APPENDICES

APPENDIX A

TVA ROW CLEARING SPECIFICATIONS

Tennessee Valley Authority Right-of-Way Clearing Specifications

1. General - The clearing contractor shall review the environmental evaluation documents (categorical exclusion checklist, environmental assessment, or environmental impact statement) for the project or proposed activity, along with all clearing and construction appendices, conditions in applicable general and/or site-specific permits, the storm water pollution prevention plan, and any Tennessee Valley Authority (TVA) commitments to property owners. The contractor shall then plan and carry out operations using techniques consistent with good engineering and management practices as outlined in TVA's best management practices (BMPs) manual (Muncy 1992, and revisions thereto). The contractor will protect areas that are to be left unaffected by access or clearing work at and adjacent to all work sites. In sensitive areas and their buffers, the contractor will retain as much native ground cover and other vegetation as possible.

   If the contractor fails to use BMPs or to follow environmental expectations discussed in the prebid or prework meeting or present in contract specifications, TVA will order corrective changes and additional work as deemed necessary in TVA's judgment to meet the intent of environmental laws and regulations or other guidelines. Major violations or continued minor violations will result in work suspension until correction of the situation is achieved or other remedial action is taken at the contractor's expense. Penalty clauses may be invoked as appropriate.

2. Regulations - The clearing contractor shall comply with all applicable federal, state, and local environmental and antipollution laws, regulations, and ordinances including without limitation all air, water, solid and hazardous waste, noise, and nuisance laws, regulations, and ordinances. The contractor shall secure or ensure that TVA has secured all necessary permits or authorizations to conduct work on the acres shown on the drawings and plan and profile for the contract. The contractor's designated project manager will actively seek to prevent, control, monitor, and safely abate all commonly recognized forms of workplace and environmental pollution. Permits or authorizations and any necessary certifications of trained or licensed employees shall be documented with copies submitted to TVA's right-of-way inspector or construction environmental engineer before work begins. The contractor will be responsible for meeting all conditions specified in permits. Permit conditions shall be reviewed in prework discussions.

3. Land and Landscape Preservation - The clearing contractor shall exercise care to preserve the condition of cleared soils by avoiding as much compacting and deep scarring as possible. As soon as possible after initial disturbance of the soil and in accordance with any permit(s) or other state or local environmental regulatory requirements, cover material shall be placed to prevent erosion and sedimentation of water bodies or conveyances to surface water or groundwater. In areas outside the clearing, use, and access areas, the natural vegetation shall be protected from damage. The contractor and his employees must not deviate from delineated access routes or use areas and must enter the site at designated areas that will be marked. Clearing operations shall be conducted to prevent any unnecessary destruction, scarring, or defacing of the remaining natural vegetation and adjacent surroundings in the vicinity of the work. In sensitive public or environmental areas, appropriate buffer zones shall be observed and the methods of clearing or reclearing modified to protect

the buffer and sensitive area. Some areas may require planting native plants or grasses to meet the criteria of regulatory agencies or commitments to special program interests.

4. Streamside Management Zones - The clearing contractor must leave as many rooted ground cover plants as possible in buffer zones along streams and other bodies of water or wet-weather conveyances thereto. In such streamside management zones (SMZ), tall-growing tree species (trees that would interfere with TVA's National Electrical Safety Code clearances) shall be cut, and the stumps may be treated to prevent resprouting. Low-growing trees identified by TVA as marginal electrical clearance problems may be cut, and then stump treated with growth regulators to allow low, slow-growing canopy development and active root growth. Only approved herbicides shall be used, and herbicide application shall be conducted by certified applicators from TVA's Transmission, Operations, and Maintenance (TOM) organization after initial clearing and construction. Cutting of trees within SMZs must be accomplished by using either hand-held equipment or other appropriate clearing equipment, such as a feller-buncher. The method will be selected based on site-specific conditions and topography to minimize soil disturbance and impacts to the SMZ and surrounding area. Disturbed soils in SMZs must be stabilized by appropriate methods immediately after the right-of-way is cleared. Stabilization must occur within the time frame specified in applicable storm water permits or regulations. Stumps within SMZs may be cut close to the ground but must not be removed or uprooted. Trees, limbs, and debris shall be immediately removed from streams, ditches, and wet areas using methods that will minimize dragging or scarring the banks or stream bottom. No debris will be left in the water or watercourse. Equipment will cross streams, ditches, or wet areas only at locations designated by TVA after the application of appropriate erosion control BMPs consistent with permit conditions or regulatory requirements.

5. Wetlands - In forested wetlands, tall trees will be cut near the ground, leaving stumps and roots in place. The cambium may be treated with herbicides applied by certified applicators from the TOM organization to prevent regrowth. Understory trees that must be initially cut and removed may be allowed to grow back or may be treated with tree growth regulators selectively to slow growth and increase the reclearing cycle. The decision will be situationally made based on existing ground cover, wetland type, and tree species since tall tree removal may "release" understory species and allow them to grow quickly to "electrical clearance problem" heights. In many circumstances, herbicides labeled for water and wetland use may be used in reclearing.

6. Sensitive Area Preservation - If prehistoric or historic artifacts or features that might be of archaeological significance are discovered during clearing or reclearing operations, the activity shall immediately cease within a 100-foot radius, and a TVA right-of-way inspector or construction environmental engineer and the Cultural Resources Program manager shall be notified. The site shall be protected and left as found until a determination about the resources, their significance, and site treatment is made by TVA's Cultural Resources Program. Work may continue beyond the finding zone and the 100-foot radius beyond its perimeter.

7. Water Quality Control - The contractor's clearing and disposal activities shall be performed using BMPs that will prevent erosion and entrance of spillage, contaminants, debris, and other pollutants or objectionable materials into drainage

ways, surface water, or groundwater. Special care shall be exercised in refueling equipment to prevent spills. Fueling areas shall be remote from any sinkhole, crevice, stream, or other water body. Open burning debris will be kept away from streams and ditches and shall be incorporated into the soil.

The clearing contractor will erect and (when TVA or contract construction personnel are unable) maintain BMPs such as silt fences on steep slopes and adjacent to any stream, wetland, or other water body. BMPs will be inspected by the TVA field engineer or other designated TVA or contractor personnel routinely and during periods of high runoff, and any necessary repairs will be made as soon as practicable. BMP inspections will be conducted in accordance with permit requirements. Records of all inspections will be maintained on site, and copies of inspection forms will be forwarded to the TVA construction environmental engineer.

8. Turbidity and Blocking of Streams - If temporary clearing activities must interrupt natural drainage, appropriate drainage facilities and erosion/sediment controls shall be provided to avoid erosion and siltation of streams and other water bodies or water conveyances. Turbidity levels in receiving waters or at storm water discharge points shall be monitored, documented, and reported if required by the applicable permit. Erosion and sediment control measures such as silt fences, water bars, and sediment traps shall be installed as soon as practicable after initial access, site, or right-of-way disturbance in accordance with applicable permit or regulatory requirements.

   Mechanized equipment shall not be operated in flowing water except when approved and, then, only to construct necessary stream crossings under direct guidance of TVA. Construction of stream fords or other crossings will only be permitted at approved locations and to current TVA construction access road standards. Material shall not be deposited in watercourses or within stream bank areas where it could be washed away by high stream flows. Any clearing debris that enters streams or other water bodies shall be removed as soon as possible. Appropriate U.S. Army Corps of Engineers and state permits shall be obtained for stream crossings.

9. Air Quality Control - The clearing or reclearing contractor shall take appropriate actions to limit the amount of air emissions created by clearing and disposal operations to well within the limits of clearing or burning permits and/or forestry or local fire department requirements. All operations must be conducted in a manner that prevents nuisance conditions or damage to adjacent land crops, dwellings, highways, or people.

10. Dust and Mud Control - Clearing activities shall be conducted in a manner that minimizes the creation of fugitive dust. This may require limitations as to type of equipment, allowable speeds, and routes utilized. Control measures such as water, gravel, etc., or similar measures may be used subject to TVA approval. On new construction sites and easements, the last 100 feet before an access road approaches a county road or highway shall be graveled to prevent transfer of mud onto the public road.

11. Burning - The contractor shall obtain applicable permits and approvals to conduct controlled burning. The contractor will comply with all provisions of the permit, notification, or authorization including burning site locations, controlled draft, burning hours, and such other conditions as stipulated. If weather conditions such as wind speed or wind direction change rapidly, the contractor's burning operation may be

temporarily stopped by TVA's field engineer. The debris to be burned shall be kept as clean and dry as possible and stacked and burned in a manner that produces the minimum amount of smoke. Residue from burning will be disposed of according to permit stipulations. No fuel starters or enhancements other than kerosene will be allowed.

12. Smoke and Odors - The contractor will properly store and handle combustible and volatile materials that could create objectionable smoke, odor, or fumes. The contractor shall not burn oil or refuse that includes trash, rags, tires, plastics, or other manufactured debris.

13. Vehicle Exhaust Emissions - The contractor shall maintain and operate equipment in a manner that limits vehicle exhaust emissions. Equipment and vehicles will be kept within the manufacturers' recommended limits and tolerances. Excessive exhaust gases will be eliminated, and inefficient operating procedures will be revised or halted until corrective repairs or adjustments are made.

14. Vehicle Servicing - Routine maintenance of personal vehicles will not be performed on the right-of-way. However, if emergency or "have to" situations arise, minimal/temporary maintenance to personal vehicles will occur in order to mobilize the vehicle to an off-site maintenance shop. Heavy equipment will be serviced on the right-of-way, except in designated sensitive areas. The clearing or reclearing contractor will properly maintain these vehicles with approved spill protection controls and countermeasures. If emergency maintenance in a sensitive or questionable area arises, the area environmental coordinator or construction environmental engineer will be consulted. All wastes and used oils will be properly recovered, handled, and disposed/recycled. Equipment shall not be temporarily stored in stream floodplains, whether overnight or on weekends or holidays.

15. Noise Control - The contractor shall take steps to avoid the creation of excessive sound levels for employees, the public, or the site and adjacent property owners. Concentration of individual noisy pieces as well as the hours and locations of operation should be considered.

16. Noise Suppression - All internal combustion engines shall be properly equipped with mufflers. The equipment and mufflers shall be maintained at peak operating efficiency.

17. Sanitation - A designated representative of TVA or the clearing contractor shall contact a sanitary contractor who will provide sanitary chemical toilets convenient to all principal points of operation for every working party. The facilities shall comply with applicable federal, state, or local health laws and regulations. They shall not be located closer than 100 feet to any stream or tributary or to any wetland. The facilities shall be required to have proper servicing and maintenance, and the waste disposal contractor shall verify in writing that the waste disposal will be in state-approved facilities. Employees shall be notified of sanitation regulations and shall be required to use the toilet facilities.

18. Refuse Disposal - The clearing or reclearing contractor shall be responsible for daily cleanup and proper labeling, storage, and disposal of all refuse and debris on the site produced by his operations and employees. Facilities that meet applicable regulations

and guidelines for refuse collection will be required. Only approved transport, storage, and disposal areas shall be used.

19. Brush and Timber Disposal (Reclearing) - The reclearing contractor shall place felled tree boles in neat stacks at the edge of the right-of-way, with crossing breaks at least every 100 feet. Property owner requests shall be reviewed with the project manager or right-of-way specialist before accepting them. Lop and drop activities must be specified in the contract and on plan and profile drawings with verification with the right-of-way specialist before conducting such work. When tree trimming and chipping is necessary, disposal of the chips on the easement or other locations on the property must be with the consent of the property owner and the approval of the right-of-way specialist. No trees, branches, or chips shall remain in a surface water body or be placed at a location where washing into a surface water or groundwater source might occur.

20. Brush and Timber Disposal (Initial Clearing) - For initial clearing, trees are commonly part of the contractor's contract to remove as they wish. Trees may be removed from the site for lumber or pulpwood or they may be chipped or stacked and burned. All such activities must be coordinated with the TVA field engineer, and the open burning permits, notifications, and regulatory requirements must be met. Trees may be cut and left in place only in areas specified by TVA and approved by appropriate regulatory agencies. These areas may include sensitive wetlands or SMZs where tree removal would cause excessive ground disturbance or in very rugged terrain where windrowed trees are used as sediment barriers along the edge of the right-of-way.

21. Restoration of Site - All disturbed areas, with the exception of farmland under cultivation and any other areas as may be designated by TVA's specifications, shall be stabilized in the following manner unless the property owner and TVA's engineer specify a different method:

    A. The subsoil shall be loosened to a minimum depth of 6 inches if possible and worked to remove unnatural ridges and depressions.

    B. If needed, appropriate soil amendments will be added.

    C. All disturbed areas will initially be seeded with a temporary ground cover such as winter wheat, rye, or millet, depending on the season. Perennials may also be planted during initial seeding if proper growing conditions exist. Final restoration and final seeding will be performed as line construction is completed. Final seeding will consist of permanent perennial grasses such as those outlined in TVA's *A Guide for Environmental Protection and Best Management Practices for Tennessee Valley Authority Transmission Construction and Maintenance Activities (Muncy 2012).* Exceptions would include those areas designated as native grass planting areas. Initial and final restoration will be performed by the clearing contractor.

    D. TVA holds the option, depending upon the time of year and weather condition, to delay or withdraw the requirement of seeding until more favorable planting conditions are certain. In the meantime, other stabilization techniques must be applied.

References

Muncy, J. A. 2012. A Guide for Environmental Protection and Best Management Practices for Tennessee Valley Authority Transmission Construction and Maintenance Activities (revised edition). Edited by Abigail Bowen, Jodie Branum, Corey Chandler, Adam Dattilo, Britta Dimick, Shea Gaither, Casey Henley, Todd Liskey, Joe Melton, Cherie Minghini, Paul Pearman, Kenton Smithson, Joe Turk, Emily Willard, Robby Wilson. Norris: TVA Technical Note TVA/LR/NRM 92/1. Retrieved from <http://www.tva.com/power/projects/bmp_manual_2012.pdf> (n.d.).

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APPENDIX B

TVA ENVIRONMENTAL QUALITY PROTECTION SPECIFICATIONS FOR TRANSMISSION LINE CONSTRUCTION

Tennessee Valley Authority Environmental Quality Protection Specifications for Transmission Line Construction

1. General – Tennessee Valley Authority (TVA) and/or the assigned contractor shall plan, coordinate, and conduct operations in a manner that protects the quality of the environment and complies with TVA's environmental expectations discussed in the preconstruction meeting. This specification contains provisions that shall be considered in all TVA and contract construction operations. If the contractor fails to operate within the intent of these requirements, TVA will direct changes to operating procedures. Continued violation will result in a work suspension until correction or remedial action is taken by the contractor. Penalties and contract termination will be used as appropriate. The costs of complying with the Environmental Quality Protection Specifications are incidental to the contract work, and no additional compensation will be allowed. At all structure and conductor pulling sites, protective measures to prevent erosion will be taken immediately upon the end of each step in a construction sequence, and those protective measures will be inspected and maintained throughout the construction and right-of-way rehabilitation period.

2. Regulations - TVA and/or the assigned contractor shall comply with all applicable federal, state, and local environmental and antipollution laws, regulations, and ordinances related to environmental protection and prevention, control, and abatement of all forms of pollution.

3. Use Areas - TVA and/or the assigned contractor's use areas include but are not limited to site office, shop, maintenance, parking, storage, staging, assembly areas, utility services, and access roads to the use areas. The construction contractor shall submit plans and drawings for their location and development to the TVA engineer and project manager for approval. Secondary containment will be provided for fuel and petroleum product storage pursuant to 29CFR1910.106(D)(6)(iii)(OSHA).

4. Equipment - All major equipment and proposed methods of operation shall be subject to the approval of TVA. The use or operation of heavy equipment in areas outside the right-of-way, access routes, or structure, pole, or tower sites will not be permitted without permission of the TVA inspector or field engineer. Heavy equipment use on steep slopes (greater than 20 percent) and in wet areas will be held to the minimum necessary to construct the transmission line. Steps will be taken to limit ground disturbance caused by heavy equipment usage, and erosion and sediment controls will be instituted on disturbed areas in accordance with state requirements.

   No subsurface ground-disturbing equipment or stump-removal equipment will be used by construction forces except on access roads or at the actual structure, pole, or tower sites, where only footing locations and controlled runoff diversions shall be created that disturb the soil. All other areas of ground cover or in-place stumps and roots shall remain in place. (Note: Tracked vehicles disturb surface layer of the ground due to size and function.) Some disking of the right-of-way may occur for proper seedbed preparation.

   Unless ponding previously occurred (i.e., existing low-lying areas), water should not be allowed to pond on the structure sites except around foundation holes; the water must be directed away from the site in as dispersed a manner as possible. At tower or

structure sites, some means of upslope interruption of potential overland flow and diversion around the footings should be provided as the first step in construction-site preparation. If leveling is necessary, it must be implemented by means that provide for continuous gentle, controlled, overland flow or percolation. A good grass cover, straw, gravel, or other protection of the surface must be maintained. Steps taken to prevent increases in the moisture content of the in-situ soils will be beneficial both during construction and over the service life of any structure.

5. Sanitation - A designated TVA or contractor representative shall contact a sanitary contractor who will provide sanitary chemical toilets convenient to all principal points of operation for every working party. The facilities shall comply with applicable federal, state, or local health laws and regulations. They shall not be located closer than 100 feet to any stream or tributary or to any wetland. The facilities shall be required to have proper servicing and maintenance, and the waste disposal contractor shall verify in writing that the waste disposal will be in state-approved facilities. Employees shall be notified of sanitation regulations and shall be required to use the toilet facilities.

6. Refuse Disposal - Designated TVA and/or contractor personnel shall be responsible for daily inspection, cleanup, and proper labeling, storage, and disposal of all refuse and debris produced by his operations and by his employees. Suitable refuse collecting facilities will be required. Only state-approved disposal areas shall be used. Disposal containers such as dumpsters or roll-off containers shall be obtained from a proper waste disposal contractor. Solid, special, construction/demolition, and hazardous wastes as well as scrap are part of the potential refuse generated and must be properly managed with emphasis on reuse, recycle, or possible give away, as appropriate, before they are handled as waste. Contractors must meet similar provisions on any project contracted by TVA.

7. Landscape Preservation - TVA and its contractors shall exercise care to preserve the natural landscape in the entire construction area as well as use areas, in or outside the right-of-way, and on or adjacent to access roads. Construction operations shall be conducted to prevent any unnecessary destruction, scarring, or defacing of the natural vegetation and surroundings in the vicinity of the work.

8. Sensitive Areas Preservation - Certain areas on site and along the right-of-way may be designated by the specifications or the TVA engineer as environmentally sensitive. These areas include but are not limited to areas classified as erodible, geologically sensitive, scenic, historical and archaeological, fish and wildlife refuges, water supply watersheds, and public recreational areas such as parks and monuments. Contractors and TVA construction crews shall take all necessary actions to avoid adverse impacts to these sensitive areas and their adjacent buffer zones. These actions may include suspension of work or change of operations during periods of rain or heavy public use; hours may be restricted or concentrations of noisy equipment may have to be dispersed. If prehistoric or historic artifacts or features are encountered during clearing or construction operations, the operations shall immediately cease for at least 100 feet in each direction, and TVA's right-of-way inspector or construction superintendent and Cultural Resources Program shall be notified. The site shall be left as found until a significance determination is made. Work may continue elsewhere beyond the 100-foot perimeter.

9. Water Quality Control - TVA and contractor construction activities shall be performed by methods that will prevent entrance or accidental spillage of solid matter, contaminants,

debris, and other objectionable pollutants and wastes into flowing caves, sinkholes, streams, dry watercourses, lakes, ponds, and underground water sources.

The clearing contractor will erect and (when TVA or contract construction personnel are unable) maintain best management practices (BMPs) such as silt fences on steep slopes and adjacent to any stream, wetland, or other water body. Additional BMPs may be required for areas of disturbance created by construction activities. BMPs will be inspected by the TVA field engineer or other designated TVA or contractor personnel routinely and during periods of high runoff, and any necessary repairs will be made as soon as practicable. BMP inspections will be conducted in accordance with permit requirements. Records of all inspections will be maintained on site, and copies of inspection forms will be forwarded to the TVA construction environmental engineer.

Acceptable measures for disposal of waste oil from vehicles and equipment shall be followed. No waste oil shall be disposed of within the right-of-way, on a construction site, or on access roads.

10. Turbidity and Blocking of Streams - Construction activities in or near SMZs or other bodies of water shall be controlled to prevent the water turbidity from exceeding state or local water quality standards for that stream. All conditions of a general storm water permit, aquatic resource alteration permit, or a site-specific permit shall be met including monitoring of turbidity in receiving streams and/or storm water discharges and implementation of appropriate erosion and sediment control measures.

    Appropriate drainage facilities for temporary construction activities interrupting natural site drainage shall be provided to avoid erosion. Watercourses shall not be blocked or diverted unless required by the specifications or the TVA engineer. Diversions shall be made in accordance with TVA's *A Guide for Environmental Protection and Best Management Practices for Tennessee Valley Authority Transmission Construction and Maintenance Activities (Muncy, 2012).*

    Mechanized equipment shall not be operated in flowing water except when approved and, then, only to construct crossings or to perform required construction under direct guidance of TVA. Construction of stream fords or other crossings will only be permitted at approved locations and to current TVA construction access road standards. Material shall not be deposited in watercourses or within stream bank areas where it could be washed away by high stream flows. Appropriate U.S. Army Corps of Engineers and state permits shall be obtained.

    Wastewater from construction or dewatering operations shall be controlled to prevent excessive erosion or turbidity in a stream, wetland, lake, or pond. Any work or placing of equipment within a flowing or dry watercourse requires the prior approval of TVA.

11. Clearing - No construction activities may clear additional site or right-of-way vegetation or disturb remaining retained vegetation, stumps, or regrowth at locations other than the structure sites and conductor setup areas. TVA and the construction contractor(s) must provide appropriate erosion or sediment controls for areas they have disturbed that have previously been restabilized after clearing operations. Control measures shall be implemented as soon as practicable after disturbance in accordance with applicable federal, state, and/or local storm water regulations.

12. Restoration of Site - All construction disturbed areas, with the exception of farmland under cultivation and any other areas as may be designated by TVA's specifications, shall be stabilized in the following manner unless the property owner and TVA's engineer specify a different method:

    A. The subsoil shall be loosened to a minimum depth of 6 inches if possible and worked to remove unnatural ridges and depressions.

    B. If needed, appropriate soil amendments will be added.

    C. All disturbed areas will initially be seeded with a temporary ground cover such as winter wheat, rye, or millet, depending on the season. Perennials may also be planted during initial seeding if proper growing conditions exist. Final restoration and final seeding will be performed as line construction is completed. Final seeding will consist of permanent perennial grasses such as those outlined in TVA's *A Guide for Environmental Protection and Best Management Practices for Tennessee Valley Authority Transmission Construction and Maintenance Activities (Muncy 2012).* Exceptions would include those areas designated as native grass planting areas. Initial and final restoration will be performed by the clearing contractor.

    D. TVA holds the option, depending upon the time of year and weather condition, to delay or withdraw the requirement of seeding until more favorable planting conditions are certain. In the meantime, other stabilization techniques must be applied.

13. Air Quality Control - Construction crews shall take appropriate actions to minimize the amount of air pollution created by their construction operations. All operations must be conducted in a manner that avoids creating a nuisance and prevents damage to lands, crops, dwellings, or persons.

14. Burning - Before conducting any open burning operations, the contractor shall obtain permits or provide notifications as required to state forestry offices and/or local fire departments. Burning operations must comply with the requirements of state and local air pollution control and fire authorities and will only be allowed in approved locations and during appropriate hours and weather conditions. If weather conditions such as wind direction or speed change rapidly, the contractor's burning operations may be temporarily stopped by the TVA field engineer. The debris for burning shall be piled and shall be kept as clean and as dry as possible, then burned in such a manner as to reduce smoke. No materials other than dry wood shall be open burned. The ash and debris shall be buried away from streams or other water sources and shall be in areas coordinated with the property owner.

15. Dust and Mud Control - Construction activities shall be conducted to minimize the creation of dust. This may require limitations as to types of equipment, allowable speeds, and routes utilized. Water, straw, wood chips, dust palliative, gravel, combinations of these, or similar control measures may be used subject to TVA's approval. On new construction sites and easements, the last 100 feet before an access road approaches a county road or highway shall be graveled to prevent transfer of mud onto the public road.

16. Vehicle Exhaust Emissions - TVA and/or the contractors shall maintain and operate equipment to limit vehicle exhaust emissions. Equipment and vehicles that show

excessive emissions of exhaust gasses and particulates due to poor engine adjustments or other inefficient operating conditions shall not be operated until corrective repairs or adjustments are made.

17. Vehicle Servicing - Routine maintenance of personal vehicles will not be performed on the right-of-way. However, if emergency or "have to" situations arise, minimal/temporary maintenance to personal vehicles will occur in order to mobilize the vehicle to an off-site maintenance shop. Heavy equipment will be serviced on the right-of-way except in designated sensitive areas. The Heavy Equipment Department within TVA or the construction contractor will properly maintain these vehicles with approved spill prevention controls and countermeasures. If emergency maintenance in a sensitive or questionable area arises, the area environmental coordinator or construction environmental engineer will be consulted. All wastes and used oils will be properly recovered, handled, and disposed/recycled. Equipment shall not be temporarily stored in stream floodplains, whether overnight or on weekends or holidays.

18. Smoke and Odors - TVA and/or the contractors shall properly store and handle combustible material that could create objectionable smoke, odors, or fumes. The contractor shall not burn refuse such as trash, rags, tires, plastics, or other debris.

19. Noise Control - TVA and/or the contractor shall take measures to avoid the creation of noise levels that are considered nuisances, safety, or health hazards. Critical areas including but not limited to residential areas, parks, public use areas, and some ranching operations will require special considerations. TVA's criteria for determining corrective measures shall be determined by comparing the noise level of the construction operation to the background noise levels. In addition, especially noisy equipment such as helicopters, pile drivers, air hammers, chippers, chain saws, or areas for machine shops, staging, assembly, or blasting may require corrective actions when required by TVA.

20. Noise Suppression - All internal combustion engines shall be properly equipped with mufflers as required by the Department of Labor's *Safety and Health Regulations for Construction*. TVA may require spark arresters in addition to mufflers on some engines. Air compressors and other noisy equipment may require sound-reducing enclosures in some circumstances.

21. Damages - The movement of construction crews and equipment shall be conducted in a manner that causes as little intrusion and damage as possible to crops, orchards, woods, wetlands, and other property features and vegetation. The contractor will be responsible for erosion damage caused by his actions and especially for creating conditions that would threaten the stability of the right-of-way or site soil, the structures, or access to either. When property owners prefer the correction of ground cover condition or soil and subsoil problems themselves, the section of the contract dealing with damages will apply.

References

Muncy, J. A. 2012. A Guide for Environmental Protection and Best Management Practices for Tennessee Valley Authority Transmission Construction and Maintenance Activities (revised edition). Edited by Abigail Bowen, Jodie Branum, Corey Chandler, Adam Dattilo, Britta Dimick, Shea Gaither, Casey Henley, Todd Liskey, Joe Melton, Cherie Minghini, Paul Pearman, Kenton Smithson, Joe Turk, Emily Willard, Robby

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APPENDIX C

TVA TRANSMISSION CONSTRUCTION GUIDELINES NEAR STREAMS

Tennessee Valley Authority Transmission Construction Guidelines Near Streams

Even the most carefully designed transmission line project eventually will affect one or more creeks, rivers, or other type of water body. These streams and other water areas are protected by state and federal law, generally support some amount of fishing and recreation, and, occasionally, are homes for important and/or endangered species. These habitats occur in the stream and on strips of land along both sides (the streamside management zone [SMZ]) where disturbance of the water, land, or vegetation could have an adverse effect on the water or stream life. The following guidelines have been prepared to help Tennessee Valley Authority (TVA) Transmission Construction staff and their contractors avoid impacts to streams and stream life as they work in and near SMZs. These guidelines expand on information presented in *A Guide for Environmental Protection and Best Management Practices for Tennessee Valley Authority Construction and Maintenance Activities* (Muncy 2012).

Three Levels of Protection

During the preconstruction review of a proposed transmission line, the TVA Environmental Biological Compliance staff will have studied each possible stream impact site and will have identified it as falling into one of three categories: (A) standard streamside management protection, (B) protection of important permanent streams, springs, and sinkholes, or (C) protection of unique habitats. These category designations are based on the variety of species and habitats that exist in the stream, as well as federal requirements to avoid harming certain species.

As early as possible after field surveys are completed by the TVA Biological Compliance Staff, any streams that have been designated as either Category B or C will be discussed with the TVA Environmental Energy Delivery staff. The purpose of these discussions will be to minimize the number of crossings and their impact on the important resources in the streams during design and construction. The category designation for each stream site will then be marked on the transmission line plan and profile sheets. Construction crews are required to protect streams and other identified water habitats using the following pertinent set(s) of guidelines:

(A) Standard Stream Protection

This is the standard (basic) level of protection for streams, springs, sinkholes, and the habitats around them. The purpose of the following guidelines is to minimize the amount and length of disturbance to the water bodies without causing adverse impacts on the construction work.

Guidelines:

1. All construction work around streams, springs, and sinkholes will be done using pertinent best management practices (BMPs) such as those described in *A Guide for Environmental Protection and Best Management Practices for Tennessee Valley Authority Construction and Maintenance Activities,* especially Chapter 5, “Structural Controls Standards and Specifications” (Muncy 2012).

2. All equipment crossings of streams and shorelines must comply with appropriate state permitting requirements. Crossings of all drainage channels, intermittent streams, and permanent streams must be done in ways that avoid erosion problems and long-term changes in water flow. Crossings of any permanent streams must allow for natural movement of fish and other aquatic life.

3. Cutting of trees within SMZs must be accomplished by using either hand-held equipment or other appropriate clearing equipment (e.g., a feller-buncher) that would result in minimal soil disturbance and damage to low-lying vegetation. The method will be selected based on site-specific conditions and topography to minimize soil disturbance and impacts to the SMZ and surrounding area. Stumps can be cut close to ground level, but must not be removed or uprooted.

4. Other vegetation near streams must be disturbed as little as possible during construction. Soil displacement as a result of clearing operations by the actions of plowing, disking, blading, or other tillage or grading equipment will be minimized in SMZs. Shorelines that have to be disturbed must be stabilized as soon as feasible.

(B) Protection of Important Permanent Streams, Springs, and Sinkholes

This category will be used when there is one or more specific reason(s) why a permanent (always-flowing) stream, spring, or sinkhole requires protection beyond that provided by standard BMPs. Reasons for requiring this additional protection include high potential for occupancy by federally listed or significant state-listed species, federally designated critical habitat, or areas designated as special use classification (e.g., trout waters). The purpose of the following guidelines is to minimize the disturbance of the banks and water in the flowing stream(s) where this level of protection is required.

Guidelines:

1. Except as modified by Guidelines 2-4 below, all construction work around streams will be done using pertinent BMPs, such as those described in *A Guide for Environmental Protection and Best Management Practices for Tennessee Valley Authority Construction and Maintenance Activities,* especially Chapter 5, “Structural Controls Standards and Specifications” (Muncy 2012).

2. All equipment crossings of streams must comply with appropriate state (and, at times, federal) permitting requirements. Crossings of drainage channels and intermittent streams must be done in ways that avoid erosion problems and long-term changes in water flow. Category B designations will be discussed with the TVA Environmental Energy Delivery staff as early as possible in the process, to allow time to discuss possible avoidance or minimization of impacts with design and construction.

3. Cutting of trees within SMZs must be accomplished by using either hand-held equipment or other appropriate clearing equipment (e.g., a feller-buncher) that would result in minimal soil disturbance and damage to low-lying vegetation. The method will be selected based on site-specific conditions and topography to minimize soil disturbance and impacts to the SMZ and surrounding area. Cutting of trees near permanent streams must be limited to those required to meet National

Electrical Safety Code and danger tree requirements. Stumps can be cut close to ground level, but must not be removed or uprooted.

4. Other vegetation near streams must be disturbed as little as possible during construction. Soil displacement by the actions of plowing, disking, blading, or other tillage or grading equipment will be minimized in SMZs. Shorelines that have to be disturbed must be stabilized as soon as possible and revegetated as soon as feasible.

(C) Protection of Unique Habitats

This category will be used when, for one or more specific reasons, a temporary or permanent aquatic habitat requires special protection. This relatively uncommon level of protection will be appropriate and required when a unique habitat requiring special protection is present (for example, the spawning area of a rare species), the stream is known to be occupied by a federally listed or significant state-listed species, or when required as a special condition resulting from consultation with the United States Fish and Wildlife Service to avoid project effects on a listed species or designated critical habitat. The purpose of the following guidelines is to avoid or minimize any disturbance of the unique aquatic habitat.

Guidelines:

1. Except as modified by Guidelines 2-4 below, all construction work around the unique habitat will be done using pertinent BMPs, such as those described in *A Guide for Environmental Protection and Best Management Practices for Tennessee Valley Authority Construction and Maintenance Activities,* especially Chapter 5, "Structural Controls Standards and Specifications" (Muncy 2012).

2. Category C designations would be discussed with the TVA Environmental Energy Delivery staff as early as possible following field surveys to allow time to discuss possible avoidance or minimization of impacts with design and construction. Environmental Energy Delivery staff would discuss construction activities to take place in the SMZ with the Environmental Biological Compliance staff. On-site planning sessions would be conducted as needed. All crossings of streams also must comply with appropriate state (and, at times, federal) permitting requirements.

3. Cutting of trees within SMZs must be accomplished by using either hand-held equipment or other appropriate clearing equipment (e.g., a feller-buncher) that would result in minimal soil disturbance and damage to low-lying vegetation. The method will be selected based on site-specific conditions and topography to minimize soil disturbance and impacts to the SMZ and surrounding area. Cutting of trees near permanent streams should be limited to those required to meet National Electrical Safety Code, Federal Energy Regulatory Commission standards, and danger tree requirements. Stumps can be cut close to ground level, but must not be removed or uprooted.

4. Other vegetation near the unique habitat must be disturbed as little as possible during construction. Soil disturbance by plowing, disking, blading, or grading must be kept at a minimum. Areas that have to be disturbed must be stabilized as soon as possible and revegetated as soon as feasible.

5. Special SMZ requirements will be coordinated with Environmental Biological Compliance staff.

Maintenance

During ongoing operations, SMZs will be inspected frequently; and during inactive periods, occasionally. Damaging or failing situations that may cause unacceptable water quality impacts will be corrected as soon as practical.

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Comparison of Guidelines Under the Three Stream and Water Body Protection Categories[1] (page 1)

Guidelines	A: Standard Stream Protection	B: Protection of Important Permanent Streams, Springs, and Sinkholes	C: Protection of Unique Habitats
1. Reference	• All TVA construction work around streams, springs, and sinkholes will be done using pertinent Best Management Practices (BMPs) such as those described in *A Guide for Environmental Protection and Best Management Practices for Tennessee Valley Authority Construction and Maintenance Activities*, especially Chapter 5, "Structural Controls Standards and Specifications."	• Except as modified by Guidelines 2-4, all construction work around streams will be done using pertinent BMPs such as those described in *A Guide for Environmental Protection and Best Management Practices for Tennessee Valley Authority Construction and Maintenance Activities*, especially Chapter 5, "Structural Controls Standards and Specifications."	• Except as modified by Guidelines 2-4, all construction work around the unique habitat will be done using pertinent BMPs such as those described in *A Guide for Environmental Protection and Best Management Practices for Tennessee Valley Authority Construction and Maintenance Activities,* especially Chapter 5, "Structural Controls Standards and Specifications."
2. Equipment Crossings	• All equipment crossings of streams and shorelines must comply with appropriate state permitting requirements. • Crossings of all drainage channels, intermittent streams, and permanent streams must be done in ways that avoid erosion problems and long-term changes in water flow. • Crossings of any permanent streams must allow for natural movement of fish and other aquatic life.	• All equipment crossings of streams also must comply with appropriate state (and, at times federal) permitting requirements. • Crossings of drainage channels and intermittent streams must be done in ways that avoid erosion problems and long-term changes in water flow. • All construction activity would be discussed with the TVA Environmental Energy Delivery staff as early as possible in the process to allow time to discuss possible avoidance or minimization of impacts with design and construction.	• All crossings of streams also must comply with appropriate state (and, at times federal) permitting requirements. • All construction activity would be discussed with the TVA Environmental Energy Delivery staff as early as possible following field surveys to allow time to discuss possible avoidance or minimization of impacts with design and construction. • On-site planning sessions would be conducted as needed.

[1]Source: *A Guide for Environmental Protection and Best Management Practices for Tennessee Valley Authority Construction and Maintenance Activities* (Muncy 2012)

Comparison of Guidelines Under the Three Stream and Water Body Protection Categories[1] (page 2)

Guidelines	A: Standard	B: Important Permanent Streams	C: Unique Water Habitats
3. Cutting Trees	• Cutting of trees within streamside management zones (SMZs) must be accomplished by using either hand-held equipment or other appropriate clearing equipment (e.g., a feller-buncher) that would result in minimal soil disturbance and damage to low-lying vegetation. The method will be selected based on site-specific conditions and topography to minimize soil disturbance and impacts to the SMZ and surrounding area. • Stumps can be cut close to ground level, but must not be removed or uprooted.	• Cutting of trees within SMZs must be accomplished by using either hand-held equipment or other appropriate clearing equipment (e.g., a feller-buncher) that would result in minimal soil disturbance and damage to low-lying vegetation. The method will be selected based on site-specific conditions and topography to minimize soil disturbance and impacts to the SMZ and surrounding area. • Cutting of trees near permanent streams must be limited to those meeting National Electrical Safety Code (NESC) and danger tree requirements. • Stumps can be cut close to ground level, but must not be removed or uprooted.	• Cutting of trees within SMZs must be accomplished by using either hand-held equipment or other appropriate clearing equipment (e.g., a feller-buncher) that would result in minimal soil disturbance and damage to low-lying vegetation. The method will be selected based on site-specific conditions and topography to minimize soil disturbance and impacts to the SMZ and surrounding area. • Cutting of trees near permanent streams must be limited to those meeting NESC, Federal Energy Regulatory Commission standards, and danger tree requirements. • Stumps can be cut close to ground level, but must not be removed or uprooted.
4. Other Vegetation	• Other vegetation near streams must be disturbed as little as possible during construction. • Soil displacement as a result of clearing operations by the actions of plowing, disking, blading, or other tillage or grading equipment will be minimized in SMZs. • Shorelines that have to be disturbed must be stabilized as soon as feasible.	• Other vegetation near streams must be disturbed as little as possible during construction. • Soil displacement by the actions of plowing, disking, blading, or other tillage or grading equipment will be minimized in SMZs. • Shorelines that have to be disturbed must be stabilized as soon as possible and revegetated as soon as feasible.	• Other vegetation near the unique habitat must be disturbed as little as possible during construction. • The soil disturbance by plowing, disking, blading, or grading must be kept at a minimum. • Areas that have to be disturbed must be stabilized as soon as possible and revegetated as soon as feasible. Special SMZ requirements will be coordinated with Environmental Biological Compliance staff.

[1]Source: *A Guide for Environmental Protection and Best Management Practices for Tennessee Valley Authority Construction and Maintenance Activities (Muncy 2012)*

APPENDIX D

TVA ENVIRONMENTAL QUALITY PROTECTION SPECIFICATIONS FOR TRANSMISSION SUBSTATION OR COMMUNICATIONS CONSTRUCTION

Tennessee Valley Authority Environmental Quality Protection Specifications for Transmission Substation or Communications Construction

1. General – Tennessee Valley Authority (TVA) and/or the assigned contractor and subcontractors shall plan, coordinate, and conduct his or her operations in a manner that protects the quality of the environment and complies with TVA's environmental expectations discussed in the preconstruction meeting (including clearing and grading or reclearing and removal or dismantling). This specification contains provisions that shall be considered in all TVA and contract construction, dismantling, or forensic operations. If the contractor and his or her subcontractors fail to operate within the intent of these requirements, TVA will direct changes to operating procedures. Continued violation will result in a work suspension until correction or remedial action is taken by the contractor. Penalties and contract termination will be used as appropriate. The costs of complying with the Environmental Quality Protection Specifications are incidental to the contract work, and no additional compensation will be allowed. At all site perimeters, structure, foundation, conduit, grounding, fence, drainage ways, etc., appropriate protective measures to prevent erosion or release of contaminants will be taken immediately upon the end of each step in a construction, dismantling, or forensic sequence, and those protective measures will be inspected and maintained throughout the construction and site stabilization and rehabilitation period.

2. Regulations - TVA and/or the assigned contractor and subcontractor(s) shall comply with all applicable federal, state, and local environmental and antipollution laws, regulations, and ordinances related to environmental protection and prevention, control, and abatement of all forms of pollution.

3. Use Areas - TVA and/or the assigned contractor and/or subcontractor(s) use areas include but are not limited to site office, shop, maintenance, parking, storage, staging, assembly areas, utility services, and access roads to the use areas. The construction contractor and subcontractor(s) shall submit plans and drawings for their location and development to the TVA engineer and project manager for approval. Secondary containment will be provided for fuel and petroleum product storage pursuant to 29CFR1910.106(D)(6)(iii)(OSHA).

4. Equipment - All major equipment and proposed methods of operation shall be subject to the approval of TVA. The use or operation of heavy equipment in areas outside the right-of-way, access routes, site, or structure, pole, or tower sites will not be permitted without permission of the TVA inspector or field engineer. Heavy equipment use on steep slopes (greater than 20 percent) and in wet areas will be held to the minimum necessary to construct the transmission or communication facility. Steps will be taken to limit ground disturbance caused by heavy equipment usage, and erosion and sediment controls will be instituted on disturbed areas in accordance with state requirements and best management practices (BMPs).

   No subsurface ground-disturbing equipment or stump-removal equipment will be used by construction forces except on access roads or at the actual site, structure, pole, or tower sites, where only footing locations and controlled runoff diversions shall be created that disturb the soil. All other areas of ground cover or in-place stumps and roots shall remain in place. (Note: Tracked vehicles disturb surface layer of the ground

due to size and function.) Some disking of the right-of-way, access, and site(s) may occur for proper seedbed preparation.

Unless ponding previously occurred (i.e., existing low-lying areas), water should not be allowed to pond on the site or around structures except around foundation holes; the water must be directed away from the site in as dispersed a manner as possible. At tower or structure sites, some means of upslope interruption of potential overland flow and diversion around the footings should be provided as the first step in construction-site preparation. If leveling is necessary, it must be implemented by means that provide for continuous gentle, controlled, overland flow or percolation. A good grass cover, straw, gravel, or other protection of the surface must be maintained. Steps taken to prevent increases in the moisture content of the in-situ soils will be beneficial both during construction and over the service life of any anchor, foundation, or its structure.

5. Sanitation - A designated TVA or contractor and/or subcontractor(s) representative shall contract a sanitary contractor who will provide sanitary chemical toilets convenient to all principal points of operation for every working party. The facilities shall comply with applicable federal, state, or local health laws and regulations. They shall not be located closer than 100 feet to any stream or tributary or to any wetland. The facilities shall be required to have proper servicing and maintenance, and the waste disposal contractor shall verify in writing that the waste disposal will be in state-approved facilities. Employees shall be notified of sanitation regulations and shall be required to use the toilet facilities.

