Agenda

Jefferson County Planning Commission

Tuesday, September 13, 2022 at 7:00 PM

By order of the President of the Jefferson County Planning Commission, this meeting will be held both in-person and virtually via ZOOM.

In-Person Meeting Location: County Commission Meeting Room located in the lower level of the Charles Town Library (side entrance on Samuel Street)
200 East Washington Street, Charles Town, WV 25414

ZOOM Meeting Information:
Meeting ID: 865 4478 4743
Meeting Link: https://us02web.zoom.us/j/86544784743
Call-In Option: 301-715-8592
Find your local number: https://us02web.zoom.us/u/kcrQilI7C

If you wish to participate virtually in public comment for one of the agenda items, please type your name and agenda item # in the chat function at the start of the meeting. Please mute yourself when you are not talking. When participating, please be mindful that your video is streaming to others.

1. Approval of Meeting Minutes: August 09, 2022
2. Request for postponement.
3. **Public Hearing:** Request for waiver from Section 20.203B2 to waive a site plan requirement to allow a construction of a 1,274 square foot apartment building and a 300'+/- gravel driveway. Applicant/Property Owner: Susquehanna Properties LLC/Doug Porter ; Property Location: 14956 Charles Town Rd, Charles Town; Tax District: Charles Town (02), Map: 0017, Parcel: 19; Size: 0.94 acres; Zoning District: Residential/Light Industrial/Commercial; File: #22-18-PCW.
4. **POSTPONED to October 11, 2022 Planning Commission Meeting: Public Hearing:** Country Club Commons Preliminary Plat to create 4 non-residential lots and a public street for future commercial pad-users. Property Owner: B.C. Partners, INC. Property Location: Vacant NE Corner of Route 24 and Route 340; Parcel ID: 04001100110000; Size: 9.54 acres; Zone: Residential/Light Industrial/Commercial (RLIC). File: #19-17-SD
5. **Public Workshop:** Concept Plan for the Wild Hill Solar Energy Facility. The applicant, Wild Hill, LLC, is proposing a 92.5 megawatt solar electric generating facility to be located on approximately 841 acres. The project will consist of rows of solar modules which are installed in arrays dispersed throughout the leased land. The project will also include construction of a new substation that will connect the solar energy facility with the existing 138-kilovolt overhead electrical transmission line passing through the southeast corner of the project area. (PC File #22-9-SP).

   Property Owners/Location/ID/Size/Zoning District:

   - Clarence & Donna Hough; Vacant parcel east of the property located at 1343 Roper North Fork Rd, Charles Town; Parcel ID: 06001100070001; Lot Size: 107.38 ac / Project Size: 107.38 ac; Zone: Rural
   - Zigler, Inc.; 1079 Roper North Fork Rd., Charles Town; Parcel ID: 06000400090000; Lot Size: 350.95 /Project Size: 350.95; Zone: Rural

- John Samuel & Alice Rissler Estate; 616 Uinta Farm Ln., Charles Town; Parcel ID: 02001600060000; Lot Size: 293.33 / Project Size: 120.56 ac; Zone: Rural
- Clarence & Donna Hough; Vacant parcel north of the property located at 340 Old Shennandale Rd., Charles Town; Parcel ID: 06000500060000; Lot Size: 49.04 ac / Project Size: 49.04 ac; Zone: Rural
- T. Todd & Susan Hough, Trustees; 340 Old Shennandale Rd, Charles Town; Parcel ID: 06000500010000; Lot Size: 206.84 ac / Project Size: 181.70 ac; Zone: Rural
- Charles & Marie Hough, Life; 620 Old Shennandale Rd, Charles Town; Parcel ID: 06001100080000; Lot Size: 118.05 ac / Project Size: 32.11 ac; Zone: Rural

A Conditional Use Permit for the 262.85 acre portion of the project located outside of the Charles Town Urban Growth Boundary was approved by the Board of Zoning Appeals 8/25/22 (File: #22-5-CUP).

There is no public comment for the following items.

6. Engineering Update

a. Solar Facility Stormwater Management memo (informational only/nonactionable)

7. Reports from Legal Counsel

a. Discuss and review Jefferson County Circuit Court Civil Action No. 2021-C-109.

b. Review of Zoning Text Amendment File #ZTA19-03 related to solar energy facilities, including discussion of Jefferson County Circuit Court Civil Action No.'s 2021-C- 33 through 37 and Jefferson County Circuit Court Civil Action No.'s 2021- C-46 through 50, and WV Supreme Court No.'s 21-0727, 21-0728, and 21-0731.

c. Jefferson County Circuit Court Case #CC-19-2022-C-81 (RE: ZTA22-01 Solar Energy Facilities).

d. Discuss and review Jefferson County Circuit Court Civil Action No. 2022-C-85.

8. Planner's Memo

9. President's Report

10. Actionable Correspondence

11. Non-Actionable Correspondence

a. Email correspondence from Alan Dattelbaum dated August 10, 2022

Meeting Minutes
Jefferson County Planning Commission
August 09, 2022

The Jefferson County Planning Commission met on August 09, 2022 at 7:00 pm with the following Planning Commission members present: Mike Shepp, President; Matt Knott, Vice President; Wade Louthan, Secretary; Steve Stolipher County Commission Liaison; Jack Hefestay; Donnie Fisher; Ron Thomas (via ZOOM) and Shane Roper (via ZOOM). J. Ware was absent without notice.

Staff members present included Alexandra Beaulieu, Deputy Director and Zoning Administrator; Jennifer Brockman, County Planner; Jonathan Saunders, County Engineer; Nathan Cochran, County Attorney; and Tanya Lyons, Planning Clerk.

The Planning Commission meeting was held as a hybrid meeting. The hybrid meeting information was made available on the agenda and packet, which were posted to the County website.

Mr. Shepp called the meeting to order at 7:00 pm. and confirmed that a quorum was present.

There was no audio recording for the first 9 minutes of the meeting due to technical difficulties.

1. **Approval of the meeting minutes:**

   Hearing no objection, Mr. Shepp approved the July 12, 2022 minutes as presented.

2. **Request for postponement**. Item # 6 Withdrawn Public Hearing Rock Ferry Station Lot 32 Final Plat Amendment was postponed at the request of the applicant to an unspecified future meeting.

Mr. Shepp modified the agenda to move Item # 7 to be heard first as it is not expected to require much time.

7. Discussion and Action: For the Planning Commission to vote to approve or deny the Country Club Commons Preliminary Plat Application as complete in accordance with Sections 24.113 and 24.114 of the Subdivision Regulation, for the purpose of scheduling a Public Hearing for this application. Property Owner: B.C. Partners, Inc.; Property Location: Parcel ID: 04001100110000; Size: 9.54 acres; Zone: Residential/Light Industrial/Commercial. File: #19-17-SD.

Steve Stolipher recused himself for this agenda item.

Ms. Brockman provided an overview of the requirements of the Subdivision Regulations and WV Code related to the requirement that the Planning Commission deem a Preliminary Plat complete for the purpose of scheduling a Public Hearing. She noted that while there are still outstanding comments from the second review of the Country Club Commons Preliminary Plat, the applicant believes they can be addressed prior to the Public Hearing.

Mr. Paul Raco, consultant representing the applicant, informed the Planning Commission that the WV DOH has completed their final review of the entrance permit, which has been responded to. The applicant is awaiting final approval of the entrance permit by Dave Cramer. He also stated that if they have not received the WV DOH approval, or at least conditional approval, they would request postponement.

Mr. Shepp made a motion to deem the Country Club Commons Preliminary Plat as complete and to schedule the Public Hearing for the September 9, 2022 Planning Commission meeting; Matt Knott seconded the motion, which carried unanimously.

Mr. Stolipher re-entered the room.

3. **Public Workshop:** Miller Station Apartments Concept Plan to consist of 7 Multi-Family Garden Style Apartments with 218 units, associated parking spaces, SWM facilities, and signage. Applicant: Keane Enterprise; Property Owner: Gerald A Miller Estate c/o Paul S. Schleifman; Property Location: Captain Chews Trace, Charles Town, WV; Parcel ID: Tax District: Charles Town (02), Map: 8C, Parcels: 1-8; Combined Lot Size: 10 acres; Zoning District: Residential/Light Industrial/Commercial; File: #22-6-SP.

   Ms. Brockman provided an overview of this application and stated that other than the waivers and the variances mentioned in the staff report, the proposed Concept Plan meets all the requirements. Charles Town Utility Board (CTUB) public water and sewer will serve the project. WVDOH has asked for a Traffic Impact Study (TIS). The applicant will need to merge the existing 8 lots into one lot before the Site Plan can be approved.

   Mr. Todd Heck, with Morris and Ritchie consultants, and Andy Shuckra, with Keane Enterprise, provided an overview of the proposed project.

   Mr. Shepp open the Public Workshop and asked for public comment.

   - Susan Pipps, resident of Charles Town Spoke and Patrick Henry Estates HOA Board member spoke on be half of the HOA Board. The Board is concerned about buffering between their subdivision and the proposed apartment complex and requested a better buffer. The Board recommended trees and a masonry wall.
   - Kristen Martin, resident of Patrick Henry Estate also requested that a sufficient buffer be required.

   The applicant responded in that the buffer area would not need to be a wall as the vegetation in the area is already fully planted, but they are willing to put up a 6 ft fence privacy fence in this area as well.

   Mr. Shepp closed the Public Workshop.

   Mr. Shepp stated that he would like to see the privacy fence that the neighbors are concerned about. Ms Beaulieu stated that the applicant will be required to comply with the narrow buffer requirements of the Standard Details. They will also be required to put a note on the site plan that they will replace any trees that die.

   The applicant responded that they are willing to put a privacy fence up within the required buffer.

   Mr. Stolipher made a motion to accept the Concept Plan as presented with the provision that the applicants include a 6 foot board fence along the northern property line, adjoining Patrick Henry Estates. Mr. Hefestay seconded the motion, which it was approved unanimously.

4. **Public Hearing:** Request for waiver from Section 22.208 to eliminate the sidewalks from the front of the Miller Station Apartments parcel. Applicant: Keane Enterprise; Property Owner: Gerald A Miller Estate c/o Paul S. Schleifman; Property Location: Captain Chews Trace, Charles Town; Parcel ID: Tax District: Charles Town (02), Map: 8C, Parcels: 1-8; Combined Lot Size: 10 acres; Zoning District: Residential/Light Industrial/Commercial; File: #22-17-PCW.

   Ms. Brockman presented an overview of the request and the requirements of the Subdivision Regulations as detailed in the staff report. She also noted that the Eastern Panhandle Transit Authority has a bus stop at the Wal Mart Shopping Center located approximately across the street from this property. The applicant is requesting to waive the required sidewalk along the road frontage and replace it with a crosswalk to the other side of the street where a sidewalk exists.

Mr. Todd Heck, with Morris & Ritchie, and Andy Shukra, with Keane Enterprises, provided an overview of their waiver request and noted that the road frontage of this property has a steep slope along Patrick Henry Way. They noted that there are no existing sidewalks leading to Walmart and neighboring developments on the west side of Patrick Henry Way so if they were to construct the side walk it wouldn't connect to anything. The applicant is requesting approval to waive the sidewalk and to provide a road crossing from their entrance to the sidewalk on the opposite side of the road.

Mr. Shepp asked if they have had any discussion at this time with DOH regarding the road crossing. Mr. Heck commented that they had not yet discussed this with WV DOH.

Mr. Shepp opened the Public Hearing. No one signed up to speak.

Mr. Shepp closed the Public Hearing.

Mr. Shepp asked for staff recommendations.

Ms. Brockman stated that while she prefers sidewalks, particularly in an area such as this with various residential densities and adjoining commensal development, due to the slope issues along the property frontage, staff would support the requested crosswalk to the existing sidewalk.

Mr. Shepp asked the applicants if they could put an easement along the front of the property for any future sidewalks. Applicants responded with they have no reservations doing that.

Mr. Shepp moved to approve the waiver as submitted with the condition that they put in the easement for a future sidewalk and work with DOH to receive approval for the proposed crosswalk. Mr. Stolipher seconded the motion; which was approved unanimously.

5. **Public Workshop:** Concept Plan for the Blake Solar Energy Facility. The applicant, Horus West Virginia 1, is proposing an 80MW solar electric generating facility to be located on approximately 516 acres, consisting of single-axis trackers, 535W modules, 3.38MW inverters, and new substation to connect the solar facility with the electric grid. A portion of the project site has existing high voltage power lines running through the property. File: #22-7-SP.

   Property Owners/Location/ID/Size/Zoning District:

   - Thorn Hill LLC; Vacant parcel on east side of Kabletown Road, south of Charles Town; Parcel ID: 2001900140000; Size: 171.59 acres; Zoning District: Rural
   - Peel Properties WVA LLC; Two Vacant parcels on the south side of Charles Town Road, east of Kabletown Road; Parcel ID: 02001900150003; Size: 51.19 acres; & Parcel ID:02001900150002; Size: 46.24 acres; Zoning District: Rural
   - High Horizons Farm Inc.; Vacant parcel on both the north and south side of Charles Town Road, north of the intersection with Kabletown Road; Parcel ID: 02001900150002; Size (southern portion): ~ 185 acres; Zoning District: Residential Growth; Size (northern portion): ~65 acres Zoning District: Rural

   A Conditional Use Permit for the 270 acre portion of the project located outside of the Charles Town Urban Growth Boundary, on the east side of Kabletown Road, was approved by the Board of Zoning Appeals 7/28/22 (File: #22-4-CUP).

   Ms. Brockman provided an overview of the process for this Public Workshop and emphasized that Solar Facilities require only a Concept Plan not a Site Plan.

   Mark Dyck, with Integrity Federal Services (IFS), the consultant for the applicant, and Braden Houston, with Horus West Virginia 1, were present for the presentation. Mr. Dyck provided an overview of the site sketch/Concept Plan and described where the solar panels are proposed to be

located and discussed the applicants proposed landscaping which is greater than the Ordinance requires. He also noted that final engineering is not complete. Mr. Dyck informed the Planning Commission that the Board of Zoning Appeals conditioned approval of the Conditional Use permit portion of this project with the requirement that the 179 lots making up the Thornhill Subdivision will need to be merged prior to issuance of the Zoning Certificate. He also discussed the need to address the stormwater requirements and to provide the required landscape buffers. He noted that they will have sufficient buffering for the panels.

