



# Environmental Impact Assessment

FLATWOOD SOLAR ELECTRIC POWER PLANT  
2301 CORINTH ROAD  
MONCURE, CHATHAM COUNTY, NORTH  
CAROLINA  
PILOT PROJECT 2671

PREPARED FOR:

STRATA SOLAR, LLC  
50101 GOVERNORS DRIVE, SUITE 280  
CHAPEL HILL, NORTH CAROLINA 27517

PREPARED BY:

PILOT ENVIRONMENTAL, INC.  
PO BOX 128  
KERNERSVILLE, NORTH CAROLINA 27285

APRIL 30, 2018  
PILOT PROJECT 2671.1



May 1, 2018

Mr. Jackson Naftel  
Strata Solar, LLC  
50101 Governors Drive, Suite 280  
Chapel Hill, North Carolina 27517

Reference: Flatwood Solar Electric Power Plant  
Approximate 46.8 Acre Tract  
2301 Corinth Road  
Moncure, Chatham County, North Carolina  
Pilot Project 2671.1

Dear Mr. Naftel:

Pilot Environmental, Inc. (Pilot) is pleased to submit this Environmental Impact Assessment (EIA) report for the approximate 46.8 acre tract located at 2301 Corinth Road in Moncure, Chatham County, North Carolina. The assessment was performed in general accordance with Chatham County Environmental Impact Assessment Requirements. If you have any questions regarding our assessment of the subject site or our conclusions, please do not hesitate to call us at 336.310.46.827.

Sincerely,

A handwritten signature in black ink, appearing to read "D S B", written over a horizontal line.

David S. Brame, PWS  
Senior Project Manager

A handwritten signature in black ink, appearing to read "Bradley S. Luckey", written over a horizontal line.

Bradley S. Luckey, PWS  
Senior Project Manager

## **Proposed Project Description and Need:**

### **1. Describe the overall project in detail, including all proposed phases:**

This project proposes the development of a solar electric power plant. The project has been designed to avoid and minimize impacts to the environment to the extent possible. The Flatwood Solar Farm is sited on an approximate 46.8 acre tract located at 2301 Corinth Road in Moncure, Chatham County, North Carolina. The site contains the parcel identified by the Chatham County Geographical Information System (GIS) as Parcel Identification Number (PIN) 5751. The site contains undeveloped, wooded land. Power lines and associated easements cross the southern and northern portions of the site. Jurisdictional wetlands are located on the central and southern portions of the site.

The proposed solar farm will be constructed within one phase. No additional phases are planned. The proposed solar farm will consist of single axis tracking solar panels, dual inverter/transformer areas and a chain link fence along the perimeter of the array. The project will also include temporary laydown and parking areas, a 24 ft. wide soil access drive, and a permanent driveway apron along Corinth Road. In order to construct the solar farm, clearing and grubbing of the wooded land will be required. There will be no disturbance of the wetlands or associated 50 foot wooded buffers. The buffers will be clearly marked in the field before any clearing begins. The panels will be mounted to a racking system, which is supported by a series of posts. The posts will be driven directly into the existing ground without excavation. Several small trenches (2' wide, 36" deep) will be installed for underground wiring of the system. All areas downslope of disturbed areas will be protected by silt fence. There will be no mass grading of the site, change in topography and alteration of native drainage patterns or ponding as a result of this project. At the completion of construction, the entire site will be seeded and mulched to establish a stand of grass that will be maintained as such.

The anticipated construction schedule based on other similar projects is estimated to be three to six months. Energy generated by the farm will be distributed to Duke Energy Progress, LLC (DEP) customers.

### **2. Provide a project location map showing surrounding areas:**

See attached Site Plan and Drawings.

### **3. Provide a project site plan showing existing and proposed facilities:**

See attached Site Plan.

### **4. Describe how this project fits into larger plans or connects with adjacent projects:**

This project is stand-alone and not associated with or connected to larger or adjacent projects. However, the project is compatible with neighboring properties as it will be used in a farming nature and for clean energy production. The surrounding properties contain a poultry farm, undeveloped wooded land and an RV camp ground. The existing Progress Energy – Cape Fear Plant, several associated utility lines and substations and the Brick Haven Mine are located on nearby properties to the northeast and southwest of the site.

**5. List and describe any public facilities or public benefits provided by the project:**

The project is in response to a regional need for an affordable, reliable, renewable and firm (non-fluctuating) supply of electric power at competitive rates to DEP customers. This project will provide a clean source of renewable energy with no emissions to Chatham County residents. It will increase the tax base without much demand on public services. It is also considered a low impact development that will not alter the pre-development stormwater runoff characteristics of the site.

**6. Discuss the land acreage to be disturbed during each phase:**

The site is approximately 46.8 acres. Clearing and grubbing of the site will be required for approximately 30 acres. There will be no disturbance of approximately 17 acres that consists of wetlands and associated vegetative buffers, boundary setbacks and existing utility easements. The remaining approximate 30 acres will be cleared in preparation for the installation of solar panels and associated equipment, an access drive, perimeter security fencing and laydown yard. The panels will be mounted to tracker racks, which are supported by a series of posts. The posts will be driven directly into the existing ground. All areas downslope of disturbed areas will be protected by silt fence. There will be no mass grading of the site, change in topography, alteration of drainage patterns or ponding of water as a result of this project. At the completion of construction, the entire site will be seeded and mulched to establish permanent herbaceous vegetation that will be routinely maintained.

**7. List square footage and height (in stories) of new buildings:**

No new buildings are proposed.

**8. Describe proposed uses of all buildings and proposed facilities:**

The new facilities will provide solar generated electric power to be sold to DEP. The power will be transmitted via an existing three-phase power line on the eastern side of the site.

**9. Show number of parking spaces in parking lots and decks:**

No permanent parking is proposed.

**10. Show areas to be cleared, graded, filled, paved, and landscaped:**

See attached Site Plan.

**11. Show connections to existing utility and sewer lines or new utilities:**

No water and sewer will be needed. Interconnection to the electrical grid is shown on the Site Plan on the southern side of the property tying to the existing three-phase power line.

**12. Show wastewater management systems on a map:**

No wastewater management systems are proposed.

**13. Show proposed areas of impervious and semi-pervious surfaces:**

The proposed impervious surfaces include the area of rack posts driven directly into the ground, the inverter areas and the proposed driveway apron. The overall proposed impervious on site is very low (0.9%). Calculations are included on the attached site plan. Logging mats are used temporarily during construction as needed and removed following completion of construction activities.

**14. Show and describe any proposed stormwater control devices:**

This project is considered a low impact development that will not alter the pre-development stormwater runoff characteristics of the site. A Sediment and Erosion Control Plan will be provided for review and approval by Chatham County prior to beginning construction. Areas have been reserved for potential sediment basins as required.

### **Alternatives Analysis:**

- 1. Discuss and compare all reasonable development alternatives (site selection, facility layout, utilities, stormwater management, construction methods, open space preservation, and any other pertinent alternative considerations).**

The site location was selected based on available interconnectivity, proximity to existing power systems, parcel size, availability, slope, aspect and regional renewable energy requirements and needs. The North Carolina Utilities Commission has approved the application of Flatwood Farm, LLC, for a certificate of public convenience and necessity at this location. Additionally, an interconnection agreement and purchase agreement have been completed for this site. A detailed site evaluation has been performed to determine design possibilities and limitations. The nature of this type of development requires access to high power utility lines and unobstructed land free of shading for solar panels. The alternative to the proposed project is a no-build alternative.

- 2. Discuss how the preferred alternative was selected and its benefits relative to other alternatives (including a no-build alternative, if applicable).**

Given the site suitability for the installation of a solar farm, the proposed development of this site would provide more environmental benefit than other types of development, or a no-build alternative. The no-build alternative is not responsive to the needs of DEP in fulfilling the demands of its customers and its requirements for affordable, reliable and renewable energy. Furthermore, if the project is not developed, the environmental benefits of adding emission free electrical generation to the utilities system will be reduced by the absence of this project. Other traditional generation technologies utilize large amounts of water and typically have high levels of greenhouse gas emissions (coal-fired and combined cycle natural gas facilities).

## **Existing Environment and Project Impacts:**

For each resource topic below, describe:

**A. Existing resources and conditions:**

The site is approximately 46.8 acres. The site contains undeveloped, wooded land and regularly maintained overhead power line easements located on the northern and southern portions of the site. Jurisdictional wetlands are located on the central and southern portions of the site. Neither streams nor ponds are located on the site. The wooded land consists of an approximate 20 year old stand of planted loblolly pines. The stand has been recently thinned. Scattered hardwoods consisting predominately of sweet gum are located within the wooded area.

**B. Anticipated impacts (short-term construction) impacts, long-term operation impacts, and indirect or secondary impacts):**

Tree removal will be required to complete the project. There will be no impacts or clearing of wetland areas or associated buffers. The long term operation impact will be a clean, reliable and renewable energy source for the area. Indirect or secondary impacts are not anticipated by the project.

**C. Discuss how potential impacts to the resource will be avoided and minimized through alternative selection, design strategies, construction methods, and long-term maintenance procedures:**

Tree removal has been minimized to the extent possible. There will be no tree removal to forested wetlands located on the site. Additionally, a fifty foot buffer will be left undisturbed adjacent to the wetlands. Landscape buffers will be planted around the northern, southern and eastern boundaries. Soil and erosion control BMPs, as required by the North Carolina Division of Land Resources, Land Quality Section, to control and reduce the amount of sediment that could potentially enter the wetlands and off-site surface waters, will be utilized during construction activities. Upon completion of construction activities, the site will be seeded and mulched to prevent post construction erosion.

**D. For unavoidable impacts, describe whether any compensatory mitigation is planned or required:**

There is no compensatory mitigation planned or required.

## 1. Geography:

- **Discuss the geographic setting, geology, and topography of the project area and adjacent areas:**

The natural geography of the area is rolling. The site is generally sloping to the southwest and drains toward tributaries to the Cape Fear River.

- **Provide a topographic map of the property and surrounding area, use the county GIS website topography (2' contour interval) data at a scale appropriate for the project size, i.e., 1" = 100', etc.):**

See attached Drawing 3.

- **Identify any 100-year floodplains (FEMA Special Flood Hazard Areas) on or adjacent to the property. If present, provide an appropriate-scale map of these flood-prone areas defined by the NC Flood Mapping Program:**

The site is located in Zone X. See attached Drawing 4.

- **Show areas that will be graded or filled, and provide estimated cut/fill volumes:**

Minimal cut/fill is anticipated. The site will maintain natural grades and drainage.

- **If the project includes pond or dam work, show areas that will be flooded:**

This project does not include a pond or dam work.

