DEVELOPMENT GUIDELINES

FOR

THE MARSHES AT COOPER RIVER

City of Charleston, South Carolina

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Prepared for:

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DEVELOPMENT GUIDELINES

1.1(A) Relationship to the Zoning Ordinance

The Development Guidelines and Land Use Plan for The Marshes at Cooper River Planned Unit Development (PUD) District, attached hereto and made a part hereof, are part of the PUD conditional use Master Plan application submitted in accordance with the Zoning Ordinance of the City of Charleston, Article 2, Part 7 Sections 54-250, et seq. The Zoning Ordinance of the City of Charleston is incorporated herein by reference, except as amended herein.

No person shall erect or alter any building or structure on any tract of land or use any tract of land within The Marshes at Cooper River PUD except in conformance with these guidelines and regulations. Unless modified herein, definitions of terms used in The Marshes at Cooper River PUD Development Guidelines shall follow definitions listed in the Zoning Ordinance of the City of Charleston, as amended from time to time. Administration and enforcement of the adopted The Marshes at Cooper River Master Plan shall follow Article 9 of the Zoning Ordinance of the City of Charleston.

The Marshes at Cooper River PUD Master Plan was approved by Charleston City Council on _____Ordinance Number_____.

1.1(B) Criteria for Review

The design guidelines for The Marshes at Cooper River subdivision:

a) Are consistent with the City's adopted comprehensive plan, and all adopted sub-areas of the City;
b) Better achieves the goals of adopted plans allowing for the development of this property due to existing grades and trees and cultural/historical value than would develop under the zoning district regulations;
c) Is consistent with the City's adopted master road plan;
d) Better protects and preserves natural and cultural resources than would development under other zoning district regulations, allowing for development with reduced impact to existing conditions;
e) Is compatible with the density and maximum building height of adjacent developed neighborhoods and the zoning of adjacent undeveloped areas.
f) Is compatible with the existing network of public streets in adjacent neighborhoods and areas;
g) provides adequate parking for residents and users of the PUD;
h) can be accommodated by existing and planned public facilities including but not limited to, roads, sewer, water, schools and parks;
i) provides adequate public facilities, open space and recreational amenities; and
j) adequately provides for the continued maintenance of common areas, open space, and other public facilities not dedicated to the city

1.2 Project Location and Description

The project site is comprised of 14 properties in Berkeley County, South Carolina. The parcel with tax map number (TMS) 267-00-00-005 is located within the limits of the City of Charleston and the remaining parcels, which are located in unincorporated Berkeley County, have the following TMS numbers: 267-00-00-004, 267-00-00-010, 267-00-00-049 267-00-00-050 through 267-00-00-057, 267-00-00-069 and 267-00-00-071.

The project site consists of approximately 34.58 gross acres. The property is bounded to the north by the Jessen Lane commercial park, to the south by residential development along Yellow House Road, to the east by Clements Ferry Road and to the west by marsh and the Cooper River. A project location map is located in the Appendix (Appendix #5.3)

1.3 Land Use Summary

The purpose of the (PUD) District is to provide for the creation of a planned, integrated community incorporating a broad range of residential types and commercial uses serving the inhabitants of the district and adjacent developments. This project meets the requirements for a PUD by providing several different uses which are listed below:

Single Family Residential - There are two different types of residential uses in this development: single family detached and single family attached (townhouses). The single family detached houses will primarily favor alley-fed, rear-loaded lots, with some traditional front-loaded lots. The single family attached lots will mostly be alley-fed with the opportunity for on-street parking in many locations. The variety of single family home types and lot configurations will attract a diversity of price points that will equally benefit from a modern, amenitized neighborhood.

Commercial - The commercial component of this development will follow the General Business (GB) Zoning set forth in the City of Charleston Zoning Code. The GB district is intended to provide for a broad range of commercial uses and activities. It is the most intensive commercial zoning district. Prohibited uses include junk and salvage yards, storage yards (except for vehicles and boats), and warehouses including self-storage mini-warehouses. Automotive repair shops, veterinary clinics, and stables are permitted only as special exceptions subject to the approval of the Board of Zoning Appeals.

Open Space – The open space for this project centers around a freshwater wetland that bisects the property. This will be a great gathering place for the community as it serves as the central point along the interconnected walking trail between the town square and the amenity center. The concept of this system is that a resident can travel from one end of the subdivision to the other without having to walk along a road.

The proposed land use is as follows:
(All acreages are approximate and subject to change)

Gross Land Area	34.58 Ac.
Critical (Salt Water) Marsh	0.85 Ac.
Total Wetlands	2.10 Ac.
Maximum Dwelling Units	160 DU
Net Density (High Ground Only)	4.93 DU/Ac.
Net Developable Land	32.48 Ac.

Land Use	Area	Dwelling Units (approx.)
Single Family Res. Detached	11.16 ac.	120
Single Family Res Attached	1.53 ac	40
Commercial District	1.00 ac.	NA
Shared Use Open Space	0.37 ac.	NA

1.4 Zoning Districts

1.4.1 Single Family Residential Detached (Type A, B, & C Single Family)

Permitted Uses:

1. Single-family detached dwellings.

2. Park, playground or athletic field, not operated as a business for profit, except that outdoor lighting shall be permitted only as an exception where the Board of Appeals shall find that the lights will not adversely impact adjacent residential areas.

3. Non-commercial horticultural activity, including garden or greenhouse.

4. Home occupations may be established in a dwelling unit as per the City of Charleston Zoning Ordinance

5. Signs or bulletin boards - see City of Charleston Zoning Ordinance

6. Family day care homes subject to permitting procedures and restrictions for family day care homes in single family residential districts as specified in the City of Charleston Zoning Ordinance.

7. Sales Office – A temporary sales office will be allowed and located in a Model Home. See Section 1.12

Zone District Area	Setbacks for Principal Buildings *see note					Minimum Lot Area Per Family Type of Dwelling Unit						Accessory Bldgs. To Residence Setback Required *see note	
	Total	Front	Rear	Total Side	Min. Side	Single Fam.	Two Fam.	Multi-Fam.	Max. % Lot Occup for All Bldgs	Max. Height Limits Structures	Max. Height Limits Fences	From Rear	From Side (total)
SFR District A,B,C	15’	10’	5’	6’	3’	3,000	N/A	N/A	65%	36’	6’	5’	3’

*Note - Critical Line Buffer and Building Setback supersede the above

i. Maximum Driveway width of 12 ft within the front 10 ft of the lot
ii. Dwelling units or heated living space are allowed in accessory buildings (i.e. Mother-in-law Suites on a shared meter with the main house.)
iii. Front-loaded garages must be setback a minimum of 10 ft from the principal building frontage.
iv. For alley served lots, no front driveway will be permitted
v. Porches and/or stairs can encroach into the front setback up to 5 ft.
vi. Lot width shall be a minimum of 20 ft at the road right of way.

1.4.2 Single Family Residential Attached

Permitted Uses:

1. Single-family attached (townhouse) dwellings.

2. Park, playground or athletic field, not operated as a business for profit, except that outdoor lighting shall be permitted only as an exception where the Board of Appeals shall find that the lights will not adversely impact adjacent residential areas.

3. Non-commercial horticultural activity, including garden or greenhouse.

4. Home occupations may be established in a dwelling unit as per the City of Charleston Zoning Ordinance

5. Signs or bulletin boards - see City of Charleston Zoning Ordinance

6. Family day care homes subject to permitting procedures and restrictions for family day care homes in single family residential districts as specified in the City of Charleston Zoning Ordinance.

Zone District Area	Setbacks for Principal Buildings *see note					Minimum Lot Area Per Family Type of Dwelling Unit						Accessory Bldgs. To Residence Setback Required *see note	
	Total	Front	Rear	Total Side **	Min. Side **	Single Fam.	Two Fam.	Multi-Fam.	Max. % Lot Occup for All Bldgs	Max. Height Limits Structures	Max. Height Limits Fences	From Rear	From Side (total)
SFR District D	0’	0’	0’	N/A	6’	1,300	N/A	N/A	100%	42’	6’	0’	0’

*Note - Critical Line Buffer and Building Setback supersede the above.

** Side setbacks shall be from exterior units. 10 ft Setbacks from Public Rights of Way, 6 ft from Property Line with adjacent buildings.

i. Maximum Driveway width of 12 ft within the front 10 ft of the lot
ii. Dwelling units or heated living space are allowed in accessory buildings (i.e. Mother-in-law Suites on a shared meter with the main house.)
iii. Front-loaded garages must be setback a minimum of 10 ft from the principal building frontage.
iv. For alley served lots, no front driveway will be permitted
v. Porches and/or stairs can encroach into the front setback up to 5 ft.
vi. Lot width shall be a minimum of 18 ft at the road right of way.

1.4.3 Commercial District

The GB district is intended to provide for a broad range of commercial uses and activities. It is the most intensive commercial zoning district. Prohibited uses include junk and salvage yards, storage yards (except for vehicles and boats), and warehouses including self-storage mini-warehouses. Automotive repair shops, veterinary clinics, and stables are permitted only as special exceptions subject to the approval of the Board of Zoning Appeals.

Permitted uses: The permitted uses are detailed in the City of Charleston Zoning Code.

Zone District Area	Setbacks for Principal Buildings *see note					Minimum Lot Area Per Family Type of Dwelling Unit						Accessory Bldgs. To Residence Setback Required *see note	
	Total	Front	Rear	Total Side	Min. Side	Single Fam.	Two Fam.	Multi-Fam.	Max. % Lot Occup for All Bldgs	Max. Height Limits Structures	Max. Height Limits Fences	From Rear	From Side (total)
GB	NR	NR	NR	N/R	N/R	N/A	N/A	N/A	N/A	45’	N/A	N/A	N/A

1.5 Open Space

20% of the gross project acreage must be set aside as permanent open space. Of this open space, 25 percent must be set aside as usable/open space. The purpose of this section is to describe the characteristics of open space land and uses allowed within permanent open space.

By using minimum height and area requirements and variations in unit types, lots and units may be clustered to create additional open space within neighborhoods.

Open spaces and parks designated on the Master Plan or identified during Site Plan approval shall be improved or conveyed as adjacent development phases are developed. Potential uses that may be located within individual parks are listed within this section.

The developers/owner shall be responsible for the maintenance of the open space. This may be transferred by means of the establishment of a homeowner’s association or neighborhood regime.

1.5.1 Shared Use Open Space

Shared Use Open space is designed to have either an enclosed amenity center or an open air pavilion that can be used for event such as an oyster roast or community gathering.

1. We envision The Marshes at Cooper River to be a biking/walking community and have attempted to minimize Open Space parking to consist of up to two on-street or off-street parking spaces, including one designated ADA parking space. The Open Space site plan will have to be approved by the City of Charleston.

2. No setbacks, buffers, minimum lot size, building occupancy are required. Critical line buffer and setbacks apply.

3. Maximum building height will be 42’ measured from the base flood elevation.

1.5.2 Open Space Requirement

A total of 6.71 acres of open space (20 percent) is required with the PUD districts, of which 1.68 acres (25 percent) is required to be Active /Usable open space. Open space is provided is as follows.

Total Upland Usable Open Space	**4.94 ac.**
1. Usable/Active Open Space	2.54 ac. (1.73 ac. required)
2. Community Amenity Open Space	0.37 ac.
3. Natural Upland Open Space	2.03
Wetlands/Salt Marsh	**2.10 ac**
Total Open Space Provided	**7.04 ac.** (6.92 ac. required)

1.6 Buffers

Buffers within the PUD District shall meet or exceed requirements of the City of Charleston Zoning Ordinance and/or any applicable deed restrictions or agreements which ever is more stringent.

Buffer areas should be preserved and protected during the construction process and existing vegetation should be augmented with new plant material as necessary to provide a consistent sense of spatial separation and effectively screen different land uses, zoning designations or roads visually.

Landscaping should meet or exceed requirements of the City of Charleston Zoning Ordinance, Section 54-110. Landscape regulations apply specifically to:

1. Street Frontage
2. Parking Lots
3. Buffers and Screening
4. Refuse Collection Facilities

Critical Line buffer to be a minimum of 25 ft plus a 10 ft building setback.

All projects affected by the landscape and screening requirements shall submit a plan for review and approval by the Zoning Division. The plan shall be consistent with the requirements outlined in the City of Charleston Zoning Ordinance. Buffers are not required between the different Districts in the PUD.

1.7 Tree Summary

The trees depicted on the Master Plan (Appendix 5.2) shall adhere to Article 16 of the City of Charleston Zoning Ordinance.

It is of utmost importance to the PUD District that significant existing vegetation be preserved whenever possible. All structures and other improvements should be planned in such a manner that existing vegetation, particularly healthy and viable Grand trees, are preserved and protected where possible.

1.8 Right of Ways

Street types as indicated on the Master Plan will be subject to review and approval during the Technical Review Committee (TRC) process and may be substituted with another listed street type from the chart below. Minor changes to the design standards below may be approved by staff during the TRC review of the construction drawings. Private roads are allowed and should meet the design standards of the similar public roads in the development. The site distance visibility at all exits and/or intersections will be maintained in accordance to the SCDOT's Access and Roadside Management Standards manual. Directional and traffic signage must conform to the MUTCD standards.

Street Type	R-O-W	Travel Lanes*	On-street Parking	Curb	Curb/Intersection Radii	Street trees 2-Sides	Street tree spacing	Sidewalks
Residential Street 1	50′ min.	Two-ways 10' min. travel lane	7′ (1 side)	Vert.	15	Tree Well (1) or Planting Strip (2)	30′—50′	5′ min. (1 side)
Residential Street 2	50' min.	Two-ways 10' min. travel lane	n/a	Vert.	15	Tree Well (1) or Planting Strip (2)	50'-60'	5' min. Sidewalk or Trail (1 side)
Residential Road	35′ min.	Two-ways 11' min. travel lane	n/a	Vert.	15	Tree Well (1) or Planting Strip (2)	30′—50′	n/a
Alley	20′ min.	One-way 14′ min. travel lane	n/a	n/a	25′	n/a	n/a	n/a
One Way Street	35' min.	One-way 14' min. travel lane	7' (1 side)	Vert.	15'	Tree Well (1) or Planting Strip (2)	30′—50′	5′ min. (1 side)

- All Travel Lanes and Parking Lanes do not include the width of the gutter.
- No gates are permitted
- Street lights will be required on all roads and alleys
- No Parking will be permitted on any of these streets that do not provide the adequate width necessary for on-street parking. The City of Charleston's Department of Traffic and Transportation has the authority to alter or restrict parking on any of these streets as necessary to provide safe and efficient travel lanes and parking areas

(1) – Tree Wells to be a minimum of 24 sqft

(2) – Planting Street to be a minimum of 4' in width

1.9 Drainage Basin Analysis

The Marshes at Cooper River subdivision will be developed within the current stormwater management guidelines of the City of Charleston and South Carolina Department of Health and Environmental Control for water quality and quantity. Due to the existing soil types, a detention waver may be necessary to meet certain storm water events in the post-developed condition.

The existing drainage patterns for this parcel drain to the existing wetlands in the center of the parcels and Yellow House Creek to the northwest. The wetlands and critical area have been certified by OCRM and ACOE. The majority of the land is wooded. The majority of the site does drain to the central wetland which ultimately leads to Yellow House Creek. The topography has elevations ranging from approximate 4.0 to 46.0 Mean Sea Level (NAVD 29). The proposed project will include a drainage plan in accordance with the City requirements. The proposed drainage for the development will maintain the existing drainage pattern through a series of drainage boxes, pipes, swales and ponds. Conceptual stormwater management designs may call for the use of ponds and individual lot drainage systems to achieve adequate control of run-off quality. Subsequent stormwater management plans will include appropriate best management practices for stormwater control.