Mr. Shepp opened the Public Workshop and the following members of the public spoke:

- Mr. Robert Edwards, Charles Town WV, expressed concerns on EMF Health Radiation Value of the homes surrounding the solar panels and expressed concern that Jefferson County cannot handle a job this size as they do not have the manpower nor plans in place for this kind of project.
- Mr. Alan Dattlebaum, Charles Town, expressed concern that no one is going to the site itself. He asked how the proposed use affects the water and the air quality? He stated that he believes that the project was pushed through for increased tax revenue.
- Mr. Justin Stone- 16452 Charles Town Road, he and his family own 3 parcels in this area. He expressed concern about water run off from the solar panels as he believes that it will flow to their lots. He stated that they have an historical farm house, the Craighill House, on the property that has been documented as a Class 2 JCHLC Historical feature. He is opposed to the solar project and feels that it will devalue the homes around it. He stated that solar facilities in the rural zoning district impact other rural investments. He also stated tht it did not appear that the Bloomery lot would be buffered as required.
- Ms. Amanda Lane, 109 Huntfield (in Eastland), stated that her main concern related to the floodplain easement between her and her neighbor. She is concerned about the storm water runoff from the impervious areas created by the solar panels and the effect it will have on the drinking water. She suggested putting in “beauty berms” within the required buffer which might help decrease the water flow and related runoff.
- Ms. Anastaysia Tabb, 248 Willowdale Dr, expressed concern about the impact on the designated floodplain and adjacent wetlands. She expressed concern that Evitt’s Run has been cited in studies for the flood plain area and would like to make sure that the appropriate measures meeting FEMA requirements are taken.

The applicants provided the following response to the comments:

Mr. Dyck explained that the Stormwater Management Ordinance only requires a stormwater management plan when the panels are to be placed on slopes greater than 10%. In this circumstance, a gravel infiltration trench system will be required to be placed under the drip line of the solar panels which serve to slow the water runoff. Where the slopes do not generate this requirement, turf will be planted and maintained throughout the solar energy facility. Additionally an NPDES permit is required to meet state erosion and sediment control requirements. The applicant also indicated that they are willing to work with the adjoining homeowners to modify the buffers where needed to ensure the water runoff does not affect them adversely.

Mr. Shane Roper asked about the slope and storm water management. Mr. Dyck explained that the applicant will be submitting a stormwater report which will determine where various stormwater improvements are required and the applicant make sure everything will be in place before all the panels are put on the property. Mr. Dyck indicated the impact of the water runoff should be minimal because of the light footprint of the solar panels.

Mr. Houston spoke stating that they are aware of articles on the internet about EMF, but there is no solid documentation of any known issues. He also stated that this solar facility is proposed to strengthen the grid of Jefferson County.

Mr. Dyck also noted that while the applicants are not required to create extra buffers for a neighboring Class 2 historical site, the applicants have already offered to do so.

Mr. Shepp closed the public workshop.

The Planning Commission members had a number of questions for the applicants:

Mr. Jonathan Saunders, County Engineer, answered the Commissioners' questions about the Stormwater Management (SWM) Ordinance requirements and the floodplain modification requirements. He noted the County's Stormwater Ordinance is based on a National Civil Engineering Study regarding solar panels. He confirmed that the Ordinance does not require the infiltration trenches when the slope is 0 – 10%. He also noted that if it is determined that the applicants can't meet the stormwater exemption provided for in the Ordinance, they will be required to complete a full stormwater plan that meets all the requirements of the Ordinance.

Mr. Ron Thomas asked if the solar panels are going to be put over the septic reserve.

Mr. Dyck responded and said the Health Department is not aware of the location of the referenced septic tank but, if the developer happens to run into one during construction, they will notify the local Health Department.

Mr. Jack Hefestay asked questions about the spacing of the proposed panels and suggested that a graphic might help the general public understand. Mr, Dyck showed the Commissioners where this information can be found in Concept Plan. He noted that the panels will need to be 12ft apart on their "ends" and that they will be 16 ft apart from center to center.

Mr. Hefestay also inquired about the potential water runoff impacts the surrounding homes and whether they have anything in place to repair /replace that home. Mr. Dyck responded stating that if the applicant could prove the damage is related to the installation the solar panels, insurance should cover this requirement.

Mr. Shepp asked for a motion. Mr. Hefestay made a motion to accept the Concept Plan as submitted, with the agreed to stipulation regarding working with the various neighbors regarding the design of the buffer adjacent to their properties. Mr. Knott seconded the motion; which passed unanimously.

Mr. Steve Stolipher returned to the room.

There is no public comment for the following items.

6. **Withdrawn: Public Hearing:** Rock Ferry Station Lot 32 Final Plat Amendment. This proposal is to modify the 300' conservation buffer area on Lot 32. Applicant: Clint Curtis; Property Owner Clint Curtis & Cassaundra Maximin; Property Location: Vacant Parcel on Eagle Landing Rd Harpers Ferry, WV; Parcel ID: 06002200140032; Size: 3.26 acres; Zoning District: Rural; File: 22-4-FPA.
7. *Moved earlier in the meeting:* **Discussion and Action:** For the Planning Commission to vote to approve or deny the Country Club Commons Preliminary Plat Application as complete in accordance with Sections 24.113 and 24.114 of the Subdivision Regulation, for the purpose of scheduling a Public Hearing for this application. Property Owner: B.C. Partners, Inc.; Property Location: Parcel ID: 04001100110000; Size: 9.54 acres; Zone: Residential/Light Industrial/Commercial. File: #19-17-SD.

8. **Reports from Legal Counsel**

   a. Discuss and review Jefferson County Circuit Court Civil Action No. 2021-C-109.

   b. Review of Zoning Text Amendment File #ZTA19-03 related to solar energy facilities, including discussion of Jefferson County Circuit Court Civil Action No.'s 2021-C- 33 through 37 and Jefferson County Circuit Court Civil Action No.'s 2021- C-46 through 50, and WV Supreme Court No.'s 21-0727, 21-0728, and 21-0731.

   c. Jefferson County Circuit Court Case #CC-19-2022-C-81 (RE: ZTA22-01 Solar Energy Facilities).

   d. Discuss and review Jefferson County Circuit Court Civil Action No. 2022-C-85.

   Mr. Shepp asked Mr. Nathan Cochran if an Executive Session is required for any of the legal matters. Mr. Cochran suggested they go to Executive Session to receive legal advice for items listed under Agenda Item Number 8. Mr. Shepp made a motion to go into Executive Session to receive legal advice related to items 8a through 8d; Mr. Knott seconded it, which passed unanimously.

   At 8:45 pm, Mr. Shepp made a motion to come out of Executive Session; Jack Hefestay seconded, which was approved

9. **Planner's Memo**

   Ms. Brockman stated that the next Planning Commission meeting is scheduled for Sept 13, 2022. At this time, there is a Concept Plan Workshop for another solar facility on that agenda, which will also need BZA approval of a Conditional Use Permit for the area outside the Urban Growth Boundary.

10. **President's Report**

11. **Actionable Correspondence**

12. **Non-Actionable Correspondence**

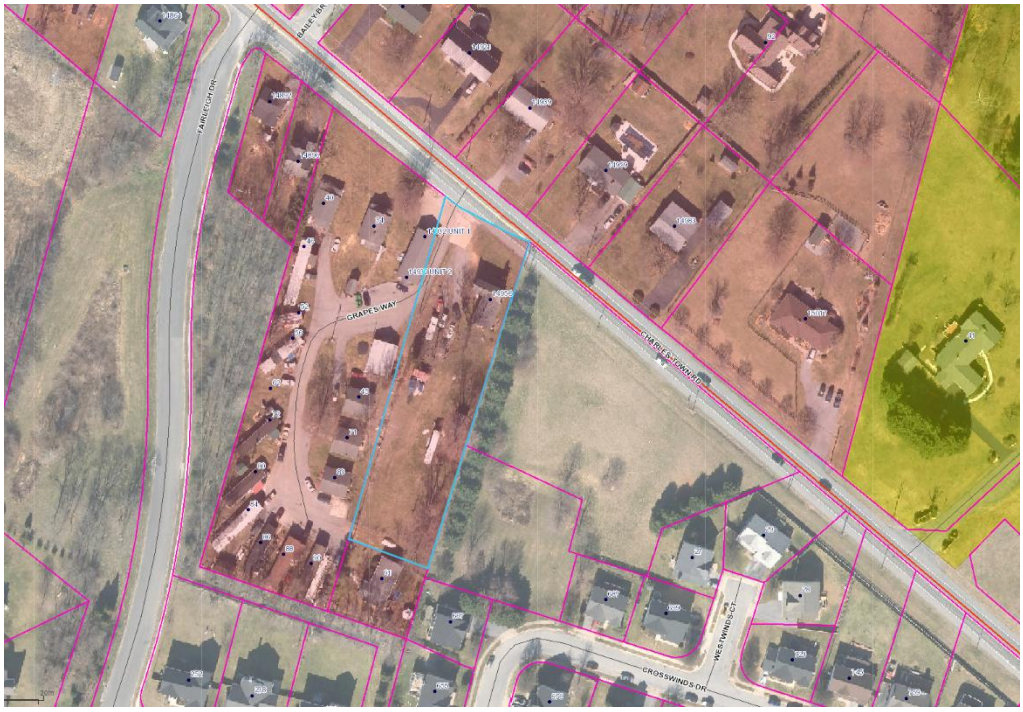
Mr. Stolipher motioned to adjourn the meeting; Mr. Louthan seconded the motion; which was carried unanimously.

The meeting was adjourned at 8:46 pm. These minutes were prepared by Tanya Lyons Planning Clerk.

Staff Report
Jefferson County Planning Commission Meeting
September 13, 2022

Doug Porter Waiver (File #: 22-18-PCW)

Item # 3: **Public Hearing:** Waiver from Section 20.203B.2 of the Subdivision Regulations, which requires a Limited Site Plan when the footprint of an addition or a new structure is greater than 1,200 square feet and less than 3,000 square feet, and the disturbed area is greater than 5,000 square feet.

Applicant/ Owner	Doug Porter- Susquehanna Properties LLC
Property Location & Information	14956 Charles Town Rd, Charles Town, WV Parcel ID: 02001700190000; Size: 0.94 ac; Zoning District: Residential-Light Industrial-Commercial 
Surrounding Zoning:	North and West: Residential-Light Industrial-Commercial (RLIC); South: RLIC and Rural; East: Rural
Proposed Activity	The applicant is requesting to waive the requirement of a Limited Site Plan to allow for the construction of a 1,274 square foot 2-story apartment structure and to allow a 24' by 300'+/- gravel driveway and parking with a disturbed area of approximately 9,400 square feet.
Property History	Occupied by an existing single family house

Summary of the Request:

The applicant is proposing to construct a two-story, 3-unit apartment building with a 1,274 square foot footprint on the lot with the existing single family home. Due to the configuration of the lot and the location of the existing single family house on the lot, the apartment structure is proposed to be located toward the rear of the property with a proposed 24' by 300'+/- driveway and parking with a disturbed area of around 9,400 square feet. A structure of this size with this much site disturbance would require the processing of a Limited Site Plan, for which this waiver is requested.

Doug Porter Waiver (File #: 22-18-PCW)

Subdivision Requirements and Discussion

Section 20.203 "Minor Site Development" of the Subdivision Regulations (excerpt below), requires all projects to process a Limited Site Plan if the footprint of the proposed addition or the new structure is greater than 1,200 square feet and less than 3,000 square feet (or 35% of the existing structure whichever is smaller), and the disturbed area is greater than 5,000 square feet. Additionally, Section 20.203A of the Subdivision Regulations states that a Concept Plan is required if the all new structures or new additions to structures located on the parcel total more than 5,000 square feet.

The applicant is requesting that the required Limited Site Plan for the proposed project be waived because the footprint of the new structure is just slightly greater than the 1,200 sq ft maximum for the "no site plan" classification; however, the disturbed area is considerably more than the required 5,000 square feet. The proposed use is a Principal Permitted Use in the RLIC Zoning District. A single family or two-family structure of this size would not require a Site Plan; however, an apartment structure requires more parking than a single family or two-family home would require. The applicant would also prefer to use a gravel driveway and parking area for the apartment building. A site plan would require a paved access and parking.

Should the Planning Commission grant the waiver, the applicant will still need to process a Zoning Certificate, a Building Permit, WV Division of Highways approval for use of the existing entrance, and approval from the necessary utility providers prior to construction. A letter from the Charles Town Utility Board stating that they have the capacity to serve these units is attached.

Sections of Subdivision Regulations under Consideration:

Section 20.203 Minor Site Development

Minor Site Developments are those proposals that do not require the development of new off-tract infrastructure or the extension of existing off-tract infrastructure.

B. **Site Plan Classifications**

All Minor Site Developments shall be processed utilizing one of the following Site Plan Classifications. Unless explicitly stated within this Section, all requirements of these Regulations apply to each of the classifications below, including the requirements of Appendix A and Appendix B. Minor Site Development may require Stormwater Management Plans and stormwater management activities per the Jefferson County Stormwater Management Ordinance.

1. **No Site Plan or Stormwater Management Plan**. No site plan is required for additions to existing structures or structures ancillary to existing uses on a property, when:
   a. The footprint of the addition or the new structure is less than 1,200 square feet; and
   b. No additional parking is required per Zoning Ordinance standards; and
   c. The disturbed area is no more than 5,000 square feet.

   Note: Once the total of any additions or new structures processed under this provision since October 5, 1988 exceeds 1,200 square feet, it shall process as a Limited Site Plan or a Full Site Plan, as appropriate.

2. **Limited Site Plan**

   A site plan limited to basic information needed to address (a) erosion and sediment control, (b) parking requirements for the expanded use, (c) stormwater management (quantity and quality) for the additional impervious area only, (d) handicapped access to the existing and proposed structures and (e) compliance with the Zoning Ordinance, may be used on sites where the structure is:

   a. An addition to an existing structure, or, ancillary to an existing use; and
   b. The footprint does not exceed 3,000 square feet or 35% of the existing structure, whichever is smaller.
   c. For a home occupation or cottage industry, the limited site plan standards are applicable if a site plan is required pursuant to the Zoning Ordinance.

Waiver Requirements

The applicant has provided a response to the requirements found in "Division 24.300 Waivers" of the Subdivision Regulations, which is attached to the application. Waivers from the minimum standards in these Regulations may be granted by the Planning Commission only when the Planning Commission finds that granting a waiver will be consistent with all of the following criteria:

(1) that the design of the project will provide public benefit in the form of reduction in County maintenance costs, greater open space, parkland consistent with the County parks plan, or benefits of a similar nature;

(2) that the waiver, if granted, will not adversely affect the public health, safety or welfare, or the rights of adjacent property owners or residents;

(3) that the waiver, if granted, will be in keeping with the intent and purpose of these Regulations; and

(4) that the waiver if granted will result in a project of better quality and/or character.

Process and procedural waivers shall be reviewed and found consistent with the above criteria prior to approval.

Staff Recommendation

Site Plans are engineered documents that depict the site improvements required by the Subdivision Regulations, including, but not limited to, stormwater management, landscaping, parking and drive aisle layout, bonding and signage. It is generally preferred that Site Developments in commercial zoning districts, such as this one, meet the Site Plan requirements of the Subdivision Regulations.

Planning staff believes that because the proposed structure footprint is similar to a single or two-family residential structure that would be permitted in this zone without a site plan, it may be reasonable to allow this development to process without a Site Plan.