6. Refuse Disposal - Designated TVA and/or contractor and subcontractor(s) personnel shall be responsible for daily inspection, cleanup, and proper labeling, storage, and disposal of all refuse and debris produced by his or her operations and by his or her employees. Suitable refuse collecting facilities will be required. Only state-approved disposal areas shall be used. Disposal containers such as dumpsters or roll-off containers shall be obtained from a proper waste disposal contractor. Solid, special, construction/demolition, and hazardous wastes as well as scrap are part of the potential refuse generated and must be properly managed with emphasis on reuse, recycle, or possible give away, as appropriate, before they are handled as wastes. Records of the amounts generated shall be provided to the site's or project's designated environmental specialist. Contractor(s) and subcontractor(s) must meet similar provisions on any project contracted by TVA. Final debris, refuse, product, and material removal is the responsibility of the contractor unless special written agreement is made with the ultimate TVA owner of the site.

7. Landscape Preservation - TVA and its contractor(s) and subcontractor(s) shall exercise care to preserve the natural landscape in the entire construction, dismantling, or forensic area as well as use areas, in or outside the right-of-way, and on or adjacent to access roads. Construction operations shall be conducted to prevent any unnecessary destruction, scarring, or defacing of the natural vegetation and surroundings in the vicinity of the work.

8. Sensitive Areas Preservation - Certain areas on site and along the access and/or right-of-way may be designated by the specifications or the TVA engineer as environmentally sensitive. These areas include but are not limited to areas classified as erodible, geologically sensitive, scenic, historical and archaeological, fish and wildlife refuges, endangered species' habitat, water supply watersheds, and public recreational areas such as parks and monuments. Contractors, their subcontractor(s), and TVA

construction crews shall take all necessary actions to avoid adverse impacts to these sensitive areas and their adjacent buffer zones. These actions may include suspension of work or change of operations during periods of rain or heavy public use; hours may be restricted or concentrations of noisy equipment may have to be dispersed. If prehistoric or historic artifacts or features are encountered during clearing, grading, borrow, fill, construction, dismantling, or forensic operations, the operations shall immediately cease for at least 100 feet in each direction, and TVA's construction superintendent, project manager, or area environmental program administrator and TVA Cultural Resources Program shall be notified. The site shall be left as found until a significance determination is made. Work may continue elsewhere beyond the 100-foot perimeter.

9. Water Quality Control - TVA and contractor construction, dismantling, or forensic activities shall be performed by methods that will prevent entrance or accidental spillage of solid matter, contaminants, debris, and other objectionable pollutants and wastes into flowing caves, sinkholes, streams, dry watercourses, lakes, ponds, and underground water sources.

   The clearing contractor erected erosion and/or sedimentation control shall be maintained and (when TVA or contract construction personnel are unable) the construction crew(s) shall maintain BMPs such as silt fences on steep slopes and adjacent to any stream, wetland, or other water body. Additional BMPs may be required for areas of disturbance created by construction activities and at sequential steps of construction at the same location on site. BMPs will be inspected by the TVA field engineer or other designated TVA or contractor and/or subcontractor(s) personnel routinely and during periods of high runoff, and any necessary repairs will be made as soon as practicable. BMP inspections and any required sampling will be conducted in accordance with permit requirements. Records of all inspections and sampling results will be maintained on site, and copies of inspection forms and sampling results will be forwarded to the TVA project manager or supporting environmental specialist.

   Acceptable measures for disposal of waste oil from vehicles and equipment shall be followed. No waste oil shall be disposed of within the site, access, or right-of-way, on a related construction site or its access roads.

10. Turbidity and Blocking of Streams - Construction, dismantling, or forensic activities in or near streamside management zones or other bodies of water shall be controlled to prevent the water turbidity from exceeding state or local water quality standards for that stream. **All conditions** of a general storm water permit, aquatic resource alteration permit, or a site-specific permit **shall be met** including monitoring of turbidity in receiving streams and/or storm water discharges and implementation of appropriate erosion and sediment control measures.

    Appropriate drainage facilities for temporary construction, dismantling, or forensic activities interrupting natural site drainage shall be provided to avoid erosion. Watercourses shall not be blocked or diverted unless required by the specifications or the TVA engineer. Diversions shall be made in accordance with TVA's *A Guide for Environmental Protection and Best Management Practices for Tennessee Valley Authority Transmission Construction and Maintenance Activities (Muncy, 2012).*

    On rights-of-way, mechanized equipment shall not be operated in flowing or standing water bodies except when approved and, then, only to construct crossings or to perform

required construction under direct guidance of TVA. Construction of stream fords or other crossings will only be permitted at approved locations and to current TVA construction access road standards. Material shall not be deposited in watercourses, their adjacent wetlands, or within stream bank areas where it could be washed away by high stream flows. Appropriate U.S. Army Corps of Engineers' and state permits shall be obtained.

Mechanized equipment shall not be operated in flowing or standing water on substation, switching station, or telecommunication sites.

Wastewater from construction, dismantling, or dewatering operations shall be controlled to prevent excessive erosion or turbidity in a stream, wetland, lake, pond or conveyed to a sinkhole. Any work or placing of equipment within a flowing or dry watercourse requires the prior approval of TVA.

11. Floodplain Evaluation - During the planning and design phase of the substation or communications facility, floodplain information should be obtained to avoid locating flood-damageable facilities in the 100-year floodplain. If the preferred site is located within a floodplain area, alternative sites must be evaluated and documentation prepared to support a determination of "no practicable alternative" to siting in the floodplain. In addition, steps taken to minimize adverse floodplain impacts should also be documented.

12. Clearing - No construction, dismantling, or forensic activities may clear additional site or right-of-way vegetation or disturb remaining retained vegetation, stumps, or regrowth at locations other than the structure, substation, or communication site or access thereto. TVA and the construction, dismantling, or forensic contractor(s) must provide appropriate erosion or sediment controls for areas they have disturbed after each disturbance that have previously been restabilized after clearing operations. Control measures shall be implemented as soon as practicable after disturbance in accordance with applicable federal, state, and/or local storm water regulations.

13. Restoration of Site - All construction, dismantling, or forensic-related disturbed areas with the exception of farmland under cultivation and any other areas as may be designated by TVA's specifications shall be stabilized in the following manner unless the property owner and TVA's engineer specify a different method:

    A. The subsoil shall be loosened to a minimum depth of 6 inches if possible and worked to remove unnatural ridges and depressions.

    B. If needed, appropriate soil amendments will be added.

    C. All disturbed areas will initially be seeded with a temporary ground cover such as winter wheat, rye, or millet, depending on the season. Perennials may also be planted during initial seeding if proper growing conditions exist. Final restoration and final seeding will be performed as line construction is completed. Final seeding will consist of permanent perennial grasses such as those outlined in TVA's *A Guide for Environmental Protection and Best Management Practices for Tennessee Valley Authority Transmission Construction and Maintenance Activities (Muncy 2012).* Exceptions would include those areas designated as native grass planting areas. Initial and final restoration will be performed by the clearing contractor.

D. Rehabilitation species shall use species designated by federal guidance that are low–maintenance, native species appropriate for the site conditions that prevail at that location.

E. TVA holds the option, depending upon the time of year and weather condition, to delay or withdraw the requirement of seeding until more favorable planting conditions are certain. In the meantime, other stabilization techniques must be applied.

F. The site must be protected from species designated by the federal Invasive Species Council and must not be the source of species that can be transported to other locations via equipment contaminated with viable materials; thus, the equipment must be inspected, and any such species' material found must be removed and destroyed prior to transport to another location.

14. Air Quality Control - Construction, dismantling, and/or forensic crews shall take appropriate actions to minimize the amount of air pollution created by their operations. All operations must be conducted in a manner that avoids creating a nuisance and prevents damage to lands, crops, dwellings, or persons.

15. Burning - Before conducting any open burning operations, the contractor and subcontractor(s) shall obtain permits or provide notifications as required to state forestry offices and/or local fire departments. Burning operations must comply with the requirements of state and local air pollution control and fire authorities and will only be allowed in approved locations and during appropriate hours and weather conditions. If weather conditions such as wind direction or speed change rapidly, the contractor's burning operations may be temporarily stopped by the TVA field engineer. The debris for burning shall be piled and shall be kept as clean and as dry as possible, then burned in such a manner as to reduce smoke. No materials other than dry wood shall be open burned. The ash and debris shall be buried away from streams or other water sources and shall be in areas coordinated with the property owner on rights-of-way or project manager for TVA sites.

16. RENOVATION OR DEMOLITION DEBRIS MAY NOT BE BURNED.

17. Dust and Mud Control - Construction, dismantling, or forensic activities shall be conducted to minimize the creation of dust. This may require limitations as to types of equipment, allowable speeds, and routes utilized. Water, straw, wood chips, dust palliative, gravel, combinations of these, or similar control measures may be used subject to TVA's approval. On new construction sites and easements, the last 100 feet before an access road approaches a county road or highway shall be graveled to prevent transfer of mud onto the public road.

18. Vehicle Exhaust Emissions - TVA and/or the contractor(s) and subcontractor(s) shall maintain and operate equipment to limit vehicle exhaust emissions. Equipment and vehicles that show excessive emissions of exhaust gasses and particulates due to poor engine adjustments or other inefficient operating conditions shall not be operated until corrective repairs or adjustments are made.

19. Vehicle Servicing - Routine maintenance of personal vehicles will not be performed on the right-of-way or access route to the site. However, if emergency or "have to" situations arise, minimal/temporary maintenance to personal vehicles will occur in order

to mobilize the vehicle to an off-site maintenance shop. Heavy equipment will be serviced on the site except adjacent to or in designated sensitive areas. The Heavy Equipment Department within TVA or the construction, dismantling, or forensic contractor will properly maintain these vehicles with approved spill protection controls and countermeasures. If emergency maintenance in a sensitive or questionable area arises, the area environmental coordinator or construction environmental engineer will be consulted. All wastes and used oils will be properly recovered, handled, and disposed/recycled. Records of amounts generated shall be provided to TVA. Equipment shall not be temporarily stored in stream floodplains whether overnight or on weekends or holidays.

20. Smoke and Odors - TVA and/or the contractor(s) and subcontractor(s) shall properly store and handle combustible material that could create objectionable smoke, odors, or fumes. The contractor and subcontractor(s) shall not burn refuse such as trash, rags, tires, plastics, or other debris.

21. Noise Control - TVA and/or the contractor and subcontractor(s) shall take measures to avoid the creation of noise levels that are considered nuisances, safety, or health hazards. Critical areas including but not limited to residential areas, parks, public use areas, and some ranching operations will require special considerations. TVA's criteria for determining corrective measures shall be determined by comparing the noise level of the construction, dismantling, or forensic operation to the background noise levels. In addition, especially noisy equipment such as helicopters, pile drivers, air hammers, chippers, chain saws, or areas for machine shops, staging, assembly, or blasting may require corrective actions when required by TVA.

22. Noise Suppression - All internal combustion engines shall be properly equipped with mufflers as required by the Department of Labor's *Safety and Health Regulations for Construction.* TVA may require spark arresters in addition to mufflers on some engines. Air compressors and other noisy equipment may require sound-reducing enclosures in some circumstances.

23. Damages - The movement of construction, dismantling, or forensic crews and equipment shall be conducted in a manner that causes as little intrusion and damage as possible to crops, orchards, woods, wetlands, and other property features and vegetation. The contractor and subcontractor(s) will be responsible for erosion damage caused by his or her actions and employees and, especially, for creating conditions that would threaten the stability of the right-of-way or site soil, the structures, or access to either. When property owners prefer the correction of ground cover condition or soil and subsoil problems themselves, the section of the project to be handled shall be documented with an implementation schedule and a property owner signature obtained.

24. Final Site Cleanup and Inspection - The contractor’s designated person shall ensure that all construction, dismantling, or forensic-related debris, products, materials, and wastes are properly handled, labeled as required, and removed from the site. Upon completion of those activities, that person and a TVA-designated person shall walk down the site and complete an approval inspection.

References

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Revision January 2013

APPENDIX E

ROW VEGETATION MANAGEMENT GUIDELINES 2013

Energy Delivery Environmental Protection Procedures
Right-Of-Way Vegetation Management Guidelines

1.0 Overview

A. The Tennessee Valley Authority (TVA) must manage the vegetation on its rights-of-way and easements to ensure emergency maintenance access and routine access to structures, switches, conductors, and communications equipment. In addition, TVA must maintain adequate clearance, as specified by the National Electrical Safety Code, between conductors and tall growing vegetation and other objects. This requirement applies to vegetation within the right-of-way as well as to trees located off the right-of-way.

B. Each year TVA assesses the conditions of the vegetation on and along its rights-of-way. This is accomplished by aerial inspections, periodic field inspections, aerial photography, and information from TVA personnel, property owners and the general public. Important information gathered during these assessments includes the coverage by various vegetation types, the mix of plant species, the observed growth, the seasonal growing conditions, and the density of the tall vegetation. TVA also evaluates the proximity, height, and growth rate of trees adjacent to the right-of-way that may be a danger to the line or structures.

C. TVA right-of-way specialists develop a vegetation re-clearing plan that is specific to each line segment and is based on terrain conditions, species mix, growth, and density.

2.0 Right-of-Way Management Methods

A. TVA uses an integrated vegetation management approach. In farming areas, TVA encourages property owner management of the right-of-way using low growing crops. In dissected terrain with rolling hills and interspersed woodlands, TVA may utilize mechanical mowing.

B. TVA uses a variety of herbicides specific to the species present with a variety of possible application techniques. TVA utilizes control methods, including use of low volume herbicide applications, occasional single tree injections, and tree growth regulators (TGRs) to a large extent.

C. In very steep terrain, in sensitive environmental areas, in extensive wetlands, at stream banks, and in sensitive property owner land use areas, hand clearing may be utilized. Hand clearing is recognized as one of the most hazardous occupations documented by the Occupational Health and Safety Administration. For that reason, TVA utilizes low volume herbicide applications in these areas when feasible.

D. TVA does not encourage tree re-clearing by individual property owners because of the high hazard potential of hand clearing, possible interruptions of the line, and electrical safety considerations for untrained personnel that might do the work. Private property owners may re-clear the right-of-way with trained re-clearing professionals.

E. Mechanical mowers not only cut the tall saplings and seedlings on the right-of-way, they also shatter the stump and the supporting near surface root crown. The tendency of resistant species is to re-sprout from the root crown and shattered stumps can produce a multi-stem dense stand in the immediate area. Repeated use of mowers on short cycle re-clearing with many original stumps re-growing in the above manner can create a single species thicket or monoculture. With the original large root system and multiple stems, the resistant species can produce re-growth at the rate of 5-10 feet in a year. In years with high rainfall, the growth can reach 12-15 feet in a single year. These dense, monoculture stands can become nearly impenetrable for even large tractors. Such stands have low diversity, little wildlife food or nesting potential, and become a property owner concern. Selective herbicide application may be used to control monoculture stands.

F. TVA encourages property owners to sign an agreement to manage rights-of-way on their land for wildlife under the auspices of "Project Habitat," a joint project by TVA, BASF, and wildlife organizations, e.g., National Wild Turkey Federation, Quail Unlimited, and Buckmasters. The property owner maintains the right-of-way in wildlife food and cover with emphasis on quail, turkey, deer or other wildlife. A variation used in or adjacent to developing suburban areas is to sign agreements with the developer and residents to plant and maintain wildflowers on the right-of-way.

G. TVA places strong emphasis on managing rights-of-way in the above manner. When the property owners do not agree to these opportunities, TVA must maintain the right-of-way in the most environmentally acceptable, cost-effective, and efficient manner possible.

3.0 Herbicide Program

A. TVA has worked with universities (such as Mississippi State University, University of Tennessee, Purdue University and others), chemical manufacturers, other utilities, U.S. Department of Transportation, U.S. Fish and Wildlife (USFWS), and U.S. Forest Service (USFS) personnel to explore options for vegetation control. The results have been strong recommendations to use species-specific, low volume herbicide applications in more situations. Research, demonstrations, and other right-of-way programs show a definite improvement of rights-of-way treated with selective low-volume applications of new herbicides using a variety of application techniques and timing. Table 1 below identifies herbicides currently used on TVA rights-of-way. Table 2 identifies pre-emergent herbicides currently being used on bare ground areas on TVA rights-of-way and in substations. Table 3 identifies TGRs that may be used on tall trees that have special circumstances that require trimming on a regular cycle, e.g., restrictions on complete removal. The rates of application utilized are those listed on the U.S. Environmental

Protection Agency (USEPA) approved label and consistent with utility standard practice throughout the Southeast.

Table 1 - Herbicides Currently Used on TVA Rights-of-Way

Trade Name	Active Ingredient	Label Signal Word
Accord/Accord XRT II	Glyphosate/Liquid	Caution
Arsenal	Imazapyr/Liquid/Granule	Caution
Chopper	Imazapyr/RTU	Caution
Clearstand	Imazapyr/Metsulfuron Methyl/Liquid	Caution
Escort	Metsulfuron Methyl/Dry Flowable	Caution
Garlon	Triclopyr/Liquid	Caution
Garlon 3A	Triclopyr/Liquid	Danger
Habitat	Imazapyr/Liquid	Caution
Krenite S	Fosamine Ammoinium	Caution
Milestone VM	Aminopyralid/Liquid	Caution
Pathfinder II	Triclopyr/RTU	Caution
Rodeo	Glyphosate/Liquid	Caution
Roundup	Glyphosate/Liquid	Caution
Roundup Pro	Glyphosate	Caution
Streamline	Aminocyclopyrachlor/ Metsulfuron Methyl/Liquid	Caution
Transline	Clopyralid/Liquid	Caution
Viewpoint	Imazapyr/Aminocyclopyrachlor/ Metsulfuron Methyl/Liquid	Caution

Table 2 - Pre-Emergent Herbicides Currently Used for Bare Ground Areas On TVA Rights-of-Way

Trade Name	Active Ingredients	Label Signal Word
Arsenal 5G	Imazapyr/Granule	Caution
Sahara	Diuron/Imazapyr	Caution
SpraKil SK-26	Tebuthiuron/Diuron/Granules	Caution
SpraKil S-5	Tebuthiuron/Granules	Caution
Topsite	Diuron/Imazapyr	Caution

Table 3 - Tree Growth Regulators (TGRs) Currently Used On TVA Rights-of-Way

Trade Name	Active Ingredients	Label Signal Word
Profile 2SC	TGR-paclobutrazol	Caution
TGR	Flurprimidol	Caution

B. The herbicides listed in Table 1 and 2 and TGRs listed in Table 3 have been evaluated in extensive studies in support of registration applications and label requirements. Many have been reviewed in the USFS vegetation management environmental impact statements (EISs), and those evaluations are incorporated here by reference (USFS 1989a, 1989b, 2002a, and 2002b). Electronic copies can be accessed at http://www.fs.fed.us/r8/planning/documents/vegmgmt/. The result of these reviews has been a consistent finding of limited environmental impact beyond that of control of the target vegetation. All the listed herbicides have been found to be of low environmental toxicity when applied by trained applicators following the label and registration procedures, including prescribed measures, such as buffer zones, to protect threatened and endangered species.

C. Low volume herbicide applications are recommended since research demonstrates much wider plant diversity after such applications. There is better ground erosion protection and more wildlife food plants and cover plants develop. In most situations there is increased development of wild flowering plants and shrubs. In conjunction with herbicides, the diversity and density of low-growing plants provide control of tall-growing species through competition.

D. Wildlife managers often request the use of herbicides in place of rotary mowing in order to avoid damage to nesting and tunneling wildlife. This method retains ground cover year around with a better mix of food species and associated high-protein insect populations for birds in the right seasons. Most also report less damage to soils (even when compared with rubber-tired equipment).

E. Property owners interested in tree production often request the use of low volume applications rather than hand or mechanical clearing because of the insect and fungus problems in damaged vegetation and debris left on the right-of-way. The insect and fungus invasions, such as pine tip moth, oak leaf blight, sycamore and dogwood blight, etc., are becoming widespread across the nation.

F. Best Management Practices (BMPs) governing application of herbicides are contained within *A Guide for Environmental Protection and Best Management Practices for Tennessee Valley Authority Transmission Construction and Maintenance Activities* (Muncy 2012) which is incorporated by reference. Herbicides can be liquid, granular, or powder and can be applied aerially or by ground equipment and may be selectively applied or broadcast, depending on the site requirements, species present, and condition of the vegetation. Water quality considerations include measures taken to keep herbicides from reaching streams whether by direct application or through runoff of or

flooding by surface water. "Applicators" must be trained, licensed, and follow manufacturers' label instructions, USEPA guidelines, and respective state regulations and laws.

G. When herbicides are used, their potential adverse impacts are considered in selecting the compound, formulation, and application method. Herbicides that are designated "Restricted Use" by USEPA require application by or under the supervision of applicators certified by the respective state control board. Aerial and ground applications are done either by TVA or by contractors in accordance with the following guidelines identified in the TVA BMP manual (Muncy 2012):

1. The sites to be treated are selected and application directed by the appropriate TVA official.
2. A preflight walking or flying inspection is made within 72 hours prior to applying herbicides aerially. This inspection ensures that no land use changes have occurred, that sensitive areas are clearly identified to the pilot, and that buffer zones are maintained.
3. Aerial application of liquid herbicides will normally not be made when surface wind speeds exceed 5 miles per hour, in areas of fog, or during periods of temperature inversion.
4. Pellet application will normally not be made when the surface wind speeds exceed 10 miles per hour, or on frozen or water saturated soils.
5. Liquid application is not performed when the temperature reaches 95 degrees Fahrenheit or above.
6. Application during unstable, unpredictable, or changing weather patterns is avoided.
7. Equipment and techniques are used that are designed to ensure maximum control of the spray swath with minimum drift.
8. Herbicides are not applied to surface water or wetlands unless specifically labeled for aquatic use. Filter and buffer strips will conform at least to federal and state regulations and any label requirements. The use of aerial or broadcast application of herbicides is not allowed within a streamside management zone (SMZ) adjacent to perennial streams, ponds, and other water sources. Hand application of certain herbicides labeled for use within SMZs is used only selectively.
9. Buffers and filter strips (200 feet minimum width) are maintained next to agricultural crops, gardens, farm animals, orchards, apiaries, horticultural crops, and other valuable vegetation.
10. Herbicides are not applied in the following areas or times: (a) in city, state, and national parks or forests or other special areas without written permission and/or required permits (b) off the right-of-way and (c) during rainy periods or during the 48- hour interval prior to rainfall predicted with a 20 percent or greater probability by local forecasters, when soil active herbicides are used.

H. TVA currently uses primarily low volume applications of foliar and basal applications, e.g., Accord (Glyphosate), Arsenal (Imazapyr), Clearstand (Imazapyr / Metsulfuron

Methyl), Milestone VM (Aminopyralid) and Streamline (Aminocyclopyrachlor / Metsulfuron Methyl).

4.0 References

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APPENDIX F
ENVIRONMENTAL INVESTIGATION REPORT
WETLAND AND PROTECTED SPECIES

Environmental Investigation:
River Bend Solar Site
Lauderdale County, Alabama

Prepared For:
AECOM
10 Patewood Drive
Building VI, Suite 500
Greenville, South Carolina 29615

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3945 Simpson Lane
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April 22, 2015

Environmental Investigation:
River Bend Solar Site
Lauderdale County, Alabama

AECOM

JACKSON GROUP PROJECT NO. 30-062-02:008

April 22, 2015

Environmental Investigation:
River Bend Solar Site
Lauderdale County, Alabama

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April 22, 2015

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1.0 INTRODUCTION

Jackson Group, of Richmond, Kentucky was contracted by AECOM of Greenville, South Carolina on behalf of River Bend, LLC to conduct a wetlands assessment and a habitat assessment for endangered species in relation to the construction of a proposed solar energy farm. The project area is adjacent to Highway 62 in Lauderdale County, Alabama (Attachment 1), and centered at coordinates N 34.841992 W 87.834944 North American Datum 1983 (NAD 83). Survey efforts took place on October 14 and 15, 2014.

1.1 Project Purpose

This project was initiated in response to the proposed construction of the River Bend Solar Site. The project area was surveyed to identify the presence of Threatened and Endangered (T&E) species habitat and the extent of all potential jurisdictional waters of the United States (jurisdictional waters), which include navigable waters and their associated tributaries and wetlands. Jurisdictional waters are subject to the provisions of Section 404 of the Clean Water Act (33 CFR 328) and Section 10 of the River and Harbors Act of 1899. Information provided in this document is based upon Jackson Group's interpretation of data collected during field investigations. The United States Army Corps of Engineers (USACE) will have the final determination of the extent of jurisdictional waters.

2.0 METHODS

2.1 Wetland Delineation

Jackson Group biologists performed a pedestrian site survey to identify wetland boundaries within the project area. The survey included identifying vegetation communities, a geomorphologic assessment of hydrology, soils identification when necessary, and notation of existing disturbance.

The project area was reviewed for the presence of wetlands using the wetland definition outlined in the United States Army Corps of Engineers (USACE) *Wetlands Delineation Manual (Environmental Laboratory, 1987)* in conjunction with the procedures outlined in the USACE *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region Version 2.0*. Natural Resource Conservation Service's (NRCS) online soil survey data from Lauderdale County was used to determine the Soil Conservation Service's (SCS) map units and evaluate the potential for the occurrence of hydric soils within the area of investigation.

Weather conditions (i.e., rain, humidity, and temperature), which potentially affect hydrologic indicators, were recorded utilizing Weather Underground, Inc. (www.wunderground.com) during and three days prior to the date of delineation (Table 1).

Table 1. Weather conditions for dates of the delineation as well as three days prior

Lauderdale County, Alabama Weather					
Date	Precipitation (inches)	Temperature (˚F)		Humidity (%)	
		High	Low	High	Low
10/11/14	0.51	78	66	93	69
10/12/14	1.18	74	64	93	79
10/13/14	1.51	82	67	93	62
10/14/14	**0.34**	**68**	**57**	**93**	**72**
10/15/14	**0.00**	**67**	**55**	**93**	**52**

2.2 Stream Delineation

The project area was surveyed to identify the extent of potential jurisdictional waters of the U.S., which was determined by the presence and/or absence of an Ordinary High Water Mark (OHWM) with a defined bed and bank, which was measured in linear feet.

Streams were delineated by traversing upstream from an identifiable landmark (i.e. confluence of two streams, road intersection) to the End of Ordinary High Water Mark (EOHWM). Latitudes and longitudes were recorded with a Garmin Oregon Global Positioning System (GPS) at each stream terminus and at the perennial/intermittent and intermittent/ephemeral conversion zones.

2.3 Endangered Species Habitat

A desktop review of potential habitat of T&E species listed by the USFWS in Lauderdale County, Alabama was conducted to determine which habitat types are present within the project boundary. Based on all available resources, it was determined that the Northern Long-eared and Indiana bat were the only T&E species with potential habitat in the project area.

Northern Long-eared (*Myotis septentrionalis*) and Indiana bat (*M. sodalis*) habitat was characterized by determining the distribution, density and quality of roost trees in the project area. The study area included any forested and/or riparian habitats. The survey was performed by a United States Fish and Wildlife Service (USFWS)-approved biologist certified to conduct Northern Long-eared and Indiana bat surveys. Sample plots were selected based on the availability of forested habitat within project area boundary.

Northern Long-eared bats are a very opportunistic roosting species that has a wide range tolerance when selecting suitable summer roost. Potential habitat is characterized as forested habitat with trees greater than or equal to three inches diameter at breast height (dbh) that have exfoliating bark, cracks, crevices, and/or hollows.

Indiana bat roosting trees for each sample plot were located, mapped and assessed for quality. Tree species, tree condition, and dbh were recorded for all potential roost trees within sample plots. Roost trees were categorized as having a "high," "moderate," or "low" potential for serving as a roost tree for Indiana bats as follows:

- **High** - Live, dead, and partially dead trees that are >16" dbh and have roost structure suitable for a maternity colony, also including solar exposure.
- **Medium** - Live, dead, and partially dead trees that are 9 to 15" dbh and have roost structure suitable for a maternity colony, also including solar exposure.
- **Low** - Live, dead, and partially dead trees that are 5 to 8" dbh and have roost structure.

The quality of habitat surrounding the sample plot was assessed by noting distance to nearest water (if in close proximity, i.e. within 100 feet), tree density (measured in terms of basal area). A Garmin Model Oregon 550T was used to map potential roosting and maternity roosting trees. Potential roost trees and general habitat surrounds were photographed and are located in Attachments 2 and 3. The following information was recorded for each potential roost tree in the sample plot: 1) tree species, 2) dbh, 3) roost tree condition (live, dead, or partially dead), 4) type of roost structure(s) (bark, crevice, and/or cavity), 5) date, 6) surveyor, and 7) sampling location (GPS coordinates).

Suitable summer habitat for Indiana bats consists of a wide variety of forested/wooded habitats where they roost, forage, and travel and may also include some adjacent and interspersed non-forested habitats such as emergent wetlands and adjacent edges of agricultural fields, old fields and pastures. This includes forests and woodlots containing potential roosts (i.e., live trees and/or snags ≥5 inches dbh (12.7 centimeter) that have exfoliating bark, cracks, crevices, and/or hollows), as well as linear features such as fencerows, riparian forests, and other wooded corridors. While trees <5 inches (<12.7 cm) dbh that have exfoliating bark, cracks, crevices, and/or hollows may have some potential to be male Indiana bat summer roosting habitat, the USFWS does not consider early-successional, even-aged stands of trees <5 inches dbh to be suitable roosting habitat. These wooded areas may be dense or loose aggregates of trees with variable amounts of canopy closure. Individual trees may be considered suitable habitat when they exhibit the characteristics of a potential roost tree and are located within 1,000 feet (305 meters) of other forested/wooded habitat. Suitable roosting habitat is defined as forest patches with trees of 5-inch (12.7 cm) dbh or larger. However, early successional habitat with small diameter trees may be used as foraging habitat by Indiana bats. Therefore, a project that

would remove or otherwise adversely affect ≥20 acres of early successional habitat containing trees between 3 and 5 inches (7.6-12.7 cm) dbh would require coordination/consultation with the USFWS to ensure that associated impacts would not rise to the level of take.

The USFWS limits tree cutting to 15 October to 31 March for projects containing summer habitat and/or within 5 miles of a maternity capture record, are within 2.5 mile radius of a male capture record and no hibernaculum within 5 mile radius of the permit area, are within a 2.5 mile radius of a known maternity tree and no hibernaculum exists within a 5 mile radius, or contain potential summer habitat, Indiana bat presence is assumed and no hibernaculum exists within a 5 mile radius of the project area. For projects with caves, underground mine workings, rock shelters, bridges, tunnels, and other underground openings where Indiana bats have been recorded, are within 10 mile radius of P1 or P2 hibernaculum, or within 5 mile radius of P3 or P4 hibernaculum, tree cutting should only occur from 15 November to 31 March.

3.0 FINDINGS AND RESULTS

3.1. General Site Description

The project area is approximately 697 acres, located within the Interior Plateu level III ecoregion, in Lauderdale County, Alabama. Land use activities within and surrounding the project area is predominantly agriculture, including row crops such as corn, cotton, and soybeans. Topography in the project area is characterized as gently sloping to flat composed primarily of agricultural fields. Elevation in the project area ranges between approximately 500 and 550 feet above sea level.

3.2. Wetlands

Two wetlands were identified during the survey, Wetland 1 and Wetland 2, and one relic wetland, Wetland 3. Representative mapping and photos are located in Attachments 1 and 2 respectively.

3.2.1. Wetland 1

Wetland 1 is an isolated, manmade, open water farm pond approximately 0.29 acres in size. Because of the depth and inability to support rooted-emergent or woody plant species Wetland 1 is classified as deepwater aquatic habitat. Since Wetland 1 lacks a significant nexus to jurisdictional waters and is a manmade artificial pond, it is considered to be non-jurisdictional.

3.2.2. Wetland 2

Wetland 2 is an approximate 0.72 acre wetland. Wetland 2 was formed from the past construction of an earthen berm and receives water from drainage of the surrounding agricultural fields. During the time of the survey, Wetland 2 was inundated beyond its normal boundary due to precipitation events prior and on the day the survey was performed, because of water depths due to the inundation a routine assessment was unable to be performed. However, the surface water at the time of the survey gives evidence of hydrology.

Vegetation in Wetland 2 included a dominate ring of Sugar-berry trees (*Celtis laevigata*), a facultative wetland (FACW) plant species, bordering the wetland with the center having only herbaceous plant species. Because of the high water in the wetland, Jackson Group biologists were unable to identify the plant species within the center of the

wetland, however because of the hydrologic indicators and the dominant presence of the FACW sugar-berry it is assumed that hydrophytic vegetation is present.

No soil samples were able to be taken due to the lack access because of high water at the time of the survey. However, it is assumed from the existence of other wetland indicators that Wetland 2 can be classified as wetland. Since Wetland 2 does not have a significant nexus to jurisdictional waters, it is considered an isolated non-jurisdictional wetland.

3.2.3. Wetland 3

Wetland 3 is a past manmade farm pond on approximate 0.55 acres that no longer holds open water. There was evidence of inundation due to precipitation events prior and on the day the survey was performed; however, because evidence of large animal burrows and lack of other hydrologic indicators, it was assumed that this inundation is not normal. Vegetation within the surveyed area was dominated by upland species such as black cherry (*Prunus serotina*), American pokeweed (*Phytolacca Americana*), muliflora rose (*Rosa muliflora*), and various upland grasses (*Fescue sp.*) it was determined that no hydrophytic vegetation was present. Wetland 3 is identified on the NRCS NWI, but because there was a lack of wetland hydrology and vegetation, it was determined that Wetland 3 was no longer a functioning wetland.

3.2.4. Soil Characterization

The National Resource Conservation Service (NRCS) soil survey for Lauderdale County maps five soil series associated with the area of investigation (Attachment 3). These series are not listed as hydric by the NRCS and are characterized as well-drained drained to somewhat excessively drained soils that are gently sloping to flat. The soil series present in the project area include Decatur silt loam, 2 to 6 percent slopes (DaB), Grasmere silty clay loam (Gr), Decatur silty clay loam, 6 to 10 percent slopes, eroded (DcC2), Fullerton gravelly silt loam, 6 to 15 percent slopes (FaC), and Bodine gravelly silt loam, 12 to 30 percent slopes (BoE). The percentage and total areas for soils located within the area of investigation are listed in Table 1; more detailed soil information including a soils map of the area of investigation is located in Attachment 7.

Table 2. Soil Summary Data

Lauderdale County, Alabama (AL077)			
Map Unit Symbol	**Map Unit Name**	**Acres in Area of Investigation**	**Percent of Area of Investigation**
DaB	Decatur silt loam, 2 to 6 percent slopes	492.3	70.6%
Gr	Grasmere silty clay loam	132.7	19.0%
DcC2	Decatur silty clay loam, 6 to 10 percent slopes, eroded	59.0	8.5%
FaC	Fullerton gravelly silt loam, 6 to 15 percent slopes	8.3	1.2%
BoE	Bodine gravelly silt loam, 12 to 30 percent slopes	5.1	0.7%
Totals for Area of Investigation		**697.4**	**100.00%**

3.3. Streams

Seven (7) ephemeral stream channels were identified within the project area (Streams UT-A, UT-Aa, UT-Ab, UT-Ac, UT-B, UT-C, and UT-D) and four (4) swales. Representative mapping and photos are located in Attachments 1 and 3 respectively.

3.3.1. Unnamed Tributary A (UT-A)

Unnamed Tributary A (UT-A) is an ephemeral, non-relatively permanent water (non-RPW) with a very low stream quality. The stream is highly incised and has been channelized in the past to act as drainage for agricultural fields. UT-A is approximately 4,583 feet in length within the project area. UT-A begins near the center of the project area and flows towards the southwest where it continues outside the project boundary.

3.3.2. Unnamed Tributary Aa (UT-Aa)

Unnamed Tributary Aa (UT-Aa) is an ephemeral, non-RPW with a very low stream quality. UT-Aa is a manmade channel created for the purpose of agricultural drainage. UT-Aa is approximately 1,388 feet in length.

3.3.3. Unnamed Tributary Ab (UT-Ab)

Unnamed Tributary Ab (UT-Ab) is an ephemeral, non-RPW with a very low stream quality. UT-Ab is a manmade channel created for the purpose of agricultural drainage. UT-Ab is approximately 512 feet in length.

3.3.4. Unnamed Tributary Ac (UT-Ac)

Unnamed Tributary Ac (UT-Ac) is an ephemeral, non-RPW with a very low stream quality. UT-Ac is a manmade channel created for the purpose of agricultural drainage. UT-Ac is approximately 2,015 feet in length.

3.3.5. Unnamed Tributary B (UT-B)

Unnamed Tributary B (UT-B) is an ephemeral, non-RPW with a very low stream quality. UT-B flows parallel with a portion of the project area boundary in the northwest. UT-B is separated from the project area by a berm. The portion of UT-B within the project boundary is approximately 1,190 feet.

3.3.6. Unnamed Tributary C (UT-C)

Unnamed Tributary C (UT-C) is an ephemeral, non-RPW with a very low stream quality. UT-C intersects the project area flowing from north to south, the stream flows out of the project area boundary and flows southeast parallel outside the project area boundary. The portion of UT-C within the project boundary is approximately 1,230 feet in length..

3.3.7. Unnamed Tributary D (UT-D)

Unnamed Tributary D (UT-D) is an ephemeral, non-RPW with a very low stream quality. UT-D is a manmade channel created for the purpose of agricultural drainage. UT-D is approximately 1,083 feet in length.

3.3.8. Swales

Four (4) swales were identified during the survey. All four are related to agricultural drainage. Representative mapping and photos are located in Attachments 1 and 3 respectively.

3.4. Endangered Species Habitat

According the USFWS, there are 19 T&E species present in Lauderdale County, Alabama (Table 3). Based upon an evaluation of the on-site habitat, it was determined that the only T&E species with potential habitat within the project area was the Northern Long-eared and Indiana bat; however, all protected species with the potential to occur on-site were evaluated. These species are included in Sections 3.4.1 – 3.4.16. Endangered bat species habitat is discussed in Section 3.4.17.

3.4.1. Cumberland Monkeyface Habitat

This species prefers relatively silt-free substrates of sand, gravel, and cobble in good flows of smaller streams. This habitat is not present within the project area.

3.4.2. Pink Mucket Habitat

This species prefers relatively silt-free substrates of sand, gravel, and cobble in good flows of smaller streams. This habitat is not present within the project area.

Table 3. Federally Threatened and Endangered Species present in Lauderdale County, Alabama

Scientific Name	Common Name	Status
Quadrula intermedia	Cumberland Monkeyface	Endangered
Lampsilis abrupta	Pink Mucket	Endangered
Dromus dromas	Dromedary Pearlymussel	Endangered
Pegias fabula	Littlewing Pearlymussel	Endangered
Plethobasus cicatricosus	White Wartyback	Endangered
Pleurobema plenum	Rough Pigtoe	Endangered
Plethobasus cooperianus	Orangefoot Pimpleback	Endangered
Obovaria retusa	Ring Pink	Endangered
Cumberlandia monodonta	Spectaclecase	Endangered
Pleuronaia dolabelloides	Slabside Pearlymussel	Endangered
Cyprogenia stegaria	Fanshell	Endangered
Plethobasus cyphyus	Sheepnose Mussel	Endangered
Speoplatyrhinus poulsoni	Alabama Cavefish	Endangered
Erimonax monachus	Spotfin Chub	Threatened
Etheostoma boschungi	Slackwater Darter	Threatened
Myotis sodalis	Indiana Bat	Endangered
Myotis grisescens	Gray Bat	Endangered
Myotis septentrionalis	Northern Long-eared Bat	Threatened
Campeloma decampi	Slender Campeloma	Endangered

3.4.3. Dromedary Pearlymussel Habitat

This is a riffle dwelling species occurring at shoals with sand and gravel and moderate current velocities, but also found in deeper, slower moving water in Tennessee. It is most often observed in clean, fast-flowing water in substrates that contain relatively firm rubble, gravel, and stable, clean substrates. This habitat is not present in the project area.

3.4.4. Littlewing Pearlymussel Habitat

This species is most common at the head of riffles, but also found in and below riffles on sand and gravel substrates with scattered cobbles. It also inhabits sand pockets between rocks, cobbles and boulders, and underneath large rocks. It is restricted to small, cool streams. It is usually found lying on top or partially buried in sand and fine gravel between cobble in only 6 to 10 inches of water. It is usually found at the head of riffles. This habitat is not present in the project area.

3.4.5. White Wartyback Habitat

This mussel is found in clean, fast-flowing water in silt-free rubble, gravel and sand bottoms of large and rivers. It buries itself in sand or gravel between bedrock ledges with only the edge of its sell and its feeding siphons exposed. This habitat is not present in the project area.

3.4.6. Rough Pigtoe Habitat

This species is found in medium to large rivers (20 m wide or greater) in sand, gravel, and cobble substrates in shoals. It is occasionally found on flats and muddy sand. This habitat is not present in the project area.

3.4.7. Orangefoot Pimpleback Habitat

This species is found in medium to large rivers in sand, gravel, and cobble substrates in riffles and shoals in deep water and steady currents as well as some shallower shoals and riffles. This habitat is not present in the project area.

3.4.8. Ring Pink Habitat

This mussel is found in shallow water over silt-free sand and gravel bottoms of large rivers. This habitat is not present in the project area.

3.4.9. Spectaclecase Habitat

Spectaclecase mussels are found in large rivers where they live in areas sheltered from the main force of the river current. This species often clusters in firm mud and in sheltered areas, such as beneath rock slabs, between boulders and even under tree roots. This habitat is not present in the project area.

3.4.10. Slabside Pearlymussel Habitat

The slabside pearlymussel is primarily a large creek to moderately-sized river species. It generally is found in gravel substrates with interstitial sand, with moderate current, at depths less than 1 meter deep in moderate to swift current velocities. This species requires flowing, well oxygenated waters to thrive. This habitat is not present in the project area.

3.4.11. Fanshell Habitat

This mussel is found in medium to large rivers. It buries itself in sand or gravel in deep water of moderate current, with only the edge of its shell and its feeding siphons exposed. This habitat is not present in the project area.

3.4.12. Sheepnose Habitat

Sheepnose mussels live in larger rivers and streams where they are usually found in shallow areas with moderate to swift currents that flow over coarse sand and gravel. However, they have also been found in areas of mud, cobble and boulders, and in large rivers they may be found in deep runs. This habitat is not present in the project area.

3.4.13. Alabama Cavefish Habitat

Habitat consists of clear lentic subterranean waters, in the Warsaw limestone formation. This habitat is not present in the project area.

3.4.14. Spotfin Chub Habitat

Spotfin chubs inhabit clear water over gravel, boulders, and bedrock in large creeks and medium-sized rivers having moderate current. This fish is rarely seen over sand, and appears to avoid silty areas. This habitat is not present in the project area.

3.4.15. Slackwater Darter Habitat

This darter typically inhabits gravel-bottomed pools in sluggish areas of creeks and small rivers that generally are not more than 12 meters wide and 2 meters deep; often it occurs in slow water beneath undercut banks (especially in wide streams) or in accumulations of old leaf litter or detritus. This habitat is not present in the project area.

