Concept Plan for the Renovation of Long Branch-Wayne Local Park

APPENDIX

Montgomery County Planning Board Meeting
July 20, 2017

TABLE OF CONTENTS

RECOMMENDED CONCEPT PLAN

MASTER PLAN REFERENCES

AGENCY COORDINATION

RECOMMENDED CONCEPT PLAN

PLAN KEY:

1. ACCESSIBLE CONCRETE RAMP (WITH HANDRAILS)
2. CONCRETE STEPS (WITH HANDRAILS)
3. WOODEN STEPS (ELEVATED)
4. WOODEN BOARDWALK (ELEVATED)
5. SEAT WALL
6. RETAINING WALL (WITH FENCING)
7. LOW RETAINING WALL (<30 INCHES)
8. FENCING
9. CONCRETE CURB (PARKING LOT)
10. SLOPING PLAY FEATURE
11. EMBANKMENT SLIDES
12. WOOD FIBER SAFETY SURFACING WITH PLAYGROUND EQUIPMENT (TO-BE-DESIGNED)
13. LAWN OPEN SPACE (FLAT)
14. LAWN OPEN SPACE (SLOPED)
15. NEW MICRO BIO-FILTRATION STORMWATER MANAGEMENT FACILITY
16. PORTA-JOHN (WITH FENCE/GATE)
17. BICYCLE RACK (4)
18. REMOVABLE BOLLARDS
19. BBQ GRILLING AREA

PROPOSED PARK IMPROVEMENTS NOT SHOWN ON THIS PLAN:

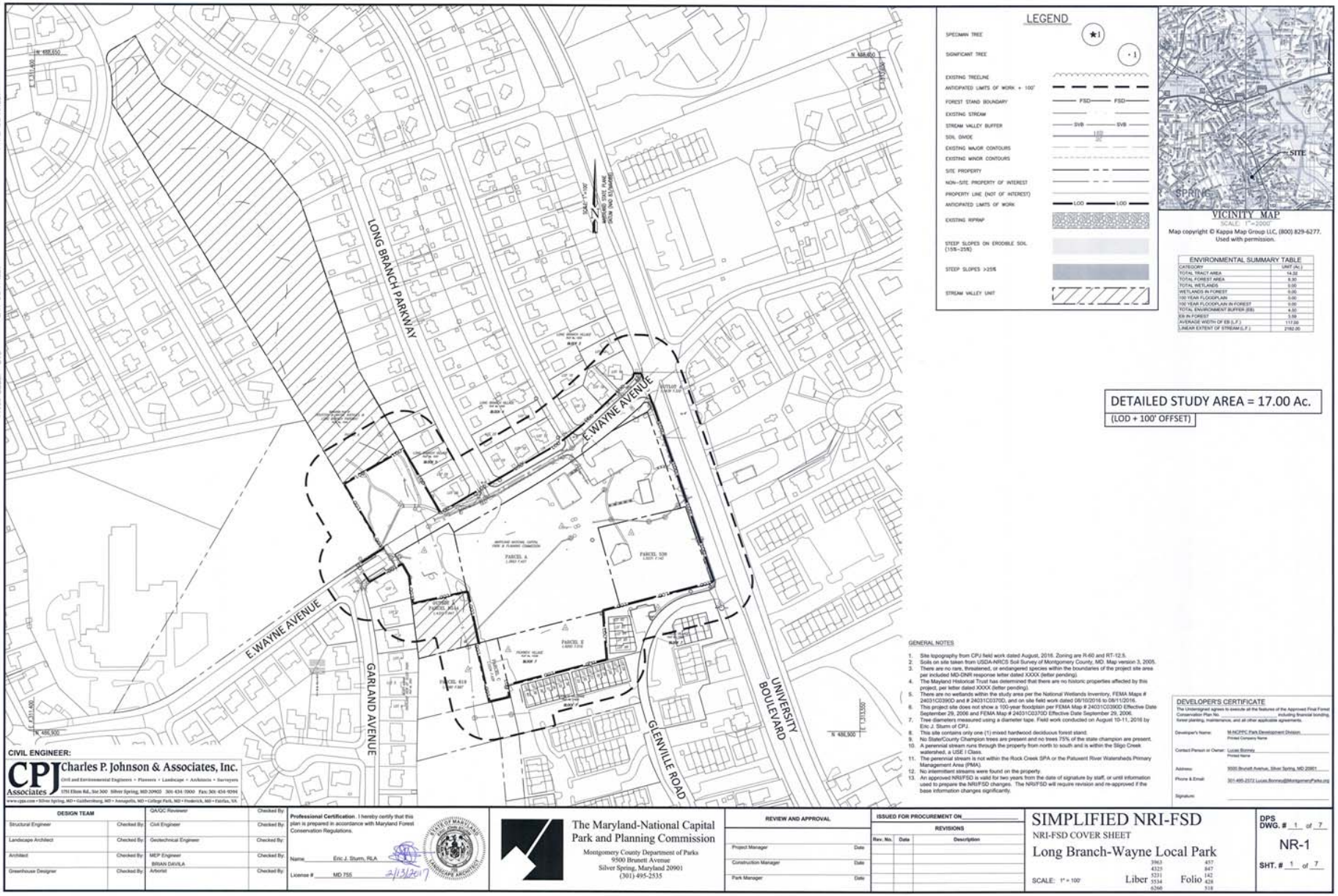
- BENCHES
- TRASH RECEPTACLES
- PARK SIGNAGE
- INFORMATION KIOSK
- WATER LINE CONNECTION FOR FUTURE ATHLETIC FIELD IRRIGATION SYSTEM.
- PLAYGROUND / FITNESS EQUIPMENT (TO-BE-DESIGNED)
- NON-NATIVE INVASIVE PLANT REMOVALS

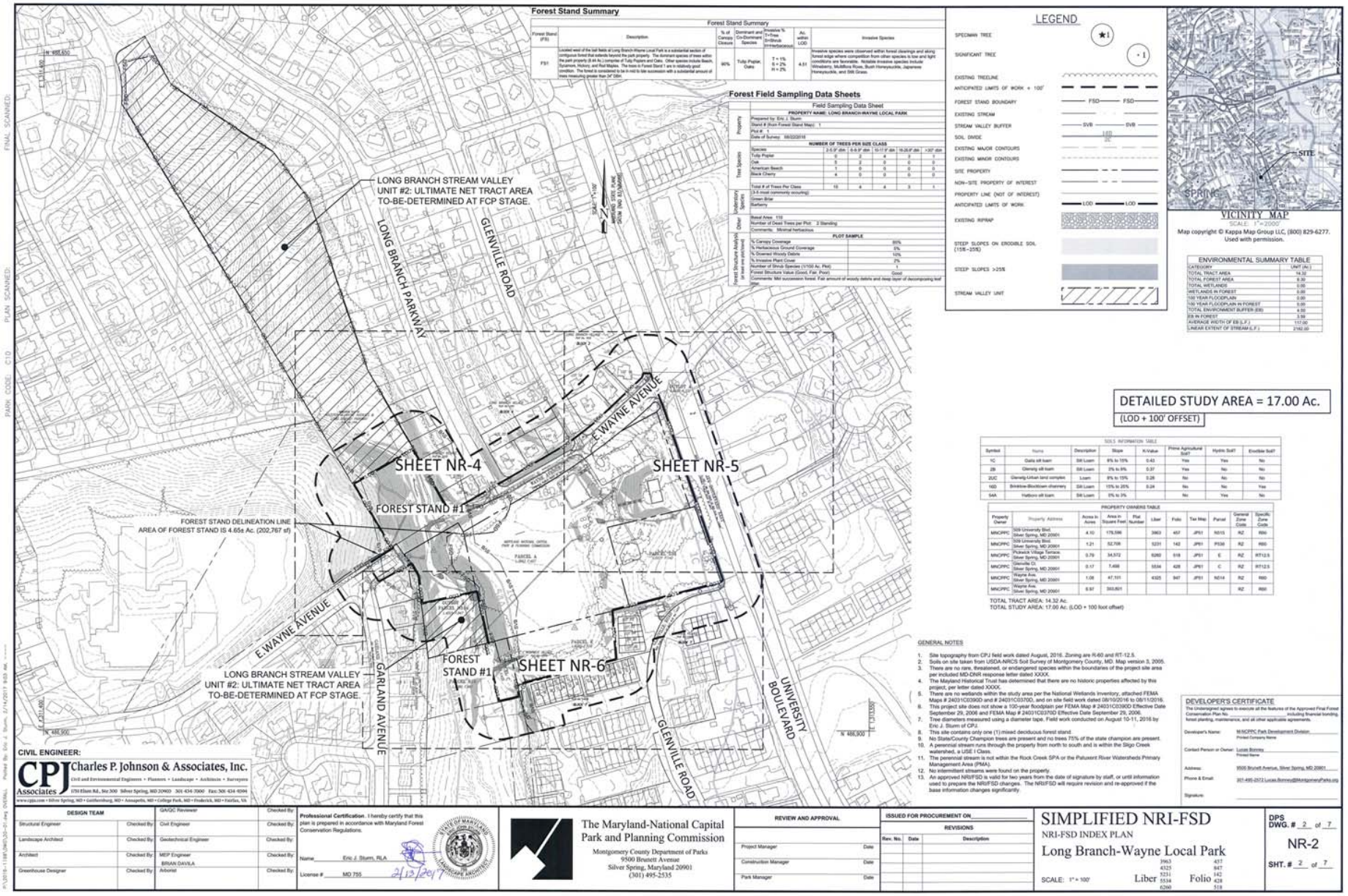
RECOMMENDED CONCEPT PLAN

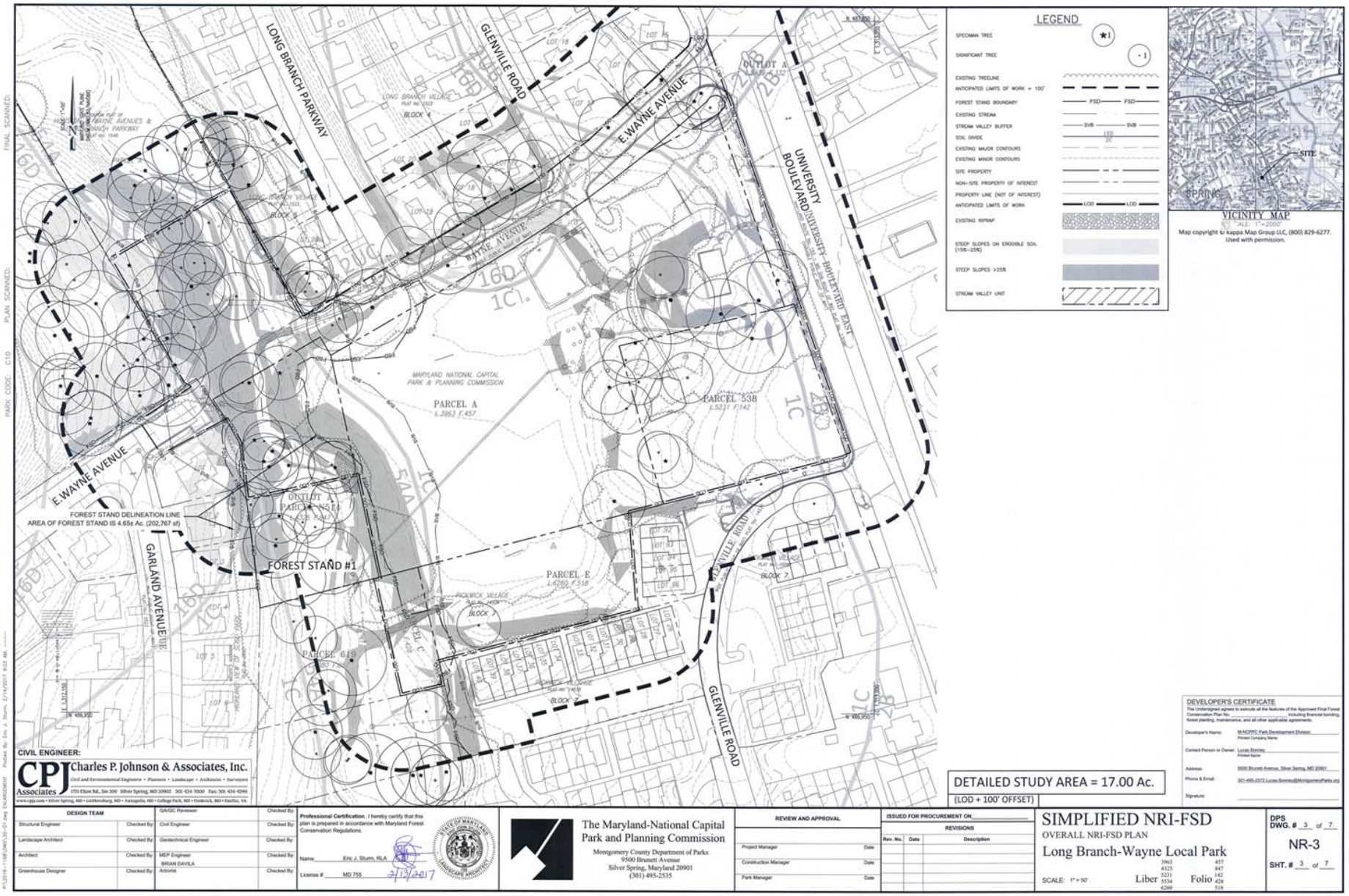
LONG BRANCH-WAYNE PARK RENOVATION

JUNE 29, 2017

Natural Resource Inventory and Forrest Stand Delineation (NRI-FSD)


LEGEND
SPECIMAN TREE
SIGNIFICANT TREE
EXISTING TREELINE
ANTICIPATED LIMITS OF WORK + 100'
FOREST STAND BOUNDARY
EXISTING STREAM
STREAM VALLEY BUFFER
SOIL DIVIDE
EXISTING MAJOR CONTOURS
EXISTING MINOR CONTOURS
SITE PROPERTY
NON-SITE PROPERTY OF INTEREST
PROPERTY LINE (NOT OF INTEREST)
ANTICIPATED LIMITS OF WORK
EXISTING RIPRAP
STEEP SLOPES ON ERODIBLE SOIL (15%-25%)
STEEP SLOPES >25%
STREAM VALLEY UNIT
VICINITY MAP
SCALE: 1"=2000'
SITE
SPRING
Map copyright © Kappa Map Group LLC, (800) 829-6277. Used with permission.
ENVIRONMENTAL SUMMARY TABLE
CATEGORY
UNIT (Ac.)
TOTAL TRACT AREA 14.32
TOTAL FOREST AREA 8.90
TOTAL WETLANDS 0.00
WETLANDS IN FOREST 0.00
100 YEAR FLOODPLAIN 0.00
100 YEAR FLOODPLAIN IN FOREST 0.00
TOTAL ENVIRONMENT BUFFER (EB) 4.50
EB IN FOREST 1.59
AVERAGE WIDTH OF EB (L.F.) 117.00
LINEAR EXTENT OF STREAM (L.F.) 2182.00
DETAILED STUDY AREA = 17.00 Ac.
(LOD + 100' OFFSET)
LONG BRANCH PARKWAY
E. WAYNE AVENUE
GARLAND AVENUE
GLENVILLE ROAD
UNIVERSITY BOULEVARD
GENERAL NOTES
1. Site topography from CPJ field work dated August, 2015. Zoning are R-60 and RT-12.5.
2. Soils on site taken from USDA-NRCS Soil Survey of Montgomery County, MD. Map version 3, 2005.
3. There are no rare, threatened, or endangered species within the boundaries of the project site area per included MD-DNR response letter dated XXXX (letter pending).
4. The Maryland Historical Trust has determined that there are no historic properties affected by this project, per letter dated XXXX (letter pending).
5. There are no wetlands within the study area per the National Wetlands Inventory, FEMA Maps # 24031C0390D and # 24031C0370D, and on site field work dated 08/10/2016 to 08/11/2016.
6. This project site does not show a 100-year floodplain per FEMA Map # 24031C0390D Effective Date September 29, 2006 and FEMA Map # 24031C0370D Effective Date September 29, 2006.
7. Tree diameters measured using a diameter tape. Field work conducted on August 10-11, 2016 by Eric J. Sturm of CPJ.
8. This site contains only one (1) mixed hardwood deciduous forest stand.
9. No State/County Champion trees are present and no trees 75% of the state champion are present.
10. A perennial stream runs through the property from north to south and is within the Sligo Creek watershed, a USE I Class.
11. The perennial stream is not within the Rock Creek SPA or the Patuxent River Watersheds Primary Management Area (PMA).
12. No intermittent streams were found on the property.
13. An approved NRI/FSD is valid for two years from the date of signature by staff, or until information used to prepare the NRI/FSD changes. The NRI/FSD will require revision and re-approved if the base information changes significantly.
DEVELOPER'S CERTIFICATE
The Undersigned agrees to execute all the features of the Approved Final Forest Conservation Plan No. _____, including financial bonding, forest planting, maintenance, and all other applicable agreements.
Developer's Name: M-NCPPC Park Development Division
Contact Person or Owner: Lucas Bonney
Address: 9500 Brunett Avenue, Silver Spring, MD 20901
Phone & Email: 301-495-2572 Lucas.Bonney@MontgomeryParks.org
Signature:
CIVIL ENGINEER:
CPJ Associates
Charles P. Johnson & Associates, Inc.
Civil and Environmental Engineers • Planners • Landscape • Architects • Surveyors
1751 Elton Rd., Ste 300 Silver Spring, MD 20903 301-434-7000 Fax: 301-434-9394
www.cpja.com • Silver Spring, MD • Gaithersburg, MD • Annapolis, MD • College Park, MD • Frederick, MD • Fairfax, VA
DESIGN TEAM
Structural Engineer
Landscape Architect
Architect
Greenhouse Designer
QA/QC Reviewer
Civil Engineer
Geotechnical Engineer
MEP Engineer
BRIAN DAVILA
Arborist
Checked By:
Professional Certification. I hereby certify that this plan is prepared in accordance with Maryland Forest Conservation Regulations.
Name Eric J. Sturm, RLA
License # MD 755
2/13/2017
The Maryland-National Capital Park and Planning Commission
Montgomery County Department of Parks
9500 Brunett Avenue
Silver Spring, Maryland 20901
(301)-495-2535
REVIEW AND APPROVAL
Project Manager Date
Construction Manager Date
Park Manager Date
ISSUED FOR PROCUREMENT ON
REVISIONS
Rev. No. Date Description
SIMPLIFIED NRI-FSD
NRI-FSD COVER SHEET
Long Branch-Wayne Local Park
SCALE: 1" = 100'
Liber 3963 4325 5231 5534 6266
Folio 457 847 142 428 518
DPS DWG. # 1 of 7
NR-1
SHT. # 1 of 7


Forest Stand Summary
Forest Field Sampling Data Sheets
LEGEND
VICINITY MAP
ENVIRONMENTAL SUMMARY TABLE
LONG BRANCH STREAM VALLEY UNIT #2: ULTIMATE NET TRACT AREA TO-BE-DETERMINED AT FCP STAGE.
LONG BRANCH PARKWAY
GLENVILLE ROAD
E.WAYNE AVENUE
GARLAND AVENUE
UNIVERSITY BOULEVARD
SHEET NR-4
SHEET NR-5
SHEET NR-6
FOREST STAND #1
FOREST STAND DELINEATION LINE
AREA OF FOREST STAND IS 4.65± Ac. (202,767 sf)
DETAILED STUDY AREA = 17.00 Ac.
(LOD + 100' OFFSET)
SOILS INFORMATION TABLE
PROPERTY OWNERS TABLE
TOTAL TRACT AREA: 14.32 Ac.
TOTAL STUDY AREA: 17.00 Ac. (LOD + 100 foot offset)
GENERAL NOTES
DEVELOPER'S CERTIFICATE
CIVIL ENGINEER:
Charles P. Johnson & Associates, Inc.
The Maryland-National Capital Park and Planning Commission
SIMPLIFIED NRI-FSD
NRI-FSD INDEX PLAN
Long Branch-Wayne Local Park
SCALE: 1" = 100'
NR-2


LONG BRANCH PARKWAY
GLENVILLE ROAD
E.WAYNE AVENUE
UNIVERSITY BOULEVARD/UNIVERSITY BOULEVARD EAST
GARLAND AVENUE
MARYLAND NATIONAL CAPITAL PARK & PLANNING COMMISSION
PARCEL A
L.3963 F.457
PARCEL 538
L.5231 F.142
PARCEL E
L.5262 F.318
PARCEL 642
OUTLOT A
PARCEL 1554
FOREST STAND #1
FOREST STAND DELINEATION LINE
AREA OF FOREST STAND IS 4.65± Ac. (202,767 sf)
LEGEND
SPECIMAN TREE
SIGNIFICANT TREE
EXISTING TREELINE
ANTICIPATED LIMITS OF WORK + 100'
FOREST STAND BOUNDARY
EXISTING STREAM
STREAM VALLEY BUFFER
SOIL DIVIDE
EXISTING MAJOR CONTOURS
EXISTING MINOR CONTOURS
SITE PROPERTY
NON-SITE PROPERTY OF INTEREST
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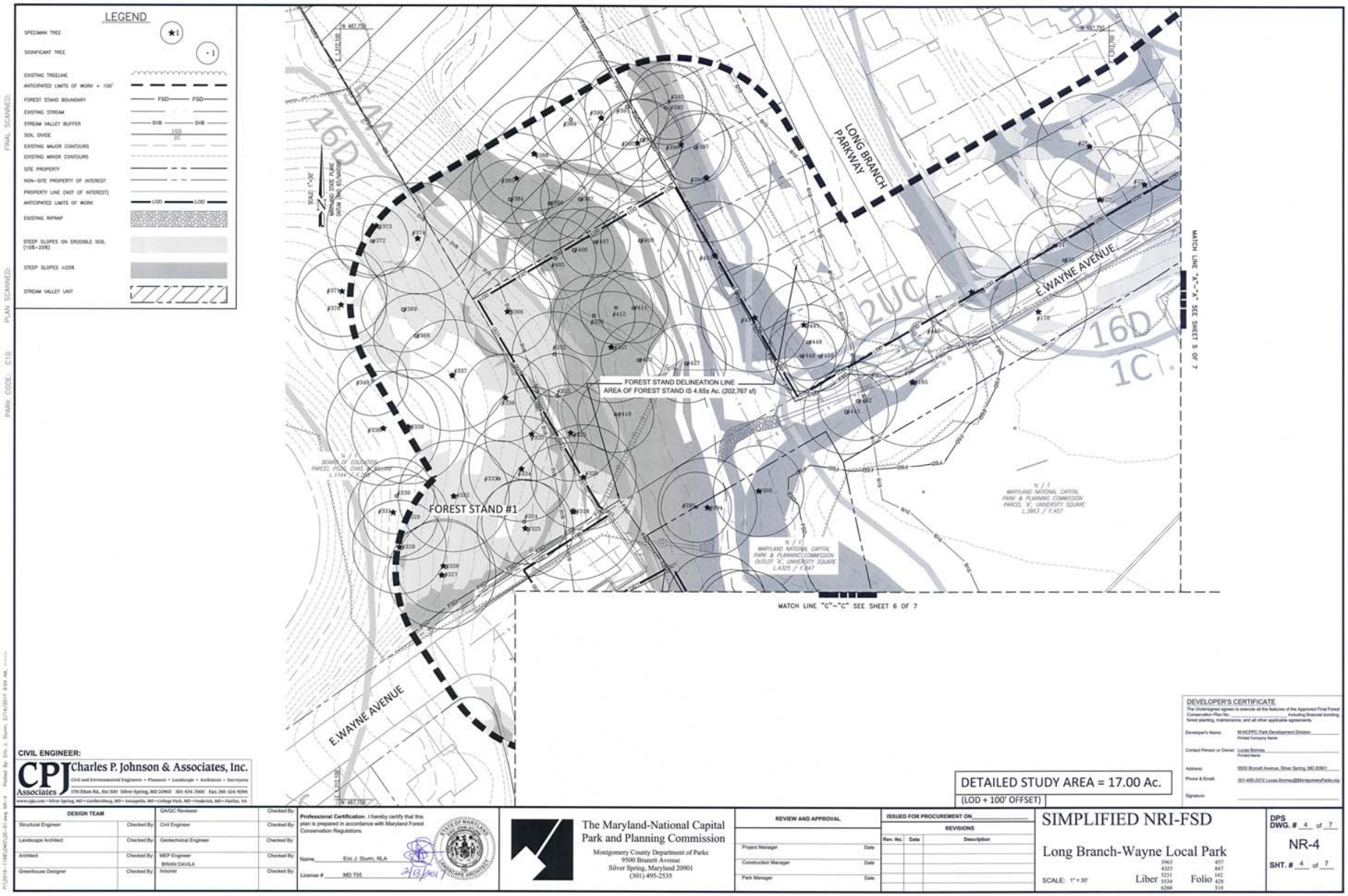
STEEP SLOPES >25%
STREAM VALLEY UNIT
SITE
SPRING
VICINITY MAP
Map copyright © Kappa Map Group LLC, (800) 829-6277. Used with permission.
DETAILED STUDY AREA = 17.00 Ac.
(LOD + 100' OFFSET)
DEVELOPER'S CERTIFICATE
CIVIL ENGINEER:
CPJ Charles P. Johnson & Associates, Inc.
Civil and Environmental Engineers • Planners • Landscape • Architects • Surveyors
DESIGN TEAM
Professional Certification. I hereby certify that this plan is prepared in accordance with Maryland Forest Conservation Regulations.
The Maryland-National Capital Park and Planning Commission
Montgomery County Department of Parks
9500 Brunett Avenue
Silver Spring, Maryland 20901
(301) 495-2535
REVIEW AND APPROVAL
ISSUED FOR PROCUREMENT ON
REVISIONS
SIMPLIFIED NRI-FSD
OVERALL NRI-FSD PLAN
Long Branch-Wayne Local Park
SCALE: 1" = 50'
Liber 3963 4325 5231 5534 6260
Folio 457 847 142 428 518
DPS DWG. # 3 of 7
NR-3
SHT. # 3 of 7