1.10 Cultural Resources

No cultural resources were found on this site. Please see Section 3 for Brockington & Associates report.

1.11 Docks

Community dock may be constructed as part of the Shared Use Community Open Space. A master dock plan will be developed that meets OCRM and City of Charleston requirements.

1.12 Model Homes

There will be a maximum of three Model Homes allowed in each Residential District (per Phase) of the development. A sales office can be located inside a model home (see section 1.4.1)

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TRAFFIC STUDY

SRS Engineering, LLC
801 Mohawk Drive
West Columbia, SC 29169
(803) 739-2548 fax

December 15, 2014

Mr. Jack Daniels
Middle Street Partners, LLC
2113 Middle St., Suite 309
Sullivan's Island, SC 29482

RE: Traffic Impact and Access Study
The Marshes at Cooper River
Charleston, SC

Dear Mr. Daniels:

As requested, SRS Engineering, LLC (SRS) has completed an assessment of the traffic impacts associated with the proposed mixed-use development to be known as The Marshes at Cooper River to be located along the north side of Clements Ferry Road opposite the existing SPARC campus within the municipal limits of the City of Charleston, South Carolina. The following provides a summary of this study's findings:

PROJECT DESCRIPTION

The project site (31.5-acres) is generally located the north side of Clements Ferry Road, opposite the SPARC campus, between Heidie Lane and Jessen Lane and is currently undeveloped. The project proposal is to develop the project with the following uses/densities:

- 135 Single-Family Residences;
- 25 Residential Townhomes; and
- an estimated 10,000 square-feet (sf) of commercial space assumed as office space.

As scheduled, this project is planned to be constructed fully and operational within approximately three years. For purposes of this report, a 2017 horizon/completion year has been utilized.

There is an existing access drive for the project that connects with Clements Ferry Road that is paved for approximately 50-feet and is then gated. This existing access is located approximately 250-feet east of Heidie Lane and 250-feet west Jessen Lane and is offset approximately 100-feet west of the existing SPARC access on the south side of Clements Ferry Road. The current plan is to utilize this existing access drive for access for the project. Details regarding this access drive an additional future connectivity are discussed in the Mitigation section of this report.

A general site location map is provided as **Figure 1**. The proposed site plan is shown in **Figure 2**.

EXISTING CONDITIONS

A comprehensive field inventory of the project study area has been conducted. The field inventory included a collection of geometric data, traffic volumes and traffic control within the study area. The following section details the current traffic conditions and includes a description of the roadway serving the site and traffic flow in close proximity to the project site.

Study Area Roadway

Clements Ferry Road (S-8-33) - is currently a two-lane divided east/west oriented roadway within the study area. Throughout the study area, this roadway provides one travel lane in each direction generally separated by a center two-way left-turn lane (TWLTL). This roadway has a posted speed limit of 45 miles-per-hour (mph) and is under the jurisdiction of the South Carolina Department of Transportation (SCDOT).

Traffic Volumes

In order to determine the existing traffic volume flow patterns along site frontage, weekday morning (7:00-9:00 AM) and evening (4:00-6:00 PM) peak period count data was gathered for Clements Ferry Road at the point of the existing access that will be utilized for the project. It should be noted that the existing access is currently not servicing traffic volumes.

Figure 3, located in the appendix of this report, graphically depicts the Existing AM and PM peak-hour traffic volumes for Clements Ferry Road fronting the site.

FUTURE CONDITIONS

Traffic analyses for future conditions have been conducted for the proposed access intersection with Clements Ferry Road for Future Build Conditions.

Annual Growth Rate

Growth in the area was investigated via a nearby SCDOT (*Berkeley County*) permanent count station (Station #269) along Clements Ferry Road as well as growth rate information utilized in recent traffic studies. Based on this information, a generalized **3**-percent per year growth rate was developed for the study area.

Planned Roadway Improvements

Based on conversations with City/SCDOT staff, Clements Ferry Road (S-8-33) will be widened from a point east of Interstate 526 to SC 41 to provide two travel lanes in each direction separated by a striped center median treatment. This project is fully funded and is currently in the planning/design phase. It is scheduled to be completed by 2016 and has therefore been assumed to be complete for future year analyses contained within this report.

Furthermore, it is understood that there are ongoing discussions regarding a potential future traffic signal along this segment of Clements Ferry Road although a formal plan has not been selected/approved. One option that has been reviewed in the past is a re-alignment of Deanna Lane such that it would intersect Clements Ferry Road directly opposite Wambaw Creek Road to create a formal four-legged intersection with the installation of traffic signal control. Another option that has been discussed is a potential signal

at Rebellion Farms Place. Recent correspondence with SCDOT indicates that the Clements Ferry Road widening plans are to a point where no changes are being made.

Site-Generated Traffic

Traffic volumes expected to be generated by the proposed project were forecasted using the Eighth Edition of the ITE *Trip Generation* manual, as published by the Institute of Transportation Engineers. Land-Use Codes #210 (Single Family Residential), #230 (Residential Condominium/Townhome) and #710 (General Office) were used to estimate the specific site-generated traffic. **Table 1** depicts the anticipated site-generated traffic.

Table 1
PROJECT TRIP-GENERATION SUMMARY[1]
The Marshes at Cooper River

Time Period	135 Lots Single-Family Residences[2] (a)	25 Residential Townhomes[3] (b)	10,000 sf General Office[4] (c)	Total Development Trips (a+b+c)
Weekday Daily	1,370	190	110	**1,670**
AM Peak-Hour				
Enter	26	3	14	**43**
Exit	78	14	2	**94**
Total	104	17	16	**137**
PM Peak-Hour				
Enter	87	13	3	**103**
Exit	51	6	12	**69**
Total	138	19	15	**172**

1. ITE Trip Generation manual, Eighth Edition.
2. ITE Trip Generation manual - LUC 210 (Single-Family Detached Housing)
3. ITE Trip Generation manual - LUC 230 (Residential Condominium/Townhouse)
4. ITE Trip Generation manual - LUC 710 (General Office)

As shown, the project as a whole can be expected to generate a total of 1,670 two-way vehicular trips on a weekday daily basis, of which a total of 137 trips (43 entering, 94 exiting) can be expected during the AM peak-hour. During the PM peak-hour, 172 trips (103 entering, 69 exiting) can be expected.

As shown, the commercial component (office space) is a relatively small component of project trips.

Distribution Pattern

The directional distribution of site-generated traffic on the study area roadways has been based on an evaluation of existing travel patterns within the study area and the proximity of the project to I 526. The distribution pattern utilized for this project is shown in **Table 2**.

Table 2
TRIP DISTRIBUTION PATTERN
The Marshes at Cooper River

Roadway	Direction To/From	AM & PM PEAK-HOUR Enter/Exit
Clements Ferry Road	East (toward SC 41)	25
	West (toward Interstate 526)	75
	Total	**100**

Note: Based on the existing and projected future traffic patterns.

This distribution pattern has been applied to the site-generated traffic volumes from Table 1 to develop the site-generated specific volumes for the study area intersections illustrated in **Figure 4**.

Build Traffic Conditions

The site-generated traffic, as depicted in Figure 4, has been combined with the projected volumes for Clements Ferry Road for 2017 (Existing volumes grown at 3-percent annually). This results in the peak-hour 2017 Build traffic volumes, which are graphically depicted in **Figure 5**. These volumes were used as the basis to determine potential improvement measures needed at the proposed site access intersection.

TRAFFIC OPERATIONS

Analysis Methodology

A primary result of capacity analysis is the assignment of Level-of-Service (LOS) to traffic facilities under various traffic flow conditions. The concept of Level-of-Service is defined as a qualitative measure describing operational conditions within a traffic stream and their perception by motorists and/or passengers. A Level-of-Service designation provides an index to the quality of traffic flow in terms of such factors as speed, travel time, freedom to maneuver, traffic interruptions, comfort, convenience, and safety.

Six Levels-of-Service are defined for each type of facility (signalized and unsignalized intersections). They are given letter designations from A to F, with LOS A representing the best operating conditions and LOS F the worst.

Since the Level-of-Service of a traffic facility is a function of the traffic flows placed upon it, such a facility may operate at a wide range of Levels-of-Service depending on the time of day, day of week, or period of a year.

Capacity Analysis Results

As part of this traffic study, capacity analyses have been performed for the site access intersection under Future conditions, which account for normal background growth in traffic and specific traffic related to the project. The results of these analyses are summarized in **Table 3**.

Table 3
LEVEL-OF-SERVICE SUMMARY
The Marshes at Cooper River

Unsignalized Intersection	Time Period	2017 BUILD CONDITIONS Delay[a]	LOS[b]
Clements Ferry Road at Site Access	AM	19.1	C
	PM	19.3	C

a. Delay in seconds-per-vehicle.
b. LOS = Level-of-Service.

GENERAL NOTES:

1. For unsignalized intersections, Delay is representative of critical movement/approach.

As shown in Table 3, the site access intersection with Clements Ferry Road is expected to operate acceptably during both peak hours with the incorporation of recommended geometry and traffic control detailed in the next section of this report. It should be noted that this analysis assumes the widening of Clements Ferry Road to a four-lane divided cross-section as currently proposed.

MITIGATION

The final phase of the analysis process is to identify mitigating measures which may either minimize the impact of the project on the transportation system or tend to alleviate poor service levels not caused by the project. The following section describes measures necessary to mitigate the project's impact.

Proposed Site Access

As planned, access to/from the site will be provided via a single access drive to Clements Ferry Road at an existing access drive that is located approximately 250-feet east of Heidie Lane and 250-feet west Jessen Lane. It should be noted that this access is offset approximately 100-feet west of the existing SPARC access on the south side of Clements Ferry Road. The proposed project access is an existing paved connection to Clements Ferry Road that is shown to remain in the SCDOT widening plans for Clements Ferry Road.

Left-turns into the project will be accommodated via the center striped median within Clements Ferry Road, which will allow left-turns to store and minimize impacts on eastbound Clements Ferry Road through volumes. The volume of right-turns entering the site during peak hours (11 during AM; 26 during PM) do not warrant a dedicated right-turn lane for westbound Clements Ferry Road.

With regards to the access road approach, consideration should be given to providing two lanes exiting (separate left and separate right) with one lane for entrances. This will allow for right-turns exiting the project to maneuver around a queued left-turning vehicle. The access road approach should be placed under STOP sign control.

Provisions for future interconnectivity to the east and west should be planned so as to allow potential future connectivity to a future traffic signal location along Clements Ferry Road.

SUMMARY

SRS has completed a Traffic Impact and Access Study relative to a proposed mixed-used development along the north side of Clements Ferry Road to be known as The Marshes at Cooper River. A total of 160 residential units are proposed along with a small commercial component planned as office space. The site is currently undeveloped but does have an existing paved access to Clements Ferry Road approximately half way between Heidie Lane and Jessen Lane, offset with the existing SPARC access on the south side of Clements Ferry Road.

Clements Ferry Road is scheduled to be widened for an additional through lane in each direction. This widening project is expected to begin in the near future, and is expected to be completed by the time The Marshes at Cooper River project is completed. The widening project will result in a striped median at the point of site access that will service eastbound left-turns into the site. A dedicated westbound right-turn deceleration lane is not recommended based on projected right-turn volumes. The site access road approach should be improved to provide for two exiting lanes (separate left and separate right) with one entering lane.

It is understood that there are ongoing discussions regarding a potential future traffic signal along this segment of Clements Ferry Road. One option that has been reviewed in the past is a re-alignment of Deanna Lane such that it would intersect Clements Ferry Road directly opposite Wambaw Creek Road to create a formal four-legged intersection with the installation of traffic signal control. Another option that has been discussed is a potential signal at Rebellion Farms Place. It is understood that a formal decision has not been made with regards to this future signalized intersection location. SCDOT has indicated that the Clements Ferry Road plans are to a point where significant changes are not being made. It is recommended that provisions for interconnectivity be provided within the site to allow for potential connectivity to a future traffic signal either to the east or west of the site.

If you have any questions or comments regarding any information contained within this report, please contact me at (803) 252-1799.