3.4.16. Slender Campeloma Habitat

Slender campeloma are typically found burrowing in soft sediment (sand and/or mud) or detritus in a few lake and spring sites. It primarily occurs in slow to moderate current, often along stream margins and may be found in gravel, mud deposits in water willow (*Justica virginiana)* beds, or on marginal clay edges. This habitat is not present in the project area.

3.4.17. Endangered Bat Habitat

A Phase 1 summer habitat assessment was performed within the project area on 14 October 2014. The project area is approximately 697 acres in size and is predominately cropland (i.e. corn, soybean, and cotton fields). Most of the wooded areas consist of fencerow shrubs along the edge of fields and has a high level of previous disturbance.

The forested area within the project consists of predominately oak (*Quercus* sp.) and red maple (*Acer rubrum*). Mimosa (*Albizia julibrissin*) was present along edges and willow (*Salix* sp.) was found within the fields. There was a pine (*Pinus* sp.) stand found near the northwest portion of the project area.

With rare exceptions, gray bats live in caves year-round. During the winter gray bats hibernate in deep, vertical caves. In the summer, they roost in caves which are scattered along rivers. These caves are in limestone karst areas of the southeastern United States. This habitat is not present in the project area.

During the summer Northern Long-eared bats roost singly or in colonies in cavities, underneath bark, crevices, or hollows of both live and dead trees and/or snags (typically ≥3 inches dbh). Males and non-reproductive females may also roost in cooler places, like caves and mines. This bat seems opportunistic in selecting roosts, using tree species based on presence of cavities or crevices or presence of peeling bark.

Indiana bats migrate to their summer habitat in wooded areas where they usually roost under loose tree bark on dead or dying trees ≥5 inches dbh. During summer, males roost alone or in small groups, while females roost in larger groups of up to 100 bats or more. Indiana bats also forage in or along the edges of forested areas.

Three (3) sites were surveyed within the project area with four (4) total potential roost trees for Northern Long-eared and Indiana bats (Table 4, Attachment 1). There was a small ephemeral stream running through the middle of Site 1 (Attachment 3). There was an ephemeral stream in Site 3 (Attachment 3). There were no potential roost trees found within the pine stand.

Table 4. Potential Roost Trees

Tree ID	Species	Common Name	Latitude	Longitude
Site 1	*Quercus falcate*	Southern Red Oak	34.84437	87.85169
Site 1	*Acer rubrum*	Red Maple	34.84439	87.85169
Site 2	*Quercus phellos*	Willow Oak	34.84412	87.84332
Site 3	*Fagus grandifolia*	American Beech	34.84439	87.83413

4.0 CONCLUSIONS

4.1. Wetlands

Presently, two isolated non-jurisdictional wetlands, totaling 1.01 acres, were identified within the project area and one relic wetland that no longer meets the criteria to be defined as a USACE wetland. Wetland 1 is a manmade pond that was historically used as a water source for livestock. Wetland 2 was formed as the result of construction related to an earthen berm separating agricultural fields where drainage collects.

Wetland 3 is a relic agricultural pond that no longer functions as wetland, as it has lost the ability to maintain wetland hydrology and is being dominated by upland plant species. Therefore, even though Wetland 3 is list on the NRCS NWI, it is no longer considered a wetland.

4.2. Streams

Seven ephemeral, non-RPW stream channels totaling 12,002 linear feet, and four swales were identified within the project area. Historically, all identified streams have been channelized as a direct result of agricultural practices. Because of this past anthropogenic disturbance, all identified streams exhibit poor habitat quality, which includes channel incision and unstable banks from erosion and limited or disturbed riparian habitat.

4.3. Wetland and Stream Buffers

The USACE has no regulation requiring buffers around streams or wetlands, unless the stream or wetland is part of a mitigation plan (per comm. USACE). However, under Section 404 of the Clean Water Act, the USACE does regulate the discharge of dredged and/or fill material into waters of the U.S., including wetlands. Based on communications with the USACE Jackson Group recommends that in order to avoid the need for a permit that buffers be established around all identified aquatic habitats (Attachment 1) and construction crews and earthmovers avoid any discharge into aquatic habitats.

4.4. Endangered Species Habitat

4.4.1 Endangered Bat Habitat

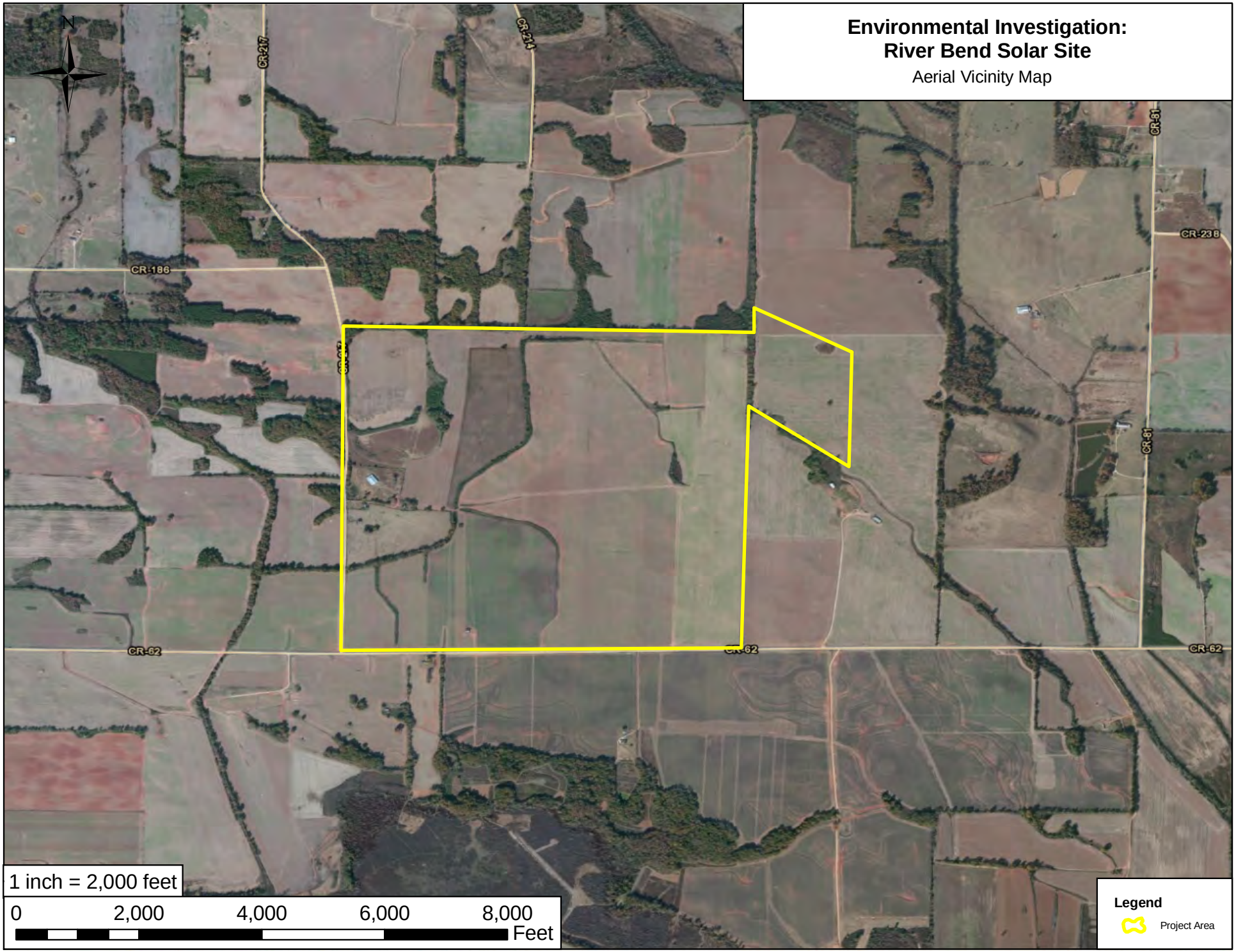
Suitable bat habitat is generally divided into four major categories which include:

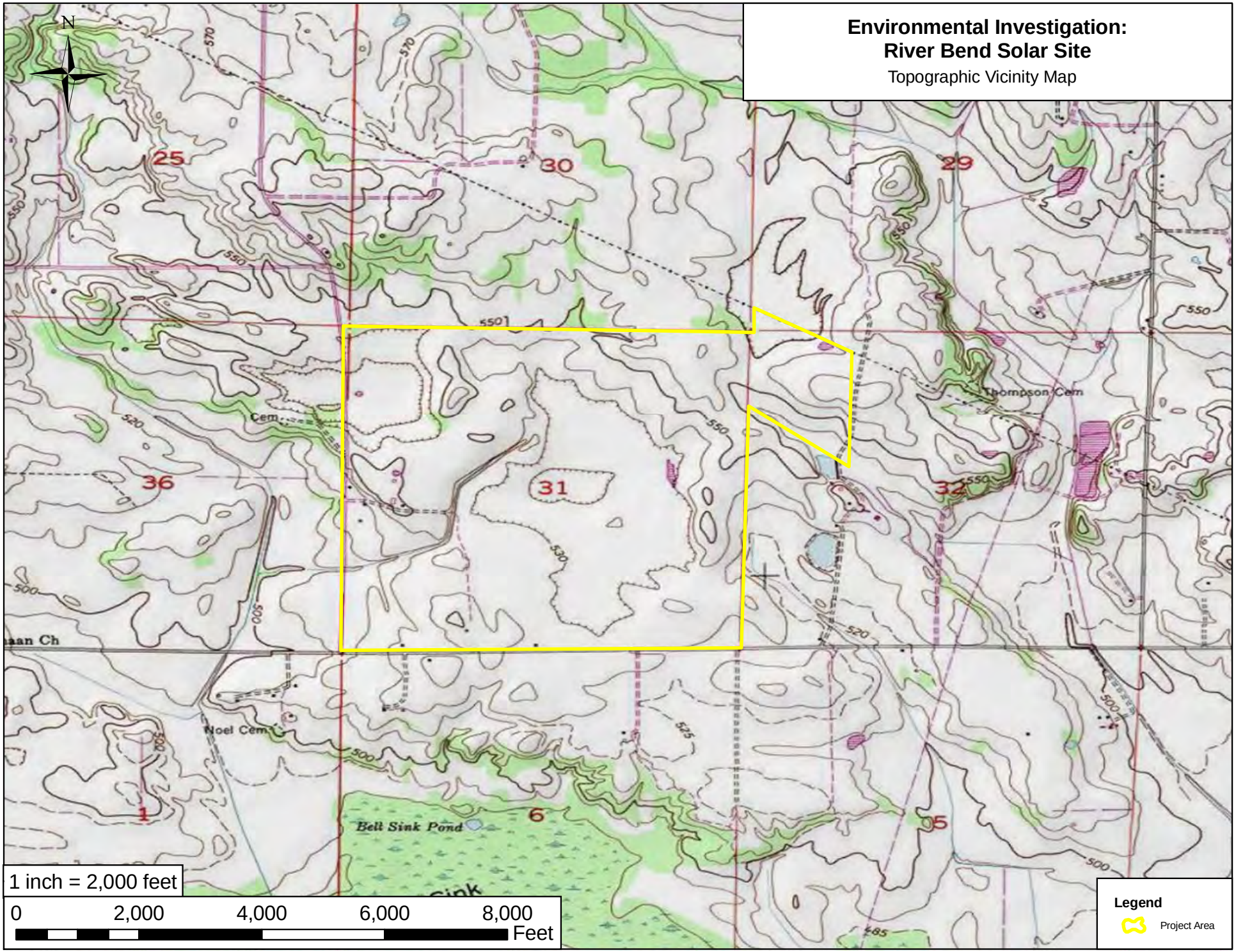
- Swarming,
- Hibernacula,
- Summer foraging and,
- Summer roosting.

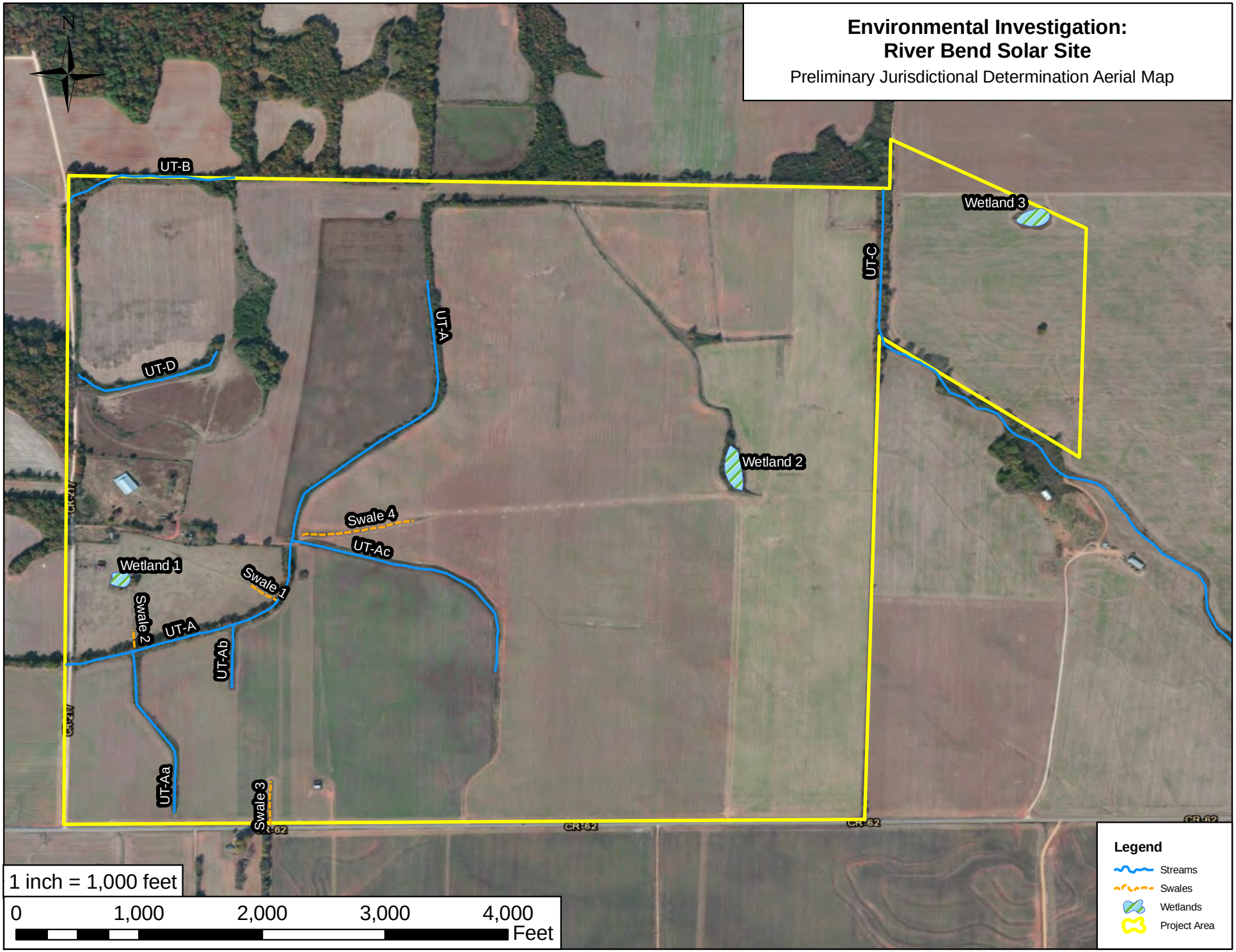
Swarming habitat, hibernacula, and suitable summer foraging habitat was not present for Gray, Northern Long-eared, or Indiana bats. However, potential roost habitat was present for Northern Long-eared and Indiana bats. These potential roost trees included four (4) trees that were discovered along the northern boundary of the project area. Each tree is surrounded by croplands and there are few permanent water resources in the area. While there were four potential roost trees, due to the highly fragmented forested area, the lack of permanent water in each site, and the heavy disturbance, it has been determined that suitable habitat is not present within the project boundary. Any additional surveys and tree cutting requirements (15 October to 31 March) will be based on findings of the USFWS' review of this report.

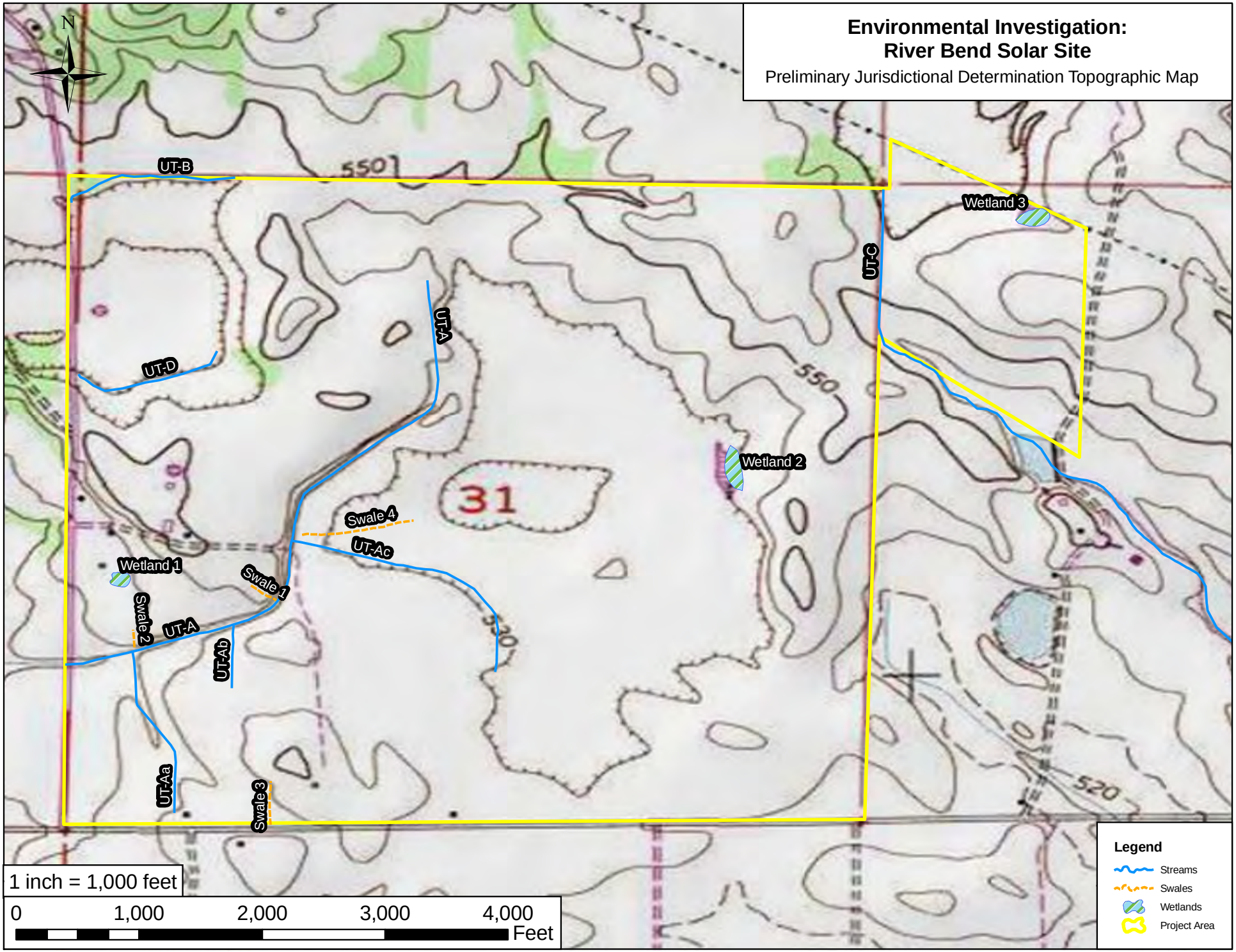
Attachment 1

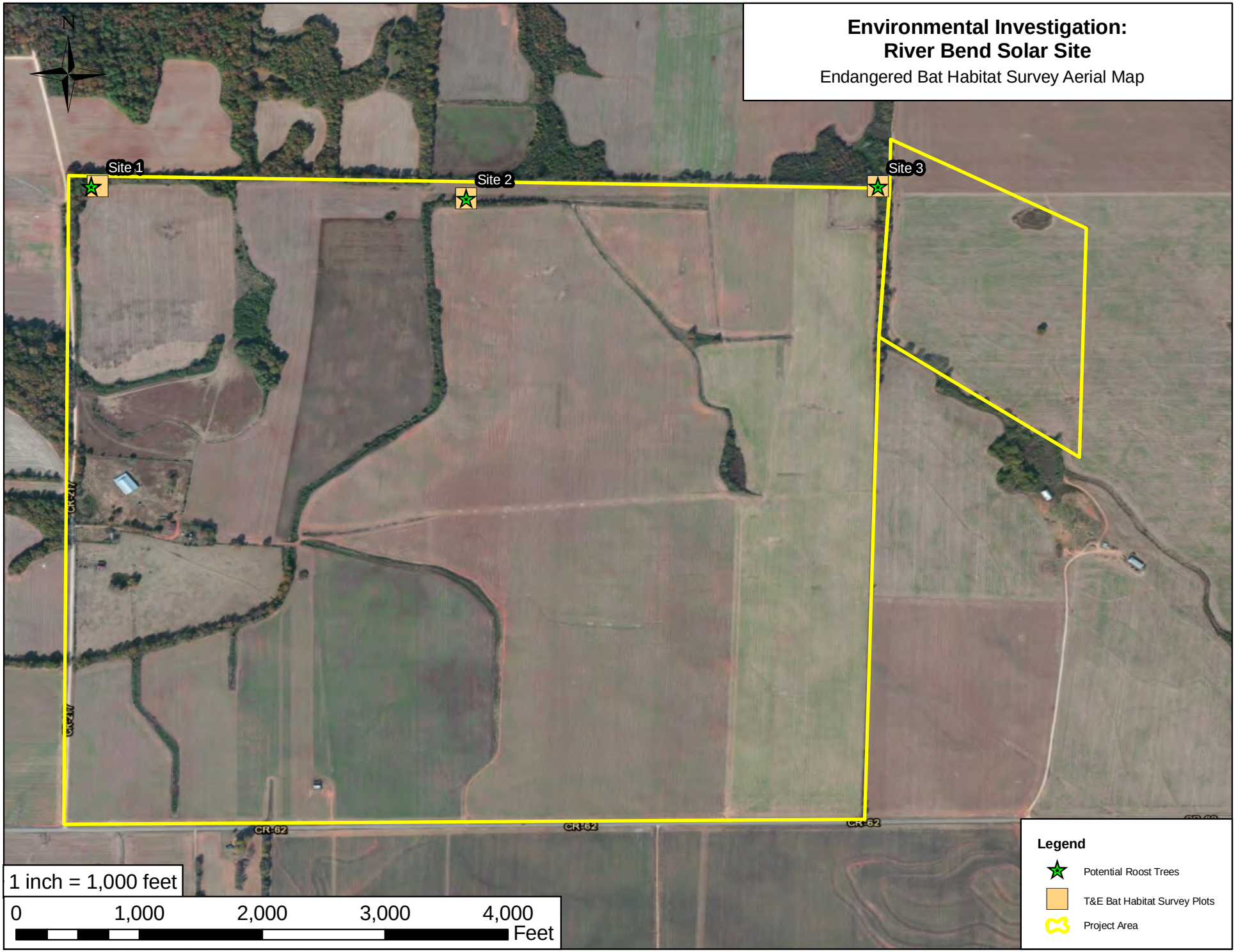
Project Maps

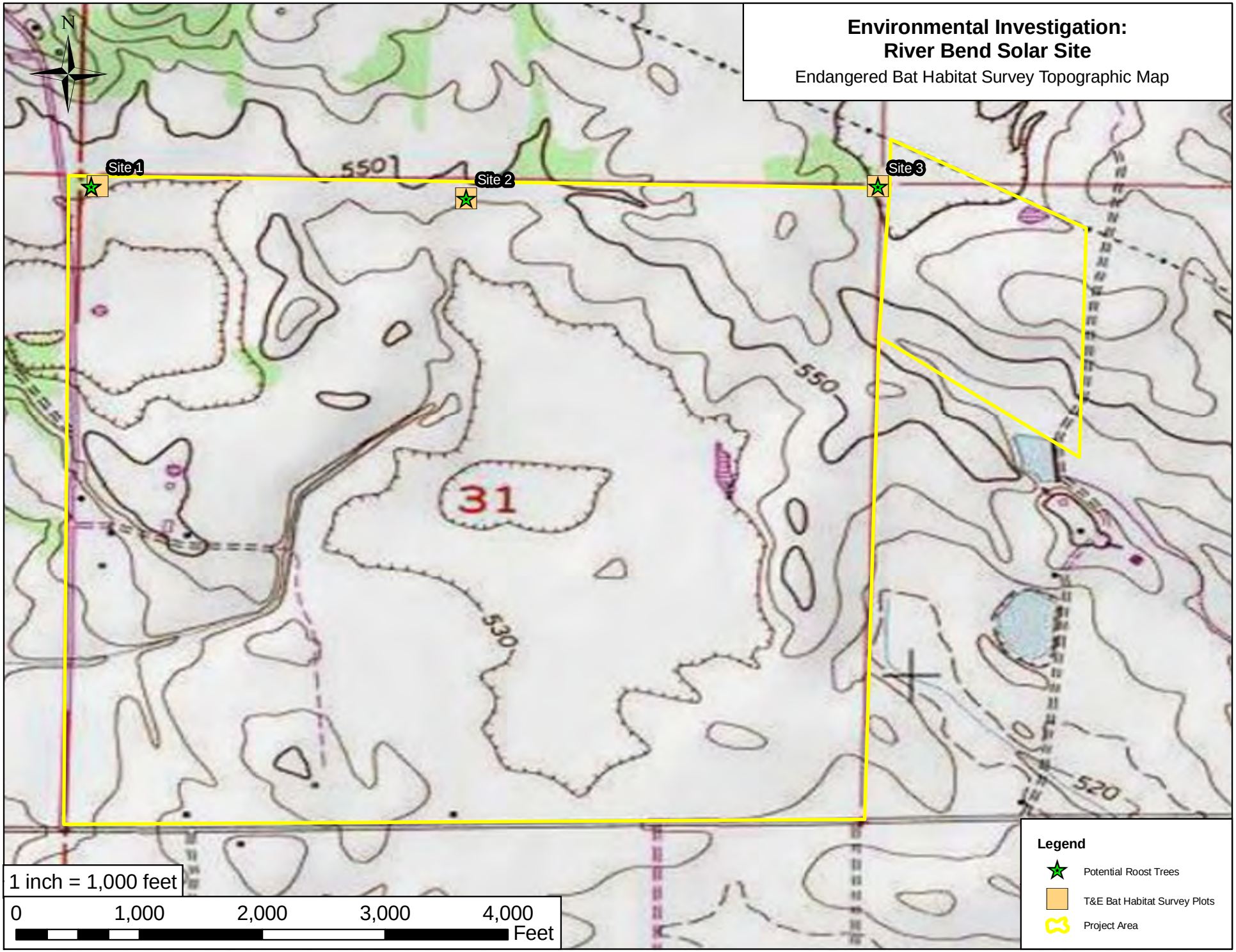

Environmental Investigation:
River Bend Solar Site
Aerial Vicinity Map
N
CR-217
CR-214
CR-186
CR-81
CR-238
CR-62
1 inch = 2,000 feet
0
2,000
4,000
6,000
8,000
Feet
Legend
Project Area


N
Environmental Investigation:
River Bend Solar Site
Topographic Vicinity Map
25
30
29
31
36
32
Thompson Cem
Noel Cem
Bell Sink Pond
6
5
1
1 inch = 2,000 feet
0
2,000
4,000
6,000
8,000
Feet
Legend
Project Area


Environmental Investigation:
River Bend Solar Site
Preliminary Jurisdictional Determination Aerial Map
N
UT-B
UT-D
UT-A
UT-C
Wetland 3
Wetland 2
Swale 4
UT-Ac
Wetland 1
Swale 1
Swale 2
UT-A
UT-Ab
UT-Aa
Swale 3
CR-217
CR-62
1 inch = 1,000 feet
0
1,000
2,000
3,000
4,000
Feet
Legend
Streams
Swales
Wetlands
Project Area


Environmental Investigation:
River Bend Solar Site
Preliminary Jurisdictional Determination Topographic Map
N
UT-B
550
Wetland 3
UT-C
UT-A
UT-D
550
Wetland 2
31
Swale 4
UT-Ac
Wetland 1
Swale 1
Swale 2
UT-A
UT-Ab
530
UT-Aa
Swale 3
520
1 inch = 1,000 feet
0
1,000
2,000
3,000
4,000
Feet
Legend
Streams
Swales
Wetlands
Project Area


Environmental Investigation:
River Bend Solar Site
Endangered Bat Habitat Survey Aerial Map
N
Site 1
Site 2
Site 3
CR-217
CR-62
1 inch = 1,000 feet
0
1,000
2,000
3,000
4,000
Feet
Legend
Potential Roost Trees
T&E Bat Habitat Survey Plots
Project Area



Environmental Investigation:
River Bend Solar Site

Endangered Bat Habitat Survey Topographic Map

Attachment 2

Representative Photographs of Wetlands

Photo 1. Representative Photo of Wetland 1

Photo 2. Representative Photo of Wetland 1

Photo 3. Representative Photo of Wetland 1

Photo 4. Representative Photo of Wetland 1

Photo 5. Representative Photo of Wetland 2

Photo 6. Representative Photo of Wetland 2

Photo 7. Representative Photo of Wetland 2

Photo 8. Representative Photo of Wetland 2

Photo 9. Representative Photo of Wetland 2

Photo 10. Representative Photo of Wetland 2

Photo 11. Representative Photo of Wetland 2

Photo 12. Representative Photo of Wetland 2

Photo 13. Representative Photo of Wetland 3

Photo 14. Representative Photo of Wetland 3

Photo 15. Representative Photo of Wetland 3

Photo 16. Representative Photo of Wetland 3

Attachment 3

Representative Photographs of Streams

Photo 1. Representative Photo of UT-A

Photo 2. Representative Photo of UT-A

Photo 3. Representative Photo of UT-A

Photo 4. Representative Photo of UT-A

Photo 5. Representative Photo of UT-A

Photo 6. Representative Photo of UT-A

Photo 7. Representative Photo of UT-A

Photo 8. Representative Photo of UT-A

Photo 9. Representative Photo of UT-A

Photo 10. Representative Photo of UT-A

Photo 11. Representative Photo of UT-A

Photo 12. Representative Photo of UT-A

Photo 13. Representative Photo of UT-A

Photo 14. Representative Photo of UT-A

Photo 15. Representative Photo of UT-A

Photo 16. Representative Photo of UT-A

Photo 17. Representative Photo of UT-A

Photo 18. Representative Photo of UT-A

Photo 19. Representative Photo of UT-A

Photo 20. Representative Photo of UT-A

Photo 21. Representative Photo of UT-A

Photo 22. Representative Photo of UT-A

Photo 23. Representative Photo of UT-A

Photo 24. Representative Photo of UT-A

Photo 25. Representative Photo of UT-A

Photo 26. Representative Photo of UT-A

Photo 27. Representative Photo of UT-A

Photo 28. Representative Photo of UT-A

Photo 29. Representative Photo of UT-A

Photo 30. Representative Photo of UT-A

Photo 31. Representative Photo of UT-Aa

Photo 32. Representative Photo of UT-Aa

Photo 33. Representative Photo of UT-Aa

Photo 34. Representative Photo of UT-Aa

Photo 35. Representative Photo of UT-Aa

Photo 36. Representative Photo of UT-Aa channel covered in honeysuckle

Photo 37. Representative Photo of UT-Aa channel covered in honeysuckle

Photo 38. Representative Photo of UT-Aa

Photo 39. Representative Photo of UT-Aa

Photo 40. Representative Photo of UT-Aa

Photo 41. Representative Photo of end of UT-Aa

Photo 42. Representative Photo of end of UT-Aa

Photo 43. Representative Photo of UT-Ab confluence with UT-A

Photo 44. Representative Photo of UT-Ab

Photo 45. Representative Photo of UT-Ab

Photo 46. Representative Photo of UT-Ab

Photo 47. Representative Photo of UT-Ab

Photo 48. Representative Photo of UT-Ab

Photo 49. Representative Photo of UT-Ab

Photo 50. Representative Photo of UT-end of Ab

Photo 51. Representative Photo of UT-Ab EOHWM

Photo 52. Representative Photo of UT-Ac

Photo 53. Representative Photo of UT-Ac

Photo 54. Representative Photo of UT-Ac

Photo 55. Representative Photo of UT-Ac

Photo 56. Representative Photo of UT-Ac

Photo 57. Representative Photo of UT-Ac

Photo 58. Representative Photo of UT-Ac

Photo 59. Representative Photo of UT-Ac

Photo 60. Representative Photo of UT-Ac

Photo 61. Representative Photo of UT-Ac

Photo 62. Representative Photo of UT-Ac

Photo 63. Representative Photo of UT-Ac

Photo 64. Representative Photo of UT-Ac

Photo 65. Representative Photo of UT-Ac

Photo 66. Representative Photo of UT-Ac

Photo 67. Representative Photo of UT-Ac

Photo 68. Representative Photo of UT-Ac

Photo 69. Representative Photo of UT-Ac

Photo 70. Representative Photo of UT-Ac

Photo 71. Representative Photo of UT-Ac

Photo 72. Representative Photo of UT-Ac

Photo 73. Representative Photo of UT-Ac

Photo 74. Representative Photo of UT-Ac

Photo 75. Representative Photo of UT-B

Photo 76. Representative Photo of UT-B

Photo 77. Representative Photo of UT-B

Photo 78. Representative Photo of UT-B

Photo 79. Representative Photo of UT-B

Photo 80. Representative Photo of UT-B

Photo 81. Representative Photo of UT-B

Photo 82. Representative Photo of UT-B

Photo 83. Representative Photo of UT-B

Photo 84. Representative Photo of UT-B

Photo 85. Representative Photo of UT-B

Photo 86. Representative Photo of UT-B

Photo 87. Representative Photo of UT-B

Photo 88. Representative Photo of UT-B

Photo 89. Representative Photo of UT-B

Photo 90. Representative Photo of UT-B, confluence of three drainages off site

Photo 91. Representative Photo of UT-B, confluence of three drainages off site

Photo 92. Representative Photo of UT-B, confluence of three drainages off site

Photo 93. Representative Photo of UT-C

Photo 94. Representative Photo of UT-C

Photo 95. Representative Photo of UT-C

Photo 96. Representative Photo of UT-C

Photo 97. Representative Photo of UT-C

Photo 98. Representative Photo of UT-C

Photo 99. Representative Photo of UT-C

Photo 100. Representative Photo of UT-C

Photo 101. Representative Photo of UT-C

Photo 102. Representative Photo of UT-C

Photo 103. Representative Photo of UT-C

Photo 104. Representative Photo of UT-C

Photo 105. Representative Photo of UT-C

Photo 106. Representative Photo of UT-C

Photo 107. Representative Photo of UT-C

Photo 108. Representative Photo of UT-C

Photo 109. Representative Photo of UT-D

Photo 110. Representative Photo of UT-D

Photo 111. Representative Photo of UT-D

Photo 112. Representative Photo of UT-D

Photo 113. Representative Photo of UT-D

Photo 114. Representative Photo of UT-D

Photo 115. Representative Photo of UT-D

Photo 116. Representative Photo of UT-D

Photo 117. Representative Photo of UT-D

Photo 118. Representative Photo of UT-D

Photo 119. Representative Photo of UT-D

Photo 120. Representative Photo of UT-D

Photo 121. Representative Photo of UT-D

Photo 122. Representative Photo of UT-D

Photo 123. Representative Photo of Swale 1

Photo 124. Representative Photo of Swale 1

Photo 125. Representative Photo of Swale 2

Photo 126. Representative Photo of Swale 2

Photo 127. Representative Photo of South Swale 3

Photo 128. Representative Photo of South Swale 3

Photo 129. Representative Photo of South Swale 3

Photo 130. Representative Photo of South Swale 3

Photo 131. Representative Photo of Swale 4

Photo 132. Representative Photo of Swale 4

Photo 133. Representative Photo of Swale 4

Photo 134. Representative Photo of Swale 4

Photo 135. Representative Photo of Swale4

Photo 136. Representative Photo of Swale 4

Attachment 4

Representative Photographs of
Threatened and Endangered Species Habitat

Photo 1. North of Site 1

Photo 2. East of Site 1

Photo 3. South of Site 1

Photo 4. West of Site 1

Photo 5. Potential roost tree in Site 1

Photo 6. Intermittent stream through Site 1

Photo 7. Forest edge at Site 1 (corn field)

Photo 8. North of Site 2

Photo 9. East of Site 2

Photo 10. South of Site 2

Photo 11. West of Site 2

Photo 12. Potential roost tree in Site 2

Photo 13. North of Site 3

Photo 14. East of Site 3

Photo 15. South of Site 3

Photo 16. West of Site 3

Photo 17. Potential roost tree in Site 3

Photo 18. Small ephemeral stream in Site 3

Attachment 5

Wetland Data Sheets

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: River Bend Solar Site City/County: Lauderdale Sampling Date: 10/14/14

Applicant/Owner: River Bend Solar, LLC State: AL Sampling Point: Wetland 9

Investigator(s): K. Bowlin, K. Cunningham Section, Township, Range:

Landform (hillslope, terrace, etc.): Pond Local relief (concave, convex, none): none Slope (%): 2

Subregion (LRR or MLRA): 224 N Lat: 34.83573 Long: -87.85078 Datum: NAD 83

Soil Map Unit Name: NWI classification: Freshwater Pond

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation Yes, Soil Yes, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No ✓	**Is the Sampled Area within a Wetland?** Yes ✓ No ____
Hydric Soil Present?	Yes ✓	No ____	
Wetland Hydrology Present?	Yes ✓	No ____	

Remarks: ~~X~~ Agricultural pond, Approximately 5-6 feet deep.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ✓ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ✓	No ____	Depth (inches): 60-72
Water Table Present?	Yes ____	No ____	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ____	Depth (inches): ____

Wetland Hydrology Present? Yes ✓ No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Agricultural pond. No signific nexus to JD waters

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: Wetland 1

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: _____)			
1. White Oak (Quercus alba)	5%	No	FAC
2.			
3.			
4.			
5.			
6.			
7.			
	5% = Total Cover		
50% of total cover: _____	20% of total cover: _____		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	_____ = Total Cover		
50% of total cover: _____	20% of total cover: _____		
Herb Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	_____ = Total Cover		
50% of total cover: _____	20% of total cover: _____		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
50% of total cover: _____	20% of total cover: _____		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)

Total Number of Dominant Species Across All Strata: _____ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

- ✓ 1 - Rapid Test for Hydrophytic Vegetation
- ___ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes _____ No ✓

Remarks: (Include photo numbers here or on a separate sheet.)

5 mature white oak trees on edge. No Hydrophytic Veg. identified

SOIL

Sampling Point: Wetland 1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ____

Remarks:

No soil sample taken. Assumed present due to permanent groundwater.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: River Bend Solar Site City/County: Lauderdale Sampling Date: 10/14/14

Applicant/Owner: River Bend Solar, LLC State: AL Sampling Point: Wetland 2

Investigator(s): K. Boutin K. Cunningham Section, Township, Range:

Landform (hillslope, terrace, etc.): Ag Field Local relief (concave, convex, none): Concave Slope (%): 3%

Subregion (LRR or MLRA): N224 Lat: 34.83816 Long: -87.83750 Datum: NAD83

Soil Map Unit Name: DaB NWI classification: Freshwater Pond

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✓ (If no, explain in Remarks.)

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes ____ No ✓

Are Vegetation No, Soil No, or Hydrology Yes naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No ____	**Is the Sampled Area within a Wetland?** Yes ✓ No ____
Hydric Soil Present?	Yes ✓	No ____	
Wetland Hydrology Present?	Yes ✓	No ____	

Remarks: Hydric soils assumed to be present, Water too high to take soil sample, Wetland inundated outside normal boundaries due to precipitation events prior to survey. Hydrology received from surrounding agricultural field drainage. Frequently disturbed. Earthen Berm surrounding half of wetland.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ✓ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ✓	No ____	Depth (inches): 24 inch
Water Table Present?	Yes ____	No ____	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ____	Depth (inches): ____

Wetland Hydrology Present? Yes ✓ No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Water level higher than normal from looking at landscape and indicators (water in corn field). No significant rains to wetlands.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: Wetland 2

Tree Stratum (Plot size: 0.5 ac)	Absolute % Cover	Dominant Species?	Indicator Status
1. Sugar berry (Celtis laevigata)	50%	Yes	FACW
2.			
3.			
4.			
5.			
6.			
7.			
	50% = Total Cover		

50% of total cover: _____ 20% of total cover: _____

Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	_____ = Total Cover		

50% of total cover: _____ 20% of total cover: _____

Herb Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	_____ = Total Cover		

50% of total cover: _____ 20% of total cover: _____

Woody Vine Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		

50% of total cover: _____ 20% of total cover: _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)

Total Number of Dominant Species Across All Strata: _____ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species _____	x 1 =	_____
FACW species _____	x 2 =	_____
FAC species _____	x 3 =	_____
FACU species _____	x 4 =	_____
UPL species _____	x 5 =	_____
Column Totals: _____ (A)		_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

- ✓ 1 - Rapid Test for Hydrophytic Vegetation
- ___ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks: (Include photo numbers here or on a separate sheet.)

Water too high to sample herbaceous plants in center of wetland. Dominant FACW assumed after hydro. veg. Vegetation submerged in center of wetland

SOIL

Sampling Point: Wetland 2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No _____

Remarks:

Assumed Hydric soils from hydrologic indicators water too high to sample soil, ~~Vegetation submerged in water~~

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: River Bend Solar Site City/County: Lauderdale Sampling Date: 10/14/14

Applicant/Owner: River Bend Solar, LLC. State: AL Sampling Point: Wetland 3

Investigator(s): K. Bowlin K. Cunningham Section, Township, Range:

Landform (hillslope, terrace, etc.): Ag Field/Pond Local relief (concave, convex, none): Concave Slope (%): 3

Subregion (LRR or MLRA): N 224 Lat: 34.843563 Long: -87.830624 Datum:

Soil Map Unit Name: DaB NWI classification: Freshwater Pond

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ✓ (If no, explain in Remarks.)

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes _____ No ✓

Are Vegetation Yes, Soil Yes, or Hydrology Yes naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks: Surface water present, but not usual from site indicators. Large mammal burrows within boundary. Water present from precipitation events on day of survey and days prior. Area is a historic farm pond, however upland veg. dominant.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ✓ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ✓ No _____ Depth (inches): 12 in

Water Table Present? Yes _____ No _____ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No _____ Depth (inches): _____

Wetland Hydrology Present? Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Surface water not usually present from surrounding indicators. Past drained farm pond.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: Wetland 3

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		

50% of total cover: _____ 20% of total cover: _____

Sapling/Shrub Stratum (Plot size: 0.55)			
1. Black cherry (Prunus serotina)	30%	Yes	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	30% = Total Cover		

50% of total cover: _____ 20% of total cover: _____

Herb Stratum (Plot size: _____)			
1. Rosa multiflora	50%	Yes	FACU
2. Pokeweed (Phytolacca americana)	25%	Yes	FACU
3. Fescue sp	30%	Yes	UPL
4. Golden rod sp. (Solidago sp)	10%	No	FACW
5. Aster sp.	10%	No	FACU
6.			
7.			
8.			
9.			
10.			
11.			
	= Total Cover		

50% of total cover: _____ 20% of total cover: _____

Woody Vine Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		

50% of total cover: _____ 20% of total cover: _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)

Total Number of Dominant Species Across All Strata: _____ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

- ✓ 1 - Rapid Test for Hydrophytic Vegetation
- ___ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes _____ No ✓

Remarks: (Include photo numbers here or on a separate sheet.)