LEGEND
SPECIMAN TREE
SIGNIFICANT TREE
EXISTING TREELINE
ANTICIPATED LIMITS OF WORK + 100'
FOREST STAND BOUNDARY
EXISTING STREAM
STREAM VALLEY BUFFER
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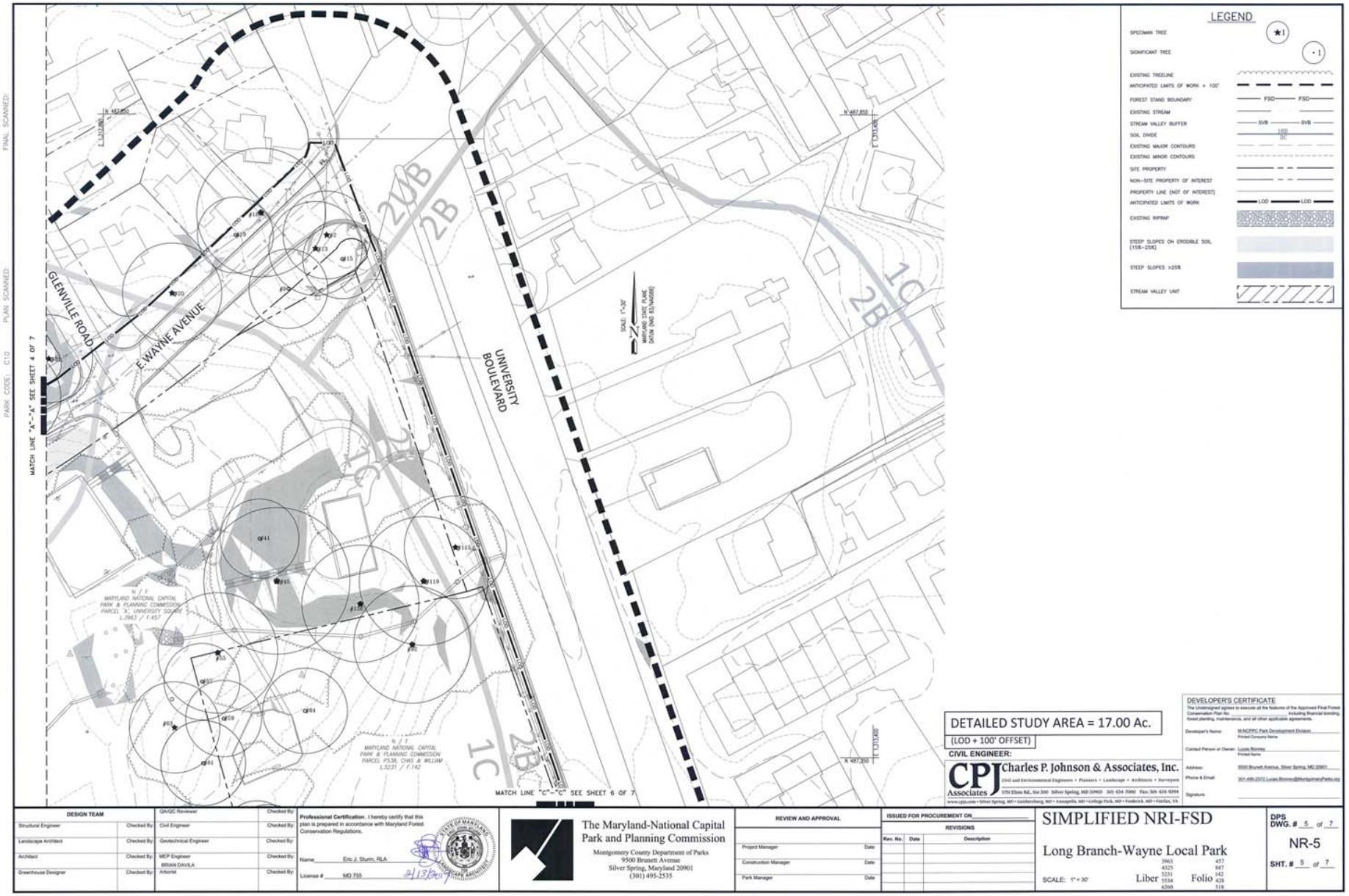
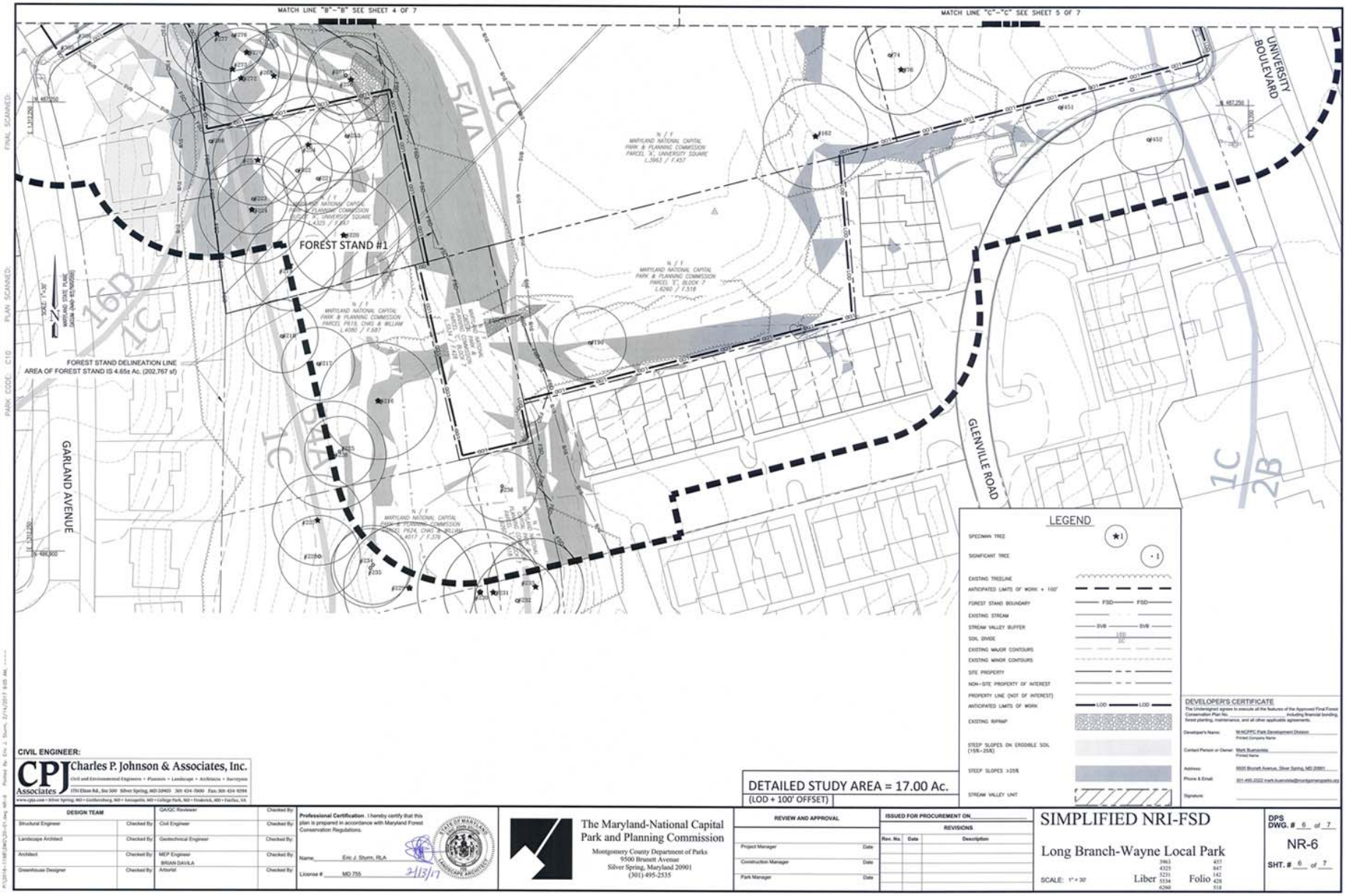
STEEP SLOPES ON ERODIBLE SOIL (15%-25%)
STEEP SLOPES >25%
STREAM VALLEY UNIT
LONG BRANCH PARKWAY
E.WAYNE AVENUE
FOREST STAND DELINEATION LINE
AREA OF FOREST STAND IS 4.65± Ac. (202,767 sf)
FOREST STAND #1
MATCH LINE "A"-"A" SEE SHEET 5 OF 7
MATCH LINE "C"-"C" SEE SHEET 6 OF 7
DETAILED STUDY AREA = 17.00 Ac.
(LOD + 100' OFFSET)
DEVELOPER'S CERTIFICATE
CIVIL ENGINEER:
CPJ Charles P. Johnson & Associates, Inc.
The Maryland-National Capital Park and Planning Commission
Montgomery County Department of Parks
9500 Brunett Avenue
Silver Spring, Maryland 20901
(301) 495-2535
SIMPLIFIED NRI-FSD
Long Branch-Wayne Local Park
SCALE: 1" = 30'
NR-4




MATCH LINE "B"-"B" SEE SHEET 4 OF 7
MATCH LINE "C"-"C" SEE SHEET 5 OF 7
FOREST STAND #1
FOREST STAND DELINEATION LINE
AREA OF FOREST STAND IS 4.65± Ac. (202,767 sf)
GARLAND AVENUE
GLENVILLE ROAD
UNIVERSITY BOULEVARD
LEGEND
DETAILED STUDY AREA = 17.00 Ac.
(LOD + 100' OFFSET)
DEVELOPER'S CERTIFICATE
CIVIL ENGINEER:
CPJ Charles P. Johnson & Associates, Inc.
The Maryland-National Capital Park and Planning Commission
Montgomery County Department of Parks
9500 Brunett Avenue
Silver Spring, Maryland 20901
(301)-495-2535
SIMPLIFIED NRI-FSD
Long Branch-Wayne Local Park
SCALE: 1" = 30'
DPS DWG. # 6 of 7
NR-6
SHT. # 6 of 7

TREE TABLE

ID No.	TRUNK	SIZE	SIG. TREE	SPEC. TREE	CONDITION	BOTANICAL NAME	COMMON NAME
2	SINGLE	30"	Y	Y	Good	Quercus	Post Oak
9	SINGLE	27"	Y	N	Good	Quercus alba	White Oak
13	SINGLE	32"	Y	Y	Good	Quercus	Post Oak
15	SINGLE	27"	Y	N	Good	Quercus rubra	Northern Red Oak
18	SINGLE	44"	Y	Y	Good	Quercus rubra	Northern Red Oak
19	SINGLE	26"	Y	N	Good	Acer rubrum	Red maple
20	SINGLE	34"	Y	Y	Good	Quercus rubra	Northern Red Oak
21	SINGLE	30"	Y	Y	Good	Quercus alba	White Oak
22	SINGLE	34"	Y	Y	Good	Quercus alba	White Oak
23	SINGLE	36"	Y	Y	Good	Liriodendron tulipifera	Tulip Poplar
24	SINGLE	27"	Y	N	Good	Liriodendron tulipifera	Tulip Poplar
25	SINGLE	25"	Y	N	Good	Liriodendron tulipifera	Tulip Poplar
26	SINGLE	36"	Y	Y	Good	Liriodendron tulipifera	Tulip Poplar
41	SINGLE	27"	Y	N	Good	Celtis occidentalis	Hackberry
45	SINGLE	50"	Y	Y	Good	Acer saccharinum	Silver Maple
55	SINGLE	41"	Y	Y	Good	Acer rubrum	Red Maple
57	SINGLE	26"	Y	N	Good	Quercus spp.	Oak Species
59	SINGLE	26"	Y	N	Good	Liriodendron tulipifera	Tulip Popler
61	SINGLE	29"	Y	N	Good	Liriodendron tulipifera	Tulip Popler
63	TWIN	31"	Y	Y	Good	Liriodendron tulipifera	Tulip Popler
74	SINGLE	24"	Y	N	Good	Prunus serotina	Black Cherry
76	SINGLE	31"	Y	Y	Good	Liriodendron tulipifera	Tulip Popler
84	SINGLE	29"	Y	N	Good	Quercus spp.	Oak Species
92	TRIPLE	40"	Y	Y	Good	Acer rubrum	Red Maple
115	TWIN	35"	Y	Y	Good	Acer saccharinum	Silver Maple
119	SINGLE	44"	Y	Y	Good	Acer saccharinum	Silver Maple
126	SINGLE	40"	Y	Y	Good	Acer saccharinum	Silver Maple
162	TRIPLE	36"	Y	Y	Good	Liriodendron tulipifera	Tulip Popler
165	SINGLE	44"	Y	Y	Good	Platanus occidentalis	American Sycamore
169	SINGLE	31"	Y	Y	Good	Quercus rubra	Northern Red Oak
170	TRIPLE	33"	Y	Y	Good	Robina pseudoacacua	Black Locust
190	SINGLE	25"	Y	N	Good	Pinus strobus	Eastern White Pine
216	SINGLE	40"	Y	Y	Good	Liriodendron tulipifera	Tulip Poplar
217	SINGLE	25"	Y	N	Good	Liriodendron tulipifera	Tulip Poplar
218	SINGLE	25"	Y	N	Good	Liriodendron tulipifera	Tulip Poplar
219	SINGLE	31"	Y	Y	Good	Liriodendron tulipifera	Tulip Poplar
220	TWIN	38"	Y	Y	Good	Liriodendron tulipifera	Tulip Poplar
221	SINGLE	24"	Y	N	Good	Liriodendron tulipifera	Tulip Poplar
222	SINGLE	24"	Y	N	Good	Liriodendron tulipifera	Tulip Poplar
223	SINGLE	24"	Y	N	Good	Liriodendron tulipifera	Tulip Poplar
224	SINGLE	37"	Y	Y	Good	Liriodendron tulipifera	Tulip Poplar
225	SINGLE	24"	Y	N	Good	Liriodendron tulipifera	Tulip Poplar
226	SINGLE	37"	Y	Y	Good	Liriodendron tulipifera	Tulip Poplar
227	SINGLE	31"	Y	Y	Good	Quercus rebra	Red Oak
228	SINGLE	28"	Y	Y	Poor	Fraxinus pennsylvanica	Green Ash
229	TWIN	45"	Y	Y	Good	Liriodendron tulipifera	Tulip Poplar
230	SINGLE	43"	Y	Y	Good	Liriodendron tulipifera	Tulip Poplar
231	SINGLE	34"	Y	Y	Good	Liriodendron tulipifera	Tulip Poplar
232	SINGLE	29"	Y	N	Good	Liriodendron tulipifera	Tulip Poplar
233	SINGLE	33"	Y	Y	Good	Liriodendron tulipifera	Tulip Poplar
234	SINGLE	27"	Y	N	Good	Liriodendron tulipifera	Tulip Poplar
235	SINGLE	27"	Y	N	Good	Liriodendron tulipifera	Tulip Poplar
236	SINGLE	24"	Y	N	Good	Liriodendron tulipifera	Tulip Poplar
253	SINGLE	25"	Y	N	Good	Liriodendron tulipifera	Tulip Poplar
254	TWIN	33"	Y	Y	Good	Liriodendron tulipifera	Tulip Poplar
255	SINGLE	31"	Y	Y	Good	Liriodendron tulipifera	Tulip Poplar
256	SINGLE	30"	Y	Y	Good	Liriodendron tulipifera	Tulip Poplar
257	SINGLE	27"	Y	N	Good	Liriodendron tulipifera	Tulip Poplar
266	SINGLE	26"	Y	N	Good	Liriodendron tulipifera	Tulip Poplar
268	SINGLE	30"	Y	Y	Good	Liriodendron tulipifera	Tulip Poplar
270	SINGLE	35"	Y	Y	Good	Liriodendron tulipifera	Tulip Poplar
272	SINGLE	34"	Y	Y	Good	Liriodendron tulipifera	Tulip Poplar
273	SINGLE	32"	Y	Y	Good	Liriodendron tulipifera	Tulip Poplar
276	SINGLE	24"	Y	N	Good	Liriodendron tulipifera	Tulip Poplar
277	SINGLE	34"	Y	Y	Good	Liriodendron tulipifera	Tulip Poplar
294	SINGLE	34"	Y	Y	Poor	Platanus occidentalis	American Sycamore
295	SINGLE	24"	Y	N	Good	Liriodendron tulipifera	Tulip Poplar
300	SINGLE	31"	Y	Y	Good	Quercus alba	White Oak
318	TWIN	47"	Y	Y	Good	Quercus rubra	Red Oak
320	SINGLE	36"	Y	Y	Good	Quercus alba	White Oak

TREE TABLE

ID No.	TRUNK	SIZE	SIG. TREE	SPEC. TREE	CONDITION	BOTANICAL NAME	COMMON NAME
323	SINGLE	33"	Y	Y	Good	Quercus alba	White Oak
324	SINGLE	29"	Y	N	Good	Quercus alba	White Oak
325	SINGLE	33"	Y	Y	Good	Quercus alba	White Oak
326	SINGLE	32"	Y	Y	Good	Quercus alba	White Oak
327	SINGLE	37"	Y	Y	Good	Quercus alba	White Oak
328	SINGLE	32"	Y	Y	Good	Quercus alba	White Oak
329	SINGLE	29"	Y	N	Good	Quercus alba	White Oak
330	SINGLE	26"	Y	N	Good	Quercus alba	White Oak
331	SINGLE	31"	Y	Y	Good	Quercus alba	White Oak
332	SINGLE	38"	Y	Y	Good	Quercus alba	White Oak
333	SINGLE	26"	Y	N	Good	Liriodendron tulipifera	Tulip Poplar
334	SINGLE	36"	Y	Y	Good	Liriodendron tulipifera	Tulip Poplar
335	SINGLE	32"	Y	Y	Good	Quercus alba	White Oak
336	SINGLE	30"	Y	Y	Good	Quercus alba	White Oak
337	SINGLE	38"	Y	Y	Good	Quercus alba	White Oak
338	SINGLE	39"	Y	Y	Good	Quercus alba	White Oak
339	SINGLE	39"	Y	Y	Good	Quercus alba	White Oak
340	SINGLE	24"	Y	N	Good	Quercus alba	White Oak
352	SINGLE	29"	Y	N	Good	Liriodendron tulipifera	Tulip Poplar
353	SINGLE	29"	Y	N	Good	Quercus alba	White Oak
357	SINGLE	38"	Y	Y	Good	Quercus alba	White Oak
358	SINGLE	28"	Y	N	Good	Quercus alba	White Oak
366	SINGLE	30"	Y	Y	Good	Liriodendron tulipifera	Tulip Poplar
368	SINGLE	29"	Y	N	Good	Liriodendron tulipifera	Tulip Poplar
369	SINGLE	29"	Y	N	Good	Liriodendron tulipifera	Tulip Poplar
370	SINGLE	31"	Y	Y	Good	Liriodendron tulipifera	Tulip Poplar
371	SINGLE	31"	Y	Y	Good	Liriodendron tulipifera	Tulip Poplar
372	SINGLE	25"	Y	N	Good	Quercus alba	White Oak
373	SINGLE	34"	Y	Y	Dead	Spp. Dead	Dead Tree
374	SINGLE	38"	Y	Y	Good	Quercus alba	White Oak
384	SINGLE	27"	Y	N	Good	Quercus rubra	Northern Red Oak
385	SINGLE	31"	Y	Y	Good	Quercus alba	White Oak
386	SINGLE	26"	Y	N	Good	Quercus rubra	Red Oak
387	SINGLE	27"	Y	N	Good	Liriodendron tulipifera	Tulip Poplar
388	SINGLE	39"	Y	Y	Good	Platanus occidentalis	American Sycamore
389	SINGLE	28"	Y	N	Good	Liriodendron tulipifera	Tulip Poplar
390	SINGLE	39"	Y	Y	Good	Liriodendron tulipifera	Tulip Poplar
391	SINGLE	29"	Y	N	Good	Liriodendron tulipifera	Tulip Poplar
392	SINGLE	26"	Y	N	Good	Fagus grandifiora	American Beech
393	SINGLE	25"	Y	N	Good	Fagus grandifiora	American Beech
394	SINGLE	28"	Y	N	Good	Liriodendron tulipifera	Tulip Poplar
395	SINGLE	30"	Y	Y	Good	Acer sacharum	Sugar Maple
396	SINGLE	30"	Y	Y	Good	Liriodendron tulipifera	Tulip Poplar
397	SINGLE	25"	Y	N	Good	Liriodendron tulipifera	Tulip Poplar
398	TWIN	44"	Y	Y	Good	Liriodendron tulipifera	Tulip Poplar
401	SINGLE	37"	Y	Y	Good	Platanus occidentalis	American Sycamore
405	SINGLE	28"	Y	N	Good	Quercus rubra	Red Oak
406	SINGLE	28"	Y	N	Good	Quercus alba	White Oak
407	SINGLE	24"	Y	N	Good	Quercus alba	White Oak
408	TWIN	27"	Y	N	Good	Fagus grandifiora	American Beech
411	SINGLE	24"	Y	N	Good	Liriodendron tulipifera	Tulip Poplar
412	SINGLE	25"	Y	N	Good	Lirioendron tulipifera	Tulip Poplar
418	SINGLE	26"	Y	N	Good	Liriodendron tulipifera	Tulip Poplar
422	SINGLE	26"	Y	N	Good	Liriodendron tulipifera	Tulip Poplar
427	SINGLE	27"	Y	N	Good	Liriodendron tulipifera	Tulip Poplar
434	SINGLE	37"	Y	Y	Good	Quercus	Black Oak
442	SINGLE	27"	Y	N	Good	Quercus alba	White Oak
443	SINGLE	29"	Y	N	Dead	Platanus occidentalis	American Sycamore
447	SINGLE	30"	Y	Y	Good	Liriodendron tulipifera	Tulip Poplar
448	SINGLE	26"	Y	N	Good	Liriodendron tulipifera	Tulip Polar
449	SINGLE	24"	Y	N	Good	Acer rubrum	Red Maple
450	SINGLE	24"	Y	N	Good	Liriodendron tulipifera	Tulip Poplar
451	SINGLE	25"	Y	N	Good	Morus nigra	Black Mulberry
452	SINGLE	24"	Y	N	Good	Acer sacharum	Sugar Maple

Forest Stand Delineation Narrative

The site is located on the west sie of University Avenue approximately 0.78 miles south of the I-495, Washington D.C. Beltway's Inner Loop. The overall site is comprised of several parcels totalling 8.44+/- acres and is known as Long Branch-Wayne Local Park as owned and managed by the Maryland National-Capital Park and Planning Commission / Montgomery County, Maryland. The project disturbance area (anticipated limits of work plus 100' offset) has not been set via an actual design plan and therefore this plan utilizes the property line of the park as a preliminary L.O.D. line to establish the 100' offset buffer to set the parameters of the NRI / FSD Study area. which encompasses 17.29 acres +/-, all inclusive.

The Longg Branch-Wayne Local Park is comprised of both active and passive park uses and physical improvements. The existing improvements include a parking lot, picnic shelter, open green areas, a multi-use athletic turf field (soccer and lacross), and miscellaneous walking paths. The open and green areas are populated with mature trees (groupings and specimens). The Long Branch Creek corridor itself boasts a linear mature forested area, comprised of mostly native deciduous hardwoods and understory as described herein.

The current zoning is R-60 and RT-12.5. The sampling method used was by observation and identification of species and canopy coverage in depth enough to create this narrative in accordance with the Simplified Forest Stand requirements of the Montgomery County and Chapter 22A, Forest Conservation Law Manual.

The delineation identified one (1) forest stand on the site. Forest Stand 1 runs congruently on both sides of the Long Branch Corridor north to south through the site. Forest Stand one (1) is a mature forest with some new successional growth due to recently disturbed areas on the eastern side of the Creek. Dominant hardwood Forest Association in Stand 1 is Tulip Poplar-Quercus sp. (alba, rubra)-Carya spp.- American Sycamore-American Beech Canopy Layer with understory and shrub layers dominated by American Beech, Hop Hornbeam amongst other various species. Forest Stand One (1) comprises approximately 4.51 +/- acres. An herbaceous layer structure that includes an organic layer of decomposed leaf litter, exists throughout most of the forest floor. The embankment between the athletic field and the stream to the east of the stream, has fallen to various invasive species that have entangled the successional growth in this area.

The site contains several environmental features and resources. They include the "Waters of the U.S." - Long Branch Creek, which runs north to south, through the site. In the last several years, stream restoration work has been performed within the stream and on the stream banks and these improvements remain visible. Long Branch Creek is part of the Paint Branch watershed. There are no freshwater wetlands (forested, scrubshrub, emergent) on the site. There is a damp,semi-saturated area along the existing pathway just north and east of the pedestrian bridge, however no hydric soils or hydrophytic vegetation were found as per soil auger penetrations and soil sample/observation analysis. All significant (24" DBH - 30" DBH) and specimen (30" DBH +) trees have been tagged in the project study area, then surveyed and are listed in the Tree Table on this NRI / FSD Plan. No champion trees were observed during the investigation and none are recorded as existing on site in the state record as well.

CIVIL ENGINEER:

CPJ Associates — Charles P. Johnson & Associates, Inc.
Civil and Environmental Engineers • Planners • Landscape • Architects • Surveyors
1751 Elton Rd., Ste 300 Silver Spring, MD 20903 301-434-7000 Fax: 301-434-9394
www.cpja.com • Silver Spring, MD • Gaithersburg, MD • Annapolis, MD • College Park, MD • Frederick, MD • Fairfax, VA

DETAILED STUDY AREA = 17.00 Ac.
(LOD + 100' OFFSET)

DEVELOPER'S CERTIFICATE

The Undersigned agrees to execute all the features of the Approved Final Forest Conservation Plan No. _____, including financial bonding, forest planting, maintenance, and all other applicable agreements.

Developer's Name: M-NCPPC Park Development Division
Printed Company Name

Contact Person or Owner: Mark Buenviaje
Printed Name

Address: 9500 Brunett Avenue, Silver Spring, MD 20901

Phone & Email: 301-495-2532 mark.buenviaje@montgomeryparks.org

Signature: _____

DESIGN TEAM		QA/QC Reviewer	Checked By:
Structural Engineer	Checked By:	Civil Engineer	Checked By:
Landscape Architect	Checked By:	Geotechnical Engineer	Checked By:
Architect	Checked By:	MEP Engineer BRIAN DAVILA	Checked By:
Greenhouse Designer	Checked By:	Arborist	Checked By:

Professional Certification. I hereby certify that this plan is prepared in accordance with Maryland Forest Conservation Regulations.

Name Eric J. Sturm, RLA

License # MD 755 02/13/2017

The Maryland-National Capital Park and Planning Commission
Montgomery County Department of Parks
9500 Brunett Avenue
Silver Spring, Maryland 20901
(301) 495-2535

REVIEW AND APPROVAL	
Project Manager	Date
Construction Manager	Date
Park Manager	Date

ISSUED FOR PROCUREMENT ON_____

REVISIONS		
Rev. No.	Date	Description

SIMPLIFIED NRI-FSD

Long Branch-Wayne Local Park

SCALE: AS-SHOWN

Liber 3963 4325 5231 5534 6266
Folio 457 847 142 428 518

DPS DWG. # 7 of 7

NR-7

SHT. # 7 of 7

CPJ Associates
Charles P. Johnson & Associates, Inc.
Civil and Environmental Engineers • Planners • Landscape Architects • Surveyors
Silver Spring, MD • Gaithersburg, MD • College Park, MD • Frederick, MD • Fairfax, VA

February 8, 2017

M-NCPPC – Countywide Planning Division
Montgomery County Planning Department
8787 Georgia Avenue
Silver Spring, MD 20910-3760

RE: LONG BRANCH-WAYNE LOCAL PARK
Montgomery County, MD
Simplified NRI FSD Narrative

Dear INTAKE Staff:

We hereby submit this letter and project narrative/summary along with the attached accompanying documents to complete this request for an approval of the attached SIMPLIFIED NRI FSD Plan.

Long Branch – Wayne Local Park Simplified NRI FSD – Project Narrative & Summary Statement

The Long Branch-Wayne Local Park NRI FSD is being prepared to provide detailed existing conditions and natural resources and environmental features necessary for the Parks Department of Montgomery County, Maryland AKA M-NCPPC to advance design studies for much needed future park improvements.

The Long Branch-Wayne Local Park is located on the west side of University Boulevard, approximately three quarters of a mile south of the 495 Beltway. The park is also bounded partially on the north side by East Wayne Avenue (which is split by the Long Branch Creek Corridor and partially on the south side by Glenville Road. The Long Branch Creek Corridor (M-NCPPC Parkland) adjoins the park boundary's north and south The west side of the park is bounded by Garland Avenue and the end of East Wayne Avenue to the north and south just east of the Oak View Elementary School.

Overall, the park project net tract area is comprised of five (5) parcels totaling 14.32 acres, with 4.50 of those acres being forested. The Long Branch Creek runs north to south longitudinally through the west central portion of the site. A varying width stream buffer coincides with both sides east and west of the Long Branch Creek. Steep slopes of both 15-25% and greater than 25% exist on the site as well. The Long Branch Stream has had previous stream restoration work completed within this park site.

Currently the park's existing improvements include a parking lot, asphalt walkways/paths, concrete steps, a picnic pavilion structure, play structure, open grass areas, basketball court, hiking paths/pedestrian bridge and a multi-purpose natural turf sports field.

The Simplified NRI FSD is inclusive of both the park tract boundary "park parcel" and adjoining parcels known and named as Long Branch SVU (Stream Valley Unit) # 2 that are part of the anticipated park's site improvements and development area. The NRI FSD "Study Area" covers 17.00 (17.0004) acres which includes the park boundary limits plus a 100 foot offset of the park boundary as the anticipated Limit of Disturbance Line (LOD).

The NRI FSD is all inclusive of specimen and significant trees, forest stands (one) and environmental features. The site consists of one mature forest stand as described on the plans and there are no freshwater wetlands on site. The Long Branch Stream is categorized as a "Waters of the U.S".