Regards,

SRS ENGINEERING, LLC

Mike Ridgeway, P.E.
Principal

Attachments

SOUTH CAROLINA
SRS ENGINEERING, LLC
No. C02853
CERTIFICATE OF AUTHORIZATION

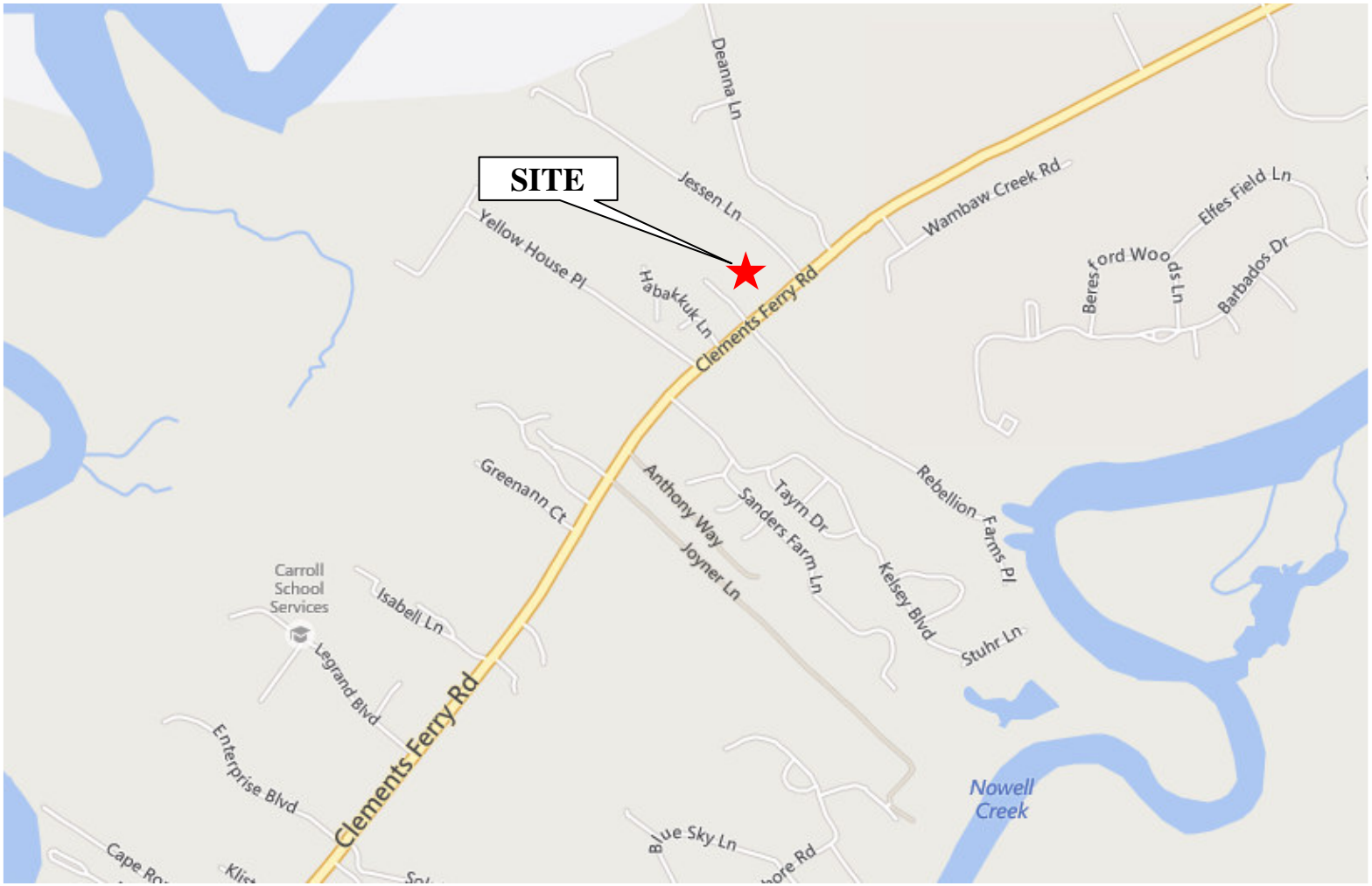
SOUTH CAROLINA
LICENSED PROFESSIONAL ENGINEER
No. 21997
MICHAEL R. RIDGEWAY

12-15-14

APPENDIX

- Figures
- Capacity Analyses

FIGURES



N

NOT TO SCALE

Figure 1

SITE LOCATION MAP

The Marshes at Cooper River : Charleston, SC

SRS ENGINEERING
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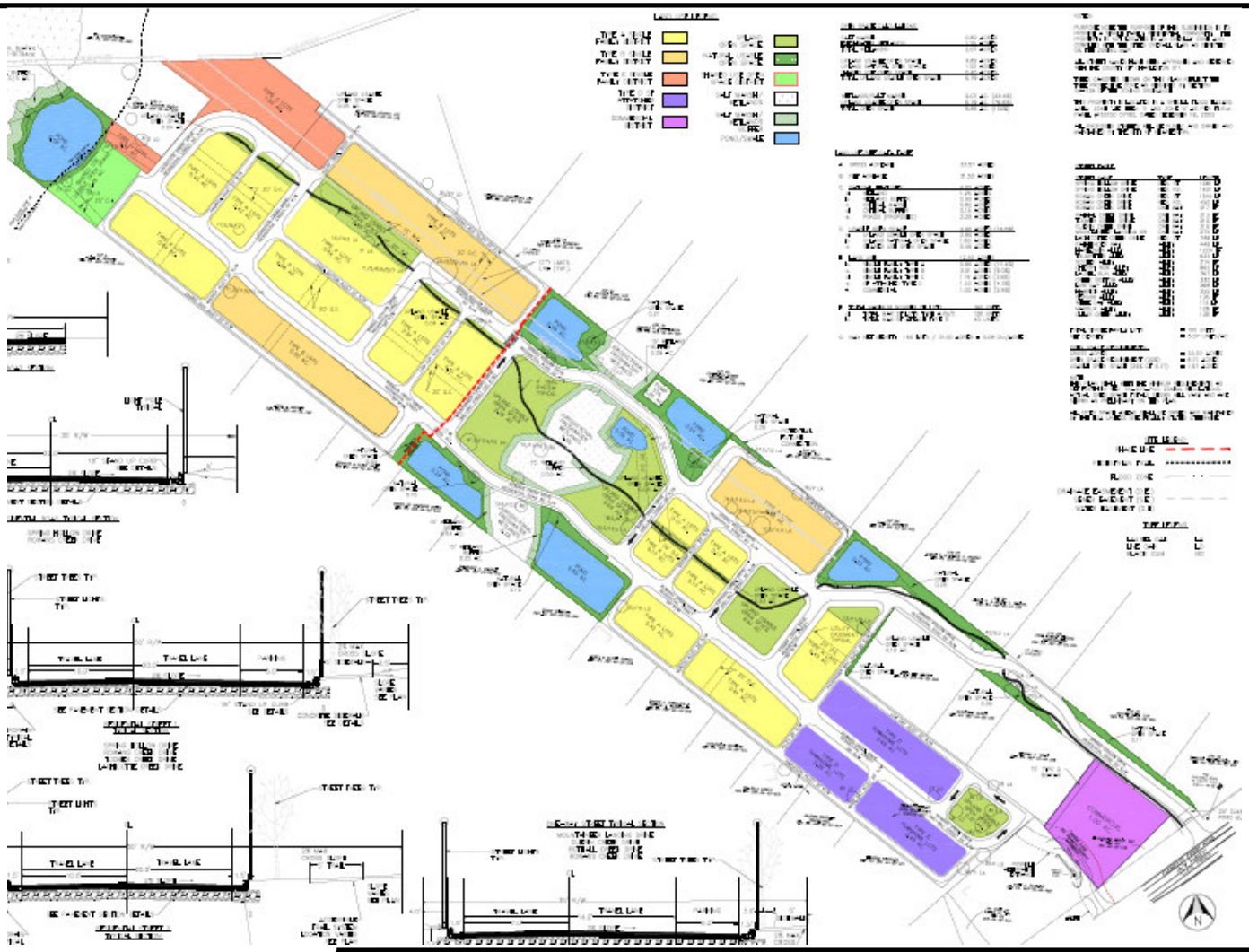

Figure 2

PROPOSED SITE PLAN

The Marshes at Cooper River : Charleston, SC

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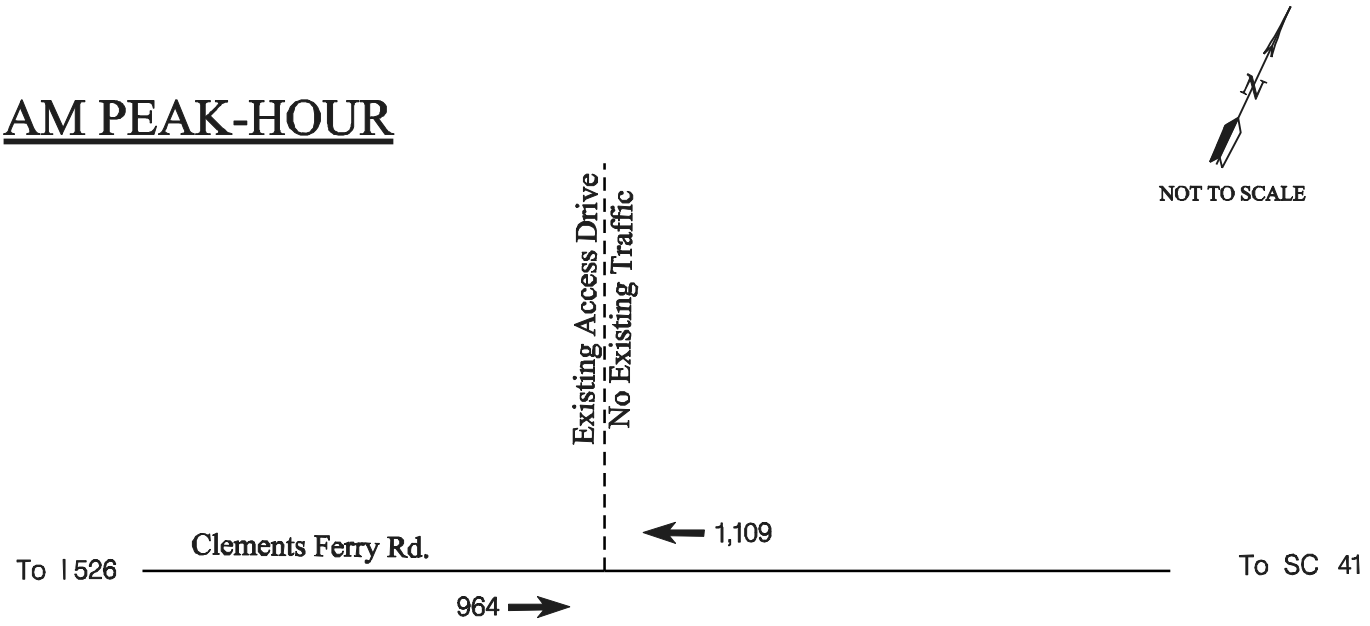
AM PEAK-HOUR



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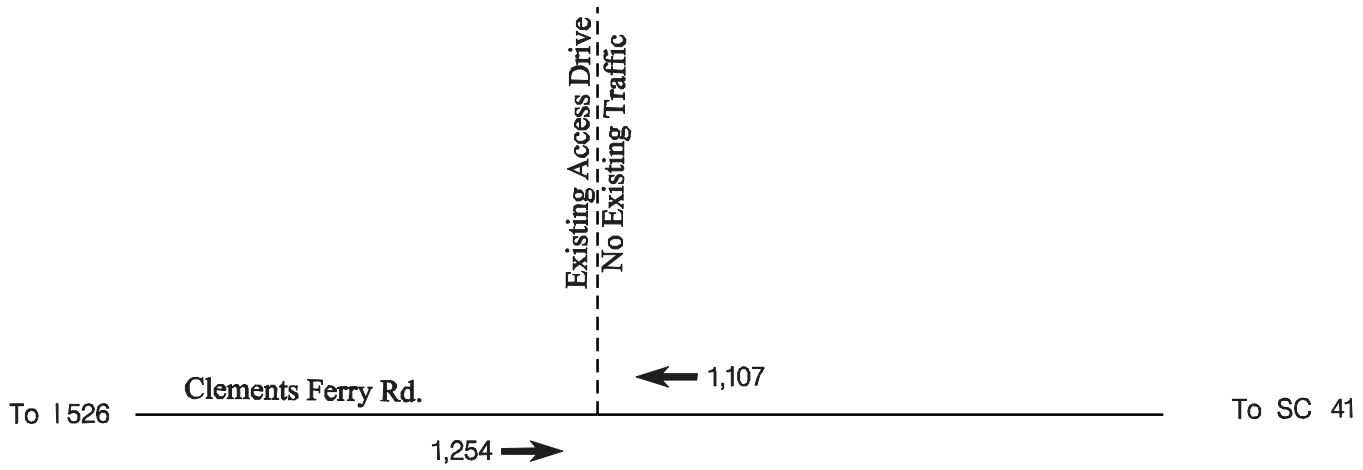

LEGEND

● = Unsignalized Intersection

Figure 3

EXISTING TRAFFIC VOLUMES

The Marshes at Cooper River: Charleston, SC

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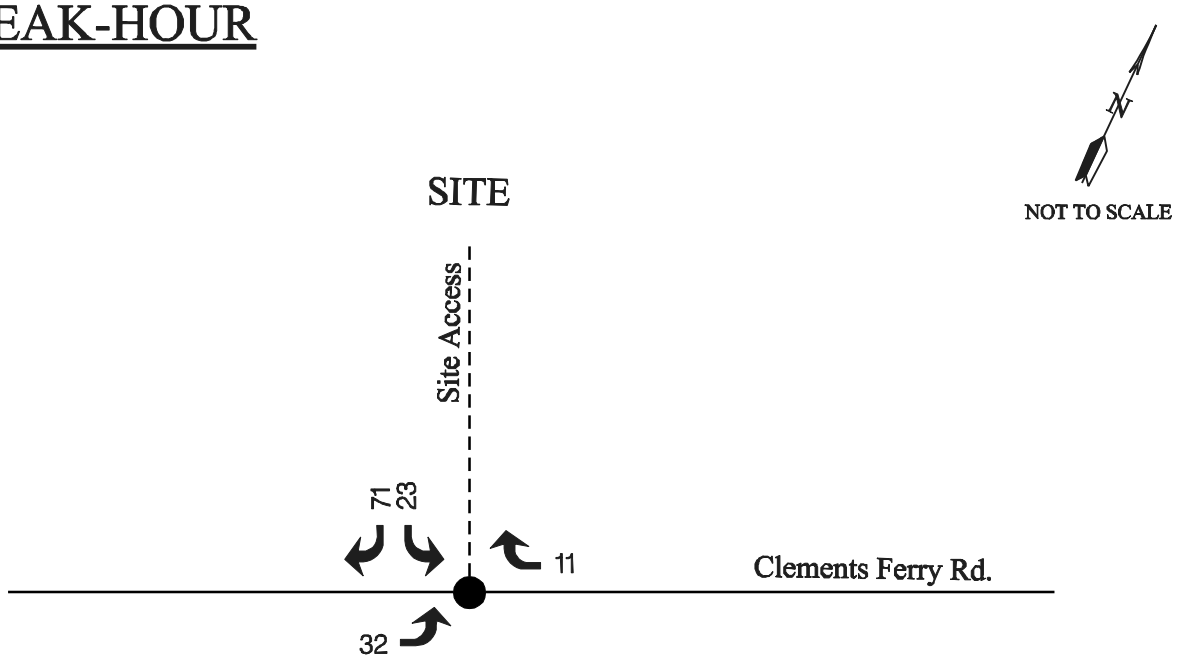
AM PEAK-HOUR



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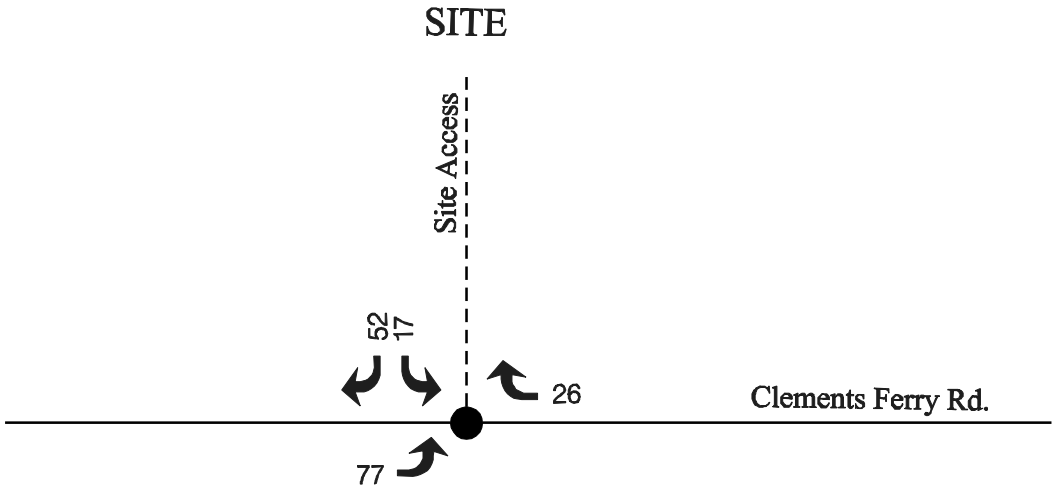