Dominant species upland species

SOIL

Sampling Point: Wetland 3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ✓ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

Soils are of red parent material, since other indicators are negative it is assumed no hydric soils are present.

Attachment 6

Threatened and Endangered Bat Species Habitat Data Sheets

PHASE 1 SUMMER HABITAT ASSESSMENT

Indiana Bat Habitat Assessment Datasheet

Project Name: River Bend Solar Site

Date: 10/14/2014

State: Alabama County: Lauderdale

Quad:

Lat/Long: N 34.84437° W 87.85169°

Surveyor: Kat Cunningham

Keith Bowlin

Brief Project Description

Drainage off of corn field

Project Area

Project ID:	Total Acres	Forest Acres	Open Acres

Proposed Tree Removal (ac)	Completely Cleared	Partially Cleared (will leave trees)	Preserve Acres (no clearing)

Vegetation Cover Types

Pre-Project	Post-Project

Landscape within 5 mile Radius

Flight corridors to other forested areas?

Tree rows along edge of crop lands

Describe adjacent properties (e.g. Forested, grassland, commercial or residential development, water sources)

Surrounded by agriculture, i.e. corn, soybeans, cotton.

Proximity to Public Lands

What is the distance (mi.) from the project area to forested public lands (e.g. national or state forests, national or state parks, conservation areas, wildlife management areas)?

PHASE 1 SUMMER HABITAT ASSESSMENT

Use additional sheets to assess discrete habitat types at multiple sites in a project area

Include a map depicting locations of sample sites if assessing discrete habitats at multiple sites in a project area. A single sheet can be used for multiple sites if habitat is the same.

Sample Site Description

Sample Site No.(s): Site 1

Water Resources at Sample Site

Stream Type (# and size)	Ephemeral	Intermittent	Perennial	Describe existing condition of water sources: Drainage ditch right in front of tree. Not much water. Had hard rains on night prior.
	1			
Pools/Ponds (# and size)		Open and accessible to bats		
Wetlands (approx. acres)	Permanent	Seasonal		

Forest Resources at Sample Site

Closure/Density	Canopy (>50')	Mid story (20-50')	Understory (<20')	1 = 1-10% 5 = 41-50% 9 = 81-90%
	70		0	2 = 11-20% 6 = 51-60% 10 = 91-100%
% Trees with Exfoliating Bark	1	1	0	3 = 21-30% 7 = 61-70% 4 = 31-40% 8 = 71-80%
Dominant Species of Mature Trees	Red oak, red maple,			
Size Composition of Live Trees (%)	Small (3-8 in)	Med (9-15 in)	Large (>15 in)	
No. of Suitable Snags	0	1	1	

Standing dead trees with exfoliating bark, cracks, crevices, or hollows. Snags without these characteristics are not considered suitable

IS THE HABITAT SUITABLE FOR INDIANA BATS?: No

Additional Comments

Attach aerial photo of project with all forested areas labeled and a general description of the habitat.

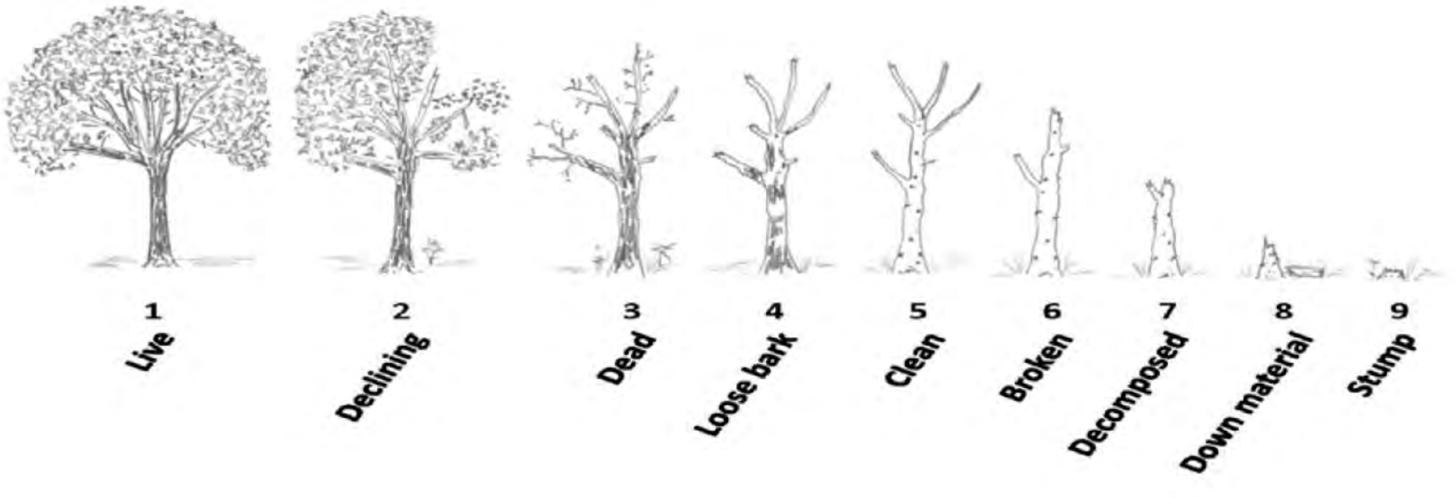
Photographic Documentation: (check when completed)	✓	Habitat shots of edge and interior from multiple locations	✓	Understory/ Midstory/ Canopy
	✓	Examples of potential suitable snags and live trees	✓	Water sources

Project Name: River Bend Solar Site **Date:** 10/14/2014

Habitat Type (Upland or Riparian): Riparian

Potential Roost Trees

Tree Species	DBH	Roost Structure*	Tree Condition**	Latitude	Longitude	Photo ID
southern red oak	42.8	Bark	4	N 34.84437°	W 87.85169°	
Red maple	19.2	Bark	4	N 34.84439°	W 87.85154°	



PHASE 1 SUMMER HABITAT ASSESSMENT

Indiana Bat Habitat Assessment Datasheet

Project Name: River Bend Solar Site

Date: 10/14/2014

State: Alabama County: Lauderdale

Quad:

Lat/Long: N 34.84412° W 87.83413°

Surveyor: Kat Cunningham

Keith Bowlin

Brief Project Description

Fencerow in cornfield near edge of field.

Project Area

Project ID:	Total Acres	Forest Acres	Open Acres

Proposed Tree Removal (ac)	Completely Cleared	Partially Cleared (will leave trees)	Preserve Acres (no clearing)

Vegetation Cover Types

Pre-Project	Post-Project

Landscape within 5 mile Radius

Flight corridors to other forested areas?

Describe adjacent properties (e.g. Forested, grassland, commercial or residential development, water sources)

Agriculture (corn field). Surrounded on all sides by croplands.

Proximity to Public Lands

What is the distance (mi.) from the project area to forested public lands (e.g. national or state forests, national or state parks, conservation areas, wildlife management areas)?

PHASE 1 SUMMER HABITAT ASSESSMENT

Use additional sheets to assess discrete habitat types at multiple sites in a project area

Include a map depicting locations of sample sites if assessing discrete habitats at multiple sites in a project area. A single sheet can be used for multiple sites if habitat is the same.

Sample Site Description

Sample Site No.(s): Site 2

Water Resources at Sample Site

Stream Type (# and size)	Ephemeral	Intermittent	Perennial	Describe existing condition of water sources: Flooded cornfield adjacent
Pools/Ponds (# and size)	N/a	Open and accessible to bats		
		Yes		
Wetlands (approx. acres)	Permanent	Seasonal		

Forest Resources at Sample Site

Closure/Density	Canopy (>50')	Mid story (20-50')	Understory (<20')	1 = 1-10% 5 = 41-50% 9 = 81-90%
	0	0	0	2 = 11-20% 6 = 51-60% 10 = 91-100%
% Trees with Exfoliating Bark	1	0	0	3 = 21-30% 7 = 61-70% 4 = 31-40% 8 = 71-80%
Dominant Species of Mature Trees	Willow oak			
Size Composition of Live Trees (%)	Small (3-8 in)	Med (9-15 in)	Large (>15 in)	
	50	45	5	
No. of Suitable Snags		1		

Standing dead trees with exfoliating bark, cracks, crevices, or hollows. Snags without these characteristics are not considered suitable

IS THE HABITAT SUITABLE FOR INDIANA BATS?: No

Additional Comments

Tree row very open

Attach aerial photo of project with all forested areas labeled and a general description of the habitat.

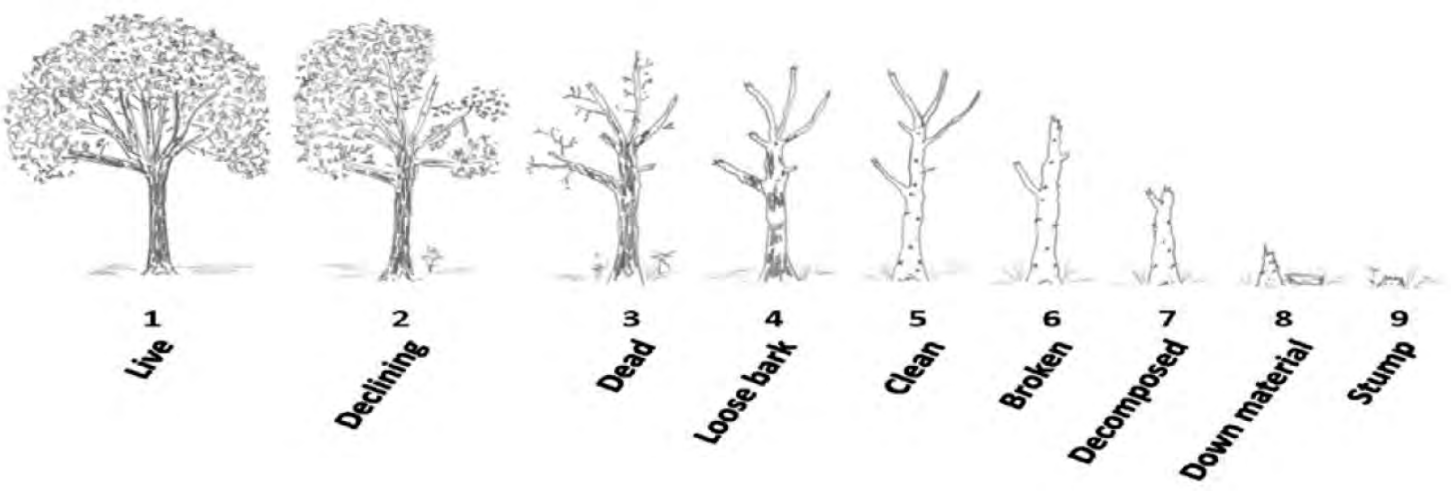
Photographic Documentation: (check when completed)	✓	Habitat shots of edge and interior from multiple locations	✓	Understory/ Midstory/ Canopy
	✓	Examples of potential suitable snags and live trees	✓	Water sources

Project Name: River Bend Solar Site **Date:** 10/14/2014

Habitat Type (Upland or Riparian): Riparian

Potential Roost Trees

Tree Species	DBH	Roost Structure*	Tree Condition**	Latitude	Longitude	Photo ID
Willow oak	43.2	Bark	3	N 34.84412	W 87.84332°	



PHASE 1 SUMMER HABITAT ASSESSMENT

Indiana Bat Habitat Assessment Datasheet

Project Name: River Bend Solar Site

Date: 10/14/2014

State: Alabama County: Lauderdale

Quad:

Lat/Long: N 34.84439° W 87.83413°

Surveyor: Kat Cunningham

Keith Bowlin

Brief Project Description

On boundary of site 1 and 2

Project Area

Project ID:	Total Acres	Forest Acres	Open Acres

Proposed Tree Removal (ac)	Completely Cleared	Partially Cleared (will leave trees)	Preserve Acres (no clearing)

Vegetation Cover Types

Pre-Project	Post-Project

Landscape within 5 mile Radius

Flight corridors to other forested areas?

Yes

Describe adjacent properties (e.g. Forested, grassland, commercial or residential development, water sources)

Tree row between 2 corn fields.

Proximity to Public Lands

What is the distance (mi.) from the project area to forested public lands (e.g. national or state forests, national or state parks, conservation areas, wildlife management areas)?

PHASE 1 SUMMER HABITAT ASSESSMENT

Use additional sheets to assess discrete habitat types at multiple sites in a project area

Include a map depicting locations of sample sites if assessing discrete habitats at multiple sites in a project area. A single sheet can be used for multiple sites if habitat is the same.

Sample Site Description

Sample Site No.(s): Site 3

Water Resources at Sample Site

Stream Type (# and size)	Ephemeral	Intermittent	Perennial	Describe existing condition of water sources: Flooded field to east of tree. Not permanent
Pools/Ponds (# and size)		Open and accessible to bats		
		Yes		
Wetlands (approx. acres)	Permanent	Seasonal		

Forest Resources at Sample Site

Closure/Density	Canopy (>50')	Mid story (20-50')	Understory (<20')	1 = 1-10% 5 = 41-50% 9 = 81-90%
	25	60		2 = 11-20% 6 = 51-60% 10 = 91-100%
% Trees with Exfoliating Bark	1	0	0	3 = 21-30% 7 = 61-70%
				4 = 31-40% 8 = 71-80%
Dominant Species of Mature Trees	FAGR, ACRU, QUFA,			
Size Composition of Live Trees (%)	Small (3-8 in)	Med (9-15 in)	Large (>15 in)	
	20	70	10	
No. of Suitable Snags			1	

Standing dead trees with exfoliating bark, cracks, crevices, or hollows. Snags without these characteristics are not considered suitable

IS THE HABITAT SUITABLE FOR INDIANA BATS?: Yes

Additional Comments

Attach aerial photo of project with all forested areas labeled and a general description of the habitat.

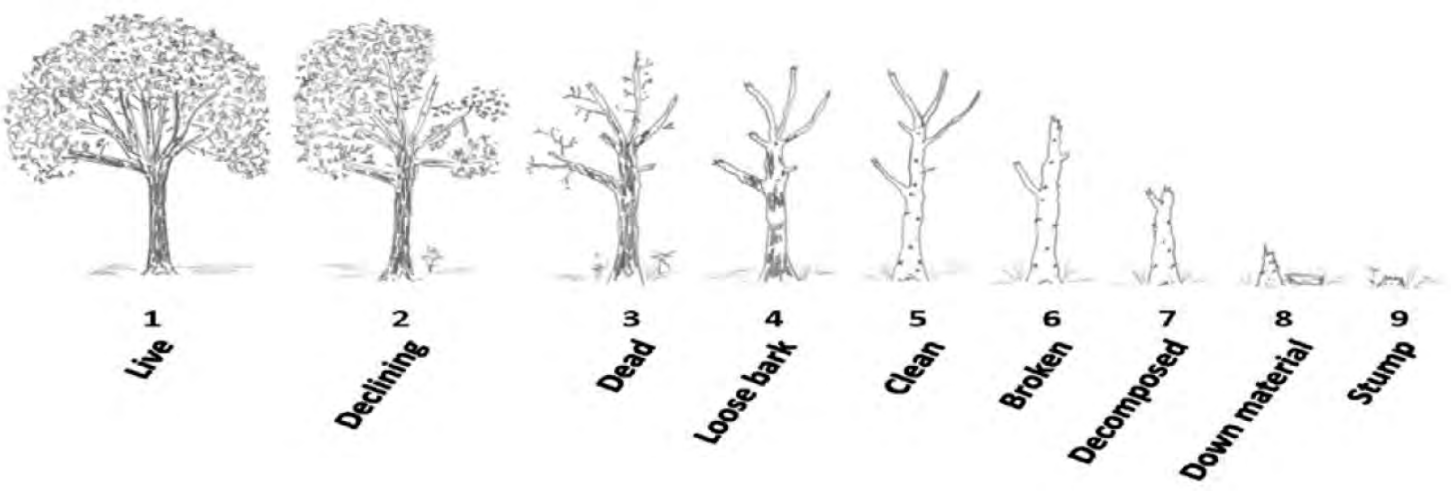
Photographic Documentation:	✓	Habitat shots of edge and interior from multiple locations	✓	Understory/ Midstory/ Canopy
(check when completed)	✓	Examples of potential suitable snags and live trees	✓	Water sources

Project Name: River Bend Solar Site **Date:** 10/14/2014

Habitat Type (Upland or Riparian): Riparian

Potential Roost Trees

Tree Species	DBH	Roost Structure*	Tree Condition**	Latitude	Longitude	Photo ID
Fagr	54.8	Bark	6	34.84439	87.83413	



Attachment 4

USDA/ NRCS Soils Report

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Lauderdale County, Alabama

River Bend Solar Site

April 22, 2015

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (http://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the

individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

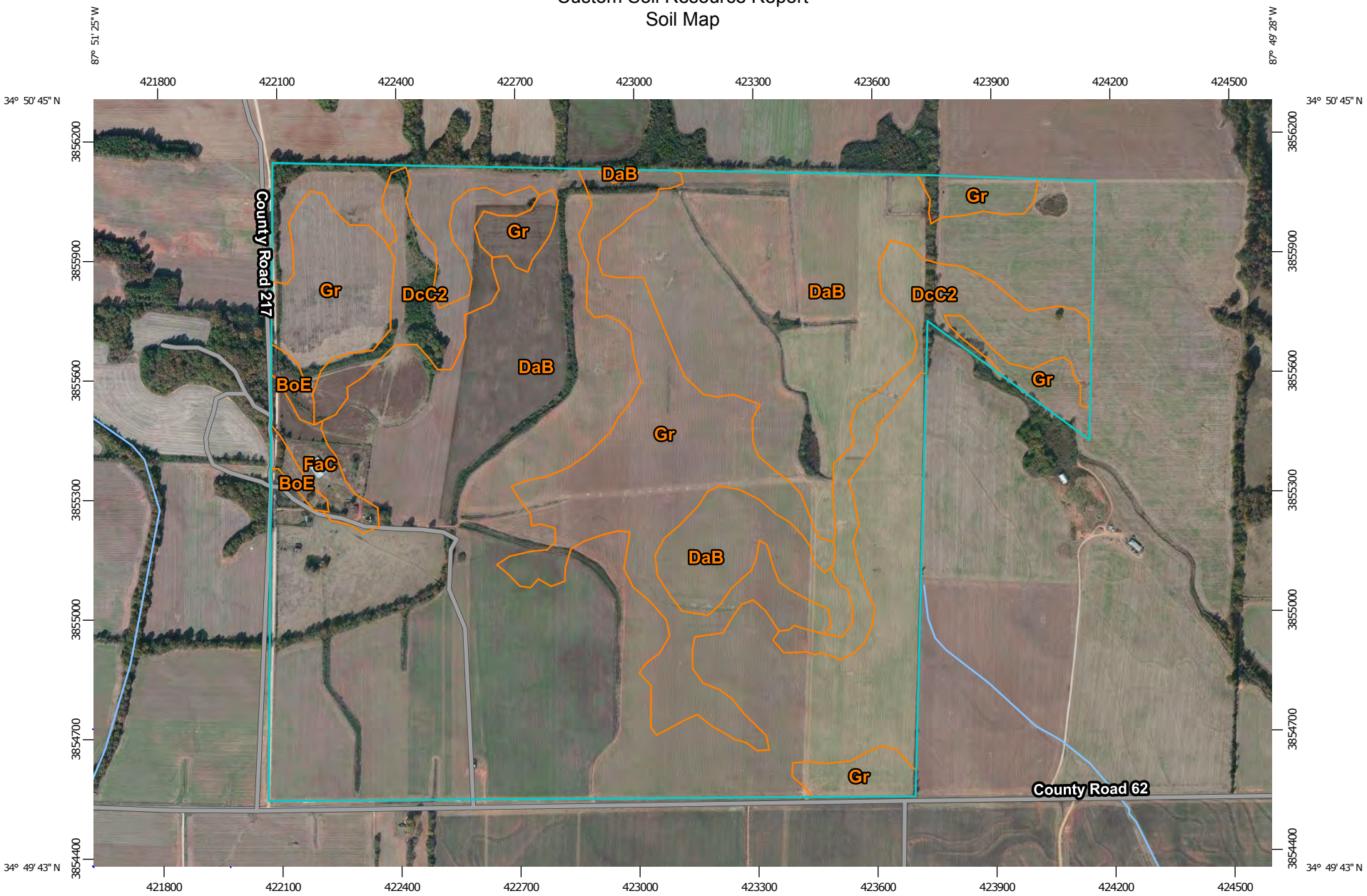
Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map



Map Scale: 1:13,600 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 200 400 800 1200

Feet: 0 500 1000 2000 3000

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 16N WGS84

MAP LEGEND

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

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

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

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: Web Mercator (EPSG:3857)

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

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

Soil Survey Area: Lauderdale County, Alabama
Survey Area Data: Version 7, Sep 16, 2014

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

Date(s) aerial images were photographed: Nov 12, 2010—Mar 17, 2011

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

Map Unit Legend

Lauderdale County, Alabama (AL077)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
BoE	Bodine gravelly silt loam, 12 to 30 percent slopes	5.1	0.7%
DaB	Decatur silt loam, 2 to 6 percent slopes	492.3	70.6%
DcC2	Decatur silty clay loam, 6 to 10 percent slopes, eroded	59.0	8.5%
FaC	Fullerton gravelly silt loam, 6 to 15 percent slopes	8.3	1.2%
Gr	Grasmere silty clay loam	132.7	19.0%
Totals for Area of Interest		**697.4**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Lauderdale County, Alabama

BoE—Bodine gravelly silt loam, 12 to 30 percent slopes

Map Unit Setting

National map unit symbol: 2sr6h
Elevation: 660 to 900 feet
Mean annual precipitation: 45 to 59 inches
Mean annual air temperature: 57 to 64 degrees F
Frost-free period: 180 to 220 days
Farmland classification: Not prime farmland

Map Unit Composition

Bodine and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Bodine

Setting

Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Gravelly residuum weathered from cherty limestone

Typical profile

A - 0 to 8 inches: gravelly silt loam
Bt1 - 8 to 24 inches: very gravelly silty clay loam
Bt2 - 24 to 80 inches: very gravelly silty clay loam

Properties and qualities

Slope: 12 to 30 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat excessively drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water storage in profile: Low (about 4.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: A

Minor Components

Dickson

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve

Down-slope shape: Linear
Across-slope shape: Convex

Fullerton
Percent of map unit: 4 percent
Landform: Hillslopes
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex

Ennis
Percent of map unit: 4 percent
Landform: Hillslopes
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear

Lobelville
Percent of map unit: 2 percent
Landform: Hillslopes
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Concave

DaB—Decatur silt loam, 2 to 6 percent slopes

Map Unit Setting
National map unit symbol: 2s8lj
Elevation: 400 to 1,120 feet
Mean annual precipitation: 36 to 63 inches
Mean annual air temperature: 57 to 61 degrees F
Frost-free period: 140 to 260 days
Farmland classification: All areas are prime farmland

Map Unit Composition
Decatur and similar soils: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Decatur

Setting
Landform: Ridges
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Clayey residuum weathered from limestone

Typical profile

Ap - 0 to 7 inches: silt loam
Bt1 - 7 to 20 inches: silty clay loam
Bt2 - 20 to 120 inches: clay

Properties and qualities

Slope: 2 to 6 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 9.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: B

Minor Components

Abernathy, (emory ponded)

Percent of map unit: 4 percent
Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave

Chenneby

Percent of map unit: 1 percent
Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave

DcC2—Decatur silty clay loam, 6 to 10 percent slopes, eroded

Map Unit Setting

National map unit symbol: 2s8m3
Elevation: 440 to 720 feet
Mean annual precipitation: 46 to 60 inches
Mean annual air temperature: 57 to 64 degrees F
Frost-free period: 180 to 210 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Decatur and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Decatur

Setting

Landform: Interfluves
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Residuum weathered from limestone

Typical profile

Ap - 0 to 4 inches: silty clay loam
Bt - 4 to 80 inches: silty clay

Properties and qualities

Slope: 6 to 10 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.9 mmhos/cm)
Available water storage in profile: High (about 9.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: B

Minor Components

Emory

Percent of map unit: 5 percent
Landform: Interfluves
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Concave

Chenneby, occasionally flooding

Percent of map unit: 3 percent
Landform: Interfluves
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Concave

Fullerton

Percent of map unit: 2 percent

Landform: Interfluves
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex

FaC—Fullerton gravelly silt loam, 6 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2s8lr
Elevation: 400 to 790 feet
Mean annual precipitation: 48 to 59 inches
Mean annual air temperature: 57 to 61 degrees F
Frost-free period: 180 to 240 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Fullerton and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Fullerton

Setting

Landform: Ridges
Landform position (two-dimensional): Summit, shoulder, backslope, toeslope
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy creep deposits derived from cherty limestone over clayey residuum weathered from cherty limestone

Typical profile

A - 0 to 6 inches: gravelly silt loam
Bt1 - 6 to 19 inches: gravelly silty clay
Bt2 - 19 to 36 inches: gravelly clay
Bt3 - 36 to 75 inches: gravelly clay

Properties and qualities

Slope: 6 to 15 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 7.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: B

Minor Components

Bodine
Percent of map unit: 9 percent
Landform: Ridges
Landform position (two-dimensional): Summit, shoulder, backslope, toeslope
Landform position (three-dimensional): Crest, side slope
Down-slope shape: Convex
Across-slope shape: Convex

Dickson
Percent of map unit: 4 percent
Landform: Ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Convex
Across-slope shape: Convex

Lee
Percent of map unit: 2 percent
Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Concave
Across-slope shape: Concave

Gr—Grasmere silty clay loam

Map Unit Setting
National map unit symbol: kk8k
Elevation: 870 to 1,170 feet
Mean annual precipitation: 46 to 54 inches
Mean annual air temperature: 57 to 61 degrees F
Frost-free period: 180 to 205 days
Farmland classification: All areas are prime farmland

Map Unit Composition
Grasmere and similar soils: 90 percent
Minor components: 3 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Grasmere

Setting
Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Dip
Down-slope shape: Concave

Across-slope shape: Concave
Parent material: Silty and clayey alluvium derived from sedimentary rock

Typical profile

H1 - 0 to 7 inches: silty clay loam
H2 - 7 to 24 inches: silty clay
H3 - 24 to 32 inches: silty clay loam
H4 - 32 to 60 inches: clay

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Frequent
Frequency of ponding: None
Available water storage in profile: High (about 10.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: C

Minor Components

Chenneby, ponded

Percent of map unit: 3 percent
Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave

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APPENDIX G

CONSULTATION INFORMATION

AECOM
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Greenville, SC 29615

864.234.3000 tel
864.234.3069 fax

24 February 2015

Jud Easterwood, Supervising Wildlife Biologist
Alabama Division of Wildlife and Freshwater Fisheries
21453 Harris Station Road
Tanner AL 35671-9716

Subject: Request a Review of Potential Endangered/Threatened Species for the Proposed River Bend Solar, LLC Solar Generation Project in Lauderdale County, Alabama

Dear Mr. Easterwood,

AECOM is working with the Tennessee Valley Authority (TVA) through Charles Nicholson (phone 865-632-3582) in the preparation of a National Environmental Policy Act (NEPA) document associated with a proposed new solar farm in Lauderdale County, Alabama.

AECOM was retained to identify obvious site-specific constraints and environmental issues that might prevent the proposed project site from being developed as a commercial solar generation facility. The Project would include construction and operation of an approximately 80-megawatt (MW) commercial solar energy generation facility, consisting of photovoltaic (PV) solar generating panels on two sites located near the Town of Oakland in Lauderdale County in northwestern Alabama. The project sites are located approximately 10 miles northwest of Florence, Alabama (Figure 1). Site 1 (green polygon Figure 2) is approximately 645.3 acres; site 2 is located immediately east of and adjacent to Site 1 and is comprised of approximately 54.7 acres of farmland (yellow polygon Figure 2). The project is centered on Lat/Long coordinates 34° 50’ 14.50”/87° 50’ 24.81” (Figure 2).

The potential project sites consist of approximately 700 total acres of corn and cotton farmland (sites 1 and 2 combined).

Site 1 consists of gently rolling terrain with small hills and depressions across the site, and ranges from approximately 520 to 560 feet above sea level in elevation (Figure 2). The majority of Site 1 appears to be comprised of actively farmed corn and cotton crops. Several small stands of trees are present in various locations across the site. A tributary of Sinking Creek crosses the site from just north of the center of the site to the southwestern side of the site. Several roughly circular or oval depressions are located in various locations around the site, including one in the northwest corner of the site named Delahunty Pond; however, none of these depressions appear to contain water year-round (per currently available aerial images). A cluster of several old structures (and a newer metal building) is present near the center of the western boundary of Site 1. Another old barn structure is present on the southern boundary of the site,

slightly west of the center. The majority of these structures appear to be agricultural or residential in purpose. A dirt road connects these two groups of structures.

Similar to Site 1, Site 2 consists of gently rolling terrain with several small hills and depressions across the site, and ranges from approximately 530 to 580 feet above sea level in elevation (Figure 2). The majority of Site 2 appears to be actively cultivated farmland. Several small, unnamed ponds are present in various locations across Site 2. The second larger pond is located along the southern border of the site. A second tributary of Sinking Creek starts at this pond and exits the site to the southeast. A small stand of trees lines the drainage that leads into this pond and some of the area around the pond. A group of agricultural and residential structures is located in approximately the center of the southern border of Site 2. A dirt road connects this group of structures to the group of structures near the center of the site.

There are no surrounding property uses identified as having a potential negative environmental impact on the properties under assessment. Properties immediately adjacent to the sites on all sides are a mix of rural and agricultural parcels in various stages of cultivation, or unused land.

We are requesting information on any endangered/threatened species that may occur within or in close proximity to the project area at your earliest convince.

If you have any questions please feel free to contact Jeremy Jackson at (859) 623-0499 (jjackson@jacksongroupco.com) or Bobbie Hurley at (864) 234-8913 (bobbie.hurley@aecom.com).

Yours sincerely,

Roberta A. Hurley
Senior Operation Manager

cc: Charles Nicholson (TVA)
Jeremy Jackson (Jackson Group)

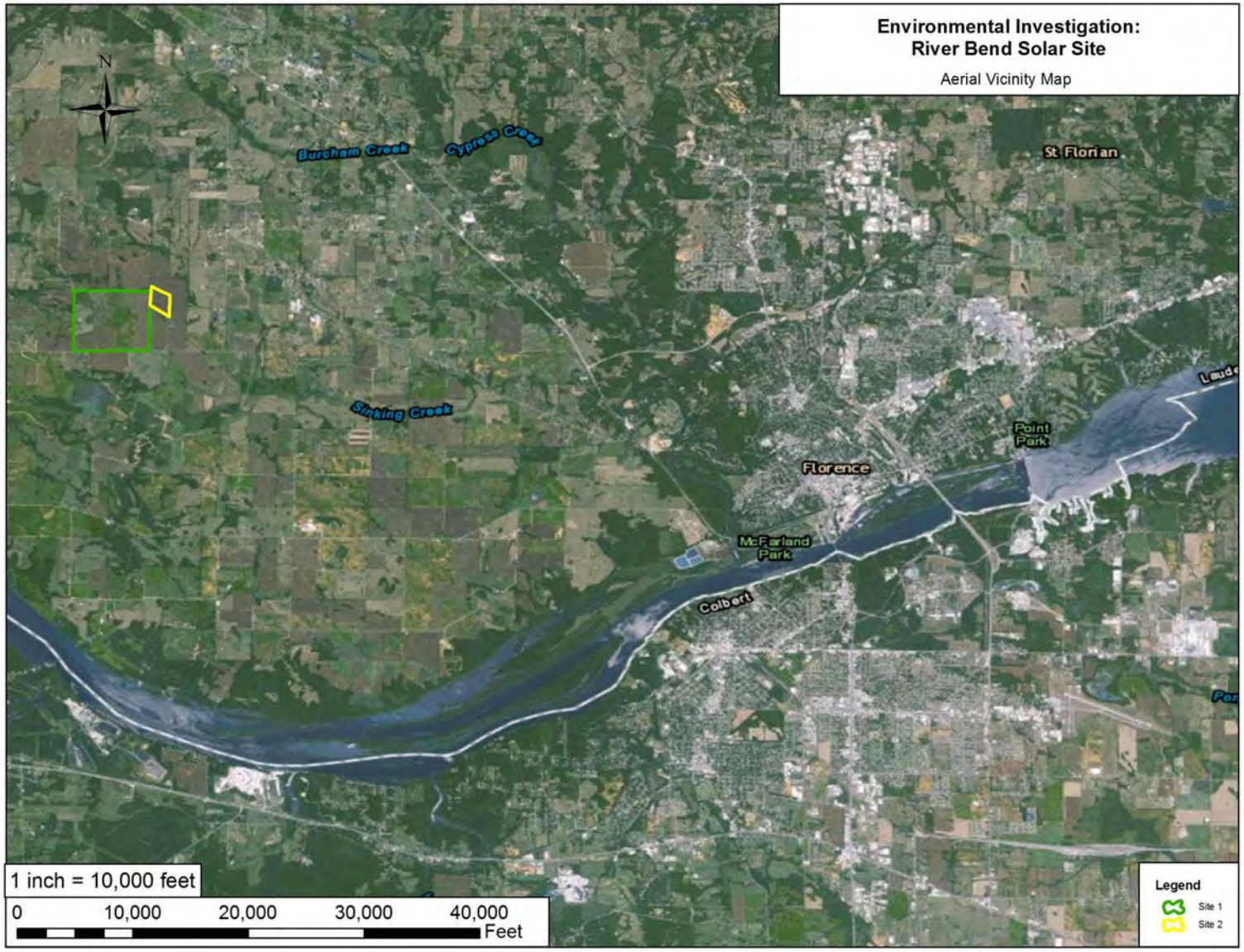

Figure 1. Vicinity map for the River Bend Solar, LLC proposed solar generation site.

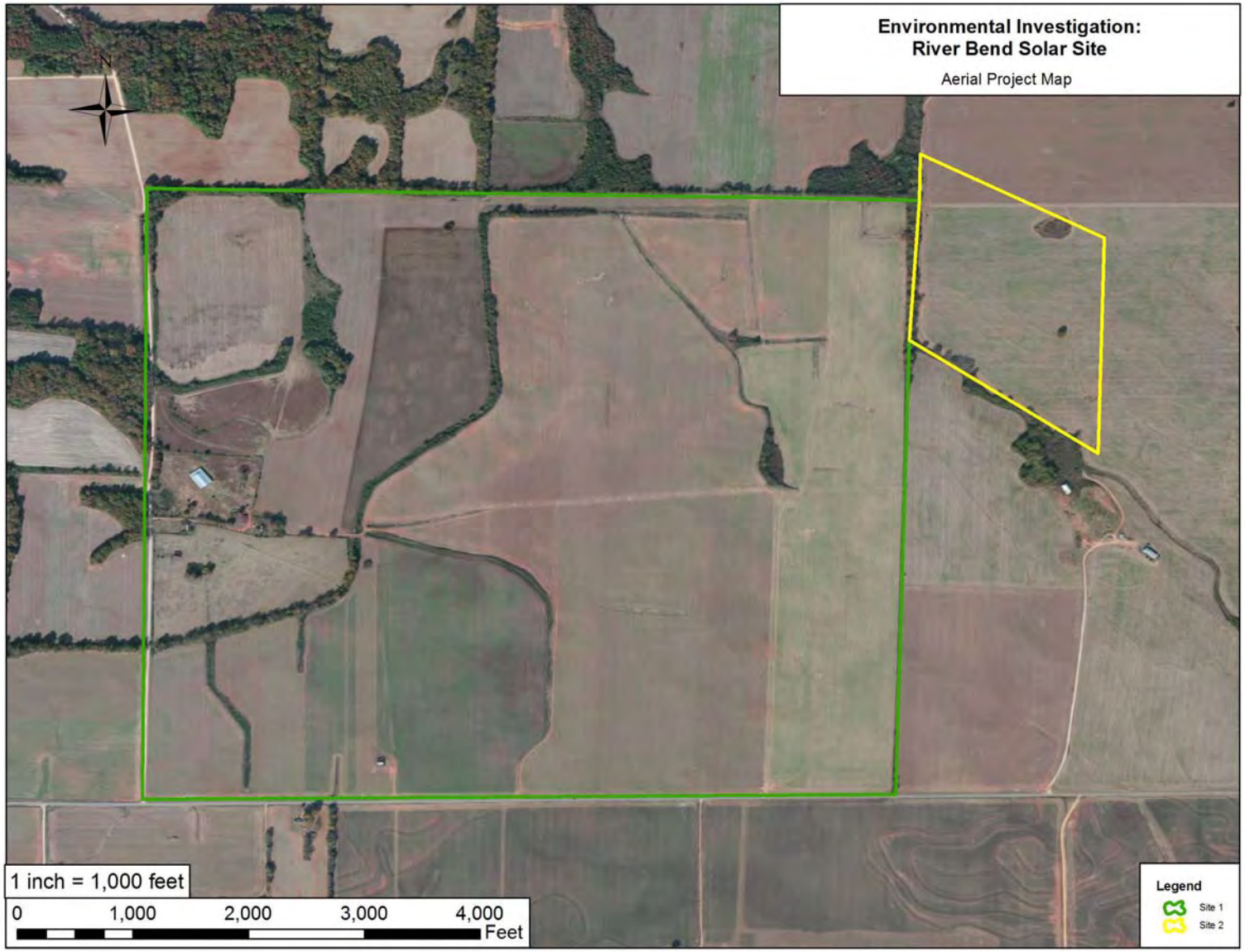

Figure 2. Project map for the River Bend Solar, LLC proposed solar generation site.

STATE OF ALABAMA
DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES
WILDLIFE AND FRESHWATER FISHERIES DIVISION

64 North Union Street, Ste. 567
P. O. Box 301456
Montgomery, AL 36130-1456
Phone: (334) 242-3465 Fax: (334) 242-3032
www.outdooralabama.com

The mission of the Wildlife and Freshwater Fisheries Division is to manage, protect, conserve, and enhance the wildlife and aquatic resources of Alabama for the sustainable benefit of the people of Alabama.

April 1, 2015

Ms. Roberta A. Hurley
AECOM
10 Patewood Drive, Bldg. VI, Suite 500
Greenville, SC 29615

RE: Request a Review of Potential Endangered/Threatened Species for the Proposed River Bend Solar, LLC Solar Generation Project in Lauderdale County, Alabama

Dear Ms. Hurley:

The Division of Wildlife and Freshwater Fisheries, Department of Conservation and Natural Resources has reviewed the above-referenced project and provides the following comments and recommendations:

- Based on the information provided in your letter dated February 24, 2015 and our own research, we have no objection to the proposed solar generation project in Lauderdale County, Alabama. It does not appear that this project will adversely affect any state- or federally-protected species. We note that you have consulted the U. S. Fish and Wildlife Service (USFWS) Information, Planning, and Conservation System for a preliminary review of species in the project area, and that you have conducted a field-visit on February 3, 2015. Federally-protected species are under the jurisdiction of the U. S. Fish and Wildlife Service. Please contact that agency regarding potential impacts to federally-protected species (251-441-5181).

- Mitigation for the loss or degradation of stream or wetland habitat should be provided in accordance with Section 10 and Section 404 regulations administered by the U.S. Army Corps of Engineers (USACE). Adverse functional impacts may result from physical impacts to a stream or wetland, or from the alteration of a stream's natural flow regime or the impairment of wetland hydrology. Adverse stream impacts requiring mitigation may include accelerated siltation resulting from improper construction or erosion control practices, stream realignment, flow diversion or interruption, the placement of riprap or other fill in the streambed in such a way that habitat functions are impaired or fish movement is impeded under low flow conditions, and other modifications of habitat or hydrology which reduce the density or diversity of aquatic species. If flowing streams, ditches, or wetlands will be impacted by the proposed activity, the Mobile District, USACE should be contacted (251-690-3188) to determine if the activity falls under a USACE regulation requiring mitigation for adverse ecological, morphological, or hydrological impacts. Lastly, we have no objection to the purchase of mitigation credits from a USACE-sanctioned wetland mitigation bank. If a mitigation plan related to this project is developed, we would like to be afforded the opportunity to provide a review and comment on the plan.

- State water quality standards (particularly those related to erosion control, water turbidity, and dissolved oxygen) should be strictly adhered to.

We appreciate the opportunity to comment on this project. Please contact me if we may be of further assistance (334-353-7484).

Sincerely,

Taconya D. Goar

Taconya D. Goar
Environmental Coordinator

AECOM
10 Patewood Drive, Bldg. VI, Suite 500
Greenville, SC 29615

864.234.3000 tel
864.234.3069 fax

24 February 2015

Bill Pearson - Field Supervisor
Alabama Ecological Services Field Office
United States Fish and Wildlife Service
1208 B Main Street
Daphne, Alabama 36526-4419

Subject: Request a Review of Potential Endangered/Threatened Species for the Proposed River Bend Solar, LLC Solar Generation Project in Lauderdale County, Alabama

Dear Mr. Pearson,

AECOM is working with the Tennessee Valley Authority (TVA) through Charles Nicholson (phone 865-632-3582) in the preparation of a National Environmental Policy Act (NEPA) document associated with a proposed new solar farm in Lauderdale County, Alabama.

AECOM was retained to identify obvious site-specific constraints and environmental issues that might prevent the proposed project site from being developed as a commercial solar generation facility. The Project would include construction and operation of an approximately 80-megawatt (MW) commercial solar energy generation facility, consisting of photovoltaic (PV) solar generating panels on two sites located near the Town of Oakland in Lauderdale County in northwestern Alabama. The project sites are located approximately 10 miles northwest of Florence, Alabama (Figure 1). Site 1 (green polygon Figure 2) is approximately 645.3 acres; site 2 is located immediately east of and adjacent to Site 1 and is comprised of approximately 54.7 acres of farmland (yellow polygon Figure 2). The project is centered on Lat/Long coordinates 34° 50’ 14.50”/87° 50’ 24.81” (Figure 2).

The potential project sites consist of approximately 700 total acres of corn and cotton farmland (sites 1 and 2 combined).

Site 1 consists of gently rolling terrain with small hills and depressions across the site, and ranges from approximately 520 to 560 feet above sea level in elevation (Figure 2). The majority of Site 1 appears to be comprised of actively farmed corn and cotton crops. Several small stands of trees are present in various locations across the site. A tributary of Sinking Creek crosses the site from just north of the center of the site to the southwestern side of the site. Several roughly circular or oval depressions are located in various locations around the site, including one in the northwest corner of the site named Delahunty Pond; however, none of these depressions appear to contain water year-round (per currently available aerial images). A cluster of several old structures (and a newer metal building) is present near

the center of the western boundary of Site 1. Another old barn structure is present on the southern boundary of the site, slightly west of the center. The majority of these structures appear to be agricultural or residential in purpose. A dirt road connects these two groups of structures.