1751 Elton Road, Suite 300 • Silver Spring, MD 20903 • 301-434-7000 • Fax: 301-434-9394 • www.cpja.com

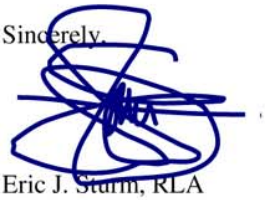
As may be required, an FCP Plan will be generated during the proposed design of the park improvements.

Please find attached the following documentation in support of this request and application submission:

- NRI Application Form – M-NCPPC – Montgomery County
- NRI FSD Plan (Sheets 1-6)
- RTE Species MDNR Letter (requesting clearance)

Should you have any questions on this application submission or should you need any additional information, please do not hesitate to call me at 301.434.7000 x 175.

Sincerely,



Eric J. Sturm, RLA
Registered Landscape Architect MD #755
Charles P. Johnson & Associates, Inc.

cc: M-NCPPC Parks Development Division - Att: Lucas Bonney
CPJ File No. 2016-1198

MARYLAND
DEPARTMENT OF
NATURAL RESOURCES

February 14, 2017

Mr. Eric J. Sturm
Charles P. Johnson & Associates, Inc.
1751 Elton Road
Suite 300
Silver Spring, MD 20903

RE: Environmental Review for Long Branch Wayne Local Park, Silver Spring, improvements, Montgomery County, Maryland.

Dear Mr. Sturm:

The Wildlife and Heritage Service has determined that there are no official State or Federal records for listed plant or animal species within the delineated area shown on the map provided. As a result, we have no specific concerns regarding potential impacts or recommendations for protection measures at this time. Please let us know however if the limits of proposed disturbance or overall site boundaries change and we will provide you with an updated evaluation.

Thank you for allowing us the opportunity to review this project. If you should have any further questions regarding this information, please contact me at (410) 260-8573.

Sincerely,

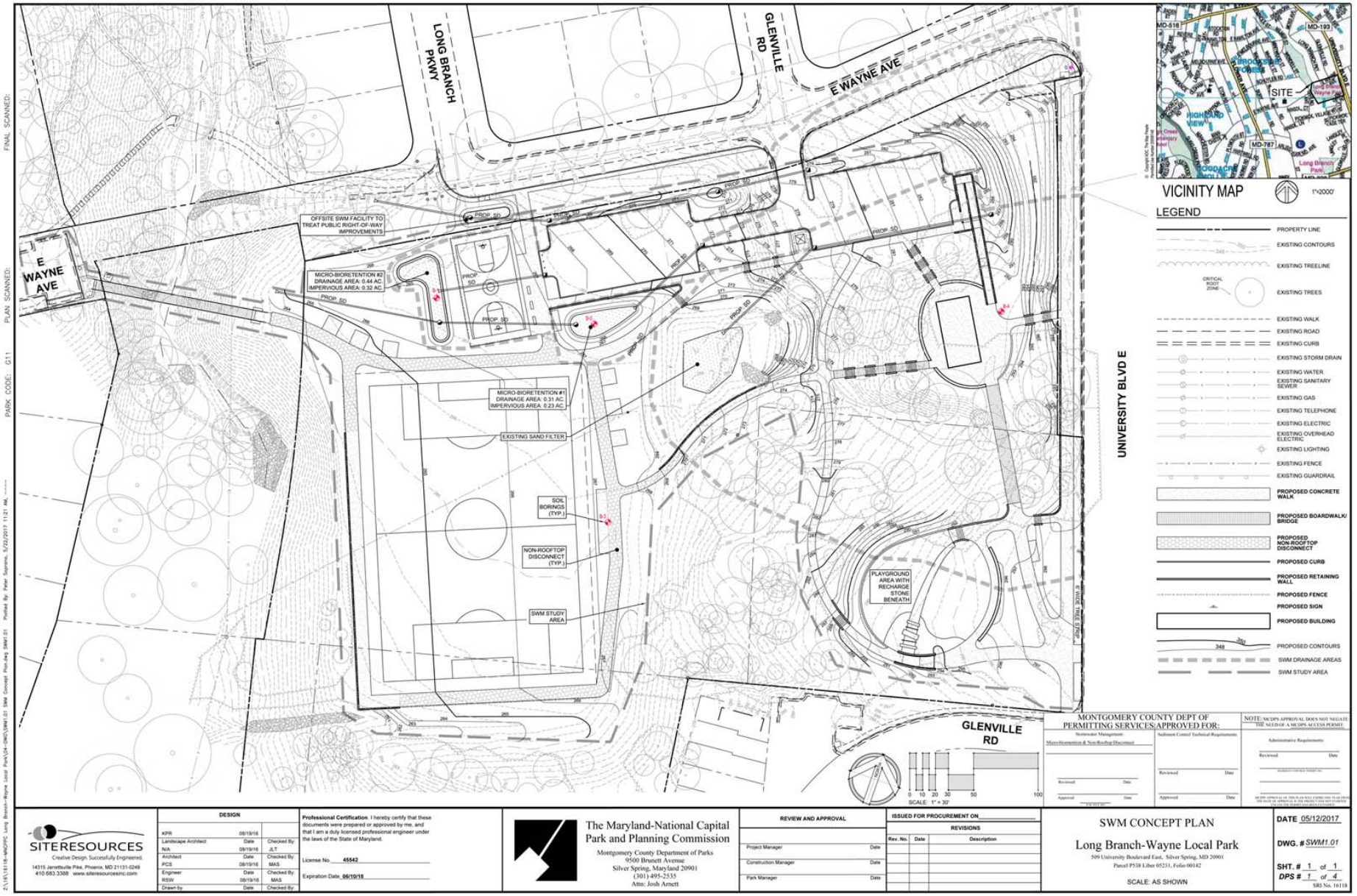
Lori A. Byrne

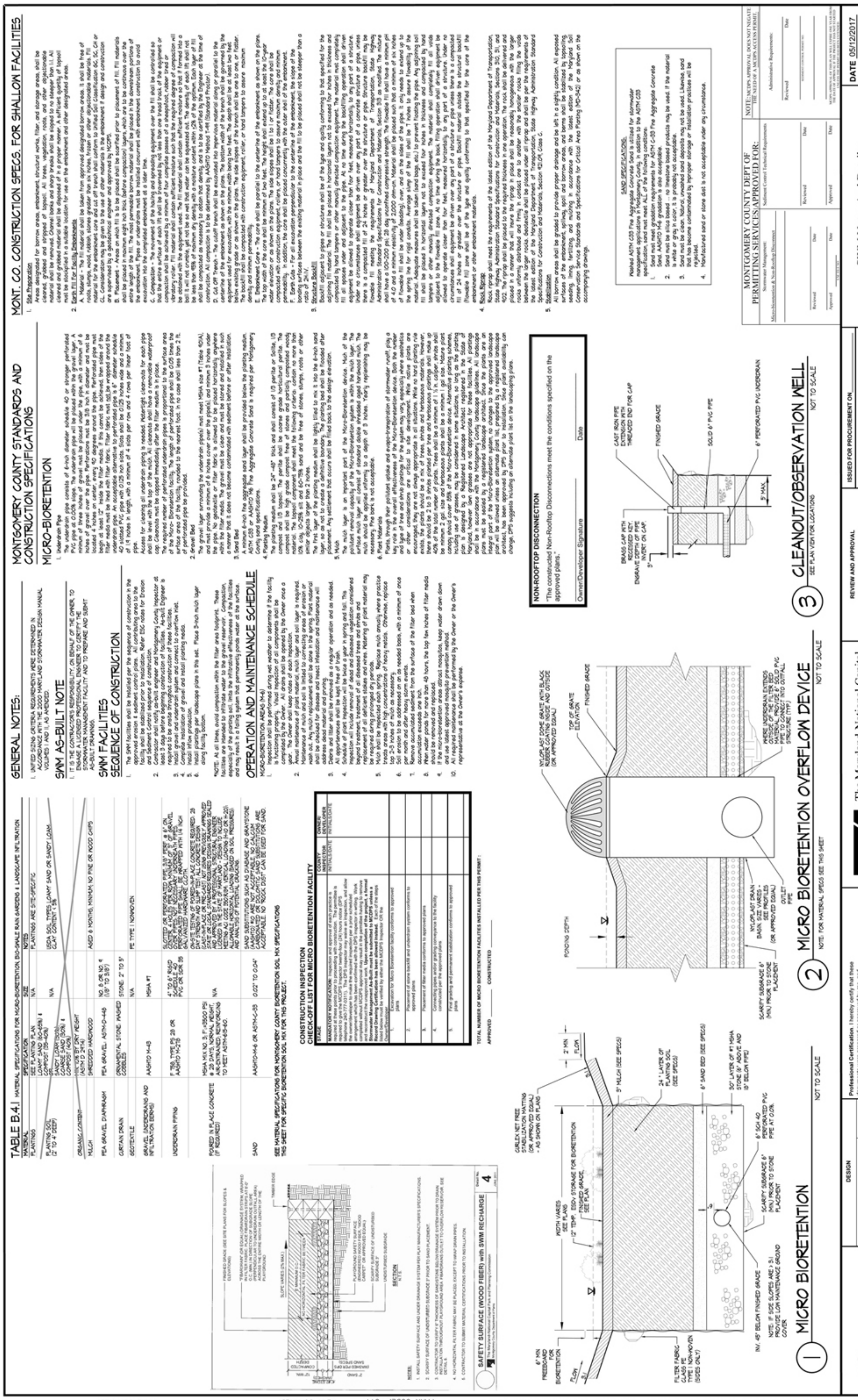
Lori A. Byrne,
Environmental Review Coordinator
Wildlife and Heritage Service
MD Dept. of Natural Resources

ER# 2017.0118.mo

Tawes State Office Building – 580 Taylor Avenue – Annapolis, Maryland 21401
410-260-8DNR or toll free in Maryland 877-620-8DNR – dnr.maryland.gov – TTY Users Call via the Maryland Relay

Stormwater Management (SWM)
Concept Plan Draft


LONG BRANCH PKWY
GLENVILLE RD
E WAYNE AVE
E WAYNE AVE
OFFSITE SWM FACILITY TO TREAT PUBLIC RIGHT-OF-WAY IMPROVEMENTS
MICRO-BIORETENTION #2
DRAINAGE AREA: 0.44 AC.
IMPERVIOUS AREA: 0.32 AC.
MICRO-BIORETENTION #1
DRAINAGE AREA: 0.31 AC.
IMPERVIOUS AREA: 0.23 AC.
EXISTING SAND FILTER
SOIL BORINGS (TYP.)
NON-ROOFTOP DISCONNECT (TYP.)
SWM STUDY AREA
PLAYGROUND AREA WITH RECHARGE STONE BENEATH
PROP. SD
UNIVERSITY BLVD E
GLENVILLE RD
SCALE: 1" = 30'
VICINITY MAP
1"=2000'
SITE
LEGEND
PROPERTY LINE
EXISTING CONTOURS
EXISTING TREELINE
EXISTING TREES
EXISTING WALK
EXISTING ROAD
EXISTING CURB
EXISTING STORM DRAIN
EXISTING WATER
EXISTING SANITARY SEWER
EXISTING GAS
EXISTING TELEPHONE
EXISTING ELECTRIC
EXISTING OVERHEAD ELECTRIC
EXISTING LIGHTING
EXISTING FENCE
EXISTING GUARDRAIL
PROPOSED CONCRETE WALK
PROPOSED BOARDWALK/ BRIDGE
PROPOSED NON-ROOFTOP DISCONNECT
PROPOSED CURB
PROPOSED RETAINING WALL
PROPOSED FENCE
PROPOSED SIGN
PROPOSED BUILDING
PROPOSED CONTOURS
SWM DRAINAGE AREAS
SWM STUDY AREA
MONTGOMERY COUNTY DEPT OF PERMITTING SERVICES APPROVED FOR:
NOTE: MCDPS APPROVAL DOES NOT NEGATE THE NEED OF A MCDPS ACCESS PERMIT.
SITERESOURCES
Creative Design. Successfully Engineered.
14315 Jamestown Pike, Phoenix, MD 21131-0249
410.683.3388 www.siteresourcesinc.com
DESIGN
Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.
License No. 45542
Expiration Date: 06/10/18
The Maryland-National Capital Park and Planning Commission
Montgomery County Department of Parks
9500 Brunett Avenue
Silver Spring, Maryland 20901
(301)-495-2535
Attn: Josh Arnett
REVIEW AND APPROVAL
Project Manager Date
Construction Manager Date
Park Manager Date
ISSUED FOR PROCUREMENT ON
REVISIONS
Rev. No. Date Description
SWM CONCEPT PLAN
Long Branch-Wayne Local Park
509 University Boulevard East, Silver Spring, MD 20901
Parcel P538 Liber 05231, Folio 00142
SCALE: AS SHOWN
DATE 05/12/2017
DWG. # SWM1.01
SHT. # 1 of 1
DPS # 1 of 4
SRI No. 16118


MONT. CO. CONSTRUCTION SPECS. FOR SHALLOW FACILITIES
MONTGOMERY COUNTY STANDARDS AND CONSTRUCTION SPECIFICATIONS
MICRO-BIORETENTION
GENERAL NOTES:
SWM AS-BUILT NOTE
SWM FACILITIES SEQUENCE OF CONSTRUCTION
OPERATION AND MAINTENANCE SCHEDULE
TABLE B.4.1
CONSTRUCTION INSPECTION CHECK-OFF LIST FOR MICRO BIORETENTION FACILITY
NON-ROOFTOP DISCONNECTION
1 MICRO BIORETENTION
NOT TO SCALE
2 MICRO BIORETENTION OVERFLOW DEVICE
NOT TO SCALE
3 CLEANOUT/OBSERVATION WELL
NOT TO SCALE
SAFETY SURFACE (WOOD FIBER) with SWM RECHARGE
SITERESOURCES
The Maryland-National Capital Park and Planning Commission
MONTGOMERY COUNTY DEPT OF PERMITTING SERVICES APPROVED FOR:
SWM Notes And Details
Long Branch-Wayne Local Park
SCALE: AS SHOWN
DATE 05/12/2017
DWG. # SWM2.01

LEGEND
PROPERTY LINE
EXISTING CONTOURS
EXISTING TREELINE
EXISTING TREES
EXISTING WALK
EXISTING ROAD
EXISTING CURB
EX. 15" RD
EXISTING STORM DRAIN
EX. 6" WATER
EXISTING WATER
EX. 8" SAN
EXISTING SANITARY SEWER
EX. 2" GAS
EXISTING GAS
EX. TELE
EXISTING TELEPHONE
EX. ELEC
EXISTING ELECTRIC
EXISTING OVERHEAD ELECTRIC
EX. ELEC
EXISTING LIGHTING
EXISTING FENCE
EXISTING GUARDRAIL
EXISTING DRAINAGE AREA
EXISTING TC PATH
UNIVERSITY BLVD E
GLENVILLE RD
E WAYNE AVE
LONG BRANCH PKWY
LONG BRANCH
LINE OF INVERSTIGATION
DA-1
6.11 Ac.
RCN=67
Tc=0.23hr.
TC PATH
MONTGOMERY COUNTY DEPT OF PERMITTING SERVICES APPROVED FOR:
NOTE: NCDPS APPROVAL DOES NOT INCLUDE ANY FIELD CHANGES
Stormwater Management
Sediment Control Handout Requirements
Administrative Requirements
Reviewed
Date
Approved
SCALE 1" = 20'
0 10 20 30 50 100
REVIEW AND APPROVAL
Project Manager
Construction Manager
Park Manager
Date
ISSUED FOR PROCUREMENT ON
REVISIONS
Rev. No.
Date
Description
The Maryland-National Capital Park and Planning Commission
Montgomery County Department of Parks
9500 Brunett Avenue
Silver Spring, Maryland 20901
(301) 495-2535
Mark Zaleski
SITERESOURCES
Civil/Site Design, Successfully Engineered.
14315 Jamesville Pike, Phoenix, MD 21131-0248
410.683.3300 www.siteresources.com
DESIGN
APP.
Landscape Architect
08/18/16
Date
Checked By
N/A
Architect
AT
JPCA
Engineer
MAS
Drawn By
Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.
License No. 45542
Expiration Date: 06/19/18
PARK CODE: G11
PLAN SCANNED:
FINAL SCANNED:
EX.SWM DA MAP
Long Branch-Wayne Local Park
599 University Boulevard East, Silver Spring, MD 20901
Parcel P538 Liber 05231, Folio 00142
SCALE AS SHOWN
DATE 05/12/2017
DWG. # SWM3.01
SHT. # 3 of 4
DPS # 3 of 4
NAD No. 1983


LEGEND
PROPERTY LINE
EXISTING CONTOURS
EXISTING TREELINE
EXISTING TREES
EXISTING WALK
EXISTING ROAD
EXISTING CURB
EX. 15" SD
EX. 6" WATER
EX. 8" SAN
EX. 2" GAS
EX. TELE
EX. ELEC
EXISTING STORM DRAIN
EXISTING WATER
EXISTING SANITARY SEWER
EXISTING GAS
EXISTING TELEPHONE
EXISTING ELECTRIC
EXISTING OVERHEAD ELECTRIC
EXISTING LIGHTING
EXISTING FENCE
EXISTING GUARDRAIL
PROPOSED CONCRETE WALK
PROPOSED BOARDWALK BRIDGE
PROPOSED ROOFTOP DISCONNECT
PROPOSED CURB
PROPOSED RETAINING WALL
PROPOSED FENCE
PROPOSED SIGN
PROPOSED BUILDING
PROPOSED CONTOURS
PROPOSED DRAINAGE AREA
PROPOSED TC PATH
UNIVERSITY BLVD E
6' WIDE TREE STRIP
GLENVILLE RD
E WAYNE AVE
LONG BRANCH PKWY
LONG BRANCH
LINE OF INVERSTIGATION
TC PATH
PROP SD
6.11 Ac.
DA-1
Tc=0.36hr
RCN=72
RCN=80
RCN=76
MONTGOMERY COUNTY DEPT OF PERMITTING SERVICES APPROVED FOR:
NOTE: NCPS APPROVAL DOES NOT INCLUDE SITE PLAN, LANDSCAPE/LIGHTING
Stormwater Management
Sediment Control Handout Requirements
Administrative Requirements
Reviewed
Date
Approved
REVIEW AND APPROVAL
Project Manager
Construction Manager
Park Manager
ISSUED FOR PROCUREMENT ON
REVISIONS
Rev. No.
Date
Description
The Maryland-National Capital Park and Planning Commission
Montgomery County Department of Parks
9500 Brunett Avenue
Silver Spring, Maryland 20901
(301) 495-2535
Mark Zaleski
PROP. SWM DA MAP
Long Branch-Wayne Local Park
599 University Boulevard East, Silver Spring, MD 20901
Parcel P538 Liber 05231, Folio 00142
SCALE: AS SHOWN
DATE 05/12/2017
DWG. # SWM3.02
SHT. # 1 of 1
DPS # 4 of 4
SITERESOURCES
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14315 Jamesville Pike, Phoenix, MD 21131-0248
410.683.3300 www.siteresources.com
DESIGN
Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.
License No. 45542
Expiration Date: 06/30/18
PLAN SCANNED:
FINAL SCANNED:

DPS | Montgomery County Department of Permitting Services
255 Rockville Pike, 2nd Floor
Rockville, MD 20850-4166
Phone: 311 in Montgomery County or (240)777-0311
Fax: (240)777-6262
http://www.montgomerycountymd.gov/permittingservices

Application for Stormwater Management Concept

Stormwater Concept Application #_____

A. Project Information

Project Name/Subdivision: Long Branch-Wayne Park Property Size/Area: 8.20 Acres

Property Address/Location: 509 University Blvd E, Silver Spring, MD 20901
Address City/State Zip

B. *Owner/Applicant Information*

Name M-NCPPC - Montgomery County Department of Parks Lucas Bonney
Property Owner's name

Mailing Address 9500 Brunett Avenue, Silver Spring, MD 20901
City State Zip Code

Cell Telephone ___-___ Work Telephone 301-495-2572 Email lucas.bonney@montgomeryparks.org

C. Engineer Information

Name Site Resources, Inc. - Peter Soprano
Firm Name and/or Contact Person

Mailing Address 14315 Jarrettsville Pike, Phoenix, MD 21131
City State Zip Code

Cell Telephone ___-___ Work Telephone 443-689-0438 Email psoprano@siteresourcesinc.com

D. Type of Application (Check One)

See "Stormwater Management Concept Application Categories" on the reverse of this application for explanation.

☑ Stormwater Concept ☐ Site Development Stormwater Management Plan

☐ Combination Concept/Site Development Stormwater Management Plan

☐ SPA Preliminary Water Quality Plan (PWQP) ☐ SPA Final Water Quality Plan (FWQP)

☐ SPA Combination PWQP/FWQP ☐ SPA Water Quality Inventory

E. Type of Submittal (Check One)

☑ ***New*** ☐ ***Resubmittal**** ☐ ***Revision**** ☐ ***Reconfirmation****

* For Resubmittal, Revision and Reconfirmation provide original Stormwater Concept #: _____

Preliminary Plan # (if applicable): _____ Watershed Name/Class (I-IV): _____
Lot(s): _____ Block(s): _____ Parcel(s): _____
Subdivision: _____ Municipality: _____

I declare and affirm, under penalty of perjury, that to the best of my knowledge, information and belief all matters and facts in this application are correct. I declare that I am the owner of the property or duly authorized to make this application on behalf of the owner.

DPS | Montgomery County
Department of Permitting Services
255 Rockville Pike, 2nd Floor
Rockville, MD 20850-4166
Phone: 311 in Montgomery County or (240)777-0311
Fax: (240)777-6262
http://www.montgomerycountymd.gov/permittingservices

Application for Stormwater Management Concept

Stormwater Concept Application #_____

Signature: _____ LUCAS Bonney 05/19/17
Signature Property Owner or Authorized Agent | Printed Name | Date

E. Conditions of Approval

At a Minimum, All Stormwater Management Concept applications must include:

1. Completed application with original signature.
2. Description of application fee category and determination of fee amount submitted separately and attached to the application.
3. Check made payable to Montgomery County, MD.
4. One (1) cover letter with justification for the proposed Stormwater Management Concept.
5. One (1) copy of grading or site plan which include:
   - A. Vicinity map.
   - B. Existing and proposed grading.
   - C. Impervious areas and improvements.
   - D. Existing and proposed drainage areas. Location of study points used for calculations. If flows beyond study points converge off-site, give distance to convergence.
   - E. Off-site drainage and outfalls.
   - F. Downstream conditions.
   - G. If the site drains to an existing storm drain system, provide a schematic drawing of the storm drain layout on 200' scale topography detailing the system from the point of inflow to the existing outfall.
   - H. The proposed development showing streets; parking lots; topography; 100-year floodplain (cite study approval authority) and flow paths; existing or proposed easements for storm drains, sewers, and other utilities; building locations; locations of springs, seeps and wetlands; and major soils groups.
   - I. In Special Protection Areas (SPA) One copy of the plans, computations and a sediment control concept must be submitted to the following agencies: DPS, DEP Watershed Management and MNCPPC (Environmental).
6. One (1) copy of notifications to downstream property owners, with receipts, per Executive Regulation 7-02AM.
7. One (1) copy of **approved** Natural Resources Inventory and Forest Stand Delineation for developments that are required to go through preliminary or site plan review.
8. The location, type, and hazard class of all proposed on-site stormwater management facilities, including preliminary design. Topography, profiles, and cross sections as necessary to show that the design is feasible and that the correct design assumptions are used.
9. Results of in-place soil testing. Refer to Montgomery County “Soil Testing Guidelines for Stormwater Management Practices”.
10. One (1) copy of computations showing the adequacy of existing public or private drainage systems.

GENERAL NOTES:

1. Incomplete or improperly prepared submissions will be returned without review.
2. The application package must be submitted in sets and all plans must be folded **no larger than 8-1/2" x 14"**.
3. **If the project is located in a designated "Special Protection Area" contact MCDPS for additional requirements.**
4. Applications are not considered received until they are accepted for review.
5. DPS may require additional information as deemed necessary during the review process.

STORMWATER MANAGEMENT CONCEPT APPLICATION CATEGORIES*:*

Stormwater Concept – The first stage of review for projects that will be going to Site Plan. Followed by Site development Concept prior to Site Plan approval.

Site Development Stormwater Concept – The final conceptual review stage for projects that will be going to Site Plan.

Combination Concept/Site Development – For all projects that are not going to Site Plan, or for projects that are going through a combined Preliminary/Site Plan process.

SPA PWQP - The first stage of review for Special Protection Area projects that will be going to Site Plan. Followed by FWQP prior to Site Plan approval.

SPA FWQP - The final conceptual review stage for Special protection Area projects that will be going to Site Plan.

Combination SPA PWQP/FWQP - For all projects that are not going to Site Plan, or for projects that are going through a combined Preliminary/Site Plan process or are going to Mandatory Referral.

SPA Water Quality Inventory – A conceptual stormwater and sediment control review for Special Protection Area projects exempt from PWQP/FWQP requirements.

STORMWATER MANAGEMENT REPORT

THE MARYLAND NATIONAL CAPITAL PARK AND PLANNING COMMISSION
LONG BRANCH-WAYNE PARK

SILVER SPRING, MARYLAND

May 2017

FOR OWNER / DEVELOPER
The Maryland National Capital Park
and Planning Commission
9500 Brunett Avenue
Silver Spring, MD 20901

CONTACT
Lucas Bonney
301-495-2572

PREPARED BY

SITE RESOURCES
Creative Design. Successfully Engineered.

14315 Jarrettsville Pike
Phoenix, Maryland 21131-0249
410.683.3388

TABLE OF CONTENTS

EXECUTIVE SUMMARY

This report has been prepared to accompany a stormwater management (SWM) submission for the proposed improvements for Long Branch-Wayne Park associated with the Maryland National Capital Park and Planning Commission. The park's existing conditions consist of a pavilion, existing parking lot, basketball court, playground area, soccer/baseball field and sand filter. The proposed improvements include removing and replacing the existing with a larger pavilion, improved standard and ADA accessible walkways, retaining walls, proposed parking lots, relocated basketball court, improved soccer field, updated playground, and stormwater management facilities.

The following table summarizes required and provided SWM for this ***New Development*.**

LIMITS OF DISTURBANCE	5.19 ACRES
EXISTING IMPERVIOUS AREA IN LOD	0.04 ACRES
TOTAL PROPOSED IMPERVIOUS AREA IN LOD	0.72 ACRES
IMPERVIOUS AREA REQUIRING TREATMENT, IART	0.72 ACRES
IMPERVIOUS AREA TREATED	0.73 ACRES
TARGET ESD_V	3,393 FT^3
PROVIDED ESD_V	3,501 FT^3

Table 1: Stormwater Management Executive Summary Table

PROJECT LOCATION/EXISTING CONDITIONS

The project is located on approximately 8.20 acres of land in Silver Spring, Maryland and is owned by the Maryland National Capital Park and Planning Commission. The property is bounded by residential properties to the south and north, University Blvd to the east, and by a tributary of Long Branch to the west.

Currently, the site serves the public with a pavilion, parking lot, basketball court, playground, soccer/baseball field, and a sand filter. The existing sand filter treats a majority of the onsite impervious, including the existing parking lot, and some offsite impervious from University Boulevard. The site is within the Anacostia River watershed and generally drains from the East to the West to Long Branch river adjacent to the property boundary which ultimately drains to the Chesapeake Bay. According to the information contained in the Web Soil Survey, National Cooperative Soil Survey, USDA, the property area is underlain with Hydrologic Soil Group (HSG) B, C, and B/D (assumed as D for computations) soils. Further information on soils can be found in Appendix E.

Based on FEMA's "Flood Map Service Center", Flood Insurance Rate Map (Panel 24033C0038E / eff. 9/16/2016), the site is located in Zone 'X' (Area of Minimal Flood Hazard). See Appendix F for more information.