However, Engineering staff believes the increase in impervious surface should be addressed with a SWM facility. Engineering recommends that a professional engineer evaluate the site and determine what type and size of SWM facility is needed to meet the Jefferson County Stormwater Management Ordinance for the increase in impervious surface.

Doug Porter Waiver (File #: 22-18-PCW)

It should be noted that if the Planning Commission is inclined to grant the waiver from requiring a site plan, that the applicant will still have to provide approval from the WVDOH (access) and the Charles Town Utility Board before a Building Permit can be issued.

Attachment:

- Letter from CTUB dated 8-18-22

Charles Town
Utility Board

661 S. George Street, Suite 101 Charles Town, WV 25414
Phone: (304) 725-2316 ♦ Fax: (304) 725-7150 ♦ Web: www.ctubwv.com

Date: August 18, 2022

Re: Charles Town Road – Property ID 17-19 – (3 Lots)
Water/Sewer Availability

Dear Mr. Porter:

The Charles Town Utility Board (CTUB) has received your request for water and sewer availability for the development of three townhomes on the subject property:

Water Service:

(CTUB) has available water service capacity to serve your project at this time. Please note that CTUB's Water Tariff does not allow for reservation of capacity. Therefore, water system capacity is provided on a first come, first serve basis. A Water Capacity Improvement Fee (CIF) at the time of building permit will apply. The current water CIF is $2,576.00 per equivalent dwelling unit (EDU). The Total Water Capacity Improvement Fee is calculated as follows:

3 Lots X $2,576.00 = **$7,728.00**

Sewer Service:

(CTUB) has available sewer service capacity to serve your project at this time. Please note that CTUB's Sewer Tariff does not allow for reservation of capacity. Therefore, sewer system capacity is provided on a first come, first serve basis. A Sewer Capacity Improvement Fee (CIF) at the time of building permit will apply. The current sewer CIF is $2,930.00 per equivalent dwelling unit (EDU). The Total Sewer Capacity Improvement Fee is calculated as follows:

3 Lots X $2,930.00 = **$8,790.00**

A copy of the CTUB Rates, Rules and Regulations as well as the Public Service Commission of West Virginia Water Rules and Regulations can be found at: www.ctubwv.com.

If you have any questions, please contact me at (304) 725-2316.

Sincerely,

Travis Markley
Engineering Technician

Jefferson County, West Virginia
Department of Engineering, Planning and Zoning
Office of Planning and Zoning
116 E. Washington Street, 2nd Floor
P.O. Box 716
Charles Town, West Virginia 25414

File #: 22-18-PCW
Mtg Date: 9-13-22
Date Rec'd: 08-22-22
Fees Paid: 100
Staff Int: TL
List of Adjoiners: ☐

Email: planningdepartment@jeffersoncountywv.org
zoning@jeffersoncountywv.org
Phone: (304) 728-3228
Fax: (304) 728-8126

Planning Commission Waiver Request

Waivers must comply with Division 24.300 of the 2008 Subdivision Regulations, as amended.

Property Owner Information

Owner Name: Davy Porter
Business Name: Susquehanna Properties LLC
Mailing Address: 470 Multnomah Ln. Harpers Ferry WV 25425
Phone Number: 540-454-0002 Email: dporter789@comcast.net

Applicant Contact Information

Applicant Name: Same as above Same as owner: ☐
Business Name:
Mailing Address:
Phone Number: Email:

Consultant Information

Name: None
Business Name:
Mailing Address:
Phone Number: Email:

Physical Property Details

Physical Address: 14956 Charles Town Rd. Charles Town WV 25415 Vacant Lot: ☐
Tax District: Charles Town Map No: 17 Parcel No: 19
Parcel Size: .8199 Acres Deed Book: 1080 Page No: 352
Zoning District:

On a separate sheet of paper sketch the shape and location of the lot. Show the location of the intended construction or land use and indicate building setbacks, size, and height. Identify existing easements, roads, buildings, structures, or land uses on the property. Sign and date the sketch.

☒ Included ☐ Not applicable (include a vicinity map if a sketch is not applicable)

What Section of the Subdivision Regulations and year of the Regulations are you requesting to Waive?

20.203 B2 Limited Site Plan

Briefly Describe the Nature of Your Waiver Request:

To waive Site plan requirement. Building footprint is 1274 Sq Ft
To allow a gravel driveway.

Explain how the design of the project will provide public benefit in the form of reduction in County maintenance costs, greater open space, parkland consistent with the County Parks Plan or benefits of a similar nature.

Natural screening is already in place on both side boundary Lines
30' pine trees on south side, Trees + Bushes on north side

Explain how the waiver, if granted, will not adversely affect the public health, safety, or welfare or the rights of adjacent property owners or residents.

Site of new building is currently an open field surrounded on
2 Sides by a trailer park.
Only new units will use new driveway for access

Explain how the waiver, if granted, will be in keeping with the intent and purpose of this Ordinance.

Property is zoned for Multi family.
All setbacks will be observed.

Explain how the waiver, if granted, will result in a project of better quality and/or character.

This waiver will make this project feasable and will provide
3 new affordable dwelling units

By signing this application, I give permission to the Planning and Zoning Staff to conduct a site visit for the purpose of taking photos for the Planning Commission staff report. The information given is correct to the best of my knowledge.

Property Owner/Applicant Signature 8/22/22 Date

Property Owner/Applicant Signature Date

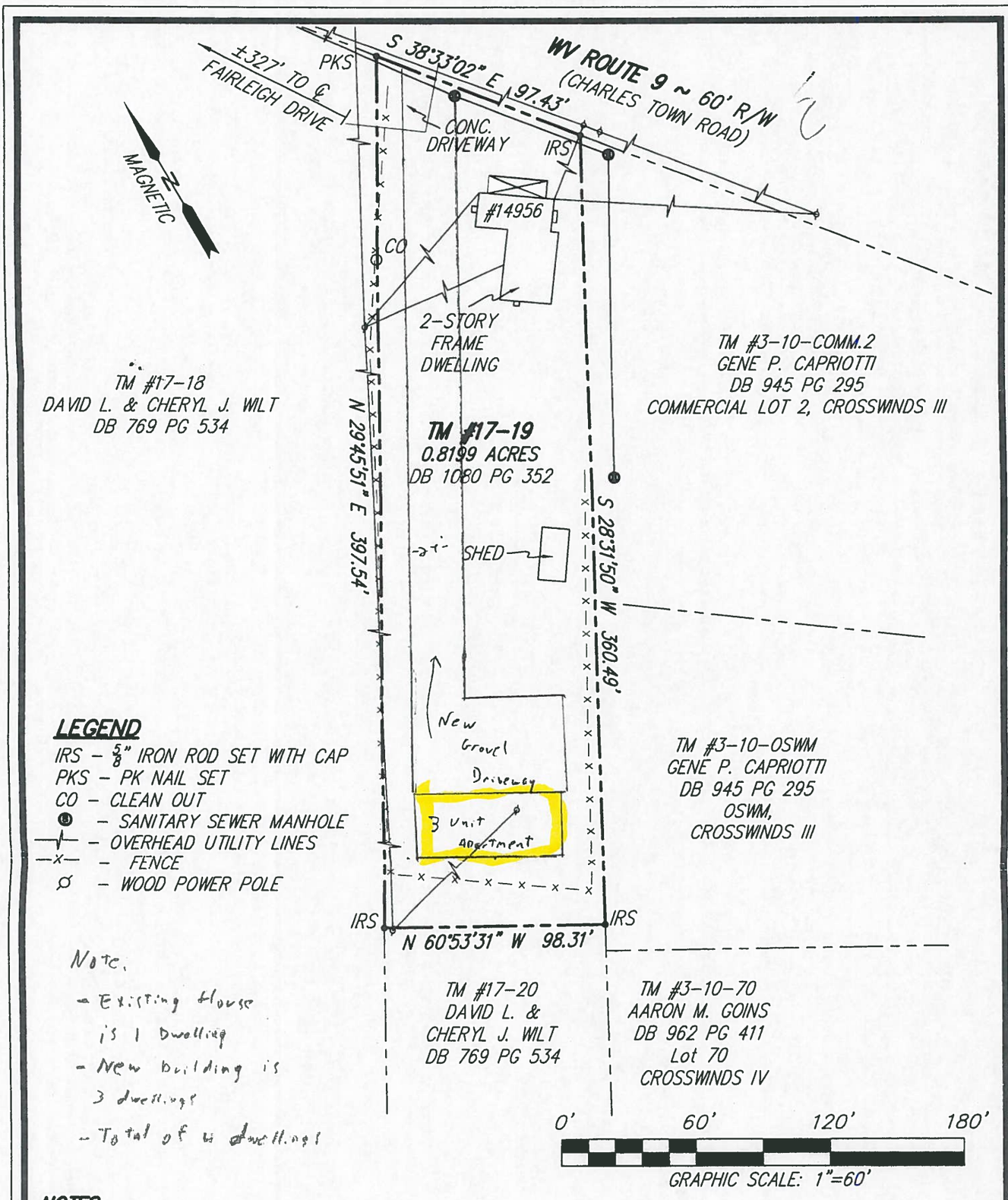
Notification Requirements

The subject parcel shall be posted with a minimum of one 28" x 22" placard at least 14 days prior to the public hearing. The placard(s) will be prepared by the Staff and posted by the applicant. Adjacent property owner name and address information shall be provided by the applicant so that notification letters can be mailed by Staff least 14 days prior to the public hearing.

9-13-2022	8-30-22	8-26-2022
Public Hearing Date	Date Placard Posted	Date Adjoiners Mailed

Planning Commission Determination

Approved ☐ Denied ☐ Date: ____ / ____ / ____



LEGEND

IRS – ⅝" IRON ROD SET WITH CAP
PKS – PK NAIL SET
CO – CLEAN OUT
– SANITARY SEWER MANHOLE
– OVERHEAD UTILITY LINES
– FENCE
– WOOD POWER POLE

Note,
- Existing House is 1 Dwelling
- New building is 3 dwellings
- Total of 4 dwellings

NOTES:

1. NO TITLE REPORT WAS FURNISHED, THEREFORE ALL EASEMENTS AND ENCUMBRANCES MAY NOT BE SHOWN.
2. PROPERTY IDENTIFICATION NO. 17-19
3. BOUNDARY INFORMATION SHOWN HEREON IS BASED UPON AN ACTUAL FIELD RUN SURVEY COMPLETED ON SEPTEMBER 20, 2010.

BOUNDARY SURVEY
OF THE LAND OF
SUSQUEHANNA PROPERTIES, LLC
DEED BOOK 1080 PAGE 352
CHARLES TOWN MAGISTERIAL DISTRICT
JEFFERSON COUNTY, WEST VIRGINIA

DATE: 09/22/10	SCALE: 1"=60'	SHEET: 1 OF 1

P. DUANE BROWN
LICENSED
No. 569
STATE OF
WEST VIRGINIA
PROFESSIONAL SURVEYOR
Sept. 22, 2010

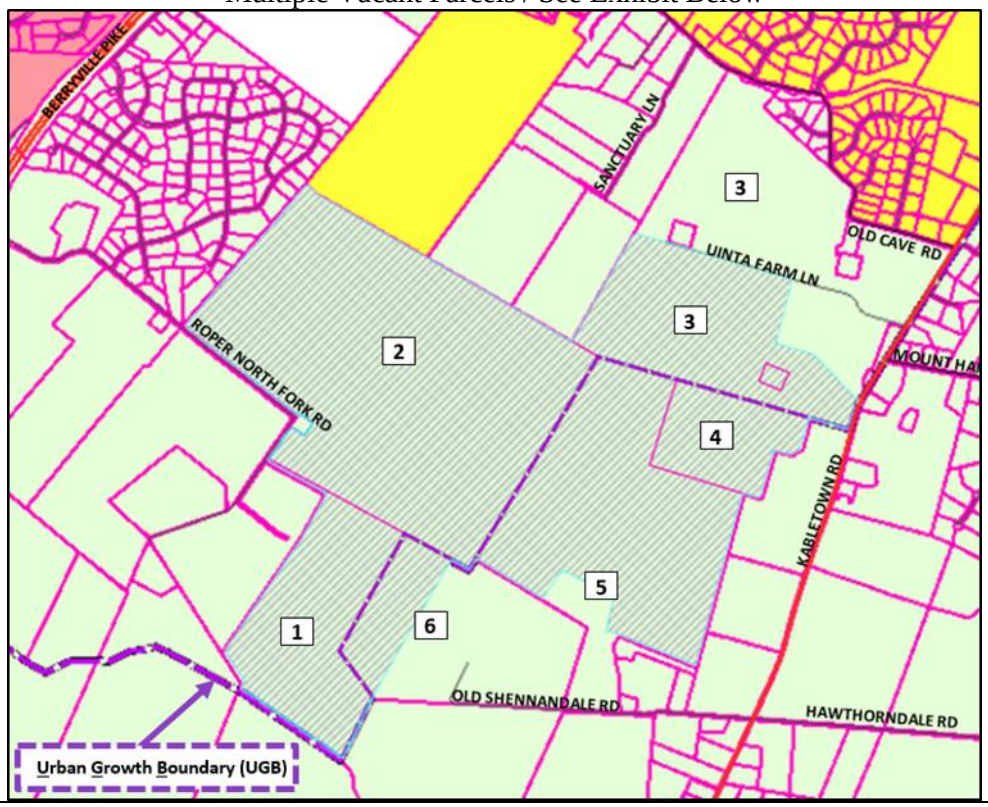
Marsh & Legge Land Surveyors, P.L.C.
560 NORTH LOUDOUN STREET ~ WINCHESTER, VIRGINIA 22601
PHONE (540) 667-0468 ~ FAX (540) 667-0469 ~ EMAIL office@marshandlegge.com

DRAWN BY: HBK
DWG NAME: ID8834-BDS

Staff Report
Jefferson County Planning Commission
September 13, 2022

Wild Hill Solar Energy Facility Concept Plan (PC File: 22-9-SP)

Item #5: **Public Workshop:** / Concept Plan for the Wild Hill Solar Energy Facility . The applicant is proposing a 92.5 megawatt solar electric generating facility to be located on approximately 841 acres. The project will consist of rows of solar modules which are installed in arrays dispersed throughout the leased land. The project will also include construction of a new substation that will connect the solar energy facility with the existing 138-kilovolt overhead electrical transmission line passing through the southeast corner of the project area..