Similar to Site 1, Site 2 consists of gently rolling terrain with several small hills and depressions across the site, and ranges from approximately 530 to 580 feet above sea level in elevation (Figure 2). The majority of Site 2 appears to be actively cultivated farmland. Several small, unnamed ponds are present in various locations across Site 2. The second larger pond is located along the southern border of the site. A second tributary of Sinking Creek starts at this pond and exits the site to the southeast. A small stand of trees lines the drainage that leads into this pond and some of the area around the pond. A group of agricultural and residential structures is located in approximately the center of the southern border of Site 2. A dirt road connects this group of structures to the group of structures near the center of the site.

There are no surrounding property uses identified as having a potential negative environmental impact on the properties under assessment. Properties immediately adjacent to the sites on all sides are a mix of rural and agricultural parcels in various stages of cultivation, or unused land.

We are requesting information on any endangered/threatened species that may occur within or in close proximity to the project area at your earliest convince.

If you have any questions please feel free to contact Jeremy Jackson at (859) 623-0499 (jjackson@jacksongroupco.com) or Bobbie Hurley at (864) 234-8913 (bobbie.hurley@aecom.com).

Yours sincerely,

Roberta A. Hurley
Senior Operation Manager

cc: Charles Nicholson (TVA)
Jeremy Jackson (Jackson Group)

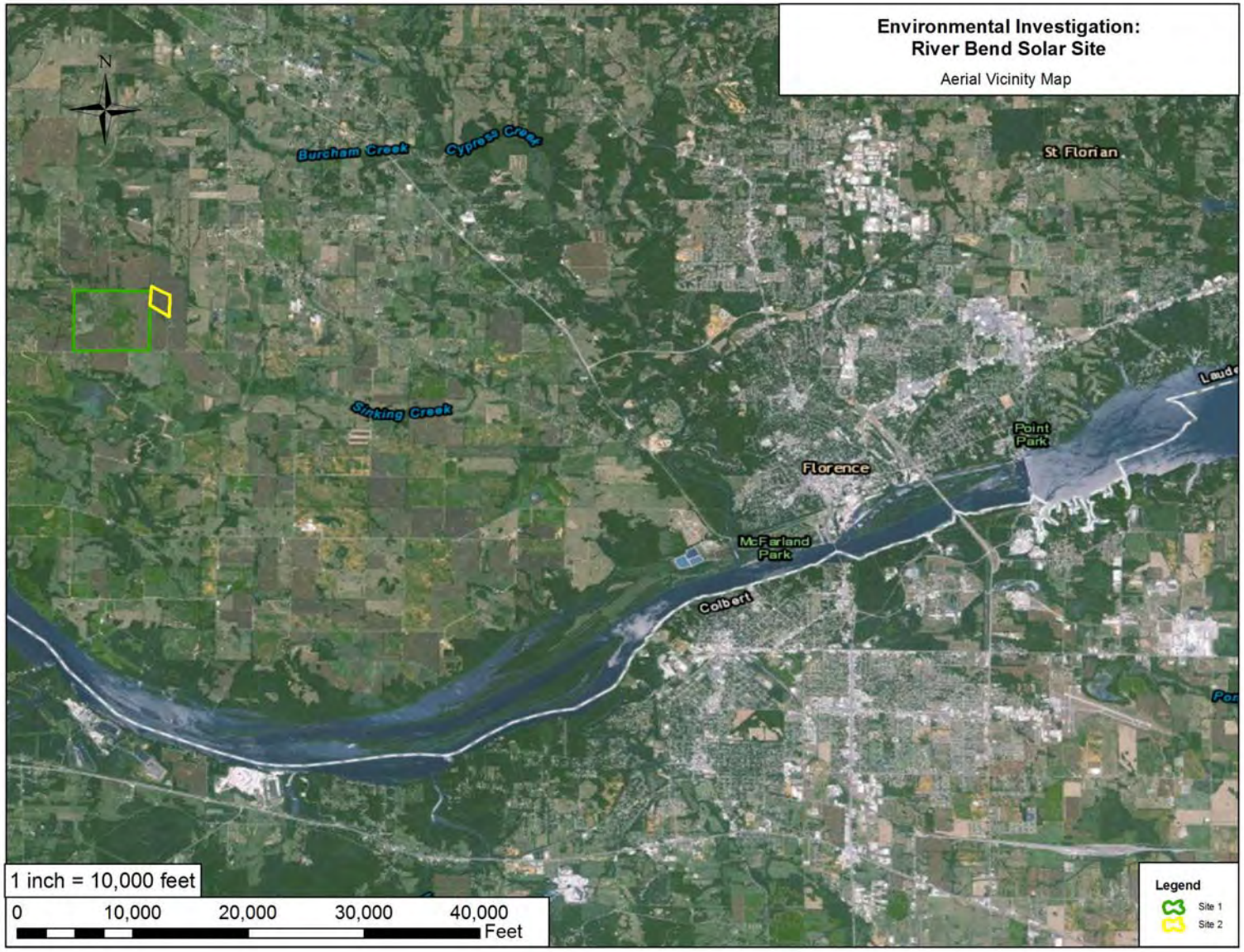

Figure 1. Vicinity map for the River Bend Solar, LLC proposed solar generation site.

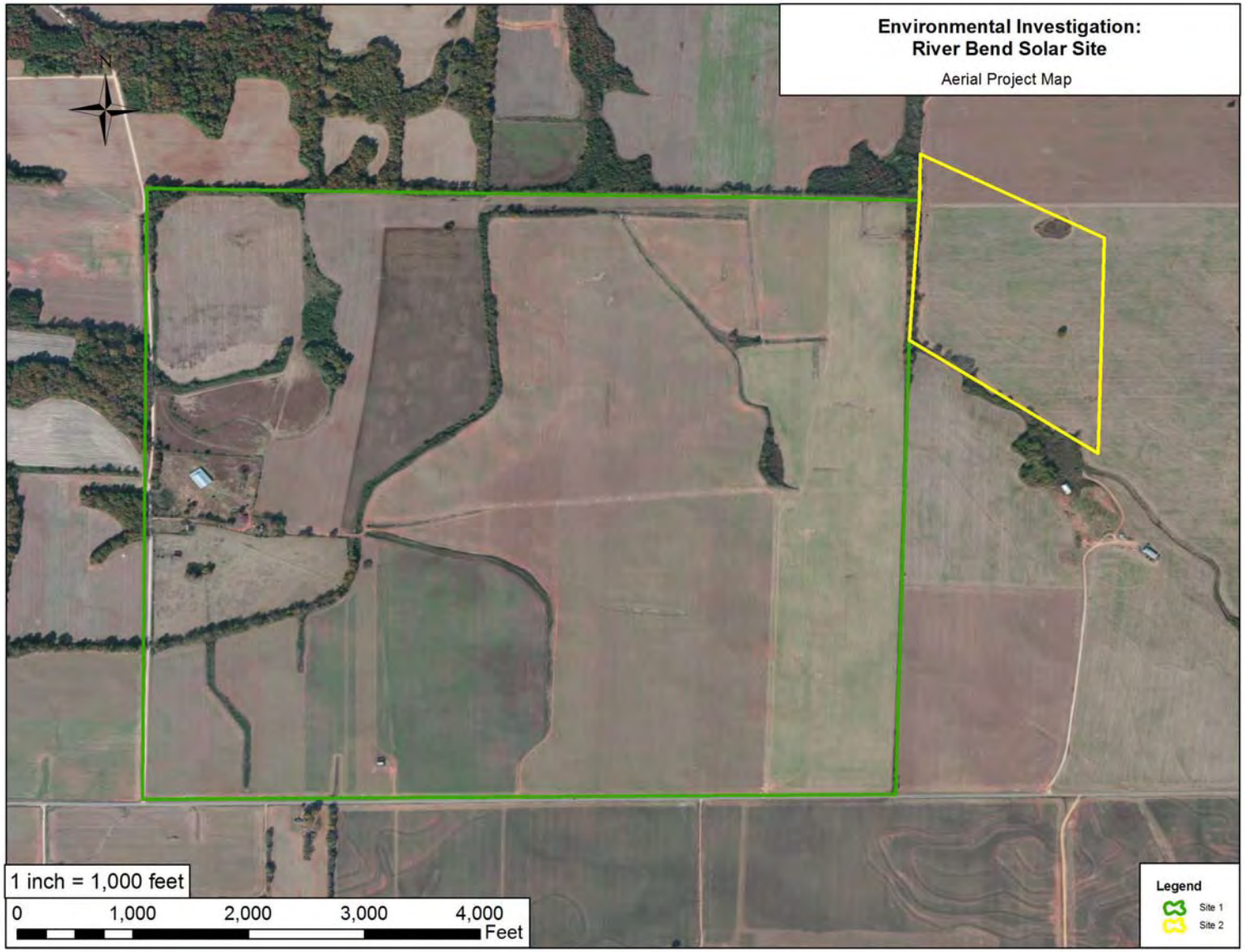

Figure 2. Project map for the River Bend Solar, LLC proposed solar generation site.

Post-It® Fax Note 7671	Date 3-24-15	# of pages ▶
To Robert Hurley	From USFWS	
Co./Dept.	Co.	
Phone #	Phone #	
864-234-3069	Fax #	

RECEIVED
MAR 03 2015
FWS

AECOM

U.S. Fish and Wildlife Service
1208-B Main Street – Daphne, Alabama 36526
Phone: 251-441-5181 Fax: 251-441-6222

No federally listed species/critical habitat are known to occur in the project area. As described, the project will have no significant impact on fish and wildlife resources. IF PROJECT DESIGN CHANGES ARE MADE, PLEASE SUBMIT NEW PLANS FOR REVIEW. We recommend use of best management practices specific to your project (See http://www.fws.gov/daphne/section7/bmp.html).

JHPowell for 3/24/15
William J. Pearson, Field Supervisor Date #3

24 February 2015

Bill Pearson - Field Supervisor
Alabama Ecological Services Field Office
United States Fish and Wildlife Service
1208 B Main Street
Daphne, Alabama 36526-4419

Subject: Request a Review of Potential Endangered/Threatened Species for the Proposed River Bend Solar, LLC Solar Generation Project in Lauderdale County, Alabama

Dear Mr. Pearson,

AECOM is working with the Tennessee Valley Authority (TVA) through Charles Nicholson (phone 865-632-3582) in the preparation of a National Environmental Policy Act (NEPA) document associated with a proposed new solar farm in Lauderdale County, Alabama.

AECOM was retained to identify obvious site-specific constraints and environmental issues that might prevent the proposed project site from being developed as a commercial solar generation facility. The Project would include construction and operation of an approximately 80-megawatt (MW) commercial solar energy generation facility, consisting of photovoltaic (PV) solar generating panels on two sites located near the Town of Oakland in Lauderdale County in northwestern Alabama. The project sites are located approximately 10 miles northwest of Florence, Alabama (Figure 1). Site 1 (green polygon Figure 2) is approximately 645.3 acres; site 2 is located immediately east of and adjacent to Site 1 and is comprised of approximately 54.7 acres of farmland (yellow polygon Figure 2). The project is centered on Lat/Long coordinates 34° 50' 14.50"/87° 50' 24.81" (Figure 2).

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5

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Similar to Site 1, Site 2 consists of gently rolling terrain with several small hills and depressions across the site, and ranges from approximately 530 to 580 feet above sea level in elevation (Figure 2). The majority of Site 2 appears to be actively cultivated farmland. Several small, unnamed ponds are present in various locations across Site 2. The second larger pond is located along the southern border of the site. A second tributary of Sinking Creek starts at this pond and exits the site to the southeast. A small stand of trees lines the drainage that leads into this pond and some of the area around the pond. A group of agricultural and residential structures is located in approximately the center of the southern border of Site 2. A dirt road connects this group of structures to the group of structures near the center of the site.

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If you have any questions please feel free to contact Jeremy Jackson at (859) 623-0499 (jjackson@jacksongroupco.com) or Bobbie Hurley at (864) 234-8913 (bobbie.hurley@aecom.com).

Yours sincerely,

Roberta A. Hurley
Senior Operation Manager

cc: Charles Nicholson (TVA)
Jeremy Jackson (Jackson Group)

AECOM
10 Patewood Drive, Bldg. VI, Suite 500
Greenville, SC 29615

864.234.3000 tel
864.234.3069 fax

May 18, 2015

Mr. Milton Tuck
Resource Soil Scientist
Natural Resources Conservation Service
420 Hackberry Lane
Tuscaloosa, AL 35486

SUBJECT: Revised Request for Farmland Conversion Impact Rating - Proposed River Bend Solar Generation Facility in Lauderdale County, Alabama

Dear Mr. Tuck,

AECOM is working with the Tennessee Valley Authority (TVA) through Charles Nicholson in the preparation of a National Environmental Policy Act (NEPA) document for a proposed 80-megawatt (MW) single axis tracking ground mounted solar photovoltaic facility. The proposed facility would be located on approximately 645 acres of private land, 10 miles northwest of Florence, in Lauderdale County, Alabama (AL) (Figure A). An earlier request for a Farmland Conversion Impact Rating for this project was submitted on March 6, 2015 and Natural Resources Conservation Service (NRCS) provided a response on March 15, 2015. Subsequent to that submittal, the dimensions of the proposed site have changed. Therefore, we are submitting this revised request.

TVA has entered into a considered power purchase agreement (PPA) with River Bend Solar, LLC (River Bend) for the purchase of energy for a minimum period of 20 years. River Bend proposes to construct and operate the facility and connect into TVA's existing electrical grid in 2016. TVA is in the process of conducting investigations, evaluating the environmental effects and preparing the subsequent NEPA compliance documentation. This documentation will include a comprehensive analysis of pertinent environmental impacts, including prime or unique farmlands and an analysis of project alternatives. This letter is being submitted under the provisions of the Farmland Protection Policy Act.

The site is located approximately 3 miles west of the unincorporated community of Oakland, at the northeast corner of the intersection of County Roads 62 and 217 (Figure B). This site contains 591.4 acres of prime farmland and 50.4 acres of statewide important farmland (Figure C) as presently characterized in the NRCS online web soil survey for Lauderdale County, Alabama.

Enclosed is Form AD-1006, the Farmland Conversion Impact Rating Form, with Parts I and III completed and a map showing soil types and farmland classification of the proposed project site (Figure C). To ensure compliance with the Farmland Protection Policy Act and to support the NEPA process, TVA requests that NRCS review the enclosed project-specific information and complete Parts II, IV, and V on the enclosed Form AD-1006. TVA staff will also forward to your office a copy of the draft NEPA document, when it is available for distribution, along with a request for comments.

Also enclosed is a copy of the March 15, 2015 NRCS response to our previous submittal for this project. Please note the discrepancy between the Farmland Conversion Impact Rating form Part IV, which lists "0" for line B, "Total Acres Statewide Important or Local Important Farmland," and the signed memorandum from Mr. Tuck, which identifies 70.2 acres of Other Farmland of Local Importance. We believe the 70.2 acres was inadvertently omitted from Part IV, line B.

If you have any questions regarding this proposed project, please contact me at 864-234-8913 (bobbie.hurley@aecom.com) or Charles Nicholson at 865-632-3582 (cpnicholson@tva.gov).

Sincerely,

Roberta A. Hurley
Senior Operations Manager

Source: ArcGIS Aerial Map

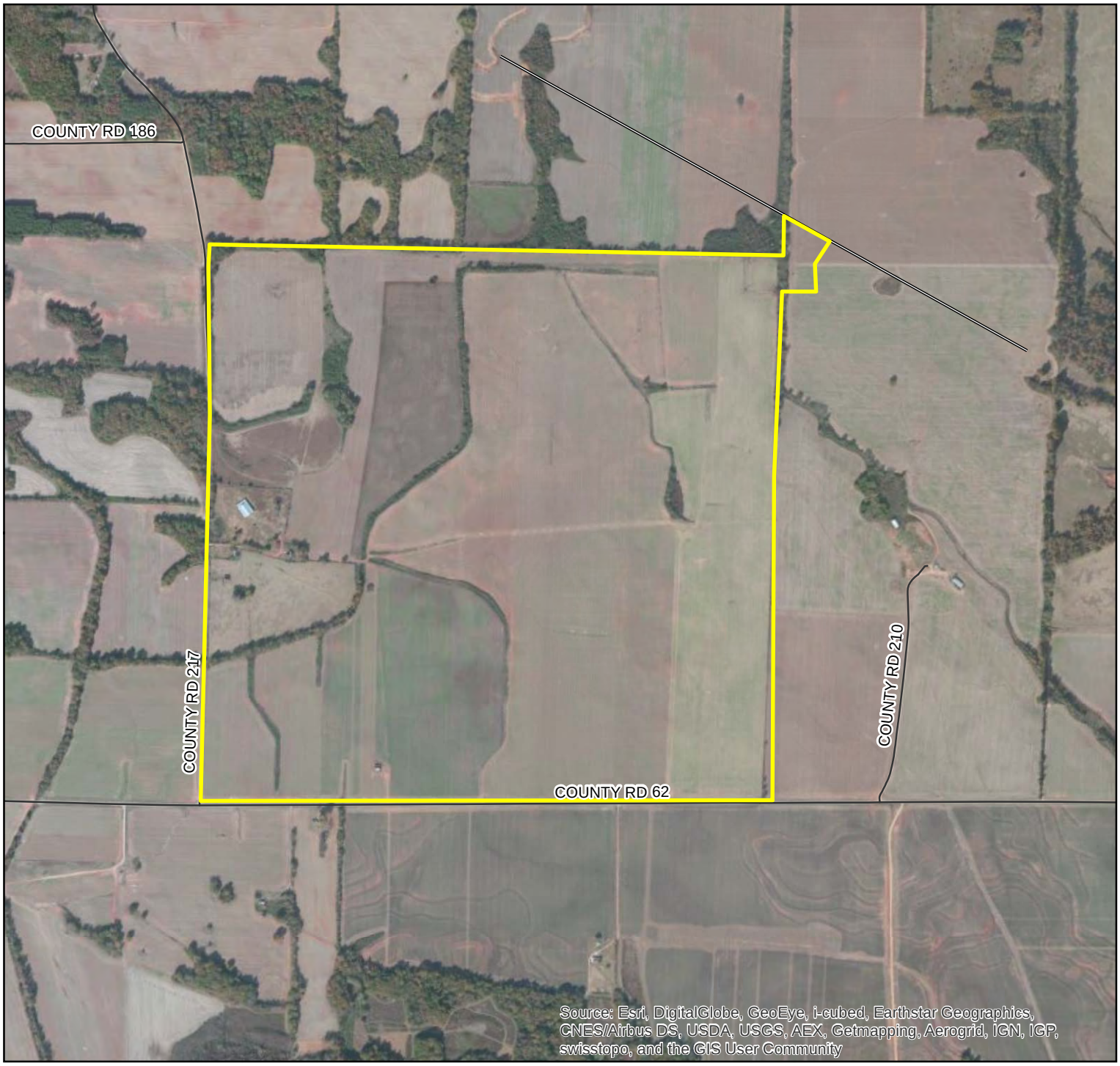
Legend

- Cities
- Highway
- Major Road
- Local Road
- Minor Road
- Site Boundary

0 2.5 5 10 Miles

N W E S

Figure A
River Bend Solar Site Location Map
Lauderdale County, Alabama



Legend

Existing Transmission Line

Site Boundary

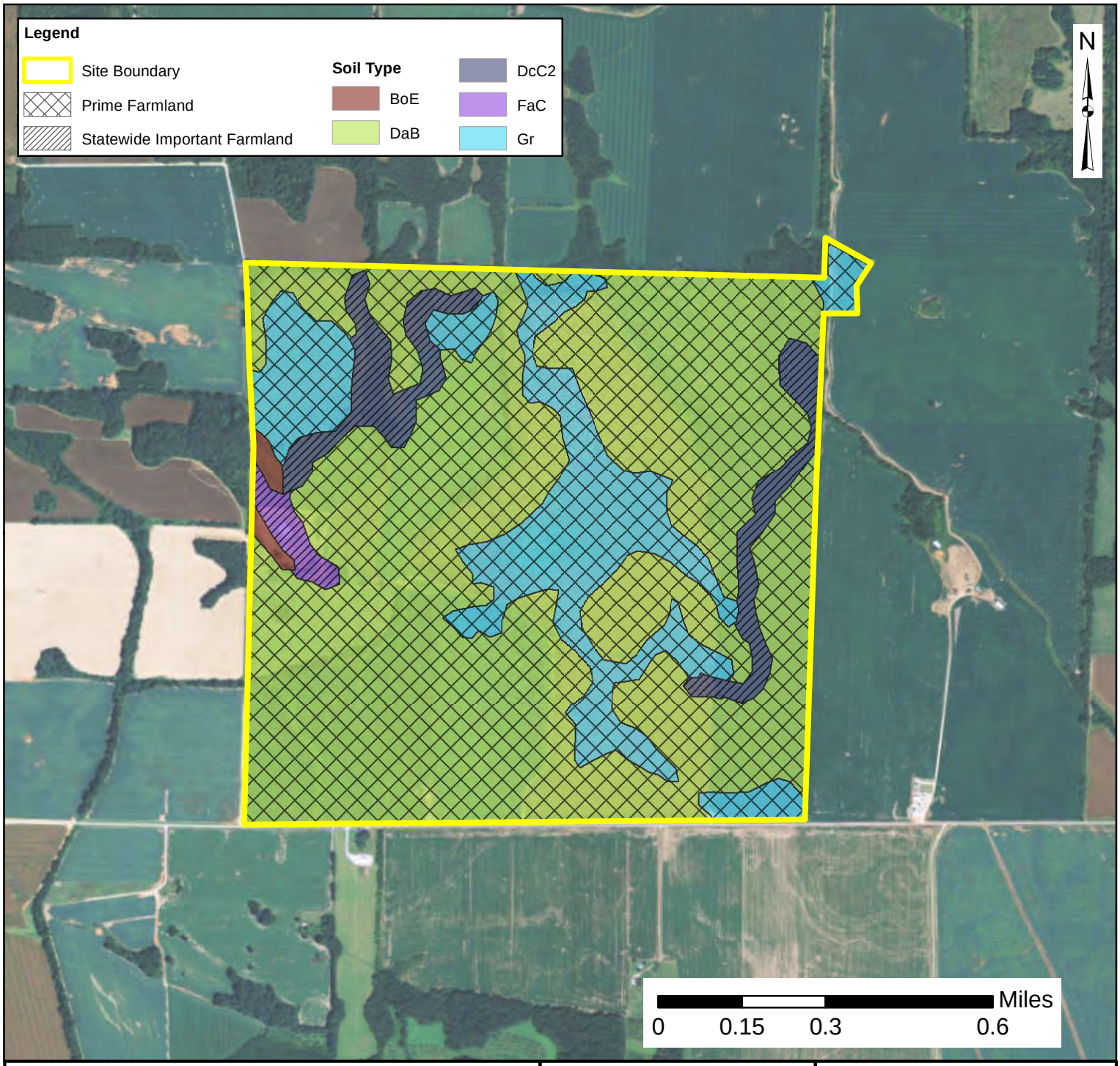
Miles

0 0.175 0.35 0.7

N W E S

Figure B
River Bend Solar Site Aerial Map

Source: ArcGIS Aerial Map



AECOM
10 Patewood Drive
Building 6, Suite 500
Greenville, SC 29615
T: (864) 234.3000
F: (864) 234.3069

Figure C

River Bend Solar Site
Farmland Soils Classification

ALABAMA

Source: USDA NRCS Soil Survey

MAY 2015

60332038.1

U.S. Department of Agriculture

FARMLAND CONVERSION IMPACT RATING

PART I *(To be completed by Federal Agency)*	Date Of Land Evaluation Request May 18, 2015	
Name of Project River Bend Solar, LLC	Federal Agency Involved Tennessee Valley Authority	
Proposed Land Use Solar farm	County and State Lauderdale County, Alabama	
PART II *(To be completed by NRCS)*	Date Request Received By NRCS	Person Completing Form:

Does the site contain Prime, Unique, Statewide or Local Important Farmland? *(If no, the FPPA does not apply - do not complete additional parts of this form)*	YES ☐ NO ☐	Acres Irrigated	Average Farm Size
Major Crop(s)	Farmable Land In Govt. Jurisdiction Acres: %	Amount of Farmland As Defined in FPPA Acres: %	
Name of Land Evaluation System Used	Name of State or Local Site Assessment System	Date Land Evaluation Returned by NRCS	

PART III *(To be completed by Federal Agency)*	Alternative Site Rating			
	Site A	Site B	Site C	Site D
A. Total Acres To Be Converted Directly	645			
B. Total Acres To Be Converted Indirectly	0			
C. Total Acres In Site	645			
PART IV *(To be completed by NRCS)* Land Evaluation Information				
A. Total Acres Prime And Unique Farmland				
B. Total Acres Statewide Important or Local Important Farmland				
C. Percentage Of Farmland in County Or Local Govt. Unit To Be Converted				
D. Percentage Of Farmland in Govt. Jurisdiction With Same Or Higher Relative Value				
PART V (To be completed by NRCS) Land Evaluation Criterion Relative Value of Farmland To Be Converted (Scale of 0 to 100 Points)				

PART VI *(To be completed by Federal Agency)* Site Assessment Criteria *(Criteria are explained in 7 CFR 658.5 b. For Corridor project use form NRCS-CPA-106)*	**Maximum Points**	Site A	Site B	Site C	Site D
1. Area In Non-urban Use	(15)				
2. Perimeter In Non-urban Use	(10)				
3. Percent Of Site Being Farmed	(20)				
4. Protection Provided By State and Local Government	(20)				
5. Distance From Urban Built-up Area	(15)				
6. Distance To Urban Support Services	(15)				
7. Size Of Present Farm Unit Compared To Average	(10)				
8. Creation Of Non-farmable Farmland	(10)				
9. Availability Of Farm Support Services	(5)				
10. On-Farm Investments	(20)				
11. Effects Of Conversion On Farm Support Services	(10)				
12. Compatibility With Existing Agricultural Use	(10)				
TOTAL SITE ASSESSMENT POINTS	160	0	0	0	0
PART VII ***(To be completed by Federal Agency)***					
Relative Value Of Farmland *(From Part V)*	100	0	0	0	0
Total Site Assessment *(From Part VI above or local site assessment)*	160	0	0	0	0
TOTAL POINTS *(Total of above 2 lines)*	260	0	0	0	0

Site Selected:	Date Of Selection	Was A Local Site Assessment Used? YES ☐ NO ☐

Reason For Selection:

Name of Federal agency representative completing this form:	Date:

(See Instructions on reverse side) **Form AD-1006 (03-02)**

STEPS IN THE PROCESSING THE FARMLAND AND CONVERSION IMPACT RATING FORM

Step 1 - Federal agencies (or Federally funded projects) involved in proposed projects that may convert farmland, as defined in the Farmland Protection Policy Act (FPPA) to nonagricultural uses, will initially complete Parts I and III of the form. For Corridor type projects, the Federal agency shall use form NRCS-CPA-106 in place of form AD-1006. The Land Evaluation and Site Assessment (LESA) process may also be accessed by visiting the FPPA website, http://fppa.nrcs.usda.gov/lesa/.

Step 2 - Originator (Federal Agency) will send one original copy of the form together with appropriate scaled maps indicating location(s)of project site(s), to the Natural Resources Conservation Service (NRCS) local Field Office or USDA Service Center and retain a copy for their files. (NRCS has offices in most counties in the U.S. The USDA Office Information Locator may be found at http://offices.usda.gov/scripts/ndISAPI.dll/oip_public/USA_map**,** or the offices can usually be found in the Phone Book under U.S. Government, Department of Agriculture. A list of field offices is available from the NRCS State Conservationist and State Office in each State.)

Step 3 - NRCS will, within 10 working days after receipt of the completed form, make a determination as to whether the site(s) of the proposed project contains prime, unique, statewide or local important farmland. (When a site visit or land evaluation system design is needed, NRCS will respond within 30 working days.

Step 4 - For sites where farmland covered by the FPPA will be converted by the proposed project, NRCS will complete Parts II, IV and V of the form.

Step 5 - NRCS will return the original copy of the form to the Federal agency involved in the project, and retain a file copy for NRCS records.

Step 6 - The Federal agency involved in the proposed project will complete Parts VI and VII of the form and return the form with the final selected site to the servicing NRCS office.

Step 7 - The Federal agency providing financial or technical assistance to the proposed project will make a determination as to whether the proposed conversion is consistent with the FPPA.

INSTRUCTIONS FOR COMPLETING THE FARMLAND CONVERSION IMPACT RATING FORM

(For Federal Agency)

Part I: When completing the "County and State" questions, list all the local governments that are responsible for local land use controls where site(s) are to be evaluated.

Part III: When completing item B (Total Acres To Be Converted Indirectly), include the following:

1. Acres not being directly converted but that would no longer be capable of being farmed after the conversion, because the conversion would restrict access to them or other major change in the ability to use the land for agriculture.
2. Acres planned to receive services from an infrastructure project as indicated in the project justification (e.g. highways, utilities planned build out capacity) that will cause a direct conversion.

Part VI: Do not complete Part VI using the standard format if a State or Local site assessment is used. With local and NRCS assistance, use the local Land Evaluation and Site Assessment (LESA).

1. Assign the maximum points for each site assessment criterion as shown in § 658.5(b) of CFR. In cases of corridor-type project such as transportation, power line and flood control, criteria #5 and #6 will not apply and will, be weighted zero, however, criterion #8 will be weighed a maximum of 25 points and criterion #11 a maximum of 25 points.

2. Federal agencies may assign relative weights among the 12 site assessment criteria other than those shown on the FPPA rule after submitting individual agency FPPA policy for review and comment to NRCS. In all cases where other weights are assigned, relative adjustments must be made to maintain the maximum total points at 160. For project sites where the total points equal or exceed 160, consider alternative actions, as appropriate, that could reduce adverse impacts (e.g. Alternative Sites, Modifications or Mitigation).

Part VII: In computing the "Total Site Assessment Points" where a State or local site assessment is used and the total maximum number of points is other than 160, convert the site assessment points to a base of 160.
Example: if the Site Assessment maximum is 200 points, and the alternative Site "A" is rated 180 points:

$$\frac{\text{Total points assigned Site A}}{\text{Maximum points possible}} = \frac{180}{200} \text{ X } 160 = 144 \text{ points for Site A}$$

For assistance in completing this form or FPPA process, contact the local NRCS Field Office or USDA Service Center.

NRCS employees, consult the FPPA Manual and/or policy for additional instructions to complete the AD-1006 form.

USDA--------NRCS
TUSCALOOSA COUNTY RESOURCE SOIL SURVEY OFFICE
P.O. BOX 861482
TUSCALOOSA AL 35486-0013

Rural Economic and Community Development \ RIVER BEND SOLAR LLC SOLAR FARMS

RE: Identification of Important Farmland and Delineation of Executive Order Wetlands:

- Project Lines
- Prime Farmland — 602 ACRES
- Wetland — Ø ACRES
- Other Farmland of Local Importance — 43 ACRES

The Prime Farmland has been identified along the project area in the color of GREEN

The Wetland has been identified along the project area in the color of BLUE

Other Farmland of local importance has been identified in the color of RED

The completion of this report as directed by Farmland Protection Act Guidelines also meets requirements directed by Departmental regulation 9500-3 Land use Policy Guidelines.

Milton Tuck RSS 6/9/15
Milton Tuck
Resource Soil Scientist

REMARKS:

U.S. Department of Agriculture

FARMLAND CONVERSION IMPACT RATING

PART I *(To be completed by Federal Agency)*	Date Of Land Evaluation Request MAY 18, 2015
Name Of Project RIVER BEND SOLAR, LLC	Federal Agency Involved TENNESSEE VALLEY AUTHORITY
Proposed Land Use SOLAR FARM	County And State LAUDERDALE COUNTY ALABAMA
PART II *(To be completed by NRCS)*	Date Request Received By NRCS 5/22/15

Does the site contain prime, unique, statewide or local important farmland? *(If no, the FPPA does not apply -- do not complete additional parts of this form).*	Yes	No	Acres Irrigated	Average Farm Size
	☑	☐	N/R	159

Major Crop(s)	Farmable Land In Govt. Jurisdiction	Amount Of Farmland As Defined in FPPA
COTTON SOYBEAN	Acres: 118786 % 26	Acres: 19854 %45
Name Of Land Evaluation System Used: LESA	Name Of Local Site Assessment System: NONE	Date Land Evaluation Returned By NRCS: 6/9/15

PART III *(To be completed by Federal Agency)*	Alternative Site Rating			
	Site A	Site B	Site C	Site D
A. Total Acres To Be Converted Directly	645			
B. Total Acres To Be Converted Indirectly	0.0			
C. Total Acres In Site	645	0.0	0.0	0.0
PART IV *(To be completed by NRCS)* Land Evaluation Information				
A. Total Acres Prime And Unique Farmland	602			
B. Total Acres Statewide And Local Important Farmland	-0-			
C. Percentage Of Farmland In County Or Local Govt. Unit To Be Converted	0095			
D. Percentage Of Farmland In Govt. Jurisdiction With Same Or Higher Relative Value	70			
PART V *(To be completed by NRCS)* Land Evaluation Criterion Relative Value Of Farmland To Be Converted *(Scale of 0 to 100 Points)*	0 80	0	0	0

PART VI *(To be completed by Federal Agency)* Site Assessment Criteria *(These criteria are explained in 7 CFR 658.5(b)*	Maximum Points				
1. Area In Nonurban Use					
2. Perimeter In Nonurban Use					
3. Percent Of Site Being Farmed					
4. Protection Provided By State And Local Government					
5. Distance From Urban Builtup Area					
6. Distance To Urban Support Services					
7. Size Of Present Farm Unit Compared To Average					
8. Creation Of Nonfarmable Farmland					
9. Availability Of Farm Support Services					
10. On-Farm Investments					
11. Effects Of Conversion On Farm Support Services					
12. Compatibility With Existing Agricultural Use					
TOTAL SITE ASSESSMENT POINTS	160	0	0	0	0
PART VII *(To be completed by Federal Agency)*					
Relative Value Of Farmland *(From Part V)*	100	0	0	0	0
Total Site Assessment *(From Part VI above or a local site assessment)*	160	0	0	0	0
TOTAL POINTS *(Total of above 2 lines)*	260	0	0	0	0

Site Selected:	Date Of Selection	Was A Local Site Assessment Used? Yes ☐ No ☐

Reason For Selection: THE COMPLETION OF THIS REPORT AS DIRECTED BY FARMLAND POLICY PROTECTION ACT GUIDELINES ALSO MEETS REQUIREMENT DIRECTED BY DEPARTMENTAL REGULATION 9500-3 LAND USE POLICY GUIDELINES.

REVISED FROM 630.7 ACRES TO 602 ACRES OF PRIME F.L.

Milton Lee 6/9/15

(See Instructions on reverse side)

Form AD-1006 (10-83)

This form was electronically produced by National Production Services Staff

U.S. Department of Agriculture

FARMLAND CONVERSION IMPACT RATING

PART I *(To be completed by Federal Agency)*	Date Of Land Evaluation Request MAY 18, 2015
Name Of Project RIVER BEND SOLAR, LLC	Federal Agency Involved TENNESSEE VALLEY AUTHORITY
Proposed Land Use : SOLAR FARM	County And State LAUDERDALE COUNTY ALABAMA
PART II *(To be completed by NRCS)*	Date Request Received By NRCS 5/22/15

Does the site contain prime, unique, statewide or local important farmland? *(If no, the FPPA does not apply -- do not complete additional parts of this form).*	Yes ☑	No ☐	Acres Irrigated N/R / Average Farm Size 159
Major Crop(s) COTTON SOYBEAN	Farmable Land In Govt. Jurisdiction Acres: 118786 % 26		Amount Of Farmland As Defined in FPPA Acres: 19854 % 45
Name Of Land Evaluation System Used LESA	Name Of Local Site Assessment System NONE		Date Land Evaluation Returned By NRCS 6/9/15

PART III *(To be completed by Federal Agency)*	Alternative Site Rating Site A	Site B	Site C	Site D
A. Total Acres To Be Converted Directly	645			
B. Total Acres To Be Converted Indirectly	00			
C. Total Acres In Site	645	0.0	0.0	0.0
PART IV *(To be completed by NRCS)* Land Evaluation Information				
A. Total Acres Prime And Unique Farmland	602			
B. Total Acres Statewide And Local Important Farmland	-0-			
C. Percentage Of Farmland In County Or Local Govt. Unit To Be Converted	0095			
D. Percentage Of Farmland In Govt. Jurisdiction With Same Or Higher Relative Value	70			
PART V *(To be completed by NRCS)* Land Evaluation Criterion Relative Value Of Farmland To Be Converted *(Scale of 0 to 100 Points)*	0 80	0	0	0

PART VI *(To be completed by Federal Agency)* Site Assessment Criteria *(These criteria are explained in 7 CFR 658.5(b)*	Maximum Points				
1. Area In Nonurban Use		15			
2. Perimeter In Nonurban Use		10			
3. Percent Of Site Being Farmed		20			
4. Protection Provided By State And Local Government		0			
5. Distance From Urban Builtup Area		15			
6. Distance To Urban Support Services		8			
7. Size Of Present Farm Unit Compared To Average		10			
8. Creation Of Nonfarmable Farmland		0			
9. Availability Of Farm Support Services		5			
10. On-Farm Investments		16			
11. Effects Of Conversion On Farm Support Services		0			
12. Compatibility With Existing Agricultural Use		1			
TOTAL SITE ASSESSMENT POINTS	160	0 100	0	0	0
PART VII *(To be completed by Federal Agency)*					
Relative Value Of Farmland *(From Part V)*	100	0 80	0	0	0
Total Site Assessment *(From Part VI above or a local site assessment)*	160	0 100	0	0	0
TOTAL POINTS *(Total of above 2 lines)*	260	0 180	0	0	0

Site Selected:	Date Of Selection	Was A Local Site Assessment Used? Yes ☐ No ☒

Reason For Selection: THE COMPLETION OF THIS REPORT AS DIRECTED BY FARMLAND POLICY PROTECTION ACT GUIDELINES ALSO MEETS REQUIREMENT DIRECTED BY DEPARTMENTAL REGULATION 9500-3 LAND USE POLICY GUIDELINES.

REVISED FROM 630.7 ACRES TO 602 ACRES OF PRIME F.L. Milton Tuff 6/9/15

(See Instructions on reverse side) Form AD-1006 (10-83)

This form was electronically produced by National Production Services Staff

AECOM
10 Patewood Drive, Bldg. VI, Suite 500
Greenville, SC 29615

864.234.3000 tel
864.234.3069 fax

April 7, 2015

Mr. Delaney Johnson
State Soil Scientist
USDA/Natural Resources Conservation Service
100 W. Capitol Street, Suite 1321 Federal Bldg.
Jackson, MS 39269

SUBJECT: Request for Farmland Conversion Impact Rating – Potential Solar Generation Facility in Noxubee County, Mississippi

Dear Mr. Johnson,

AECOM is working with the Tennessee Valley Authority (TVA) through Charles Nicholson in the preparation of a National Environmental Policy Act (NEPA) document for a proposed 80-megawatt (MW) single axis tracking ground mounted solar photovoltaic facility. One of the locations considered for this facility is a tract of land located on 602.4 acres of private land, approximately 7 miles southeast of Macon in Noxubee County, Mississippi (MS) (Figure 1).

TVA is considering entering into a power purchase agreement (PPA) with NextEra Energy Resources (NextEra) for the purchase of energy for a minimum period of 20 years. NextEra proposes to construct and operate a solar facility and connect into TVA's existing electrical grid in 2016. TVA is in the process of conducting investigations, evaluating the environmental effects and preparing the subsequent NEPA compliance documentation. This documentation will include a comprehensive analysis of pertinent environmental impacts, including prime or unique farmlands and an analysis of project alternatives. This letter is being submitted under the provisions of the Farmland Protection Policy Act.

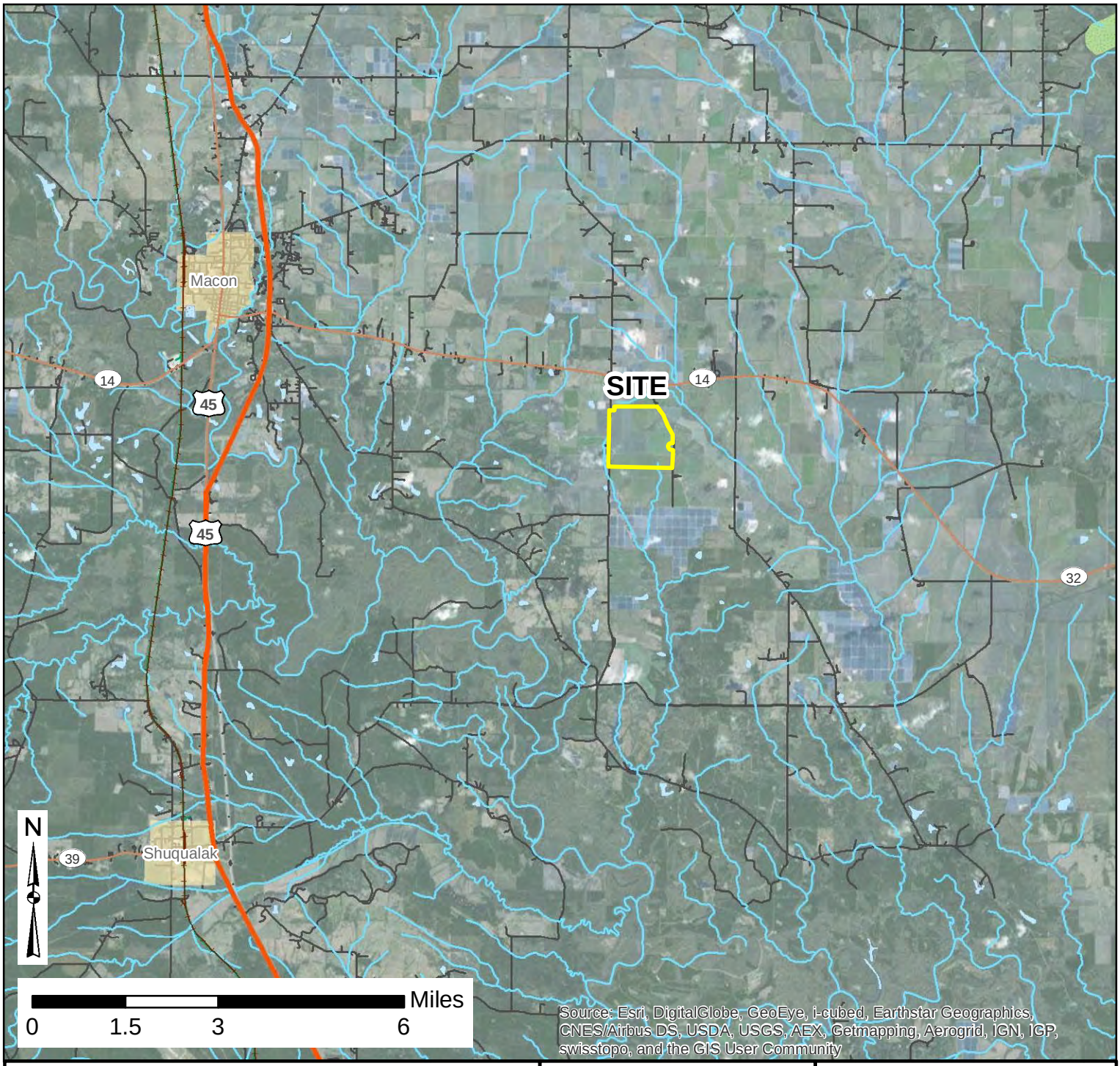
The proposed site is bounded to the east by Stan Tabor Road and to the west by Paulette Road and is located approximately 0.5 miles southeast of the intersection of Paulette Road and Mississippi Highway 14 (Figure 2). This site contains 542.6 acres of prime farmland and 16.6 acres of statewide important farmland (Figure 3) as presently characterized in the NRCS online web soil survey for Noxubee County, Mississippi. The remaining 43.2 acres are rated as prime farmland if protected from flooding or not frequently flooded during the growing season.