PROPOSED IMPROVEMENTS

The proposed development includes a 1,900 square foot pavilion, adjacent ADA accessible ramps, sidewalks, parking, relocation of existing basketball court, retaining walls, improved soccer field, storm drain, and stormwater management facilities. There will be two (2) micro-bioretention facilities utilized for SWM treatment as well as non-rooftop disconnect for the majority of the onsite pathways. Additional recharge is provided underneath the proposed playground. Pervious/permeable concrete and other infiltration practices will be considered pending the results of the geotechnical report. It is important to note that the impervious area draining to the existing sand filter remains approximately the same in the proposed conditions. The amount of impervious area draining to the sand filter is treated in the existing conditions; therefore, this same amount of area is also considered already treated in the proposed condition. Computations are contained in Appendix A & B.

The Concept SWM plan also shows proposed widening of East Wayne Avenue, adjacent path improvements, and a separate SWM facility within the public ROW to treat the public development. The intent of this development is to improve neighborhood circulation adjacent to Long Branch-Wayne Park. SRI and Montgomery County Parks will coordinate with Montgomery County Department of Transportation to receive approval of these improvements. Please note since this development is not within the property boundary, SWM design for the widening is not included in this submittal.

METHODOLOGY

The stormwater management plan for this project complies with the Maryland Stormwater Management Act of 2007 (Act) and revisions as well as additional Montgomery County Department of Public Works requirements. The SWM plan was established via Stormwater Management practices to more adequately reflect Environmental Site Design (ESD) practices to the maximum extent practicable (MEP).

As the calculations in the following section show, the project site is classified as new development. Therefore, treatment of Water Quality Volume is required for 100% of the total impervious area within the LOD in the proposed condition. Water Quality volume is treated based upon a target P_E = 1.0 inch. Detailed computations are included in Appendix A and B.

Stormwater management requirements are provided within two (2) micro-bioretention facilities and non-rooftop disconnect of site pathways. These facilities satisfy the target water quality volume and the 10 year stormwater quantity management requirement via RCN reduction as shown in Appendix C.

QUALITY MANAGEMENT SUMMARY

The new development status is determined from the amount of the existing impervious within the property boundary and the ESD requirements are determined the SWM study area as shown in Appendix A. ESD requirements are summarized in the table below. Detailed computations are provided in Appendix A of this report. Re_V is provided since the target ESD volume (ESD_V) is met. However, supplementary recharge computations are provided showing additional recharge provided beneath the playground area. See the summary table below.

Treatment Level	ESDV	Impervious Area Requiring Treatment	PE
New Development	3,393 cu ft	100% New 0.72 ac	1.00 inches
Total Required	3,393 cu ft	Total IART 0.72 ac	1.00 inches
Total Provided	3,501 cu ft	Total 0.73 ac	1.03 inches

Table 2: Stormwater Management Summary Table

QUANTITY MANAGEMENT SUMMARY

Where the project meets the required target ESDv, there is a decrease in site runoff for the 10 year storm via the reduced runoff curve number method. Detailed computations are contained in Appendix C of this report. Please reference the Existing and Proposed Drainage Area Maps when reviewing computations.

EROSION AND SEDIMENT CONTROL

Erosion and Sediment Control is provided for the site in accordance with the 2011 Maryland Standards and Specifications for Soil Erosion and Sediment Control. Sediment controls for the site will primarily consist of perimeter controls to contain and filter sediment from erosion during construction. These controls are integrated within the stormwater strategy to minimize and control erosion.

CONCLUSIONS

This report illustrates stormwater quality management (Appendix B) for the proposed site using two (2) micro-bioretention facilities and non-rooftop disconnect of pathways. Stormwater quantity management for the 10-year storm is provided via the reduced runoff curve number method due to the amount of ESDv provided.

APPENDIX A - SWM REQUIREMENTS

SITE DATA

SITE AREA:	8.20	acres
LIMIT OF DISTURBANCE	5.19	acres
Proposed Impervious Cover:	0.72	acres
Impervious Area Requiring Treatment:	0.72	acres
Soils:	B & C	
Prop. Impervious (Reconstruct. & New) =	0.72	acres
Ex. Impervious =	0.04	acres
Net Change in Impervious =	0.68	acres
50% Ex. Imp + 100% Net Change Imp =	0.74	**acres**

Impervious Area Requiring Treatment =	0.72	**acres**

EX CONDITIONS

Site Area	8.20	acres
Existing Impervious Cover:	0.04	acres*
% Impervious Cover:	0.5%	

Existing Site I < 40%; Therefore, NEW DEVELOPMENT

A_T Redevelopment = 50%Ex.	0.00	acres
A_T New Development = Prop. - Ex.	0.72	acres
	0.72	**acres IART**

This is NOT a Redevelopment project, see New Development

*Existing and Proposed impervious numbers do not include 0.46 acres treated by existing sand filter. Impervious area draining to existing sand filter is reduced in the proposed conditions. Therefore, since it is presently treated and not being changed in the proposed condition, this impervious area is not accounted for in the Impervious area requiring treatment computation.

Compute ESD Targets for New Development:

Because the existing site imperviousness is less than 40%, the project is considered new development.
Stormwater management shall be addressed according to New Development requirements
Therefore, the amount of runoff from the site shall be reduced to a level equivalent to woods in good condition
Using Table 5.3 below, determine the target rainfall amount P_E for the appropriate soil type at the proposed percent impervious

Soils	Total Area (Ac.)	Total Prop. Impervious Area (Ac.)
B,C, & D	**8.20**	**0.72 (9% impervious)**

Hydrologic Soil Group B

%I	RCN*	P_E = 1"	1.2"	1.4"	1.6"	1.8"	2.0"	2.2"	2.4"	2.6"
0%	61									
5%	63									
10%	65									
15%	67	55								
20%	68	60	55	55						
25%	70	64	61	58						
30%	72	65	62	59	55					
35%	74	66	63	60	56					
40%	75	66	63	60	56					
45%	78	68	66	62	58					
50%	80	70	67	64	60					
55%	81	71	68	65	61	55				
60%	83	73	70	67	63	58				
65%	85	75	72	69	65	60	55			
70%	87	77	74	71	67	62	57			
75%	89	79	76	73	69	65	59			
80%	91	81	78	75	71	66	61			
85%	92	82	79	76	72	67	62	55		
90%	94	84	81	78	74	70	65	59	55	
95%	96	87	84	81	77	73	69	63	57	
100%	98	89	86	83	80	76	72	66	59	55

Hydrologic Soil Group C										
%I	RCN*	P_E = 1"	1.2"	1.4"	1.6"	1.8"	2.0"	2.2"	2.4"	2.6"
0%	74									
5%	75									
10%	76									
15%	78									
20%	79	**70**								
25%	80	72	**70**	**70**						
30%	81	73	72	71						
35%	82	74	73	72	**70**					
40%	84	77	75	73	71					
45%	85	78	76	74	71					
50%	86	78	76	74	71					
55%	86	78	76	74	71	**70**				
60%	88	80	78	76	73	71				
65%	90	82	80	77	75	72				
70%	91	82	80	78	75	72				
75%	92	83	81	79	75	72				
80%	93	84	82	79	76	72				
85%	94	85	82	79	76	72				
90%	95	86	83	80	77	73	**70**			
95%	97	88	85	82	79	75	71			
100%	98	89	86	83	80	76	72	**70**		

Hydrologic Soil Group D										
%I	RCN*	P_E = 1"	1.2"	1.4"	1.6"	1.8"	2.0"	2.2"	2.4"	2.6"
0%	80									
5%	81									
10%	82									
15%	83									
20%	84	**77**								
25%	85	78								
30%	85	78	**77**	**77**						
35%	86	79	78	78						
40%	87	82	81	79	**77**					
45%	88	82	81	79	78					
50%	89	83	82	80	78					
55%	90	84	82	80	78					
60%	91	85	83	81	78					
65%	92	85	83	81	78					
70%	93	86	84	81	78					
75%	94	86	84	81	78					
80%	94	86	84	82	79					
85%	95	86	84	82	79					
90%	96	87	84	82	79	**77**				
95%	97	88	85	82	80	78				
100%	98	89	86	83	80	78	**77**			

B soils, P_E = 1.00

C soils, P_E = 1.00

D soils, P_E = 1.00

Avg. P_E = 1.00

Compute Runoff Coefficient (Rv)

Rv = 0.05 +(0.009)(I) = volumetric runoff coefficient

Ai = Impervious Cover (Acres) = 0.72

A = LOD (Acres) = 5.19

I = 14.0%

Rv = 0.18

The ESDv for the new development area is as follows:

$ESD_V = \frac{(P_E)(R_V)(A)}{12}$, where

P_E = 1.0 inches

Rv = 0.18

A = 5.19 acres

New Development ESDv =	0.0779	ac-ft
New Development ESDv =	3,393	cubic feet

Therefore, 3,393 cu ft of runoff needs to be captured and treated within an ESD practice. If the target ESDv is met channel protection volume and recharge volume are also provided for. However, suggested recharge computations for the project site are shown below.

Suggested Recharge Computations for Project Site

Compute Weighted Specific Recharge Factor (*S*)

Soil Group	S	Area (Ac.)	% Total	Wgt'd "S"
A	0.38	0.00	0	0.00
B	0.26	5.11	84	0.22
C	0.13	0.72	12	0.02
D	0.07	0.28	5	0.00
Total		6.11	100	0.24

$Re_v = \frac{(S)(R_V)(A)}{12}$, where

S = Soil Specific Recharge Factor (from pg. 2.30 MD Stormwater Design Manual)

S = 0.24

Rv = 0.18

A = 5.19 acres

Rev = 0.019 ac-ft 814 cubic feet

Total	**814**	cubic feet

Summary of Management Required

Treatment Level	ESDv	Impervious Area Requiring Treatment	
New Development	**3,393 cu ft**	**IART**	**0.72 acres**
Total Required	**3,393 cu ft**	**Total IART**	**0.72 acres**

APPENDIX B – QUALITY SWM DESIGN & COMPUTATIONS

ESD Practice Design

Existing Sand Filter

Existing DA to Sand Filter*	106,916 sf	2.45 ac
Existing Impervious Area to Sand Filter*	20,204 sf	0.46 ac
Proposed DA to Sand Filter**	79,179 sf	1.82 ac
Proposed Onsite Impervious Area to Sand Filter	20,016 sf	0.46 ac

*As shown on the existing SWM Drainage Area Map. This does not encompass the total area draining to the existing sand filter. See initial SWM report for the sand filter in Appendix B. The impervious provided is the impervious within this drainage area.

**As shown on the SWM plan and the proposed SWM Drainage Area Map. There is additional drainage from University Boulevard that is not shown because it does not impact the site. See initial SWM report for the sand filter in Appendix #.

It is shown that the Drainage area to the existing sand filter is reduced in the proposed conditions; therefore, the impervious area draining to the sand filter is not included in the Impervious Area Requiring Treatment.

Micro-Bioretention #1:

Surface Area	700 sf	
Ponding Depth	1.00 ft	
Planting Media Depth	2.0 ft	
Sand Depth	0.5 ft	
Depth of Stone Above Underdrain	0.5 ft	
Underdrain Pipe	0.5 ft perf. PVC	
Depth of Stone Below Underdrain	1.50 ft	
Porosity Factor	0.4	
DA to ESD Measures	13,520 sf	0.31 ac
Impervious to ESD Measures	10,125 sf	0.23 ac

$ESDv = \frac{(P_E)(R_v)(A)}{12}$

$R_V = 0.05 + (0.009)(I)$; I = Imp. A / DA

$R_V =$ 0.72

A = (Drainage Area to the ESD measures)

A = 0.31 acres

Min. $P_E =$ 1.0 inches

Target $P_E =$ .0 inches

Max $P_E =$ 2.6 inches

$$\text{ESDv Min.} = \frac{1.0 \times 0.72 \times 0.31}{12} = 811 \text{ cu feet ESDv required}$$

$$\text{ESDv Max} = \frac{2.6 \times 0.72 \times 0.31}{12} = 2{,}109 \text{ cu feet ESDv required}$$

ESDv Provided = $[(A_f) \times (\text{Ponding Depth})] + [(A_f)(\text{depth}_{\text{filter}})(\text{porosity of media } 0.40)]$

ESDv Provided = 700 x 1.0 + (700 x 2.5 x 0.4)

ESDv Provided = 1,400 cu ft provided

$$P_E = \frac{(ESD_V)(12)}{(R_V)(A)} = \frac{1{,}400 \times 12.0}{0.72 \times 0.31} = 1.72 \text{ inches treated}$$

Micro-Bioretention #2:

Surface Area	900 sf	
Ponding Depth	1.00 ft	
Planting Media Depth	2.0 ft	
Sand Depth	0.5 ft	
Depth of Stone Above Underdrain	0.5 ft	
Underdrain Pipe	0.5 ft perf. PVC	
Depth of Stone Below Underdrain	1.50 ft	
Porosity Factor	0.4	
DA to ESD Measures	19,122 sf	0.44 ac
Impervious to ESD Measures	14,050 sf	0.32 ac

$ESDv = \frac{(P_E)(R_v)(A)}{12}$

$R_V = 0.05 + (0.009)(I)$; I = Imp. A / DA

$R_V =$ 0.71

A = (Drainage Area to the ESD measures)

A = 0.44 acres

Min. $P_E =$ 1.0 inches

Target $P_E =$ 1.0 inches

Max $P_E =$ 2.6 inches

$$\text{ESDv Min.} = \frac{1.0 \times 0.71 \times 0.44}{12} = 1{,}131 \text{ cu feet ESDv required}$$

$$\text{ESDv Max} = \frac{2.6 \times 0.71 \times 0.44}{12} = 2{,}942 \text{ cu feet ESDv required}$$

ESDv Provided = [(A_f) x (Ponding Depth)] + [(A_f)($depth_{filter}$)(porosity of media 0.40)]

ESDv Provided = 900 x 1.0 + (900 x 2.5 x 0.4)

ESDv Provided = 1,800 cu ft provided

$$P_E = \frac{(ESD_v)(12)}{(R_V)(A)} = \frac{1{,}800 \times 12.0}{0.71 \times 0.44} = 1.59 \text{ inches treated}$$

Non Rooftop Disconnect

Impervious to ESD Measures	7,600 sf	0.17 ac
Contributing Impervious Length	6.0 ft	
Receiving Pervious Length	4.0 ft	
Impervious Ratio	0.5:1	
Pe	0.5 inches	

According to the Montgomery County Department of Permitting Services' design specifications for non-rooftop disconnect, disconnected runoff must discharge directly to vegetated areas of less than 5% and flow path length shall be at least 10 feet. The provided the flow length is 12 feet.

$ESDv = \frac{(P_E)(R_v)(A)}{12}$ $R_V = 0.05 + (0.009)(I\%)$; I = Imp. A / DA

$R_V =$ 0.95

A = (Drainage Area to the ESD measures)

A = 0.17 acres

$$\text{ESDv Provided} = \frac{0.5 \times 0.95 \times .17}{12}$$

ESDv Provided = 301 cu ft provided

$$P_E = \frac{(ESD_V)(12)}{(R_V)(A)} = \frac{301 \times 12.0}{0.95 \times 0.17} = 0.50 \text{ inches treated}$$

CONCLUSIONS:

By using ESD practices, the required ESD volume and impervious cover have been managed as shown in the table below.

Facility	ESDv Provided	Impervious Area
Micro-Bioretention #1:	1400 cu ft	0.23 ac
Micro-Bioretention #2:	1800 cu ft	0.32 ac
Non Rooftop Disconnect	301 cu ft	0.17 ac
PROVIDED	**3,501 cu ft**	**0.73 ac**
REQUIRED	**3,393 cu ft**	**0.72 ac**

Recharge Computations:

Beneath Playground Area

$A_f =$ 7642

Rev = 0.40 x A_f x 4"/12"

Rev = 1528.4

Total Rev Suggested = 814 cu ft
Total Rev Provided = 1528 cu ft

APPENDIX C – QUANTITY SWM DESIGN & COMPUTATIONS

WinTR-55 Current Data Description

--- Identification Data ---

User: Peter
Project: 16118 - Long Branch-Wayne Park
SubTitle: Existing RCN Values
State: Maryland
County: Montgomery
Filename: Z:\16\16118-MNCPPC Long Branch-Wayne Local Park\07-ENG & DESIGN\SWM\RCN Values for Existing DAs

Date: 5/11/2017
Units: English
Areal Units: Acres

--- Sub-Area Data ---

Name	Description	Reach	Area(ac)	RCN	Tc
Ex. DA-1			6.11	67	

Total area: 6.11 (ac)

--- Storm Data --

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	1-Yr (in)
3.2	4.2	5.1	5.6	6.3	7.2	2.6

Storm Data Source: Montgomery County, MD (NRCS)
Rainfall Distribution Type: Type II
Dimensionless Unit Hydrograph: <standard>

==========

Peter
16118 - Long Branch-Wayne Park
Existing RCN Values
Montgomery County, Maryland

Sub-Area Summary Table

Sub-Area Identifier	Drainage Area (ac)	Time of Concentration (hr)	Curve Number	Receiving Reach	Sub-Area Description
Ex. DA-1	6.11	0.000	67		

Total Area: 6.11 (ac)

==========

Peter
16118 - Long Branch-Wayne Park
Existing RCN Values
Montgomery County, Maryland

Sub-Area Land Use and Curve Number Details

Sub-Area	Hydrologic	Sub-Area	Curve

Identifier	Land Use		Soil Group	Area (ac)	Number
Ex. DA-1	Open space; grass cover > 75%	(good)	B	4.62	61
	Open space; grass cover > 75%	(good)	C	.55	74
	Open space; grass cover > 75%	(good)	D	.28	80
	Paved parking lots, roofs, driveways		B	.5	98
	Paved parking lots, roofs, driveways		C	.16	98
	Total Area / Weighted Curve Number			6.11	67

WinTR-55 Current Data Description

--- Identification Data ---

User: Peter
Project: 16118 - Long Branch-Wayne Park
SubTitle: Proposed RCN Values
State: Maryland
County: Montgomery
Filename: Z:\16\16118-MNCPPC Long Branch-Wayne Local Park\07-ENG & DESIGN\SWM\RCN Values for Proposed DAs

Date: 5/11/2017
Units: English
Areal Units: Acres

--- Sub-Area Data ---

Name	Description	Reach	Area(ac)	RCN	Tc
Prop. DA-1			6.11	72	

Total area: 6.11 (ac)

--- Storm Data --

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	1-Yr (in)
3.2	4.2	5.1	5.6	6.3	7.2	2.6

Storm Data Source: Montgomery County, MD (NRCS)
Rainfall Distribution Type: Type II
Dimensionless Unit Hydrograph: <standard>

==========

Peter
16118 - Long Branch-Wayne Park
Proposed RCN Values
Montgomery County, Maryland

Sub-Area Summary Table

Sub-Area Identifier	Drainage Area (ac)	Time of Concentration (hr)	Curve Number	Receiving Reach	Sub-Area Description
Prop. DA-1	6.11	0.000	72		

Total Area: 6.11 (ac)

==========

Peter
16118 - Long Branch-Wayne Park
Proposed RCN Values
Montgomery County, Maryland

Sub-Area Land Use and Curve Number Details

Sub-Area	Hydrologic	Sub-Area	Curve

Identifier	Land Use		Soil Group	Area (ac)	Number
Prop. DA-1	Open space; grass cover > 75%	(good)	B	3.93	61
	Open space; grass cover > 75%	(good)	C	.44	74
	Open space; grass cover > 75%	(good)	D	.23	80
	Paved parking lots, roofs, driveways		B	1.19	98
	Paved parking lots, roofs, driveways		C	.27	98
	Paved parking lots, roofs, driveways		D	.05	98
	Total Area / Weighted Curve Number			6.11	72

Watershed Model Schematic

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5

Legend

Hyd.	Origin	Description
1	SCS Runoff	DA-1 Ex. Condition
3	SCS Runoff	DA-1 Prop. Condition

Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	14.61	2	722	42,031	------	------	------	DA-1 Ex. Condition
3	SCS Runoff	14.01	2	728	49,345	------	------	------	DA-1 Prop. Condition

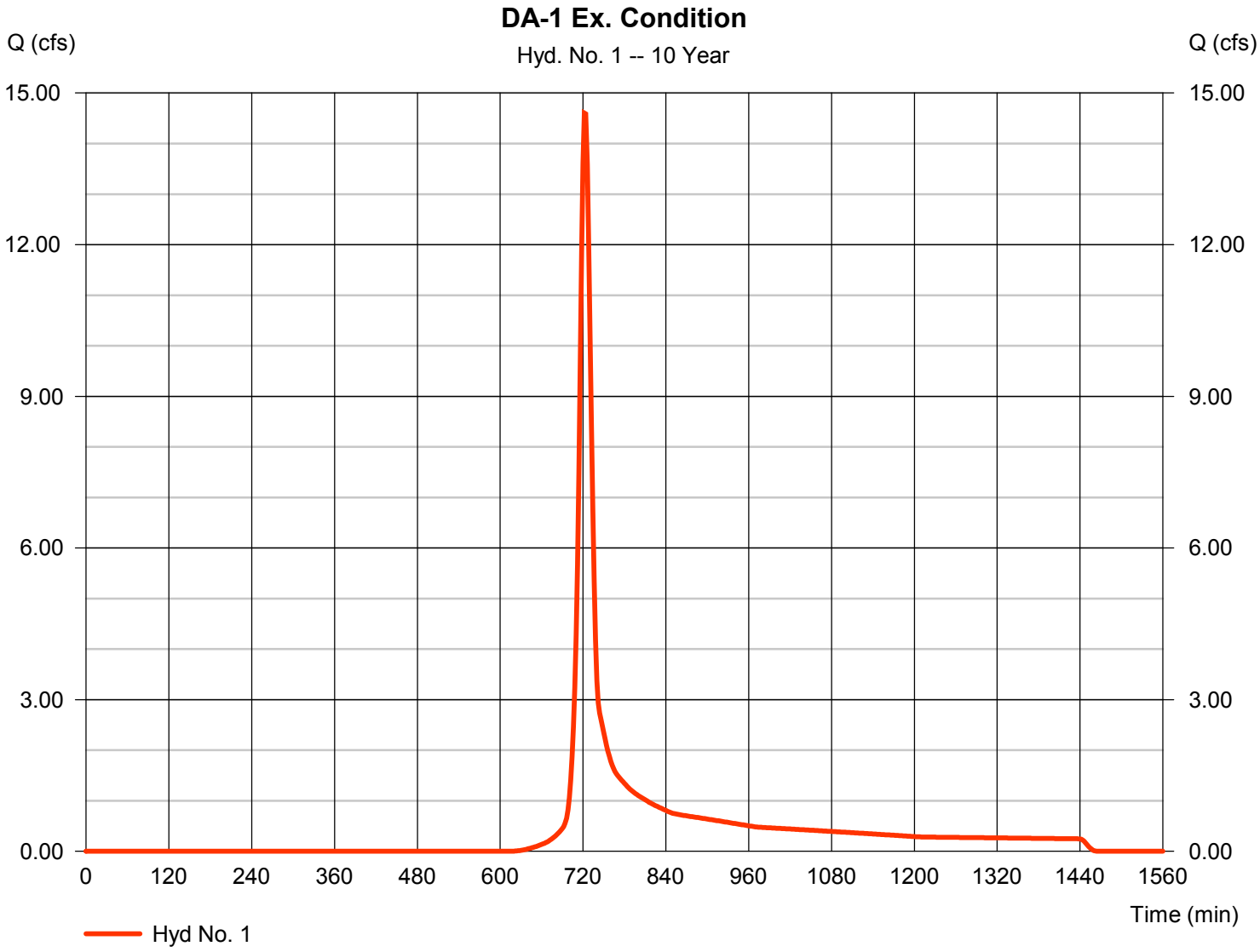
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5 Friday, 05 / 12 / 2017

Hyd. No. 1

DA-1 Ex. Condition

Hydrograph type	= SCS Runoff	Peak discharge	= 14.61 cfs
Storm frequency	= 10 yrs	Time to peak	= 722 min
Time interval	= 2 min	Hyd. volume	= 42,031 cuft
Drainage area	= 6.110 ac	Curve number	= 67
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 13.80 min
Total precip.	= 5.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



TR55 Tc Worksheet

Hyd. No. 1

DA-1 Ex. Condition

Description	A		B		C		Totals
Sheet Flow							
Manning's n-value	= 0.240		0.011		0.011		
Flow length (ft)	= 100.0		0.0		0.0		
Two-year 24-hr precip. (in)	= 3.30		0.00		0.00		
Land slope (%)	= 4.00		0.00		0.00		
Travel Time (min)	**= 10.65**	**+**	**0.00**	**+**	**0.00**	**=**	**10.65**
Shallow Concentrated Flow							
Flow length (ft)	= 284.00		0.00		0.00		
Watercourse slope (%)	= 11.00		0.00		0.00		
Surface description	= Unpaved		Paved		Paved		
Average velocity (ft/s)	=5.35		0.00		0.00		
Travel Time (min)	**= 0.88**	**+**	**0.00**	**+**	**0.00**	**=**	**0.88**
Channel Flow							
X sectional flow area (sqft)	= 2.61		0.00		0.00		
Wetted perimeter (ft)	= 8.63		0.00		0.00		
Channel slope (%)	= 3.00		0.00		0.00		
Manning's n-value	= 0.060		0.015		0.015		
Velocity (ft/s)	=1.93						
			0.00				
					0.00		
Flow length (ft)	({0})258.0		0.0		0.0		
Travel Time (min)	**= 2.23**	**+**	**0.00**	**+**	**0.00**	**=**	**2.23**

Total Travel Time, Tc ..... 13.80 min

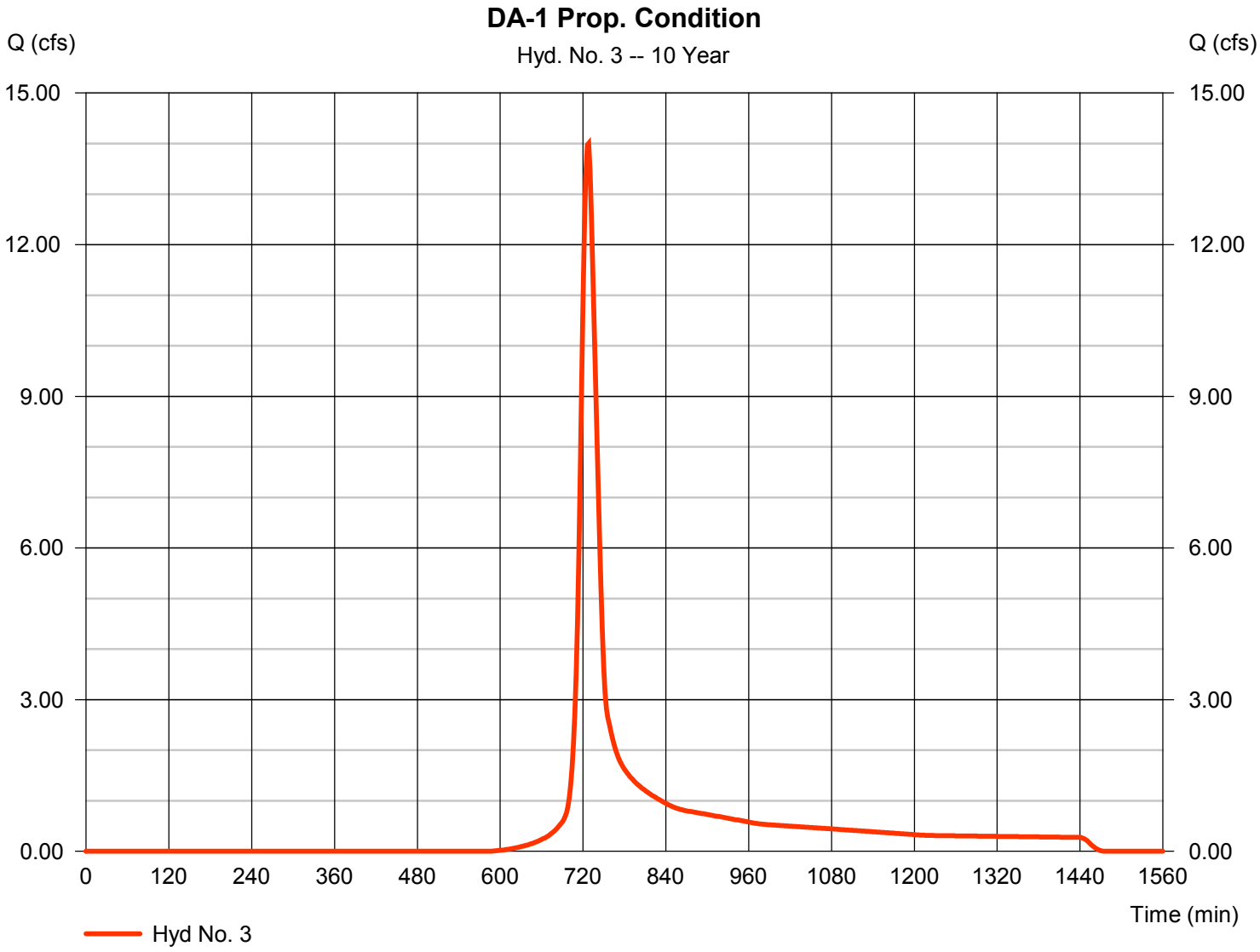
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5 Friday, 05 / 12 / 2017

Hyd. No. 3

DA-1 Prop. Condition

Hydrograph type	= SCS Runoff	Peak discharge	= 14.01 cfs
Storm frequency	= 10 yrs	Time to peak	= 728 min
Time interval	= 2 min	Hyd. volume	= 49,345 cuft
Drainage area	= 6.110 ac	Curve number	= 70
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 21.30 min
Total precip.	= 5.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



TR55 Tc Worksheet

Hyd. No. 3

DA-1 Prop. Condition

Description	A		B		C		Totals
Sheet Flow							
Manning's n-value	= 0.240		0.240		0.011		
Flow length (ft)	= 80.0		20.0		0.0		
Two-year 24-hr precip. (in)	= 3.30		3.30		0.00		
Land slope (%)	= 1.20		1.50		0.00		
Travel Time (min)	**= 14.42**	**+**	**4.35**	**+**	**0.00**	**=**	**18.77**
Shallow Concentrated Flow							
Flow length (ft)	= 92.00		241.00		162.00		
Watercourse slope (%)	= 3.00		10.40		1.50		
Surface description	= Paved		Unpaved		Unpaved		
Average velocity (ft/s)	=3.52		5.20		1.98		
Travel Time (min)	**= 0.44**	**+**	**0.77**	**+**	**1.37**	**=**	**2.57**
Channel Flow							
X sectional flow area (sqft)	= 0.00		0.00		0.00		
Wetted perimeter (ft)	= 0.00		0.00		0.00		
Channel slope (%)	= 0.00		0.00		0.00		
Manning's n-value	= 0.015		0.015		0.015		
Velocity (ft/s)	=0.00						
			0.00				
					0.00		
Flow length (ft)	({0})0.0		0.0		0.0		
Travel Time (min)	**= 0.00**	**+**	**0.00**	**+**	**0.00**	**=**	**0.00**

Total Travel Time, Tc ..... 21.30 min

APPENDIX D – VICINITY MAP

VICINITY MAP

1"=2000'

APPENDIX E – SOILS MAP

Hydrologic Soil Group—Montgomery County, Maryland
(16118 - Long Branch-Wayne Park Soils)

Map Scale: 1:2,130 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 30 60 120 180

Feet: 0 100 200 400 600

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils

Soil Rating Polygons
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Montgomery County, Maryland
Survey Area Data: Version 12, Sep 20, 2016

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Data not available.