Applicant:	Wild Hill Solar, LLC
Owners:	Multiple Owners / See Exhibit Below
Consultant:	Paul Raco, P.J. Raco Consulting, LLC
Parcel Information / Zoning District:	Multiple Vacant Parcels / See Exhibit Below 
Surrounding Zoning:	Zoning Map Designation: North: Residential Growth & Rural; East, South, West: Rural
Previous Approvals:	Wild Hill Solar Energy Facility (File #21-3-SP) approved by Planning Commission 6-8-21 as presented; subsequently voided by lawsuit which invalidated Zoning Text Amendment # ZTA19-03 permitting the land use
Current Applications (Wild Hill Solar Project)	• Conditional Use Permit (File #22-5-CUP) Public Hearing: 08/25/22 Board of Zoning Appeal Meeting: Approved • Concept Plan (File #22-9-SP) Public Workshop 9/13/22 Planning Commission Meeting

Map Ref .#	Property Owner:	Physical Address	Parcel Information:
1.	Clarence & Donna Hough	Vacant parcel east of the property located at 1343 Roper North Fork Rd, Charles Town	Parcel ID: 06001100070001; Lot Size: 107.38 ac / Project Size: 107.38 ac Zone: Rural
2.	Zigler, Inc.	1079 Roper North Fork Rd., Charles Town	Parcel ID: 06000400090000; Lot Size: 350.95 / Project Size: 350.95 Zone: Rural
3.	John Samuel & Alice Rissler Estate	616 Uinta Farm Ln., Charles Town	Parcel ID: 02001600060000; Lot Size: 293.33 / Project Size: 120.56 ac Zone: Rural
4.	Clarence & Donna Hough	Vacant parcel north of the property located at 340 Old Shennandale Rd., Charles Town	Parcel ID: 06000500060000; Lot Size: 49.04 ac / Project Size: 49.04 ac Zone: Rural
5.	T. Todd & Susan Hough, Trustees	340 Old Shennandale Rd Charles Town	Parcel ID: 06000500010000; Lot Size: 206.84 ac / Project Size: 181.70 ac Zone: Rural
6.	Charles & Marie Hough, Life	620 Old Shennandale Rd Charles Town	Parcel ID: 06001100080000; Lot Size: 118.05 ac / Project Size: 32.11 ac Zone: Rural
Parcels #4 - #6 are also subject to the Conditional Use requirements because they are located outside of the County's identified Urban Growth Boundary.			

Overview of Project

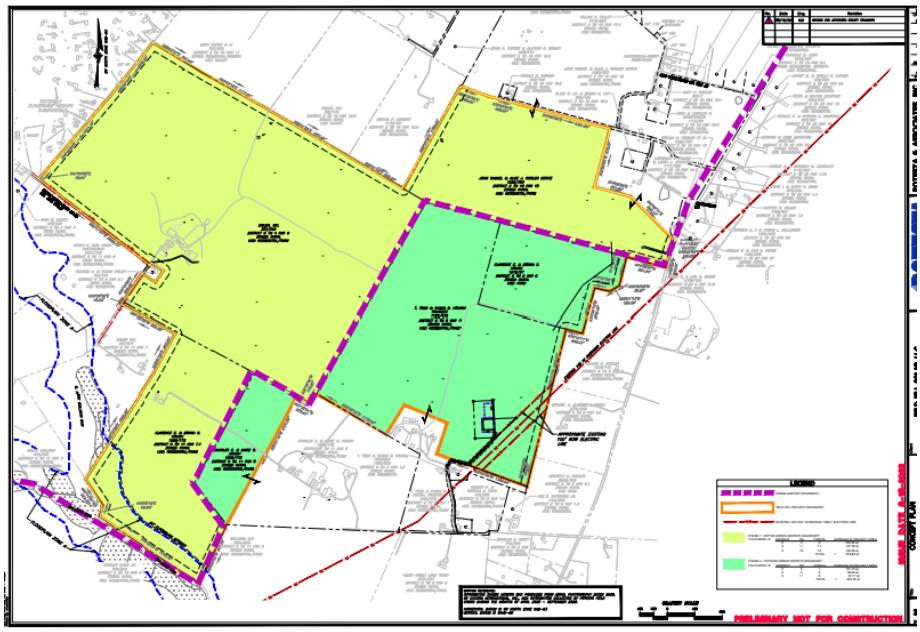
The applicant is proposing a 92.5 megawatt solar electric generating facility to be located on approximately 841 acres. The project will consist of rows of solar modules which are installed in arrays dispersed throughout the leased land. The project will also include construction of a new substation that will connect the solar energy facility with the existing 138-kilovolt overhead electrical transmission line passing through the southeast corner of the project area.

> The proposed use is identified as a Solar Energy Facility, defined in Article 2 of the Zoning Ordinance, as: "A facility that generates electricity from sunlight by utilization of photovoltaic (PV) technology and distributes the generated electrical power. On-site components of the facility may include solar panels and other accessory components including, without limitation, Essential Utility Equipment, transformers, inverters, cabling, electrical lines, substations, and other improvements necessary to support generation, collection, storage, and transmission of electrical power."

Solar Energy Facilities are Principal Permitted Uses in the Rural Zoning District in areas inside of the Urban Growth Boundary and the Preferred Growth Area as delineated on the Future Land Use Guide in the Comprehensive Plan. Solar Energy Facilities are required to process as Conditional Uses in zoning districts outside of the Urban Growth Boundary (UGB) and Preferred Growth Area (PGA). The provisions for large-scale solar energy facilities are found in Section 8.20 of the Zoning Ordinance.

The Wild Hill Energy Project is proposed to occur on a total of 814 acres, with 551+/- acres located within the Charles Town Urban Growth Boundary, where solar energy facilities are permitted by right. The project also includes 262+/- acres of the solar energy facility project to be located outside of the Charles Town

Urban Growth Boundary, which requires approval of a Conditional Use Permit (CUP). The CUP (File #22-5-CUP) was approved by the Board of Zoning Appeals after a Public Hearing was held on August 25, 2022, with no conditions.



Tonight's Public Workshop relates to the Concept Plan for the full 814 acres. The subject properties, comprising the 814 acres, are currently vacant and/or used for agricultural purposes. A portion of the property is located within the delineated floodplain area. No structures or grading are proposed for the areas within the floodplain.

The Concept Plan includes a graphic and narrative description related to the configuration and components of the proposed facility. Wild Hill Solar, LLC proposes to lease the 841 acres for a period of 30+/- years. The project will consist of rows of solar modules which are installed in arrays dispersed throughout the leased land. The project will have a substation connected to the existing 138-kilovolt overhead electrical transmission line passing though the southeast corner of the project area. The substation will be situated on a proposed 5-acre subdivided parcel which will have a 50-foot access easement off of Shennandale Road. The project will include internal access roads, commercial entrance(s), will be surrounded by security fencing and required zoning buffer, and stormwater management.

An 8' fence is proposed around the perimeter of the full solar facility. The Concept Plan states that no solar panels are located within 100' of all of the external property lines or within 200' from any neighboring residence, Category 1 historic resource, institute for human care, church or similar structure. The project is also proposes to provide the 20' medium landscape buffer screening within the 100 foot setback along the Cloverdale Subdivision (see Sheet 2 of 4 of the Concept Plan).

The primary entrance to the solar facility is proposed to be off Kabletown Road south of Uinta Farm Lane

Site Plan Category

Section 8.20 of the Zoning Ordinance requires that all projects meeting the definition of Solar Energy Facilities are required to process a Concept Plan, pursuant to the Minor Site Development Concept Plan standards established in the Jefferson County Subdivision Regulations. After the Concept Plan Public Workshop is held and Planning Commission direction is given, the next steps are Application for a Zoning Certificate and Building Permits, including submission of a report in conformance with the Jefferson County Stormwater Management Ordinance, if required. The Concept Plan includes the entire project, including the portion of the project that also required a Conditional Use Permit.

In addition to the Concept Plan requirements outlined in the Subdivision Regulations, the Zoning Ordinance requires the Concept Plan for a solar energy facility to include all of the property locations; access points; anticipated locations of all proposed components of the Solar Energy Facility; and landscaping, buffering,

ground cover plan, and fencing. A narrative outlining the decommissioning of the Solar Energy Facility is also required to be included with the Concept Plan (see Section 6.0 of the Narrative). The narrative is required to include a description of the timeline of the lease or operating plan, and a general plan for removal of the Solar Energy Facility. All of these Zoning Ordinance requirements have been addressed in the Concept Plan submitted.

The Concept Plan Public Workshop is the only opportunity for public input on the full project. The balance of the County's approval process is administrative.

Staff Determination of Application Sufficiency and Concept Plan Completeness Review

In accordance with the current Subdivision Regulations, the Minor Site Plan Concept Plan process incorporates a sufficiency and completeness review in a single step. Upon first submission and review of the applicant's Concept Plan, Staff found the submitted plan "sufficient" pursuant to Section 24.106 of the Jefferson County Subdivision and Land Use Regulations. These requirements, as well as the current review status for each requirement for the subject application, are provided below:

	Description	Status
1. General Location	A map or aerial photograph showing an area of 500 feet around the property. Zoning boundaries shall be located on this document.	Provided
2. Concept Plan	In accordance with the content and formatting guidelines provided in Appendix A, *Plan & Plat Standards*.	Provided
3. Zoning Information	a) Zoning District in which the proposed development is located. b) Density calculations. c) Site resource map d) Use designation for all adjoin and confronting parcels	Provided on Concept Plan: Rural zoning; includes rows of solar modules installed in arrays; and a substation on a proposed 5-acre subdivided parcel
4. Proposal Description	A written description of the proposal with general identification of the number of dwelling units or floor area proposed, commentary, zoning, and development option selected if the development is multi-family residential.	Narrative and Concept Plan provide relevant information
5. Traffic Impact Data	a) Average Daily Trip (ADT) figures for the adjoining or accessible State road. b) Trip generation figures c) Nearest key intersection that will serve the proposed project as classified by the current Comprehensive Plan. d) "Highway Problem Areas" according to the current Comprehensive Plan that falls within a one-mile radius of the project.	Provided on Plan & in narrative: WV 340: 14,003 ADT; WV 25 (Kabletown Rd): 1,630 ADT; Trip Generation: 3 vpd
6. Traffic Study	A traffic study may be required only at the request and direction of the West Virginia Division of Highways. Any required traffic study or a letter from the West Virginia Division of Highways outlining the proposed improvements shall be received with the first submission of the Site Plan.	WV DOH is not anticipated to require a TIS.

7. Agency Reviews	The applicant shall distribute the concept plan to all reviewing agencies found in Section 23.203 and 23.204 no later than 7 days after the review.	Letters to required agencies provided. See responses below.
D. Department	The Department review shall include the following: 1. Whether the density, use, and plan meet the requirements of the Zoning Ordinance and any other zoning issues that can be identified at the Concept Plan submission and any zoning issues the developer shall address in a Site Plan submittal. 2. Staff opinion as to whether the plan meets the Site Plan criteria of these Regulations. The Department shall review the Concept Plan for modifications that would improve the plan.	Staff determined that the proposed Concept Plan meets the requirements of the Zoning Ordinance and the Subdivision Regulations as a Minor Site Development requiring a Concept Plan only.
E./F. WVDOH	WVDOH shall submit a letter to the Office of Planning and Zoning indicating issues and data requirements or notice that there are no issues or data requirements. If WVDOH determines that a traffic study is needed, parameters shall be provided. The review shall indicate whether a traffic impact study will be required based on analysis required in Section 24.106.B.5.	WV DOH is not anticipated to require a TIS.
G. Public Service	The review shall indicate whether there are existing water and sewer systems in place that can handle the development. If not, the review shall indicate the type or extent of a system that shall be proposed by the developer to best meet the County's needs in that area of the County.	No water or wastewater services will be required for this project.
H. Recommended Conditions	All reviews shall contain recommended conditions for moving forward to a site plan or reasons why the plan should be denied.	See below

Concept Plan Review

1. External Agency Reviews

   The applicant submitted the required agency letters to the appropriate agencies. The applicant submitted the required agency letters to the appropriate agencies. No responses were received at the time this report was prepared.

2. Staff Recommendation related to Concept Plan

   The Subdivision Regulations state that unless there are reviews indicating that the development cannot conform to the Zoning Ordinance, be serviced by public services, or provide its own utilities, or other factors that make the development impossible, Planning staff is required to accept or deny the Concept Plan as complete. Upon accepting the application as complete, Planning staff is required to place it on the next possible Planning Commission agenda as a public workshop, which is advertised at least fourteen (14) days in advance of the meeting and posted on the property.

   The Office of Planning and Zoning Staff finds the Concept Plan for the proposed Wild Hill Solar Energy Facility, to be located on 841 acres, generally located east of Cloverdale Subdivision, south of

Uinta Farm Lane, west of Kabletown Rd, and north of Old Shennandale Road, Bullskin Run, and Roper North Fork Rd, to be "complete" based on the information provided related to the criteria above and to meet the standards detailed in the Zoning Ordinance. No Site Plan is required pursuant to Section 8.20 of the Zoning Ordinance.

3. Planning Commission Direction

The Concept Plan Public Workshop allows for the Planning Commission and the general public to comment on the proposed plan before the Zoning Certificate and Building Permit are obtained. The Subdivision Regulations outline the procedure:

1. The applicant makes a short presentation.
2. Staff explains outside agency comments and whether the plan can meet the standards of the Zoning Ordinance.
3. Public comment is solicited.

Following the applicant's presentation, staff's explanation, and the solicitation of public comment, the Planning Commission shall provide direction to the applicant as required under Concept Plan Direction outlined in the Subdivision Regulations. The Planning Commission has the option of providing this direction at the same meeting during which the Concept Plan public workshop takes place, or at a subsequent meeting that occurs within 14 days of the meeting at which the Concept Plan public workshop is closed.

While Section 24.108 of the Subdivision and Land Development Regulations outlines the direction to be provided to the applicant during a Minor Site Plan Concept Plan review as it relates to the preparation of a Site Plan (which is not required for Solar Energy Facilities), Section 8.20 of the Zoning Ordinance details the next steps after the Concept Plan Workshop for all Solar Energy Facilities are as follows:

a. A Zoning Certificate based on an approved Concept Plan is required prior to initiating any use regarding Solar Energy Facilities.

   "In addition to the standards found in Section 8.20, any Zoning Certificate regarding Solar Energy Facilities shall be issued conditioned on all other State Regulations and approvals being granted, including, but not limited to, the WV Public Service Commission, WVDEP applicable NPDES Permits and Decommissioning Bonds, Fire Marshal approval, Building Permits through the Department of Engineering, Planning, and Zoning, and approval of the Stormwater Management Report pursuant to the Jefferson County Stormwater Management Ordinance."

b. Stormwater Management

   "Stormwater Management shall be required in accordance with the Jefferson County Stormwater Management Ordinance. Solar Energy Facilities may be exempt from providing stormwater management if the conditions for granting exemption under Article I.D.2.h of the Stormwater Management Ordinance are satisfied."

It should be noted that the direction provided to the applicant in the Minor Site Plan Concept Plan Public Workshop shall be applicable for a period of two years.