## 2. Soils and Prime Farmlands:

- **Identify dominant soils in the project area (County GIS or NRCS website) and show on a map.**

See attached Drawing 5 and Drawing 5A. The USDA Web Soil Survey of Chatham County (Drawing 2) identifies the following mapping units on the site: Creedmoor-Green Level Complex (CrC), Mattaponi fine sandy loam (MaB) and Peawick fine sandy loam (PeB). The Creedmoor series consists of moderately well to somewhat poorly drained, very slowly permeable soils that occur on nearly level to steep uplands. The Green Level series consists of somewhat poorly drained, moderately permeable soils that occur on interstream divides, ridges and side slopes. The Mattaponi series consists of moderately well to well drained, moderately slowly permeable soils that occur on uplands. The Peawick series consists of moderately well drained, very slowly permeable soils that occur on treads and risers of stream terraces. The soil mapping units are not identified on the Chatham County Hydric Soils List.



- **Discuss any soil constraints (fill, wetland soils, septic suitability, slopes, etc.), and indicate those areas on a map.**

See attached Drawing 6. Wetland areas will be avoided.

- **Describe any soil disturbance or contamination expected as a result of this project.**

No contamination is expected.

- **If contamination is expected, discuss containment plans and procedures:**

No contamination is expected.

- **If soil will be relocated, specify the number of square yards/feet to be moved, and its relocation site:**

No soil will be removed or added to the site.

- **Describe runoff management plans for the project.**

The project will not alter the pre-development stormwater runoff characteristics of the site. A Sediment and Erosion Control Plan will be provided for review and approval by Chatham County prior to beginning construction. Areas have been reserved for potential sediment basins as required.

- **If soil disturbance is proposed, describe the off-site impacts expected from this activity.**

There will be no off-site impact from soil disturbance.

- **Provide a map of any prime or unique farmland soils in the project or service areas, and include references used to make this determination.**

Prime farmland soils are located on the site. Peawick fine sandy loam (PeB) and Mattaponi fine sandy loam (MaB) are identified by the USDA Soil Survey of Chatham County, as Prime Farm Land. Unique farmland is not located on the site.

- **Describe impacts to prime or unique farmland soils, including acreage estimates of lost farmland soils and retained farmland soils.**

There will be approximately 26 acres of mapped prime farmland soils, currently containing wooded land, developed with solar panels. Approximately 10 acres of mapped prime farmland soils will remain as wetlands and forested land. There are no impacts to unique farmlands.

### 3. Land Use:

- **Provide a map showing current use of land on the site and surrounding properties.**

See attached Drawing 2.

- **Discuss how the current land use fits into the surrounding area (conservation, development, ecological function, etc).**

The surrounding properties contain a mixture of land uses including undeveloped, wooded land, an RV camp ground and poultry farm. The existing Progress Energy – Cape Fear Plant, several associated utility lines and substations and the Brick Haven Mine are located on nearby properties to the northeast and southwest of the site. The project is compatible with neighboring properties as it will be used for purposes similar to surrounding properties with power production and as a farm. The facility will not produce noise, air or light pollution that could impact the adjacent RV camp. Similar forest resources as those lost to the solar development will remain on adjoining properties, promoting continued ecological function in the area.

- **Provide the current zoning of the project site and the surrounding area.**

The current site is zoned R-1. The surrounding area is also R-1, with the exception of the adjacent property to the south across Corinth Road, which is IND-H.

- **Discuss how the proposed uses fit into the intended land use of the area (conservation, development, ecological function, quality of life).**

The proposed project fits into the area as it is a mixed use area. The solar farm will not alter the spirit of the surrounding land uses. A solar farm is compatible with agricultural farms as they are used for similar purposes, compatible with industrial areas as they supply needed power and with residential areas (or a camp ground) as they are low impact in terms of light, noise and air pollution.

- **Indicate whether zoning or local land use plans will need to be changed after project completion.**

Land use will not need to be altered at the completion of this site work.

#### 4. Wetlands:

- **Indicate whether wetlands are present; describe the basis for this determination and the identity of the person who made the determination.**

Jurisdictional wetlands are located on the site. Neither streams nor ponds are located on the site. Stream and wetland information is based on a wetland delineation conducted by Mr. Michael Brame of Pilot Environmental, Inc. and verified in the field by Mr. Andrew Williams with the US Army Corps of Engineers, on July 25, 2017.

- **Show identified wetlands on a map, and describe all relevant details, such as acreage, types, delineation, function, etc.).**

Two palustrine forested wetlands are located on the site. See attached Drawing 6.

- **If wetlands are to be filled, specify the number of acres that will be affected.**

Wetland impacts are not proposed.

- **List all required permits and permitting agencies.**

- Erosion Control Permit from Chatham County
- Stormwater Permit from Chatham County
- Building Permit from Chatham County
- Driveway Permit from NCDOT

- **If any diversions/additions/withdrawals of surface water will affect wetlands, describe those activities.**

Collected stormwater will be released outside of buffered areas so that flow will diffuse before discharge to wetlands.

#### 5. Public Lands and Scenic, Recreational, and State Natural Areas:

- **Provide a map of County or municipal parks, scenic, recreational, or state natural areas (SNHAs, State or Federal Forests, etc.) on or adjacent to the site/project area.**

Parks, scenic, recreational or state designated natural areas are not located on or adjacent to the site.

**6. Areas of Archaeological or Historical Value:**

- **Discuss any archaeological or historical studies of the project location; provide relevant references.**

The NCSHPO - HPO GIS website does not identify historic properties and/or eligible for listing properties on the site or on properties within one-half mile of the site. The NCSHPO responded to a North Carolina State Clearinghouse Department of Administration Intergovernmental Review request in a letter dated August 25, 2016. According to the response letter, the NCSHPO has conducted a review of the project and are aware of no historic resources which would be affected by the project. The NCSHPO has no comment on the project as proposed.

- **Describe and identify on a map any structures (i.e., walls, buildings, etc.) on the site and provide estimated ages of those structures.**

No structures are located on the site.

- **Describe all impacts to any archaeological or historical resources in the proposed project area.**

N/A

- **Describe plans for demolishing or rebuilding any structures.**

N/A

- **Provide photographs of any significant resources, including all structures older than 50-years.**

N/A

- **Provide relevant correspondence with the Chatham County Historical Association and NC SHPO.**

The NCSHPO responded to a North Carolina State Clearinghouse Department of Administration Intergovernmental Review request in a letter dated August 25, 2016. The NCSHPO has no comment on the project as proposed. A copy of the letter is included as an attachment.

**7. Air Quality:**

- **Describe the project's impacts on ambient air quality.**

The project is anticipated to comply with the State Implementation Plans for achieving and maintaining National Ambient Air Quality Standards for criteria pollutants. Air permits from the North Carolina Division of Air Quality are not required for the construction or long term maintenance of the solar farm. Negligible impacts to air quality are anticipated from construction vehicle emissions and dust generated during construction activities. However, following construction activities, air emissions will not be generated during normal and long term operation of the solar farm.

- **Describe plans for any open burning during or after construction.**

N/A

- **Indicate the number of proposed parking spaces, if applicable.**

N/A

- **Describe whether the project will increase odor levels, or the likelihood of odor complaints.**

N/A

- **Provide a copy of any required traffic studies.**

N/A

**8. Noise Levels:**

- **Discuss current noise levels; use a benchmark, if possible.**

Current noise levels from vehicular traffic, a railroad track, farming and mining operations exist in the area. The noise levels are typical to a light industrial/residential area.

- **Describe any increases in noise levels expected from this project.**

Noise levels will temporarily increase during construction activities only. There will be no increase in noise levels during long term operation of the solar farm. The noise levels during construction will be typical of heavy trucks and grading equipment.

- **Specify the distance at which the increased noise will be heard.**

Noise levels are not expected to exceed fifty decibels when measured along property lines with adjoining residential use.

- **Discuss whether surrounding properties will be affected by noise levels.**

Surrounding properties will not be significantly affected by noise levels. Negligible and temporary affects could occur at the RV camp located on adjacent property. The nearest occupied portion of the property is approximately 400 feet from the site. The increased noise will be limited to working hours during the 3 to 6 months required to construct the project and are not expected to be more significant than the nearby mining and railroad operations.

- **If commercial uses are proposed, specify the hours of operation.**

N/A

#### 9. **Light Levels:**

- **Describe lighting plans for the project, including how lighting will impact adjacent residents and wildlife.**

No light plans are proposed.

#### 10. **Surface and Groundwater Resources (discuss separately):**

- **Identify and provide a map of surface waters in the project area. Describe groundwater (aquifers) in the project area.**

There are no surface waters on the site. A pond is located on adjacent property north of the site. The pond is located up-gradient and therefore will not be impacted by the project. Based on a review of the USGS topographic map, the site drains to the southwest toward an unnamed tributary to the Cape Fear River. The pond and tributary are shown on the Drawings 1 and 2.

Groundwater movement is expected to be from higher to lower elevations. As such, the presumed direction of groundwater flow is to the southwest across the site. It should be noted that groundwater will not be affected as no proposed drilling, excavation below the water table or dewatering will be required.

- **Include names, locations, classifications, and use support ratings for surface waters.**

There are no surface waters located on the site. The site drains to the southwest to an unnamed tributary to the Cape Fear River. The NCDEQ-DWR has designated the Cape Fear River as WS IV waters at the location that receives site waters/drainage.

- **Specify and show on a map the river basin in which the project is located.**

See the attached Drawing 7.

- **Discuss any known groundwater quality issues.**

N/A

- **Discuss drinking water sources.**

N/A

#### **11. Fish and Aquatic Habitats:**

- **Describe fish and aquatic habitats in and adjacent to the site/project area.**

A pond is located on adjacent property east of the site. The pond is located up-gradient from the site. Other surface waters are not located on or immediately adjacent to the site.

- **Discuss impacts to fish and aquatic life and their habitats, including a map showing those habitats.**

There will be no impacts to fish, aquatic life or their habitats.

#### **12. Wildlife and Natural Vegetation:**

- **Describe and provide a map of natural community types on and adjacent to the site/project area.**

See attached Drawing 2. The site contains wooded land consisting of planted loblolly pines. Similar forest communities are located to the north and east of the site.

- **List the species of dominant plants and animals observed on the site that typify those communities.**

The wooded land consists of an approximate 20 year old stand of planted loblolly pines. The stand has been thinned within the past year. Scattered hardwoods consisting predominately of sweet gum are located within the wooded area. The majority of the wooded areas contain moderately dense mid and under-story vegetation consisting of native and invasive species. Broom-sedge, Chinese privet, Japanese honeysuckle, microstegium, golden-rod, ragweed, blackberry, rush species, netted chain-fern and other low-lying species were observed in the understory.

- **Evaluate and discuss whether suitable habitat exists for rare, threatened, and/or endangered species, as described by the NC Natural Heritage Program.**

Pilot conducted a site visit and evaluated the potential for the presence of threatened and endangered species on the site. Based on our evaluation, potential habitat was not observed. Additionally, Pilot submitted a letter to the USFWS to solicit comments pertaining to the proposed project. The USFWS responded to our request in a letter dated May 18, 2017. The letter response indicates that the USFWS concurs with our opinion that the proposed action of developing the site with a solar farm is not likely to adversely affect any federally listed endangered or threatened species, their formally designated habitat, or species currently proposed for listing under the Act at the site. A copy of the letter is included as an attachment.

