Sandy SILT, trace gravel and mica, moist	3 3 3	12		1		
				4 3 3 5	18		2		
481.5				8 8 9 10	18		3		Sample dry from 6'-10'
				12 14 24 28	14		4		
		SM	Brown Silty SAND, moist	16 5 5 7	18		5		
				20 9 10 17	18		6		
467.5				20					Bottom of boring at 20.0'

Notes:

# KEY TO SYMBOLS

Symbol Description

## Strata symbols



Topsoil



Silt



Silty Sand



Weathered Rock



Elastic Silt

## Misc. Symbols



Long term water reading



Water level during  
drilling

## Notes:

1. Exploratory borings were drilled between 06/27/01 and 07/02/01 using 2-1/4" inside diameter hollow stem augers.
2. Groundwater measurements are recorded on the logs when encountered.
3. These logs are subject to the limitations, conclusions, and recommendations in this report.
4. Borings and elevations were located by B&N personel.

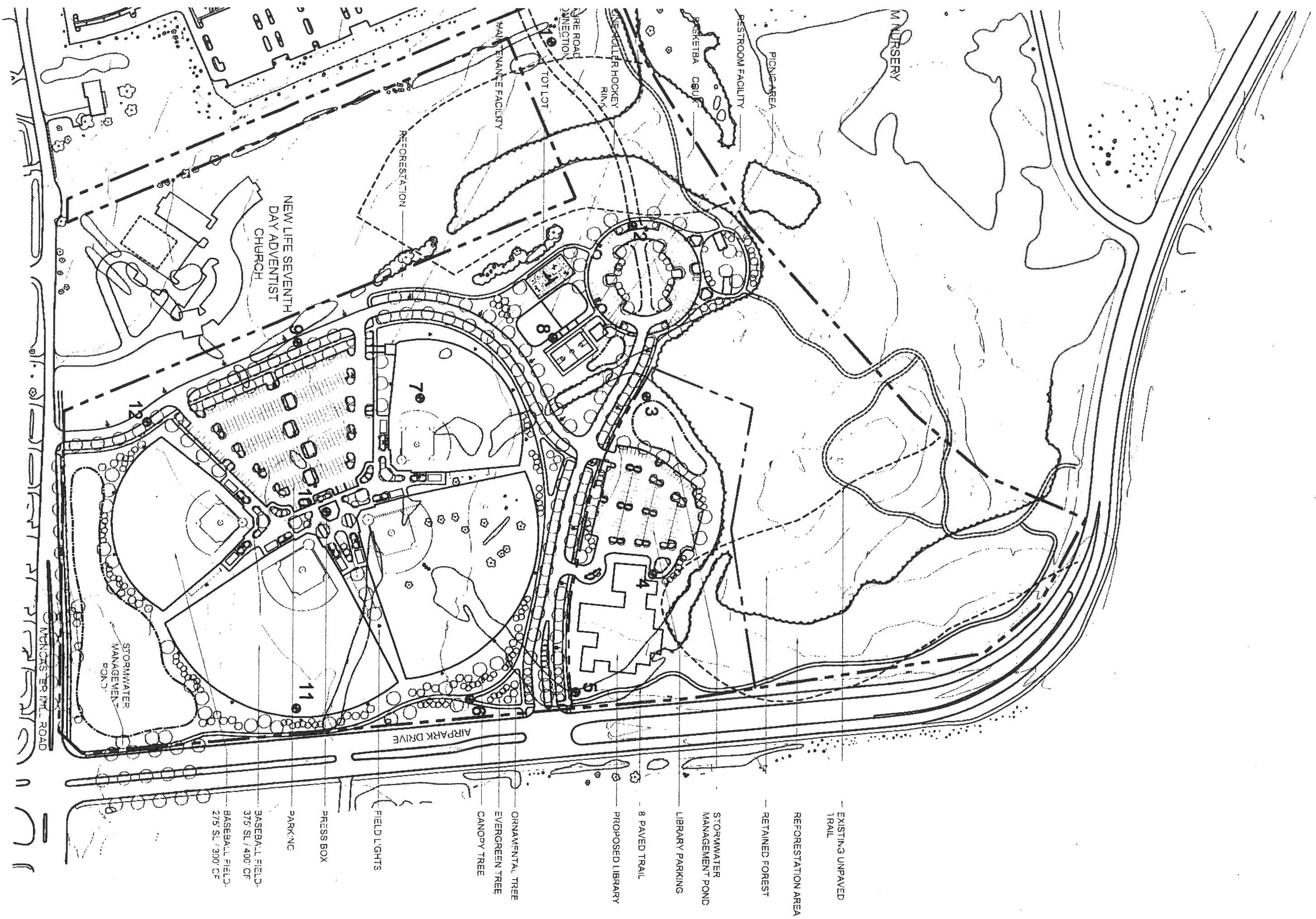




## **APPENDIX H**

### **Test Borings Location Plan**





# TEST BORINGS LOCATION PLAN

- EXISTING UNPAVED TRAIL
- REFORESTATION AREA
- RETAINED FOREST
- STORMWATER MANAGEMENT POND
- LIBRARY PARKING
- 8 PAVED TRAIL
- PROPOSED LIBRARY
- ORNAMENTAL TREE
- EVERGREEN TREE
- CANOPY TREE
- FIELD LIGHTS
- PRESS BOX
- PARKING
- BASEBALL FIELD - 375' SL / 400' CF
- BASEBALL FIELD - 275' SL / 300' CF

NURSERY

PICNIC AREA

RESTROOM FACILITY

BASKETBALL COURT

LINE KILLER HOCKEY RINK

BIKE ROAD CONNECTION

TOT LOT

MAINTENANCE FACILITY

REFORESTATION

NEW LIFE SEVENTH DAY ADVENTIST CHURCH

STORMWATER MANAGEMENT POND

AIRPARK DRIVE

WESTINGHOUSE BLVD



**APPENDIX I**

**Development Costs**



PRELIMINARY COST ESTIMATE  
 1. Site Development and Utilities

ITEM	SECTION	ITEM DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	COST (Dollars)	SUBTOTAL	TOTAL
1.1	Site Preparation	existing pond excavation	c.y.	\$4.00	11,500	\$46,000.00		
		clear and grub (heavy)	ac	\$7,500.00	3	\$22,500.00		
		fill	cy.	\$4.00	50,000	\$200,000.00		
		excavation	cy.	\$4.00	15,000	\$60,000.00		
		borrow excavation	cy.	\$8.00	35,000	\$280,000.00		
		relocate existing utility poles	ea.	\$10,000.00	3	\$30,000.00		
		E + S	lump	\$25,000.00	1	\$25,000.00		
		seeding and mulching	sy.	\$2.00	21,000	\$42,000.00		
		demolition, clean-up	lump	\$250,000.00	1	\$250,000.00		\$855,500
1.2	Water							
	within ROW	existing sidewalk (removal)	sf.		150	\$150.00		