Jefferson County, West Virginia
Department of Engineering, Planning and Zoning
Office of Planning and Zoning
116 E. Washington Street, 2nd Floor, P.O. Box 716
Charles Town, West Virginia 25414

File #: 22-9-SP
Fees Paid: n/a
Staff Int.: jth

Email: planningdepartment@jeffersoncountywv.org
zoning@jeffersoncountywv.org
Phone: (304) 728-3228
Fax: (304) 728-8126

Subdivision or Site Development Application

Application Type

- ☑ Concept Plan
- ☐ Preliminary Plat
- ☐ Final Plat (major/minor)
- ☐ Site Plan

Project Name: Wild Hill Solar Project
Description: Construct solar farm on approx. 841 acres of leased land on six parcels in the Kablestown and Charles Town Tax Districts and connect to the existing 138k overhead elec transmission line.
Primary Contact Phone Number (must be a direct line number) 540-450-0180

Property Owner Information

Owner Name: Multiple Owners (See attached)
Business Name:
Mailing Address:
Phone Number: Email:

Applicant Information

Same as Owner: ☐

Applicant Name: Chris Sternhagen (See attached for consultant)
Business Name: Wild Hill Solar, LLC
Mailing Address: 10 Second Street, NE, Suite 400 Minneapolis, Minnesota 55413
Phone Number: 612-486-4513 Email: Christopher.Sternhagen@edf-re.com

Registered WV Engineer or Surveyor Information

Consultant Name: Joe Knechtel, P.E.
Business Name: Potesta & Associates, inc.
Mailing Address: 15 South Braddock Street, Winchester Virginia 22602
Phone Number: 540-450-0180 Email: kjknechtel@potesta.com

1 **Physical Property Details** Vacant Lot: ☐

Physical Address: 1343 Roper North Fork Road, Charles Town, West Virginia 25414
Tax District: 6 Map No: 4 Parcel No: 9
Parcel Size: 350.95 Deed Book: 307 Page No: 345
Zoning District: Rural

Additional Parcels (if any)

2 **Physical Property Details** Vacant Lot: ☐

Physical Address: 620 Old Shennandale Road, Charles Town, WV 25414
Tax District: 6 Map No: 11 Parcel No: 7.1
Parcel Size: 107.38 Deed Book: 1209 Page No: 172
Zoning District: Rural

3 **Physical Property Details** Vacant Lot: ☐

Physical Address: 616 Uinta Farm Lane, Charles Town, WV 25414
Tax District: 2 Map No: 16 Parcel No: 18
Parcel Size: 291.5 Deed Book: 1228 Page No: 303
Zoning District: Rural

PHYSICAL PROPERTY DETAILS

Property Owner	Zigler, Inc.	Clarence & Donna S. Hough	John Samuel & Alice J. Rissler, et al.
Physical Address	1343 Roper North Fork Road Charles Town, WV 25414	620 Old Shennandale Road Charles Town, WV 25414	616 Uinta Farm Lane Charles Town, WV 25414
Phone Number	(304) 283-6799	(304) 725-9655	(304) 725-2476
Deed Book	307	1209	1228
Page	345	172	303
Parcel ID	District 6, TM#4, Parcel 9	District 6, TM#11, Parcel 7.1	District 2, TM#16, Parcel 18
Zoning District	Rural	Rural	Rural
Total Parcel Size	350.95 acres	107.38 acres	291.57 acres
Project Area	350.95 acres	107.38 acres	120.56 acres

CONCEPT PLAN
SUBMITTAL MATERIALS

Wild Hill Solar Project
Kabletown, West Virginia

Prepared for:

Wild Hill Solar, LLC an Indirect Subsidiary of
EDF Renewables, Inc.
10 Second Street, NE, Suite 400
Minneapolis, Minnesota 55413

Prepared by:

Potesta & Associates, Inc.
7012 MacCorkle Avenue, SE
Charleston, West Virginia 25304
Phone: (304) 342-1400 Fax: (304) 343-9031
Email: potesta@potesta.com

Project No. 0101-19-0344-001

August 2022

POTESTA

TABLE OF CONTENTS

REVISED CONCEPT PLAN SUBMITTAL MATERIALS

Wild Hill Solar Project
Kabletown, West Virginia

1.0 PROJECT DESCRIPTION

Wild Hill Solar, LLC (Wild Hill) an indirect subsidiary of EDF Renewables, Inc (EDF), is proposing to construct a 92.5-megawatt alternating current solar energy generating facility, known as Wild Hill Solar (the Project), on approximately 841 acres on six contiguous parcels owned by five separate property owners. The project is located approximately 2.5 miles south of the city of Charles Town situated between U.S. Highway 340 (to the west) and Route 25, Kabletown Road, (to the east) and is surrounded by agricultural and residential land uses. Approximately 579 acres of this solar project land is within the Urban Growth Boundary, and approximately 262 acres are outside of this Urban Growth Boundary. Wild Hill proposes to lease these parcels for a period of 30 or more years. The project will consist of rows of solar modules which are installed in arrays dispersed throughout the leased land. The project will have a substation connected to the existing 138-kilovolt overhead electrical transmission line passing though the southeast corner of the project area. This substation will be situated on a proposed 5-acre subdivided parcel which will have a 50-foot access easement through Mr. Todd Hough's property off of Shennandale Road. The project will include internal access roads, commercial entrance(s), will be surrounded by security fencing and required zoning buffer, and stormwater management.

2.0 PROJECT AND ADJOINING PROPERTIES

Parcels to be Leased (within Solar Project)

Property Owner	**Zigler,Inc.**	**Clarence & Donna S. Hough**	**John Samuel & Alice J. Rissler Estate**	**Charles E. & Marie S. Hough – LIFE**	**T. Todd & Susan H. Hough, Trustees**	**Clarence & Donna S. Hough**
Physical Address	1079 Roper North Fork Rd., Charles Town, WV 25414	Vacant Parcel - east of the property located at 1343 Roper North Fork Rd. Charles Town, WV 25414	616 Uinta Farm Ln., Charles Town, WV 25414	620 Old Shennandale Rd., Charles Town, WV 25414	340 Old Shennandale Rd., Charles Town, WV 25414	Vacant Parcel – north of the property located at 340 Old Shennandale Rd., Charles Town, WV 25414
Deed Book	307	1209	1228	1209	1125	1212
Page	345	172	303	172	476	57
Parcel ID	District 6, TM#4, Parcel 9	District 6, TM#11, Parcel 7.1	District 2, TM#16, Parcel 18	District 6, TM#11, Parcel 8	District 6, TM#5, Parcel 1	District 6, TM#5, Parcel 6
Zoning District	Rural	Rural	Rural	Rural	Rural	Rural

Total Parcel Size	350.95 Acres	107.38 Acres	293.33 Acres	118.05 Acres	206.84 Acres	49.04 Acres
Project Area	350.95 Acres	107.38 Acres	120.56 Acres	32.11 Acres	181.70 Acres	49.04 Acres
in Urban Growth Area?	YES	YES	YES	NO	NO	NO

Adjoining Property Information

1. Vacant TM 4 PAR 4
   Owner: Cloverdale Heights Homeowners Association Inc.
   Address: 209 Cloverdale Road
   Charles Town, WV 25414
   Zoned: Rural

2. Lot 112 TM 4 PAR 121
   Owner: Amanda L. Thomas
   Address: 153 Heath Court
   Charles Town, WV 25414
   Zoned: Rural

3. Lot 111 TM 4 PAR 120
   Owner: Glendwell J. & Joann L. Lloyd
   Address: 133 Heath Court
   Charles Town, WV 25414
   Zoned: Rural

4. Lot 110 TM 4 PAR 119
   Owner: Robert and Caroline Kurz
   Address: 111 Heath Court
   Charles Town, WV 25414
   Zoned: Rural

5. Lot 109 TM 4 PAR 118
   Owner: Timothy B. & Marta C. Sheehy
   Address: 71 Heath Court
   Charles Town, WV 25414
   Zoned: Rural

6. Lot 95 TM 4 PAR 104
   Owner: Lowell V. & Teresa L. Barnard
   Address: 362 Cloverdale Road
   Charles Town, WV 25414
   Zoned: Rural

7. Lot 94 TM 4 PAR 103
   Owner: Nathan A. & Katie S. Madrid
   Address: 434 Cloverdale Road
   Charles Town, WV 25414
   Zoned: Rural

8. Lot 93 TM 4 PAR 102
   Owner: Markee and Jade Smith
   Address: 58 Barksdale Drive
   Charles Town, WV 25414
   Zoned: Rural

9. Lot 85 TM 4 PAR 94
   Owner: Steven Krop
   Address: 544 Cloverdale Road
   Charles Town, WV 25414
   Zoned: Rural

10. Lot 84 TM 4 PAR 93
    Owner: Randy T. & Teresa R. Kelley
    Address: 582 Cloverdale Road
    Charles Town, WV 25414
    Zoned: Rural

11. TM 16 PAR 11
    Owner: Mark E. Roper, et al.
    Address: 418 S. Samuel Street
    Charles Town, WV 25414
    Zoned: Residential/Growth

12. TM 16 PAR 12.8
    Owner: Zigler Inc.
    Address: 1343 Roper North Fork Road
    Charles Town, WV 25414
    Zoned: Rural

13. TM 16 PAR 12.9
    Owner: Joshua P. Largent
    Address: 469 Sanctuary Lane
    Charles Town, WV 25414
    Zoned: Rural

14. TM 16 PAR 18
    Owner: Ronald Rissler et al.
    Address: 616 Uinta Farm Lane
    Charles Town, WV 25414
    Zoned: Rural

15. TM 16 PAR 18.2
    Owner: Ronald D. & Tracey H. Rissler
    Address: 616 Uinta Farm Lane
    Charles Town, WV 25414
    Zoned: Rural

16. TM 16 PAR 19.1
    Owner: Lawrence G. Rinard & Laura J. Johnston
    Address: 5731 Kabletown Road
    Charles Town, WV 25414
    Zoned: Rural

17. TM 5 PAR 5
    Owner: William G. & Barbara W. Rissler
    Address: 3432 Macintyre Drive
    Murrysville, PA 15668
    Zoned: Rural

18. TM 5 PAR 5.2
    Owner: Michael A. & Wilma J. Nemec
    Address: 5203 Kabletown Road
    Charles Town, WV 25414
    Zoned: Rural

19. TM 5 PAR 5.1
    Owner: Dorothy D. Rissler
    Address: 4052 Cypress Street
    Zachary, LA 70791
    Zoned: Rural

20. TM 5 PAR 1.2
    Owner: Todd T. & Susan B. Hough, Trustees
    Address: 219 Ann Lewis Road
    Charles Town, WV 25414
    Zoned: Rural

21. TM 5 PAR 1
    Owner: Todd T. & Susan B. Hough, Trustees
    Address: 219 Ann Lewis Road
    Charles Town, WV 25414
    Zoned: Rural

23. TM 11 PAR 9
    Owner: Bullskin LLC
    Address: 3250 Highland Place
    Washington, DC 20008
    Zoned: Rural

24. TM 10 PAR 5
    Owner: Stanley W. Jr. & Katherine B. Dunn
    Address: 1371 Meyerstown Road
    Charles Town, WV 25414
    Zoned: Rural

25. TM 11 PAR 5
    Owner: Nancy C. Stolipher
    Address: 1599 Roper North Fork Road
    Charles Town, WV 25414
    Zoned: Rural

26. TM 11 PAR 7
    Owner: Zigler Inc.
    Address: 1083 Roper North Fork Road
    Charles Town, WV 25414
    Zoned: Rural

27. TM 11 PAR 6
    Owner: Sarah F. Carl Family Partnership
    Address: 14707 Essington Road
    Rockville, MD 20853
    Zoned: Rural

28. TM 4 PAR 9.1
    Owner: Richard A. & Susan Zigler
    Address: 1083 Roper North Fork Road
    Charles Town, WV 25414
    Zoned: Rural

29. TM 4 PAR 3.1
    Owner: Reva N. Mickey
    Address: 377 Roper North Fork Road
    Charles Town, WV 25414
    Zoned: Rural

30. TM 5 PAR 1.4
    Owner: Douglas A. Knott
    Address: 336 Old Shennandale Road
    Charles Town, WV 25414
    Zoned: Rural

31. TM 5 PAR 1.3
    Owner: Kim E. Gutierrez Jr.
    Address: 182 Old Shennandale Road
    Charles Town, WV 25414
    Zoned: Rural

32. TM 5 PAR 1.1
    Owner: Robert P. & Patricia A. Funk
    Address: 252 Old Shennandale Road
    Charles Town, WV 25414
    Zoned: Rural

33. TM 22 PAR 97
    Owner: Donald E. & Lois A. Coyne.
    Address: 5712 Kabletown Road
    Charles Town, WV 25414
    Zoned: Rural

34. TM 5 PAR 7.10
    Owner: James A. & Lisa S. Boyer
    Address: 5404 Kabletown Road
    Charles Town, WV 25414
    Zoned: Rural

35. TM 19 PAR 8.4
    Owner: Michelle D. Cook
    Address: 6171 Kabletown Road
    Charles Town, WV 25414
    Zoned: Rural

36. TM 19 PAR 8.1
    Owner: Iurie & Valentina S. Gutu
    Address: 80 Old Cave Road
    Charles Town, WV 25414
    Zoned: Rural

37. TM 16 PAR 78
    Owner: Ryan B. & Michelle L. Robbins
    Address: 18 Devonshire Drive
    Charles Town, WV 25414
    Zoned: Rural

38. TM 16 PAR 91
    Owner: Daniel J. & Theresa E. Stogner
    Address: 27 Devonshire Drive
    Charles Town, WV 25414
    Zoned: Rural

39. TM 16 PAR 17.6
    Owner: Anthony LaFleur
    Address: 300 Old Cave Road
    Charles Town, WV 25414
    Zoned: Rural

40. TM 16 PAR 18.1
    Owner: Mary P. Rissler
    Address: 279 Old Cave Road
    Charles Town, WV 25414
    Zoned: Rural

41. TM 16 PAR 18.3
    Owner: Gary & Carolyn R. Vanderhaven
    Address: 283 Old Cave Road
    Charles Town, WV 25414
    Zoned: Rural

42. TM 16 PAR 18.4
    Owner: Clyde R. Jr. & Donna R. Hitt
    Address: 97 Water Side Street
    Ridgely, WV 26753-7336
    Zoned: Rural

43. TM 16 PAR 17.5
    Owner: Gwen and Matthew Robins
    Address: 302 Old Cave Road
    Charles Town, WV 25414
    Zoned: Rural

44. TM 16 PAR 17
    Owner: Gabriel S. & Shanika A. McCloud
    Address: 53 Monte Carlo Way
    Charles Town, WV 25414
    Zoned: Rural

45. TM 16 PAR 126
    Owner: Jacqueline K. Oehlsen
    Address: 32 Abbington Court
    Charles Town, WV 25414
    Zoned: Rural

46. TM 16 PAR 132
    Owner: Mark A. Mann & Pamela M. Phillips-Mann
    Address: 41 Abbington Court
    Charles Town, WV 25414
    Zoned: Rural

47. TM 16 PAR 133
    Owner: Jondra W. Kershner
    Address: 26 Sheffield Court
    Charles Town, WV 25414
    Zoned: Rural