- **If wildlife will be displaced, discuss any limitations of adjacent areas to support them.**

Adjoining properties to the north and west contain forested land similar to that on the site and sufficient to support wildlife that could be displaced from the site. The properties to the south and east do not contain suitable habitat for displaced wildlife. Additional nearby forested land suitable for supporting displaced wildlife is abundant in the area.

- **Identify, list, and describe the distribution of the invasive species present on the site. Consult the NC Botanical Garden's Web page, "Plants to Avoid in the Southeast US" for a list of invasive species common to the region.**

Chinese privet, Japanese honeysuckle and microstegium.

- **If forests will be cleared, discuss the extent of planned deforestation and specify the forestry methods to be used, including BMPs.**

The site will be timbered using a track mounted feller-buncher and rubber tired skidders. A bulldozer and dump trucks will be used to grub or remove the stumps. Buffers will be marked clearly in the field to establish the cutting limits including the vegetative buffer to be left adjacent to the wetlands.

### **13. Hazardous Materials:**

- **List all hazardous materials to be stored or introduced during construction or operation.**

There will be no hazardous materials stored or introduced on site.

- **For each hazardous material, other than in de minimis quantities or for routine housekeeping purposes, describe the procedures to be used to ensure their proper management, storage, and disposal.**

There will be no hazardous materials stored or introduced on site.



**Topographic Map:**

**A topographic map with contours at vertical intervals of not more than five (5) feet, at the same scale as the First Plat, for all major subdivisions unless not deemed necessary by staff. Staff may require a topographic map for other subdivisions if necessary for adequate review. The date and method of preparing the topographic survey shall be stated.**

See attached Site Plan. Additional drawings can be provided upon request.

**Soils Evaluation:**

**A soils evaluation shall be performed by a certified/licensed soil scientist or persons approved by the Health Department to perform such evaluations or investigations. Such evaluations shall be performed unless a central sewage disposal system is proposed. A soils map showing the location of suitable soils and a letter of explanation shall be submitted to perform such evaluations or investigations.**

No wastewater treatment, septic systems or drinking water wells are proposed for this project.

**Utility Plans:**

**Plans of proposed utility layouts for sewer and water where applicable, showing feasible connections to the existing utility system, or any proposed utility system.**

No new sewer or water connections or changes are proposed with this project.

**U.S. Army Corps of Engineers and Division of Water Quality Permits or Certifications:**

**Indicate if US Army Corps of Engineers and/or NC Division of Water Quality permits or certifications will be required. These permits and/or certifications may be required when development improvements may involve the placement of excavated material or fill material into streams, creeks, lakes, or wetlands. If any of these permits or certifications will be required, copies of the approved permits shall be submitted at time of Construction Plan submittal.**

No USACE permits are required for this project.

## Exhibits and Attachments

### Drawings

Drawing 1	USGS Topographic Map
Drawing 2	2017 Aerial Photograph
Drawing 3	Contour Map
Drawing 4	FEMA FIRM
Drawing 5	Web Soil Map
Drawing 5A	Published Soil Map
Drawing 6	Wetland Map
Drawing 7	River Basin Map

*Zoning Site Plan* (Sheet C2.01), April 17, 2018

United States Department of the Interior, Fish and Wildlife Service, letter dated March 31, 2017,  
prepared by Pete Benjamin, Field Supervisor

North Carolina Department of Natural and Cultural Resources, State Historic Preservation Office, letter  
dated February 25, 2015.





**Drawing 1**  
 USGS Topographic Map  
 Moncure, NC Quadrangle  
 Scale: 1" = 2,000'



**USGS Topographic Map**  
 Flatwood Solar Farm  
 Corinth Road  
 Moncure, Chatham County, NC  
 Pilot Project 2671.1





**LEGEND**

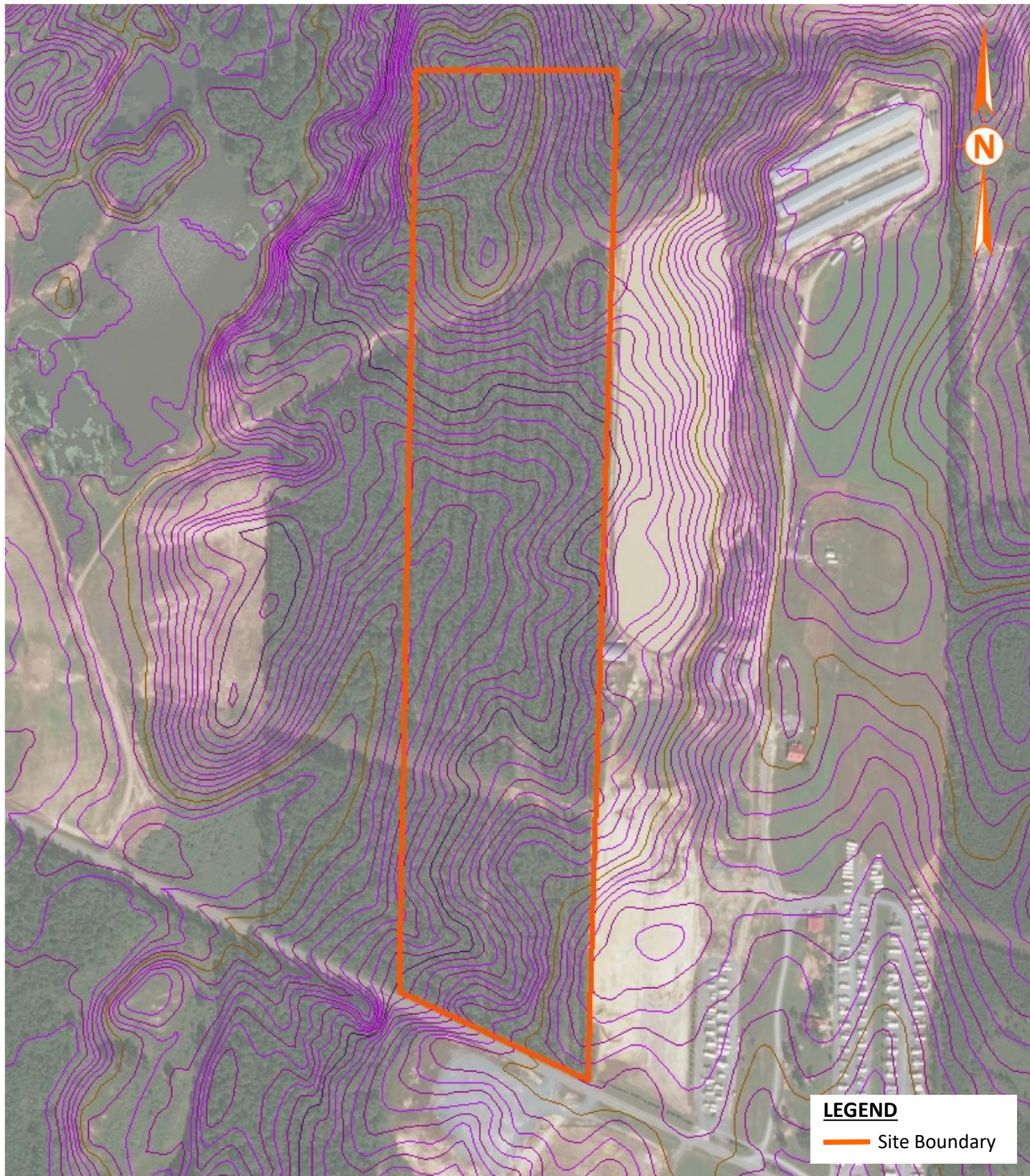
- Site Boundary
- 1. Brick Haven Mine
- 2. Poultry Houses
- 3. Dicken's RV Park

**Drawing 2**  
Google Earth  
Interactive Mapping Program  
Scale: 1" = 600'



**2017 Aerial Photograph**  
Flatwood Solar Farm  
Corinth Road  
Moncure, Chatham County, NC  
Pilot Project 2671.1





**Drawing 3**

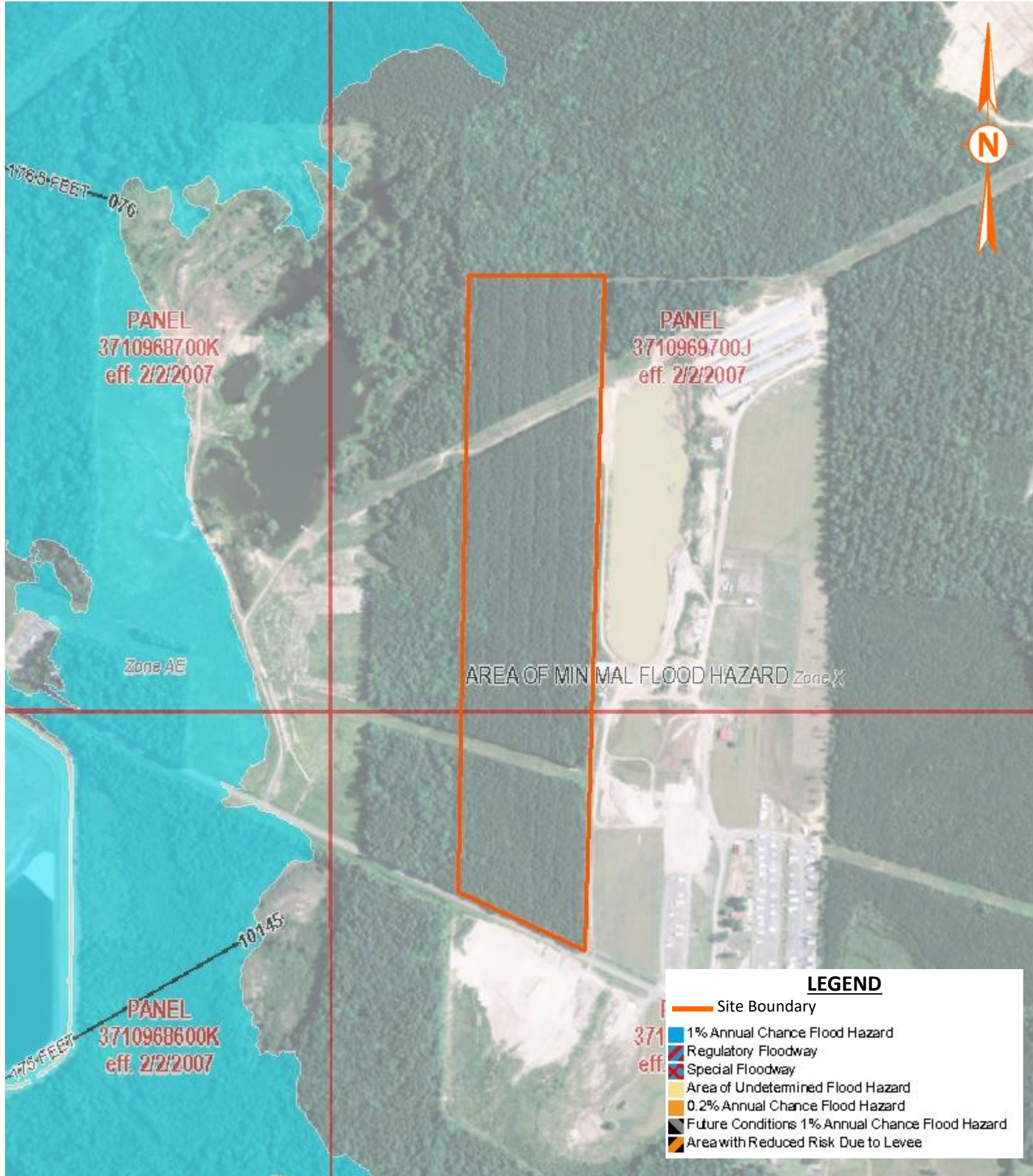
Aerial Imagery from Esri  
2 Ft Lidar from NC Onemap  
Scale: 1" = 400'