		existing curb and gutter (removal)	lf.		30	\$120.00		
		Prop. 6" DIP (Incl. excavation, backfill, and material)	lf.		65	\$2,600.00		
		Connection to Ex. 12"	lump		1	\$2,000.00		
		Prop. 12" x 6" Valve	ea.		1	\$1,200.00		
		Mill and Overlay	lump.		1	\$1,900.00		
		3" Bituminous Conc. Surface	sy.		130	\$650.00		
		3" Bituminous Conc. Base	sy.		130	\$1,040.00		
		6" Gravel Base	sy.		130	\$650.00		
							\$10,310.00	
	on site	Prop. 6" Ductile Iron Pipe (Incl. excavation, backfill,	lf.		1685	\$67,400.00		
		Prop. 4" Ductile Iron Pipe (Incl. excavation, backfill,	lf.		1280	\$51,200.00		
		Fire Hydrant	ea.		5	\$10,000.00		
		6" Tapping Sleeve & Valve	ea.		1	\$1,800.00		
		6" Valves	ea.		3	\$1,080.00		
		4" Valves	ea.		2	\$480.00		
							\$131,960.00	
								\$142,270
1.3	Sanitary Sewer							
	within ROW	Ex. Curb & Gutter (Removal)	lf.		30	\$120.00		
		Prop. 8" PVC (includes excavation, backfill and materials)	lf.		65	\$3,575.00		
		Connection to Ex. 6" Sewer	lump		1	\$2,000.00		
		Mill and Overlay	lump		1	\$1,900.00		
		3" Bituminous Conc. Surface	sy		130	\$650.00		
		3" Bituminous Conc. Base	sy		130	\$1,040.00		
		6" Gravel Base	sy		130	\$650.00		
							\$8,935.00	
	on site	Prop. 6" PVC (includes excavation, backfill and materials)	lf		1,685	\$92,675.00		
		Prop. 4" Manholes	ea.		5	\$10,000.00		
							\$102,875.00	
								\$112,610
1.4	SWM							
	storm sewer sys.	A-5 Inlet (2.5')	ea.		3	\$4,500.00		
		A-5 > 3 VF	vf		6	\$570.00		
		A-10 Inlet (3.5')	ea.		7	\$15,610.00		
		A-10 > 3 VF	vf		19	\$3,135.00		
		A-10 Inlet (4.5')	ea.		1	\$2,350.00		
		A-10 > 3 VF	vf		1	\$185.00		
		Endwall 30" RCP	ea.		1	\$1,825.00		
		Type B Manhole (4')	vf		5	\$1,920.00		
		15" RCP CL III	lf		315	\$7,875.00		
		18" RCP CL III	lf		215	\$6,235.00		
		21" RCP CL III	lf		850	\$22,100.00		
		24" RCP CL III	lf		65	\$2,535.00		
		27" RCP CL III	lf		290	\$12,760.00		
		30" RCP CL III	lf		190	\$11,020.00		
		Rip-Rap	sy.		42	\$2,520.00		
							\$85,120.00	
	stormwater man.	infiltration trenches	ea.		4	\$40,000.00		
		biofiltration device	ea.		4	\$50,000.00		
							\$90,000.00	
								\$185,120
1.5	Utility Service	electric (Pepco)	lump		1	\$81,000.00		
		telephone (Verizon)	lump		1	\$52,000.00		
								\$133,000
<b>Section Total</b>								<b>\$1,528,500</b>