LEGEND

● = Unsignalized Intersection

Figure 4

SITE-GENERATED TRAFFIC VOLUMES

The Marshes at Cooper River: Charleston, SC

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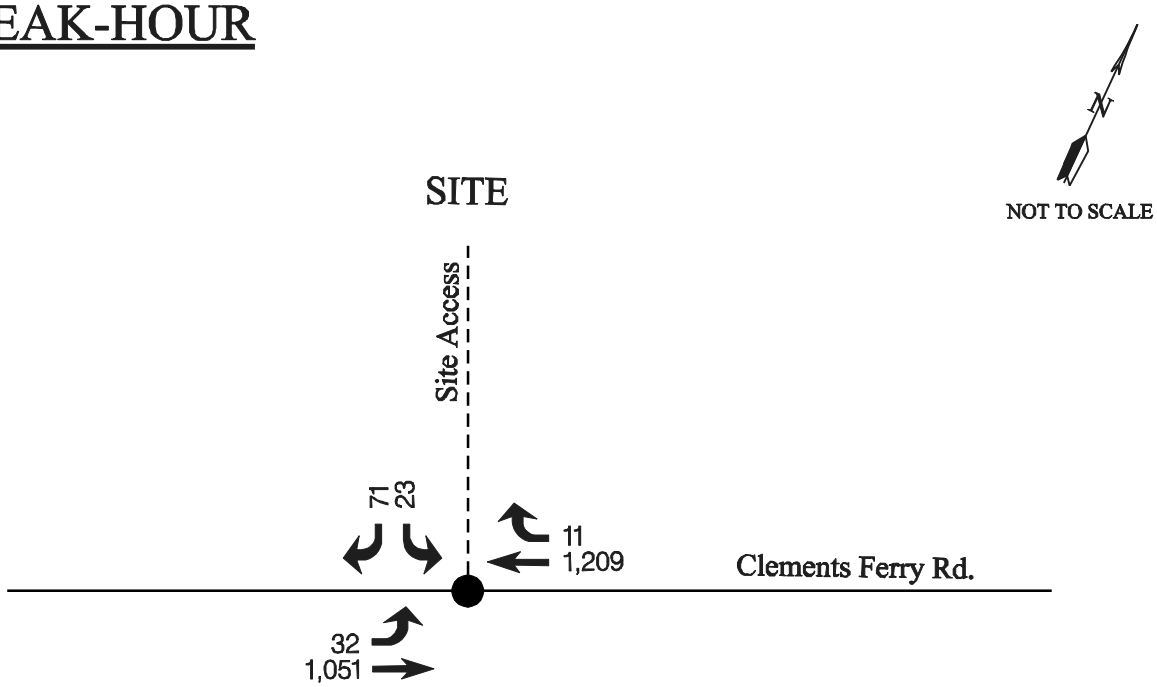
AM PEAK-HOUR



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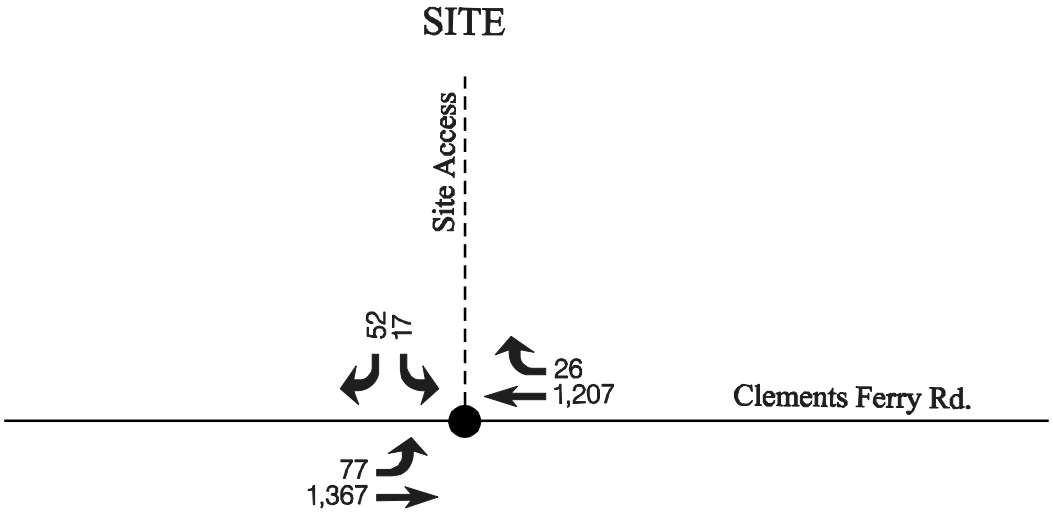

LEGEND

● = Unsignalized Intersection

Note: These volumes include 3% annual background growth for Clements Ferry Road.

Figure 5

2017 BUILD TRAFFIC VOLUMES

The Marshes at Cooper River: Charleston, SC

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CAPACITY ANALYSES

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	32	1051	1209	11	23	71
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	36	1168	1343	12	26	79
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLTL	TWLTL			
Median storage veh)		2	2			
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1356				2004	678
vC1, stage 1 conf vol					1349	
vC2, stage 2 conf vol					655	
vCu, unblocked vol	1356				2004	678
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	93				86	80
cM capacity (veh/h)	503				186	395

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1	SB 2
Volume Total	36	584	584	896	460	26	79
Volume Left	36	0	0	0	0	26	0
Volume Right	0	0	0	0	12	0	79
cSH	503	1700	1700	1700	1700	186	395
Volume to Capacity	0.07	0.34	0.34	0.53	0.27	0.14	0.20
Queue Length 95th (ft)	6	0	0	0	0	12	18
Control Delay (s)	12.7	0.0	0.0	0.0	0.0	27.5	16.4
Lane LOS	B					D	C
Approach Delay (s)	0.4			0.0		19.1	
Approach LOS						C	

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	44.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	77	1367	1207	26	17	52
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	86	1519	1341	29	19	58
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLTL	TWLTL			
Median storage veh)		2	2			
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1370				2286	685
vC1, stage 1 conf vol					1356	
vC2, stage 2 conf vol					931	
vCu, unblocked vol	1370				2286	685
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	83				88	85
cM capacity (veh/h)	497				162	391

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1	SB 2
Volume Total	86	759	759	894	476	19	58
Volume Left	86	0	0	0	0	19	0
Volume Right	0	0	0	0	29	0	58
cSH	497	1700	1700	1700	1700	162	391
Volume to Capacity	0.17	0.45	0.45	0.53	0.28	0.12	0.15
Queue Length 95th (ft)	15	0	0	0	0	10	13
Control Delay (s)	13.7	0.0	0.0	0.0	0.0	30.1	15.8
Lane LOS	B					D	C
Approach Delay (s)	0.7			0.0		19.3	
Approach LOS						C	

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	51.8%	ICU Level of Service	A
Analysis Period (min)	15		

3

CULTURAL RESOURCES

(Full Report has been provided to the City of Charleston. The section included in this PUD is the results/recommendations of the report. Please contact our office if a pdf copy is desired.)

4.0 Results and Recommendations

4.1 Results

Brockington designed the intensive cultural resources survey of the 32-acre Cabin Creek Tract to identify and assess all cultural resources in the project tract. During these investigations, we identified three new archaeological sites (Sites 38BK2552-38BK2554) and one isolated artifact occurrence (Isolate 1). The discussion below describes each of these cultural resources and provides NRHP eligibility and management recommendations.

4.1.1 Site 38BK2552

Cultural Affiliation *– Early/Middle Woodland; late nineteenth-early-twentieth century*
Site Type *– ceramic scatter; domestic scatter*
Site Dimensions *– 45 meters north-south (n/s) by 75 meters east-west (e/w)*
Soil Type *– Cainhoy fine sand (Long 1980:12)*
Elevation *– 10.7 meters amsl*
Nearest Water Source *– Unnamed swamp; tributary of Yellow House Creek*
Present Vegetation *– Savannah: predominantly grass with sparse hardwoods*
NRHP Recommendation *– Not eligible*
Management Recommendations *– No further management*

Site 38BK2552 is a surface/subsurface scatter of Pre-Contact ceramic artifacts and Post-Contact architectural and kitchen artifacts located in the central portion of the project tract. Site 38BK2552 is likely associated with 38BK2553, another multi-component archaeological site located across a wetland to the west (see Figures 1.1 and 4.1). Figure 4.2 provides views of 38BK2552. Site 38BK2552 measures 45-by-75 meters, oriented to grid north. Vegetation across the site is characterized as savannah, predominantly covered in grass with sparse hardwoods. Surface visibility across the site is fair (26-50 percent). However, investigators observed an earthen push pile with brick and mortar interspersed near a stand of trees in the central portion of the site. Two consecutive negative shovel tests, wetlands, and a modern collection pond form the site boundaries.

We excavated 29 shovel tests at 15-meter intervals in and around 38BK2552; four of these shovel tests produced artifacts. Shovel tests consistently revealed a dark grayish brown (10YR4/2) fine sand A1 horizon 0-10 cm bs, underlain by a yellowish brown (10YR5/6) fine sand B21 horizon 10-40 cm bs, and a brownish yellow (10YR6/6) to yellow (10YR7/6) fine sand B22/23 horizon 40-80 cm below surface (bs). We recovered artifacts from the A1 and B22 soil horizons, 0-50 cm bs. This suggests that the archaeological deposits within the site have been affected by processes related to soil development and possibly by plowing associated with agricultural activities during the twentieth century.

We recovered two artifacts from 38BK2552 as well as 100 grams of brick and 125 grams of mortar. One of the artifacts is an Early/Middle Woodland Deptford Check Stamped sherd and the other is a clear bottle glass fragment; both recovered from Shovel Test 2.1.

The Early/Middle Woodland Deptford Check Stamped sherd indicates minor Pre-Contact activities at 38BK2552. It is likely this artifact represents a seasonal resource extraction encampment. The clear glass bottle fragment and brick and mortar recovered from 38BK2552 likely indicate late nineteenth-early-twentieth century activities in the site area. Historic maps indicate several historic roads and structures in the site area (Latimer et al. 1916; USACE 1918). However, the site area is heavily disturbed, possibly related to land clearing activities and the construction of the collection pond. Neither component can be distinguished in vertical soil horizons at 38BK2552.

Archaeologists assessed 38BK2552 with respect to Criteria A-D (see Sections 2.5 and 2.6). Site 38BK2552 produced artifacts associated with an Early/Middle Woodland Deptford camp site and a possible late nineteenth-/early twentieth-century homesite. Neither component can be distinguished in vertical soil horizons across 38BK2552. Site 38BK2552 appears disturbed by modern construction activities. Both components identified at 38BK2552 are common throughout Berkeley County and the region. These factors suggest that additional investigation of 38BK2552 cannot provide important information about Early/Middle Woodland and the late nineteenth/early twentieth century use of the site or region beyond that recovered to date. We recommend 38BK2552 not eligible for the NRHP.

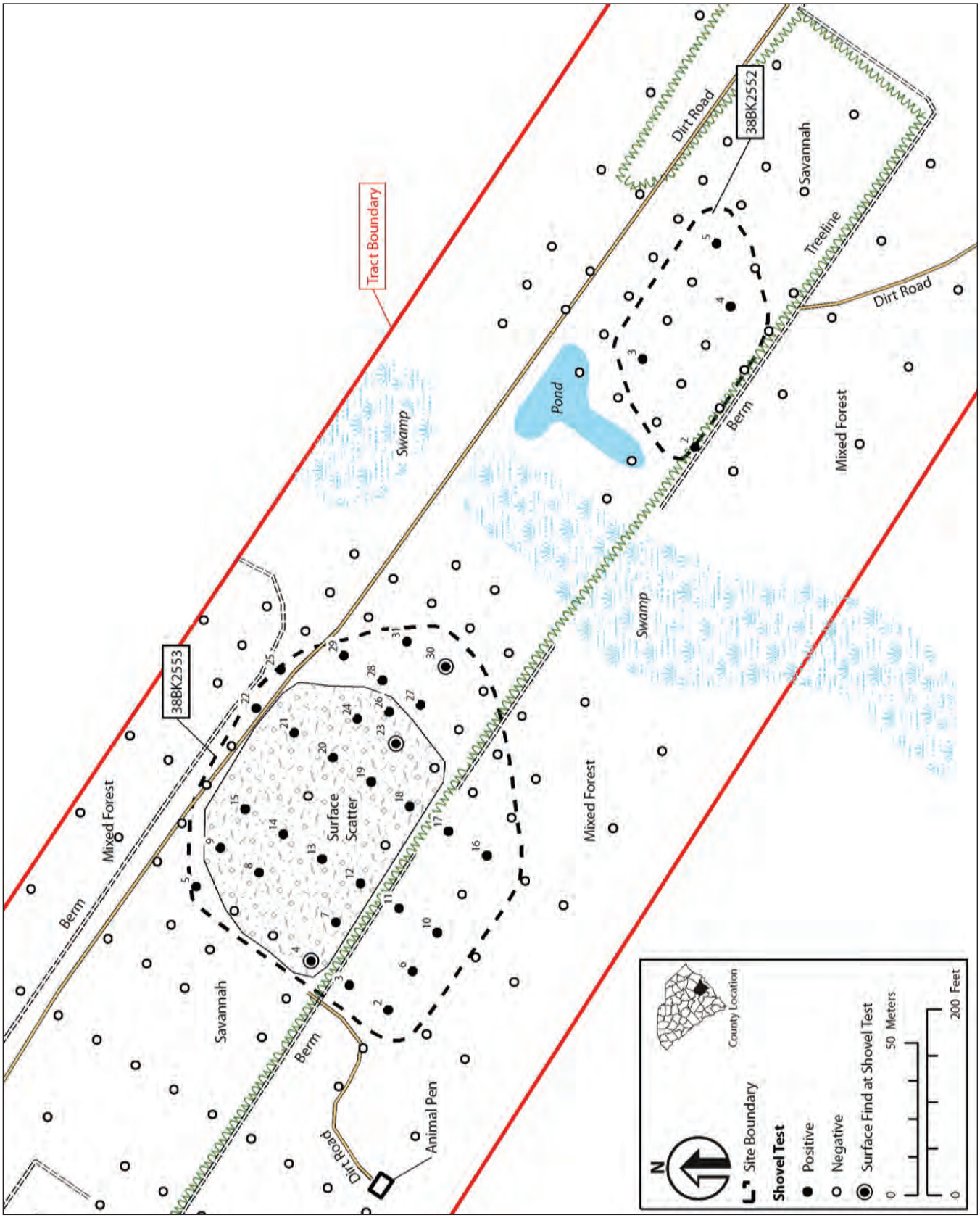

Figure 4.1 Plan of Sites 38BK2552 and 38BK2553.

Figure 4.2 Views of 38BK2552: push pile with brick and mortar looking grid east (top); typical vegetation looking grid east (bottom).

4.1.2 Site 38BK2553

Cultural Affiliation *– Middle/Late Woodland; mid-nineteenth-early-twentieth century*
Site Type *– ceramic and lithic scatter; domestic scatter*
Site Dimensions *– 105 meters north-south (n/s) by 90 meters east-west (e/w)*
Soil Type *– Cainhoy fine sand (Long 1980:12)*
Elevation *– 10.7 meters amsl*
Nearest Water Source *– Unnamed swamp; tributary of Yellow House Creek*
Present Vegetation *– Savannah and mixed forest*
NRHP Recommendation *– Not eligible*
Management Recommendations *– No further management*

Site 38BK2553 is a surface/subsurface scatter of Pre-Contact ceramic and lithic artifacts and Post-Contact domestic artifacts located in the central portion of the project tract. Site 38BK2553 is likely associated with 38BK2552, another multi-component archaeological site located across a wetland to the east (see Figures 1.1 and 4.1). Figure 4.3 provides views of 38BK2553. Site 38BK2553 measures 105-by-90 meters, oriented to grid north. Vegetation across the site is characterized as savannah, predominantly covered in grass with sparse hardwoods. Surface visibility across the site is poor (1-25 percent) in the wooded areas and good (26-50 percent) in the open savannahs. Investigators observed a broad and diffuse artifact scatter in the northern portion of 38BK2553 and a discrete, approximately three-meter-diameter shell scatter in the central portion of the site. Two consecutive negative shovel tests and wetlands form the site boundaries.