**Contour Map**

Flatwood Solar Farm  
Corinth Road  
Moncure, Chatham County, NC  
Pilot Project 2671.1





**Drawing 4**

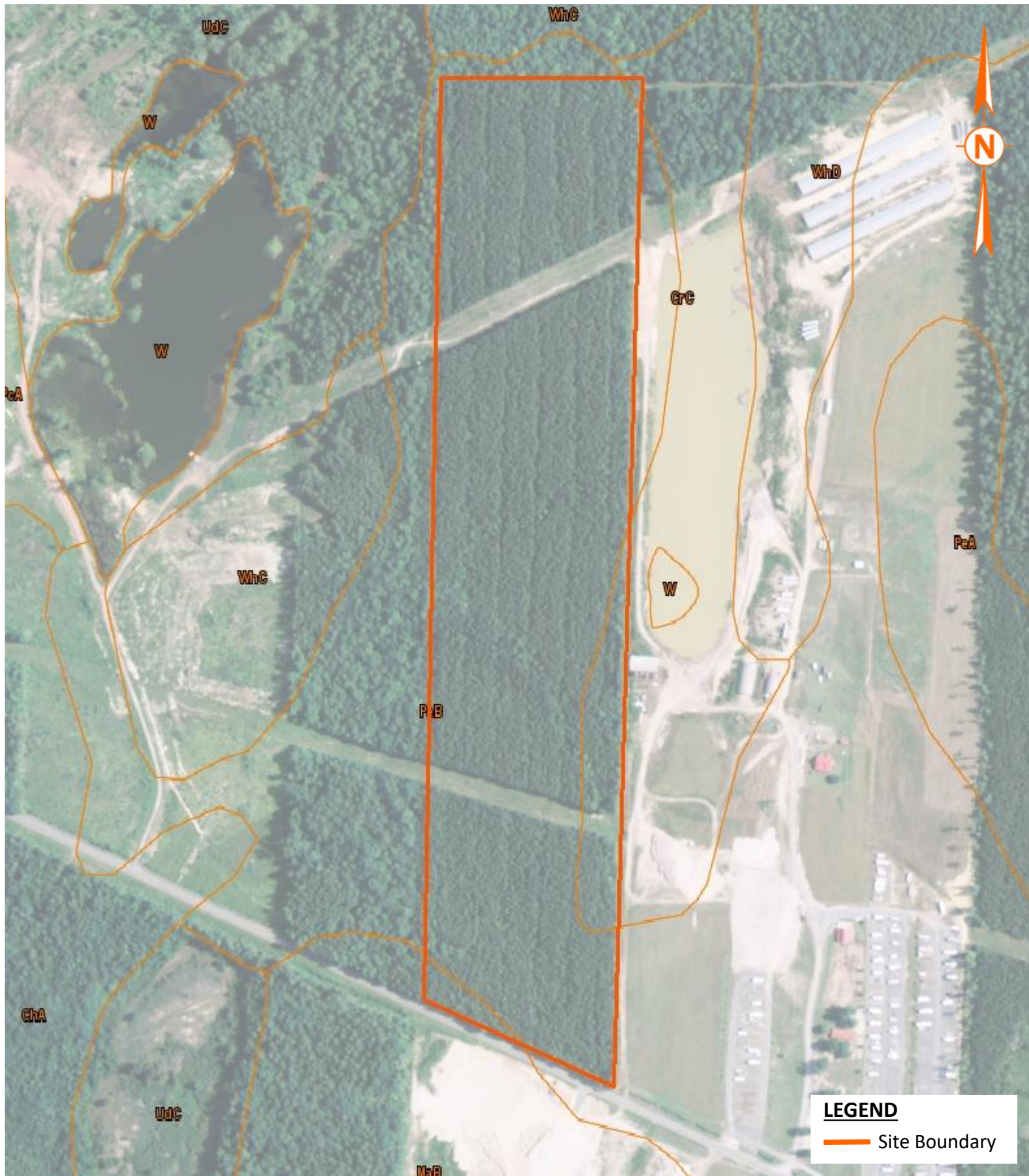
FEMA FIRM Panels  
3710560100J, 3710560000J,  
3710561100J and 3710561000J,  
Effective 11.5.08  
Scale: 1" = 600'



**FEMA FIRM**

Flatwood Solar Farm  
Corinth Road  
Moncure, Chatham County, NC  
Pilot Project 2671.1