48. TM 16 PAR 17.1
    Owner: William A. Culley
    Address: PO Box 217
    Summit Point, WV 25446
    Zoned: Rural

49. TM 16 PAR 20
    Owner: Aimee D. Whitlock Real Estate Trust
    Address: 39 Terrace View
    Charles Town, WV 25414
    Zoned: Rural

50. TM 16 PAR 21
    Owner: Thomas W. & Eileen V. Wall
    Address: 75 Terrace View
    Charles Town, WV 25414
    Zoned: Rural

51. TM 16 PAR 22
    Owner: George J. & Joyce O. Hussion
    Address: 95 Terrace View
    Charles Town, WV 25414
    Zoned: Rural

52. TM 16 PAR 23
    Owner: Barbara A. Bittinger
    Address: 123 Terrace View
    Charles Town, WV 25414
    Zoned: Rural

53. TM 16 PAR 45
    Owner: Eastland Homeowners Assoc. Inc.
    Address: PO Box 21
    Rippon, WV 25441
    Zoned: Rural

54. TM 16 PAR 12.4
    Owner: David A. Turner & Allyson R. Marley
    Address: PO Box 1072
    Harpers Ferry, WV 25425
    Zoned: Rural

55. TM 22 PAR 78
    Owner: Peter & Mihyun Schipper
    Address: 30 Green Valley Drive
    Charles Town, WV 25414
    Zoned: Rural

56. TM 22 PAR 79
    Owner: Gerald H. & Patricia A. Magnone
    Address: PO Box 1311
    Charles Town, WV 25414
    Zoned: Rural

57. TM 22 PAR 83
    Owner: Leonard & Linda Dearstine
    Address: 40 Windsor Drive
    Charles Town, WV 25414
    Zoned: Rural

58. TM 22 PAR 1.10
    Owner: Yvonne E. & Gregory M. Zabrucky
    Address: 5952 Kabletown Road
    Charles Town, WV 25414
    Zoned: Rural

59. TM 22 PAR 1.4
    Owner: Steve I. & Kathy D. Davis
    Address: 5908 Kabletown Road
    Charles Town, WV 25414
    Zoned: Rural

60. TM 22 PAR 1.5
    Owner: Curtiss B. Miller
    Address: 19 Mt. Hammond Lane
    Charles Town, WV 25414
    Zoned: Rural

61. TM 22 PAR 98
    Owner: Norman D. II & Robyn L. Ballenger
    Address: 20 Mount Hammond Lane
    Charles Town, WV 25414
    Zoned: Rural

62. TM 16 PAR 19
    Owner: Ronald D. Rissler Et al.
    Address: 616 Uinta Farm Lane
    Charles Town, WV 25414
    Zoned: Rural

65. TM 5 PAR 2
    Owner: Casey Family Land Trust
    Address: 118 Country Club Circle
    Winchester, VA 22602
    Zoned: Rural

66. TM 22 PAR 69
    Owner: Jarret M. & Shelly K. Carver
    Address: 20 Green Valley Drive
    Charles Town, WV 25414

67. TM 16 PAR COMM
    Owner: Owner: Eastland Homeowners Assoc. Inc.
    Address: P.O. Box 21
    Rippon, WV 25441

3.0 TRAFFIC IMPACT DATA

The Average Daily Traffic (ADT) of Adjoining Road (at proposed entrance) - Berryville Pike (US Route 340) carries approximately 14,003 ADT near Wheatland and Roper North Road Intersection. The roadway transitions from two lanes to four lanes near this intersection and has a posted speed of 55 mph. Kabletown Road (CR 25) carries around 1,630 ADT (West Virginia Division of Transportation Data Viewer). The roadway is one lane in each direction with a posted speed limit of 40 mph. The pavement width is approximately 20 feet with two 10-foot travel lanes, with variable width shoulders from 0 feet to 1.5 feet. The minimum right-of-way width is 30 feet (15 feet from centerline). The road surface appears to be in good condition. Peak period traffic volumes do not exceed 180 vehicles for both directions. Peak traffic periods are 7 to 8 am and 4 to 5 pm.

Potesta & Associates, Inc. (POTESTA) contacted the West Virginia Division of Highways' (WVDOH) District 5 office and requested that they review this location to determine if this would be a viable entrance location. A stake was placed at the proposed entrance and WVDOH verified, by viewing this stake in the field, that this location should be viable and relayed this information to POTESTA on June 3, 2020. POTESTA also conducted a sight distance profile and determined that this entrance meets the WVDOH sight distance requirements.

Trip Generation – "Solar Facility" is not listed on table 24-119.B.5.b, nor is it included in the International Transportation Manual; therefore, trip generation data developed for a previous EDF Solar facility project will be presented for this project.

Per "EDF Morris Ridge Solar Farm – Effect on Transportation Report, April 2020"

Maintenance and Operations Traffic Trip Generation

Due to the limited personnel, the operations and maintenance of the Project will result in minimal vehicular traffic generation. Two to three utility type maintenance vehicles would be anticipated to support the site operations. These vehicles would be anticipated to generate an average of two trips per day with a maximum of four trips per day. The maintenance and operations work efforts would generally require vehicular trips to the site outside of the AM and PM peak traffic periods. Occasional water delivery trucks (one per week) would be anticipated to the Project but the need would be sporadic, and their delivery times would vary during the day and would generally be outside of the AM and PM peak traffic periods. Typical operation and maintenance procedures for the facility would include:

- Inspection of each of the solar panel sites on a frequency of at least once per week.
- Informal site inspections and corrective maintenance for the facility occurring on an as-needed basis.
- Conducting ground maintenance of the facility during growing season months; a couple times per year if mechanically mowing, or multiple times per week if managing alternate strategies such as sheep grazing.

Due to the minimal trips generated by the maintenance and operations of the facility, the existing low volume of traffic along the site access roadways, and the rural nature of the site (not an urbanized congested location), the traffic impacts on the roadway operating level of service will be negligible.

Trip Generation for Wild Hill

- Vehicles per Day = 2-3 vpd
- Maximum and Average Trips Per Day = Max-4 vpd / Ave-2 vpd

Highway Problem Area

None within a 1-mile radius of the project (Envision Jefferson 2035 Comprehensive Plan, dated 2015)

Nearest Key Intersections

(1) Route 25/3 Shennandale Road with Route 25 Kabletown Road (secondary) from 0.8 mile from proposed entrance.
(2) Route 115 Shennandale Road (Primary) with Route 25 Kabletown Road (secondary) from 1.8 miles from proposed entrance. (Envision Jefferson 2035 Comprehensive Plan, dated 2015)

4.0 STORMWATER NARRATIVE

Stormwater Management for this solar project will follow the amended Jefferson County Stormwater Management Ordinance, Article I D.2.h for Solar Energy Facilities. A stormwater Management report with documentations and drawings will be submitted to Jefferson County for review and approval.

The solar project will also develop the required Erosion and Sediment Control Plan Stormwater Pollution Prevention Plan, and Groundwater Protection Plan to make application to register for the West Virginia Department of Environmental Protection National Pollution Discharge Elimination System (NPDES) permit for this construction.

The solar facility will be constructed on agricultural land, normally planted in row crops, hay/straw and used for grazing. The solar facility will be seeded with pollinator friendly and resistant ground cover such white clover or equivalent and will not be used for grazing.

5.0 LANDSCAPING AND GROUND COVER PLAN

Disturbed areas will be seeded with either white clover (*trifolium Repens*) or Birdsfoot Trefoil (*Lotus Corniculatus*) for pollinator friendly and resistant ground cover. The permanent solar facility's entire project boundary area will be seeded with these pollinator friendly and resistant ground cover to also extend under each Photo Voltaic (PV) module. The PV modules will be arranged to allow this growth of vegetation beneath and between the rows of PV modules. Vegetal cover shall have a minimum of 90 percent or better uniform coverage and shall not be subject to chemical fertilization and herbicides/pesticides. Existing vegetations and trees will be retained to the extent possible at outside property boundaries and buffer areas to assist in natural screening.

6.0 DECOMMISSIONING PLAN OUTLINE*

DECOMMISSIONING

DECOMMISSIONING DURING CONSTRUCTION, ABANDONMENT, OR COMPLETION OF PROJECT

- Completed useful life of the project (30 years life expected) or if the project is deenergized for greater than six months, decommissioning plan will go into effect.
- Or unlikely event that construction cannot be completed.

DECOMMISSIONING AFTER CEASING OPERATION

- Operational lifespan of 30 or more years. Proper maintenance, component replacement and repowering can extend life.

GENERAL ENVIRONMENTAL PROTECTION DURING DECOMMISSIONING

- General environmental protection and mitigation measures would be implemented. (similar to construction phase).

PRE-DISMANTLING ACTIVITIES

- De-energized and isolated from all external electrical lines.
- Staging areas would be delineated at appropriate locations.
- Temporary erosion and sedimentation control measures will be implemented.

EQUIPMENT DISMANTLING AND REMOVAL

Solar Panels

- Each panel will be disconnected and unfastened from the mounting rack and removed.
- Fixed racks be disassembled and removed from the site.
- The pilings will be removed.
- The metal racking components may be reused or recycled for future use.

Electrical Equipment and Collector System Inverters

- Will be removed and shipped off-site for eventual reuse or disposal.
- The piles and associated foundations will be removed from the site.
- Decommission up to the point of interconnection.

Substation

- All aboveground structure and electrical equipment will be removed.
- Land to be restored to original grade.
- Concrete foundations removed to at least 3 feet below original grade.
- All granular and geotextile materials would be removed.

Access Roads

- All access roads will be removed.
- All granular and geotextile materials would be removed from the site by dump truck.

Storage Infrastructure and Perimeter Fence

- Storage and operation infrastructure (e.g., temporary construction trailer) will be removed from the site by truck.
- Foundations associated with these facilities would be removed to a depth of at least 3 feet below original grade.
- Perimeter fencing would be removed and recycled or reused unless landowner(s) prefers to retain portions of fence.

SITE REHABILITATION/RESTORATION - Rehabilitation Plan will develop at the time of decommissioning. To include:

- Agricultural areas will be restored to their original condition, as appropriate.
- Access roads and other compacted areas to be de-compacted, and returned to pre-construction condition, or natural grade as appropriate.
- Disturbed areas will be immediately returned to agricultural uses.
- Erosion and sediment control left in place until ground cover is fully established.

Water Quality

- Jefferson County to be consulted for any decommissioning work near streams/waterbodies.

Agricultural Lands

- Any agricultural lands that have become compacted would be de-compacted and returned to pre-construction condition, or natural grade as appropriate.

Spills

- Strict spill prevention and spill response procedures will be in place

MANAGING EXCESS MATERIALS AND WASTE

Typical waste materials and modes of disposal:

- Concrete foundations - Crush and recycle as granular material.
- Solar Panels - Reuse or recycle.
- Steel and aluminum racks and mounts - Salvage for reuse or recycle for scrap.
- Cabling – Recycle.
- Inverter step-up transformers, inverters, and circuit breakers - Salvage for reuse or recycle for scrap.
- Granular material - Reuse or dispose in landfill.
- Oils/lubricants – Recycle.
- Hazardous materials - Dispose through licensed hauler.

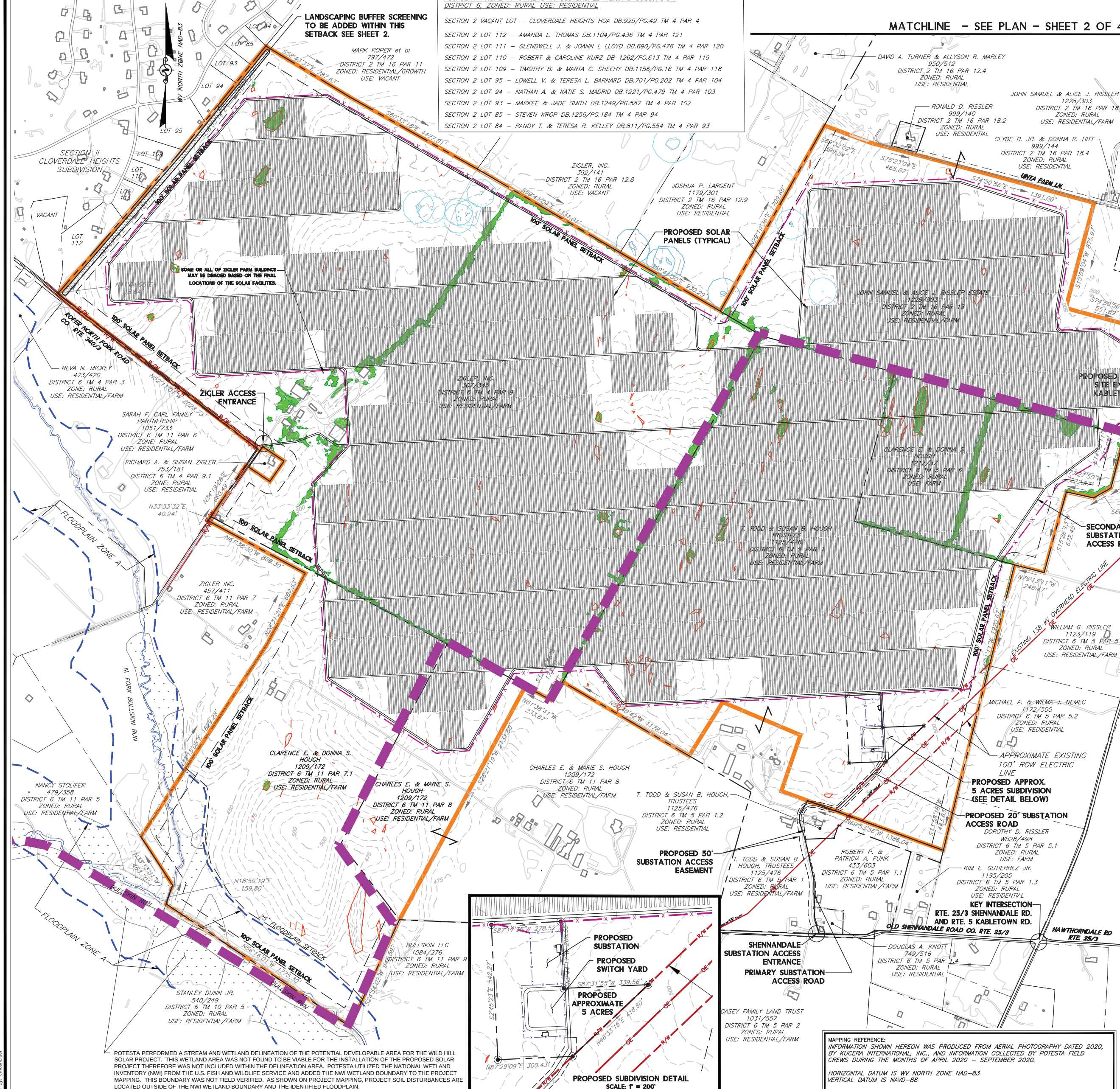
- Geotextile material - Dispose in landfill.
- Miscellaneous non-recyclable materials - Dispose in landfill.