Enclosed is Form AD-1006, the Farmland Conversion Impact Rating Form, with Parts I and III completed and a map showing soil types and farmland classification of the proposed project site (Figure 3). To ensure compliance with the Farmland Protection Policy Act and to support the NEPA process, TVA requests that Natural Resources Conservation Service review the enclosed project-specific information and complete Parts II, IV, and V on the enclosed Form AD-1006.

If you have any questions regarding this proposed project, please contact me at 864-234-8913 (bobbie.hurley@aecom.com) or Charles Nicholson at 865-632-3582 (cpnicholson@tva.gov).

Sincerely,

Roberta A. Hurley
Senior Operations Manager



Source: USDA NRCS Soil Survey

AECOM

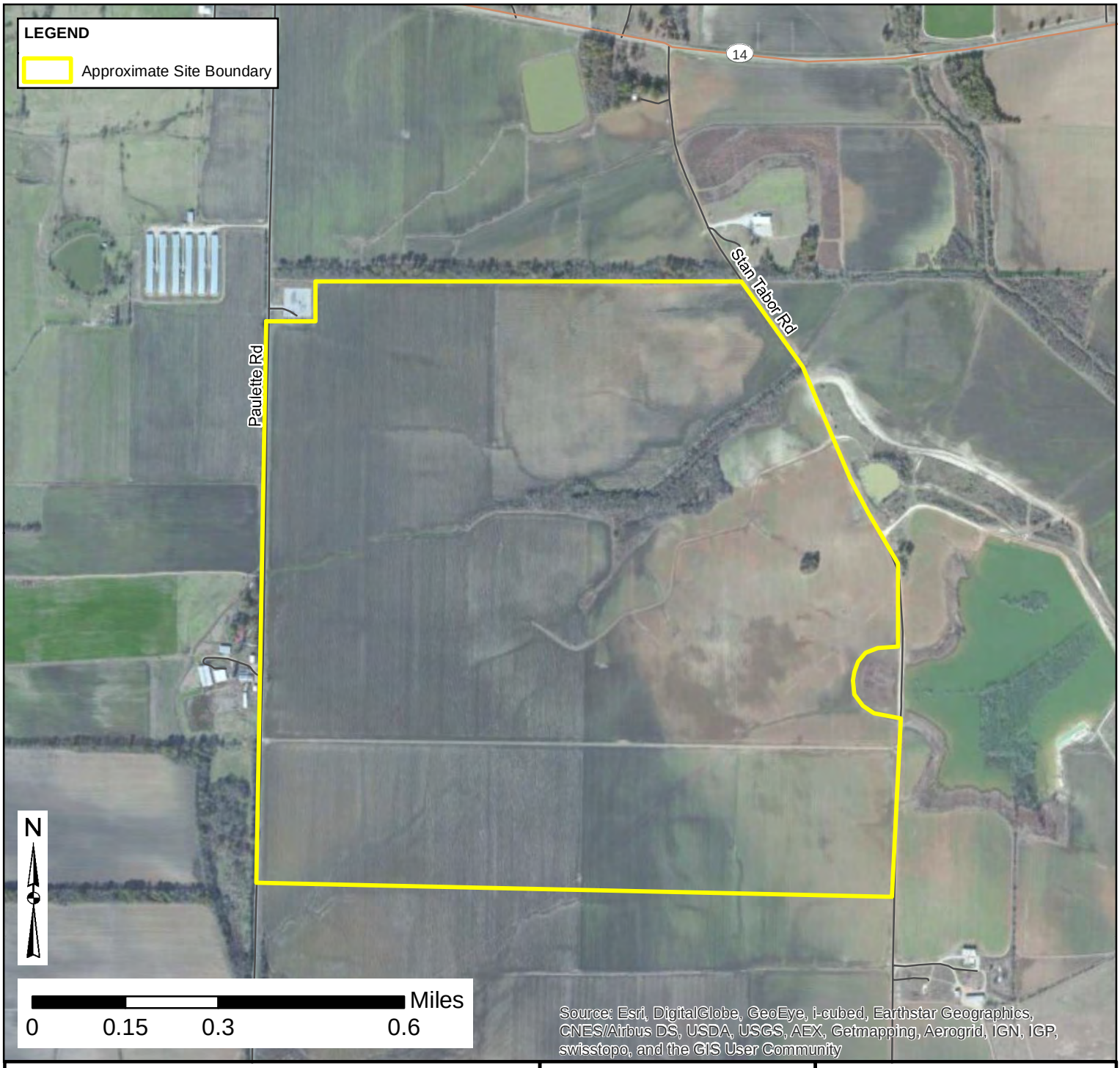
10 Patewood Drive
Building 6, Suite 500
Greenville, SC 29615
T: (864) 234.3000
F: (864) 234.3069

Figure 1

Site Location Map
Prairie Point Solar Site

MISSISSIPPI

APRIL 2015



Source: USDA NRCS Soil Survey

AECOM

10 Patewood Drive
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Greenville, SC 29615
T: (864) 234.3000
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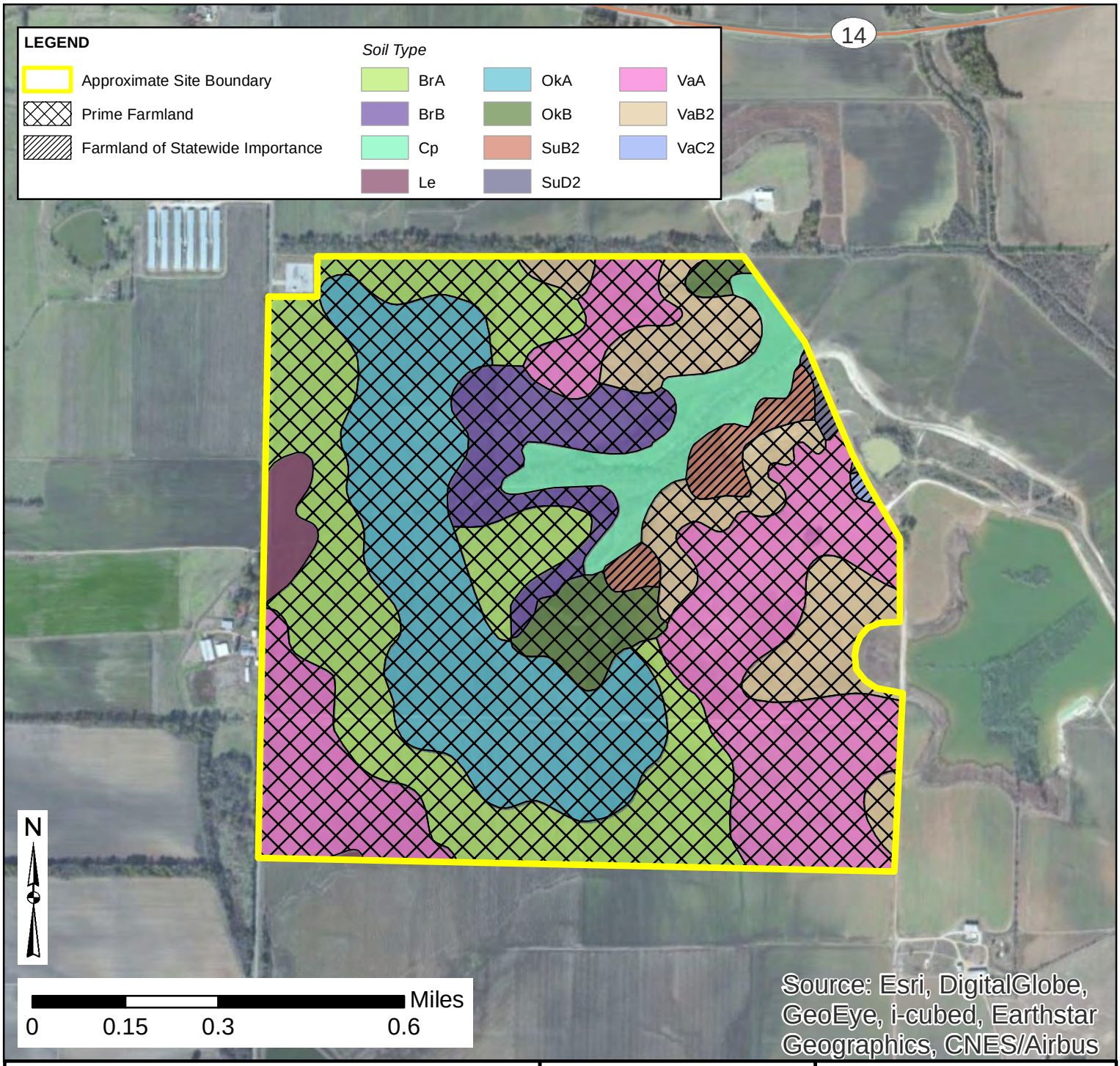
Figure 2

Vicinity Map
Prairie Point Solar Site

MISSISSIPPI

APRIL 2015



Source: USDA NRCS Soil Survey

AECOM
10 Patewood Drive
Building 6, Suite 500
Greenville, SC 29615
T: (864) 234.3000
F: (864) 234.3069

Figure 3

Farmland Soils Classification
Prairie Point Solar Site

MISSISSIPPI

APRIL 2015

U.S. Department of Agriculture

FARMLAND CONVERSION IMPACT RATING

PART I *(To be completed by Federal Agency)*		Date Of Land Evaluation Request April 6, 2015	
Name of Project Prairie Point Solar		Federal Agency Involved Tennessee Valley Authority	
Proposed Land Use Solar farm		County and State Noxubee County, Mississippi	
PART II *(To be completed by NRCS)*		Date Request Received By NRCS	Person Completing Form:
Does the site contain Prime, Unique, Statewide or Local Important Farmland? *(If no, the FPPA does not apply - do not complete additional parts of this form)*	YES ☐ NO ☐	Acres Irrigated	Average Farm Size
Major Crop(s)	Farmable Land In Govt. Jurisdiction Acres: %	Amount of Farmland As Defined in FPPA Acres: %	
Name of Land Evaluation System Used	Name of State or Local Site Assessment System	Date Land Evaluation Returned by NRCS	

PART III *(To be completed by Federal Agency)*	Alternative Site Rating			
	Site A	Site B	Site C	Site D
A. Total Acres To Be Converted Directly	602.4			
B. Total Acres To Be Converted Indirectly	0			
C. Total Acres In Site	602.4			
PART IV *(To be completed by NRCS)* Land Evaluation Information				
A. Total Acres Prime And Unique Farmland				
B. Total Acres Statewide Important or Local Important Farmland				
C. Percentage Of Farmland in County Or Local Govt. Unit To Be Converted				
D. Percentage Of Farmland in Govt. Jurisdiction With Same Or Higher Relative Value				
PART V (To be completed by NRCS) Land Evaluation Criterion Relative Value of Farmland To Be Converted (Scale of 0 to 100 Points)				

PART VI *(To be completed by Federal Agency)* Site Assessment Criteria *(Criteria are explained in 7 CFR 658.5 b. For Corridor project use form NRCS-CPA-106)*	**Maximum Points**	Site A	Site B	Site C	Site D
1. Area In Non-urban Use	(15)				
2. Perimeter In Non-urban Use	(10)				
3. Percent Of Site Being Farmed	(20)				
4. Protection Provided By State and Local Government	(20)				
5. Distance From Urban Built-up Area	(15)				
6. Distance To Urban Support Services	(15)				
7. Size Of Present Farm Unit Compared To Average	(10)				
8. Creation Of Non-farmable Farmland	(10)				
9. Availability Of Farm Support Services	(5)				
10. On-Farm Investments	(20)				
11. Effects Of Conversion On Farm Support Services	(10)				
12. Compatibility With Existing Agricultural Use	(10)				
TOTAL SITE ASSESSMENT POINTS	160	0	0	0	0
PART VII ***(To be completed by Federal Agency)***					
Relative Value Of Farmland *(From Part V)*	100	0	0	0	0
Total Site Assessment *(From Part VI above or local site assessment)*	160	0	0	0	0
TOTAL POINTS ***(Total of above 2 lines)***	260	0	0	0	0

Site Selected:	Date Of Selection	Was A Local Site Assessment Used? YES ☐ NO ☐

Reason For Selection:

Name of Federal agency representative completing this form:	Date:

(See Instructions on reverse side) **Form AD-1006 (03-02)**

STEPS IN THE PROCESSING THE FARMLAND AND CONVERSION IMPACT RATING FORM

Step 1 - Federal agencies (or Federally funded projects) involved in proposed projects that may convert farmland, as defined in the Farmland Protection Policy Act (FPPA) to nonagricultural uses, will initially complete Parts I and III of the form. For Corridor type projects, the Federal agency shall use form NRCS-CPA-106 in place of form AD-1006. The Land Evaluation and Site Assessment (LESA) process may also be accessed by visiting the FPPA website, http://fppa.nrcs.usda.gov/lesa/.

Step 2 - Originator (Federal Agency) will send one original copy of the form together with appropriate scaled maps indicating location(s)of project site(s), to the Natural Resources Conservation Service (NRCS) local Field Office or USDA Service Center and retain a copy for their files. (NRCS has offices in most counties in the U.S. The USDA Office Information Locator may be found at http://offices.usda.gov/scripts/ndISAPI.dll/oip_public/USA_map, or the offices can usually be found in the Phone Book under U.S. Government, Department of Agriculture. A list of field offices is available from the NRCS State Conservationist and State Office in each State.)

Step 3 - NRCS will, within 10 working days after receipt of the completed form, make a determination as to whether the site(s) of the proposed project contains prime, unique, statewide or local important farmland. (When a site visit or land evaluation system design is needed, NRCS will respond within 30 working days.

Step 4 - For sites where farmland covered by the FPPA will be converted by the proposed project, NRCS will complete Parts II, IV and V of the form.

Step 5 - NRCS will return the original copy of the form to the Federal agency involved in the project, and retain a file copy for NRCS records.

Step 6 - The Federal agency involved in the proposed project will complete Parts VI and VII of the form and return the form with the final selected site to the servicing NRCS office.

Step 7 - The Federal agency providing financial or technical assistance to the proposed project will make a determination as to whether the proposed conversion is consistent with the FPPA.

INSTRUCTIONS FOR COMPLETING THE FARMLAND CONVERSION IMPACT RATING FORM

(For Federal Agency)

Part I: When completing the "County and State" questions, list all the local governments that are responsible for local land use controls where site(s) are to be evaluated.

Part III: When completing item B (Total Acres To Be Converted Indirectly), include the following:

1. Acres not being directly converted but that would no longer be capable of being farmed after the conversion, because the conversion would restrict access to them or other major change in the ability to use the land for agriculture.
2. Acres planned to receive services from an infrastructure project as indicated in the project justification (e.g. highways, utilities planned build out capacity) that will cause a direct conversion.

Part VI: Do not complete Part VI using the standard format if a State or Local site assessment is used. With local and NRCS assistance, use the local Land Evaluation and Site Assessment (LESA).

1. Assign the maximum points for each site assessment criterion as shown in § 658.5(b) of CFR. In cases of corridor-type project such as transportation, power line and flood control, criteria #5 and #6 will not apply and will, be weighted zero, however, criterion #8 will be weighed a maximum of 25 points and criterion #11 a maximum of 25 points.

2. Federal agencies may assign relative weights among the 12 site assessment criteria other than those shown on the FPPA rule after submitting individual agency FPPA policy for review and comment to NRCS. In all cases where other weights are assigned, relative adjustments must be made to maintain the maximum total points at 160. For project sites where the total points equal or exceed 160, consider alternative actions, as appropriate, that could reduce adverse impacts (e.g. Alternative Sites, Modifications or Mitigation).

Part VII: In computing the "Total Site Assessment Points" where a State or local site assessment is used and the total maximum number of points is other than 160, convert the site assessment points to a base of 160.
Example: if the Site Assessment maximum is 200 points, and the alternative Site "A" is rated 180 points:

$$\frac{\text{Total points assigned Site A}}{\text{Maximum points possible}} = \frac{180}{200} \text{ X } 160 = 144 \text{ points for Site A}$$

For assistance in completing this form or FPPA process, contact the local NRCS Field Office or USDA Service Center.

NRCS employees, consult the FPPA Manual and/or policy for additional instructions to complete the AD-1006 form.

USDA

April 24, 2015

Roberta A. Hurley, AECOM
10 Patewood Drive, Bldg. VI. Suite 500
Greenville, SC 29615

FPPA Prairie Point Solar Farm

Dear Miss Hurley,

This is in response to your letter dated April 7, 2015, concerning TVA, Prairie Point Solar Farm Project. Within the 602.6 acre project boundary, the area contains approximately 586 acres of Prime and 16.6 acres of Statewide Important farmland, as define by Farmland Protection Policy Act (FPPA); therefore, the representative of Federal agency must complete Parts VI and VII of the appropriate form (AD-1006). If total points in Part VII is less than 160 points, no further consideration for farmland protection is warranted and no additional sites needs to be evaluated. Sites receiving 160 total points or more should be given increasingly higher level of consideration for protection.

If you need any further assistance, please contact me via phone: 601-965-5205 x 160 or Email: james.curtis2@ms.usda.gov .

Sincerely,

James Curtis

James Curtis
Assistant State Soil Scientist

cc: Delaney B. Johnson, State Soil Scientist, NRCS, Jackson, MS
Wallace Cade, District Conservationist, NRCS, Starkville, MS

U.S. Department of Agriculture

FARMLAND CONVERSION IMPACT RATING

PART I *(To be completed by Federal Agency)*	Date Of Land Evaluation Request April 6, 2015
Name of Project Prairie Point Solar	Federal Agency Involved Tennessee Valley Authority
Proposed Land Use Solar Farm	County and State Noxubee County, Mississippi
PART II *(To be completed by NRCS)*	Date Request Received By NRCS April 13, 2015 / Person Completing Form: James Curtis

Does the site contain Prime, Unique, Statewide or Local Important Farmland? *(If no, the FPPA does not apply - do not complete additional parts of this form)*	YES ☑ NO ☐	Acres Irrigated 72,279	Average Farm Size 377
Major Crop(s) Soybeans	Farmable Land In Govt. Jurisdiction Acres: 381187 % 85.1	Amount of Farmland As Defined in FPPA Acres: 38198 % 85.2	
Name of Land Evaluation System Used Noxubee County LE System	Name of State or Local Site Assessment System None	Date Land Evaluation Returned by NRCS April 24, 2015	

PART III *(To be completed by Federal Agency)*	Alternative Site Rating Site A	Site B	Site C	Site D
A. Total Acres To Be Converted Directly	602.6			
B. Total Acres To Be Converted Indirectly	0			
C. Total Acres In Site	602.6			
PART IV *(To be completed by NRCS)* Land Evaluation Information				
A. Total Acres Prime And Unique Farmland	586			
B. Total Acres Statewide Important or Local Important Farmland	16.6			
C. Percentage Of Farmland in County Or Local Govt. Unit To Be Converted	0.15			
D. Percentage Of Farmland in Govt. Jurisdiction With Same Or Higher Relative Value	50.4			
PART V (To be completed by NRCS) Land Evaluation Criterion Relative Value of Farmland To Be Converted (Scale of 0 to 100 Points)	85.3			

PART VI *(To be completed by Federal Agency)* Site Assessment Criteria *(Criteria are explained in 7 CFR 658.5 b. For Corridor project use form NRCS-CPA-106)*	**Maximum Points**	Site A	Site B	Site C	Site D
1. Area In Non-urban Use	(15)				
2. Perimeter In Non-urban Use	(10)				
3. Percent Of Site Being Farmed	(20)				
4. Protection Provided By State and Local Government	(20)				
5. Distance From Urban Built-up Area	(15)				
6. Distance To Urban Support Services	(15)				
7. Size Of Present Farm Unit Compared To Average	(10)				
8. Creation Of Non-farmable Farmland	(10)				
9. Availability Of Farm Support Services	(5)				
10. On-Farm Investments	(20)				
11. Effects Of Conversion On Farm Support Services	(10)				
12. Compatibility With Existing Agricultural Use	(10)				
TOTAL SITE ASSESSMENT POINTS	160	0	0	0	0
PART VII ***(To be completed by Federal Agency)***					
Relative Value Of Farmland *(From Part V)*	100	85.3	0	0	0
Total Site Assessment *(From Part VI above or local site assessment)*	160	0	0	0	0
TOTAL POINTS ***(Total of above 2 lines)***	260	85.3	0	0	0

Site Selected:	Date Of Selection	Was A Local Site Assessment Used? YES ☐ NO ☐

Reason For Selection:

Name of Federal agency representative completing this form:	Date:

(See Instructions on reverse side) **Form AD-1006 (03-02)**

U.S. Department of Agriculture

FARMLAND CONVERSION IMPACT RATING

PART I *(To be completed by Federal Agency)*	Date Of Land Evaluation Request April 6, 2015
Name of Project Prairie Point Solar	Federal Agency Involved Tennessee Valley Authority
Proposed Land Use Solar Farm	County and State Noxubee County, Mississippi
PART II *(To be completed by NRCS)*	Date Request Received By NRCS April 13, 2015 / Person Completing Form: James Curtis

Does the site contain Prime, Unique, Statewide or Local Important Farmland? *(If no, the FPPA does not apply - do not complete additional parts of this form)*	YES ☑ NO ☐	Acres Irrigated 72,279	Average Farm Size 377
Major Crop(s) Soybeans	Farmable Land In Govt. Jurisdiction Acres: 381187 % 85.1	Amount of Farmland As Defined in FPPA Acres: 38198 % 85.2	
Name of Land Evaluation System Used Noxubee County LE System	Name of State or Local Site Assessment System None	Date Land Evaluation Returned by NRCS April 24, 2015	

PART III *(To be completed by Federal Agency)*	Alternative Site Rating Site A	Site B	Site C	Site D
A. Total Acres To Be Converted Directly	602.6			
B. Total Acres To Be Converted Indirectly	0			
C. Total Acres In Site	602.6			
PART IV *(To be completed by NRCS)* Land Evaluation Information				
A. Total Acres Prime And Unique Farmland	586			
B. Total Acres Statewide Important or Local Important Farmland	16.6			
C. Percentage Of Farmland in County Or Local Govt. Unit To Be Converted	0.15			
D. Percentage Of Farmland in Govt. Jurisdiction With Same Or Higher Relative Value	50.4			
PART V (To be completed by NRCS) Land Evaluation Criterion Relative Value of Farmland To Be Converted (Scale of 0 to 100 Points)	85.3			

PART VI *(To be completed by Federal Agency)* Site Assessment Criteria *(Criteria are explained in 7 CFR 658.5 b. For Corridor project use form NRCS-CPA-106)*	**Maximum Points**	Site A	Site B	Site C	Site D
1. Area In Non-urban Use	(15)	15			
2. Perimeter In Non-urban Use	(10)	10			
3. Percent Of Site Being Farmed	(20)	20			
4. Protection Provided By State and Local Government	(20)	0			
5. Distance From Urban Built-up Area	(15)	15			
6. Distance To Urban Support Services	(15)	8			
7. Size Of Present Farm Unit Compared To Average	(10)	10			
8. Creation Of Non-farmable Farmland	(10)	0			
9. Availability Of Farm Support Services	(5)	5			
10. On-Farm Investments	(20)	16			
11. Effects Of Conversion On Farm Support Services	(10)	0			
12. Compatibility With Existing Agricultural Use	(10)	1			
TOTAL SITE ASSESSMENT POINTS	160	100	0	0	0
PART VII ***(To be completed by Federal Agency)***					
Relative Value Of Farmland *(From Part V)*	100	85.3	0	0	0
Total Site Assessment *(From Part VI above or local site assessment)*	160	100	0	0	0
TOTAL POINTS ***(Total of above 2 lines)***	260	185.3	0	0	0

Site Selected:	Date Of Selection	Was A Local Site Assessment Used? YES ☐ NO ☑

Reason For Selection:

Name of Federal agency representative completing this form: Charles P. Nicholson — Date: 05/05/2015

(See Instructions on reverse side) **Form AD-1006 (03-02)**

AECOM
10 Patewood Drive, Bldg. VI, Suite 500
Greenville, SC 29615

864.234.3000 tel
864.234.3069 fax

March 16, 2015

Ms. Lisa Morris
Project Manager
Nashville District Corps of Engineers, Regulatory Branch
3701 Bell Road
Nashville, TN 37214

Subject: Transmittal of Preliminary Jurisdictional Determination: River Bend Solar Site, Lauderdale County, Alabama

Dear Ms. Morris,

AECOM is working with the Tennessee Valley Authority (TVA) through Charles Nicholson in the preparation of a National Environmental Policy Act (NEPA) document for a proposed 80-megawatt (MW) single axis tracking ground mounted solar photovoltaic facility. The proposed facility would be located on about 700 acres of private land, approximately 10 miles northwest of Florence, in Lauderdale County, Alabama.

TVA has entered into a conditional power purchase agreement (PPA) with River Bend Solar, LLC (River Bend) for the purchase of energy for a minimum period of 20 years. River Bend proposes to construct and operate the facility and connect into TVA's existing electrical grid in 2016. TVA is in the process of conducting investigations, evaluating the environmental effects and preparing the subsequent NEPA compliance documentation. This documentation will include a comprehensive analysis of pertinent environmental impacts.

Enclosed is the wetlands report titled, Preliminary Jurisdictional Determination: River Bend Solar Site Lauderdale County, Alabama (dated February 13, 2015). We respectfully request your review and a site visit, as deemed appropriate. We look forward to receiving your comments, or documentation of your concurrence with the findings, at your earliest convenience.

If you have any questions regarding the enclosed wetlands report please feel free to contact Jeremy Jackson at (859) 623-0499 (jjackson@jacksongroupco.com) or me at (864) 234-8913 (bobbie.hurley@aecom.com). If you have any other questions regarding this proposed project, please contact me or Charles Nicholson at 865-632-3582 (cpnicholson@tva.gov).

Sincerely,

Roberta A. Hurley
Senior Operation Manager

Cc: Charles Nicholson (TVA)
Jeremy Jackson (Jackson Group)

Preliminary Jurisdictional Determination: River Bend Solar Site Lauderdale County, Alabama

Prepared For:
AECOM
10 Patewood Drive
Building VI, Suite 500
Greenville, South Carolina 29615

Prepared By:
Jackson Group
3945 Simpson Lane
Richmond, Kentucky 40475

February 13, 2015

Preliminary Jurisdictional Determination:
River Bend Solar Site
Lauderdale County, Alabama

AECOM

JACKSON GROUP PROJECT NO. 30-062-02:008

February 13, 2015

Preliminary Jurisdictional Determination:
River Bend Solar Site
Lauderdale County, Alabama

Prepared For:

AECOM
10 Patewood Drive
Building VI, Suite 500
Greenville, South Carolina 29615

Prepared By:

Jackson Group
3945 Simpson Lane
Richmond, Kentucky 40475

February 13, 2015

TABLE OF CONTENTS

LIST OF TABLES

LIST OF ATTACHMENTS

1.0 INTRODUCTION

Jackson Group, of Richmond, Kentucky was contracted by AECOM of Greenville, South Carolina on behalf of River Bend Solar, LLC to assess any potential jurisdictional wetlands and/or streams in relation to the construction of a proposed solar energy farm. The project area is adjacent to Highway 62 in Lauderdale County, Alabama (Attachment 1), and centered at coordinates N 34.841992 W 87.834944 North American Datum 1983 (NAD 83). Survey efforts took place on October 14 and 15, 2014.

1.1 Project Purpose

This project was initiated in response to the proposed construction of the River Bend Solar site. The project area was surveyed to identify the extent of all potential jurisdictional waters of the United States (jurisdictional waters), which include navigable waters and their associated tributaries and wetlands. Jurisdictional waters are subject to the provisions of Section 404 of the Clean Water Act (33 CFR 328) and Section 10 of the River and Harbors Act of 1899. Information provided in this document is based upon Jackson Group's interpretation of data collected during field investigations. The United States Army Corps of Engineers (USACE) will have the final determination of the extent of jurisdictional waters.

2.0 METHODS

2.1 Wetland Delineation

Jackson Group biologists performed a pedestrian site survey to identify wetland boundaries within the project area. The survey included identifying vegetation communities, a geomorphologic assessment of hydrology, soils identification when necessary, and notation of existing disturbance.

The project area was reviewed for the presence of wetlands using the wetland definition outlined in the United States Army Corps of Engineers (USACE) *Wetlands Delineation Manual (Environmental Laboratory, 1987)* in conjunction with the procedures outlined in the USACE *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region Version 2.0*. Natural Resource Conservation Service's (NRCS) online soil survey data from Lauderdale County was used to determine the Soil Conservation Service's (SCS) map units and evaluate the potential for the occurrence of hydric soils within the area of investigation.

Weather conditions (i.e., rain, humidity, and temperature), which potentially affect hydrologic indicators, were obtained utilizing Weather Underground, Inc. (www.wunderground.com) during and three days prior to the date of delineation (Table 1).

Table 1. Weather conditions for dates of the delineation as well as three days prior

Lauderdale County, Alabama Weather					
Date	Precipitation (inches)	Temperature (˚F)		Humidity (%)	
		High	Low	High	Low
10/11/14	0.51	78	66	93	69
10/12/14	1.18	74	64	93	79
10/13/14	1.51	82	67	93	62
10/14/14	**0.34**	**68**	**57**	**93**	**72**
10/15/14	**0.00**	**67**	**55**	**93**	**52**

2.2 Stream Delineation

The project area was surveyed to identify the extent of potential jurisdictional waters of the U.S., which was determined by the presence and/or absence of an Ordinary High Water Mark (OHWM) with a defined bed and bank, which was measured in linear feet.

Streams were delineated by traversing upstream from an identifiable landmark (i.e. confluence of two streams, road intersection) to the End of Ordinary High Water Mark (EOHWM). Latitudes and longitudes were recorded with a Garmin Oregon Global Positioning System (GPS) at each stream terminus and at the perennial/intermittent and intermittent/ephemeral conversion zones.

3.0 FINDINGS AND RESULTS

3.1. General Site Description

The project area is approximately 697 acres, located within the Interior Plateu level III ecoregion, in Lauderdale County, Alabama. Land use activities within and surrounding the project area is predominantly agriculture, including row crops such as corn, cotton, and soybeans. Topography in the project area is characterized as gently sloping to flat composed primarily of agricultural fields. Elevation in the project area ranges between approximately 500 and 550 feet above sea level.

3.2. Wetlands

Two wetlands were identified during the survey, Wetland 1 and Wetland 2; and one relic wetland, Wetland 3. Representative mapping and photos are located in Attachments 1 and 2 respectively.

3.2.1. Wetland 1

Wetland 1 is an isolated, manmade, open water farm pond approximately 0.29 acres in size. Because of the depth and inability to support rooted-emergent or woody plant species, Wetland 1 is classified as deepwater aquatic habitat. This wetland lacked a significant nexus to jurisdictional waters and thus is considered to be non-jurisdictional.

3.2.2. Wetland 2

Wetland 2 is an approximate 0.72 acre wetland. Wetland 2 was formed as a result of past construction of an earthen berm, which receives water from drainage of the surrounding agricultural fields. During the time of the survey, Wetland 2 was inundated beyond its normal boundary due to precipitation events prior to, and on the day the survey was performed. Because of the amount of inundation, a routine assessment was unable to be performed. However, the surface water at the time of the survey provides evidence of precipitation induced hydrology.

Vegetation in Wetland 2 included a dominate ring of Sugar-berry trees (*Celtis laevigata*), a facultative wetland (FACW) plant species, bordering the wetland with the center having only herbaceous plant species. Because of the relative abundance of water in this wetland, Jackson Group biologists were unable to identify the plant species within

the center of the wetland. Considering hydrologic indicators and the dominant presence of the FACW sugar-berry, it is assumed that hydrophytic vegetation is present.

No soil samples were able to be taken due to the lack of access because of high water at the time of the survey. However, it is assumed based upon the existence of other indicators that Wetland 2 can be classified as a wetland. This wetland lacked a significant nexus to jurisdictional waters, and thus is considered to be non-jurisdictional.

3.2.3. Wetland 3

Wetland 3 is a past manmade farm pond on approximate 0.55 acres that does not maintain inundated water levels. There was evidence of recent inundation related to precipitation events prior to, and on the day of the survey. However, because of the presence of large animal burrows within the boundaries of the potential wetland and lack of other hydrologic indicators, it was assumed this inundation is not typical of this potential area. Vegetation within the surveyed area was dominated by upland species such as black cherry (*Prunus serotina*), American pokeweed (*Phytolacca Americana*), muliflora rose (*Rosa muliflora*), and various upland grasses (*Fescue sp.*) it was determined that no hydrophytic vegetation was present. Wetland 3 is identified on the NRCS NWI, but because there was a lack of wetland hydrology and vegetation, it was determined that Wetland 3 should no longer classified as a wetland.

3.2.4. Soil Characterization

The National Resource Conservation Service (NRCS) soil survey for Lauderdale County maps five soil series associated with the area of investigation (Attachment 5). These series are not listed as hydric by the NRCS and are characterized as well-drained to somewhat excessively drained soils that are gently sloping to flat. The soil series present in the project area include Decatur silt loam, 2 to 6 percent slopes (DaB), Grasmere silty clay loam (Gr), Decatur silty clay loam, 6 to 10 percent slopes, eroded (DcC2), Fullerton gravelly silt loam, 6 to 15 percent slopes (FaC), and Bodine gravelly silt loam, 12 to 30 percent slopes (BoE). The percentage and total areas for soils located within the area of investigation are listed in Table 2; more detailed soil information including a soils map of the area is located in Attachment 5.

Table 2. Soil Summary Data

Lauderdale County, Alabama (AL077)			
Map Unit Symbol	**Map Unit Name**	**Acres in Area of Investigation**	**Percent of Area of Investigation**
DaB	Decatur silt loam, 2 to 6 percent slopes	492.3	70.6%
Gr	Grasmere silty clay loam	132.7	19.0%
DcC2	Decatur silty clay loam, 6 to 10 percent slopes, eroded	59.0	8.5%
FaC	Fullerton gravelly silt loam, 6 to 15 percent slopes	8.3	1.2%
BoE	Bodine gravelly silt loam, 12 to 30 percent slopes	5.1	0.7%
Totals for Area of Investigation		**697.4**	**100.00%**

3.3. Streams

Seven (7) ephemeral stream channels were identified within the project area (Streams UT-A, UT-Aa, UT-Ab, UT-Ac, UT-B, UT-C, and UT-D) and four (4) swales. Representative mapping and photos are located in Attachments 1 and 3 respectively.

3.3.1. Unnamed Tributary A (UT-A)

Unnamed Tributary A (UT-A) is an ephemeral, non-relatively permanent water (non-RPW) with a very low stream quality. The stream is highly incised and has been channelized in the past to act as drainage for agricultural fields. UT-A is approximately 4,583 feet in length within the project area. UT-A begins near the center of the project area and flows towards the southwest where it continues outside the project boundary.

3.3.2. Unnamed Tributary Aa (UT-Aa)

Unnamed Tributary Aa (UT-Aa) is an ephemeral, non-RPW with a very low stream quality. UT-Aa is a manmade channel created for the purpose of agricultural drainage. UT-Aa is approximately 1,388 feet in length.

3.3.3. Unnamed Tributary Ab (UT-Ab)

Unnamed Tributary Ab (UT-Ab) is an ephemeral, non-RPW with a very low stream quality. UT-Ab is a manmade channel created for the purpose of agricultural drainage. UT-Ab is approximately 512 feet in length.

3.3.4. Unnamed Tributary Ac (UT-Ac)

Unnamed Tributary Ac (UT-Ac) is an ephemeral, non-RPW with a very low stream quality. UT-Ac is a manmade channel created for the purpose of agricultural drainage. UT-Ac is approximately 2,015 feet in length.

3.3.5. Unnamed Tributary B (UT-B)

Unnamed Tributary B (UT-B) is an ephemeral, non-RPW with a very low stream quality. UT-B flows parallel with a portion of the project area boundary in the northwest. UT-B is separated from the project area by a berm. The portion of UT-B within the project boundary is approximately 1,190 feet.

3.3.6. Unnamed Tributary C (UT-C)

Unnamed Tributary C (UT-C) is an ephemeral, non-RPW with a very low stream quality. UT-C intersects the project area flowing from north to south, the stream flows out of the project area boundary and flows southeast parallel outside the project area boundary. The portion of UT-C within the project boundary is approximately 1,230 feet in length..

3.3.7. Unnamed Tributary D (UT-D)

Unnamed Tributary D (UT-D) is an ephemeral, non-RPW with a very low stream quality. UT-D is a manmade channel created for the purpose of agricultural drainage. UT-D is approximately 1,083 feet in length.

3.3.8. Swales

Four (4) swales were identified during the survey. All four are related to agricultural drainage. Representative mapping and photos are located in Attachments 1 and 3 respectively.

4.0 CONCLUSIONS

4.1. Wetlands

Presently, two isolated non-jurisdictional wetlands, totaling 1.01 acres, were identified within the project area and one relic wetland that no longer meets the criteria to be defined as a USACE wetland. Wetland 1 is a manmade pond that was historically used as a water source for livestock. Wetland 2 was formed as the result of construction of an earthen berm separating agricultural fields where drainage collects. Wetland 3 is a relic agricultural pond that no longer functions as wetland, as it has lost the ability to maintain wetland hydrology and is being dominated by upland plant species. Although Wetland 3 is listed on the NRCS NWI, it should no longer be classified as a wetland, because it does not meet all three wetland criterion.

4.2. Streams

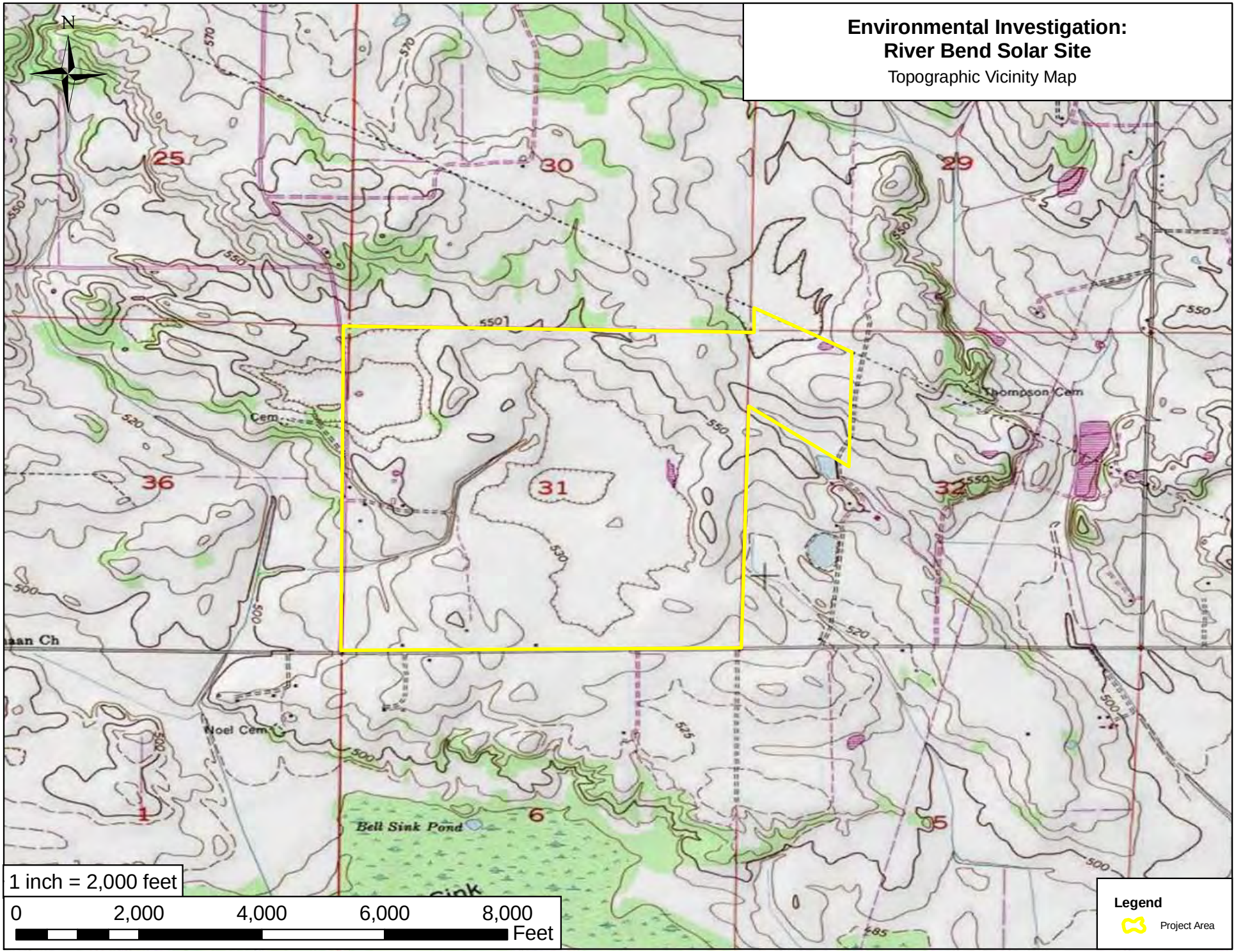
Seven ephemeral, non-RPW stream channels totaling 12,002 linear feet, and four swales were identified within the project area. All identified streams have been channelized as a direct result of historic agricultural practices. Because of the past anthropogenic disturbance to these streams, all exhibited poor habitat quality, which includes channel incision and unstable banks from erosion and limited or disturbed riparian habitat.