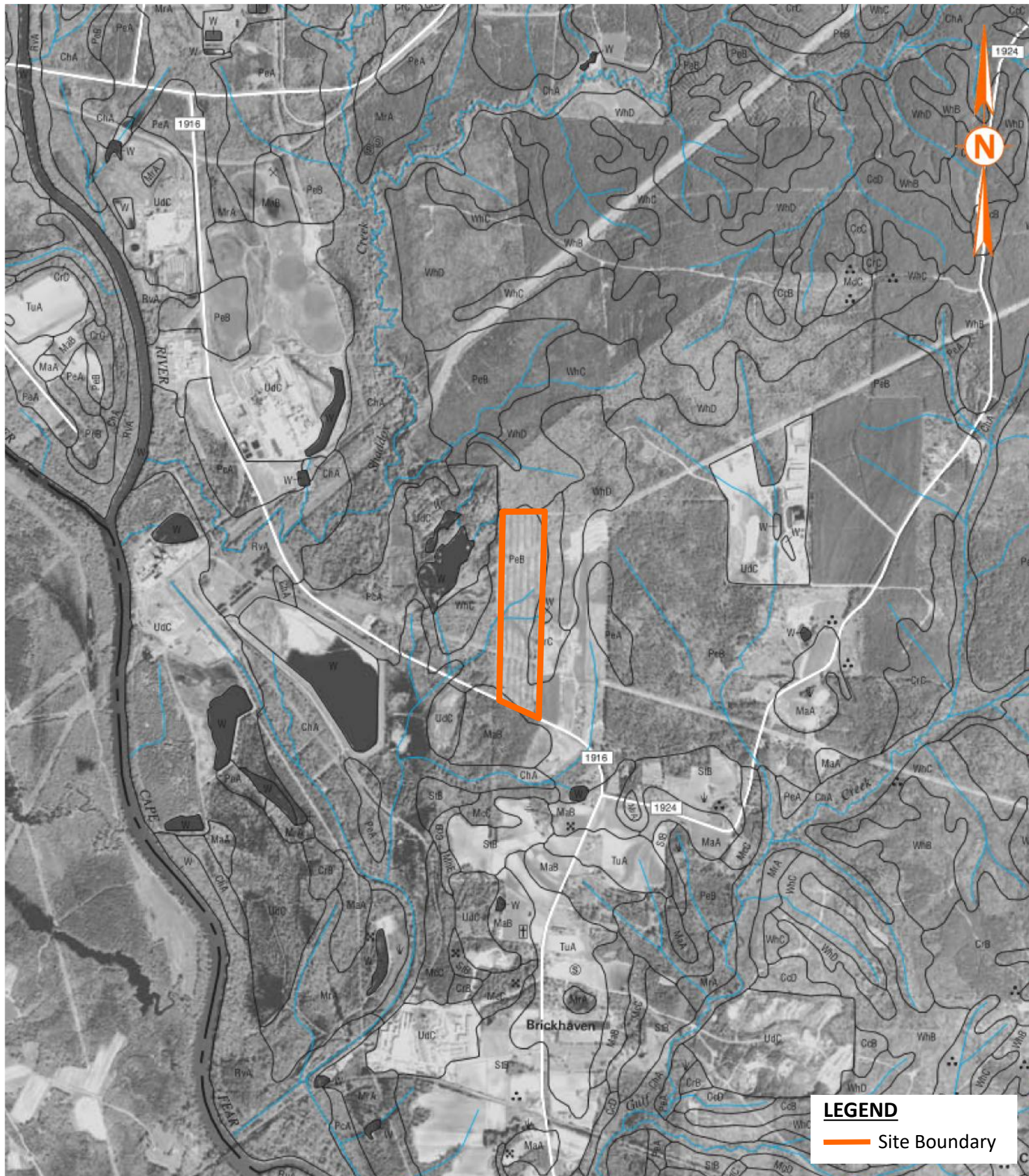


**Drawing 5**  
 USDA Web Soil Survey  
 of Cabarrus County NC  
 Scale: 1" = 400'



**Web Soil Map**  
 Flatwood Solar Farm  
 Corinth Road  
 Moncure, Chatham County, NC  
 Pilot Project 2671.1





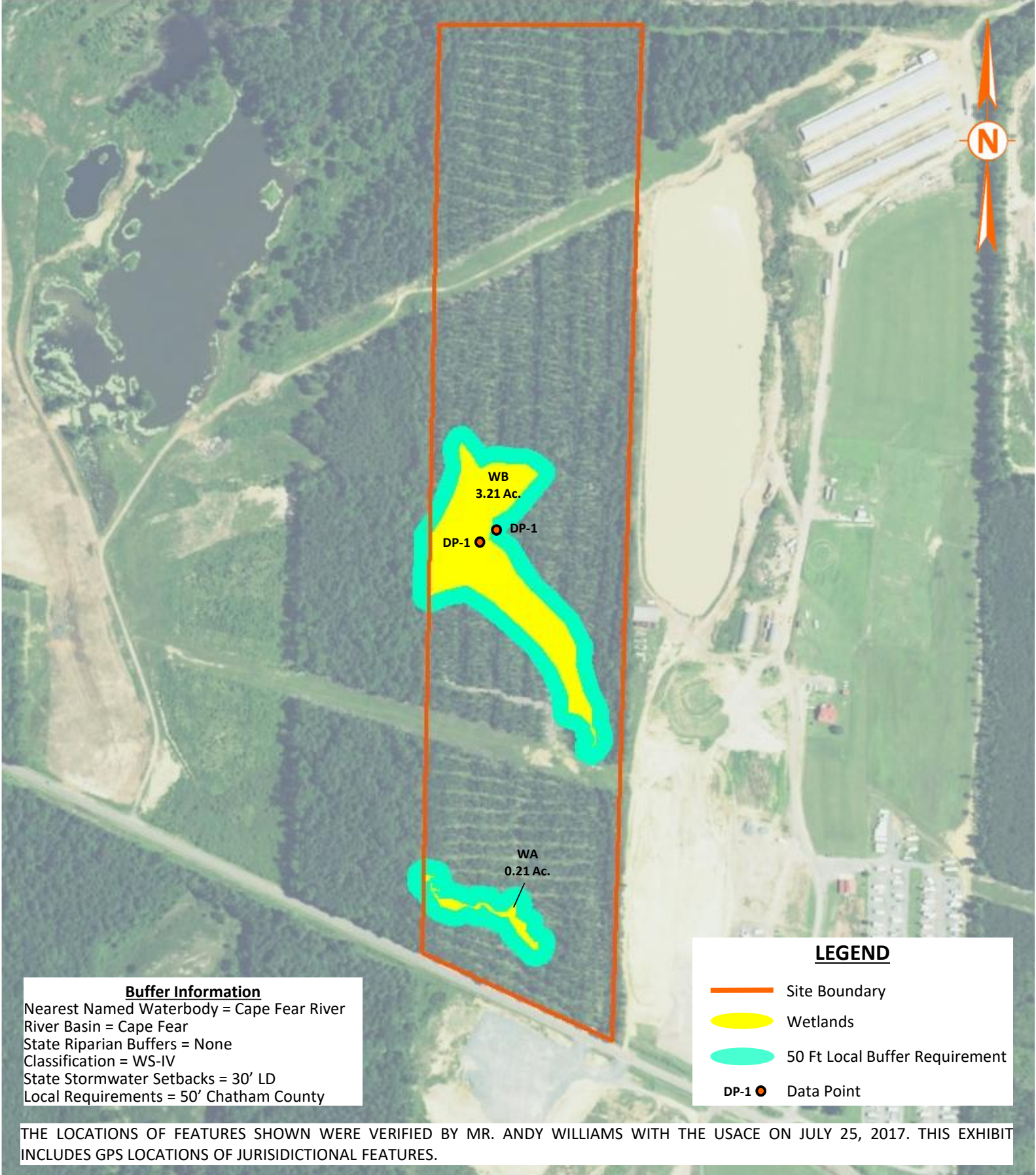
**LEGEND**  
▬ Site Boundary

**Drawing 5A**  
 USDA Soil Survey  
 of Chatham County, NC  
 Published 2006, Sheet 17  
 Not to Scale







**Published Soil Map**  
 Flatwood Solar Farm  
 Corinth Road  
 Moncure, Chatham County, NC  
 Pilot Project 2671.1





**Buffer Information**  
 Nearest Named Waterbody = Cape Fear River  
 River Basin = Cape Fear  
 State Riparian Buffers = None  
 Classification = WS-IV  
 State Stormwater Setbacks = 30' LD  
 Local Requirements = 50' Chatham County

**LEGEND**

-  Site Boundary
-  Wetlands
-  50 Ft Local Buffer Requirement
-  DP-1 Data Point

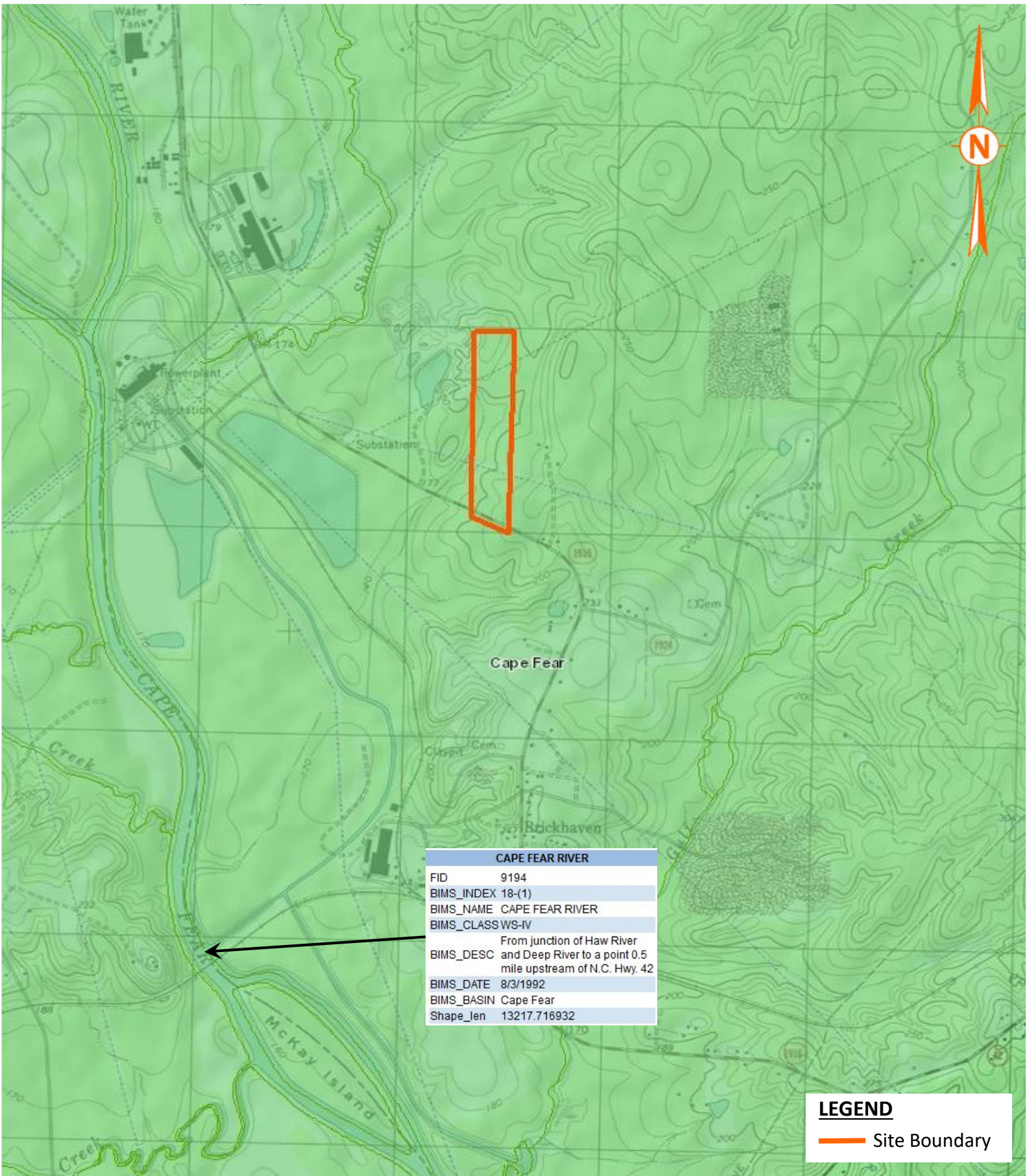
THE LOCATIONS OF FEATURES SHOWN WERE VERIFIED BY MR. ANDY WILLIAMS WITH THE USACE ON JULY 25, 2017. THIS EXHIBIT INCLUDES GPS LOCATIONS OF JURISDICTIONAL FEATURES.