EMERGENCY RESPONSE AND COMMUNICATIONS PLANS

- Environmental Procedures.
- Occupational Health and Safety Procedures.
- Health and Safety Plan considering both public and occupational health and safety issues.

[*]*Decommissioning plan will adhere to any plan approved by the Jefferson County Commission.*

MATCHLINE – SEE PLAN – SHEET 2 OF 4



ADJACENT PROPERTY OWNERS IN CLOVERDALE HEIGHTS SUBDIVISION
DISTRICT 6, ZONED: RURAL USE: RESIDENTIAL

SECTION 2 VACANT LOT – CLOVERDALE HEIGHTS HOA DB.925/PG.49 TM 4 PAR 4
SECTION 2 LOT 112 – AMANDA L. THOMAS DB.1104/PG.436 TM 4 PAR 121
SECTION 2 LOT 111 – GLENDWELL J. & JOANN L LLOYD DB.690/PG.476 TM 4 PAR 120
SECTION 2 LOT 110 – ROBERT & CAROLINE KURZ DB 1262/PG.613 TM 4 PAR 119
SECTION 2 LOT 109 – TIMOTHY B. & MARTA C. SHEEHY DB.1156/PG.16 TM 4 PAR 118
SECTION 2 LOT 95 – LOWELL V. & TERESA L. BARNARD DB.701/PG.202 TM 4 PAR 104
SECTION 2 LOT 94 – NATHAN A. & KATIE S. MADRID DB.1221/PG.479 TM 4 PAR 103
SECTION 2 LOT 93 – MARKEE & JADE SMITH DB.1249/PG.587 TM 4 PAR 102
SECTION 2 LOT 85 – STEVEN KROP DB.1256/PG.184 TM 4 PAR 94
SECTION 2 LOT 84 – RANDY T. & TERESA R. KELLEY DB.811/PG.554 TM 4 PAR 93

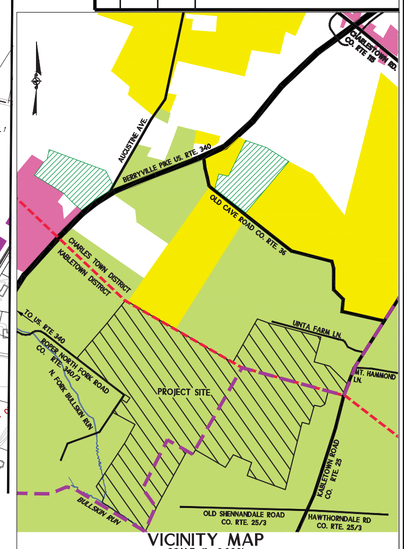
PROPOSED SUBDIVISION DETAIL
SCALE: 1" = 200'

POTESTA PERFORMED A STREAM AND WETLAND DELINEATION OF THE POTENTIAL DEVELOPABLE AREA FOR THE WILD HILL SOLAR PROJECT. THIS WETLAND AREA WAS NOT FOUND TO BE VIABLE FOR THE INSTALLATION OF THE PROPOSED SOLAR PROJECT THEREFORE WAS NOT INCLUDED WITHIN THE DELINEATION AREA. POTESTA UTILIZED THE NATIONAL WETLAND INVENTORY (NWI) FROM THE U.S. FISH AND WILDLIFE SERVICE AND ADDED THE NWI WETLAND BOUNDARY TO THE PROJECT MAPPING. THIS BOUNDARY WAS NOT FIELD VERIFIED. AS SHOWN ON PROJECT MAPPING, PROJECT SOIL DISTURBANCES ARE LOCATED OUTSIDE OF THE NWI WETLAND BOUNDARY AND THE IDENTIFIED FLOODPLAIN.

MAPPING REFERENCE:
INFORMATION SHOWN HEREON WAS PRODUCED FROM AERIAL PHOTOGRAPHY DATED 2020, BY KUCERA INTERNATIONAL, INC., AND INFORMATION COLLECTED BY POTESTA FIELD CREWS DURING THE MONTHS OF APRIL 2020 – SEPTEMBER 2020.

HORIZONTAL DATUM IS WV NORTH ZONE NAD–83
VERTICAL DATUM IS NAVD–88

GRAPHIC SCALE
400 200 0 400 800



VICINITY MAP
SCALE: 1"= 2,000'

ZONNING LEGEND
- RURAL
- RESIDENTIAL/LIGHT INDUSTRIAL/COMMERCIAL
- RESIDENTIAL GROWTH
- PUBLIC/QUASI–PUBLIC LAND
- PARCELS
- TAX DISTRICT BOUNDARY
- URBAN GROWTH BOUNDARY

LEGEND
- WILD HILL PROJECT BOUNDARY
- PROPOSED 8FT FENCE AROUND SOLAR PERIMETER
- PROPOSED 6FT FENCE AROUND SUBSTATION AND SWITCH YARD
- PROPOSED SUBSTATION ACCESS EASEMENT
- EXISTING 100' R/W OVERHEAD 138kV ELECTRIC LINE
- FLOODPLAIN ZONE A
- WETLAND AREA NATIONAL WETLAND INVENTORY (NWI)
- SINKHOLE WITH 105 FT. BUFFER
- FORESTED AREAS
- ROCK OUTCROPS
- LANDSCAPING BUFFER

SITE INFORMATION:

CURRENT ZONING/USE: RURAL / AGRICULTURE

PHASE 1 - WITHIN URBAN GROWTH BOUNDARY :

TAX PARCEL #: DISTRICT	TM	PARCEL	ACREAGE IN PROJECT AREA
6	4	9	350.95 ac
6	11	7.1	107.38 ac
2	16	18	120.56 ac

PHASE 2 - OUTSIDE URBAN GROWTH BOUNDARY:

TAX PARCEL #: DISTRICT	TM	PARCEL	ACREAGE IN PROJECT AREA
6	5	1	181.70 ac
6	5	6	49.04 ac
6	11	8	32.11 ac

PROPOSED USE: CONSTRUCT A SOLAR FARM ON 841.74 ACRES OF LEASED LAND CONSISTING OF ROWS OF SOLAR MODULES AND SUBSTATION CONNECTED TO AN EXISTING 138-KILOVOLT OVERHEAD ELECTRICAL TRANSMISSION LINE.

SETBACKS:
NO SOLAR PANELS ARE LOCATED WITHIN 100 FEET OF THE FRONT, SIDE, REAR EXTERNAL PROPERTY LINES.
NO ACCESSORY COMPONENTS ARE LOCATED WITHIN 25 FEET OF THE FRONT, SIDE, REAR SETBACK FROM ALL EXTERNAL PROPERTY LINES.

BUFFERS
(1) NO PROPOSED SOLAR OR ACCESSORY STRUCTURE WILL BE LOCATED WITHIN THE 100 FOOT SETBACK SHOWN HEREON, OR 200 FEET FROM NEIGHBORING RESIDENCE, CATEGORY 1 HISTORIC RESOURCE, INSTITUTION FOR HUMAN CARE, CHURCH, OR SIMILAR USE OR STRUCTURE.
(2) A LANDSCAPE BUFFER SCREENING IS PROPOSED WITHIN THE 100 FOOT SETBACK FROM THE CLOVERDALE SUBDIVISION (SEE LANDSCAPING PLAN SHEET 2 OF 2).

HIGHWAY PROBLEM AREA:
NONE WITHIN ONE-MILE RADIUS OF THE PROJECT (ENVISION JEFFERSON 2035 COMPREHENSIVE PLAN, DATED 2015)

NEAREST KEY INTERSECTION:
(1) RT 25/3 SHENNANDALE RD WITH RT 25 KABLETOWN RD (SECONDARY) FROM 0.8 MILES FROM PROPOSED ENTRANCE
(2) RT 115 CHARLES TOWN RD (PRIMARY) WITH RT 25 KABLETOWN RD (SECONDARY) FROM 1.8 MILES FROM PROPOSED ENTRANCE. (ENVISION JEFFERSON 2035 COMPREHENSIVE PLAN, DATED 2015)

SITE TRIP GENERATION: (SEE NOTE 4.)
VEHICLE PER DAY (VPD) = 3

NOTES

1. PROPERTY IS IN ZONE X AND ZONE A OF THE FLOOD INSURANCE RATE MAP COMMUNITY PANEL NUMBERS 54037C0225E & 54037C0230E FOR JEFFERSON COUNTY, WEST VIRGINIA AND HAVING AS EFFECTIVE DATE OF DECEMBER 18, 2009. THERE IS A SMALL AREA LOCATED SOUTH EAST OUTSIDE THE PROPOSED BUILDING AREA WHICH IS ZONE A.
2. HILLSIDE DEVELOPMENT NOT APPLICABLE SINCE SITE IS NOT EAST OF THE SHENANDOAH RIVER OR WITHIN 1000 FEET OF THE POTOMAC AND SHENANDOAH RIVERS AND OPEQUON CREEK.
3. NO FEDERAL JURISDICTIONAL WETLANDS OR WATERWAYS IDENTIFIED WITHIN THE SITE BOUNDARIES.
4. DAILY MAINTENANCE AND OPERATIONS TRAFFIC FOR TYPICAL SOLAR SITE. TRIP GENERATION FIGURES NOT AVAILABLE PER SECTION 24.119(B)5.B OR INSTITUTE OF TRANSPORTATION ENGINEERS MANUAL (ITE).
5. NO SIGNAGE OR ADVERTISING IS PERMITTED ON FACILITY, OTHER THAN ENTRANCE IDENTIFICATIONS.
6. SITE WILL NOT BE SERVED BY PUBLIC OR ONSITE WATER OR SEWER.
7. ALL DISTURBED AREAS WILL BE SEEDED WITH EITHER WHITE CLOVER (*TRIFOLIUM REPENS*) OR BIRDSFOOT TREFOIL (LOTUS CORNICULATUS) FOR POLLINATOR FRIENDLY AND RESISTANT GROUND COVER.
8. ALL PROPOSED ROADS SHOWN SHALL BE SURFACED WITH GRAVEL.
9. ANY EXISTING OR PROPOSED PLANTINGS OR FENCING USED FOR BUFFERING SHALL BE MAINTAINED OR REPLACED BY THE APPLICANT, AS NEEDED.
10. IT WILL BE THE RESPONSIBILITY OF THE LANDOWNER TO REPLACE ANY TREES, SHRUBS, OR VEGETATION THAT DIE.
11. SOLVENTS NECESSARY FOR CLEANING SOLAR PANELS SHALL BE BIODEGRADABLE.
12. LIGHTING SHALL COMPLY WITH STANDARDS OUTLINED IN THE SUBDIVISION REGULATIONS (APPENDIX B, SECTION 2.6)
13. PROJECT WILL COMPLY WITH SECTION 8.9 OF THE ZONING ORDINANCE.
14. DAMAGED OR UNUSABLE PANELS SHALL BE REMOVED WITHIN 60 DAYS FROM DISCOVER OF DAMAGE; HOWEVER, LONGER PERIODS MAY BE APPROVED BY THE COUNTY ENGINEER DUE TO EXTENUATING CIRCUMSTANCES.
15. POTESTA HAS A STAFF OF ENVIRONMENTAL PROFESSIONALS TRAINED IN THE DELINEATION OF STREAM AND WETLAND AQUATIC RESOURCES. THESE STAFF MEMBERS ARE EXPERIENCED WITH THE FEDERAL AND STATE REGULATIONS IN THE PERMITTING, IDENTIFICATION AND DELINEATION OF AQUATIC RESOURCES. THE SITE BOUNDARY FOR THE WILD HILL PROJECT HAS BEEN DELINEATED FOR AQUATIC RESOURCES. DURING FIELD RECONNAISSANCE, NO WETLANDS OR STREAMS WERE IDENTIFIED FROM THE AREA WITHIN THE WETLANDS MAPPER (NWI) RESOURCE "R4SBC". THE PROJECT WILL BE CONSTRUCTED WITHOUT FILL MATERIAL BEING PLACED INSIDE THE ORDINARY HIGH WATER MARK OF POTENTIAL JURISDICTIONAL STREAMS OR WETLANDS. POTESTA BELIEVES THAT THIS PROJECT DOES NOT REQUIRE SECTION 401 AND 404 PERMITS FROM THE UNITED STATES ARMY CORPS OF ENGINEERS (USACE) OR THE WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION (WVDEP) BECAUSE FILL MATERIAL WILL NOT BE DISCHARGED INTO "WATERS OF THE UNITED STATES" OR "WATERS OF THE STATE."
16. PANELS WILL USE ANTIREFLECTIVE GLASS THAT IS DESIGNED TO ABSORB RATHER THAN REFLECT LIGHT.

ISSUE DATE 8–16–2022

PRELIMINARY NOT FOR CONSTRUCTION

No.	Date	Eng.	Revision
1	08/16/22	KJK	REVISED PER JEFFERSON COUNTY COMMENTS

C–SHT 1
CAD File No.
MBS/CJM
Drawn
KJK
Checked
KJK
Approved
NOTED
Scale:
JUNE. 2022
Date:
19–0344
Project No.