We excavated 76 shovel tests at 7.5- and 15-m intervals in and around 38BK2547; 27 of these shovel tests produced artifacts. Shovel tests consistently revealed a dark grayish brown (10YR4/2) fine sand A1 horizon 0-30 cm bs, underlain by a yellowish brown (10YR5/6) fine sand B21 horizon 30-50 cm bs, and a brownish yellow (10YR6/6) to yellow (10YR7/6) fine sand B22/23 horizon 50-100 cm bs. We recovered artifacts from the A1, B22, and B23 soil horizons, at an average depth of 0-40 cm bs. Two shovel tests (Shovel Tests 19 and 24) produced Pre-Contact artifacts to a maximum depth of 80 cm bs. Investigators excavated Shovel Test 26 into the shell scatter, exposing a matrix of oyster and periwinkle shell, along with small amounts of bone and charcoal, as well as Pre-Contact and Post-Contact artifacts, to a depth of 25 cm bs. Across the rest of 38BK2553, most of the Pre-Contact artifacts and all of the Post-Contact artifacts were recovered 0-40 cm bs. This suggests that the archaeological deposits within the site have been affected by processes related to soil development and possibly by plowing associated with agricultural activities during the twentieth century.

We recovered 119 artifacts from 38BK2553, as well as 728.8 grams of brick, 4.5 grams of unidentifiable iron fragments, 2486.6 grams of oyster shell, and 126.8 grams of periwinkle shell. Table 4.1 summarizes the artifacts recovered from 38BK2553. Artifacts include 31 Pre-Contact artifacts, and 88 Post-Contact artifacts. Temporally diagnostic Pre-Contact artifacts include eight Wando Simple Stamped or Smoothed sherds, recovered from four shovel tests (Shovel Tests 20, 22, 25, and 26). Wando Simple Stamped and Smoothed sherds indicate a Middle/Late Woodland occupation. It is likely that the Pre-Contact occupation(s) at 38BK2553 are a palimpsest of temporary hunting camps, occupied on a seasonal basis, most likely during the Middle/Late Woodland subperiod.

The 88 Post-Contact artifacts and brick represent four distinct artifact classes (architectural, clothing/personal, hardware, kitchen, and tobacco). Kitchen artifacts (n=79) dominate the artifact assemblage, with high number of bottle, container, and table glass (n=67). Temporally diagnostic Post-Contact artifacts include cut nails (ca. 1805-present), wire nails (ca. 1850-present), milkglass (ca. 1869-present), whiteware (ca. 1830-present), and one clear German cologne bottle, embossed *E.W. Hoyt & Co., Lowell, Mass USA* (ca. 1900-1940). These artifacts indicate a mid-nineteenth to early twentieth-century occupation at 38BK2553. No maps or plats prior to the twentieth century indicate any buildings or structures in the vicinity of 38BK2553. However, Latimer et al. (1916) and the USACE (1918) *Meldrim* quadrangle show a network of roads and several buildings on the west site of a drainage in close proximity to 38BK2553. It is likely that 38BK2553 represents one or more buildings associated the Bennett family tenure at the Cabin Creek Tract (see Chapter 3).

Figure 4.3 Views of 38BK2553: wooded portion of 38BK2553 looking grid west along old road (top); savannah portion of 38BK2553 showing shell midden in foreground and grand oak in background looking grid east (bottom).

Table 4.1 Artifacts Recovered from 38BK2553.

Era	Artifact Class	Artifact Description	Count	Weight
Pre-Contact	Ceramic	residual sherd	23	48.6
		Wando Smoothed sherd	2	18.6
		Wando Simple Stamped sherd	6	54.3
	Lithic	chert non-cortical 3/4" flake	1	0.9
Indeterminate	Faunal	oyster		2486.6
		periwinkle		126.8
		unidentifiable bird bone fragment	1	0.7
Post-Contact	Activities	UID iron fragment	2	4.5
	Architectural	brick		605.2
		mortar		18.3
		unidentifiable square nail	1	3.3
		wire nail	2	6.7
	Clothing	white metal buckle	1	1.1
		porcelain button	1	0.2
	Kitchen	amber bottle glass fragment	1	1.0
		amethyst container fragment	13	98.7
		aqua bottle glass fragment	16	113.5
		clear glass container fragment	16	57
		clear glass bottle*	1	23.5
		clear (flashed orange exterior) tableglass fragments	17	85.2
		dark olive green bottle glass fragment	1	12.3
		green glass container fragment	1	2.3
		milkglass container base	1	84.9
		milkglass container fragment	2	2.6
		undecorated porcelain sherd	1	0.8
		undecorated whiteware sherd	7	35.8
		Stoneware, blue underglazed salt glazed	1	41.0
	Tobacco	kaolin pipe stem fragment	1	1.5
		Total	**119**	**3935.9**

**"E.W. Hoyt & Co., Lowell, Mass USA", German cologne bottle, ca. 1900-1940*

Archaeologists assessed 38BK2553 with respect to Criteria A-D (see Sections 2.5 and 2.6). Site 38BK2553 is the largest site identified during the current investigation and produced artifacts associated with a Middle/Late Woodland Wilmington occupation, a late seventeenth to eighteenth century occupation, and a mid-nineteenth to mid-twentieth century occupation. These artifacts are scattered diffusely across the site and no discrete activity areas can be ascertained. The shell midden located in the center of site appears to contain a matrix of not only oyster and periwinkle shell, bone, and charcoal, but also Pre-Contact and Post-Contact artifacts. The two shovel tests that produced artifacts below the A1 horizon produced only small amounts of Pre-Contact artifacts. Furthermore, the highly acidic, excessively drained nature of Cainhoy fine sand soils found at the site has eroded artifacts and leached away cultural features that may have once been present. Therefore, it is unlikely that additional investigation of 38BK2553 will produce additional information about Middle/Late Woodland subperiod or the mid-nineteenth to early twentieth century use of the site or region beyond that recovered to date. We recommend 38BK2553 not eligible for the NRHP.

4.1.3 Site 38BK2554

Cultural Affiliation *– Unknown Pre-Contact; nineteenth- twentieth century*
Site Type *– ceramic scatter; architectural scatter*
Site Dimensions *– 22.5 meters n/s by 15 meters e/w*
Soil Type *– Cainhoy fine sand (Long 1980:12)*
Elevation *– 6.1 meters amsl*
Nearest Water Source *– Unnamed swamp tributary of Yellow House Creek*
Present Vegetation *–Mixed forest*
NRHP Recommendation *– Not eligible*
Management Recommendations *– No further management*

Site 38BK2554 is a subsurface scatter of Pre-Contact ceramic artifacts and a Post-Contact architectural artifact located in the western portion of the project tract. Site 38BK2554 is likely associated with an isolated artifact occurrence (Isolate 1), located 60 meters grid north (Figures 1.1 and 4.4). Site 38BK2554 is located on a sand ridge and overlooks hardwood swamp adjacent to Yellow House Creek to the west. Site 38BK2554 measures 22.5 by 15 meters, oriented to grid north. Vegetation across 38BK2554 consists of mixed hardwoods and pines with no surface visibility. Figure 4.5 provides views of 38BK2554 (top) and the Isolate 1 (bottom). Two consecutive negative shovel tests at 15-meter intervals and the project tract boundary form the site boundary.

We excavated 13 shovel tests at 7.5- and 15-meter intervals in and around 38BK2554; two of these shovel tests produced artifacts. Shovel tests consistently revealed a dark grayish brown (10YR4/2) fine sand A1 horizon 0-35 cm bs, underlain by a yellowish brown (10YR5/6) fine sand B21 horizon 35-55 cm bs, and a brownish yellow (10YR6/6) to yellow (10YR7/6) fine sand B22/23 horizon 55-80 cm bs. We recovered artifacts from the A1 soil horizon, to a maximum depth of 35 cm bs. This suggests that the archaeological deposits within the site have been affected by processes related to soil development and possibly by plowing associated with agricultural activities during the twentieth century.

We recovered three artifacts from 38BK2554. These artifacts include two residual sherds and one unidentifiable nail. Shovel Tests 2.1 and 3.1 produced one residual sherd each; Shovel Test 3.1 produced the cut nail. The two residual sherds are likely Pre-Contact but cannot be associated with a particular cultural subperiod. This component of 38BK2554 is likely the remnants of a temporally occupied, resource procurement camp, similar to those identified at Sites 38BK2552 and 38BK2553. The Post-Contact artifact could be associated with any kind of historic activity during the nineteenth and twentieth century. No historic maps or plats show structures in the vicinity of 38BK2554.

Archaeologists assessed 38BK2554 with respect to Criteria A-D (see Sections 2.5 and 2.6). Site 38BK2554 produced the minimum number of artifacts necessary to be considered an archaeological site and includes two components dating to an unknown Pre-Contact occupation and a nineteenth-twentieth century occupation. These artifacts cannot be distinguished horizontally or vertically across 38BK2554. Therefore, it is unlikely that additional investigation of 38BK2554 will produce important information about the period of use and possible functions presented above. We recommend 38BK2554 not eligible for the NRHP.

4.1.4 Isolate 1

Isolate 1 is a subsurface artifact scatter located in a wooded area in the western portion of the project tract (see Figures 1.1 and 4.4). Isolate 1 is composed of two artifacts, including one Pre-Contact residual sherd (recovered from Shovel Test 2.1) and one Post-Contact unidentifiable wire nail (recovered from Shovel Test 3.1). Investigators excavated 14 shovel tests at 15-meters in and around Isolate 1; both artifacts were recovered 0-30 cm bs. An earthen berm extends across Isolate 1 between Shovel Tests 2.1 and 3.1 (see Figure 4.5). Isolate 1 is not eligible for the NRHP (COSCAPA et al. 2013).

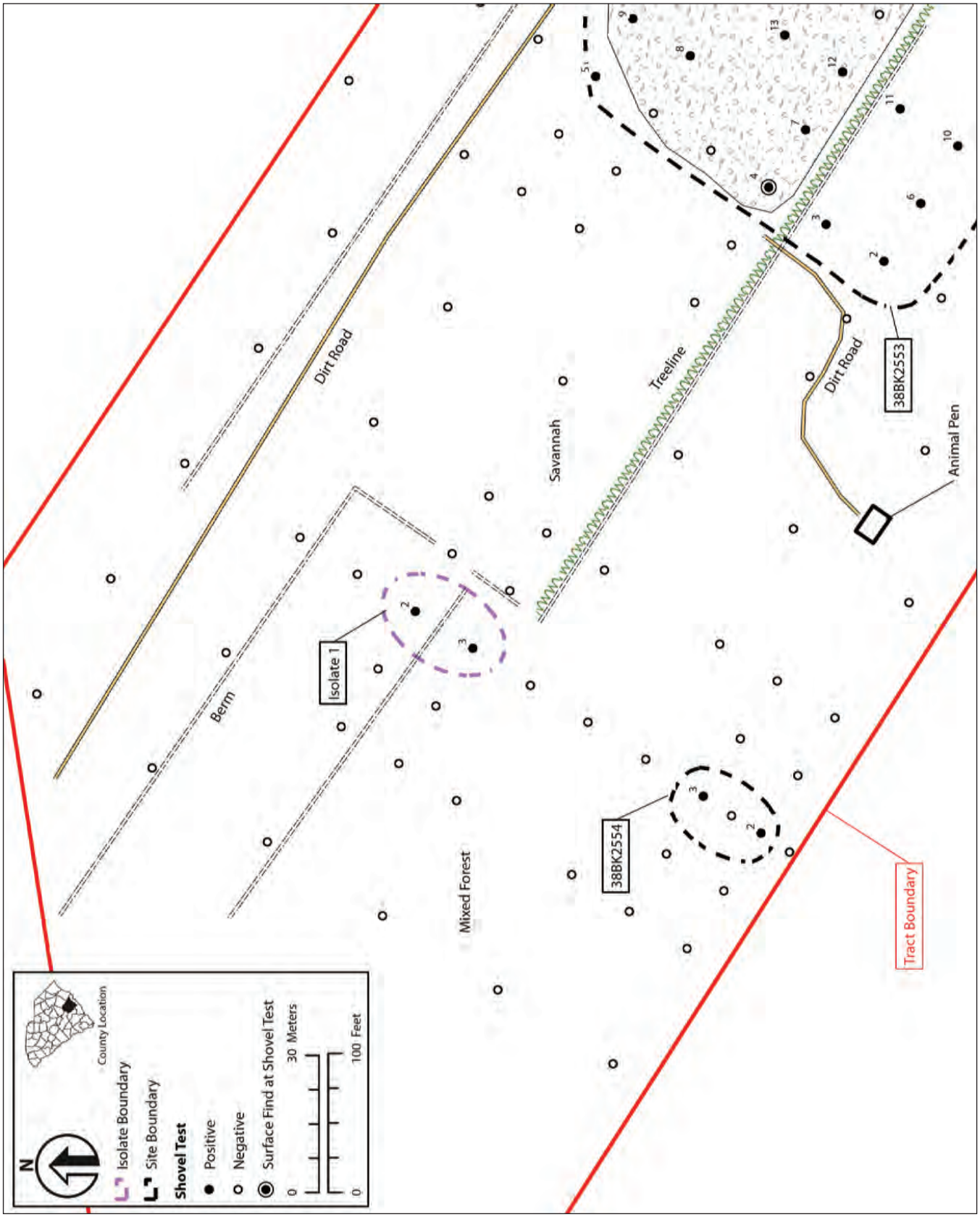

Figure 4.4 Plan of 38BK2554 and Isolate 1.

Figure 4.5 View of 38BK2554 looking grid north (top) and of Isolate 1 looking grid north, showing the berm (bottom).

4.2 Project Summary and Management Recommendations

From September 2-3, 2014, Brockington conducted an archaeological survey of the 32-acre APE of the Cabin Creek Tract. There are no survey-eligible structures within the project tract; therefore, an architectural survey was not necessary. Brockington identified three new archaeological sites (Sites 38BK2552-38BK2554) and one isolated artifact occurrence (Isolate 1). Site 38BK2552 is a surface/subsurface scatter of Pre-Contact ceramic artifacts dating to the Middle/Late Woodland subperiod and Post-Contact architectural and kitchen artifacts dating to the late nineteenth to early twentieth century, and. Site 38BK2553 is a surface/subsurface scatter of Pre-Contact ceramic and lithic scatter dating to the Middle/Late Woodland subperiod and Post-Contact domestic artifacts dating to the mid-nineteenth to early twentieth centuries. Site 38BK2554 is a subsurface scatter of Pre-Contact ceramic artifacts dating to an unknown Pre-Contact subperiod and a Post-Contact architectural artifact dating to the nineteenth to twentieth centuries. Although sites 38BK2552-38BK2554 vary greatly in size, none have the potential to contribute meaningful new data to the current understanding of any of the individual components represented. Therefore, we recommend Sites 38BK2552-38BK2554 and Isolate 1 not eligible for the NRHP. None of these cultural resources require additional management. Development of the project tract will not affect any historic properties.

4

LETTERS OF COORDINATION

Charleston Water System

PO Box B
Charleston, SC 29402
103 St. Philip Street (29403)

(843) 727-6800
www.charlestonwater.com

Board of Commissioners
Thomas B. Pritchard, Chairman
David E. Rivers, Vice Chairman
William E. Koopman, Jr., Commissioner
Mayor Joseph P. Riley, Jr. (Ex-Officio)
Councilmember Dean C. Riegel (Ex-Officio)

Officers
Kin Hill, P.E., Chief Executive Officer
Dorothy Harrison, Chief Administrative Officer
Wesley Ropp, CMA, Chief Financial Officer
Andy Fairey, Chief Operating Officer
Mark Cline, P.E., Capital Projects Officer

8/28/2014

Mr. Chris Donato
Sitecast, LLC
1250 Fairmont Avenue
Mt. Pleasant, SC 29464

Re: Water Availability to TMS #267-00-00-004, 005, 010, 049 - 057, 069 to serve 180 single family residential units and 10,000 sf of commercial units

Dear Mr. Donato,

This letter is to certify our willingness and ability to provide water to the above referenced site in Charleston County, South Carolina. We currently have a 30" water main in the right-of-way of Clements Ferry Rd. that your property may be served from. Please be advised that it may be necessary to loop the proposed mains so that sufficient fire flow demands are met. This review does not supplant any other review as required by governing authorities and municipalities. It will of course be a developer responsibility to ensure there are adequate pressures and quantities on this line to serve this site with domestic water/fire flow and not negatively impact the existing developments. Please be advised any extensions or modification to the infrastructure as well as any additional fire protection will be a developer expense. All fees and costs associated with providing water service to this site will be a developer expense. This letter does not reserve capacity in the Charleston Water System infrastructure and it is incumbent upon the developer or his agent to confirm the availability herein granted past 12 months of this correspondence.