**Drawing 6**  
 Aerial Imagery from ESRI  
 and PEI GPS Data  
 Scale: 1" = 400'  
 Date: 7.25.17



**Wetland Map**  
 Flatwood Solar Farm  
 Corinth Road  
 Moncure, Chatham County, NC  
 Pilot Project 2671.1



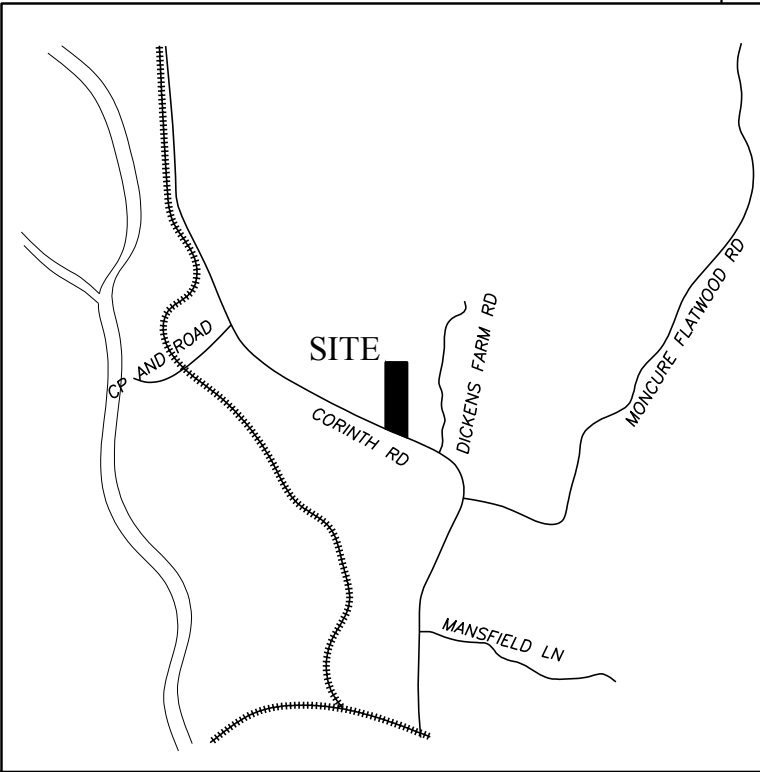


**Drawing 7**  
 River Basins from NC OneMap  
 Scale: 1" = 2,000'

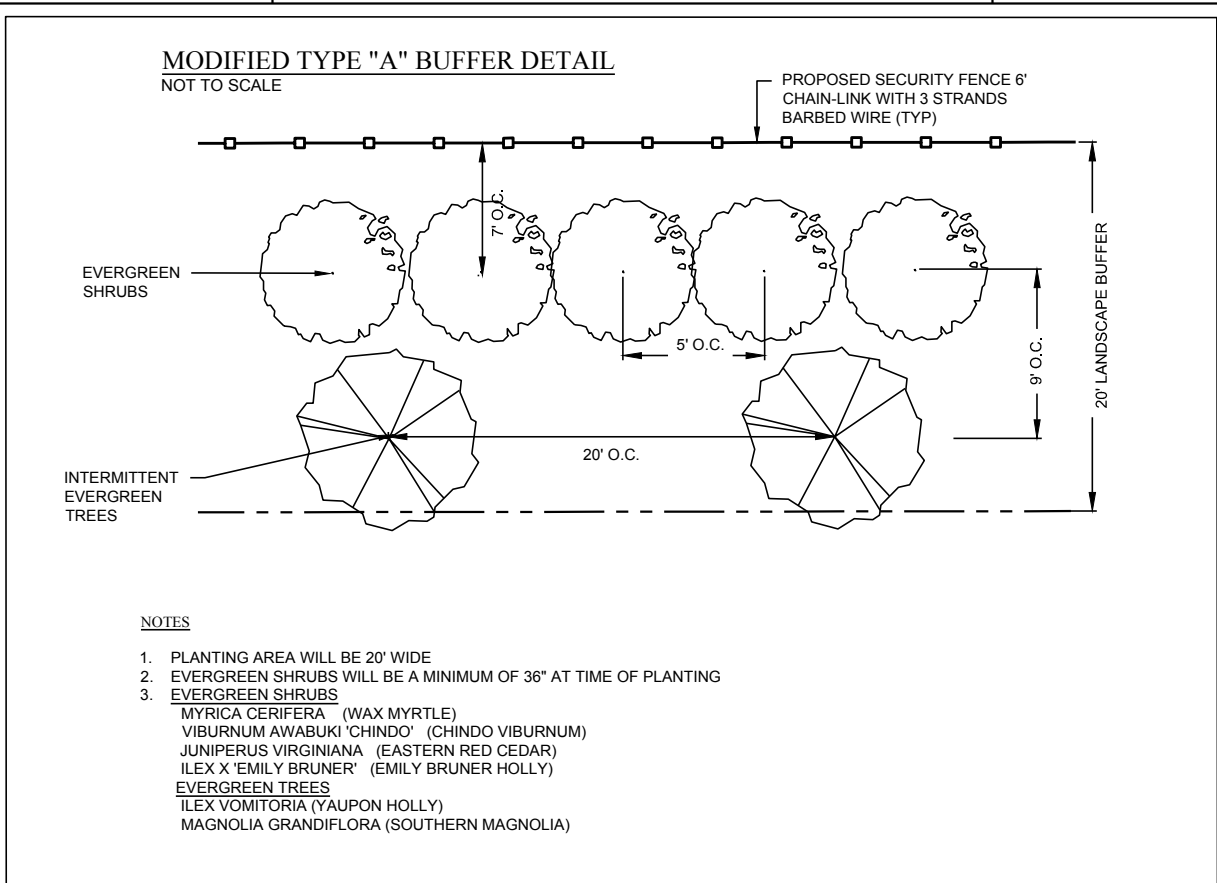


**River Basin Map**  
 Flatwood Solar Farm  
 Corinth Road  
 Moncure, Chatham County, NC  
 Pilot Project 2671.1





VICINITY MAP  
(NOT TO SCALE)



- NOTES
1. PLANTING AREA WILL BE 20' WIDE
  2. EVERGREEN SHRUBS WILL BE A MINIMUM OF 36" AT TIME OF PLANTING
  3. EVERGREEN SHRUBS:
    - MYRTICA CERIFERA (WAX MYRTLE)
    - VIBURNUM ANANIKUM 'CHINDY' (CHINDY VIBURNUM)
    - JUNIPERUS VIRGINIANA (EASTERN RED CEDAR)
    - ILEX X EMILY BRUNER (EMILY BRUNER HOLLY)
    - EVERGREEN TREES:
      - LEA X YAMONIA (YAMONIA HOLLY)
      - MAGNOLIA GRANDIFLORA (SOUTHERN MAGNOLIA)

NOTES

1. EXISTING PROPERTY INFORMATION

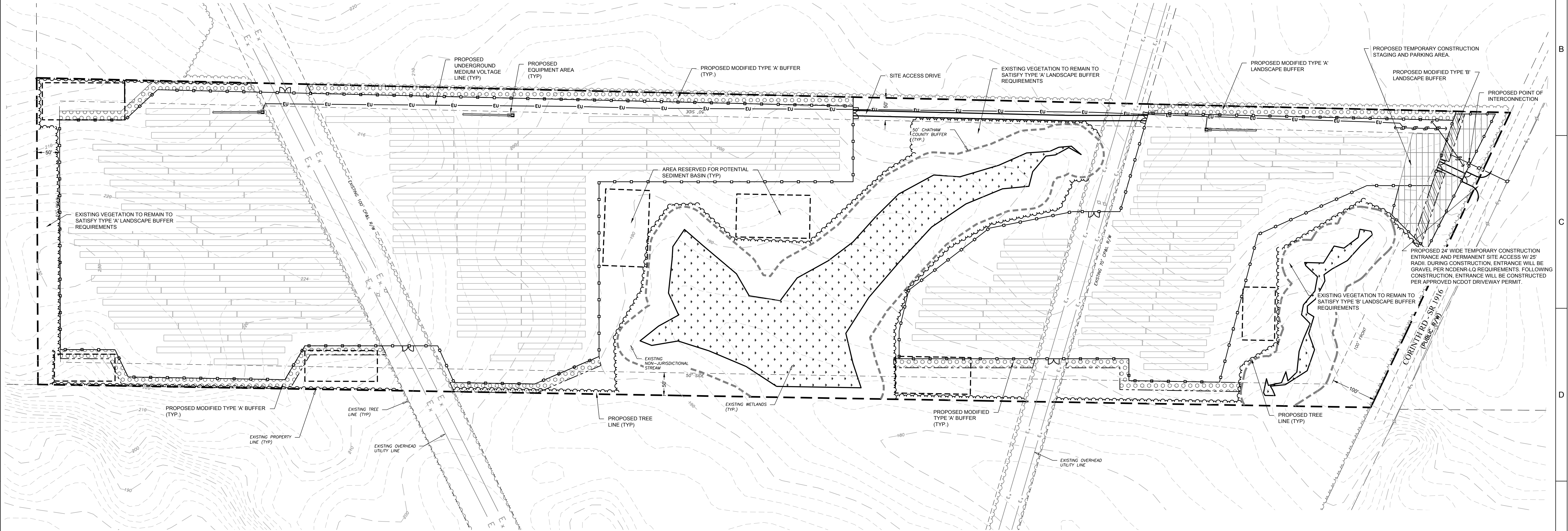
PIN	OWNER	DB/PG	PARCEL ACREAGE	LEASED ACREAGE	LAND USE
5751	PHYLLIS T. BUCHANAN	568/0797	46.8±	46.8±	VACANT

RIVER BASIN: CAPE FEAR  
WATERSHED: WS-IV PA  
MINIMUM SETBACK REQUIREMENTS:  
EXISTING ZONING: R-1 SOLAR

FRONT	SIDE	REAR
40'	25'	25'
100'	50'	50'

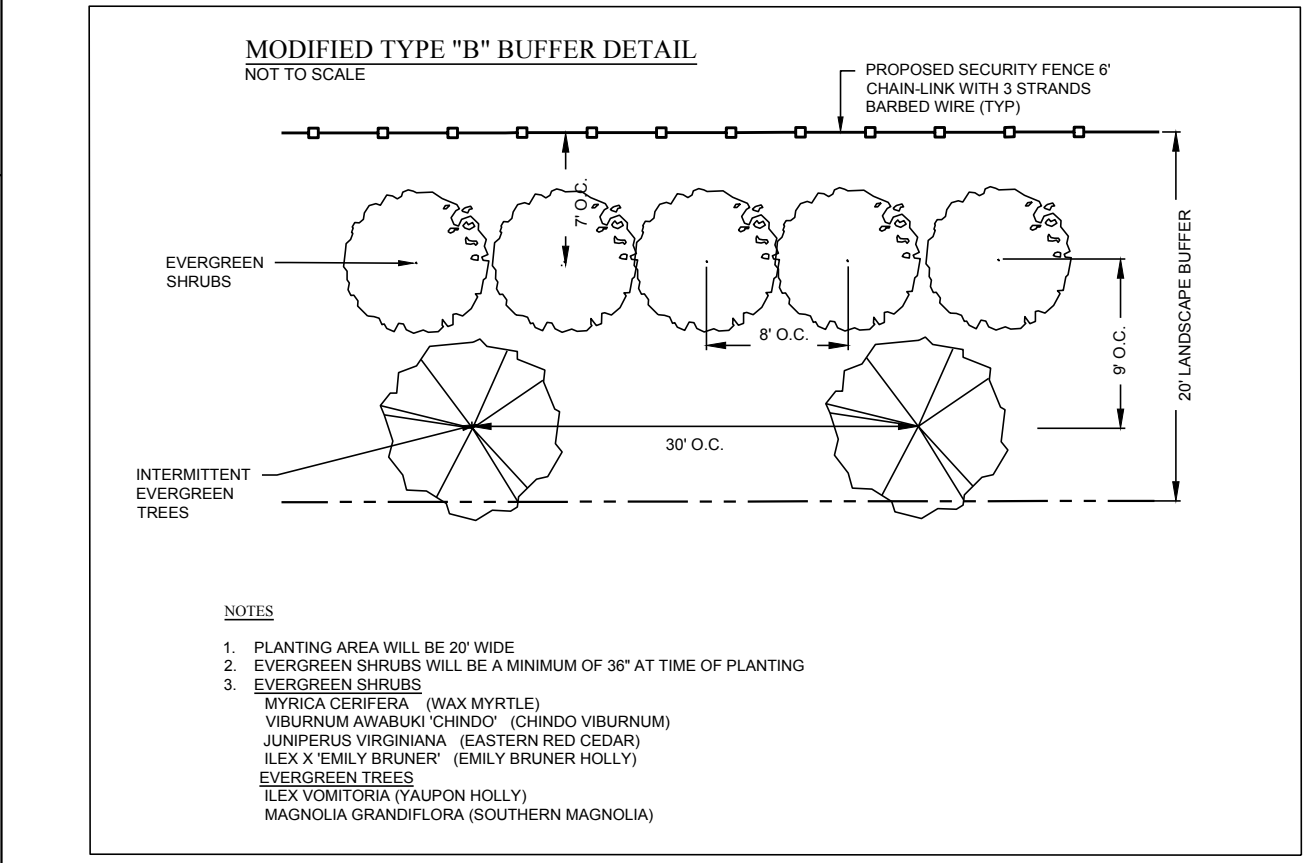
2. THE PURPOSE OF THIS PLAN IS FOR A CONDITIONAL USE PERMIT APPLICATION FOR REVIEW AND APPROVAL BY THE CHATHAM COUNTY BOARD OF COMMISSIONERS TO CONSTRUCT A SOLAR ELECTRIC POWER PLANT. THE LOCATION OF PROPOSED IMPROVEMENTS, INCLUDING BUT NOT LIMITED TO: FENCING, SOLAR ARRAY RACKING, EQUIPMENTS, OVERHEAD POLES & LINES, ETC., SHOWN IS APPROXIMATE AND MAY BE SUBJECT TO MODIFICATION DUE TO SITE CONDITIONS, ADDITIONAL PERMITTING REQUIREMENTS (NCDOT, NCDEQ, USAOCE, ETC.), EQUIPMENT SPECIFICATIONS, AND/OR OTHER CONSTRAINTS. ANY REVISIONS WILL BE SUBMITTED FOR STAFF APPROVAL PRIOR TO CONSTRUCTION TO VERIFY COMPLIANCE WITH ZONING REQUIREMENTS AND CONDITIONS AS APPROVED.
3. TOPOGRAPHIC DATA & EXISTING IMPROVEMENTS SHOWN ON THIS PLAN IS PER NCDOT LIDAR TOPOGRAPHY, CHATHAM COUNTY GIS AND AERIAL IMAGERY.
4. WATERS OF THE US SHOWN PER REPORT PREPARED BY PILOT ENVIRONMENTAL, INC AND VERIFIED BY THE USAOCE ON 07/25/2017. THEY HAVE NOT BEEN FIELD LOCATED.