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Hydrologic Soil Group— Summary by Map Unit — Montgomery County, Maryland (MD031)				
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
1C	Gaila silt loam, 8 to 15 percent slopes	B	5.6	68.3%
2B	Glenelg silt loam, 3 to 8 percent slopes	C	0.5	5.8%
2UB	Glenelg-Urban land complex, 0 to 8 percent slopes	B	0.1	1.2%
16D	Brinklow-Blocktown channery silt loams, 15 to 25 percent slopes	C	0.1	1.2%
54A	Hatboro silt loam, 0 to 3 percent slopes, frequently flooded	B/D	1.9	23.4%
Totals for Area of Interest			**8.1**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

APPENDIX F – FEMA FLOOD PLAIN MAP

FEMA's National Flood Hazard Layer (Official)

Data from Flood Insurance Rate Maps (FIRMs) where available digitally. New NFHL FIRMette Print app available: http://tinyurl.com/j4xwp5e

Print here instead: http://tinyurl.com/j4xwp5e Support: FEMAMapSpecialist@riskmapcds.com | National Geospatial-Intelligence Agency (NGA); Delta State University; Esri | USGS The National Map: Orthoimagery

GEOTECHNICAL ENGINEERING REPORT

MARYLAND-NATIONAL CAPITAL PARK & PLANNING COMMISION
LONG BRANCH - WAYNE LOCAL PARK
PRELIMINARY DESIGN - STORMWATER MANAGEMENT & SITE RENOVATIONS
SILVER SPRING, MARYLAND

Prepared for:

Site Resources
14315 Jarrettsville Pike
Phoenix, MD 21131

Prepared by:

SaLUT-TLB
530 McCormick Drive, Suite S
Glen Burnie, Maryland 21061

JUNE 20, 2017

Soil and Land Use Technology, Inc. (SaLUT-TLB)
530 McCormick Drive, Suite S • Glen Burnie, MD 21061
(443) 577-1600
www.SaLUTinc.com

JUNE 20, 2017

Site Resources, Inc.
14315 Jarrettsville Pike
Phoenix, MD 21131

Attn: Mr. Kevin Riley, PLA, LEED AP BD+C
Senior Project Manager

Re: Maryland National Capital Park & Planning Commission (M-NCPPC)
Long Branch - Wayne Local Park
Preliminary Design - Stormwater Management & Site Renovations
Silver Spring, Maryland
SaLUT-TLB Reference No. 17-0005

Dear Mr. Riley:

Pursuant to your request, we have performed a geotechnical study in support of your design efforts on the referenced project. The following report summarizes the results of our subsurface explorations and laboratory testing and presents geotechnical engineering recommendations for the proposed Stormwater Management (SWM) and Site Renovations at the Long Branch - Wayne Local Park in Silver Spring, Maryland.

We thank you for providing us this opportunity to perform these services for Site Resources, Inc., and look forward to working with you during the implementation of the project. Please do not hesitate to contact us if you have any comments or questions regarding this report, or when we can be of further assistance on this and other projects.

Sincerely,

SaLUT-TLB

STATE OF MARYLAND
SHANNON HUDGINS
No. 28254
PROFESSIONAL ENGINEER

Shannon Hudgins, P.E.
Senior Project Engineer

Edward Dalton, P.E.
Executive Vice-President

Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed Professional Engineer under the laws of the State of Maryland. License No. 28254, Expiration Date: January 17, 2018. SLH

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ATTACHMENTS

Drawing No. 1 - Site Vicinity Map
Drawing No. 2 - Test Boring Location Plan

APPENDIX A Records of Field Testing

- Record of Soil / Rock Exploration
- Field Infiltration Test Results

APPENDIX B Laboratory Test Results

- Summary of Laboratory Test Results
- Atterberg Limits
- Gradation Analysis
- USDA Textural Classification Chart
- Moisture-Density Curve

Y:\01 Projects\2016 PROJECTS\Site Resources\MNCPPC Long Branch-Wayne Local Park\Report\Prelim Geotech Report - MNCPPC LBWLP.Doc

1.0 INTRODUCTION

Site Resources, Inc. of Phoenix, MD has been engaged to perform architectural and engineering (AE) services for the Long Branch - Wayne Local Park project in Silver Spring, Maryland. To perform the geotechnical engineering design services, Site Resources retained **SaLUT-TLB**.

The geotechnical scope of services for this study has changed compared to the scope outlined in SaLUT-TLB's approved proposal dated November 28, 2016. A total of 10 test borings were originally proposed, however only 4 test borings are requested for the current scope. The current scope includes providing preliminary recommendations for proposed SWM facilities, renovated pavilion, concrete slab, ramp retaining walls, and the parking lot pavements to develop Schematic Design documents.

2.0 PROJECT DESCRIPTION

2.1 Site Description

The project is located at the Long Branch - Wayne Local Park in Silver Spring, Montgomery County, Maryland. The site is approximately 6 acres and consists of an athletic field for softball/baseball and soccer, playground areas, a basketball court, an asphalt-paved parking lot, pedestrian access paths, and trail paths that includes a pedestrian bridge that crosses over Long Branch in a wooded portion of the park.

The terrain at the project site consists of hills and slopes, with the surface generally sloping downward from east to west before sloping steeply upward west of Long Branch. The areas in the immediate vicinity of the amenities are graded relatively flat.

The surface grades at the site range from approximately El.240± at Long Branch to El. 300± on the east end of the park. The surface elevations that are referenced are based on the SWM Concept Plan Sheet SWM1.01, dated May 12, 2017 and prepared by Site Resources.

The park property is bounded by East Wayne Street to the north, University Boulevard E to the east, a residential community to the south, and a wooded area and Long Branch to the west. The project location is shown on the attached Drawing No. 1 - Site Vicinity Map.

2.2 Proposed Development

The project consists of the construction of SWM facilities for best management practices, an expanded parking lot, a rehabilitated pavilion, and an access ramp with retaining walls that will comply with the Americans with Disabilities Act (ADA) guidelines. Three (3) locations have been identified for SWM development. The exact size and geometry of the SWM facilities was not known at the time of this report. It is our understanding that infiltration design is being considered for the SWM facilities.

3.0 SUBSURFACE EXPLORATION

To evaluate the subsurface conditions, 4 test borings (B-1 to B-4) were performed at the site on June 5, 2017. The test boring locations were selected by and staked in the field by Site Resources. The approximate test boring locations are shown on the attached Drawing No. 2 – Test Boring Location Plan.

The test boring depths ranged from 10 feet to 20 feet below-grade. Soil samples were obtained from the test borings at select intervals using a split-barrel sampler (spoon) in accordance with the Standard Penetration Test (SPT) procedure ASTM D1586.

Field infiltration tests were performed adjacent to 3 test borings, B-1 to B-3, on June 6, 2017. The field infiltration tests were performed at approximate depths of 2 and 9 feet below-grade and was performed in general accordance with the 2000 Maryland Stormwater Design Manual, Appendix D.1 and the Montgomery County Department of Permitting Services (MCDPS) Soil Testing Guidelines for SWM Practices. Detailed field infiltration test reports are included in Appendix A.

The test borings and infiltration boreholes were backfilled with the soil cuttings after completion of field testing. The soil samples were transported to our Glen Burnie, MD laboratory for testing and storage.

4.0 GEOLOGICAL SETTING

The project site in located within the Piedmont Geographical Province. The natural soil of the Piedmont consists of residual soils that is formed by the chemical and physical weathering of bedrock, and the underlying parent bedrock.

Based on the Geologic Map of the Montgomery County, Detail 12 (1968), the underlain bedrock consists of the Boulder Gneiss rock formation of the Late Precambrian period. The rock is described as “thick-bedded to massive, pebble- and boulder-bearing, arenaceous to pelitic metamorphic rock, typically a medium-grained, garnet-oligoclase-mica-quartz gneiss; locally an intensely foliated gneiss or schist” based on the geology map referenced above.

5.0 SUBSURFACE CONDITIONS

Logs describing the subsurface soil and groundwater conditions encountered at the test boring locations are presented as "Records of Soil / Rock Exploration" in Appendix A. The ground surface elevations noted on the test boring logs were obtained from the SWM Concept Plan Sheet SWM1.01, dated May 12, 2017 and prepared by Site Resources. The descriptive terminology used to classify the soils encountered during this study are explained on the “General Classification Summary for Soil & Rock Exploration” sheet in Appendix A. The subsurface conditions are summarized below.

5.1 Subsurface Stratigraphy

Ground Cover: Topsoil was encountered at the surface at the test boring locations. The topsoil thickness ranged from approximately 3 to 7 inches.

Stratum A (Existing Fill): Existing fill was encountered below the topsoil at the test boring locations, except at B-4. The fill material extended to depths ranging from 3 feet below-grade to the termination depth of 12 feet. The fill material consisted of sandy lean Clay, silty Sand and clayey Sand. Varying amount of gravel and rock fragments were encountered in the fill. Asphalt fragments were encountered in the fill material at Test Boring B-1. The Standard Penetration Test (SPT) N-values obtained in the granular material ranged from 5 to 19 blows per foot (bpf), indicating loose to medium dense relative densities. The N-values in the cohesive material ranged from 3 to 15 bpf, indicating soft to stiff consistencies.

Stratum B (Residual): Residual soil was encountered below the ground cover or existing fill at the test boring locations. The residual soil generally consisted of silty Sand, but also included sandy lean Clay and clayey Sandy. Varying amounts of mica and rock fragments were encountered in the residual soil. The SPT N-values obtained in the granular soils ranged from 3 to 49 bpf, indicating very loose to dense relative densities. The N-values in the cohesive soil was 2 bpf, indicating a very soft consistency.

Stratum C (Weathered Rock): Weathered rock was encountered below the residual soil at test boring B-3. The weathered rock material was visually classified as silty Sand with varying amounts of rock fragments and mica. Weathered rock can visually resemble soil but denser portions may exhibit rock-like qualities. The SPT N-values were in excess of 50 bpf, indicating very dense relative densities.

5.2 Groundwater

Groundwater was not encountered during drilling, at completion, or 24-hours after completion of drilling. Based on the groundwater and soil conditions encountered during the field work, the water table is deeper than the test boring exploration depths. However perched groundwater may be encountered within the existing fill soil at isolated locations. Groundwater conditions will fluctuate throughout the year depending on stream levels, precipitation, seasons, surface drainage, and other climatic factors.

5.3 Laboratory Tests

Representative soil samples obtained during the subsurface exploration program were subjected to laboratory testing which included natural moisture content (ASTM D2216), gradation and hydrometer analysis (ASTM D422), Atterberg limits (ASTM D4318), and modified proctor (ASTM D1557). The test results are presented in Appendix B, and are summarized in the table below.

Test	Results	
	Range	Average
Moisture Content (%)	16.4 – 27.6	20.8
Liquid Limit (%)	34 – 48	39.5
Plastic Index (%)	11 – 19	16
% Passing No. 4 Sieve	75 – 100	89.8

Test	Results	
	Range	Average
% Passing No. 200 Sieve	38 – 55	47
Optimum Moisture Content (%)	12.3	
Maximum Dry Density (pcf)	121	

The remaining soil samples are being temporarily stored in our Glen Burnie, Maryland laboratory and are available for review. The samples will be discarded forty-five (45) days following the submittal of this report unless other arrangements are made.

6.0 CONCLUSIONS AND PRELIMINARY RECOMMENDATIONS

The geotechnical conclusions and preliminary recommendations provided in this report are based on the project information provided to us, assumptions detailed in this report, and the subsurface conditions encountered at the site. The following sections provide preliminary recommendations for the proposed expanded parking lot, pavilion, access ramp retaining walls and SWM facilities.

6.1 Ramp Retaining Wall and Pavilion Foundations

We expect that the access ramp retaining walls will retain less than 5 feet of soil and the foundation loads for the new pavilion to be less than 20 kips. Considering the subsurface conditions in the vicinity of the proposed structures (B-4), the structures may be supported by shallow spread footings. We recommend an allowable soil bearing pressure of 1,500 psf for spread footings supported by natural soil. The bearing pressures considers a factor of safety of at least 3 for general shear failure. Wall and column foundations are recommended to be at least 18 inches and 24-inches wide, respectively, for shear considerations.

The exterior foundations should bear at a minimum depth of 2.5 feet below-grade for frost protection. The resultant total settlement of the foundations supported by approved foundation subgrades is not expected to exceed one inch. Differential settlement is estimated to be less than 0.5-inch.

We understand that the foundations may be subjected to lateral loads. We recommend a fluid passive earth pressure of 300H psf, where H is the soil height adjacent to the foundation, for passive resistance of the soil. The passive pressure assumes that the soil will be backfilled as recommended in this report and compacted tight against the spread footing. The top one foot of soil from the finished surface should be neglected for passive resistance. Based on approved foundation subgrades as described in this report, a sliding coefficient of 0.34 may be used when evaluating sliding at the base of the spread footings. A factor of safety of 1.5 should be used when evaluating the passive and sliding resistance.

6.2 Lateral Earth Pressures for Retaining Walls

Site retaining walls will have to be designed to resist lateral earth pressure. Drainage panel should be placed behind the walls (retaining side of the wall) to eliminate hydro-static pressures.

The drainage panel must tie into an adequate drainage system. With the wall drainage system installed to reduce the hydro-static pressure, we recommend an equivalent active earth pressure of 42H psf, where H is the height of the wall. The earth pressures do not consider surcharge loads and slopes at the top of the wall. Use of heavy compaction equipment should not be allowed for backfilling operations behind the walls.

6.3 Concrete Slab and Concrete Walk

New concrete slabs for the pavilion and concrete paved access paths will be constructed in the at the park. A modulus of subgrade reaction (k-value) is commonly used to determine soil support parameters for concrete slab. Based on the subsurface conditions in the vicinity of the pavilion (B-4), the slab subgrades will generally consist of the existing fill and new compacted fill. Therefore, we recommend a modulus of subgrade reaction of 175 pci (considering a 1-ft by 1-ft square plate) for subgrades prepared in accordance with Section 6.6 of this report.

Considering the recommended modulus and the subgrade preparation, the following M-NCPPC concrete walk standard is considered suitable for the proposed access paths:

5.0” Portland Cement Concrete
3.0” Graded Aggregate Base

6.4 Parking Lot Pavement

An expanded parking lot is proposed for this project. We assume passenger vehicles will utilize this area as they visit the park. It is our understanding that the pavement section will consist of hot-mixed asphalt (HMA). The parking lot capacity and average daily traffic (ADT) was not known at the time of this report. However, we expect fire truck access (HS-20 loading) will be required. We have assumed a maximum parking lot capacity of 70 vehicles and an ADT of 160 vehicles per day for this project.

California Bearing Ratio (CBR) tests were not performed for the preliminary design, but should be performed for final design to evaluate the existing soil subgrades for pavement support. Based on the assumed ADT and anticipated soil subgrades in the vicinity of the proposed parking lot (B-2), the M-NCPPC standard is generally considered suitable for the pavement. However we recommend a thicker graded aggregate base layer as indicated in the section provided below:

1.5” HMA Superpave 12.5mm for Surface – PG64-22
4.0” HMA Superpave 25.0mm for Base – PG64-22
6.0” Graded Aggregate Base

6.5 Stormwater Management Considerations

Field infiltration tests were performed adjacent to B-1, B-2, and B-3 at depths of approximately 2 and 9 feet below-grade. A 5-inch diameter casing was installed at each location to facilitate infiltration testing. Water was placed in the casing to a depth of 24 inches from the bottom and allowed to pre-soak for a period of 24 hours. The casing was then re-filled to the 24-inch level, and the water level was measured after a one-hour period. This process was repeated three additional times at one hour intervals for a total period of approximately 4 hours. The field

infiltration tests were performed in general accordance the 2000 Maryland Stormwater Design Manual, Appendix D.1 and MC DPS Design Guidelines. The results of the field infiltration tests are summarized below, and the detailed test results are included in Appendix A.

Test Boring ID	Approximate Test Depth/Elevation (ft.)	Average Field Infiltration Rate (in./hr)	USDA Textural Classification	Minimum USDA Infiltration Rate (in./hr)
B-1	9 / El. 258	0.03	SANDY CLAY LOAM	0.17
B-2	9 / El. 260	1.11	CLAY LOAM	0.09
B-3	2 / El. 263	0.00	SANDY LOAM	1.02

Based on the 2000 Maryland Stormwater Design Manual, Appendix D.1 and MC DPS guidelinges, a minimum field infiltration rate of 0.52 inches per hour is required for infiltration practices. Lower infiltration rates preclude the use of infiltration practices. Infiltration practices are also precluded if groundwater or bedrock is within 4 feet of the bottom of the proposed facility. Groundwater or bedrock was not encountered within 4 feet of the test elevations.

For design purposes, we recommend using the lower value of the average field infiltration rate and minimum USDA infiltration rate associated with the textural classification. The field and laboratory test results indicate that infiltration may not be feasible at the test elevations and locations of the infiltration tests.

It is important to note that existing fill material was present at all infiltration test locations and will likely be encountered throughout the project area due to the existing construction. Fill material can vary greatly with a change in location and depth. Therefore SWM facilities with mediums within existing fill and soil not suitable for infiltration practices will likely need an underdrain system or lowering the medium in suitable soil for infiltration practices.

6.6 Site Preparation

6.6.1 Demolition, Clearing and Stripping

The existing pavilion structure will be removed. Site preparation will require complete removal and disposal of any remnants of the existing foundations. It should be noted that any construction remnants left in-place may cause excavation difficulties for new and future construction.

Vegetation, topsoil and roots must be removed in the project area prior to construction. Clearing and stripping should extend several feet beyond the development area if possible, and should be performed in a manner as to minimize disruption of the subgrade soils. Depressions made by clearing operations shall be filled with suitable material and compacted to conform to the adjacent surface. standard is considered suitable for the proposed access paths.

6.6.2 Inspection of Subgrades

We recommend that all subgrades be inspected by a Geotechnical Engineer or an experienced engineering technician. Subgrades should be evaluated and unstable areas identified based on appropriate field testing. Any soft or loose zones that are identified that cannot be re-compacted

should be undercut to a depth, within the area marked by the inspecting Engineer. The depths and extent of undercuts shall be determined by the inspecting Geotechnical Engineer. Deeper undercuts should be avoided, and it is requested that SaLUT-TLB be extended an opportunity to review the conditions warranting any deeper undercuts before undercutting commences. Undercut volume shall be backfilled to grade with compacted fill in accordance with the requirements in this report.

Exposed subgrades must be sloped to facilitate surface runoff away from construction area and to prevent ponding of surface water. If ponding of surface water does occur, it should be removed by pumping, ditching or as otherwise directed by the inspecting geotechnical engineer. During periods of anticipated inclement weather, exposed surfaces shall be graded and sealed to preclude infiltration of surface water.

6.6.3 Fill Material and Compaction

The on-site soils generally consisted of silty Sand and lean Clay. On-site soil that is free of organics and debris is considered to be suitable for reuse as compacted fill. Considering the laboratory test results, the natural moisture content of the on-site soils are likely above the optimum moisture content for compaction. Therefore drying of the soil or blending with dryer material may be required to achieve suitable compaction.

If imported fill is required, we recommend to the material have non-expansive characteristics. The material should have less than 50 percent passing the No. 200 sieve, Liquid Limit of 30 or less, Plasticity Index less than 10, and a minimum dry density of at least 110 pcf.

We recommend that all fill material be placed in lifts having a maximum loose lift thickness commensurate with the equipment being utilized to perform the compaction. In no case should those lifts exceed eight (8) inches. Each lift should be uniformly compacted to at least 95% of the laboratory maximum dry density as determined by ASTM D698. SWM medium subgrades that require infiltration practices should be compacted as directed by the Civil Engineer.

7.0 RECOMMENDATIONS FOR ADDITIONAL STUDIES

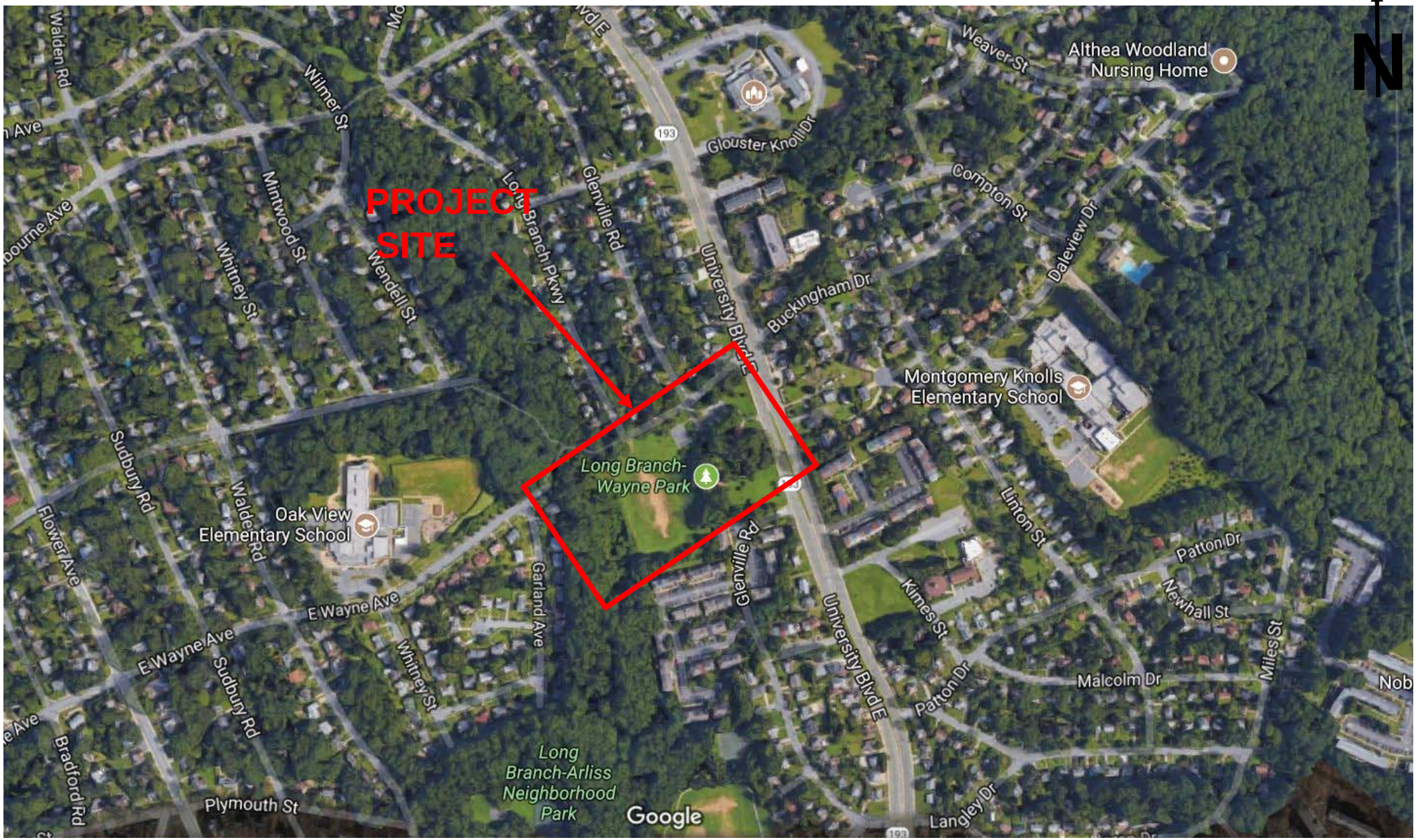
A limited subsurface exploration program was performed for this project in order to develop schematic design documents. The recommendations in this report are preliminary. Additional test borings, field and laboratory tests, and geotechnical engineering analyses will be required for final design of the ADA ramp, pedestrian bridge, site retaining walls, and parking lot pavement.