The Charleston Water System certifies the availability of service only insofar as its rights allow. Should access to our existing main/mains be denied by appropriate governing authorities, the Charleston Water System will have no other option than to deny service.

This letter is not to be construed as a letter of acceptance for operation and maintenance from the Department of Health and Environmental Control.

If there are any questions pertaining to this letter, please do not hesitate to call on me at (843) 727-6870.

Sincerely,

Cheryl L. Boyle
Engineering Assistant
Charleston Water System

cc: file

This is an "uncontrolled" copy of a controlled document.

Charleston Water System

PO Box B
Charleston, SC 29402
103 St. Philip Street (29403)

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www.charlestonwater.com

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Dorothy Harrison, Chief Administrative Officer
Wesley Ropp, CMA, Chief Financial Officer
Andy Fairey, Chief Operating Officer
Mark Cline, P.E., Capital Projects Officer

8/28/2014

Mr. Chris Donato
Sitecast, LLC
1250 Fairmont Avenue
Mt. Pleasant, SC 29464

Re: Sewer Availability to TMS #267-00-00-004, 005, 010, 049 - 057, 069 to serve 180 single family residential units and 10,000 sf of ocmmercial units

Dear Mr. Donato,

This letter is to certify our willingness and ability to provide wastewater collection service to the above referenced site in Charleston County, South Carolina. Wastewater collection service to this site may be made available via the existing 24" force main in the right of way of Clements Ferry Rd. Any subdividing of the property subsequent to this correspondence will require a review process of the civil engineering plans to ensure compliance with the Charleston Water System minimum standards. Please be advised that it is the policy of Charleston Water System that the proposed gravity sewer mains be designed and constructed at a depth that will allow future development to tie into the gravity mains. Any extensions and/or modifications to the infrastructure to serve this site will be a developer expense. Please be advised that wastewater impact fees, wastewater tap fees, change-in-use fees, and/or cost to extend fees will be due prior to connection of any Charleston Water System's sewer system. This letter does not reserve capacity in the Charleston Water System infrastructure and it is incumbent upon the developer or his agent to confirm the availability herein granted past 12 months of this correspondence.

The Charleston Water System certifies the availability of service only insofar as its rights allow. Should access to our existing sewer main/mains be denied by appropriate governing authorities, the Charleston Water System will have no other option than to deny service.

This letter is not to be construed as a letter of acceptance for operation and maintenance from the Department of Health and Environmental Control.

If there are any questions pertaining to this letter, please do not hesitate to call on me at (843) 727-6870.

Sincerely,

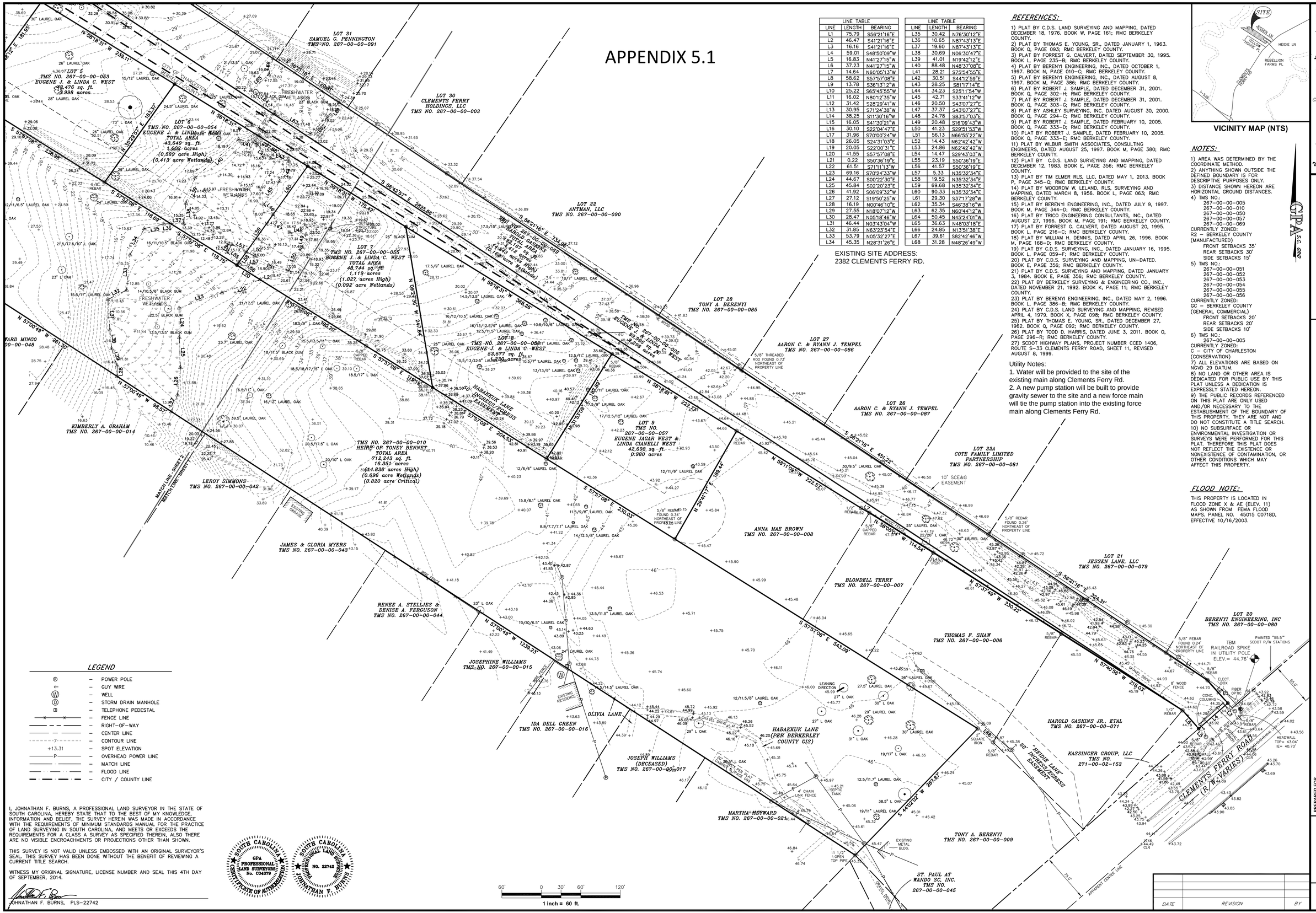
Cheryl L. Boyle
Engineering Assistant
Charleston Water System

cc: file

This is an "uncontrolled" copy of a controlled document.

APPENDIX

APPENDIX 5.1



LINE TABLE		
LINE	LENGTH	BEARING
L1	75.79	S56°21'16"E
L2	46.47	S41°21'16"E
L3	16.16	S41°21'16"E
L4	59.01	S48°50'09"W
L5	16.83	N41°27'15"W
L6	37.23	N41°27'15"W
L7	14.64	N60°05'13"W
L8	58.62	S57°57'08"E
L9	13.78	S36°13'12"W
L10	25.22	S65°45'55"W
L11	16.02	N80°12'35"W
L12	31.42	S28°29'41"W
L13	30.95	S71°24'38"W
L14	38.25	S11°30'16"W
L15	16.05	S41°30'21"W
L16	30.10	S22°20'47"E
L17	31.96	S70°00'24"W
L18	26.05	S24°31'03"E
L19	20.05	S22°00'31"E
L20	41.55	S57°57'08"E
L21	0.22	S50°36'19"E
L22	61.51	S71°11'13"W
L23	69.16	S70°24'33"W
L24	44.67	S00°22'30"E
L25	45.84	S02°20'23"E
L26	41.92	S06°09'32"W
L27	27.12	S19°50'25"W
L28	16.19	N00°46'10"E
L29	27.55	N18°07'12"W
L30	28.47	N05°18'46"W
L31	46.44	N03°43'04"W
L32	31.85	N63°23'54"E
L33	53.79	N05°32'27"E
L34	45.35	N28°31'26"E

LINE TABLE		
LINE	LENGTH	BEARING
L35	30.42	N76°30'12"E
L36	10.65	N87°43'13"E
L37	19.60	N87°43'13"E
L38	30.69	N06°30'47"E
L39	41.01	N19°42'12"E
L40	88.48	N48°37'08"E
L41	28.21	S75°54'55"E
L42	30.51	S44°12'59"E
L43	28.25	S81°17'14"E
L44	34.23	S25°11'54"W
L45	42.71	S33°41'12"W
L46	20.50	S43°07'27"E
L47	37.37	S43°07'27"E
L48	24.78	S83°57'03"E
L49	20.48	S16°09'43"W
L50	41.23	S29°51'53"W
L51	56.13	N66°55'22"W
L52	14.43	N62°42'42"W
L53	24.86	N62°42'42"W
L54	14.47	S29°43'03"W
L55	23.19	S50°36'19"E
L56	41.57	S50°36'19"E
L57	5.33	N35°32'34"E
L58	19.52	N35°32'34"E
L59	69.68	N35°32'34"E
L60	90.33	N35°32'34"E
L61	29.30	S37°17'28"W
L62	35.34	S46°38'16"W
L63	62.35	N60°44'12"W
L64	50.45	N45°24'01"W
L65	36.63	N48°03'18"E
L66	24.85	N13°51'38"E
L67	39.61	S82°42'46"W
L68	31.28	N48°26'49"W

REFERENCES:

1) PLAT BY C.D.S. LAND SURVEYING AND MAPPING, DATED DECEMBER 18, 1976. BOOK W, PAGE 161; RMC BERKELEY COUNTY.
2) PLAT BY THOMAS E. YOUNG, SR., DATED JANUARY 1, 1963. BOOK Q, PAGE 093; RMC BERKELEY COUNTY.
3) PLAT BY FORREST G. CALVERT, DATED SEPTEMBER 30, 1995. BOOK L, PAGE 235–B; RMC BERKELEY COUNTY.
4) PLAT BY BERENYI ENGINEERING, INC., DATED OCTOBER 1, 1997. BOOK N, PAGE 010–C; RMC BERKELEY COUNTY.
5) PLAT BY BERENYI ENGINEERING, INC., DATED AUGUST 8, 1997. BOOK M, PAGE 386; RMC BERKELEY COUNTY.
6) PLAT BY ROBERT J. SAMPLE, DATED DECEMBER 31, 2001. BOOK Q, PAGE 302–H; RMC BERKELEY COUNTY.
7) PLAT BY ROBERT J. SAMPLE, DATED DECEMBER 31, 2001. BOOK Q, PAGE 303–G; RMC BERKELEY COUNTY.
8) PLAT BY ASHLEY SURVEYING, INC. DATED AUGUST 30, 2000. BOOK Q, PAGE 294–C; RMC BERKELEY COUNTY.
9) PLAT BY ROBERT J. SAMPLE, DATED FEBRUARY 10, 2005. BOOK Q, PAGE 333–D; RMC BERKELEY COUNTY.
10) PLAT BY ROBERT J. SAMPLE, DATED FEBRUARY 10, 2005. BOOK Q, PAGE 333–E; RMC BERKELEY COUNTY.
11) PLAT BY WILBUR SMITH ASSOCIATES, CONSULTING ENGINEERS, DATED AUGUST 25, 1997. BOOK M, PAGE 380; RMC BERKELEY COUNTY.
12) PLAT BY C.D.S. LAND SURVEYING AND MAPPING, DATED DECEMBER 12, 1983. BOOK E, PAGE 356; RMC BERKELEY COUNTY.
13) PLAT BY TIM ELMER RLS, LLC, DATED MAY 1, 2013. BOOK P, PAGE 345–Q; RMC BERKELEY COUNTY.
14) PLAT BY WOODROW W. LELAND, RLS, SURVEYING AND MAPPING, DATED MARCH 8, 1956. BOOK L, PAGE 063; RMC BERKELEY COUNTY.
15) PLAT BY BERENYI ENGINEERING, INC., DATED JULY 9, 1997. BOOK M, PAGE 344–D; RMC BERKELEY COUNTY.
16) PLAT BY TRICO ENGINEERING CONSULTANTS, INC., DATED AUGUST 27, 1996. BOOK M, PAGE 191; RMC BERKELEY COUNTY.
17) PLAT BY FORREST G. CALVERT, DATED AUGUST 20, 1995. BOOK L, PAGE 216–C; RMC BERKELEY COUNTY.
18) PLAT BY WILLIAM H. DENNIS, DATED APRIL 26, 1996. BOOK M, PAGE 168–D; RMC BERKELEY COUNTY.
19) PLAT BY C.D.S. SURVEYING, INC., DATED JANUARY 16, 1995. BOOK L, PAGE 059–F; RMC BERKELEY COUNTY.
20) PLAT BY C.D.S. SURVEYING AND MAPPING, UN–DATED. BOOK E, PAGE 356; RMC BERKELEY COUNTY.
21) PLAT BY C.D.S. SURVEYING AND MAPPING, DATED JANUARY 3, 1984. BOOK E, PAGE 356; RMC BERKELEY COUNTY.
22) PLAT BY BERKELEY SURVEYING & ENGINEERING CO., INC., DATED NOVEMBER 21, 1992. BOOK K, PAGE 11; RMC BERKELEY COUNTY.
23) PLAT BY BERENYI ENGINEERING, INC., DATED MAY 2, 1996. BOOK L, PAGE 386–B; RMC BERKELEY COUNTY.
24) PLAT BY C.D.S. LAND SURVEYING AND MAPPING, REVISED APRIL 4, 1979. BOOK X, PAGE 098; RMC BERKELEY COUNTY.
25) PLAT BY THOMAS E. YOUNG, SR., DATED DECEMBER 27, 1962. BOOK Q, PAGE 092; RMC BERKELEY COUNTY.
26) PLAT BY TODD D. HARRIS, DATED JUNE 3, 2011. BOOK O, PAGE 296–R; RMC BERKELEY COUNTY.
27) SCDOT HIGHWAY PLANS, PROJECT NUMBER CCED 1406, ROUTE S–33 CLEMENTS FERRY ROAD, SHEET 11, REVISED AUGUST 8, 1999.

Utility Notes:
1. Water will be provided to the site of the existing main along Clements Ferry Rd.
2. A new pump station will be built to provide gravity sewer to the site and a new force main will tie the pump station into the existing force main along Clements Ferry Rd.