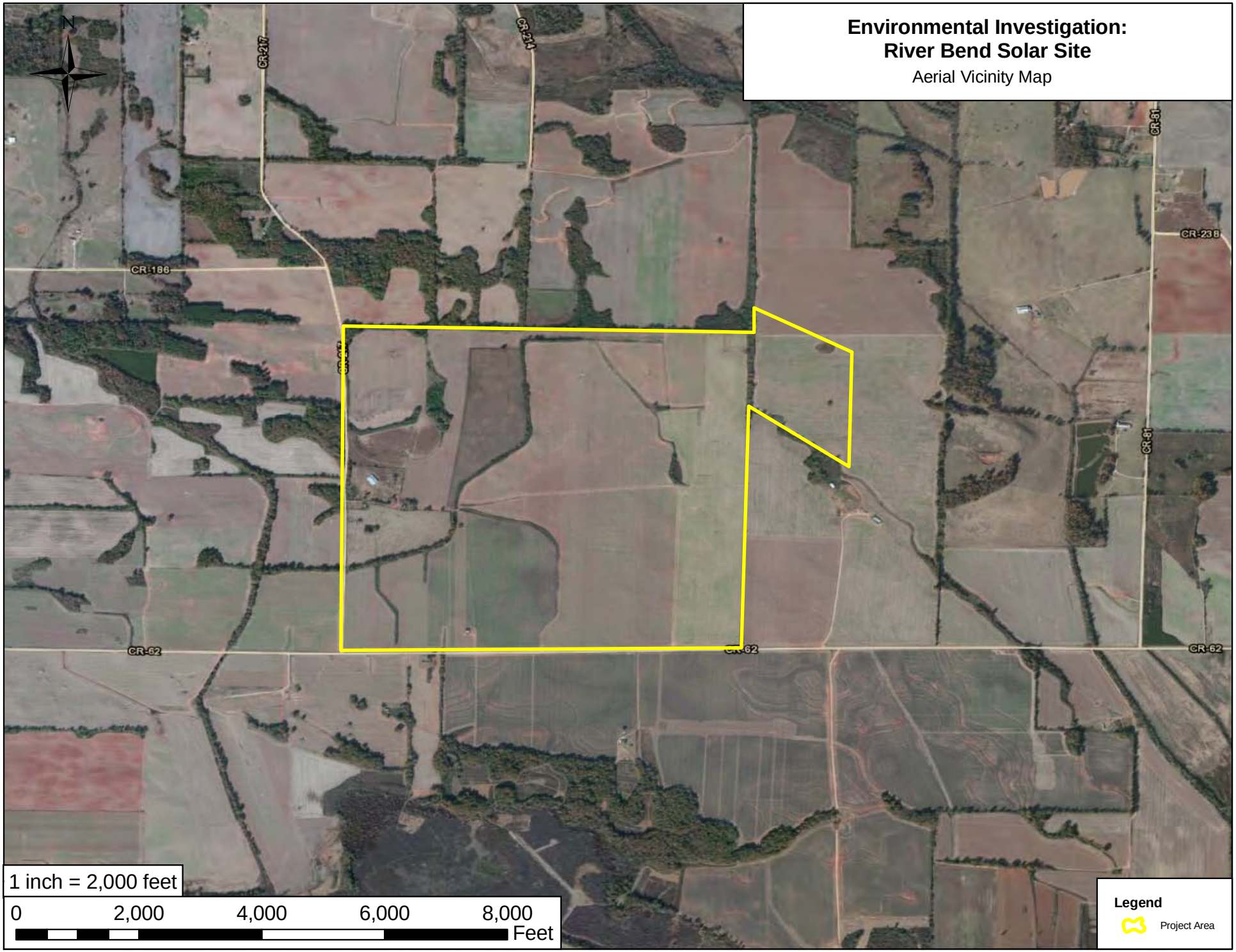
4.3. Streams and Wetlands

Under Section 404 of the Clean Water Act, the USACE regulates the discharge of dredged and/or fill material into waters of the U.S., including wetlands and stream channels. The proposed project was designed to avoid dredging/filling of jurisdictional waters, therefore these types of impacts will not occur within the Ordinary High Water Mark associated with jurisdictional waters.

Attachment 1

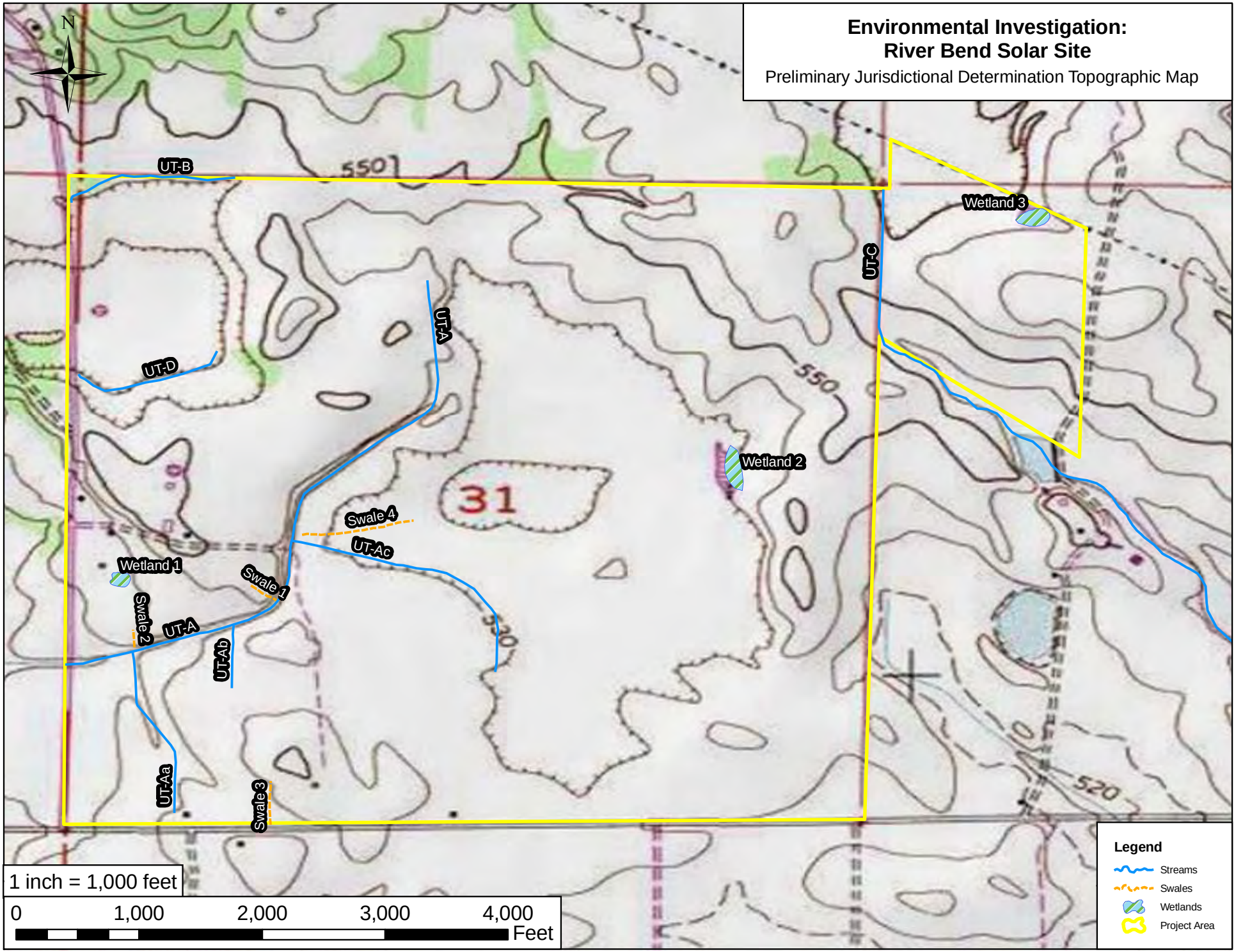
Project Maps

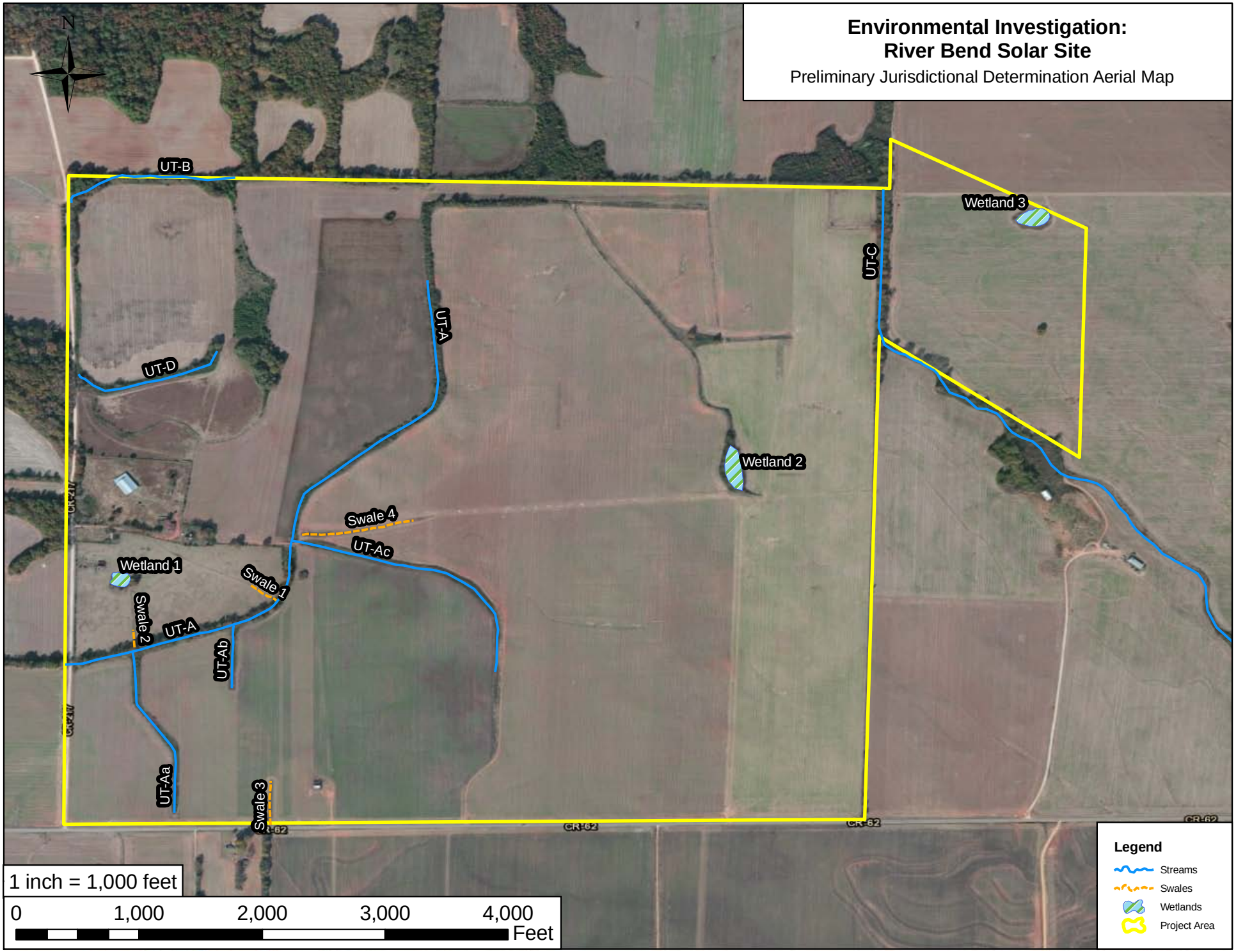

N
Environmental Investigation:
River Bend Solar Site
Topographic Vicinity Map
25
30
29
31
36
32
Thompson Cem
Noel Cem
Bell Sink Pond
6
5
1
1 inch = 2,000 feet
0
2,000
4,000
6,000
8,000
Feet
Legend
Project Area



Environmental Investigation:
River Bend Solar Site

Aerial Vicinity Map


Environmental Investigation:
River Bend Solar Site
Preliminary Jurisdictional Determination Topographic Map
N
UT-B
UT-D
UT-A
UT-C
Wetland 1
Wetland 2
Wetland 3
Swale 1
Swale 2
Swale 3
Swale 4
UT-Aa
UT-Ab
UT-Ac
550
530
520
31
1 inch = 1,000 feet
0
1,000
2,000
3,000
4,000
Feet
Legend
Streams
Swales
Wetlands
Project Area


Environmental Investigation:
River Bend Solar Site
Preliminary Jurisdictional Determination Aerial Map
N
UT-B
UT-D
UT-A
UT-C
Wetland 3
Wetland 2
Swale 4
UT-Ac
Wetland 1
Swale 1
Swale 2
UT-A
UT-Ab
UT-Aa
Swale 3
CR-217
CR-62
1 inch = 1,000 feet
0
1,000
2,000
3,000
4,000
Feet
Legend
Streams
Swales
Wetlands
Project Area

Attachment 2

Representative Photographs of Wetlands

Photo 1. Representative Photo of Wetland 1

Photo 2. Representative Photo of Wetland 1

Photo 3. Representative Photo of Wetland 1

Photo 4. Representative Photo of Wetland 1

Photo 5. Representative Photo of Wetland 2

Photo 6. Representative Photo of Wetland 2

Photo 7. Representative Photo of Wetland 2

Photo 8. Representative Photo of Wetland 2

Photo 9. Representative Photo of Wetland 2

Photo 10. Representative Photo of Wetland 2

Photo 11. Representative Photo of Wetland 2

Photo 12. Representative Photo of Wetland 2

Photo 13. Representative Photo of Wetland 3

Photo 14. Representative Photo of Wetland 3

Photo 15. Representative Photo of Wetland 3

Photo 16. Representative Photo of Wetland 3

Attachment 3

Representative Photographs of Streams

Photo 1. Representative Photo of UT-A

Photo 2. Representative Photo of UT-A

Photo 3. Representative Photo of UT-A

Photo 4. Representative Photo of UT-A

Photo 5. Representative Photo of UT-A

Photo 6. Representative Photo of UT-A

Photo 7. Representative Photo of UT-A

Photo 8. Representative Photo of UT-A

Photo 9. Representative Photo of UT-A

Photo 10. Representative Photo of UT-A

Photo 11. Representative Photo of UT-A

Photo 12. Representative Photo of UT-A

Photo 13. Representative Photo of UT-A

Photo 14. Representative Photo of UT-A

Photo 15. Representative Photo of UT-A

Photo 16. Representative Photo of UT-A

Photo 17. Representative Photo of UT-A

Photo 18. Representative Photo of UT-A

Photo 19. Representative Photo of UT-A

Photo 20. Representative Photo of UT-A

Photo 21. Representative Photo of UT-A

Photo 22. Representative Photo of UT-A

Photo 23. Representative Photo of UT-A

Photo 24. Representative Photo of UT-A

Photo 25. Representative Photo of UT-A

Photo 26. Representative Photo of UT-A

Photo 27. Representative Photo of UT-A

Photo 28. Representative Photo of UT-A

Photo 29. Representative Photo of UT-A

Photo 30. Representative Photo of UT-A

Photo 31. Representative Photo of UT-Aa

Photo 32. Representative Photo of UT-Aa

Photo 33. Representative Photo of UT-Aa

Photo 34. Representative Photo of UT-Aa

Photo 35. Representative Photo of UT-Aa

Photo 36. Representative Photo of UT-Aa channel covered in honeysuckle

Photo 37. Representative Photo of UT-Aa channel covered in honeysuckle

Photo 38. Representative Photo of UT-Aa

Photo 39. Representative Photo of UT-Aa

Photo 40. Representative Photo of UT-Aa

Photo 41. Representative Photo of end of UT-Aa

Photo 42. Representative Photo of end of UT-Aa

Photo 43. Representative Photo of UT-Ab confluence with UT-A

Photo 44. Representative Photo of UT-Ab

Photo 45. Representative Photo of UT-Ab

Photo 46. Representative Photo of UT-Ab

Photo 47. Representative Photo of UT-Ab

Photo 48. Representative Photo of UT-Ab

Photo 49. Representative Photo of UT-Ab

Photo 50. Representative Photo of UT-end of Ab

Photo 51. Representative Photo of UT-Ab EOHWM

Photo 52. Representative Photo of UT-Ac

Photo 53. Representative Photo of UT-Ac

Photo 54. Representative Photo of UT-Ac

Photo 55. Representative Photo of UT-Ac

Photo 56. Representative Photo of UT-Ac

Photo 57. Representative Photo of UT-Ac

Photo 58. Representative Photo of UT-Ac

Photo 59. Representative Photo of UT-Ac

Photo 60. Representative Photo of UT-Ac

Photo 61. Representative Photo of UT-Ac

Photo 62. Representative Photo of UT-Ac

Photo 63. Representative Photo of UT-Ac

Photo 64. Representative Photo of UT-Ac

Photo 65. Representative Photo of UT-Ac

Photo 66. Representative Photo of UT-Ac

Photo 67. Representative Photo of UT-Ac

Photo 68. Representative Photo of UT-Ac

Photo 69. Representative Photo of UT-Ac

Photo 70. Representative Photo of UT-Ac

Photo 71. Representative Photo of UT-Ac

Photo 72. Representative Photo of UT-Ac

Photo 73. Representative Photo of UT-Ac

Photo 74. Representative Photo of UT-Ac

Photo 75. Representative Photo of UT-B

Photo 76. Representative Photo of UT-B

Photo 77. Representative Photo of UT-B

Photo 78. Representative Photo of UT-B

Photo 79. Representative Photo of UT-B

Photo 80. Representative Photo of UT-B

Photo 81. Representative Photo of UT-B

Photo 82. Representative Photo of UT-B

Photo 83. Representative Photo of UT-B

Photo 84. Representative Photo of UT-B

Photo 85. Representative Photo of UT-B

Photo 86. Representative Photo of UT-B

Photo 87. Representative Photo of UT-B

Photo 88. Representative Photo of UT-B

Photo 89. Representative Photo of UT-B

Photo 90. Representative Photo of UT-B, confluence of three drainages off site

Photo 91. Representative Photo of UT-B, confluence of three drainages off site

Photo 92. Representative Photo of UT-B, confluence of three drainages off site

Photo 93. Representative Photo of UT-C

Photo 94. Representative Photo of UT-C

Photo 95. Representative Photo of UT-C

Photo 96. Representative Photo of UT-C

Photo 97. Representative Photo of UT-C

Photo 98. Representative Photo of UT-C

Photo 99. Representative Photo of UT-C

Photo 100. Representative Photo of UT-C

Photo 101. Representative Photo of UT-C

Photo 102. Representative Photo of UT-C

Photo 103. Representative Photo of UT-C

Photo 104. Representative Photo of UT-C

Photo 105. Representative Photo of UT-C

Photo 106. Representative Photo of UT-C

Photo 107. Representative Photo of UT-C

Photo 108. Representative Photo of UT-C

Photo 109. Representative Photo of UT-D

Photo 110. Representative Photo of UT-D

Photo 111. Representative Photo of UT-D

Photo 112. Representative Photo of UT-D

Photo 113. Representative Photo of UT-D

Photo 114. Representative Photo of UT-D

Photo 115. Representative Photo of UT-D

Photo 116. Representative Photo of UT-D

Photo 117. Representative Photo of UT-D

Photo 118. Representative Photo of UT-D

Photo 119. Representative Photo of UT-D

Photo 120. Representative Photo of UT-D

Photo 121. Representative Photo of UT-D

Photo 122. Representative Photo of UT-D

Photo 123. Representative Photo of Swale 1

Photo 124. Representative Photo of Swale 1

Photo 125. Representative Photo of Swale 2

Photo 126. Representative Photo of Swale 2

Photo 127. Representative Photo of South Swale 3

Photo 128. Representative Photo of South Swale 3

Photo 129. Representative Photo of South Swale 3

Photo 130. Representative Photo of South Swale 3

Photo 131. Representative Photo of Swale 4

Photo 132. Representative Photo of Swale 4

Photo 133. Representative Photo of Swale 4

Photo 134. Representative Photo of Swale 4

Photo 135. Representative Photo of Swale4

Photo 136. Representative Photo of Swale 4

Attachment 4

Wetland Data Sheets

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: River Bend Solar Site City/County: Lauderdale Sampling Date: 10/14/14

Applicant/Owner: River Bend Solar, LLC State: AL Sampling Point: Wetland 9

Investigator(s): K. Bowlin, K. Cunningham Section, Township, Range:

Landform (hillslope, terrace, etc.): Pond Local relief (concave, convex, none): none Slope (%): 2

Subregion (LRR or MLRA): 224 N Lat: 34.83573 Long: -87.85078 Datum: NAD 83

Soil Map Unit Name: NWI classification: Freshwater Pond

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation Yes, Soil Yes, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No ✓	**Is the Sampled Area within a Wetland?** Yes ✓ No ____
Hydric Soil Present?	Yes ✓	No ____	
Wetland Hydrology Present?	Yes ✓	No ____	

Remarks: ~~X~~ Agricultural pond, Approximately 5-6 feet deep.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ✓ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ✓	No ____	Depth (inches): 60-72
Water Table Present?	Yes ____	No ____	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ____	Depth (inches): ____

Wetland Hydrology Present? Yes ✓ No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Agricultural pond. No signific nexus to JD waters

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: Wetland 1

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: _____)			
1. White Oak (Quercus alba)	5%	No	FAC
2.			
3.			
4.			
5.			
6.			
7.			
	5% = Total Cover		
50% of total cover: _____	20% of total cover: _____		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	_____ = Total Cover		
50% of total cover: _____	20% of total cover: _____		
Herb Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	_____ = Total Cover		
50% of total cover: _____	20% of total cover: _____		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
50% of total cover: _____	20% of total cover: _____		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)

Total Number of Dominant Species Across All Strata: _____ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

- ✓ 1 - Rapid Test for Hydrophytic Vegetation
- ___ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes _____ No ✓

Remarks: (Include photo numbers here or on a separate sheet.)

5 mature white oak trees on edge. No Hydrophytic Veg. identified

SOIL

Sampling Point: Wetland 1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ____

Remarks:

No soil sample taken. Assumed present due to permanent groundwater.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: River Bend Solar Site City/County: Lauderdale Sampling Date: 10/14/14

Applicant/Owner: River Bend Solar, LLC State: AL Sampling Point: Wetland 2

Investigator(s): K. Boutin K. Cunningham Section, Township, Range:

Landform (hillslope, terrace, etc.): Ag Field Local relief (concave, convex, none): Concave Slope (%): 3%

Subregion (LRR or MLRA): N224 Lat: 34.83816 Long: -87.83750 Datum: NAD83

Soil Map Unit Name: DaB NWI classification: Freshwater Pond

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✓ (If no, explain in Remarks.)

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes ____ No ✓

Are Vegetation No, Soil No, or Hydrology Yes naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No ____	**Is the Sampled Area within a Wetland?** Yes ✓ No ____
Hydric Soil Present?	Yes ✓	No ____	
Wetland Hydrology Present?	Yes ✓	No ____	

Remarks: Hydric soils assumed to be present, Water too high to take soil sample, Wetland inundated outside normal boundaries due to precipitation events prior to survey. Hydrology received from surrounding agricultural field drainage. Frequently disturbed. Earthen Berm surrounding half of wetland.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ✓ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ✓	No ____	Depth (inches): 24 inch
Water Table Present?	Yes ____	No ____	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ____	Depth (inches): ____

Wetland Hydrology Present? Yes ✓ No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Water level higher than normal from looking at landscape and indicators (water in corn field). No significant rains to wetlands.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: Wetland 2

Tree Stratum (Plot size: 0.5 ac)	Absolute % Cover	Dominant Species?	Indicator Status
1. Sugar berry (Celtis laevigata)	50%	Yes	FACW
2.			
3.			
4.			
5.			
6.			
7.			
	50% = Total Cover		

50% of total cover: _____ 20% of total cover: _____

Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	_____ = Total Cover		

50% of total cover: _____ 20% of total cover: _____

Herb Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	_____ = Total Cover		

50% of total cover: _____ 20% of total cover: _____

Woody Vine Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		

50% of total cover: _____ 20% of total cover: _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)

Total Number of Dominant Species Across All Strata: _____ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species _____	x 1 =	_____
FACW species _____	x 2 =	_____
FAC species _____	x 3 =	_____
FACU species _____	x 4 =	_____
UPL species _____	x 5 =	_____
Column Totals: _____ (A)		_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

- ✓ 1 - Rapid Test for Hydrophytic Vegetation
- ___ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks: (Include photo numbers here or on a separate sheet.)

Water too high to sample herbaceous plants in center of wetland. Dominant FACW assumed after hydro. veg. Vegetation submerged in center of wetland

SOIL

Sampling Point: Wetland 2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No _____

Remarks:

Assumed Hydric soils from hydrologic indicators water too high to sample soil, ~~Vegetation submerged in water~~

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: River Bend Solar Site City/County: Lauderdale Sampling Date: 10/14/14

Applicant/Owner: River Bend Solar, LLC. State: AL Sampling Point: Wetland 3

Investigator(s): K. Bowlin K. Cunningham Section, Township, Range:

Landform (hillslope, terrace, etc.): Ag Field/Pond Local relief (concave, convex, none): Concave Slope (%): 3

Subregion (LRR or MLRA): N 224 Lat: 34.843563 Long: -87.830624 Datum:

Soil Map Unit Name: DaB NWI classification: Freshwater Pond

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ✓ (If no, explain in Remarks.)

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes _____ No ✓

Are Vegetation Yes, Soil Yes, or Hydrology Yes naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks: Surface water present, but not usual from site indicators. Large mammal burrows within boundary. Water present from precipitation events on day of survey and days prior. Area is a historic farm pond, however upland veg. dominant.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ✓ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ✓ No _____ Depth (inches): 12 in

Water Table Present? Yes _____ No _____ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No _____ Depth (inches): _____

Wetland Hydrology Present? Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Surface water not usually present from surrounding indicators. Past drained farm pond.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: Wetland 3

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		

50% of total cover: _____ 20% of total cover: _____

Sapling/Shrub Stratum (Plot size: 0.55)			
1. Black cherry (Prunus serotina)	30%	Yes	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	30% = Total Cover		

50% of total cover: _____ 20% of total cover: _____

Herb Stratum (Plot size: _____)			
1. Rosa multiflora	50%	Yes	FACU
2. Pokeweed (Phytolacca americana)	25%	Yes	FACU
3. Fescue sp	30%	Yes	UPL
4. Golden rod sp. (Solidago sp)	10%	No	FACW
5. Aster sp.	10%	No	FACU
6.			
7.			
8.			
9.			
10.			
11.			
	= Total Cover		

50% of total cover: _____ 20% of total cover: _____

Woody Vine Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		

50% of total cover: _____ 20% of total cover: _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)

Total Number of Dominant Species Across All Strata: _____ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

- ✓ 1 - Rapid Test for Hydrophytic Vegetation
- ___ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes _____ No ✓

Remarks: (Include photo numbers here or on a separate sheet.)

Dominant species upland species

SOIL

Sampling Point: Wetland 3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ✓ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

Soils are of red parent material, since other indicators are negative it is assumed no hydric soils are present.

AECOM
10 Patewood Drive, Bldg. VI, Suite 500
Greenville, SC 29615

864.234.3000 tel
864.234.3069 fax

July 7, 2015

Mr. Charles “David” Monroe
Office Manager
Nashville District Corps of Engineers, Regulatory Branch
3701 Bell Road
Nashville, TN 37214

Subject: Transmittal of REVISED Preliminary Jurisdictional Determination: River Bend Solar Site, Lauderdale County, Alabama

Dear Mr. Monroe,

AECOM is working with the Tennessee Valley Authority (TVA) through Charles Nicholson in the preparation of a National Environmental Policy Act (NEPA) document for a proposed 80-megawatt (MW) single axis tracking ground mounted solar photovoltaic facility. The proposed facility would be located on about 645 acres of private land, approximately 10 miles northwest of Florence, in Lauderdale County, Alabama.

TVA has entered into a conditional power purchase agreement (PPA) with River Bend Solar, LLC (River Bend) for the purchase of energy for a minimum period of 20 years. River Bend proposes to construct and operate the facility and connect into TVA’s existing electrical grid in 2016. TVA is in the process of conducting investigations, evaluating the environmental effects and preparing the subsequent NEPA compliance documentation. This documentation will include a comprehensive analysis of pertinent environmental impacts.

On June 24, 2015, the USACE visited the River Bend Site accompanied by Jeremy Jackson of the Jackson Group (subcontractor who performed the initial Wetland and Protected Species surveys). Since the time of the original wetland survey, the Project Site acreage was reduced and the previously identified 'Wetland 3" has been removed because it is no longer with the Project Site boundary. Note that during the USACE site visit, the Wetland 3 area was observed as actually being an upland relic stock pond that no longer holds water. Following the site visit, AECOM revised the JD Aerial and Topographic Maps of the Project Site (enclosed) to reflect the current Project Site boundaries and acreage, and to address some site feature changes that were identified during the site visit. Also enclosed is the current Site Layout Map (Figure C) which illustrates how the Proposed Project layout has been designed to avoid the isolated stock pond, the isolated depressional area, and all potential jurisdictional streams (see enclosed stream lengths).

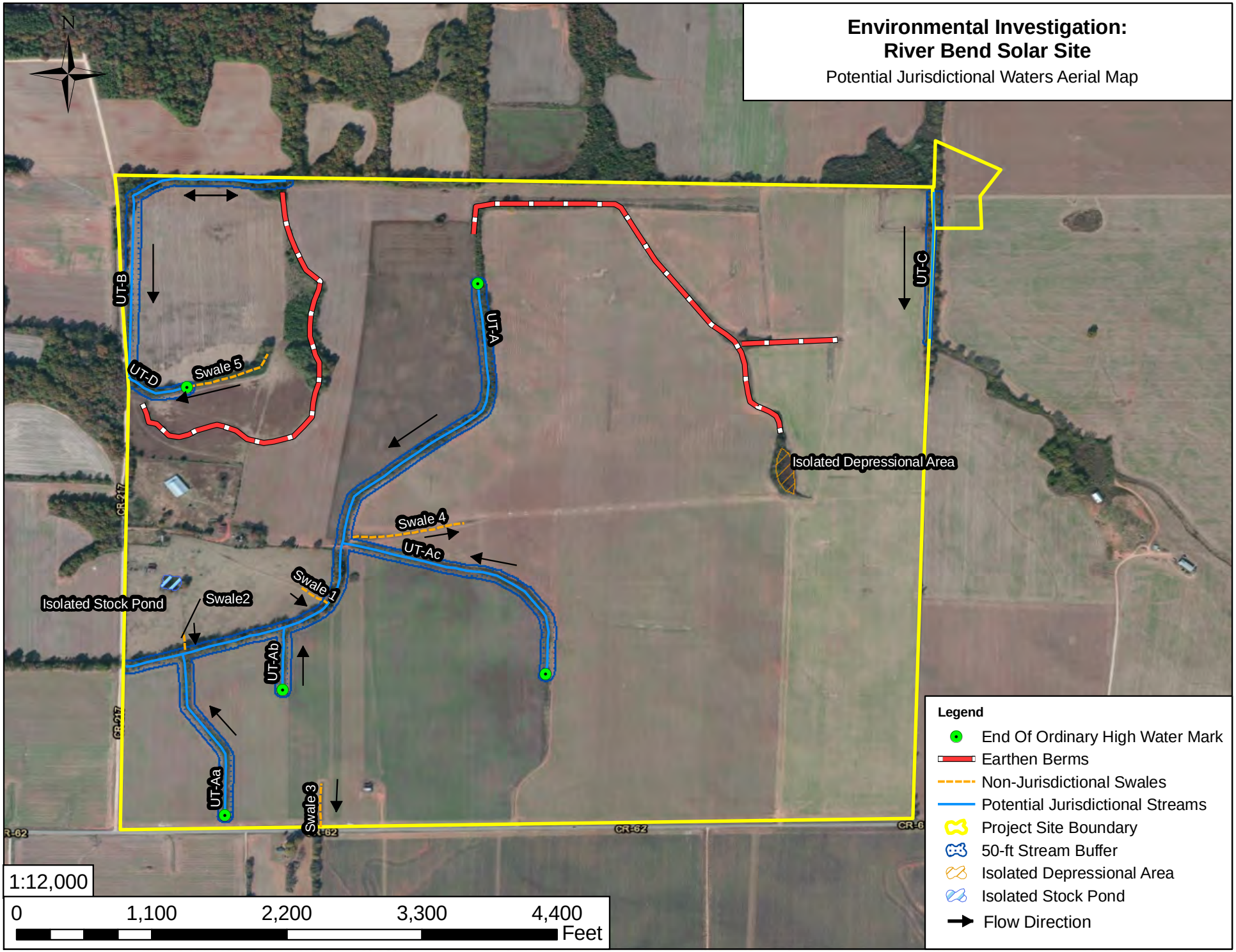
We respectfully request your review of the revised maps, as deemed appropriate. We look forward to receiving your comments, or documentation of your concurrence with the findings, at your earliest convenience.

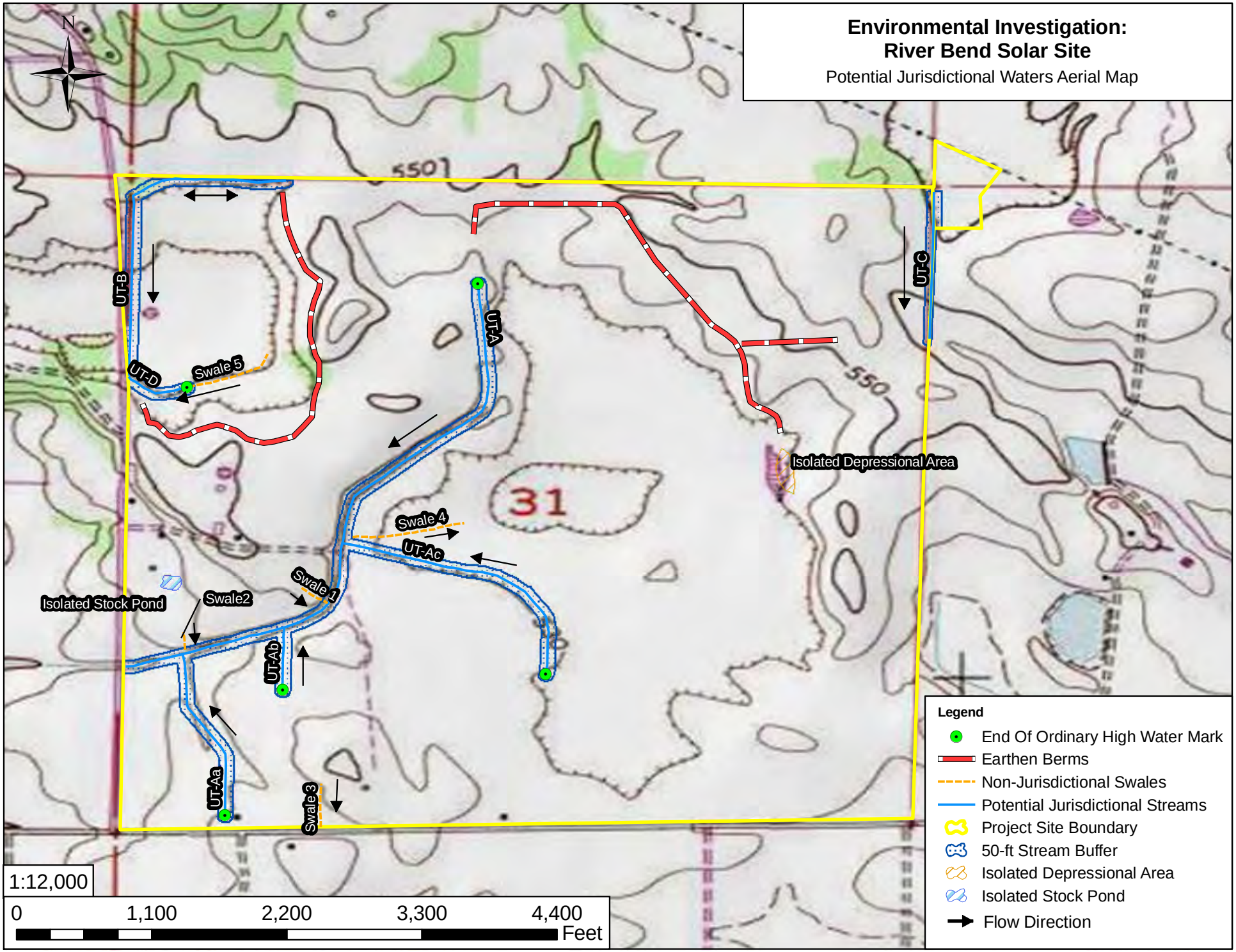
If you have any questions regarding the enclosed wetlands report please feel free to contact Jeremy Jackson at (859) 623-0499 (jjackson@jacksongroupco.com) or me at (864) 234-8913 (bobbie.hurley@aecom.com). If you have any other questions regarding this proposed project, please contact me or Charles Nicholson at 865-632-3582 (cpnicholson@tva.gov).

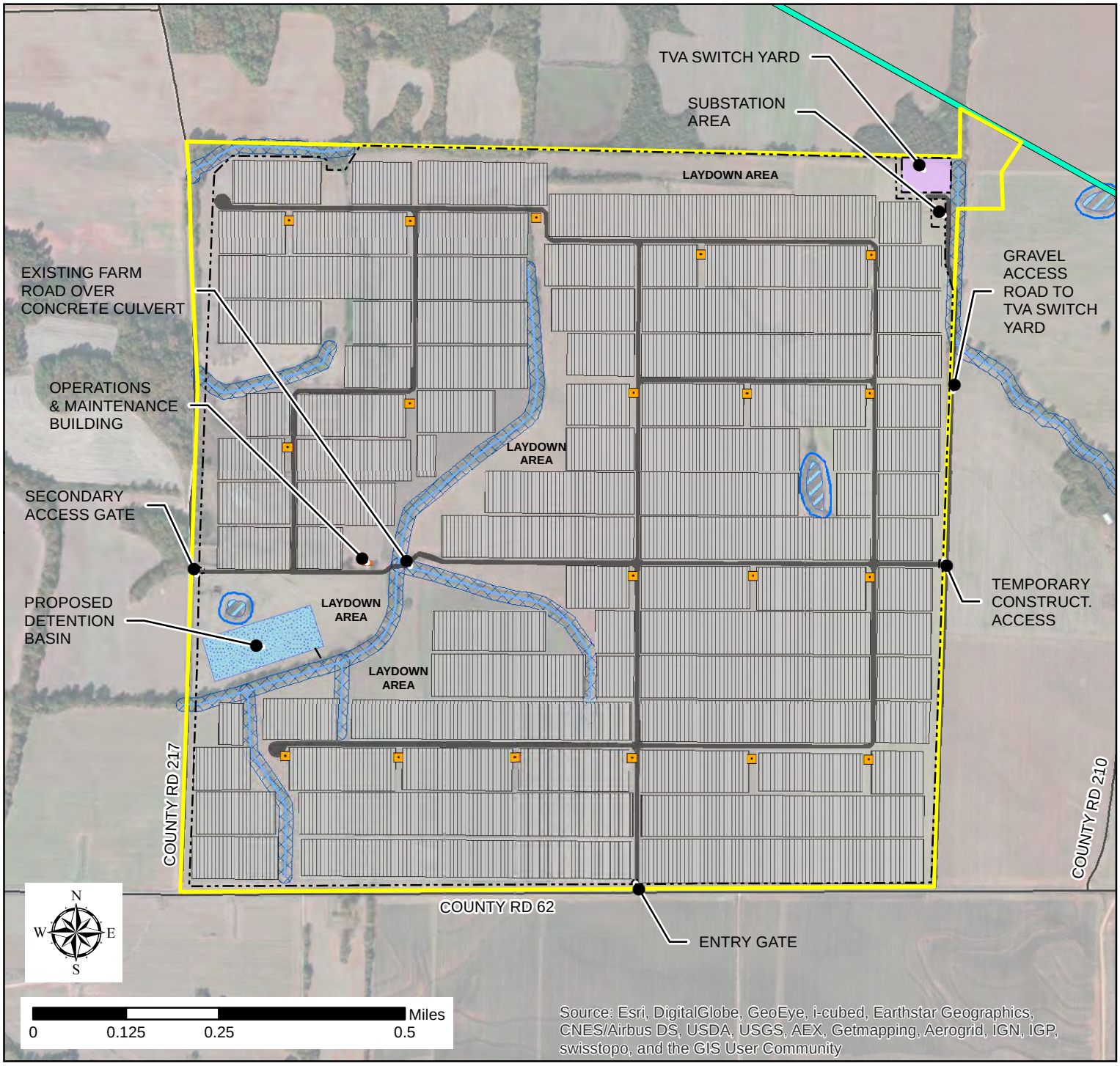
Sincerely,

Roberta A. Hurley
Senior Operation Manager

Cc: Charles Nicholson (TVA)
Jeremy Jackson (Jackson Group)


Environmental Investigation:
River Bend Solar Site
Potential Jurisdictional Waters Aerial Map
N
UT-B
UT-D
Swale 5
UT-A
UT-C
Isolated Depressional Area
CR-217
Swale 4
UT-Ac
Swale 1
Isolated Stock Pond
Swale2
UT-Ab
UT-Aa
Swale 3
CR-62
1:12,000
0
1,100
2,200
3,300
4,400
Feet
Legend
End Of Ordinary High Water Mark
Earthen Berms
Non-Jurisdictional Swales
Potential Jurisdictional Streams
Project Site Boundary
50-ft Stream Buffer
Isolated Depressional Area
Isolated Stock Pond
Flow Direction


Environmental Investigation:
River Bend Solar Site
Potential Jurisdictional Waters Aerial Map
N
550
550
31
UT-B
UT-D
Swale 5
UT-A
UT-C
Isolated Depressional Area
Swale 4
UT-Ac
Swale 1
Isolated Stock Pond
Swale2
UT-Ab
UT-Aa
Swale 3
1:12,000
0
1,100
2,200
3,300
4,400
Feet
Legend
End Of Ordinary High Water Mark
Earthen Berms
Non-Jurisdictional Swales
Potential Jurisdictional Streams
Project Site Boundary
50-ft Stream Buffer
Isolated Depressional Area
Isolated Stock Pond
Flow Direction



Legend

- Inverter
- Transmission Line
- Fence Line
- Stream
- Site Boundary
- Operations / Maintenance Building
- Proposed Detention Basin
- Road
- TVA Switch Yard
- Stream Buffer
- Wetland
- Wetland Buffer

Figure C
River Bend Solar Site Layout

Source: ArcGIS Aerial Map

FID	name	Length	Id
0	UT-A	4516	0
1	UT-Aa	1388	0
2	UT-Ab	512	0
3	UT-Ac	2015	0
4	UT-B	2521	0
5	UT-C	1193	0
6	UT-D	443	0

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, NASHVILLE DISTRICT
WESTERN REGULATORY FIELD OFFICE
2424 DANVILLE ROAD SW, SUITE N
DECATUR AL 35603

August 24, 2015

SUBJECT: File No. LRN-2015-00365; Preliminary Jurisdictional Determination and Delineation Verification, 645 acre site located Northeast of County Road 62 and 217, southwest of the Oakland Community within the sinking Creek Watershed, Tennessee River Mile 245.6, Right Bank, Lauderdale County, Alabama

AECOM
Attn: Ms. Roberta A Hurley
10 Patewood Drive, Bldg VI, Suite 500
Greenville, South Carolina 29615

Dear Ms. Hurley:

This letter is in regard to your report entitled "Revised Preliminary Jurisdictional Determination", dated July 7, 2015, which documented potential waters of the United States on a survey area of approximately 645 acres. The JD Report, associated with River Bend 80-migawatt (MW) single axis tracking ground mounted solar photovoltaic facility located 10 miles northwest of Florence, Lauderdale County, Alabama, indicated your preference for potential waters of the U.S. on the survey area to be reviewed as a preliminary jurisdictional determination (PJD). This project has been assigned File No. LRN-2015-00365, please refer to this number in any future correspondence.