8.0 LIMITATIONS

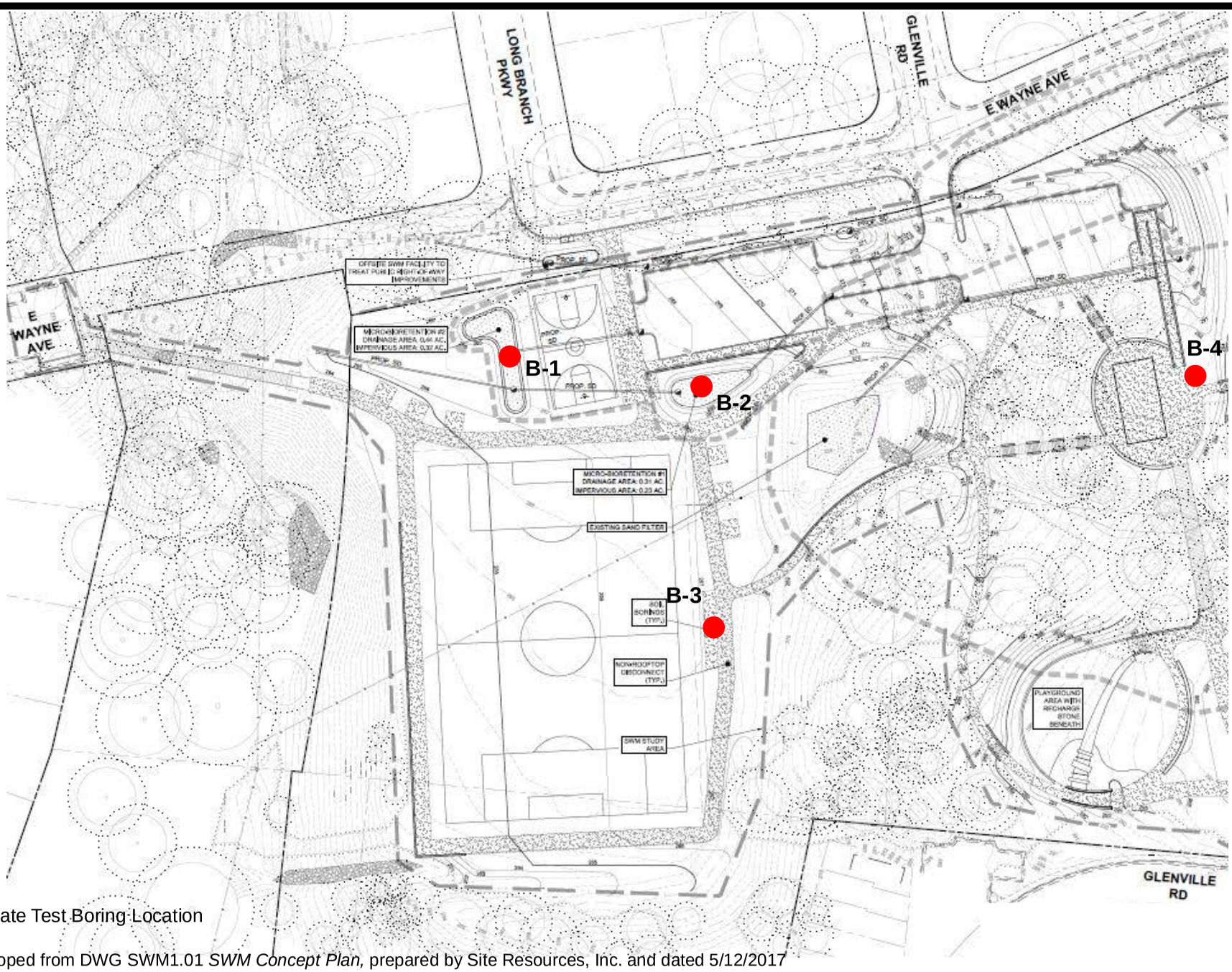
This report has been prepared to aid in the evaluation of this site and to assist Site Resources in the design and construction aspects of aforementioned project based upon our understanding of the design details, project assumptions, criteria, and utilization of the aspects as outlined herein. All subsurface explorations require the extrapolation of limited amounts of data based on general geologic knowledge. The water level observations and geologic descriptions presented on the accompanying logs have been made with reasonable care and accuracy, but must be considered only an approximate representation of subsurface conditions to be encountered beyond a particular exploratory location.

Variations in the soil conditions noted in this report may be encountered during construction. SaLUT-TLB should be retained to observe subsurface conditions encountered during construction and to verify that conditions are compatible with the findings of this study. Observation services should include fill, footing, and pavement subgrade observations; and fill placement and compaction. If another firm is hired for construction observation services, SaLUT-TLB should be contacted immediately if significant variations are encountered or if the proposed locations or designs are altered.

We have completed these services in accordance with general engineering practices used by members of the profession in the same region and under similar conditions of this project. We make no warranty or guarantee, either expressed or implied, for these services.



SaLUT-TLB A DIVISION OF SaLUT GLEN BURNIE, MD	**M-NCPPC** **LONG BRANCH-WAYNE LOCAL PARK** **PRELIMINARY DESIGN – SWM & SITE RENOVATIONS** **SILVER SPRING, MD** SaLUT-TLB PROJECT NO. 17-0005	SITE VICINITY MAP		
		DATE: 06/20/17 SCALE: NTS	DRAWN BY: SH CHECKED BY:	DRAWING NO: 1



● Approximate Test Boring Location

Plan is developed from DWG SWM1.01 *SWM Concept Plan,* prepared by Site Resources, Inc. and dated 5/12/2017

SaLUT-TLB A DIVISION OF SaLUT GLEN BURNIE, MD	**M-NCPPC** **LONG BRANCH-WAYNE LOCAL PARK** **PRELIMINARY DESIGN – SWM & SITE RENOVATIONS** **SILVER SPRING, MD** SaLUT-TLB PROJECT NO. 17-0005	TEST BORING LOCATION PLAN DATE: 06/20/17 DRAWN BY: SH DRAWING NO: 2 SCALE: NTS CHECKED BY:

APPENDIX A

RESULTS OF FIELD TESTING

Records of Soil / Rock Exploration

GENERAL CLASSIFICATION SUMMARY FOR SOIL & ROCK EXPLORATION

SOIL

Particle Size Identification

Boulders		- 12 inch diameter or more
Cobbles		- 3 to 12 inch diameter
Gravel	- Coarse	- 3/4 to 3 inches
	- Fine	- 4.75mm to 3/4 inch
Sand	- Coarse	- 2.00mm to 4.75 mm [Sieve #10 to #4]
	- Medium	- 0.4mm to 2.00mm [Sieve #40 to #10]
	- Fine	- 0.075mm to 0.4mm [Sieve #200 to #40]
Silt/Clay		- less than 0.075mm (Cannot see particles)
Silt		- Atterberg limits plot below "A" line
Clay		- Atterberg limits plot above "A" line

Relative Proportions

Descriptive Term	Percent
In accordance with ASTM D 2487 and ASTM D 2488	

Cohessionless Soils

Density	*N-Value*
Very loose	0-4 blows/ft.
Loose	5-10 blows/ft.
Medium Dense	11-30 blows/ft.
Dense	31-50 blows/ft.
Very Dense	>50 blows/ft.

Cohesive Soils

Consistency	*N-Value*
Very Soft	0-1 blows/ft.
Soft	2-4 blows/ft.
Medium Stiff	5-8 blows/ft.
Stiff	9-15 blows/ft.
Very Stiff	16-30 blows/ft.
Hard	>30 blows/ft.

Classifications on logs are made by visual inspection.

Standard Penetration Test - Driving a 2.0" O.D., 1 3/8" I.D., sampler a distance of 1.0 foot into undisturbed soil with a 140 pound hammer free falling a distance of 30.0 inches. It is customary for us to drive the spoon 6.0 inches of penetration to seat into undisturbed soil, and then perform the test. The number of hammer blows for seating the spoon and making the tests are recorded for each 6.0 inches of penetration on the drill log (Example: 6-8-9). The standard penetration test resistance or "N"-value can be obtained by adding the last two figures (i.e., 8 + 9 = 17 blows/ft.).

Strata Changes - In the column "Soil Descriptions" on the drill log, the horizontal lines represent estimated strata changes.

Groundwater observations were made at the times indicated. Porosity of soil strata, weather conditions, site topography, etc., may cause changes in the water levels indicated on the logs.

ROCK

Rock Quality Designation (RQD) - The sum of the lengths of pieces of recovered core which are greater than four inches in length, expressed as a percentage of the total length of the core run. If the core has been broken by the drilling process, it is considered to be intact provided the broken fragments are cumulatively greater than 4 inches in length. For this investigation, vertical separations which split the core have not been considered discontinuities when determining RQD.

Recovery (REC) - The total length of core recovered expressed as a percentage of the total length of that coring run.

ROCK CLASSIFICATION

Fresh**-** No visible signs of discoloration or decomposition.
Slightly Weathered **-** Slightly discolored. Lower in strength than fresh rock. Dull under hammer.
Moderately Weathered **-** Significant portions show discoloration and weakening (softening, lighter color). Shows loss of weight. Rock fabric evident.
Highly Weathered **-** Almost all of the rock shows severe discoloration and weathering. Rock fabric evident in majority of the rock.
Completely Weathered (Saprolite) **-** Rock fabric discernible in a few scattered locations. Effectively reduced to soil and can be broken by hand.
Residual Soil **-** Reduced to soil. Rock fabric not discernible. Can be easily broken by hand.

SaLUT-TLB
Subsurface Explorations &
Geotechnical Engineering Consultants

RECORD OF SOIL / ROCK EXPLORATION

Contracted With: Site Resources | Boring #: B-1
Project Name: Long Branch-Wayne Local Park SWM & Site Renovations | Job #: 17-0005
Location: Silver Spring, MD

SAMPLER

Datum: | Hammer Wt.: 140 lb | Hole Diameter: 8 in | Foreman: J. Freeman
Surf. Elev.: 267.0 ft | Hammer Drop: 30 in | Rock Core Dia.: N/A | Inspector: S. Hudgins
Date Started: 6/5/17 | Spoon Size: 2 in | Boring Method: HSA | Date Completed: 6/5/17

ELEV. (ft)	SOIL DESCRIPTION Color, Moisture, Density, Plasticity, Size Proportions	STRA DEPTH (ft)	SOIL SYMBOL	DEPTH SCALE	SAMPLE Cond	Blows/6"	No.	Type	Rec (in)	BORING & SAMPLE NOTES
266.8	3" of **TOPSOIL**	0.3								1. No water encountered
	Brown, moist, loose to medium dense, silty **SAND**, little mica, rock fragments, and asphalt fragments, **(FILL)**				I/D	4-4-5-7	1	DS	16	2. Borehole offset 5-ft East and infiltration casing at 9-ft
	[USDA: SANDY CLAY LOAM]				I/D	4-8-11-14	2	DS	20	
				5	I/D	4-5-10-12	3	DS	22	
					I/D	5-4-5-5	4	DS	24	
					I/D	2-2-3-5	5	DS	17	
				10	I/D	3-3-2-3	6	DS	12	
255.0	Bottom of Boring at 12.0 ft	12.0								
				15						
				20						
				25						

SAMPLER TYPE
DS - DRIVEN SPLIT SPOON
PT - PRESSED SHELBY TUBE
CA - CONTINUOUS FLIGHT AUGER
RC - ROCK CORE

SAMPLE CONDITIONS
D - DISINTEGRATED
I - INTACT
U - UNDISTURBED
L - LOST

GROUNDWATER DEPTH
AT COMPLETION Dry ft
AFTER ____ HRS. ____ ft
AFTER 24 HRS. Dry ft
CAVED AT 8.0 ft

BORING METHOD
HSA - HOLLOW STEM AUGERS
CFA - CONTINUOUS FLIGHT AUGERS
DC - DRIVING CASING
MD - MUD DRILLING

STANDARD PENETRATION TEST DRIVING 2" OD SAMPLER 1' WITH 140# HAMMER FALLING 30": COUNT MADE AT 6" INTERVALS

RECORD OF SOIL EXPLORATION BORING LOGS.GPJ TLB2010.GDT 6/15/17

RECORD OF SOIL / ROCK EXPLORATION

Contracted With: Site Resources | Boring #: B-2
Project Name: Long Branch-Wayne Local Park SWM & Site Renovations | Job #: 17-0005
Location: Silver Spring, MD

SAMPLER

Datum: | Hammer Wt.: 140 lb | Hole Diameter: 8 in | Foreman: J. Freeman
Surf. Elev.: 269.0 ft | Hammer Drop: 30 in | Rock Core Dia.: N/A | Inspector: S. Hudgins
Date Started: 6/5/17 | Spoon Size: 2 in | Boring Method: HSA | Date Completed: 6/5/17

ELEV. (ft)	SOIL DESCRIPTION Color, Moisture, Density, Plasticity, Size Proportions	STRA DEPTH (ft)	SOIL SYMBOL	DEPTH SCALE	SAMPLE Cond	Blows/6"	No.	Type	Rec (in)	BORING & SAMPLE NOTES
268.6	5" of **TOPSOIL**	0.4								1. No water encountered
	Brown and red-brown, moist, soft to medium stiff, sandy lean **CLAY**, little to some mica, little silt, gravel and rock fragments, **(FILL)** [USDA: CLAY LOAM]				I/D	2-5-6-5	1	DS	24	2. Borehole offset 5-ft West and infiltration casing at 9-ft
					I/D	7-7-8-10	2	DS	3	3. Bulk sample obtained from 1-ft to 5-ft
				5	I/D	3-5-7-8	3	DS	22	
					I/D	2-2-2-2	4	DS	15	
					I/D	3-2-1-5	5	DS	2	
259.0		10.0		10						
	Dark gray, moist, soft, sandy lean **CLAY**				I/D	WOH-WOH -2-2	6	DS	24	
257.0		12.0								
	Bottom of Boring at 12.0 ft									
				15						
				20						
				25						

SAMPLER TYPE
DS - DRIVEN SPLIT SPOON
PT - PRESSED SHELBY TUBE
CA - CONTINUOUS FLIGHT AUGER
RC - ROCK CORE

SAMPLE CONDITIONS
D - DISINTEGRATED
I - INTACT
U - UNDISTURBED
L - LOST

GROUNDWATER DEPTH
AT COMPLETION Dry ft
AFTER ____ HRS. ____ ft
AFTER 24 HRS. Dry ft
CAVED AT 9.6 ft

BORING METHOD
HSA - HOLLOW STEM AUGERS
CFA - CONTINUOUS FLIGHT AUGERS
DC - DRIVING CASING
MD - MUD DRILLING

STANDARD PENETRATION TEST DRIVING 2" OD SAMPLER 1' WITH 140# HAMMER FALLING 30": COUNT MADE AT 6" INTERVALS

RECORD OF SOIL / ROCK EXPLORATION

Contracted With: Site Resources | Boring #: B-3
Project Name: Long Branch-Wayne Local Park SWM & Site Renovations | Job #: 17-0005
Location: Silver Spring, MD

SAMPLER

Datum: | Hammer Wt.: 140 lb | Hole Diameter: 8 in | Foreman: J. Freeman
Surf. Elev.: 265.0 ft | Hammer Drop: 30 in | Rock Core Dia.: N/A | Inspector: S. Hudgins
Date Started: 6/5/17 | Spoon Size: 2 in | Boring Method: HSA | Date Completed: 6/5/17

ELEV. (ft)	SOIL DESCRIPTION Color, Moisture, Density, Plasticity, Size Proportions	STRA DEPTH (ft)	SOIL SYMBOL	DEPTH SCALE	SAMPLE Cond	Blows/6"	No.	Type	Rec (in)	BORING & SAMPLE NOTES
264.4	7" of **TOPSOIL**	0.6								1. No water encountered
	Brown and red-brown, moist, loose, clayey **SAND**, WITH rock fragments and gravel, **(FILL)**				I/D	3-3-6-7	1	DS	18	2. Borehole offset 5-ft West and infiltration casing at 2-ft
262.0	[USDA: SANDY LOAM]	3.0			I/D	10-10-11-14	2	DS	20	
	Light gray, red-brown, and black, moist, medium dense to dense, silty **SAND**, some mica, trace rock fragments			5	I/D	9-11-12-17	3	DS	24	
257.0		8.0			I/D	9-16-24-24	4	DS	24	
	Red-brown, moist, very dense, silty **SAND**, some mica, little rock fragments,				I/D	22-23-29-50	5	DS	24	
255.0	**(WEATHERED ROCK)**	10.0		10						
	Bottom of Boring at 10.0 ft			15						
				20						
				25						

SAMPLER TYPE
DS - DRIVEN SPLIT SPOON
PT - PRESSED SHELBY TUBE
CA - CONTINUOUS FLIGHT AUGER
RC - ROCK CORE

SAMPLE CONDITIONS
D - DISINTEGRATED
I - INTACT
U - UNDISTURBED
L - LOST

GROUNDWATER DEPTH
AT COMPLETION Dry ft
AFTER ____ HRS. ____ ft
AFTER 24 HRS. Dry ft
CAVED AT 5.1 ft

BORING METHOD
HSA - HOLLOW STEM AUGERS
CFA - CONTINUOUS FLIGHT AUGERS
DC - DRIVING CASING
MD - MUD DRILLING

STANDARD PENETRATION TEST DRIVING 2" OD SAMPLER 1' WITH 140# HAMMER FALLING 30": COUNT MADE AT 6" INTERVALS

RECORD OF SOIL / ROCK EXPLORATION

Contracted With: Site Resources | Boring #: B-4
Project Name: Long Branch-Wayne Local Park SWM & Site Renovations | Job #: 17-0005
Location: Silver Spring, MD

SAMPLER

Datum: | Hammer Wt.: 140 lb | Hole Diameter: 8 in | Foreman: J. Freeman
Surf. Elev.: 293.0 ft | Hammer Drop: 30 in | Rock Core Dia.: N/A | Inspector: S. Hudgins
Date Started: 6/5/17 | Spoon Size: 2 in | Boring Method: HSA | Date Completed: 6/5/17

ELEV. (ft)	SOIL DESCRIPTION Color, Moisture, Density, Plasticity, Size Proportions	STRA DEPTH (ft)	SOIL SYMBOL	DEPTH SCALE	SAMPLE Cond	Blows/6"	No.	Type	Rec (in)	BORING & SAMPLE NOTES
292.5	6" of **TOPSOIL**	0.5								1. No water encountered
	Brown, light gray, and black, moist, very loose to loose, silty **SAND**, some mica, trace rock fragments				I/D	5-4-5	1	DS	18	
					I/D	2-1-2	2	DS	18	
				5	I/D	1-1-2	3	DS	16	
					I/D	3-2-3	4	DS	16	
				10						
280.0		13.0								
	Brown, wet, very loose, clayey **SAND**				I/D	1-2-2	5	DS	18	
				15						
277.0		16.0								
	Brown, red-brown, and light gray, moist, dense, silty **SAND**, some mica, trace rock fragments				I/D	20-24-25	6	DS	18	
273.0		20.0		20						
	Bottom of Boring at 20.0 ft									
				25						

SAMPLER TYPE
DS - DRIVEN SPLIT SPOON
PT - PRESSED SHELBY TUBE
CA - CONTINUOUS FLIGHT AUGER
RC - ROCK CORE

SAMPLE CONDITIONS
D - DISINTEGRATED
I - INTACT
U - UNDISTURBED
L - LOST

GROUNDWATER DEPTH
AT COMPLETION Dry ft
AFTER ____ HRS. ____ ft
AFTER 24 HRS. Dry ft
CAVED AT 13.5 ft

BORING METHOD
HSA - HOLLOW STEM AUGERS
CFA - CONTINUOUS FLIGHT AUGERS
DC - DRIVING CASING
MD - MUD DRILLING

STANDARD PENETRATION TEST DRIVING 2" OD SAMPLER 1' WITH 140# HAMMER FALLING 30": COUNT MADE AT 6" INTERVALS

RECORD OF SOIL EXPLORATION BORING LOGS.GPJ TLB2010.GDT 6/15/17

Field Infiltration Test Results

SaLUT-TLB
A Division of Soil and Land Use Technology, Inc.

Infiltration Test Data

Name of Project: M-NCPPC - Long Branch-Wayne Local Park
Project No.: 17-0005
Contracted With: Site Resources, Inc.
Location: Silver Spring, MD
Date: 6/5/2017
Technician(s):
Inspector: S.H.

Boring No.: **B-1**

Surface Elevation 267 ft.
Test Depth 9.0 ft.
Test Elevation 258.0 ft.

Casing Stick-up 0.40 ft.

1st Hour Run		2nd Hour Run		3rd Hour Run		4th Hour Run	
Time	Depth (ft)	Time	Depth (ft)	Time	Depth (ft)	Time	Depth (ft)
0 min	7.34	0 min	7.34	0 min	7.34	0 min	7.35
10 mins		10 mins		10 mins		15 mins	
30 mins		30 mins		30 mins		30 mins	
45 mins		45 mins		45 mins		45 mins	
60 mins	7.34	**60 mins**	7.34	**60 mins**	7.35	**60 mins**	7.35
Rates (ft.)	0.00		0.00		0.01		0.00

Average Infiltration Rate = **0.03** **inch/hr**

USDA Textural Classification **SANDY CLAY LOAM**

Soil Texture Min. Infiltration Rate **0.17** **inch/hr**

SaLUT-TLB
A Division of Soil and Land Use Technology, Inc.

Infiltration Test Data

Name of Project: M-NCPPC - Long Branch-Wayne Local Park
Project No.: 17-0005
Contracted With: Site Resources, Inc.
Location: Silver Spring, MD
Date: 6/5/2017
Technician(s):
Inspector: S.H.

Boring No.: **B-2**

Surface Elevation 269 ft.
Test Depth 8.0 ft.
Test Elevation 261.0 ft.

Casing Stick-up 0.35 ft.

1st Hour Run		2nd Hour Run		3rd Hour Run		4th Hour Run	
Time	Depth (ft)	Time	Depth (ft)	Time	Depth (ft)	Time	Depth (ft)
0 min	7.36	0 min	7.36	0 min	7.36	0 min	7.36
10 mins		10 mins		10 mins		15 mins	
30 mins		30 mins		30 mins		30 mins	
45 mins		45 mins		45 mins		45 mins	
60 mins	7.45	**60 mins**	7.45	**60 mins**	7.45	**60 mins**	7.46
Rates (ft.)	0.09		0.09		0.09		0.10

Average Infiltration Rate = **1.11** **inch/hr**

USDA Textural Classification **CLAY LOAM**

Soil Texture Min. Infiltration Rate **0.09** **inch/hr**

SaLUT-TLB
A Division of Soil and Land Use Technology, Inc.

Infiltration Test Data

Name of Project: M-NCPPC - Long Branch-Wayne Local Park
Project No.: 17-0005
Contracted With: Site Resources, Inc.
Location: Silver Spring, MD
Date: 6/5/2017
Technician(s):
Inspector: S.H.

Boring No.: **B-3**

Surface Elevation 265 ft.
Test Depth 2.0 ft.
Test Elevation 263.0 ft.

Casing Stick-up 1.30 ft.

1st Hour Run		2nd Hour Run		3rd Hour Run		4th Hour Run	
Time	Depth (ft)	Time	Depth (ft)	Time	Depth (ft)	Time	Depth (ft)
0 min	1.29	0 min	1.29	0 min	1.29	0 min	1.29
10 mins		10 mins		10 mins		15 mins	
30 mins		30 mins		30 mins		30 mins	
45 mins		45 mins		45 mins		45 mins	
60 mins	1.29	**60 mins**	1.29	**60 mins**	1.29	**60 mins**	1.29
Rates (ft.)	0.00		0.00		0.00		0.00

Average Infiltration Rate = **0.00** **inch/hr**

USDA Textural Classification **SANDY LOAM**

Soil Texture Min. Infiltration Rate **1.02** **inch/hr**

APPENDIX B

LABORATORY TEST RESULTS

Summary of Laboratory Test Results

Boring	Depth (ft)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	% < #4 Sieve	% < #200 Sieve	Classification	Water Content (%)	Dry Density (pcf)	Optimum Water Content (%)
B-1	8.0-10.0	48	29	19	100	47	SM	27.6		
B-2	1.0-5.0	39	23	16	97	48	SC	17.3	121.0	12.3
B-2	6.0-8.0	37	19	18	87	55	CL	21.9		
B-3	0.0-2.0	34	23	11	75	38	SC	16.4		

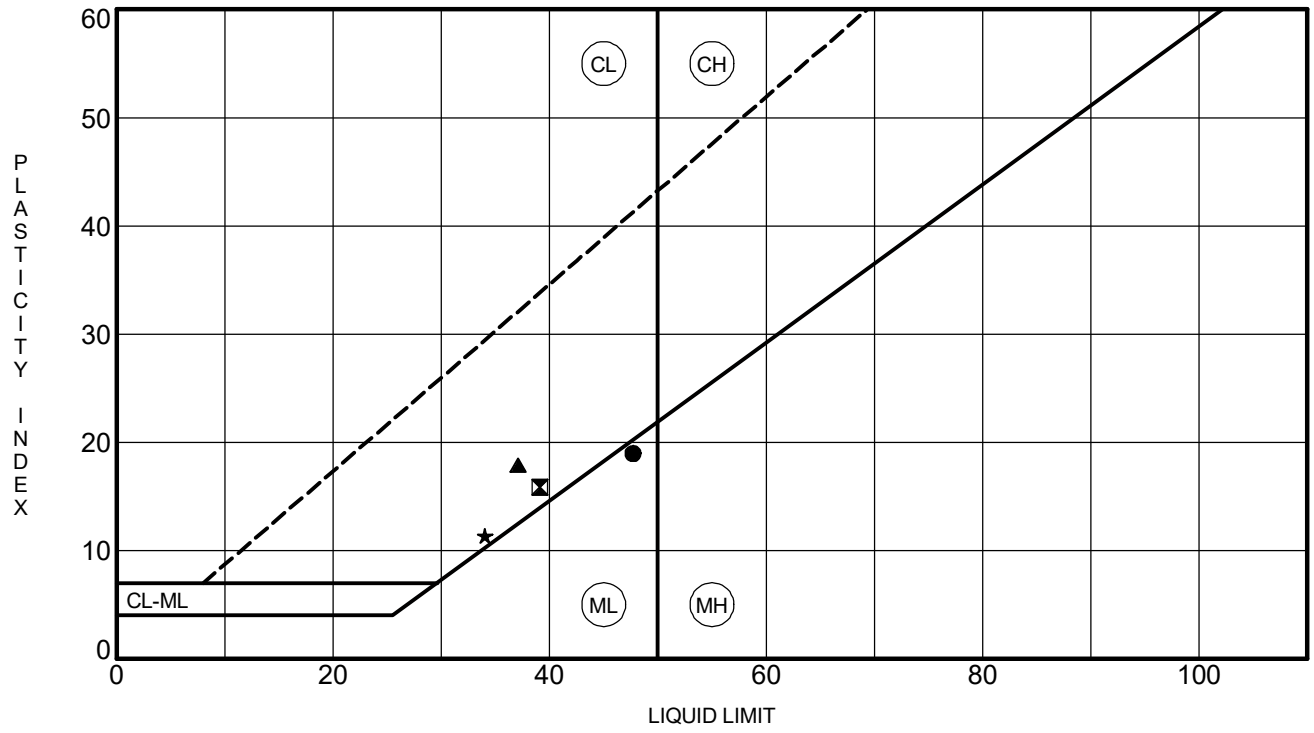
Summary of Laboratory Results

Long Branch-Wayne Local Park SWM & Site Renovations

Silver Spring, MD

Project Number: 17-0005

Atterberg Limits



	Boring	Depth	LL	PL	PI	Fines	Classification
●	B-1	8.0-10.0	48	29	19	47	SILTY SAND(SM)
⊠	B-2	1.0-5.0	39	23	16	48	CLAYEY SAND(SC)
▲	B-2	6.0-8.0	37	19	18	55	SANDY LEAN CLAY(CL)
★	B-3	0.0-2.0	34	23	11	38	CLAYEY SAND with GRAVEL(SC)