VICINITY MAP (NTS)

NOTES:

1) AREA WAS DETERMINED BY THE COORDINATE METHOD.
2) ANYTHING SHOWN OUTSIDE THE DEFINED BOUNDARY IS FOR DESCRIPTIVE PURPOSES ONLY.
3) DISTANCE SHOWN HEREON ARE HORIZONTAL GROUND DISTANCES.
4) TMS NO.:
267–00–00–005
267–00–00–010
267–00–00–050
267–00–00–057
267–00–00–069
CURRENTLY ZONED:
R2 – BERKELEY COUNTY
(MANUFACTURED)
FRONT SETBACKS 35'
REAR SETBACKS 30'
SIDE SETBACKS 15'
5) TMS NO.:
267–00–00–051
267–00–00–052
267–00–00–053
267–00–00–054
267–00–00–055
267–00–00–056
CURRENTLY ZONED:
GC – BERKELEY COUNTY
(GENERAL COMMERCIAL)
FRONT SETBACKS 20'
REAR SETBACKS 20'
SIDE SETBACKS 10'
6) TMS NO.:
267–00–00–005
CURRENTLY ZONED:
C – CITY OF CHARLESTON
(CONSERVATION)
7) ALL ELEVATIONS ARE BASED ON NGVD 29 DATUM.
8) NO LAND OR OTHER AREA IS DEDICATED FOR PUBLIC USE BY THIS PLAT UNLESS A DEDICATION IS EXPRESSLY STATED HEREON.
9) THE PUBLIC RECORDS REFERENCED ON THIS PLAT ARE ONLY USED AND/OR NECESSARY TO THE ESTABLISHMENT OF THE BOUNDARY OF THIS PROPERTY. THEY ARE NOT AND DO NOT CONSTITUTE A TITLE SEARCH.
10) NO SUBSURFACE OR ENVIRONMENTAL INVESTIGATION OR SURVEYS WERE PERFORMED FOR THIS PLAT. THEREFORE THIS PLAT DOES NOT REFLECT THE EXISTENCE OR NONEXISTENCE OF CONTAMINATION, OR OTHER CONDITIONS WHICH MAY AFFECT THIS PROPERTY.

FLOOD NOTE:

THIS PROPERTY IS LOCATED IN FLOOD ZONE X & AE (ELEV. 11) AS SHOWN FROM FEMA FLOOD MAPS, PANEL NO. 45015 C0718D, EFFECTIVE 10/16/2003.

LEGEND

Ⓟ	–	POWER POLE
←	–	GUY WIRE
Ⓦ	–	WELL
Ⓓ	–	STORM DRAIN MANHOLE
▥	–	TELEPHONE PEDESTAL
x x	–	FENCE LINE
	–	RIGHT–OF–WAY
	–	CENTER LINE
7	–	CONTOUR LINE
+13.31	–	SPOT ELEVATION
P	–	OVERHEAD POWER LINE
	–	MATCH LINE
	–	FLOOD LINE
	–	CITY / COUNTY LINE

I, JOHNATHAN F. BURNS, A PROFESSIONAL LAND SURVEYOR IN THE STATE OF SOUTH CAROLINA, HEREBY STATE THAT TO THE BEST OF MY KNOWLEDGE, INFORMATION AND BELIEF, THE SURVEY HEREIN WAS MADE IN ACCORDANCE WITH THE REQUIREMENTS OF MINIMUM STANDARDS MANUAL FOR THE PRACTICE OF LAND SURVEYING IN SOUTH CAROLINA, AND MEETS OR EXCEEDS THE REQUIREMENTS FOR A CLASS A SURVEY AS SPECIFIED THEREIN, ALSO THERE ARE NO VISIBLE ENCROACHMENTS OR PROJECTIONS OTHER THAN SHOWN.

THIS SURVEY IS NOT VALID UNLESS EMBOSSED WITH AN ORIGINAL SURVEYOR'S SEAL. THIS SURVEY HAS BEEN DONE WITHOUT THE BENEFIT OF REVIEWING A CURRENT TITLE SEARCH.

WITNESS MY ORIGINAL SIGNATURE, LICENSE NUMBER AND SEAL THIS 4TH DAY OF SEPTEMBER, 2014.

JOHNATHAN F. BURNS, PLS–22742

SOUTH CAROLINA GPA PROFESSIONAL LAND SURVEYORS No. C04379 CERTIFICATE OF AUTHORIZATION

SOUTH CAROLINA PROFESSIONAL LAND SURVEYOR NO. 22742 JOHNATHAN F. BURNS

GPA
PROFESSIONAL LAND SURVEYORS
237 OLD SUMMERVILLE RD UNIT H
SUMMERVILLE SC 29483
OFFICE (843) 285–2424
GPA OF CHARLOTTE, INC.
605 PHILLIP DAVIS DRIVE
CHARLOTTE NC 28236–6916
OFFICE (704) 335–8600
GPA OF RALEIGH, INC.
333 WADE AVENUE
RALEIGH NC 27605
CHARLESTON SC 29492
OFFICE (843) 971–9099
FAX (843) 971–9992
"Integrity Without Boundaries"
www.gpaland.com

SCALE 1"=60'
FLD. BK. PG.
JOB NO. 145090
DATE 09/04/2014
DRAWN BY SWM
CHECKED BY JFB

PREPARED FOR
MIDDLE STREET PARNERS, LLC

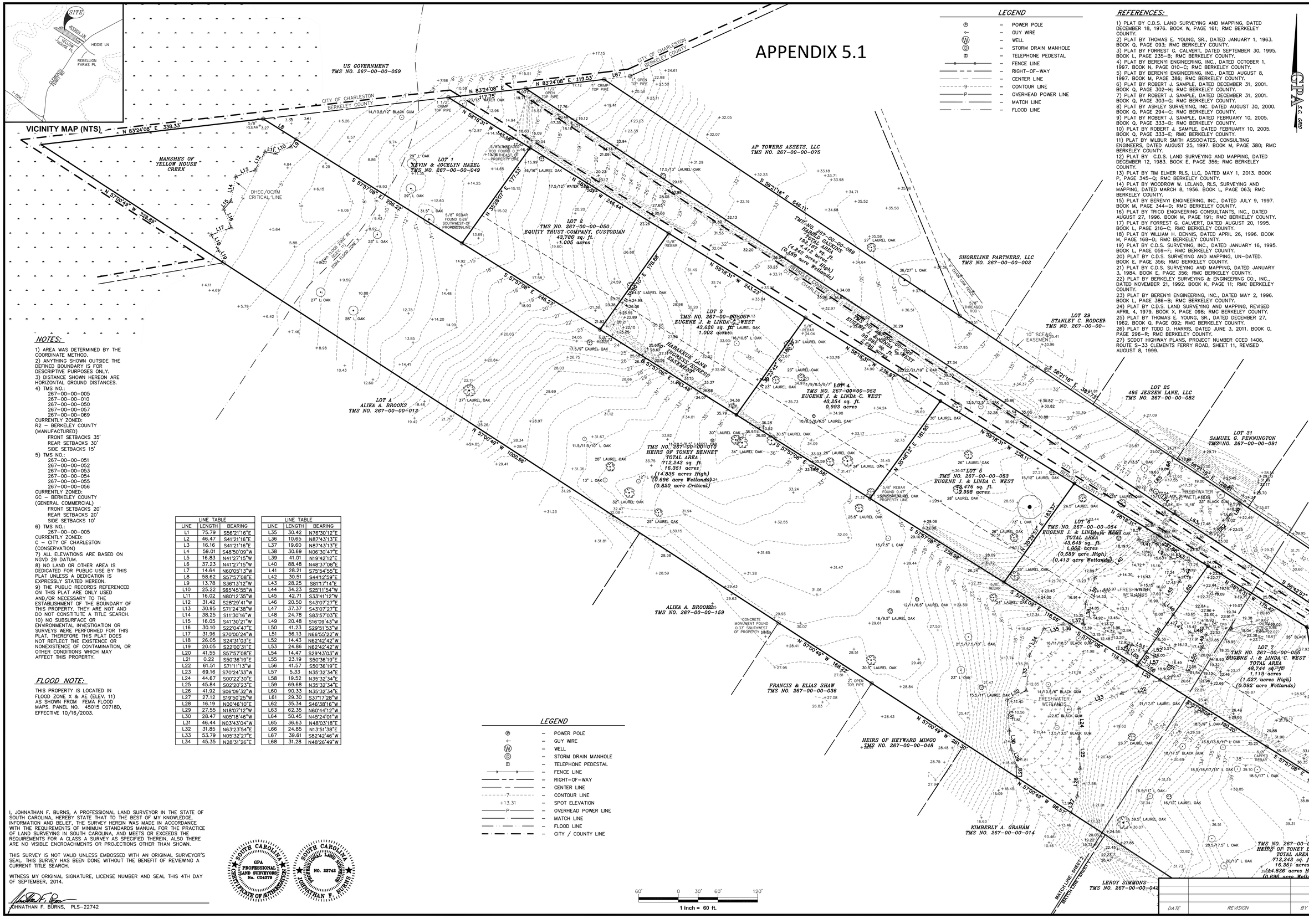
SHOWING TMS NO.: 267-00-00-004, 005, 010, 050 - 057 & 069
OWNED BY
BENNETT TONEY HEIRS, EQUITY TRUST COMPANY, EUGENE J. WEST & HAROLD GASKINS
LOCATED IN
CITY OF CHARLESTON & BERKELEY COUNTY, SOUTH CAROLINA

TOPOGRAPHIC / TREE SURVEY

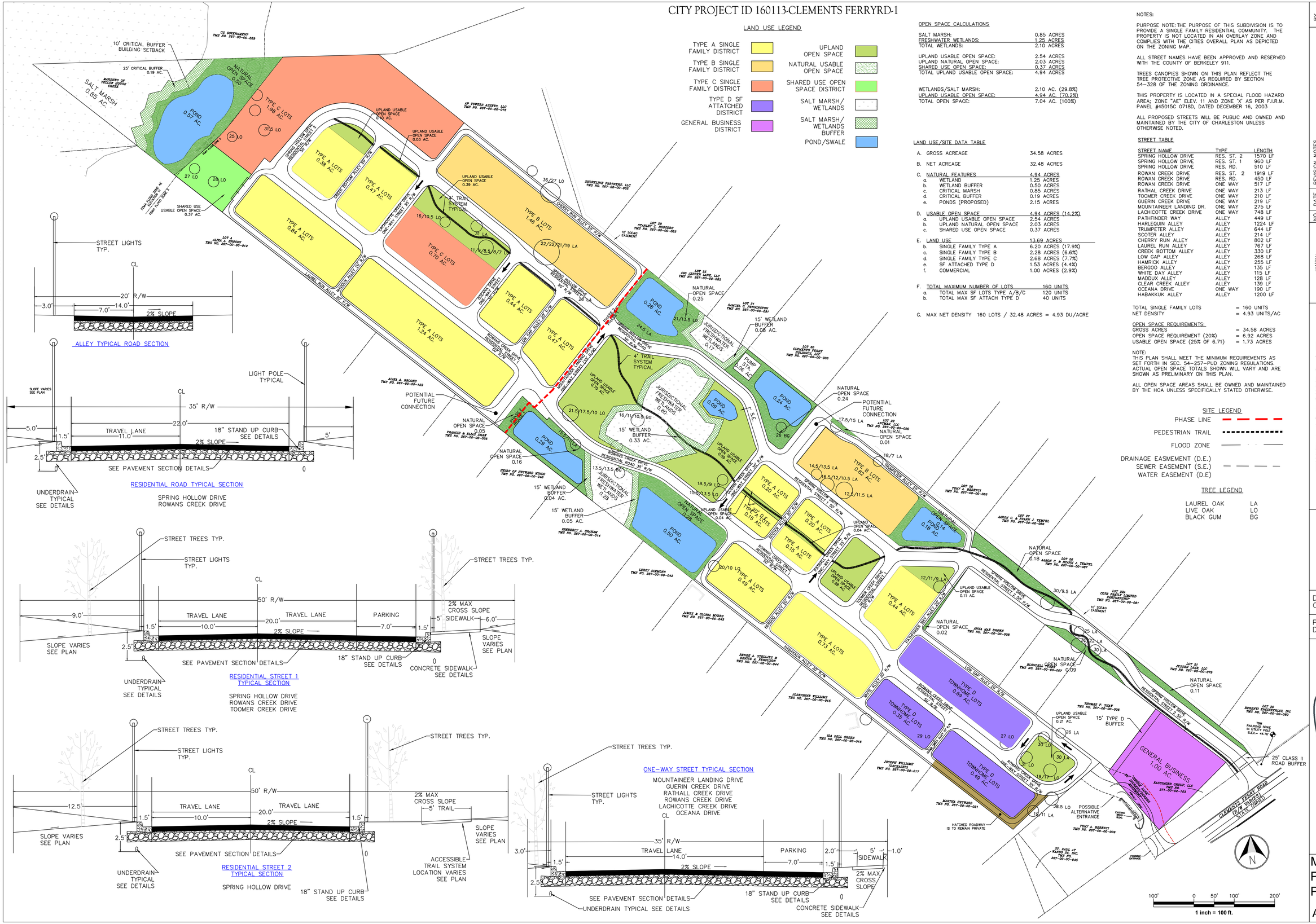
DATE	REVISION	BY

SHEET 1 OF 2

APPENDIX 5.1


VICINITY MAP (NTS)
SITE
JESSEN LN
YELLOW HOUSE PL
HEIDIE LN
REBELLION FARMS PL
CLEMENTS FERRY RD
I-526
US GOVERNMENT
TMS NO. 267-00-00-059
CITY OF CHARLESTON
BERKELEY COUNTY
MARSHES OF YELLOW HOUSE CREEK
DHEC/OCRM CRITICAL LINE
LOT 1
KEVIN & JOCELYN HAZEL
TMS NO. 267-00-00-049
LOT 2
TMS NO. 267-00-00-050
EQUITY TRUST COMPANY, CUSTODIAN
43,786 sq. ft.
1.005 acres
LOT 3
TMS NO. 267-00-00-051
EUGENE J. & LINDA C. WEST
43,626 sq. ft.
1.002 acres
LOT 4
TMS NO. 267-00-00-052
EUGENE J. & LINDA C. WEST
43,254 sq. ft.
0.993 acres
LOT 5
TMS NO. 267-00-00-053
EUGENE J. & LINDA C. WEST
43,476 sq. ft.
0.998 acres
LOT 6
TMS NO. 267-00-00-054
EUGENE J. & LINDA C. WEST
TOTAL AREA
43,649 sq. ft.
1.002 acres
(0.589 acre High)
(0.413 acre Wetlands)
LOT 7
TMS NO. 267-00-00-055
EUGENE J. & LINDA C. WEST
TOTAL AREA
46,744 sq. ft.
1.119 acres
(1.027 acres High)
(0.092 acre Wetlands)
LOT A
ALIKA A. BROOKS
TMS NO. 267-00-00-012
ALIKA A. BROOKS
TMS NO. 267-00-00-159
AP TOWERS ASSETS, LLC
TMS NO. 267-00-00-075
SHORELINE PARTNERS, LLC
TMS NO. 267-00-00-002
LOT 29
STANLEY C. RODGER
LOT 25
495 JESSEN LANE, LLC
TMS NO. 267-00-00-082
LOT 31
SAMUEL C. PENNINGTON
TMS NO. 267-00-00-091
HARAKKUH LANE
(NON-EXCLUSIVE ACCESS EASEMENT)
TMS NO. 267-00-00-070
HEIRS OF TONEY BENNET
TOTAL AREA
712,243 sq. ft.
16.351 acres
(14.836 acres High)
(0.696 acre Wetlands)
(0.820 acre Critical)
FRANCIS & ELIAS SHAW
TMS NO. 267-00-00-036
HEIRS OF HEYWARD MINGO
TMS NO. 267-00-00-048
KIMBERLY A. GRAHAM
TMS NO. 267-00-00-014
LEROY SIMMONS
TMS NO. 267-00-00-042
FRESHWATER WETLANDS
MATCH LINE - SHEET 2
MATCH LINE - SHEET 1
N 83°24'08" E 338.33'
N 83°24'08" E 117.75'
N 83°24'08" E 119.53'
N 58°18'31" W 345.16'
N 58°18'31" W 243.23'
N 58°18'31" W 235.99'
N 58°18'31" W 238.11'
N 58°18'31" W 175.42'
N 57°00'49" W 320.89'
N 57°00'49" W 1000.96'
N 57°00'49" W 168.22'
N 57°00'49" W 261.30'
N 57°00'49" W 99.52'
S 57°57'08" E 298.22'
S 57°57'08" E 248.23'
S 57°57'08" E 238.98'
S 57°57'08" E 118.49'
S 57°57'08" E 118.75'
S 57°57'08" E 190.20'
S 56°21'16" E 846.11'
S 56°21'16" E 389.74'
S 56°42'57" E
N 35°28'07" E 177.53'
N 35°23'42" E 178.88'
N 35°23'42" E 198.93'
N 35°54'12" E 187.93'
N 39°16'31" W
S 39°16'31" E 120.91'
S 39°16'31" E 190.20'
S 35°28'57" E 165.37'
S 35°23'42" E 178.88'
S 35°23'42" E 198.93'
S 35°54'12" E 187.93'