The U.S. Army Corps of Engineers (USACE) has regulatory responsibilities pursuant to Section 404 of the Clean Water Act (33 U.S.C. 1344) and Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403). The Clean Water Act prohibits the discharge of dredged or fill material without a Section 404 permit. The Rivers and Harbors Act requires a Section 10 permit for work in navigable waters of the United States. It appears the property does not include navigable waters of the U.S. and would not be subject to the provisions of Section 10. Under Section 404, the USACE regulates the discharge of dredged and/or fill material into waters of the U.S., including wetlands.

During a field review of the survey area on June 24, 2015 Mr. David Monroe and Mr. Gary Davis of our Western Regulatory Field Office verified waters within the survey area including 4 reaches of ephemeral stream totaling 4,358 linear feet (lf), 2 stream reaches of intermittent stream totaling 3,714 lf, and one reach of perennial stream totaling 4,516 lf This office has determined these features **may** be jurisdictional waters of the U.S. in accordance with 33 C.F.R. 331.2 and a PJD has been prepared. The PJD is non-binding, cannot be appealed and only provides a written indication that waters of the U.S, including wetlands, may be present on-site. For purposes of computation of impacts, compensatory mitigation requirements and other

resource protection measures, a permit decision made on the basis of a PJD will treat all waters that would be affected in any way by the permitted activity on the site as if they are jurisdictional waters of the U.S. If you wish, you may request an approved JD (which may be appealed), by contacting this office. Also, you may provide new information for further consideration by the Corps to re-evaluate the PJD. This PJD is only valid for the review area shown on the attached maps labeled "LRN-2015-00365 Exhibit A & B."

Enclosed with this letter are two copies of the PJD form and a Notification of Appeals Process (NAP) fact sheet and Request for Appeal (RFA) form. **If you agree with the findings of this PJD and understand your options regarding the same, please sign and date one copy of the form and return it to this office within 30 days of receipt of this letter to the following address:**

U.S. Army Corps of Engineers
Nashville District
2424 Danville Road SW, Suite N
Decatur, Alabama 35603
Attn: Mr. David Monroe

It should be noted this PJD verification is only for the subject property as shown on the enclosed "LRN-2015-00365 Exhibit A & B Map" and does not authorize any work on the site. Impacts to WOUS should be avoided during the design phase whenever practicable. When these resources cannot be avoided, the work should be designed to minimize adverse impacts. If your development plan requires the discharge of dredged or fill material into waters of the U.S., a Department of the Army (DA) Permit would be required. DA permit application forms and additional information may be found on our website:
http://www.lrn.usace.army.mil/Missions/Regulatory/ObtainaPermit.aspx

If you have questions or need more information, please contact David Monroe at the above address or by telephone (256)350-5620.

Sincerely,

Timothy C. Wilder
Chief, Western Regulatory Section
Operations Division

Enclosures

Electronic Copy Furnished:
Applicant, Erika.Grace@aecom.com
Consultant, jjackson@jacksongroupco.com.

LRN-2015-00365 Exhibit C Proposed Impacts

Electronic Copy Furnished:
Applicant, Erika.Grace@aecom.com
Consultant, jjackson@jacksongroupco.com.

PRELIMINARY JURISDICTIONAL DETERMINATION FORM

BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR PRELIMINARY JURISDICTIONAL DETERMINATION (JD): 14 April 2015

B. NAME AND ADDRESS OF PERSON REQUESTING PRELIMINARY JD:
River Bend Solar LLC
AECOM
Attn: Roberta A Hurley
10 Patewood Drive
Building VI, Suite 500
Greenville, South Carolina 29615

C. DISTRICT OFFICE, FILE NAME, AND NUMBER: LRN-2015-00234
Nashville District
Jeremy Jackson
Jackson Group
File No. LRN-2015-00365

D. PROJECT LOCATION(S) AND BACKGROUND INFORMATION:
The site is located within the Sinking Creek Watershed, southwest of Oakland Community, East of County Road 217 and North of County Road 62, in Lauderdale County, Alabama (U.S. Geological Survey, Sinking Creek topographic quadrangle). The site consists of approximately 697 acre parcel. The site is in the Sinking Creek Watershed, Tennessee River Mile 245.6, Right Bank. Within the survey area of the property there is 12,588 linear feet of streams that have been identified and mapped.

State: Alabama County: Lauderdale City:
Center coordinates of site (lat/long in degree decimal format):
Lat. 34.838582°**N**, Long. -86.842154°**W.**
Universal Transverse Mercator: 16
Name of nearest waterbody: Sinking Creek

(USE THE ATTACHED TABLE TO DOCUMENT MULTIPLE WATERBODIES AT DIFFERENT SITES)

Name of any water bodies on the site that have been identified as Section 10 waters:
Tidal:
Non-Tidal:

E. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):
☒ Office (Desk) Determination. Date: July 14, 2015

☒ Field Determination. Date(s): June 24, 2015

1. The Corps of Engineers believes that there may be jurisdictional waters of the United States on the subject site, and the permit applicant or other affected party who requested this preliminary JD is hereby advised of his or her option to request and obtain an approved jurisdictional determination (JD) for that site. Nevertheless, the permit applicant or other person who requested this preliminary JD has declined to exercise the option to obtain an approved JD in this instance and at this time.

2. In any circumstance where a permit applicant obtains an individual permit, or a Nationwide General Permit (NWP) or other general permit verification requiring "pre-construction notification" (PCN), or requests verification for a non-reporting NWP or other general permit, and the permit applicant has not requested an approved JD for the activity, the permit applicant is hereby made aware of the following:

(1) The permit applicant has elected to seek a permit authorization based on a preliminary JD, which does not make an official determination of jurisdictional waters;

(2) that the applicant has the option to request an approved JD before accepting the terms and conditions of the permit authorization, and that basing a permit authorization on an approved JD could possibly result in less compensatory mitigation being required or different special conditions;

(3) That the applicant has the right to request an individual permit rather than accepting the terms and conditions of the NWP or other general permit authorization;

(4) that the applicant can accept a permit authorization and thereby agree to comply with all the terms and conditions of that permit, including whatever mitigation requirements the Corps has determined to be necessary;

(5) that undertaking any activity in reliance upon the subject permit authorization without requesting an approved JD constitutes the applicant's acceptance of the use of the preliminary JD, but that either form of JD will be processed as soon as is practicable;

(6) accepting a permit authorization (e.g., signing a proffered individual permit) or undertaking any activity in reliance on any form of Corps permit authorization based on a preliminary JD constitutes agreement that all wetlands and other water bodies on the site affected in any way by that activity are jurisdictional waters of the United States, and precludes any challenge to such jurisdiction in any administrative or judicial compliance or enforcement action, or in any administrative appeal or in any Federal court;

(7) Whether the applicant elects to use either an approved JD or a preliminary JD, that JD will be processed as soon as is practicable. Further, an approved JD, a proffered individual permit (and all terms and conditions contained therein), or individual permit denial can be administratively appealed pursuant to 33 C.F.R. Part 331, and that in any administrative appeal,

jurisdictional issues can be raised (see 33 C.F.R. 331.5(a)(2)). If, during that administrative appeal, it becomes necessary to make an official determination whether CWA jurisdiction exists over a site, or to provide an official delineation of jurisdictional waters on the site, the Corps will provide an approved JD to accomplish that result, as soon as is practicable.

This preliminary JD finds that there *"may be"* waters of the United States on the subject project site, and identifies all aquatic features on the site that could be affected by the proposed activity, based on the following information:

SUPPORTING DATA. Data reviewed for preliminary JD (check all that apply - checked items should be included in case file and, where checked and requested, appropriately reference sources below):

☒ Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: AECOM.

☒ Data sheets prepared/submitted by or on behalf of the applicant/consultant. AECOM.

- ☒ Office concurs with data sheets/delineation report.
- ☐ Office does not concur with data sheets/delineation report.

☐ Data sheets prepared by the Corps:

☐ Corps navigable waters' study:.

☐ U.S. Geological Survey Hydrologic Atlas:

- ☐ USGS NHD data.
- ☐ USGS 8 and 12 digit HUC maps.

☒ U.S. Geological Survey map(s). Cite scale & quad name: 1:24000; Sinking Creek Alabama Quad, Photo Revised 1988.

☒ USDA Natural Resources Conservation Service Soil Survey. Citation: Lauderdale County, AL; NRCS Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov.

☐ National wetlands inventory map(s). Cite name:

☐ State/Local wetland inventory map(s):

☐ FEMA/FIRM maps:.

☐ 100-year Floodplain Elevation is: (National Geodectic Vertical Datum of 1929)

☒ Photographs:

- ☒ Aerial (Name & Date):, Aerial photo Google Earth Pro images were reviewed dated, 1/17/1999, 10/4/2005, 6/14/2006, 9/29/2011, 6/19/2012, 9/18/2012 and 11/29/2013.
- ☒ Other (Name & Date): Photos provided by AECOM

☐ Previous determination(s). File no. and date of response letter:

☒ Other information (please specify): U.S. Army Corps of Engineers Jurisdictional Determination Form Instructional Guidebook 6/1/2007; 1987 Corps of Engineers Wetlands Delineation Manual; Regional Supplement to

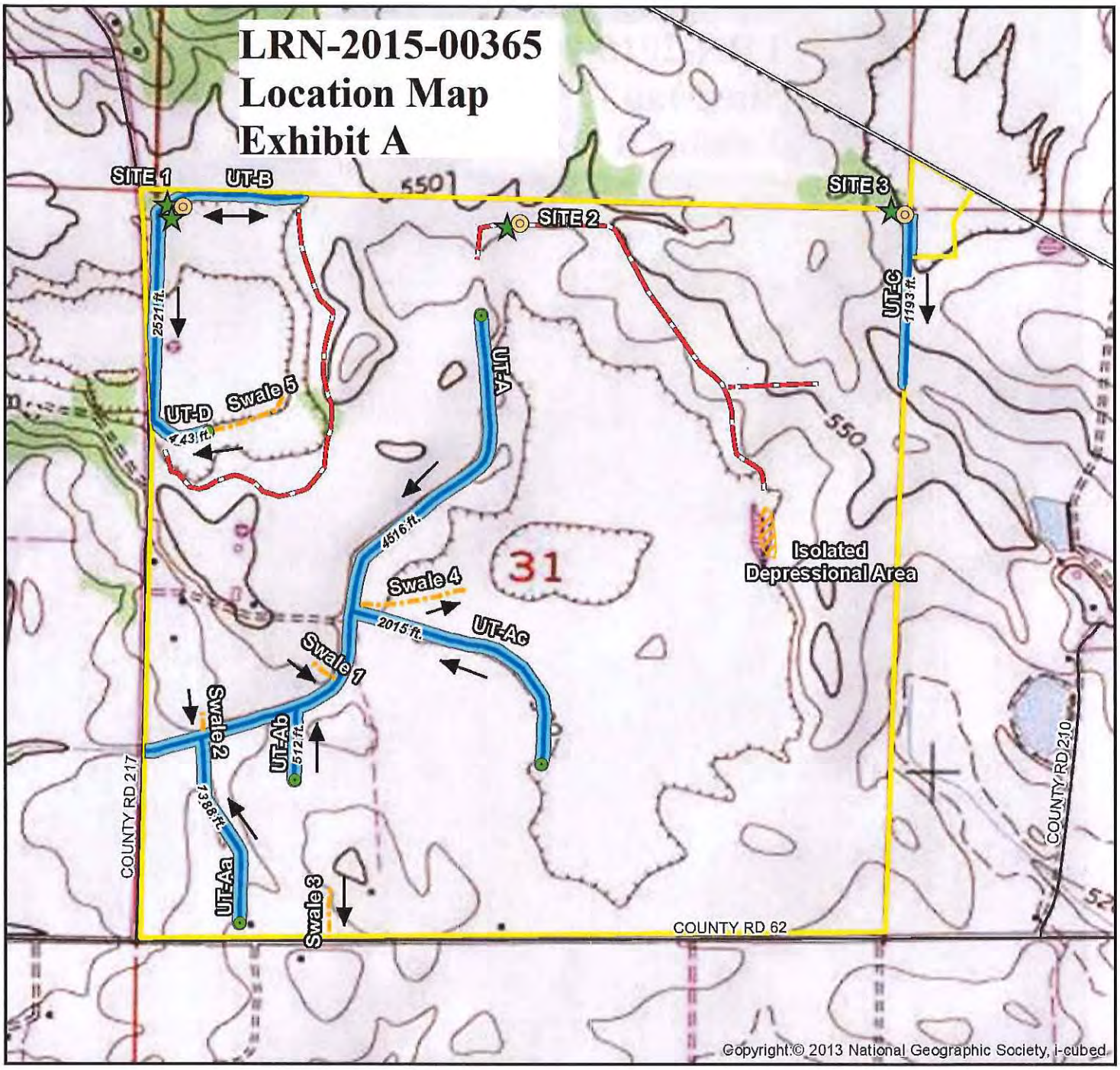
the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region, Version 2.0, April 2012; National Wetlands Plant List (NWPL) https://rsgisias.crrel.usace.army.mil/apex/f?p=703:1:; Wetlands Research Program Technical Report Y-87-1; NC Division of Water Quality. 2005. Identification Methods for the Origins of Intermittent and Perennial Streams, Version 3.1. North Carolina Department of Environment and Natural Resources, Division of Water Quality. Raleigh, NC. Effective Date: February 28, 2005; The Role of Headwater Streams in Downstream Water Quality, Journal of the American Water Resources Association (JAWRA), February 2007, Volume 43, No. 1, Pages 41-59; http://www.nws.noaa.gov/climate/local_data.php.

IMPORTANT NOTE: The information recorded on this form has not necessarily been verified by the Corps and should not be relied upon for later jurisdictional determinations.

Timothy C. Wilder 22 AUG 2015
Chief, Western Regulatory Section
Operations Division
(REQUIRED)

Signature and date of 9-18-2015
person requesting preliminary JD
(REQUIRED, unless obtaining
the signature is impracticable)

Site number	Latitude	Longitude	Cowardin Class	Estimated amount of aquatic resource in review area	Class of aquatic resource
LRN-2015-00365 UT-A	34.836450°	-87.847203°	R3	4516 Linear Feet	Perennial Steam
LRN-2015-00365 UT-Aa	34.832240°	-87.850204°	R6	1388 Linear Feet	Ephemeral Stream
LRN-2015-00365 UT-Ab	34.833867°	-87.848489°	R6	512 Linear Feet	Ephemeral Stream
LRN-2015-00365 UT-Ac	34.8358532°	-87.844687°	R6	2015 Linear Feet	Ephemeral Stream
LRN-2015-00365 UT-B	34.844337°	-87851741°	R4	2521 Linear Feet	Intermittent Stream
LRN-2015-00365 UT-C	34.843030°	-87.834002°	R4	1193 Linear Feet	Intermittent Stream
LRN-2015-00365 UT-D	34.839816°	-87.851420°	R6	443 Linear Feet	Ephemeral Stream
LRN-2015-00365 Isolated Depression	34.838111°	-87.837416°	PEM	0.72 acres	Wetland



Legend

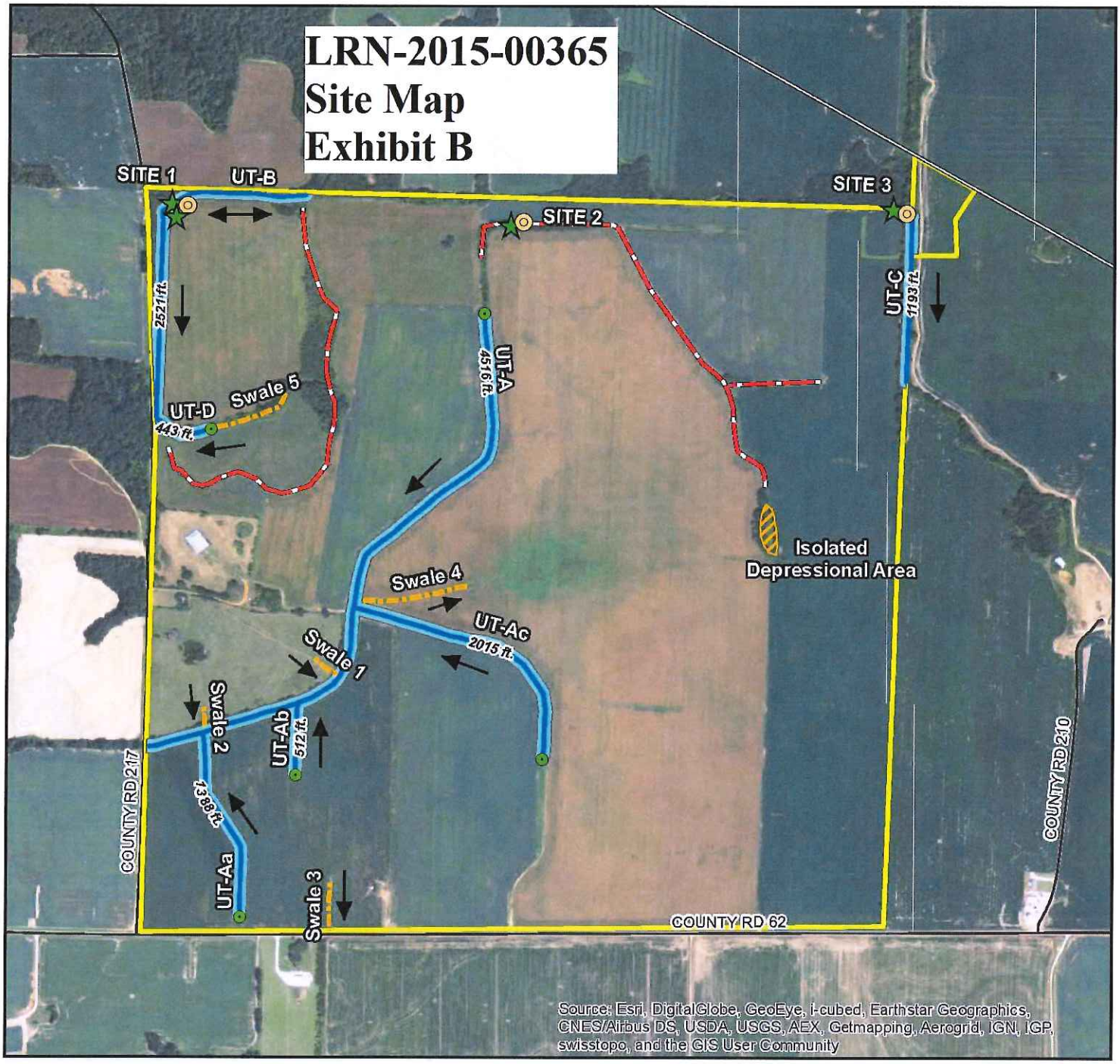
- Existing Transmission Line
- Earthen Berms
- Potential Jurisdictional Streams
- Non-Jurisdictional Swales
- 50-ft. Stream Buffer
- Isolated Depressional Area
- Site Boundary
- End of Ordinary High Water Mark
- Potential Roost Trees
- T&E Bat Habitat Survey Plots
- Flow Direction

0 0.125 0.25 0.5 Miles

N W E S

Figure F
River Bend Solar Site
Wetlands and Bat Habitat
Topographic Map

Source: ArcGIS Topo Map



Legend

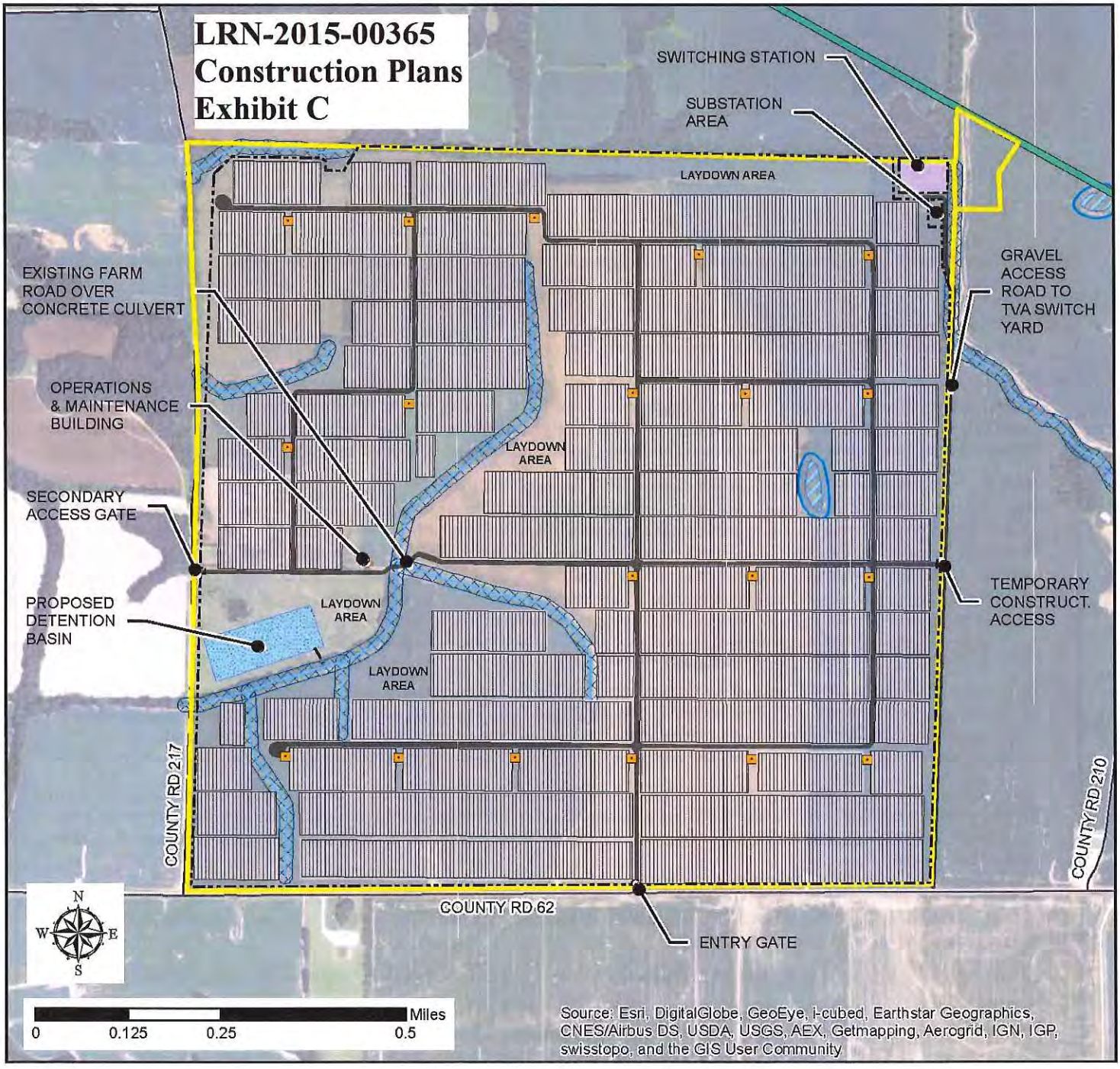
- Existing Transmission Line
- Earthen Berms
- Potential Jurisdictional Streams
- Non-Jurisdictional Swales
- 50-ft. Stream Buffer
- Isolated Depressional Area
- Site Boundary
- End of Ordinary High Water Mark
- Potential Roost Trees
- T&E Bat Habitat Survey Plots
- Flow Direction

0 0.125 0.25 0.5 Miles

N W E S

Figure J
River Bend Solar Site
Wetlands and Bat Habitat
Aerial Map

Source: ArcGIS Aerial Map



Legend

- Inverter
- Transmission Line
- Fence Line
- Stream
- Site Boundary
- Proposed Detention Basin
- Road
- Switching Station
- Stream Buffer
- Wetland
- Wetland Buffer

Figure C
River Bend Solar Site Layout

Source: ArcGIS Aerial Map

NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REQUEST FOR APPEAL

Applicant: AECOM	File Number LRN-2015-00365	Date: August 24, 2015
Attached is:		See Section below
	INITIAL PROFFERED PERMIT (Standard Permit or Letter of permission)	A
	PROFFERED PERMIT (Standard Permit or Letter of permission)	B
	PERMIT DENIAL	C
	APPROVED JURISDICTIONAL DETERMINATION	D
X	PRELIMINARY JURISDICTIONAL DETERMINATION	E

SECTION I - The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found at http://usace.army.mil/inet/functions/cw/cecwo/reg or Corps regulations at 33 CFR Part 331.

A: INITIAL PROFFERED PERMIT: You may accept or object to the permit.

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- OBJECT: If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the district engineer. Your objections must be received by the district engineer within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the district engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the district engineer will send you a proffered permit for your reconsideration, as indicated in Section B below.

B: PROFFERED PERMIT: You may accept or appeal the permit

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- APPEAL: If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

C: PERMIT DENIAL: You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

D: APPROVED JURISDICTIONAL DETERMINATION: You may accept or appeal the approved JD or provide new information.

- ACCEPT: You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice, means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.
- APPEAL: If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

E: PRELIMINARY JURISDICTIONAL DETERMINATION: You do not need to respond to the Corps regarding the preliminary JD. The Preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also you may provide new information for further consideration by the Corps to reevaluate the JD.

SECTION II - REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMIT		
REASONS FOR APPEAL OR OBJECTIONS: (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record.)		
ADDITIONAL INFORMATION: The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record.		
POINT OF CONTACT FOR QUESTIONS OR INFORMATION:		
If you have questions regarding this decision and/or the appeal process you may contact: U.S. Army Corps of Engineers Western Regulatory Field Office 2424 Danville Rd SW Suite N Decatur , AL 35603	If you only have questions regarding the appeal process you may also contact: U.S. Army Corps of Engineers Great Lakes and Ohio River Division 550 Main Street, Room 10032 Cincinnati, OH 45202	
RIGHT OF ENTRY: Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15 day notice of any site investigation, and will have the opportunity to participate in all site investigations.		
_____ Signature of appellant or agent.	Date:	Telephone number:

Dudley, Cynthia S

From: Ezzell, Patricia Bernard
Sent: Tuesday, June 02, 2015 3:19 PM
To: 'sheila-bird@cherokee.org'; 'Tyler B. Howe (tylehowe@nc-cherokee.com)'; 'Miranda Panther (mirapant@nc-cherokee.com)'; 'ukbthpo-larue@yahoo.com'; 'jjacobs@mcn-nsn.gov'; 'Emman Spain (ESpain@mcn-nsn.gov)'; 'HPO@chickasaw.net'; 'celestine.bryant@actribe.org'; 'slandsberry@alabama-quassarte.org'; 'kialegeettcpo@gmail.com'; 'Charles Coleman (chascoleman75@yahoo.com)'; 'Thrower, Robert (rthrower@pci-nsn.gov)'; 'Natalie Harjo (harjo.n@sno-nsn.gov)'; 'Joseph Blanchard'; 'cecil.wilson@astribe.com'; 'Robin Dushane (RDushane@estoo.net)'; 'Dee Gardner (dgardner@estoo.net)'; 'Kim Jumper (kim.jumper@shawnee-tribe.com)'
Cc: 'Russell Townsend (RussellT@nc-cherokee.com)'; 'jfife@muscogeenation-nsn.gov'; 'odette_freeman@muscogeenation-nsn.gov'; 'tthompson@mcn-nsn.gov'; 'David Proctor (Davidp@mcn-nsn.gov)'; 'Johnnie Wesley (jswesley@mcn-nsn.gov)'; 'lwendt@mcn-nsn.gov'
Subject: TVA, POWER PURCHASE AGREEMENT WITH NEXTERA ENERGY RESOURCES (NEXTERA) FOR THE PROPOSED RIVER BEND SOLAR FARM, PHASE I ARCHAEOLOGICAL SURVEY, LAUDERDALE COUNTY, ALABAMA
Attachments: RiverBend NextEra Archaeology Draft Rpt_THPO 20150602.pdf; NextEra_LauderdaleAL_CulturalResourcesSurvey_20150501_red.pdf

Good Afternoon,
I hope this email message finds you well. By this email, I am transmitting the attached letter regarding TVA's proposal to enter into a power purchase agreement (PPA) with NextEra through the Renewable Standard Offer (RSO) and Solar Solutions Initiative (SSI) programs for the construction, operation, and maintenance of a photovoltaic power system near Oakland in Lauderdale County, Alabama. TVA's RSO program offers pre-set prices (the "standard offer") and terms and conditions for power generated by selected renewable energy technologies. TVA's SSI program provides incentive payments for mid-size solar projects in the RSO program that use local installers. TVA would enter into a PPA with NextEra for the construction and operation of a ca. 80 megawatt (MW) photovoltaic array on a ca. 690 acre tract that is currently in cultivation.

The referenced report is attached.

As always, please do not hesitate to contact me if you have any questions. Please respond by July 2, 2015, if you have any comments on the proposed undertaking.

Thank you.

Sincerely,

Pat

Pat Bernard Ezzell
Senior Program Manager
Tribal Relations and Corporate History
Tennessee Valley Authority
400 W. Summit Hill Drive
460 WT 7D-K
Knoxville, Tennessee 37902
Office Phone: (865) 632-6461
Cell phone: 865-304-9251
E-mail: pbezzell@tva.gov

Tennessee Valley Authority, 400 West Summit Hill Drive, Knoxville, TN 37902

June 2, 2015

To Those Listed:

TENNESSEE VALLEY AUTHORITY (TVA), POWER PURCHASE AGREEMENT WITH NEXTERA ENERGY RESOURCES (NEXTERA) FOR THE PROPOSED RIVER BEND SOLAR FARM, PHASE I ARCHAEOLOGICAL SURVEY, LAUDERDALE COUNTY, ALABAMA

TVA proposes to enter into a power purchase agreement (PPA) with NextEra through the Renewable Standard Offer (RSO) and Solar Solutions Initiative (SSI) programs for the construction, operation, and maintenance of a photovoltaic power system near Oakland in Lauderdale County, Alabama. TVA's RSO program offers pre-set prices (the "standard offer") and terms and conditions for power generated by selected renewable energy technologies. TVA's SSI program provides incentive payments for mid-size solar projects in the RSO program that use local installers. TVA would enter into a PPA with NextEra for the construction and operation of a ca. 80 megawatt (MW) photovoltaic array on a ca. 690 acre tract that is currently in cultivation. TVA has determined that the proposed PPA constitutes an undertaking (as defined at 36 CFR § 800.16(y)) that has the potential to cause effects on historic properties. We are initiating consultation with your office regarding the proposed River Bend Solar Farm project.

The photovoltaic power system would utilize a ground-mounted, photovoltaic array (i.e., solar panels). The solar panels would be installed on metal racks arranged in parallel rows, supported by poles driven three feet into the ground, with a total height of approximately 8-9 feet above the ground. Construction would include minor vegetation clearing and site grading as necessary, installing the solar panels, installing underground wiring in trenches, building access roads, and installing DC/AC converters. A substation, adjacent switching station, and new 161-kV transmission line no longer than 0.25 mile would also be constructed. The new transmission line would connect to an existing TVA 161-kV transmission line located on the northeast edge of the site. The exact locations of the substation, switching station, and new transmission line have not yet been determined but will be within the ca. 690 acre tract. TVA has determined that the area of potential effects (APE) for archaeological sites consists of the ca. 690 acre tract. We are consulting with your office under separate cover regarding the undertaking's potential effects on architectural resources.

River Bend Solar, LLC (who would construct the photovoltaic system) contracted with AECOM to perform a Phase I archaeological survey of the APE. Enclosed is a copy of the draft report titled *A Phase I Cultural Resources Survey of Approximately 640 Acres of Section 31, 50 Acres of Section 32, and 1 Acre of Section 29 (T2-S, R12-W), Lauderdale County, Alabama.*

AECOM's site file and literature search indicated that one previously recorded archaeological site, 1LU608, is located within the APE. During the field survey, this site was revisited, and no

artifacts associated with the site were identified. The survey identified four historical dwelling sites (three of which are associated with standing structures) and four isolated finds of cultural material. The authors recommend that all four historical dwelling sites and all four isolated finds are ineligible for inclusion in the National Register of Historic Places (NRHP).

TVA has reviewed the enclosed report and agrees with the findings and recommendations of the authors. Based on the results of this survey, TVA finds that that proposed undertaking will have no effects on archaeological sites included or eligible for inclusion in the NRHP.

Pursuant to 36 CFR Part 800.3(f) (2), TVA is consulting with the following federally recognized Indian tribes regarding properties that may have religious and cultural significance to their tribe and may be eligible for listing in the NRHP: Cherokee Nation, Eastern Band of Cherokee Indians, United Keetoowah Band of Cherokee Indians in Oklahoma, The Chickasaw Nation, Muscogee (Creek) Nation of Oklahoma, Alabama-Coushatta Tribe of Texas, Alabama-Quassarte Tribal Town, Kialegee Tribal Town, Thlopthlocco Tribal Town, Poarch Band of Creek Indians, Seminole Nation of Oklahoma, Absentee Shawnee Tribe of Oklahoma, Eastern Shawnee Tribe of Oklahoma and the Shawnee Tribe.

By this letter, TVA is providing notification of these findings and is seeking your comments regarding this undertaking and any properties that may be of religious and cultural significance and may be eligible for listing in the NRHP pursuant to 36CFR §§§ 800.2 (c)(2)(ii), 800.3 (f)(2), and 800.4 (a)(4)(b).

Please respond by July 2, 2015, if you have any comments on the proposed undertaking. If you have any questions, please contact me at (865) 632-6461 or by email at pbezzell@tva.gov.

Sincerely,

Pat Bernard Ezzell

Patricia Bernard Ezzell
Senior Program Manager
Tribal Relations and Corporate History
Communications

SCC:CSD:PBE
Enclosures

Tennessee Valley Authority, 400 West Summit Hill Drive, Knoxville, TN 37902

May 29, 2015

Ms. Lee Anne Wofford
Deputy State Historic Preservation Officer
Alabama Historical Commission
468 South Perry Street
Montgomery, Alabama 36130-0900

Dear Ms. Wofford

TENNESSEE VALLEY AUTHORITY (TVA), POWER PURCHASE AGREEMENT WITH NEXTERA ENERGY RESOURCES (NEXTERA) FOR THE PROPOSED RIVER BEND SOLAR FARM, PHASE I ARCHITECTURAL SURVEY, LAUDERDALE COUNTY, ALABAMA

TVA proposes to enter into a power purchase agreement (PPA) with NextEra through the Renewable Standard Offer (RSO) and Solar Solutions Initiative (SSI) programs for the construction, operation, and maintenance of a photovoltaic power system near Oakland in Lauderdale County, Alabama. TVA's RSO program offers pre-set prices (the "standard offer") and terms and conditions for power generated by selected renewable energy technologies. TVA's SSI program provides incentive payments for mid-size solar projects in the RSO program that use local installers. TVA would enter into a PPA with NextEra for the construction and operation of a ca. 80 megawatt (MW) photovoltaic array on a ca. 690 acre tract that is currently in cultivation. TVA has determined that the proposed PPA constitutes an undertaking (as defined at 36 CFR § 800.16(y)) that has the potential to cause effects on historic properties. We are initiating consultation with your office regarding the proposed River Bend Solar Farm project.

The photovoltaic power system would utilize a ground-mounted photovoltaic array (i.e., solar panels). The solar panels would be installed on metal racks arranged in parallel rows, supported by poles driven three feet into the ground, with a total height of approximately 8-9 feet above the ground. Construction would include minor vegetation clearing and site grading as necessary, installing the solar panels, installing underground wiring in trenches, building access roads, and installing DC/AC converters. A substation, adjacent switching station, and new 161-kV transmission line no longer than 0.25 mile would also be constructed. The new transmission line would connect to an existing TVA 161-kV transmission line located on the northeast edge of the site. The exact locations of the substation, switching station, and new transmission line have not yet been determined but will be within the ca. 690 acre tract. TVA has determined that the area of potential effects (APE) for historic architectural resources consists of a one-mile radius surrounding the ca. 690-acre tract. We are consulting with your office under separate cover regarding the undertaking's potential effects on archaeological resources.

River Bend Solar, LLC (who would construct the photovoltaic system) contracted with Tennessee Valley Archaeological Research (TVAR) to perform a Phase I architectural survey of the architectural APE. Enclosed is one bound copy and one electronic copy on CD of the draft report titled*, Phase I Architectural Survey for the Proposed River Bend Solar, LLC Project, Lauderdale County, Alabama.*

TVAR's site file and literature search indicated that one historic architectural resource has been recorded previously within the APE: "10 0 8-9/Canaan Methodist Church". TVAR recommends that this resource is ineligible for listing in the National Register of Historic Places (NRHP) due to modern alternations that have compromised its architectural integrity. The survey identified four previously unrecorded architectural resources, which they labelled IS-1 through IS-4. TVAR recommends all four of the newly recorded resources ineligible for the NRHP due to a lack of architectural distinction and poor integrity resulting from neglect and vandalism. TVAR recommends no further architectural investigations in association with the proposed undertaking.

TVA has reviewed the enclosed report and agrees with the findings and recommendations of the authors. Based on the results of this survey, TVA finds that that proposed undertaking will have no effects on historic architectural resources included in or eligible for inclusion in the NRHP.

Pursuant to 36 CFR Part 800.4(d)(1), we are seeking your concurrence with TVA's finding of no effect.

Pursuant to 36 CFR Part 800.3(f)(2), TVA is consulting with federally recognized Indian tribes regarding historic properties within the proposed project's APE that may be of religious and cultural significance and are eligible for the NRHP.

Should you have any questions or comments, please contact Richard Yarnell in Knoxville at wryarnell@tva.gov or (865) 632-3463.

Sincerely,

Clinton E. Jones, Manager
Biological and Cultural Compliance
Safety, River Management and Environment
WT11B-K

SCC:CSD
Enclosures

Tennessee Valley Authority, 400 West Summit Hill Drive, Knoxville, TN 37902

May 29, 2015

Ms. Lee Anne Wofford
Deputy State Historic Preservation Officer
Alabama Historical Commission
468 South Perry Street
Montgomery, Alabama 36130-0900

Dear Ms. Wofford:

TENNESSEE VALLEY AUTHORITY (TVA), POWER PURCHASE AGREEMENT WITH NEXTERA ENERGY RESOURCES (NEXTERA) FOR THE PROPOSED RIVER BEND SOLAR FARM, PHASE I ARCHAEOLOGICAL SURVEY, LAUDERDALE COUNTY, ALABAMA

TVA proposes to enter into a power purchase agreement (PPA) with NextEra through the Renewable Standard Offer (RSO) and Solar Solutions Initiative (SSI) programs for the construction, operation, and maintenance of a photovoltaic power system near Oakland in Lauderdale County, Alabama. TVA's RSO program offers pre-set prices (the "standard offer") and terms and conditions for power generated by selected renewable energy technologies. TVA's SSI program provides incentive payments for mid-size solar projects in the RSO program that use local installers. TVA would enter into a PPA with NextEra for the construction and operation of a ca. 80 megawatt (MW) photovoltaic array on a ca. 690 acre tract that is currently in cultivation. TVA has determined that the proposed PPA constitutes an undertaking (as defined at 36 CFR § 800.16(y)) that has the potential to cause effects on historic properties. We are initiating consultation with your office regarding the proposed River Bend Solar Farm project.

The photovoltaic power system would utilize a ground-mounted, photovoltaic array (i.e., solar panels). The solar panels would be installed on metal racks arranged in parallel rows, supported by poles driven three feet into the ground, with a total height of approximately 8-9 feet above the ground. Construction would include minor vegetation clearing and site grading as necessary, installing the solar panels, installing underground wiring in trenches, building access roads, and installing DC/AC converters. A substation, adjacent switching station, and new 161-kV transmission line no longer than 0.25 mile would also be constructed. The new transmission line would connect to an existing TVA 161-kV transmission line located on the northeast edge of the site. The exact locations of the substation, switching station, and new transmission line have not yet been determined but will be within the ca. 690 acre tract. TVA has determined that the area of potential effects (APE) for archaeological sites consists of the ca. 690 acre tract. We are consulting with your office under separate cover regarding the undertaking's potential effects on architectural resources.

River Bend Solar, LLC (who would construct the photovoltaic system) contracted with AECOM to perform a Phase I archaeological survey of the APE. Enclosed is one bound copy and one electronic copy on CD of the draft report titled *A Phase I Cultural Resources Survey of Approximately 640 Acres of Section 31, 50 Acres of Section 32, and 1 Acre of Section 29 (T2-S, R12-W), Lauderdale County, Alabama.*

AECOM's site file and literature search indicated that one previously recorded archaeological site, 1LU608, is located within the APE. During the field survey, this site was revisited, and no artifacts associated with the site were identified. The survey identified four historical dwelling sites (three of which are associated with standing structures) and four isolated finds of cultural material. The authors recommend that all four historical dwelling sites and all four isolated finds are ineligible for inclusion in the National Register of Historic Places (NRHP).

TVA has reviewed the enclosed report and agrees with the findings and recommendations of the authors. Based on the results of this survey, TVA finds that that proposed undertaking will have no effects on archaeological sites included or eligible for inclusion in the NRHP.

Pursuant to 36 CFR Part 800.4(d)(1), we are seeking your concurrence with TVA's finding of no effect.

Pursuant to 36 CFR Part 800.3(f)(2), TVA is consulting with federally recognized Indian tribes regarding historic properties within the proposed project's APE that may be of religious and cultural significance and are eligible for the NRHP.

Should you have any questions or comments, please contact Richard Yarnell in Knoxville at wryarnell@tva.gov or (865) 632-3463.

Sincerely,

Clinton E. Jones, Manager
Biological and Cultural Compliance
Safety, River Management and Environment
WT 11B-K

SCC:CSD
Enclosures

A PHASE I CULTURAL RESOURCE SURVEY OF APPROXIMATELY 690 ACRES OF SECTION 31, 50 ACRES OF SECTION 32, AND 1 ACRE OF SECTION 29 (T2-S R12-W), LAUDERDALE COUNTY, ALABAMA

Prepared for:
Tennessee Valley Authority
400 West Summit Hill Drive, WT 11D
Knoxville, Tennessee 37902-1499

and

River Bend Solar, LLC
700 Universe Boulevard, JES/JB
Juno Beach, FL 33408

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April 2015

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EXECUTIVE DIRECTOR

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June 18, 2015

Clinton E. Jones
TVA
400 West Summit Hill Drive
Knoxville, TN 37902

Re: AHC 15-0994
CRA
Proposed River Bend Solar Farm
Lauderdale County

Dear Mr. Jones:

Upon review of the cultural resource assessments conducted for the above referenced project, we have determined that project activities will have no adverse effect on cultural resources eligible for or listed on the National Register of Historic Places. Therefore, we concur with the proposed project activities. The Canaan Methodist Church and other resources IS1-IS4 are not eligible for National Register of Historic Places.

However, should artifacts or archaeological features be encountered during project activities, work shall cease and our office shall be consulted immediately. Artifacts are objects made, used or modified by humans. They include but are not excluded to arrowheads, broken pieces of pottery or glass, stone implements, metal fasteners or tools, etc. Archaeological features are stains in the soil that indicate disturbance by human activity. Some examples are post holes, building foundations, trash pits and even human burials. This stipulation shall be placed on the construction plans to insure contractors are aware of it.

We appreciate your commitment to helping us preserve Alabama's historic archaeological and architectural resources. Should you have any questions, please contact Stacye Hathorn at 334.230.2649 or Stacye.Hathorn@preserveala.org. Have the AHC tracking number referenced above available and include it with any future correspondence.

Sincerely,

Lee Anne Wofford
Deputy State Historic Preservation Officer

LAW/SGH/amh