2. AIRPARK ROAD ACCESS

ITEM	SECTION	ITEM DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	COST (Dollars)	SUBTOTAL	TOTAL
2.1	Access Road							
	Entrance	3" bituminous surface course	sy	\$5.00	180	\$900.00		
		6" bituminous base	sy	\$10.00	180	\$1,800.00		
		6" curb and gutter	lf.	\$11.00	150	\$1,650.00		
		maintenance of traffic	lump	\$3,500.00	1	\$3,500.00	\$7,850.00	
	Access road	3" bituminous concrete surface	sy	\$5.00	2,900	\$14,500.00		
		3" bituminous concrete base	sy	\$8.00	2,900	\$23,200.00		
		6" curb and gutter	lf.	\$11.00	1,125	\$12,375.00	\$50,075.00	\$57,925
2.2	Recreation development	asphalt trail	sy.	\$14.00	1,650	\$23,100.00		\$23,100
2.3	Landscape	major tree (2 1/2" caliper, B&B)	ea.	\$270.00	32	\$8,640.00		
		minor tree (1 1/2" caliper, B&B)	ea.	\$180.00	8	\$1,440.00		
		evergreen tree (6' height, B&B)	ea.	\$150.00	5	\$750.00		
		shrubs (18" height, B&B or container, 5' O.C.)	ea.	\$30.00	300	\$9,000.00		
		perennials and groundcover (1 gal. Container, 18" O.C.)	ea.	\$12.00	1,200	\$14,400.00		
		watering (assume 5 waterings per year)	mg.	\$100.00	14	\$1,400.00		
		shredded hardwood bark mulching (3" depth)	s.y.	\$3.00	35	\$105.00		
		topsoil	s.y.	\$5.00	35	\$175.00		\$35,910
2.4	Lighting	single head streetlight (spaced @ 150')	ea.	\$2,500.00	6	\$15,000.00		\$15,000
								\$15,000
								\$131,935