CITY PROJECT ID 160113-CLEMENTS FERRYRD-1



OPEN SPACE CALCULATIONS

SALT MARSH:	0.85 ACRES
FRESHWATER WETLANDS:	1.25 ACRES
TOTAL WETLANDS:	2.10 ACRES
UPLAND USABLE OPEN SPACE:	2.54 ACRES
UPLAND NATURAL OPEN SPACE:	2.03 ACRES
SHARED USE OPEN SPACE:	0.37 ACRES
TOTAL UPLAND USABLE OPEN SPACE:	4.94 ACRES
WETLANDS/SALT MARSH:	2.10 AC. (29.8%)
UPLAND USABLE OPEN SPACE:	4.94 AC. (70.2%)
TOTAL OPEN SPACE:	7.04 AC. (100%)

LAND USE/SITE DATA TABLE

A.	GROSS ACREAGE	34.58 ACRES
B.	NET ACREAGE	32.48 ACRES
C.	NATURAL FEATURES	4.94 ACRES
a.	WETLAND	1.25 ACRES
b.	WETLAND BUFFER	0.50 ACRES
c.	CRITICAL MARSH	0.85 ACRES
d.	CRITICAL BUFFER	0.19 ACRES
e.	PONDS (PROPOSED)	2.15 ACRES
D.	USABLE OPEN SPACE	4.94 ACRES (14.2%)
a.	UPLAND USABLE OPEN SPACE	2.54 ACRES
b.	UPLAND NATURAL OPEN SPACE	2.03 ACRES
c.	SHARED USE OPEN SPACE	0.37 ACRES
E.	LAND USE	13.69 ACRES
b.	SINGLE FAMILY TYPE A	6.20 ACRES (17.9%)
c.	SINGLE FAMILY TYPE B	2.28 ACRES (6.6%)
d.	SINGLE FAMILY TYPE C	2.68 ACRES (7.7%)
e.	SF ATTACHED TYPE D	1.53 ACRES (4.4%)
f.	COMMERCIAL	1.00 ACRES (2.9%)
F.	TOTAL MAXIMUM NUMBER OF LOTS	160 UNITS
a.	TOTAL MAX SF LOTS TYPE A/B/C	120 UNITS
b.	TOTAL MAX SF ATTACH TYPE D	40 UNITS

G. MAX NET DENSITY 160 LOTS / 32.48 ACRES = 4.93 DU/ACRE

NOTES:

PURPOSE NOTE: THE PURPOSE OF THIS SUBDIVISION IS TO PROVIDE A SINGLE FAMILY RESIDENTIAL COMMUNITY. THE PROPERTY IS NOT LOCATED IN AN OVERLAY ZONE AND COMPLIES WITH THE CITIES OVERALL PLAN AS DEPICTED ON THE ZONING MAP.

ALL STREET NAMES HAVE BEEN APPROVED AND RESERVED WITH THE COUNTY OF BERKELEY 911.

TREES CANOPIES SHOWN ON THIS PLAN REFLECT THE TREE PROTECTIVE ZONE AS REQUIRED BY SECTION 54-328 OF THE ZONING ORDINANCE.

THIS PROPERTY IS LOCATED IN A SPECIAL FLOOD HAZARD AREA; ZONE "AE" ELEV. 11 AND ZONE "X" AS PER F.I.R.M. PANEL #45015C 0718D, DATED DECEMBER 16, 2003

ALL PROPOSED STREETS WILL BE PUBLIC AND OWNED AND MAINTAINED BY THE CITY OF CHARLESTON UNLESS OTHERWISE NOTED.

STREET TABLE

STREET NAME	TYPE	LENGTH
SPRING HOLLOW DRIVE	RES. ST. 2	1570 LF
SPRING HOLLOW DRIVE	RES. ST. 1	960 LF
SPRING HOLLOW DRIVE	RES. RD.	510 LF
ROWAN CREEK DRIVE	RES. ST. 2	1919 LF
ROWAN CREEK DRIVE	RES. RD.	450 LF
ROWAN CREEK DRIVE	ONE WAY	517 LF
RATHAL CREEK DRIVE	ONE WAY	213 LF
TOOMER CREEK DRIVE	ONE WAY	210 LF
GUERIN CREEK DRIVE	ONE WAY	219 LF
MOUNTAINEER LANDING DR.	ONE WAY	275 LF
LACHICOTTE CREEK DRIVE	ONE WAY	748 LF
PATHFINDER WAY	ALLEY	449 LF
HARLEQUIN ALLEY	ALLEY	1224 LF
TRUMPETER ALLEY	ALLEY	644 LF
SCOTER ALLEY	ALLEY	214 LF
CHERRY RUN ALLEY	ALLEY	802 LF
LAUREL RUN ALLEY	ALLEY	767 LF
CREEK BOTTOM ALLEY	ALLEY	330 LF
LOW GAP ALLEY	ALLEY	268 LF
HAMRICK ALLEY	ALLEY	255 LF
BERGOO ALLEY	ALLEY	135 LF
WHITE DAY ALLEY	ALLEY	115 LF
MADDUX ALLEY	ALLEY	128 LF
CLEAR CREEK ALLEY	ALLEY	139 LF
OCEANA DRIVE	ONE WAY	190 LF
HABAKKUK ALLEY	ALLEY	1200 LF

TOTAL SINGLE FAMILY LOTS	= 160 UNITS
NET DENSITY	= 4.93 UNITS/AC

OPEN SPACE REQUIREMENTS:

GROSS ACRES	= 34.58 ACRES
OPEN SPACE REQUIREMENT (20%)	= 6.92 ACRES
USABLE OPEN SPACE (25% OF 6.71)	= 1.73 ACRES

NOTE:
THIS PLAN SHALL MEET THE MINIMUM REQUIREMENTS AS SET FORTH IN SEC. 54-257-PUD ZONING REGULATIONS. ACTUAL OPEN SPACE TOTALS SHOWN WILL VARY AND ARE SHOWN AS PRELIMINARY ON THIS PLAN.

ALL OPEN SPACE AREAS SHALL BE OWNED AND MAINTAINED BY THE HOA UNLESS SPECIFICALLY STATED OTHERWISE.

SITE LEGEND

PHASE LINE
PEDESTRIAN TRAIL
FLOOD ZONE
DRAINAGE EASEMENT (D.E.)
SEWER EASEMENT (S.E.)
WATER EASEMENT (D.E)

TREE LEGEND

LAUREL OAK	LA
LIVE OAK	LO
BLACK GUM	BG

NO.	DATE	REVISION NOTES	BY

SOUTH CAROLINA CERTIFICATE OF AUTHORIZATION
SITECAST,LLC
No. C04442
No. C0263

THE MARSHES AT COOPER RIVER

TRC SUBMITTAL DATE: 10.13.14
MIDDLE STREET PARTNERS, LLC
CITY OF CHARLESTON, SC

SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER NO. 26983
CHRISTOPHER D. CRAWFORD

DRAWN BY: JAC/CDD
CHECKED BY: JAC/CDD

PROJECT: 7120.00
DATE: 10.13.14

SITECAST
ENGINEERING PLANNING CONSULTING
1250 Fairmont Avenue
Mt. Pleasant, SC 29464
Tel (843) 224-4264
www.sitecastsc.com

MASTER PLAN & PHASE PLAN

APPENDIX 5.2

THIS DRAWING SHALL NOT BE REPRODUCED IN ANY MANNER OR USED FOR ANY PURPOSE WITHOUT WRITTEN PERMISSION.

COPYRIGHT © SITECAST, L.L.C.

THIS DRAWING SHALL NOT BE REPRODUCED IN ANY MANNER OR USED FOR ANY PURPOSE WITHOUT WRITTEN PERMISSION.

OPEN SPACE CALCULATIONS

SALT MARSH:	0.85 ACRES
FRESHWATER WETLANDS:	1.25 ACRES
TOTAL WETLANDS:	2.10 ACRES
UPLAND USABLE OPEN SPACE:	2.54 ACRES
UPLAND NATURAL OPEN SPACE:	2.04 ACRES
SHARED USE OPEN SPACE:	0.37 ACRES
TOTAL UPLAND USABLE OPEN SPACE:	4.95 ACRES
WETLANDS/SALT MARSH:	2.10 AC. (29.8%)
UPLAND USABLE OPEN SPACE:	4.95 AC. (70.2%)
TOTAL OPEN SPACE:	7.05 AC. (100%)

TOTAL SINGLE FAMILY LOTS	= 160 UNITS
NET DENSITY	= 4.93 UNITS/AC

OPEN SPACE REQUIREMENTS:

GROSS ACRES	= 34.58 ACRES
OPEN SPACE REQUIREMENT (20%)	= 6.92 ACRES
USABLE OPEN SPACE (25% OF 6.71)	= 1.73 ACRES

NOTE:
THIS PLAN SHALL MEET THE MINIMUM REQUIREMENTS AS SET FORTH IN SEC. 54-257-PUD ZONING REGULATIONS. ACTUAL OPEN SPACE TOTALS SHOWN WILL VARY AND ARE SHOWN AS PRELIMINARY ON THIS PLAN.

ALL OPEN SPACE AREAS SHALL BE OWNED AND MAINTAINED BY THE HOA UNLESS SPECIFICALLY STATED OTHERWISE.

NO.	DATE	REVISION NOTES	BY

SOUTH CAROLINA CERTIFICATE OF AUTHORIZATION
SITECAST,LLC
No. C04442
No. C0263

THE MARSHES AT COOPER RIVER

TRC SUBMITTAL DATE: 10.13.14
MIDDLE STREET PARTNERS, LLC
CITY OF CHARLESTON, SC

SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER NO. 26983
CHRISTOPHER D. CODDINGTON

DRAWN BY: JAC/CDD
CHECKED BY: JAC/CDD

PROJECT: 7120.00
DATE: 10.13.14

SITECAST
ENGINEERING PLANNING CONSULTING
1250 Fairmont Avenue
Mt. Pleasant, SC 29464
Tel (843) 224-4264
www.sitecastsc.com

TRAIL & OPEN SPACE PLAN

APPENDIX 5.3

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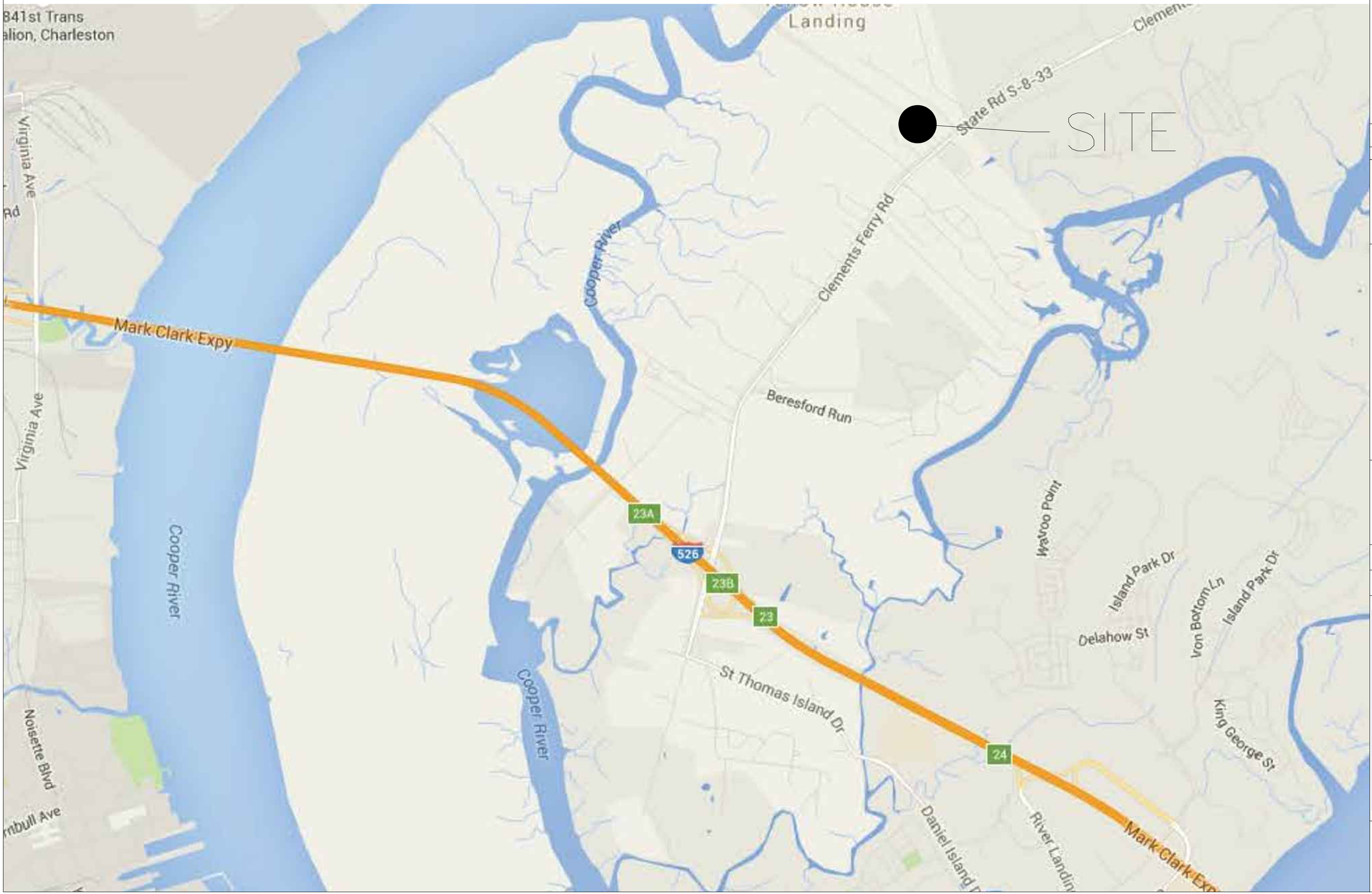

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SITECAST,LLC
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LOCATION MAP

APPENDIX 5.4

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0' 50' 100' 200'
GRAPHIC SCALE: 1" = 100'

N

NO.	DATE	REVISION NOTES	BY

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AERIAL PHOTOGRAPH

APPENDIX 5.5

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