5. THE PROPERTY SHOWN HEREON DOES NOT CONTAIN SPECIAL FLOOD HAZARD AREAS (SFHAS) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD (I.E. 100-YR. EVENT) PER FEMA FIRM MAP PANEL NO. 3710969700J AND 3710968700K EFFECTIVE DATE 2/02/2007.
6. ALL RIGHT-OF-WAYS ARE PUBLIC, UNLESS NOTED OTHERWISE.
7. UTILITY LINES AND SERVICES SHOWN HEREON ARE APPROXIMATE PER AERIAL PHOTOGRAPHY OR AS REPORTED BY VARIOUS RESPONSIBLE PARTIES. LOCATION OF UNDERGROUND UTILITIES ARE APPROXIMATE AND MUST BE FIELD VERIFIED. CALL NC ONE CALL CENTER BEFORE DIGGING AT 811.
8. COPIES OF ALL PERMITS AND APPROVED PLANS MUST BE KEPT ON-SITE IN A PERMIT BOX THAT IS CONSPICUOUSLY LOCATED AND EASILY ACCESSIBLE DURING CONSTRUCTION.
9. A SEDIMENT AND EROSION CONTROL PLAN WILL BE APPROVED BY CHATHAM COUNTY PRIOR TO BEGINNING CONSTRUCTION.
10. A DRIVEWAY PERMIT WILL BE APPROVED BY NCDOT PRIOR TO BEGINNING CONSTRUCTION.
11. PROJECT AREA, INCLUDING CONSTRUCTION STAGING AREAS, WILL BE CLEARED AND GRUBBED AS NECESSARY, RETAINING PRE-DEVELOPMENT DRAINAGE PATTERNS (I.E. NO MASS GRADING). A PORTION OF PROJECT AREAS MAY CONSIST OF TREE CLEARING ONLY (NO GRUBBING) TO ALLEVIATE SHADING OF THE ARRAY, AS INDICATED ON THE SITE PLAN. MINOR GRADING ONLY WILL OCCUR AROUND EQUIPMENT AREAS TO DIVERT SURFACE DRAINAGE. CONSTRUCTION STAGING AND AREAS SUBJECT TO RUTTING DURING CONSTRUCTION WILL BE TEMPORARILY STABILIZED WITH LOGGING MATS, WHICH WILL BE REMOVED FOLLOWING CONSTRUCTION.
12. PROPOSED TEMPORARY LAYDOWN YARD/CONSTRUCTION STAGING AREA TO BE COVERED DURING SITE CONSTRUCTION. A PORTION OF THIS AREA (HATCHED) WILL BE COVERED WITH LOGGING MATS TO ALLOW DELIVERY OF CONSTRUCTION MATERIALS. PRIOR TO CONSTRUCTION, THIS AREA WILL BE COMPACTED BY A SMOOTH DRUM ROLLER TO REDUCE/PREVENT RUTTING. FOLLOWING CONSTRUCTION, THE LOGGING MATS ARE REMOVED AND THE ENTIRE AREA IS RESTORED TO PRE-CONSTRUCTION CONDITIONS.
13. ACCESS AISLES ARE COMPACTED BY A SMOOTH DRUM ROLLER TO REDUCE/PREVENT RUTTING. LOGGING MATS MAY BE PLACED IN HIGH TRAFFIC OR POORLY DRAINING AREAS DURING CONSTRUCTION ACTIVITIES TO IMPROVE ACCESS.
14. PROPOSED 24' ACCESS GATE (TWO 12' SECTIONS) IS 6' TALL CHAIN LINK WITH 3 STRANDS OF BARBED WIRE. GATE WILL BE LOCKED WITH STANDARD KEYPAD OR COMBINATION LOCK. EMERGENCY PERSONNEL (AS DESIGNATED BY CHATHAM COUNTY) WILL BE PROVIDED A KEY OR COMBINATION FOR ACCESS.
15. NO LIGHTING IS PROPOSED FOR THIS SITE.
16. ALUMINUM SIGNS ("DANGER - HIGH VOLTAGE" AND "DANGER - NO TRESPASSING") MEASURING 14" X 10" IN SIZE, WILL BE PLACED ON PERMANENT SECURITY FENCING, ALTERNATING EVERY 100' AROUND THE ARRAY.
17. SYSTEMS, EQUIPMENT AND STRUCTURES WILL NOT EXCEED FIFTEEN (15) FEET IN HEIGHT WHEN GROUND MOUNTED. EXCLUDED FROM THIS HEIGHT REQUIREMENT, HOWEVER, ARE OVERHEAD ELECTRIC DISTRIBUTION LINES AND UTILITY POLES.
18. BEFORE ANY LAND DISTURBANCE ACTIVITIES MAY BEGIN, THE RIPARIAN BUFFER BOUNDARIES SHALL BE CLEARLY FLAGGED AND APPROVED BY COUNTY STAFF. TREE PROTECTION FENCING SHALL BE INSTALLED ALONG THE APPROVED FLAGGING LINES.

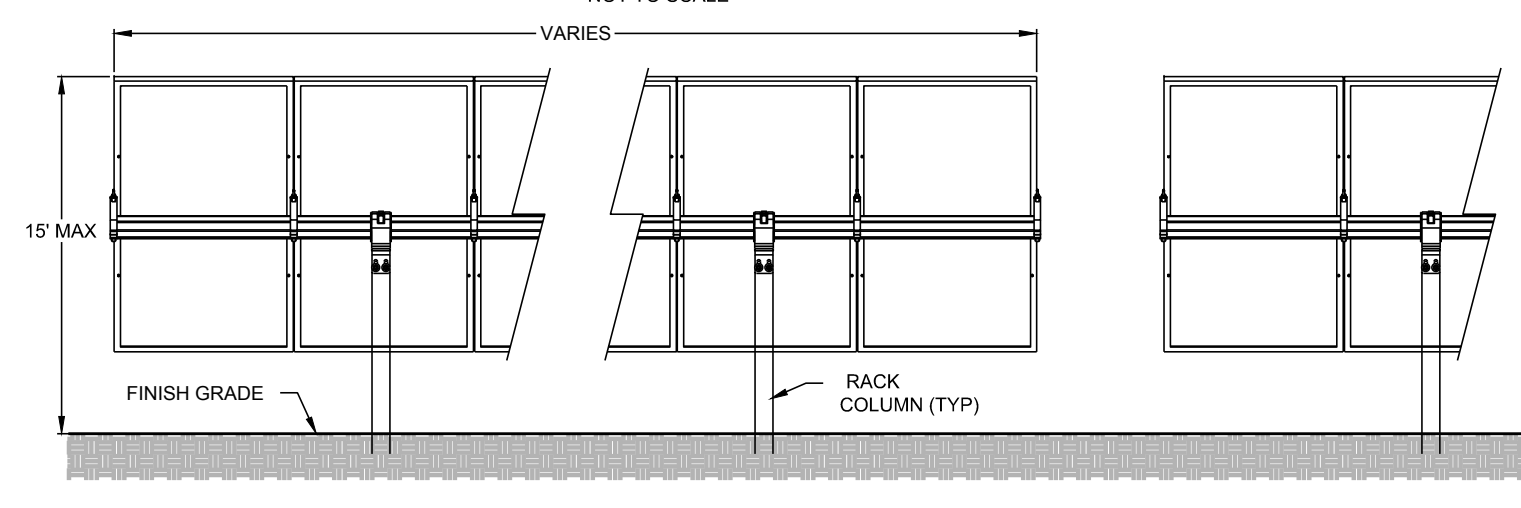
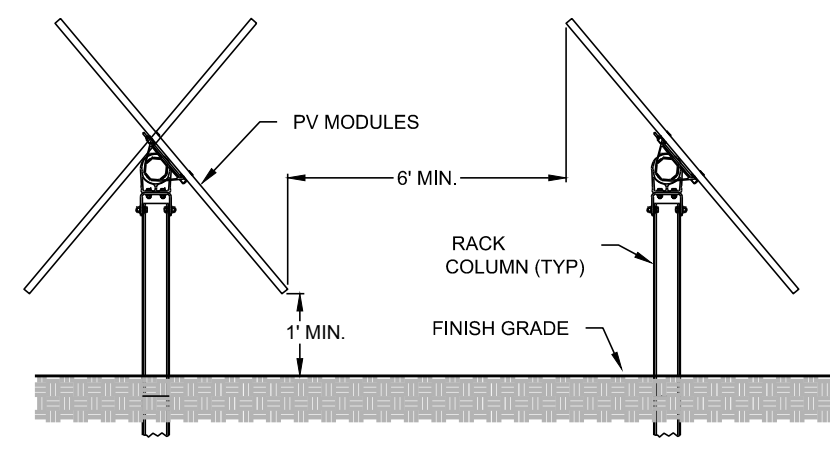


FLATWOOD IMPERVIOUS CALCULATIONS

Existing Conditions	Area (sf)	Area (ac)	% of Total	
<b>Impervious</b>				
Drives	0	0.000	0.0%	
Structures	0	0.000	0.0%	
<b>Pervious</b>				
Wooded Areas	2,035,351	46.725	99.8%	
Agricultural Fields/Lawns	3,257	0.075	0.2%	
<b>Total Area =</b>	<b>2,038,608</b>	<b>46.800</b>	<b>100.0%</b>	
<b>Existing % Impervious =</b>	<b>0.0%</b>			
<b>Proposed Conditions</b>	<b>Area (sf)</b>	<b>Area (ac)</b>	<b>% of Total</b>	
<b>Impervious</b>				
Existing Drives to Remain	0	0.000	0.0%	
Existing Structures to Remain	0	0.000	0.0%	
Proposed Drives	16,730	0.384	0.8%	
<b>Equipment Areas</b> (Assumes entire graded area)	<b># of Pads</b>	<b>Area/Equip ment Pad</b>	<b>Equipment Area Total</b>	
	3	200	600	
			0.014	
			0.0%	
<b>Rack Posts</b>	<b># of Posts/Rack</b>	<b># of Racks</b>	<b>Area/Post (in2)</b>	<b>Rack Posts Total</b>
	7	250	2.9	35
				0.001
				0.0%
<b>Pervious</b>				
Wooded Areas	447,729	10.278	22.0%	
Agricultural Fields/Lawns	1,573,514	36.123	77.2%	
<b>Total Area =</b>	<b>2,038,608</b>	<b>46.800</b>	<b>100.0%</b>	
<b>Proposed % Impervious =</b>	<b>0.9%</b>			