Test Method: ASTM D4318

Tested By: JW Date: 6/9/2017

ATTERBERG LIMITS' RESULTS

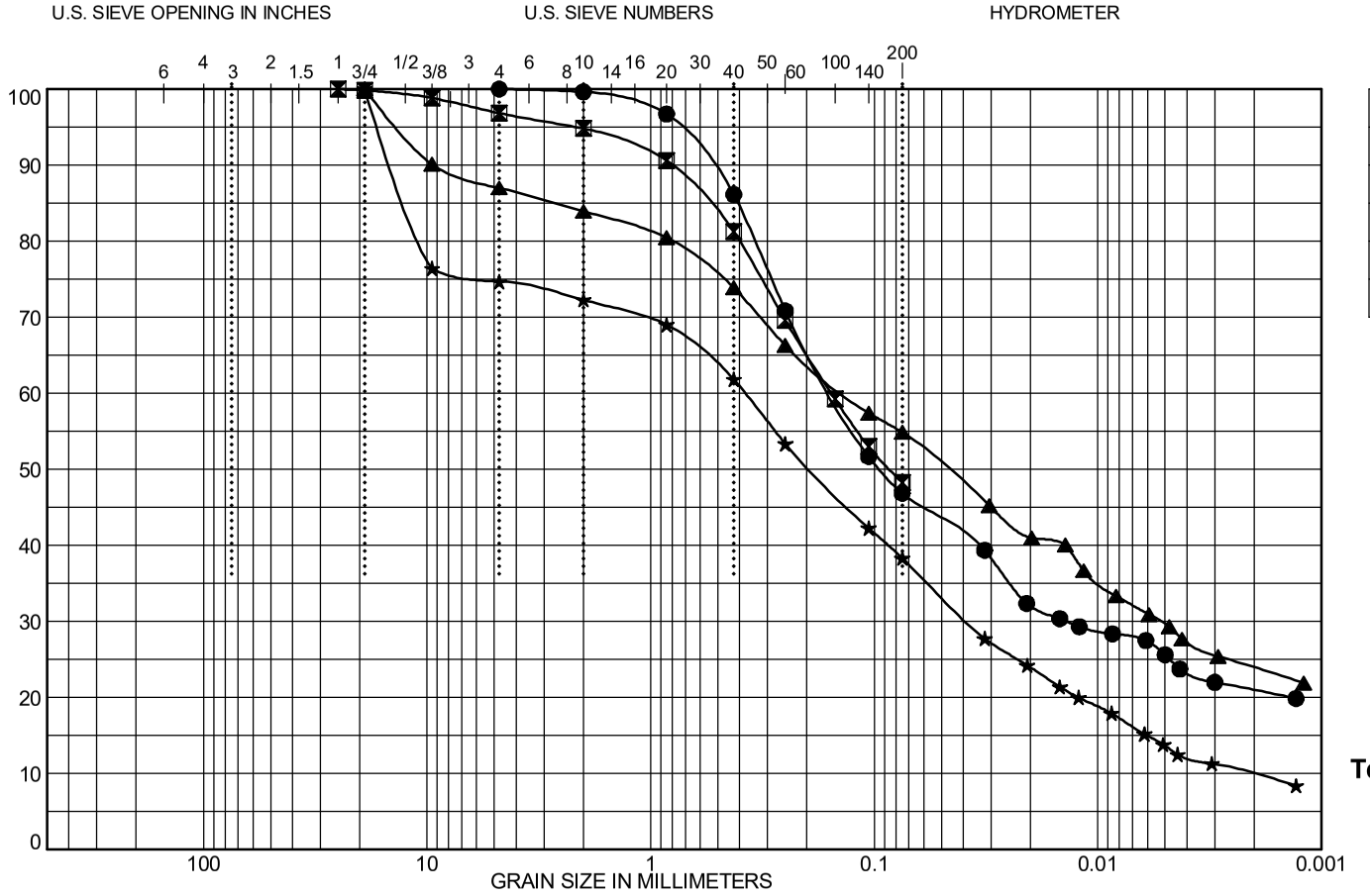
Project: Long Branch-Wayne Local Park Renovation, MNCPPC Contract MC 2016-10

Location: Silver Spring, MD

Project Number: 17-0005

TLB ATTERBERG LIMITS BORING LOGS.GPJ TLB2009.GDT 6/12/17

Gradation Analyses



	D10	D30	D60	D100
●		0.014	0.154	4.76
⊠			0.156	25
▲		0.005	0.136	19
★	0.002	0.038	0.379	19

Test Method: ASTM D422

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Tested By: EAP Date: 6/8/2017

	Boring	S No.	Depth	%Gravel	%Sand	%Silt	%Clay	LL	PI	MC(%)	Classification
●	B-1	5	8.0-10.0	0.0	53.2	21.2	25.6	48	19	27.6	SILTY SAND(SM)
⊠	B-2	Bag	1.0-5.0	3.2	48.6	48.2		39	16	17.3	CLAYEY SAND(SC)
▲	B-2	4	6.0-8.0	13.0	32.1	25.2	29.6	37	18	21.9	SANDY LEAN CLAY(CL)
★	B-3	1	0.0-2.0	25.4	36.3	24.7	13.6	34	11	16.4	CLAYEY SAND with GRAVEL(SC)

GRAIN SIZE DISTRIBUTION

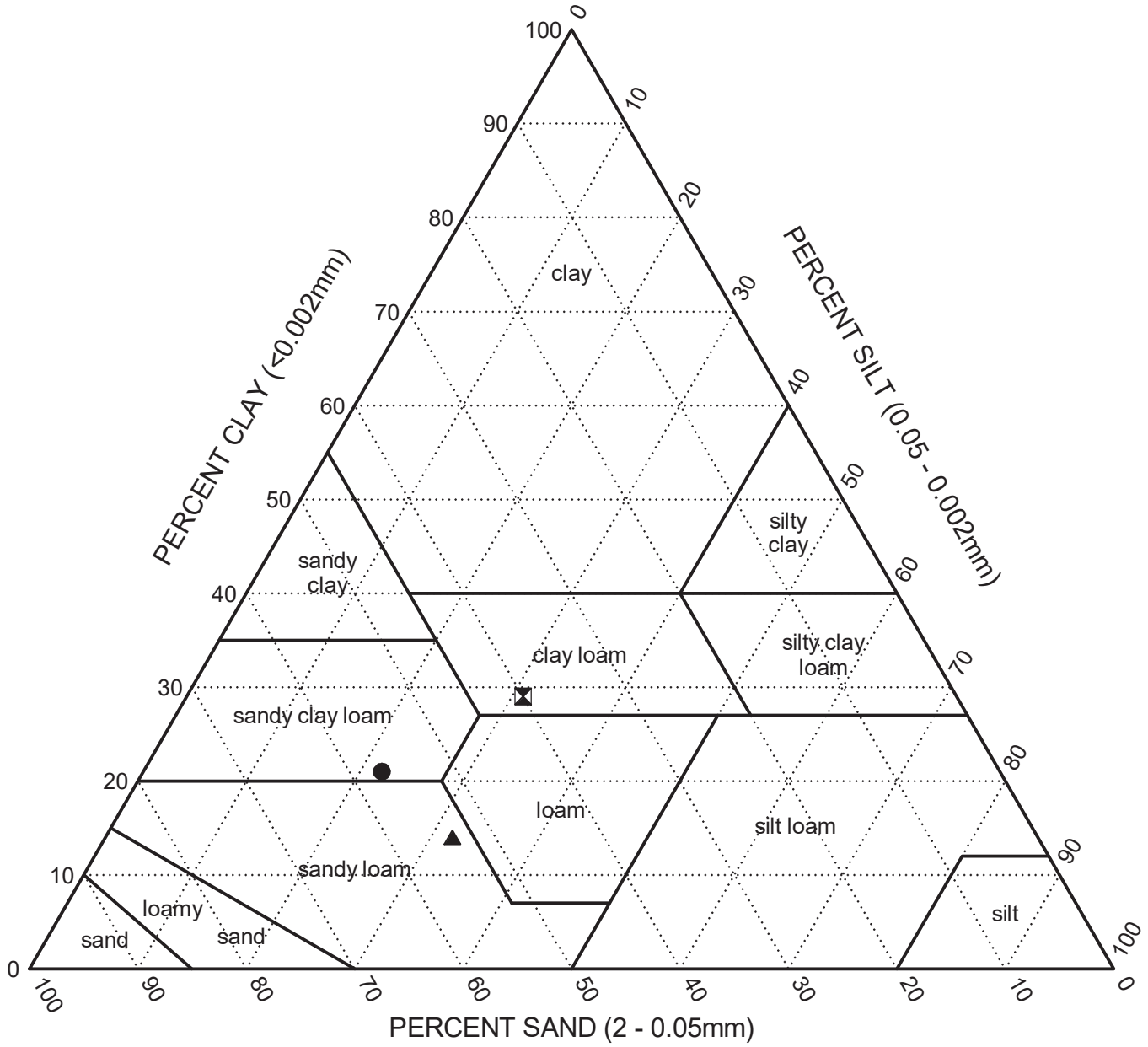
Long Branch-Wayne Local Park SWM & Site Renovations

Silver Spring, MD

Project Number: 17-0005

USDA Textural Classification Charts

Fractions normalized to 100% passing
the 2mm (#10) sieve



Test Method: ASTM D422

	Boring	Depth	Sand (%)	Silt (%)	Clay (%)	MC(%)	USDA Classification	Tested By	Date
●	B-1	8.0-10.0	56.6	22.4	21.0	27.6	SANDY CLAY LOAM	EAP	6/8/2017
⊠	B-2	6.0-8.0	39.8	31.7	28.5	21.9	CLAY LOAM	EAP	6/8/2017
▲	B-3	0.0-2.0	54.0	32.4	13.6	16.4	SANDY LOAM	EAP	6/8/2017

USDA Textural Classification Chart

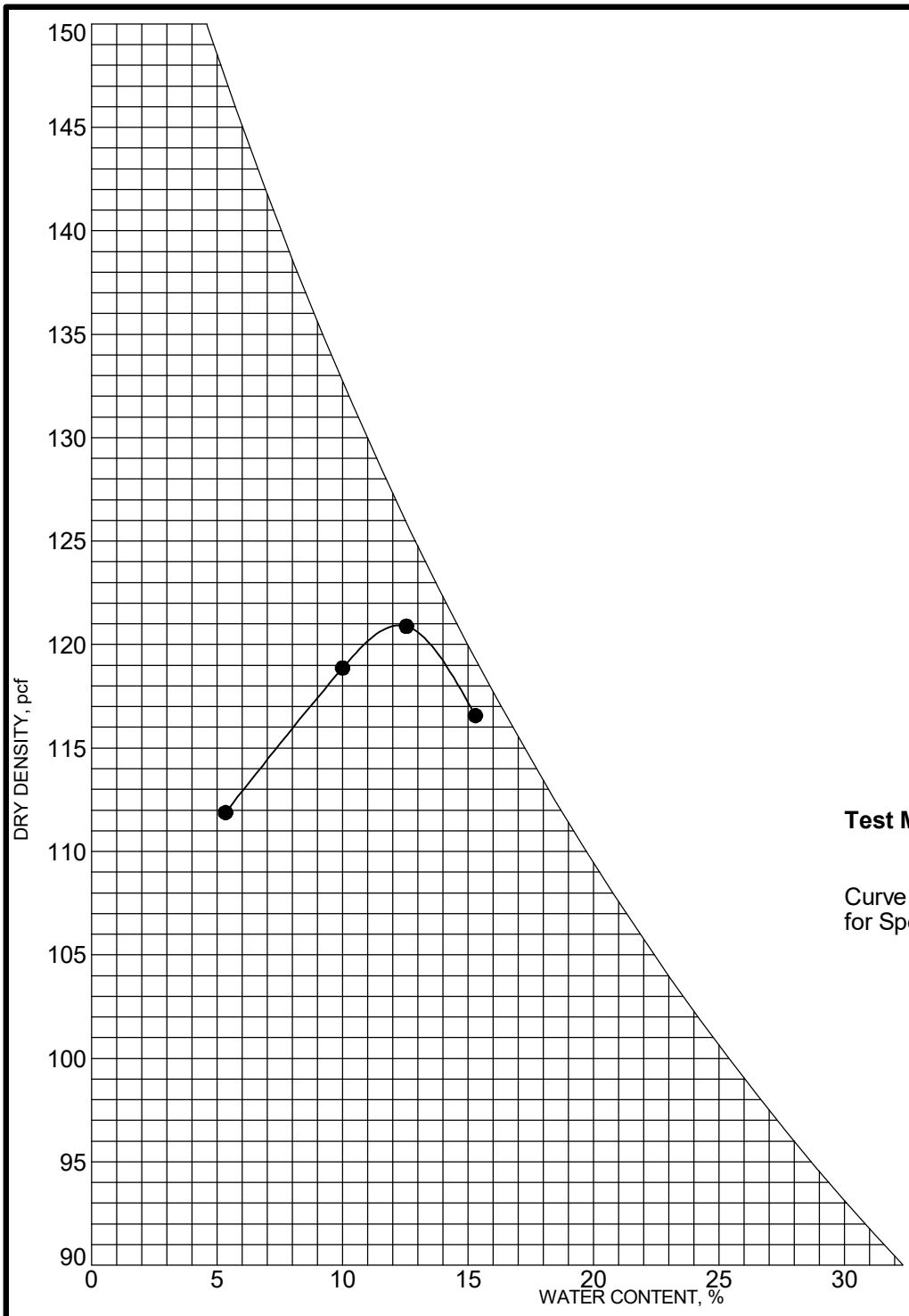
Project: Long Branch-Wayne Local Park SWM & Site Renovations

Location: Silver Spring, MD

Project Number: 17-0005

TLB GRAIN SIZE LANDSCAPE USDA BORING LOGS.GPJ 6/15/17

Moisture – Density Curve



Test Method: ASTM D1557 Method A

Curve of 100% Saturation
for Specific Gravity Equal to: 2.7

* Oversize Correction

	Boring	Sample No.	Depth, Ft	Classification	Max. Dry Density (pcf)	Opt. MC %	LL	PI
●	B-2	Bag	1.0-5.0	CLAYEY SAND(SC)	121.0	12.3	39	16

Tested By: EM Date: 6/8/2017

MOISTURE-DENSITY RELATIONSHIP

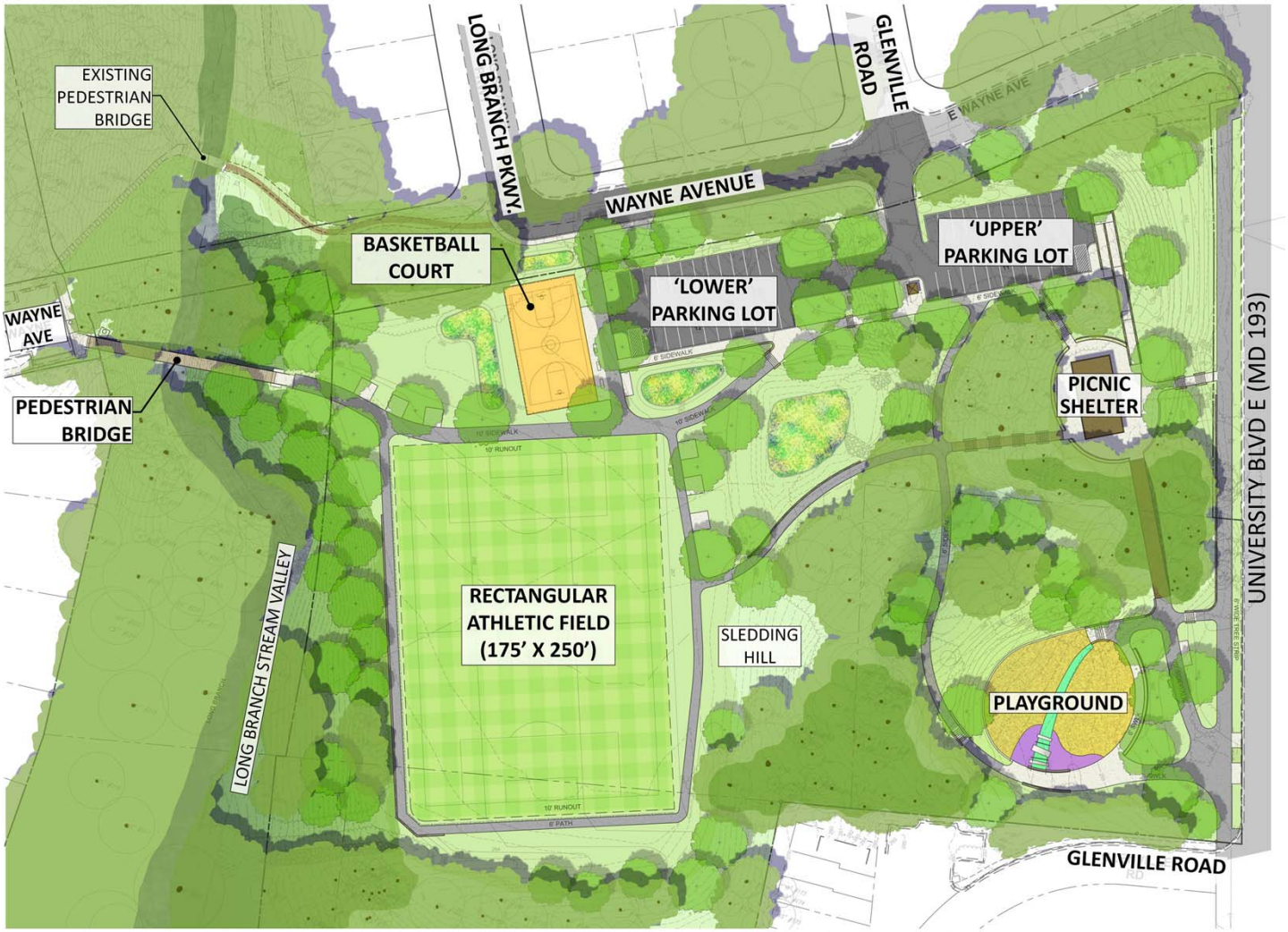
Project: Long Branch-Wayne Local Park SWM & Site Renovations

Location: Silver Spring, MD

Project Number: 17-0005

TLB COMPACTION MULTIPLE BORING LOGS.GPJ SALUT2014.GDT 6/15/17

Detailed Cost Estimate / Phasing Plan



RECOMMENDED CONCEPT PLAN

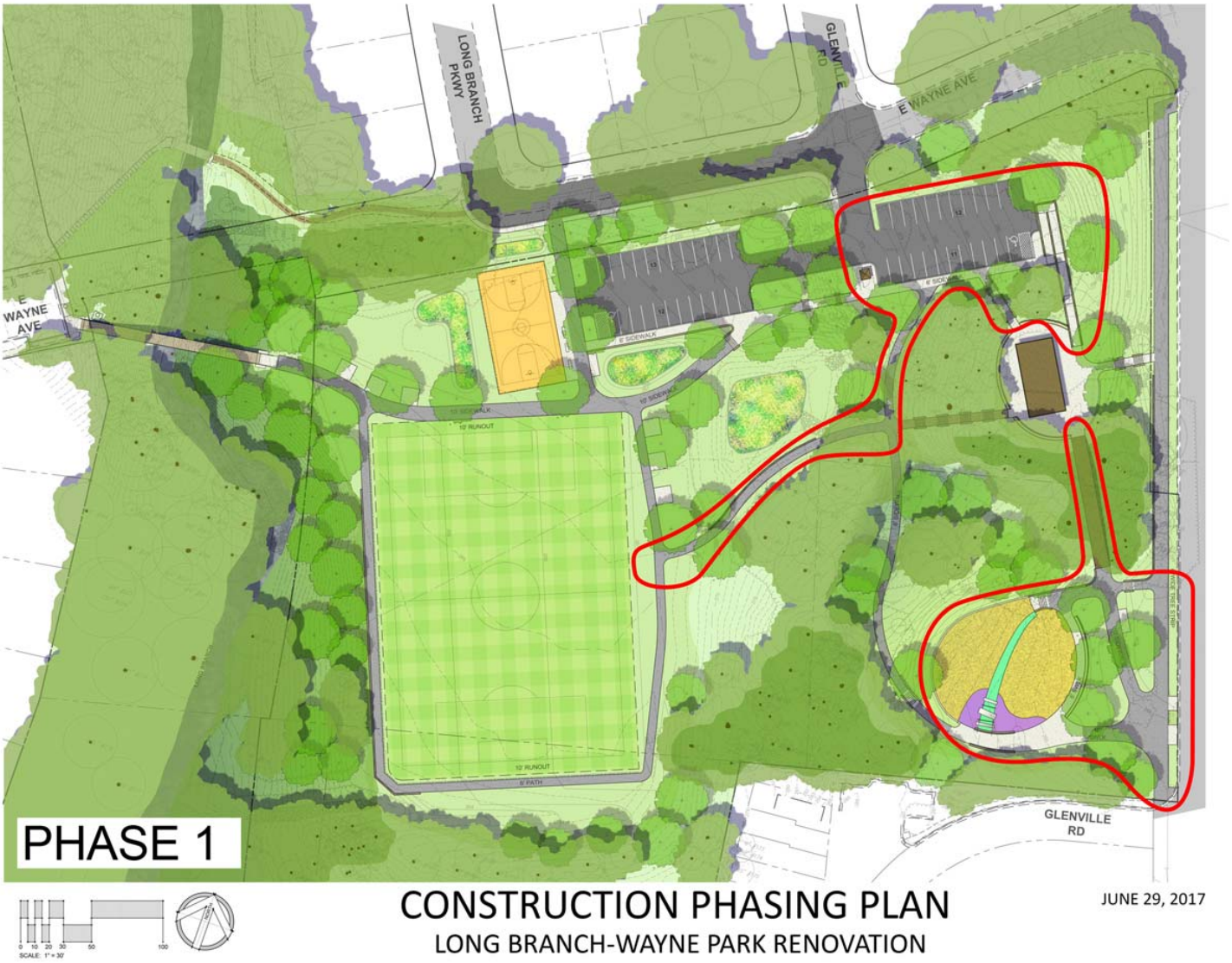
LONG BRANCH-WAYNE PARK RENOVATION

JUNE 29, 2017

TOTAL PROJECT COST (ALL PHASES)

ITEM	SUBTOTAL
SITE PREPARATION & DEMOLITION (Including Mobilization)	$230,000
TREE CARE	$60,000
EROSION & SEDIMENT CONTROL	$103,000
GRADING/EARTHWORK	$490,000
STRUCTURES	$506,000
STORMWATER MANAGEMENT	$243,800
VEHICULAR PAVEMENT - PARKING LOTS	$135,385
UTILITIES	$68,000
HARDSCAPE MATERIALS (PAVING, WALLS, STEPS, STREETSCAPE)	$575,825
PLAYGROUND	$466,350
FURNISHINGS, SITE AMENITIES	$376,150
LANDSCAPING, MICRO-BIORETENTION PLANTS + MAINTENANCE	$295,400
CONSTRUCTION SUBTOTALS	$3,549,910
CONSTRUCTION CONTINGENCY (30% of Construction)	$1,064,973
CONSTRUCTION TOTALS	$4,614,883
DESIGN CONTRACT WITH CONTINGENCY (13% of Construction Total plus Maintenance & Operations Manual)	$599,935
STAFF CHARGEBACKS FOR DESIGN (20% of Design Contract with Contingency)	$119,987
CONSTRUCTION MANAGEMENT & INSPECTIONS (3% x Construction Total)	$138,446
AS-BUILT DRAWINGS	$15,000
ELECTRONIC SUBMISSION OF SUBMITTALS	$10,000
TOTAL COST	**$5,498,000**

PHASE 1 PLAN

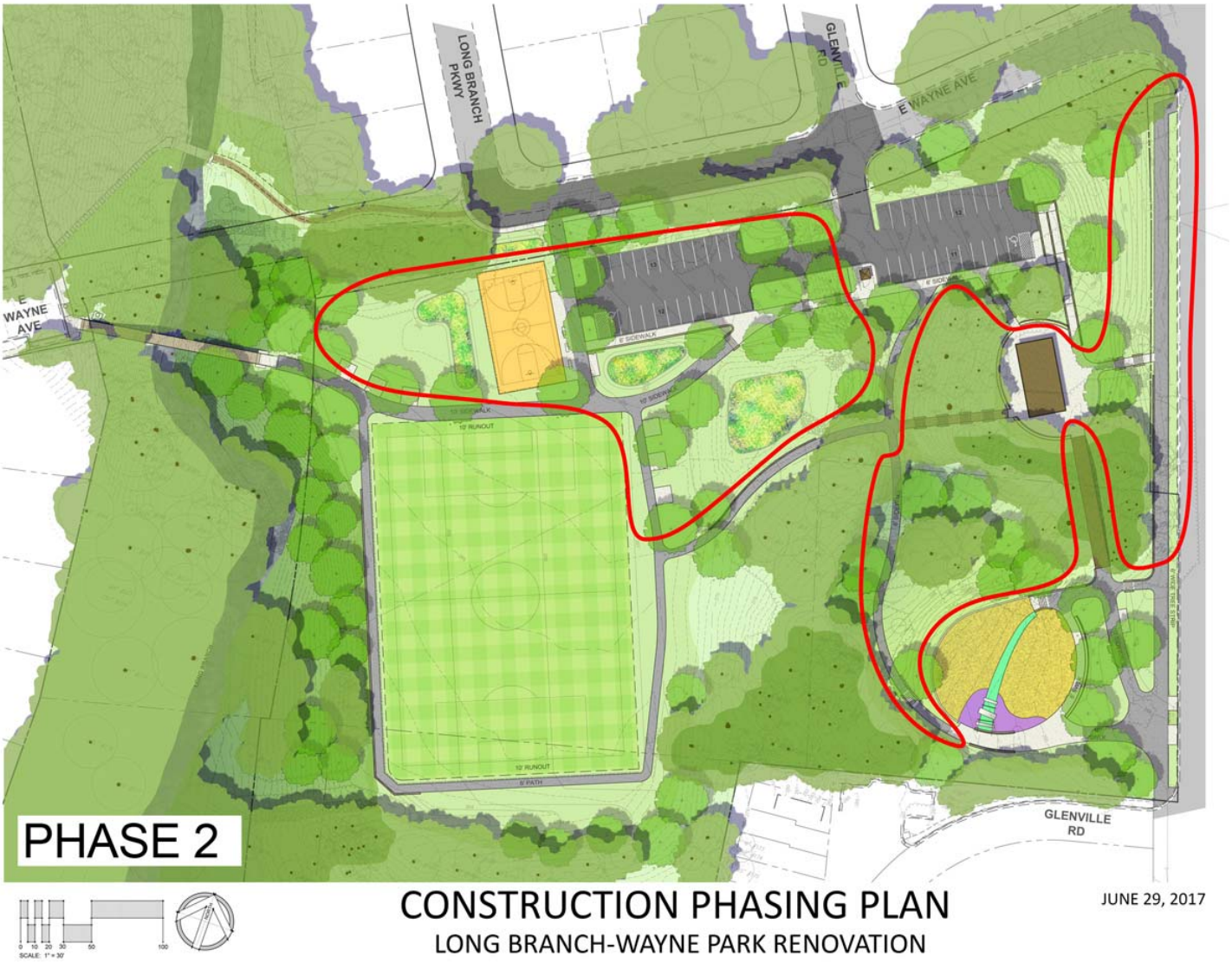

LONG BRANCH PKWY
GLENVILLE RD
E WAYNE AVE
E WAYNE AVE
6' SIDEWALK
10' SIDEWALK
10' RUNOUT
12' RUNOUT
8' PATH
GLENVILLE RD
PHASE 1
CONSTRUCTION PHASING PLAN
LONG BRANCH-WAYNE PARK RENOVATION
JUNE 29, 2017