Section Total \$131,935

3. BALLFIELD COMPLEX

ITEM	SECTION	ITEM DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	COST (Dollars)	SUBTOTAL	TOTAL
3.1	Roads and parking lot							
	Muncaster Mill entrance	3" bituminous surface course	sy	\$5.00	83	\$415.00		
		6" bituminous base	sy	\$10.00	83	\$830.00		
		6" curb and gutter	lf.	\$11.00	185	\$2,035.00		
		maintenance of traffic	lump	\$2,500.00	1	\$2,500.00		
							\$5,780.00	
	access from Muncaster Mill	3" bituminous concrete surface	sf.	\$5.00	3,850	\$19,250.00		
		3" bituminous concrete base	sf.	\$8.00	3,850	\$30,800.00		
		6" curb and gutter	lf.	\$11.00	2,760	\$30,360.00		
							\$80,410.00	
	ballfield parking	1.5" bituminous surface course	sy	\$4.00	10,500	\$42,000.00		
		3" bituminous base	sy	\$8.00	10,500	\$84,000.00		
		6" aggregate base	sy	\$10.00	10,500	\$105,000.00		
		6" curb and gutter	lf	\$11.00	3,352	\$36,872.00		
		wheel stops	ea.	\$34.00	282	\$9,588.00		
							\$277,460.00	
								\$363,650
3.2	Recreation development	pressbox (625 sf. per floor-ground floor: storage, packaged food sales, two fixture set restrooms / upper floor: open views, PA service maintenance / storage building (two tractor bays and ball field material asphalt trails	ea.	\$171,875.00	1	\$171,875.00		
		concrete paving in baseball hub	ea.	\$100,000.00	1	\$100,000.00		
		bleachers	sy	\$14.00	4,622	\$64,708.00		
		dugout benches	s.y.	\$25.00	4,300	\$107,500.00		
		chain link fencing w/ vinyl coating(6' height)	ea.	\$100.00	800	\$80,000.00		
		chain link fencing w/ vinyl coating(10' height)	ea.	\$100.00	80	\$8,000.00		
		backstop (20' x 18' back, 30' x 18' wing w/ canopy) 3 days labor	linear ft.	\$20.00	3,600	\$72,000.00		
		400' CF field topsoil and fine grading (forming mounds, 300' CF field topsoil and fine grading (forming mounds, trash receptacles	linear ft.	\$35.00	1,000	\$35,000.00		
		benches	ea.	\$7,000.00	4	\$28,000.00		
			ea.	\$350,000.00	2	\$700,000.00		
			ea.	\$250,000.00	2	\$500,000.00		
			ea.	\$600.00	11	\$6,600.00		
			ea.	\$1,000.00	5	\$5,000.00		
								\$1,878,683
3.3	Lighting	ballfield lighting (400' CF fields- materials and installation)	ea.	\$290,000.00	2	\$580,000.00		
		ballfield lighting (300' CF fields- materials and installation)	ea.	\$175,000.00	2	\$350,000.00		
		double head parking lights (spaced @ 150')	ea.	\$4,000.00	7	\$28,000.00		
		single head streetlights (spaced @ 150')	ea.	\$2,500.00	7	\$17,500.00		
								\$975,500
3.4	Landscape	major tree (2 1/2" caliper, B&B)	ea.	\$270.00	84	\$22,680.00		
		minor tree (1 1/2" caliper, B&B)	ea.	\$180.00	92	\$16,560.00		
		evergreen tree (6' height, B&B)	ea.	\$150.00	93	\$13,950.00		
		shrubs (18" height, B&B or container, 5' O.C.)	ea.	\$30.00	2,100	\$63,000.00		
		perennials and groundcover (1 gal. Container, 18" O.C.)	ea.	\$12.00	8,400	\$100,800.00		
		watering (assume 5 waterings per year)	mg.	\$100.00	98	\$9,800.00		
		shredded hardwood bark mulching (3" depth)	s.y.	\$3.00	245	\$735.00		
		topsoil	s.y.	\$5.00	245	\$1,225.00		
								\$228,750
3.5	Irrigation	400' CF ballfield irrigation	ea.	\$22,000.00	2	\$44,000.00		
		300' CF ballfield irrigation	ea.	\$18,000.00	2	\$36,000.00		
		water source (well water or WSSC connection)	lump	\$35,000.00	1	\$35,000.00		
								\$115,000
								\$3,581,583