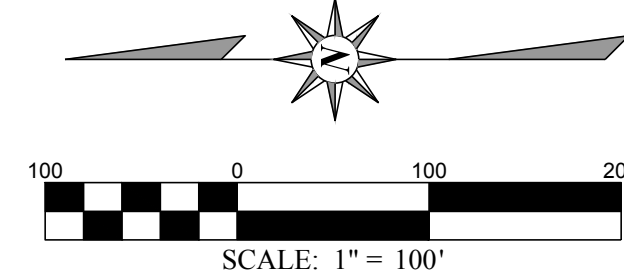


- NOTES
1. PLANTING AREA WILL BE 20' WIDE
  2. EVERGREEN SHRUBS WILL BE A MINIMUM OF 36" AT TIME OF PLANTING
  3. EVERGREEN SHRUBS:
    - MYRTICA CERIFERA (WAX MYRTLE)
    - VIBURNUM ANANIKUM 'CHINDY' (CHINDY VIBURNUM)
    - JUNIPERUS VIRGINIANA (EASTERN RED CEDAR)
    - ILEX X EMILY BRUNER (EMILY BRUNER HOLLY)
    - EVERGREEN TREES:
      - LEA X YAMONIA (YAMONIA HOLLY)
      - MAGNOLIA GRANDIFLORA (SOUTHERN MAGNOLIA)



SITE PLAN LEGEND

EXISTING PROPERTY LINE	---
EXISTING PROPERTY LINE (NOT SURVEYED)	- - - -
EXISTING RIGHT-OF-WAY	R/W
EXISTING SETBACK	---
PROPOSED LEASE LINE	---
EXISTING FENCE LINE	---
PERMANENT SECURITY FENCE (6' CHAIN-LINK WITH 3 STRANDS BARBED WIRE)	---o---o---o---
TEMPORARY SECURITY FENCE (6' CHAIN-LINK)	---o---o---
EXISTING OVERHEAD POWER LINE	---
PROPOSED OVERHEAD MEDIUM VOLTAGE LINE	---
PROPOSED UNDERGROUND MEDIUM VOLTAGE LINE	---
EXISTING TREE LINE	---
PROPOSED TREE LINE	---
PROPOSED TREE CLEARING	---
PROPOSED SOLAR ARRAY	---
PROPOSED EQUIPMENT AREA	---
EXISTING UTILITY POLE	---
PROPOSED UTILITY POLE (BY STRATA)	---
PROPOSED UTILITY POLE (BY OTHERS)	---
PROPOSED GUY WIRE	---



REV	DATE	REVISION DESCRIPTION	BY	CHK	APP
1	05/01/2018	IMPERVIOUS CHART	JNS		JNS
4/17/2018					

DATE: 05/01/2018

DRAWING DESCRIPTION: ZONING SITE PLAN

**FLATWOOD SOLAR ELECTRIC POWER PLANT**  
2301 CORNITH ROAD  
MONCURE, NORTH CAROLINA 27559  
CHATHAM COUNTY

PROJECT NAME AND ADDRESS: STRATA SOLAR LLC, 50101 Governors Drive Suite 280 Chapel Hill, NC 27517 919-960-6015 www.stratasolar.com NC License No.: D-0298

THIS DRAWING IS PROTECTED BY COPYRIGHT. THIS DOCUMENT IS THE SOLE PROPERTY OF STRATA SOLAR LLC. ANY USE, REPRODUCTION, DISTRIBUTION, PUBLICATION, OR PRESENTATION IS BY EXPRESS PERMISSION OF STRATA SOLAR LLC. DO NOT SCALE DRAWINGS. USE FIGURED DIMENSIONS ONLY.

PROJ NO: C-507-16-FLTWD  
SIZE: 24" x 36"  
SCALE: 1" = 100'  
DRAWING NO: C2.01

DFTR: RBJ  
CHKD: JRD  
ENGR: JNS  
REVISION: 1

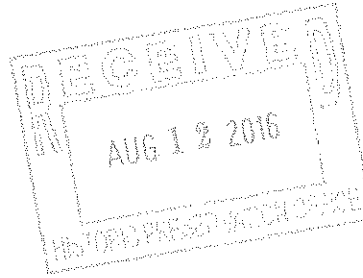
NORTH CAROLINA STATE CLEARINGHOUSE  
DEPARTMENT OF ADMINISTRATION  
INTERGOVERNMENTAL REVIEW

COUNTY: CHATHAM

H11: ENERGY RELATED  
FACILITIES/ACTIVITIES

STATE NUMBER: 17-E-4600-006  
DATE RECEIVED: 08/05/2016  
AGENCY RESPONSE: 09/01/2016  
REVIEW CLOSED: 09/06/2016

MS RENEE GLEDHILL-EARLEY  
CLEARINGHOUSE COORDINATOR  
DEPT OF NATURAL & CULTURAL RESOURCE  
STATE HISTORIC PRESERVATION OFFICE  
MSC 4617 - ARCHIVES BUILDING  
RALEIGH NC



CH 16- 1434

REVIEW DISTRIBUTION

DEPT OF AGRICULTURE  
DEPT OF ENVIRONMENTAL QUALITY  
DEPT OF NATURAL & CULTURAL RESOURCE  
DEPT OF TRANSPORTATION  
DNCR - DIV OF PARKS AND RECREATION  
DPS - DIV OF EMERGENCY MANAGEMENT  
TRIANGLE J COG

DE 8/22/16 A @JSM 8/15/16

PROJECT INFORMATION

APPLICANT: North Carolina Department of Commerce  
TYPE: State Environmental Policy Act  
Environmental Review

DE 8/26/16 S (NC) file 8/11/16

DESC: Application of Flatwood Farm, LLC for Certificate to construct a 5 MW Solar Photovoltaic Electric Generating Facility in Chatham Co. Docket #SP-8170, Sub 0.  
- View document at  
<http://starw1.ncuc.net/NCUC/portal/ncuc/page/Dockets/portal.aspx>, Type SP-8170 Sub 0 in the Docket Number search line.

Located on the north side of Corinth Road, west of the intersection with Dickens Farm Road in the Township of Cape Fear, NC *MONROE*

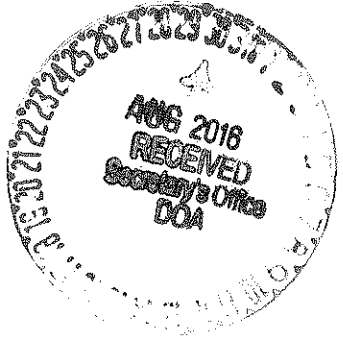
The attached project has been submitted to the N. C. State Clearinghouse for intergovernmental review. Please review and submit your response by the above indicated date to 1301 Mail Service Center, Raleigh NC 27699-1301.

If additional review time is needed, please contact this office at (919)807-2425.

AS A RESULT OF THIS REVIEW THE FOLLOWING IS SUBMITTED:  NO COMMENT  COMMENTS ATTACHED

SIGNED BY: Renee Gledhill-Earley

DATE: 8-25-16



AUG 15 2016

OFFICIAL COPY  
Sep 09 2016





# United States Department of the Interior

## FISH AND WILDLIFE SERVICE

Raleigh ES Field Office  
Post Office Box 33726  
Raleigh, North Carolina 27636-3726

May 18, 2017

Michael Brame  
Pilot Environmental Inc.  
PO Box 128  
Kernersville, NC 27285

Re: Flatwood Solar – Chatham County, NC

Dear Mr. Brame:

This letter is in response to your request for information on your proposed solar project, listed above. Our comments are submitted pursuant to, and in accordance with, provisions of the Endangered Species Act (the Act).

Based on the information provided and other information available, it appears that the proposed action is not likely to adversely affect any federally-listed endangered or threatened species, their formally designated critical habitat, or species currently proposed for listing under the Act at these sites. We believe that the requirements of section 7(a)(2) of the Act have been satisfied for your project. Please remember that obligations under section 7 consultation must be reconsidered if: (1) new information reveals impacts of this identified action that may affect listed species or critical habitat in a manner not previously considered; (2) this action is subsequently modified in a manner that was not considered in this review; or, (3) a new species is listed or critical habitat determined that may be affected by the identified action.

However, the Service is concerned about the potential impacts the proposed action might have on aquatic species. Aquatic resources are highly susceptible to sedimentation. Therefore, we recommend that all practicable measures be taken to avoid adverse impacts to aquatic species, including implementing directional boring methods and stringent sediment and erosion control measures. An erosion and sedimentation control plan should be submitted to and approved by the North Carolina Division of Land Resources, Land Quality Section prior to construction. Erosion and sedimentation controls should be installed and maintained between the construction site and any nearby down-gradient surface waters. We recommend maintaining natural, vegetated buffers on all streams and creeks adjacent to the project site.


In addition, we encourage the use of natural vegetation management practices (such as sheep grazing) and the planting or seeding of native pollinator plant species where possible on the site. If you are interested in pursuing these and other efforts to improve habitat for various species (such as bird houses and bat boxes), please feel free to contact us.

In general, the Service recommends that solar facilities be sited in areas that are previously disturbed, or sites that do not impact mature forest, wetlands, or streams. The North Carolina Wildlife Resources Commission has developed a Guidance Memorandum (a copy can be found on our website at (<http://www.fws.gov/raleigh>) to address and mitigate secondary and cumulative impacts to aquatic and terrestrial wildlife resources and water quality. We recommend that you consider this document in the development of your projects and in completing an initiation package for consultation (if necessary).

The Service has established an on-line project planning and consultation process which assists developers and consultants in determining whether a federally-listed species or designated critical habitat may be affected by a proposed project. For future projects, please visit the Raleigh Field Office's project planning website at <https://www.fws.gov/raleigh/pp.html>. If you are only searching for a list of species that may be present in the project's Action Area, then you may use the Service's Information, Planning, and Consultation System (IPaC) website to determine if any listed, proposed, or candidate species may be present in the Action Area and generate a species list. The IPaC website may be viewed at <https://ecos.fws.gov/ipac/>. The IPaC web site contains a complete and frequently updated list of all endangered and threatened species protected by the provisions of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.)(Act), a list of federal species of concern<sup>1</sup> that are known to occur in each county in North Carolina, and other resources.

If you have any questions or comments, please contact Kathy Matthews of this office at (919) 856-4520 ext. 27.

Sincerely,

  
for Pete Benjamin  
Field Supervisor

---

<sup>1</sup> The term "federal species of concern" refers to those species which the Service believes might be in need of concentrated conservation actions. Federal species of concern receive no legal protection and their designation does not necessarily imply that the species will eventually be proposed for listing as a federally endangered or threatened species. However, we recommend that all practicable measures be taken to avoid or minimize adverse impacts to federal species of concern.