PHASE 1 COST

PHASE 1

ITEM	QUANTITY	UNIT	UNIT COST Materials & Installation	TOTAL COST
SITE PREPARATION & DEMOLITION (Including Mobilization)			SUBTOTAL	**$80,000.00**
TREE CARE			SUBTOTAL	**$30,000.00**
EROSION & SEDIMENT CONTROL			SUBTOTAL	**$38,000.00**
Erosion & Sediment Control (3% of Construction Subtotal	1	LS	$38,000.00	$38,000.00
GRADING/EARTHWORK			SUBTOTAL	**$62,000.00**
Clearing & Grubbing	2	AC	$6,000.00	$12,000.00
Excavation, Cut/Fill, including Fine Gradin	1,000	CY	$40.00	$40,000.00
Import & Spread Topsoil for new lawn areas (6" depth)	200	CY	$50.00	$10,000.00
STORMWATER MANAGEMENT			SUBTOTAL	**$106,300.00**
Micro-bioretention Facilities	2,500	SF	$15.00	$37,500.00
Water Quality Inlet	4	EA	$8,000.00	$32,000.00
Drain Pipe (12-15" HDPE)	920	LF	$40.00	$36,800.00
STRUCTURES			SUBTOTAL	**$40,000.00**
Wooden Boardwalk (vehicle rated)	1,000	SF	$40.00	$40,000.00
VEHICULAR PAVEMENT - PARKING LOTS			SUBTOTAL	**$46,485.00**
Concrete Curb & Gutter (Upper Parking Lot)	450	LF	$20.00	$9,000.00
Heavy Duty Asphalt Paving (Upper Parking Lot)	833	SY	$45.00	$37,485.00
HARDSCAPE MATERIALS (PAVING, WALLS, STEPS, STREETSCAPE)			SUBTOTAL	**$210,900.00**
5" Concrete Sidewalk & Site Furnishing Pads with Welded Wire Mesh	350	SY	$45.00	$15,750.00
4" Aggregate Subgrade for Concrete Sidewalk	350	SY	$10.00	$3,500.00
Asphalt Path (including stone base)	460	SY	$34.00	$15,640.00
Asphalt Path (including stone base) - University Blvd 10' sidewalk (SOUTH)	190	SY	$34.00	$6,460.00
Concrete Stairs	350	SF	$130.00	$45,500.00
Concrete Cheek Walls (12-18 inch height), incl. along conc. stairs/ramps	260	LF	$60.00	$15,600.00
Concrete Retaining Walls (18-30 inch height)	20	CY	$750.00	$15,000.00
Concrete Retaining Walls (18-60 inch height) - along ADA Ramp	84	CY	$750.00	$63,000.00
Precast Seat Walls	82	LF	$350.00	$28,700.00
Wheel Stops	25	EA	$70.00	$1,750.00
PLAYGROUND			SUBTOTAL	**$466,350.00**
Playground Equipment	1	LS	$ 300,000.00	$300,000.00
Slope Play Features (concrete core)	50	CY	$500.00	$25,000.00
Resilient rubber play surface over concrete-stone base	1,500	SF	$35.00	$52,500.00
Engineered Wood Fiber Play Surfacing	5,800	SF	$10.00	$58,000.00
Play Surfacing SWM recharge sand/stone	250	CY	$65.00	$16,250.00
Play Surfacing Underdrainage	5,800	SF	$2.00	$11,600.00
Concrete curb at playground	150	LF	$20.00	$3,000.00
FURNISHINGS, SITE AMENITIES			SUBTOTAL	**$117,250.00**
Guardrail Fencing (42 inch min. height) - Ex. SWM edge	90	LF	$ 100.00	$9,000.00
Guardrail at Playground (42 inch min. height)	40	LF	$ 100.00	$4,000.00
Handrails at Stairs	75	LF	$ 170.00	$12,750.00
Handrails at Ramps	340	LF	$ 170.00	$57,800.00
Benches (with footers and concrete pad)	3	EA	$ 2,000.00	$6,000.00
Trash / Recycling Receptacles (with footers) - 45 Gallon	4	EA	$ 1,800.00	$7,200.00
Porta-John Structure	1	AL	$ 3,000.00	$3,000.00
Porta-John Structure Enclosure Wood Fencing	50	LF	$ 50.00	$2,500.00
Bicycle Rack (with footing)	4	EA	$ 1,500.00	$6,000.00
Collapsible Bollards	4	EA	$ 1,000.00	$4,000.00
MNCPPC Standard Wood Entrance Sign	1	EA	$ 2,500.00	$2,500.00
General Park Standard Signage (M-NCPPC)	1	AL	$ 2,500.00	$2,500.00
LANDSCAPING, MICRO-BIORETENTION PLANTS + MAINTENANCE			SUBTOTAL	**$71,800.00**
Lawn establishment including seed bed prep, seed stabilization, water and aftercare per specifications.	1	LS	$10,000.00	$10,000.00
Shade trees (4-6" CAL)	20	EA	$1,200.00	$24,000.00
Evergreen trees (10-12' height)	2	EA	$600.00	$1,200.00
Ornamental trees (2" CAL)	2	EA	$800.00	$1,600.00
Micro-Bioretention Plants	1,500	EA	$20.00	$30,000.00
Two-Year Plant Aftercare and Extended Warranty	1	LS	$5,000.00	$5,000.00
CONSTRUCTION SUBTOTAL - Phase 1				**$1,269,085.00**
CONSTRUCTION CONTINGENCY (30% of Construction)				**$380,725.50**
CONSTRUCTION TOTAL - Phase 1				**$1,649,810.50**
DESIGN CONTRACT WITH CONTINGENCY (13% of Construction Total plus Maintenance & Operations Manual)				**$214,475.37**
STAFF CHARGEBACKS FOR DESIGN (20% of Design Contract with Contingency)				**$42,895.07**
CONSTRUCTION MANAGEMENT & INSPECTIONS (3% x Construction Total)				**$49,494.32**
AS-BUILT DRAWINGS				**$15,000.00**
ELECTRONIC SUBMISSION OF SUBMITTALS				**$10,000.00**
PHASE 1 COST				**$1,982,000**

PHASE 2 PLAN

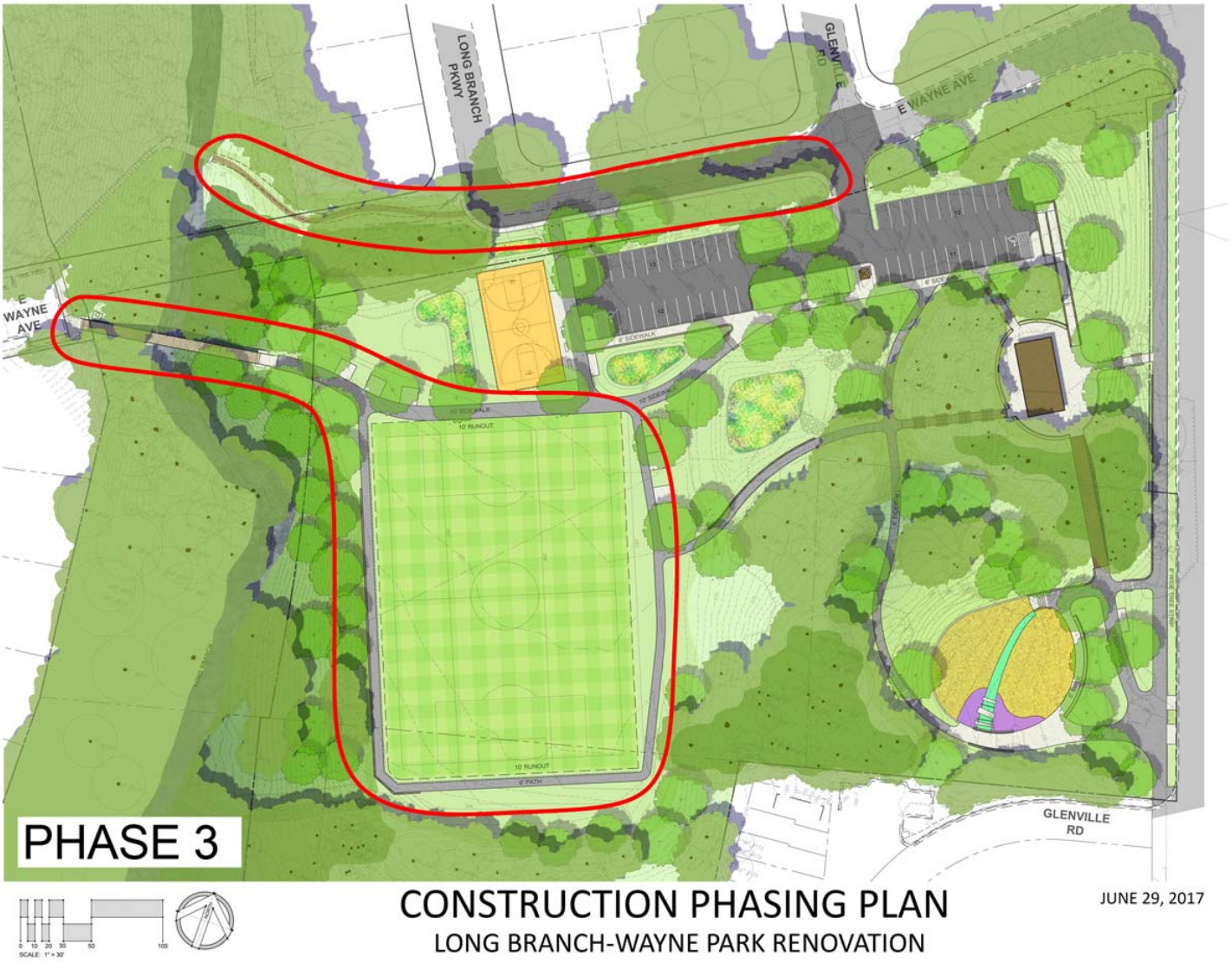

LONG BRANCH PKWY
GLENVILLE RD
E WAYNE AVE
E WAYNE AVE
GLENVILLE RD
PHASE 2
CONSTRUCTION PHASING PLAN
LONG BRANCH-WAYNE PARK RENOVATION
JUNE 29, 2017

PHASE 2 COST

PHASE 2

ITEM	QUANTITY	UNIT	UNIT COST Materials & Installation	TOTAL COST
SITE PREPARATION & DEMOLITION (Including Mobilization)			SUBTOTAL	**$90,000.00**
TREE CARE			SUBTOTAL	**$20,000.00**
EROSION & SEDIMENT CONTROL			SUBTOTAL	**$30,000.00**
Erosion & Sediment Control (3% of Construction Subtotal)	1	LS	$30,000.00	$30,000.00
GRADING/EARTHWORK			SUBTOTAL	**$86,000.00**
Clearing & Grubbing	2	AC	$6,000.00	$12,000.00
Excavation, Cut/Fill, including Fine Grading	1,500	CY	$40.00	$60,000.00
Import & Spread Topsoil for new lawn areas (6" depth)	280	CY	$50.00	$14,000.00
STRUCTURES			SUBTOTAL	**$116,000.00**
Wooden Steps (with helical piers)	450	SF	$80.00	$36,000.00
Picnic Shelter	1	AL	$ 80,000.00	$80,000.00
STORMWATER MANAGEMENT			SUBTOTAL	**$78,500.00**
Micro-bioretention Facilities	2,700	SF	$15.00	$40,500.00
Water Quality Inlet	4	EA	$8,000.00	$32,000.00
Drain Pipe (12-15" HDPE)	150	LF	$40.00	$6,000.00
VEHICULAR PAVEMENT - PARKING LOTS			SUBTOTAL	**$50,050.00**
Concrete Curb & Gutter (Parking Lots)	500	LF	$20.00	$10,000.00
Heavy Duty Asphalt Paving (Parking Lots)	890	SY	$45.00	$40,050.00
UTILITIES			SUBTOTAL	**$8,000.00**
New Water connection for hose bibs (including plumbing permit) - Contingency	1	AL	$3,000.00	$3,000.00
New Water connection for (possible future) Irrigation system (including plumbing permit) - Contingency	1	AL	$5,000.00	$5,000.00
HARDSCAPE MATERIALS (PAVING, WALLS, STEPS, STREETSCAPE)			SUBTOTAL	**$283,625.00**
5" Concrete Sidewalk & Site Furnishing Pads with Welded Wire Mesh	630	SY	$45.00	$28,350.00
4" Aggregate Subgrade for Concrete Sidewalk	630	SY	$9.00	$5,670.00
Asphalt Path (including stone base)	580	SY	$34.00	$19,720.00
Asphalt Path (including stone base) - University Blvd 10' sidewalk (NORTH)	490	SY	$34.00	$16,660.00
Basketball Court (concrete and surfacing)	555	SY	$35.00	$19,425.00
Concrete Stairs	500	SF	$130.00	$65,000.00
Concrete Cheek Walls (12-18 inch height), including along conc. stairs	205	LF	$60.00	$12,300.00
Concrete Retaining Walls (18-30 inch height)	90	CY	$750.00	$67,500.00
Precast Seat Walls	135	LF	$350.00	$47,250.00
Wheel Stops	25	EA	$70.00	$1,750.00
FURNISHINGS, SITE AMENITIES			SUBTOTAL	**$143,700.00**
Chainlink Fence at B-Ball Court (8 foot height)	190	LF	$ 100.00	$19,000.00
B-Ball Court Hoop Structures	1	AL	$ 3,000.00	$3,000.00
Handrails at Stairs	140	LF	$ 170.00	$23,800.00
Benches (with footers and concrete pad)	10	EA	$ 2,000.00	$20,000.00
Trash / Recycling Receptacles (with footers) - 45 Gallon	8	EA	$ 1,800.00	$14,400.00
Bicycle Rack (with footing)	4	EA	$ 1,500.00	$6,000.00
Collapsible Bollards	6	EA	$ 1,000.00	$6,000.00
General Park Standard Signage (M-NCPPC)	1	AL	$ 5,000.00	$5,000.00
Interpretive Panel	3	EA	$ 4,000.00	$12,000.00
Tables and Chairs (4 person)	7	EA	$ 3,500.00	$24,500.00
Tables and Chairs (2 person)	4	EA	$ 2,500.00	$10,000.00
LANDSCAPING, MICRO-BIORETENTION PLANTS + MAINTENANCE			SUBTOTAL	**$117,400.00**
Shade trees (4-6" CAL)	20	EA	$1,200.00	$24,000.00
Evergreen trees (10-12' height)	6	EA	$600.00	$3,600.00
Ornamental trees (2" CAL)	6	EA	$800.00	$4,800.00
Micro-Bioretention Plants	2,000	EA	$20.00	$40,000.00
Two-Year Plant Aftercare and Extended Warranty	1	LS	$15,000.00	$15,000.00
Non-Native Invasive (NNI) Plant Removals	3,000	SF	$10.00	$30,000.00
CONSTRUCTION SUBTOTAL - Phase 2				**$1,023,275.00**
CONSTRUCTION CONTINGENCY (30% of Construction)				**$306,982.50**
CONSTRUCTION TOTAL - Phase 2				**$1,330,257.50**
DESIGN CONTRACT WITH CONTINGENCY (13% of Construction Total plus Maintenance & Operations Manual)				**$172,933.48**
STAFF CHARGEBACKS FOR DESIGN (20% of Design Contract with Contingency)				**$34,586.70**
CONSTRUCTION MANAGEMENT & INSPECTIONS (3% x Construction Total)				**$39,907.73**
PHASE 2 COST				**$1,578,000**

PHASE 3 PLAN


LONG BRANCH PKWY
GLENVILLE RD
E WAYNE AVE
E WAYNE AVE
6' SIDEWALK
10' RUNOUT
10' RUNOUT
6' PATH
GLENVILLE RD
PHASE 3
CONSTRUCTION PHASING PLAN
LONG BRANCH-WAYNE PARK RENOVATION
JUNE 29, 2017

PHASE 3 COST

PHASE 3

ITEM	QUANTITY	UNIT	UNIT COST Materials & Installation	TOTAL COST
SITE PREPARATION & DEMOLITION (Including Mobilization)			SUBTOTAL	**$60,000.00**
TREE CARE			SUBTOTAL	**$10,000.00**
EROSION & SEDIMENT CONTROL			SUBTOTAL	**$35,000.00**
Erosion & Sediment Control (3% of Construction Subtotal	1	LS	$35,000.00	$35,000.00
GRADING/EARTHWORK			SUBTOTAL	**$342,000.00**
Clearing & Grubbing	2	AC	$6,000.00	$12,000.00
Excavation, Cut/Fill, including Fine Gradin	2,100	CY	$40.00	$84,000.00
Import & Spread Topsoil for new lawn areas (6" depth)	120	CY	$50.00	$6,000.00
Import & Spread approved Rectangular Field Athletic Topsoil (12" depth)	1,800	CY	$50.00	$90,000.00
Renovate Rectangular Field and runout area including deconsolidation of soil, soil testing and amendments.	1	AL	$150,000.00	$150,000.00
STORMWATER MANAGEMENT			SUBTOTAL	**$59,000.00**
Micro-bioretention Facilities	1,000	SF	$15.00	$15,000.00
Water Quality Inlet	1	EA	$8,000.00	$8,000.00
Drain Pipe (12-15" HDPE)	100	LF	$40.00	$4,000.00
Bio-swale Facilities	1,600	SF	$20.00	$32,000.00
STRUCTURES			SUBTOTAL	**$350,000.00**
Pedestrian Bridge - 125 LF, 8' width	1	AL	$ 350,000.00	$350,000.00
VEHICULAR PAVEMENT			SUBTOTAL	**$38,850.00**
Heavy Duty Asphalt Paving (East Wayne Avenue)	700	SY	$43.00	$30,100.00
Concrete Curb & Gutter (East Wayne Avenue)	350	LF	$25.00	$8,750.00
HARDSCAPE MATERIALS (PAVING, WALLS, STEPS, STREETSCAPE)			SUBTOTAL	**$81,300.00**
5" Concrete Sidewalk & Site Furnishing Pads with Welded Wire Mesh	95	SY	$45.00	$4,275.00
4" Aggregate Subgrade for Concrete Sidewalk	95	SY	$9.00	$855.00
Asphalt Path (including stone base)	780	SY	$34.00	$26,520.00
Concrete Cheek Walls (12-18 inch height), including along conc. stairs	140	LF	$60.00	$8,400.00
Concrete Retaining Walls (18-30 inch height)	55	CY	$750.00	$41,250.00
UTILITIES			SUBTOTAL	**$60,000.00**
Irrigation System (including water line connectior	1	AL	$60,000.00	$60,000.00
FURNISHINGS, SITE AMENITIES			SUBTOTAL	**$115,200.00**
Chainlink Fence at Field (8 foot height)	400	LF	$ 100.00	$40,000.00
Fitness Equipment (includes concrete pad)	6	EA	$ 10,000.00	$60,000.00
Benches (with footers and concrete pad)	4	EA	$ 2,000.00	$8,000.00
Trash / Recycling Receptacles (with footers) - 45 Gallon	4	EA	$ 1,800.00	$7,200.00
LANDSCAPING, MICRO-BIORETENTION PLANTS + MAINTENANCE			SUBTOTAL	**$106,200.00**
Rectangular Field turf establishment including seed bed prep, seed stabilization, water and aftercare of field per specifications.	1	LS	$30,000.00	$30,000.00
Shade trees (4-6" CAL)	10	EA	$1,200.00	$12,000.00
Evergreen trees (10-12' height)	3	EA	$600.00	$1,800.00
Ornamental trees (2" CAL)	3	EA	$800.00	$2,400.00
Two-Year Plant Aftercare and Extended Warranty	1	LS	$10,000.00	$10,000.00
Non-Native Invasive (NNI) Plant Removals	5,000	SF	$10.00	$50,000.00
CONSTRUCTION SUBTOTAL - Phase 3				**$1,257,550.00**
CONSTRUCTION CONTINGENCY (30% of Construction)				**$377,265.00**
CONSTRUCTION TOTAL - Phase 3				**$1,634,815.00**
DESIGN CONTRACT WITH CONTINGENCY (13% of Construction Total plus Maintenance & Operations Manual)				**$212,525.95**
STAFF CHARGEBACKS FOR DESIGN (20% of Design Contract with Contingency)				**$42,505.19**
CONSTRUCTION MANAGEMENT & INSPECTIONS (3% x Construction Total)				**$49,044.45**
PHASE 3 COST				**$1,939,000**

RECOMMENDED PROJECT - PHASES 1 & 2 PLAN

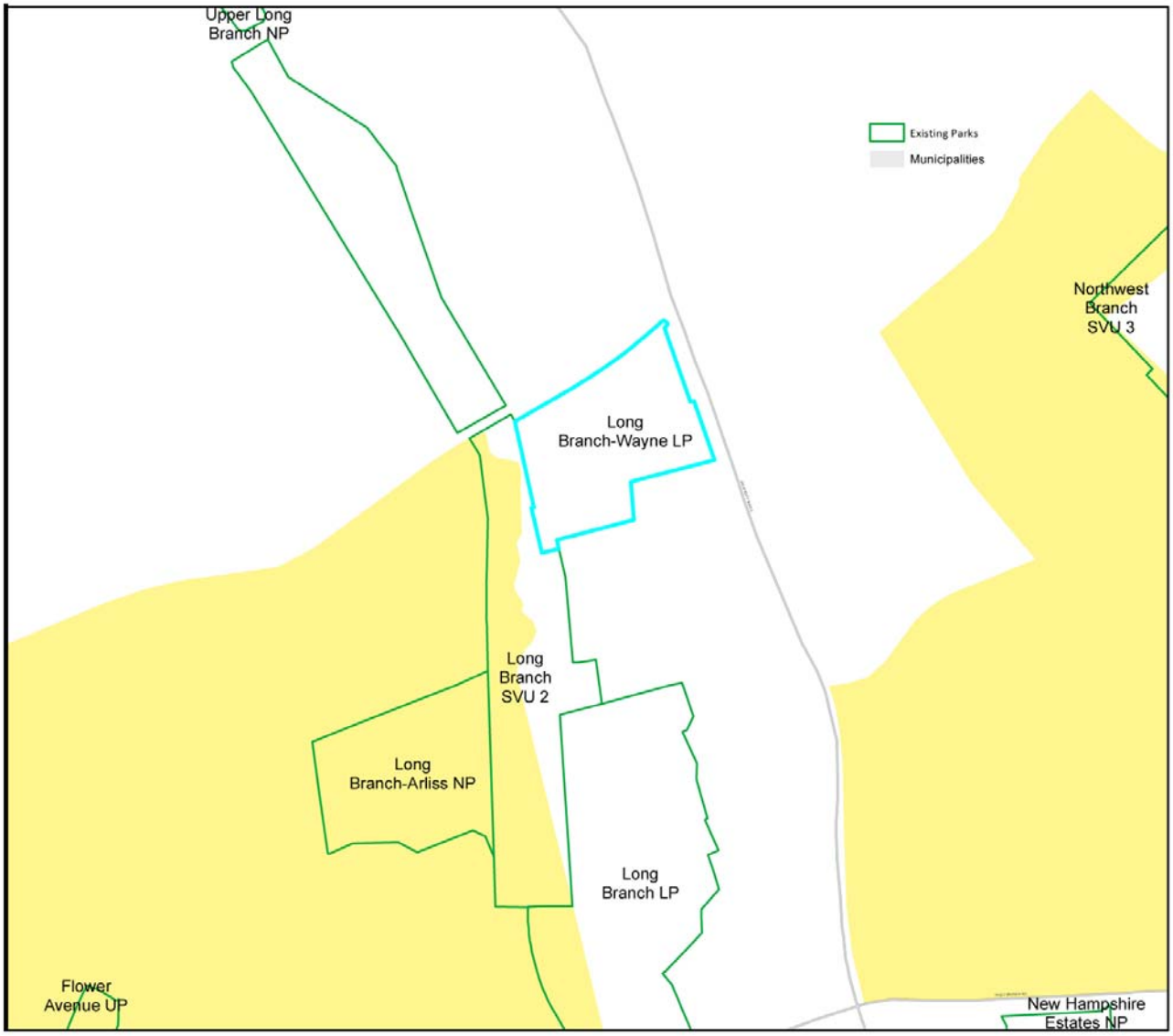
PHASES 1 & 2 COST

ITEM	PHASE 1	PHASE 2
SITE PREPARATION & DEMOLITION (Including Mobilization)	$80,000	$90,000
TREE CARE	$30,000	$20,000
EROSION & SEDIMENT CONTROL	$38,000	$30,000
GRADING/EARTHWORK	$62,000	$86,000
STRUCTURES	$40,000	$116,000
STORMWATER MANAGEMENT	$106,300	$78,500
VEHICULAR PAVEMENT - PARKING LOTS	$46,485	$50,050
UTILITIES		$8,000
HARDSCAPE MATERIALS (PAVING, WALLS, STEPS, STREETSCAPE)	$210,900	$283,625
PLAYGROUND	$466,350	
FURNISHINGS, SITE AMENITIES	$117,250	$143,700
LANDSCAPING, MICRO-BIORETENTION PLANTS + MAINTENANCE	$71,800	$117,400
CONSTRUCTION SUBTOTALS	$1,269,085	$1,023,275
CONSTRUCTION CONTINGENCY (30% of Construction)	$380,726	$306,983
CONSTRUCTION TOTALS	$1,649,811	$1,330,258
DESIGN CONTRACT WITH CONTINGENCY (13% of Construction Total plus Maintenance & Operations Manual)	$214,475	$172,933
STAFF CHARGEBACKS FOR DESIGN (20% of Design Contract with Contingency)	$42,895	$34,587
CONSTRUCTION MANAGEMENT & INSPECTIONS (3% x Construction Total)	$49,494	$39,908
AS-BUILT DRAWINGS	$15,000	
ELECTRONIC SUBMISSION OF SUBMITTALS	$10,000	
TOTAL COST	**$1,982,000**	**$1,578,000**

TOTAL PROJECT COST - PHASES 1 & 2	**$3,560,000**

MASTER PLAN
REFERENCES

Park Equity Analysis Map



The Park Equity Map was designed to identify high concentrations of lower income households with low walkable access to park entrances and trailheads. This map depicts an index of three factors: Population Density, Median Household Income as a percent of Area Median Income, and Walkable Access to Parks and Trailheads.

Park Equity Concerns (6-9)

Density, Income and Walkable Access weighted equally

- 6 - Moderate
- 7
- 8
- 9 - Greatest

0 0.03 0.06 0.12

Miles

AGENCY COORDINATION

Bonney, Lucas

From: Anyesha Mookherjee <AMookherjee@sha.state.md.us>
Sent: Friday, February 03, 2017 11:15 PM
To: Bonney, Lucas
Cc: Claudine Myers; Dave Murnan
Subject: RE: University Boulevard (MD 193) at Long Branch-Wayne Park
Attachments: LBW-Four Concept Plans Handout.pdf

Follow Up Flag: Follow up
Flag Status: Flagged

Categories: Red Category

Lucas:

From an access point of view, you have two options:

1. All access to be provided via Wayne Avenue, in which case both parking lots (25 spaces each would be aligned along Wayne Avenue- Concept 1 and 2)
2. Access provided to one parking lot from MD 193 (University Boulevard) by one way in access road which would exit onto Glenville. The other lot would be still accessed via Wayne Avenue. This is shown in Concept 3 and 4.

SHA would recommend all access to the parking spaces be made via Wayne Avenue as this intersection is already signalized. At this stage, without any projections available I cannot say for sure if this intersection (the left turn lanes along MD 193) has sufficient storage to handle the additional traffic that may be generated. But for now, one may assume that park traffic would rarely coincide with peak hour weekday traffic. From an operational safety standpoint, this access would be preferred too.

Any access from MD 193 would be either a right- in only or a right-in/right-out type. We would not recommend a full movement access point on MD 193 between Wayne Avenue and Glenville Road as this would create operational challenges given that Wayne Avenue and Glenville Road are approximately 560 feet apart. A right-in/right-out access point has the potential of reducing gaps/sight distance for vehicles exiting Glenville Road who now depend on gaps created by the signal at Wayne Avenue to make their turns. Also this type of access would create u turning traffic at a downstream intersection on heavy use days when the parking space fills up.

I am not sure how the right-in/right-out access for North Four Corners Park, also on MD 193 (near the intersection with Brunett Avenue) was approved without doing some further research. However, just looking at the aerials I could hazard a guess. There is no signalized intersection within close proximity of the North Four Corners Park to take advantage of. Also Brunett Avenue forms a T intersection with MD 193 on the opposite side of the park and as such traffic entering/exiting park does not affect Brunett Avenue. There is a residential driveway about 200 feet west of the Park access, however motorists exiting from this driveway do not have a signal close by to provide reliable gaps. The nearest signal is approximately 2000 feet away.

If you want to discuss further, please feel free to give me a call on Monday. I am also cc-ing Claudine from Engineering Systems Team on this, in case I have missed anything. Sorry for the delay…but I did make it by 2/3 ☺

Regards
Anyesha