Section Total \$3,581,583

4. OTHER ACTIVE RECREATION AREA

ITEM	SECTION	ITEM DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	COST (Dollars)	SUBTOTAL	TOTAL		
4.1	Parking lot (south half of circle)	1.5" bituminous surface course	sy	\$4.00	1,611	\$6,444.00				
		3" bituminous base	sy	\$8.00	1,611	\$12,888.00				
		6" aggregate base	sy	\$10.00	1,611	\$16,110.00				
		6" curb and gutter	lf	\$11.00	808	\$8,888.00				
		wheel stops	ea.	\$34.00	36	\$1,224.00				
									\$45,554	
4.2	Recreation development	restroom (3 sinks and 5 WC each side, 1000 sf. @ \$180 / sf.)	ea.	\$180,000.00	1	\$180,000.00				
		asphalt trails	sy.	\$14.00	1,600	\$22,400.00				
		asphalt paving for basketball and in line hockey								
		dashboards, upper	s.y.	\$14.00	2,300	\$32,200.00				
		containment fencing, in line hockey surface (flexifloor coat)	lump	\$66,000.00	1	\$66,000.00				
		basketball surface (flexipave coat)	s.y.	\$5.00	1,550	\$7,750.00				
		basketball hoop	ea.	\$2,000.00	2	\$4,000.00				
		playground equipment (equipment, ground surface)	lump	\$150,000.00	1	\$150,000.00				
		trash receptacles	ea.	\$600.00	4	\$2,400.00				
		benches	ea.	\$1,000.00	8	\$8,000.00				
									\$476,500	
		4.3	Landscape	major tree (2 1/2" caliper, B&B)	ea.	\$270.00	11	\$2,970.00		
minor tree (1 1/2" caliper, B&B)	ea.			\$180.00	11	\$1,980.00				
evergreen tree (6' height, B&B)	ea.			\$150.00	7	\$1,050.00				
shrubs (18" height, B&B or container, 5' O.C.)	ea.			\$30.00	300	\$9,000.00				
perennials and groundcover (1 gal. Container, 18" O.C.)	ea.			\$12.00	1,200	\$14,400.00				
watering (assume 5 waterings per year)	mg.			\$100.00	14	\$1,400.00				
shredded hardwood bark mulching (3" depth)	s.y.			\$3.00	35	\$105.00				
topsoil	s.y.			\$5.00	35	\$175.00				
reforestation overstory trees (5' height, 20' OC) 2.76 acres	ea.			\$50.00	243	\$12,150.00				
reforestation understory trees (15" height, 8' OC) 2.76 acres	ea.			\$30.00	648	\$19,440.00				
									\$62,670	
4.4	Lighting			single head streetlights and overhead lights (spaced @ 150')	ea.	\$2,500.00	2	\$5,000.00		
				basketball lighting (2- 40' poles, 1 each side)		\$40,000.00	1	\$40,000.00		
				in line hockey lighting (4- 40' poles, 2 each side)		\$70,000.00	1	\$70,000.00		
								\$115,000		
<b>Section Total</b>								<b>\$699,724</b>		

5. PICNIC AREA

ITEM	SECTION	ITEM DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	COST (Dollars)	SUBTOTAL	TOTAL
5.1	Parking lot (north half of circle)	1.5" bituminous surface course	sy	\$4.00	1,611	\$6,444.00		
		3" bituminous base	sy	\$8.00	1,611	\$12,888.00		
		6" aggregate base	sy	\$10.00	1,611	\$16,110.00		
		6" curb and gutter	lf	\$11.00	808	\$8,888.00		
		wheel stops	ea.	\$34.00	36	\$1,224.00		\$45,554
5.2	Recreation development	picnic shelter (1,500 sf. conc slab floor, metal roof, lighting and convenience power- \$50	ea.	\$75,000.00	2	\$150,000.00		
		asphalt trails	sy.	\$14.00	1,100	\$15,400.00		
		picnic tables	ea.	\$800.00	30	\$24,000.00		
		grill	ea.	\$400.00	1	\$400.00		
		trash receptacles	ea.	\$600.00	4	\$2,400.00		\$192,200
5.3	Landscape	major tree (2 1/2" caliper, B&B)	ea.	\$270.00	14	\$3,780.00		
		minor tree (1 1/2" caliper, B&B)	ea.	\$180.00	14	\$2,520.00		
		evergreen tree (6' height, B&B)	ea.	\$150.00	14	\$2,100.00		
		shrubs (18" height, B&B or container, 5' O.C.)	ea.	\$30.00	300	\$9,000.00		
		perennials and groundcover (1 gal. Container, 18" O.C.)	ea.	\$12.00	1,200	\$14,400.00		
		watering (assume 5 waterings per year)	mg.	\$100.00	14	\$1,400.00		
		shredded hardwood bark mulching (3" depth)	s.y.	\$3.00	35	\$105.00		
		topsoil	s.y.	\$5.00	35	\$175.00		
								\$33,480
5.4	Lighting	single head streetlights (spaced @ 150')	ea.	\$2,500.00	3	\$7,500.00		\$7,500
							<b>Section Total</b>	<b>\$278,734</b>

Subtotal	\$6,200,476
A/E Fees	\$744,056
Contingency	\$830,070
Construction Management	\$372,028
Staff Charge-backs	\$83,007
<b>Project Total</b>	<b>\$8,339,637</b>