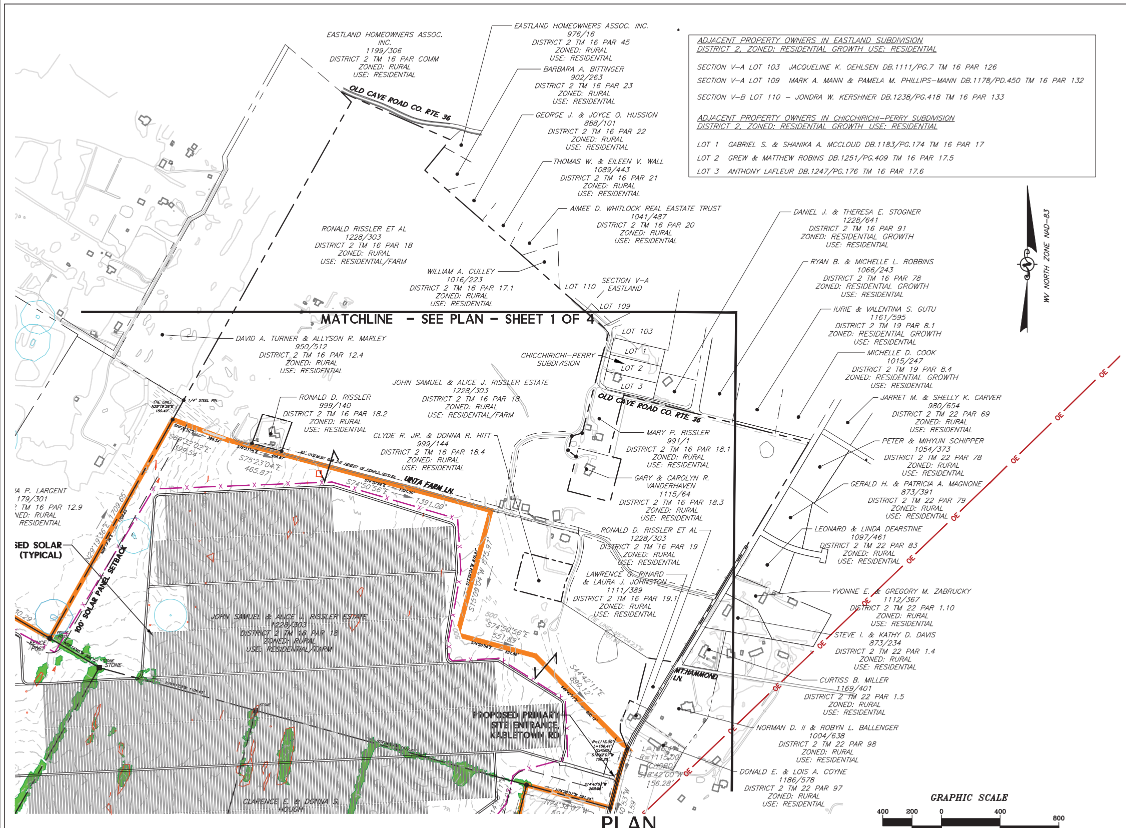
POTESTA & ASSOCIATES, INC.
ENGINEERS AND ENVIRONMENTAL CONSULTANTS
15 South Braddock St, Winchester, VA 22601
TEL: (540) 450–0180 FAX: (540) 450–0182
E–Mail Address: potesta@potesta.com

POTESTA

Client
WILD HILL SOLAR, LLC
KABLETOWN ROAD
CHARLES TOWN, WEST VIRGINIA

Title
CONCEPT PLAN
(FILE #21–3–SP)
WILD HILL SOLAR PROJECT
JEFFERSON COUNTY, WEST VIRGINIA

1 of 4
Drawing No.

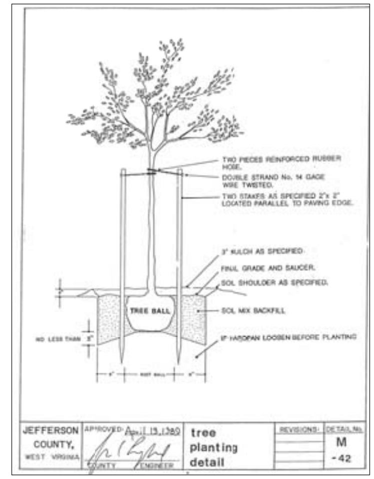


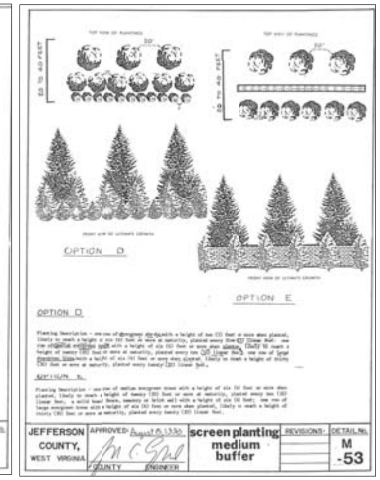
ADJACENT PROPERTY OWNERS IN EASTLAND SUBDIVISION
DISTRICT 2, ZONED: RESIDENTIAL GROWTH USE: RESIDENTIAL

SECTION V–A LOT 103 JACQUELINE K. OEHLSEN DB.1111/PG.7 TM 16 PAR 126
SECTION V–A LOT 109 MARK A. MANN & PAMELA M. PHILLIPS–MANN DB.1178/PG.450 TM 16 PAR 132
SECTION V–B LOT 110 – JONDRA W. KERSHNER DB.1238/PG.418 TM 16 PAR 133

ADJACENT PROPERTY OWNERS IN CHICCHIRICHI–PERRY SUBDIVISION
DISTRICT 2, ZONED: RESIDENTIAL GROWTH USE: RESIDENTIAL

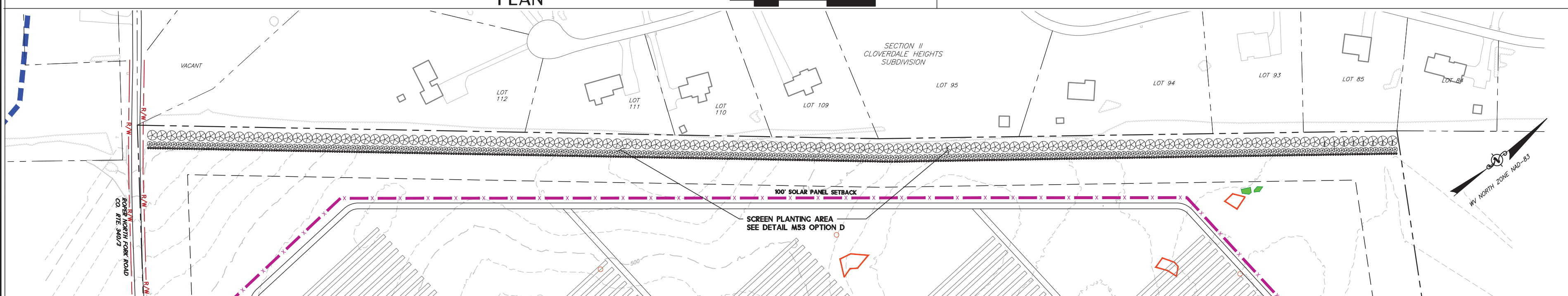
LOT 1 GABRIEL S. & SHANIKA A. MCCLOUD DB.1183/PG.174 TM 16 PAR 17
LOT 2 GREW & MATTHEW ROBINS DB.1251/PG.409 TM 16 PAR 17.5
LOT 3 ANTHONY LAFLEUR DB.1247/PG.176 TM 16 PAR 17.6





LANDSCAPING LEGEND

SYM	TYPE	PLANTING SEPARATION	MATURE HEIGHT
⊛	LARGE EVERGREEN TREE	20 FEET	30'HT
⊛	MEDIUM EVERGREEN TREE	10 FEET	20'HT
⊖	EVERGREEN SHRUB	5 FEET	2'HT



NOTES:

1. IT WILL BE THE RESPONSIBILITY OF THE LANDOWNER TO REPLACE ANY TREES, SHRUBS, OR VEGETATION THAT DIE.
2. ALL DISTURBED AREAS WILL BE SEEDED WITH EITHER WHITE CLOVER (TRIFOLIUM REPENS) OR BIRDSFOOT TREFOIL (LOTUS CORNICULATUS) FOR POLLINATOR FRIENDLY AND RESISTANT GROUND COVER. THE PERMANENT SOLAR FACILITY'S ENTIRE PROJECT BOUNDARY AREA WILL BE SEEDED WITH THESE POLLINATOR FRIENDLY AND REGISTANT GROUND COVER ALSO EXTEND UNDER EACH PHOTO VOLTAIC (PV) MODULE. THE PV MODULES WILL BE ARRANGED TO ALLOW THIS GROWTH OF VEGETATION BENEATH AND BETWEEN THE ROWS OF PV MODULES. VEGETAL COVER SHALL HAVE A MINIMUM OF 90% OR BETTER UNIFORM COVERAGE AND SHALL NOT BE SUBJECT TO CHEMICAL FERTILIZATION AND HERBICIDES/PESTICIDES. EXISTING VEGETATION AND TREES WILL BE RETAINED TO THE EXTENT POSSIBLE AT ALL OUTSIDE PROPERTY BOUNDARIES AND BUFFER AREAS TO ASSIST IN NATURAL SCREENING.
3. ALL PROPOSED ROADS SHOWN SHALL BE SURFACED WITH GRAVEL.
4. ANY EXISTING OR PROPOSED PLANTINGS OR FENCING USED FOR BUFFERING SHALL BE MAINTAINED OR REPLACED BY THE APPLICANT, AS NEEDED.

LANDSCAPING BUFFER SCREENING

GRAPHIC SCALE

MAPPING REFERENCE:
INFORMATION SHOWN HEREON WAS PRODUCED FROM AERIAL PHOTOGRAPHY DATED 2020, BY KUCERA INTERNATIONAL, INC., AND INFORMATION COLLECTED BY POTESTA FIELD CREWS DURING THE MONTHS OF APRIL 2020 – SEPTEMBER 2020.

HORIZONTAL DATUM IS WV NORTH ZONE NAD–83
VERTICAL DATUM IS NAVD–88

PRELIMINARY NOT FOR CONSTRUCTION

ISSUE DATE 8-16-2022

No.	Date	Eng.	Revision
1	08/16/22	KJK	REVISED PER JEFFERSON COUNTY COMMENTS

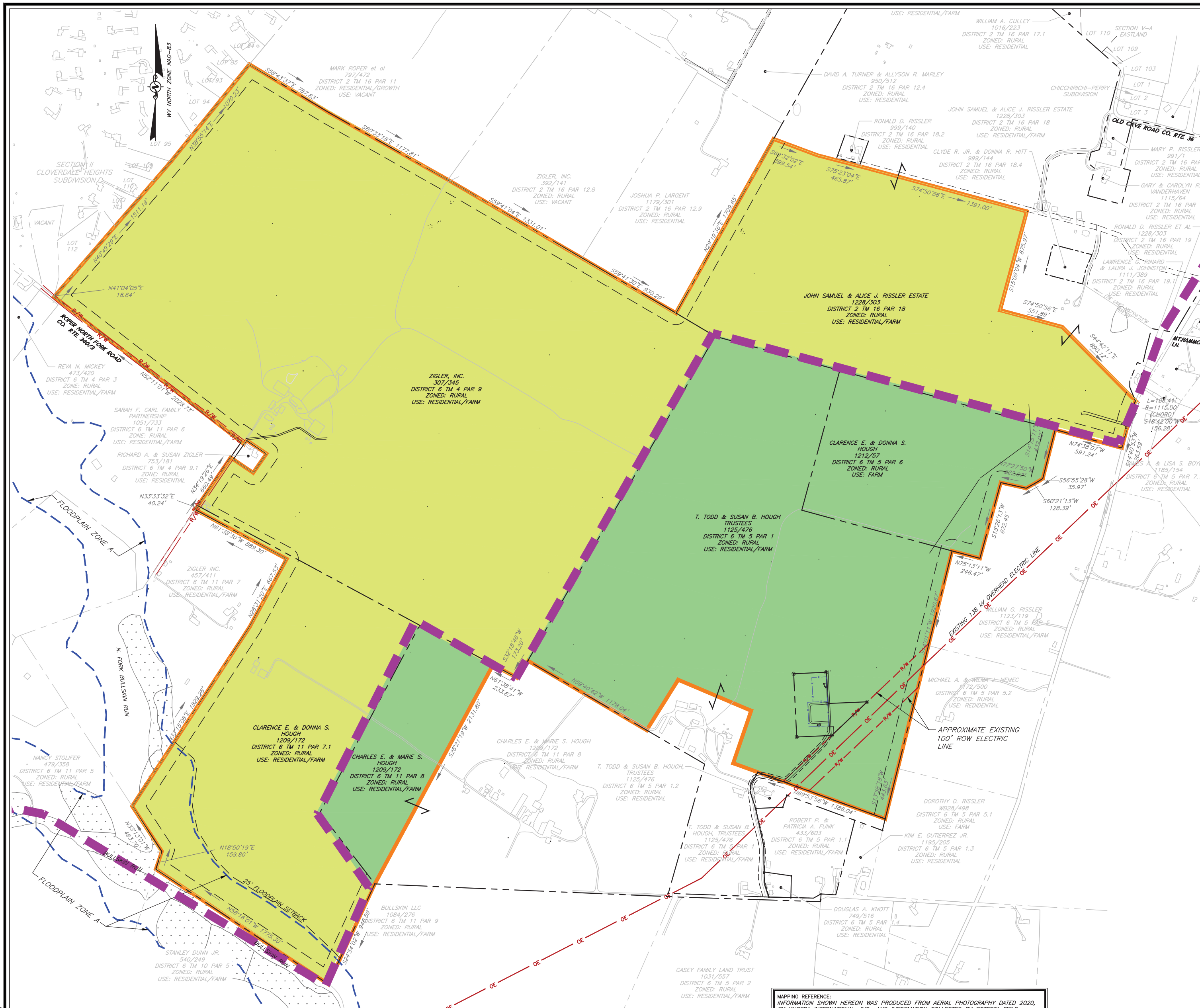
Title: LANDSCAPE SCREENING BUFFER (FILE #21-3-SP) WILD HILL SOLAR PROJECT JEFFERSON COUNTY, WEST VIRGINIA

Client: WILD HILL SOLAR, LLC KABLETOWN ROAD CHARLES TOWN, WEST VIRGINIA

POTESTA & ASSOCIATES, INC.
ENGINEERS AND ENVIRONMENTAL CONSULTANTS
15 South Braddock St. Winchester, VA 22601
TEL: (540) 450-0180 FAX: (540) 450-0182
E-Mail Address: potesta@potesta.com

CAD File No.: C-SHT 2
Drawn: CJM
Checked: KJK
Approved: KJK
Scale: NOTED
Date: JUNE, 2022
Project No.: 19-0344
Drawing No.: 2 of 4

Plot Date/Time: Aug 18, 2022 – 3:31pm
Plotted By: cmosholder



MAPPING REFERENCE:
INFORMATION SHOWN HEREON WAS PRODUCED FROM AERIAL PHOTOGRAPHY DATED 2020, BY KUCERA INTERNATIONAL, INC., AND INFORMATION COLLECTED BY POTESTA FIELD CREWS DURING THE MONTHS OF APRIL 2020 – SEPTEMBER 2020.

HORIZONTAL DATUM IS WV NORTH ZONE NAD–83
VERTICAL DATUM IS NAVD–88

GRAPHIC SCALE
400 200 0 400 800

LEGEND

URBAN GROWTH BOUNDARY

WILD HILL PROJECT BOUNDARY

R/W — EXISTING 100' R/W OVERHEAD 138kV ELECTRIC LINE

PHASE 1 - WITHIN URBAN GROWTH BOUNDARY:

TAX PARCEL #:	DISTRICT	TM	PARCEL		ACREAGE IN PROJECT AREA
	6	4	9		350.95 ac
	6	11	7.1		107.38 ac
	2	16	18		120.56 ac
			TOTAL	=	578.89 ac

PHASE 2 - OUTSIDE URBAN GROWTH BOUNDARY:

TAX PARCEL #:	DISTRICT	TM	PARCEL		ACREAGE IN PROJECT AREA
	6	5	1		181.70 ac
	6	5	6		49.04 ac
	6	11	8		32.11 ac
			TOTAL	=	262.58 ac

PRELIMINARY NOT FOR CONSTRUCTION

ISSUE DATE 8-16-2022

No.	Date	Eng.	Revision
1	08/16/22	KJK	REVISED PER JEFFERSON COUNTY COMMENTS

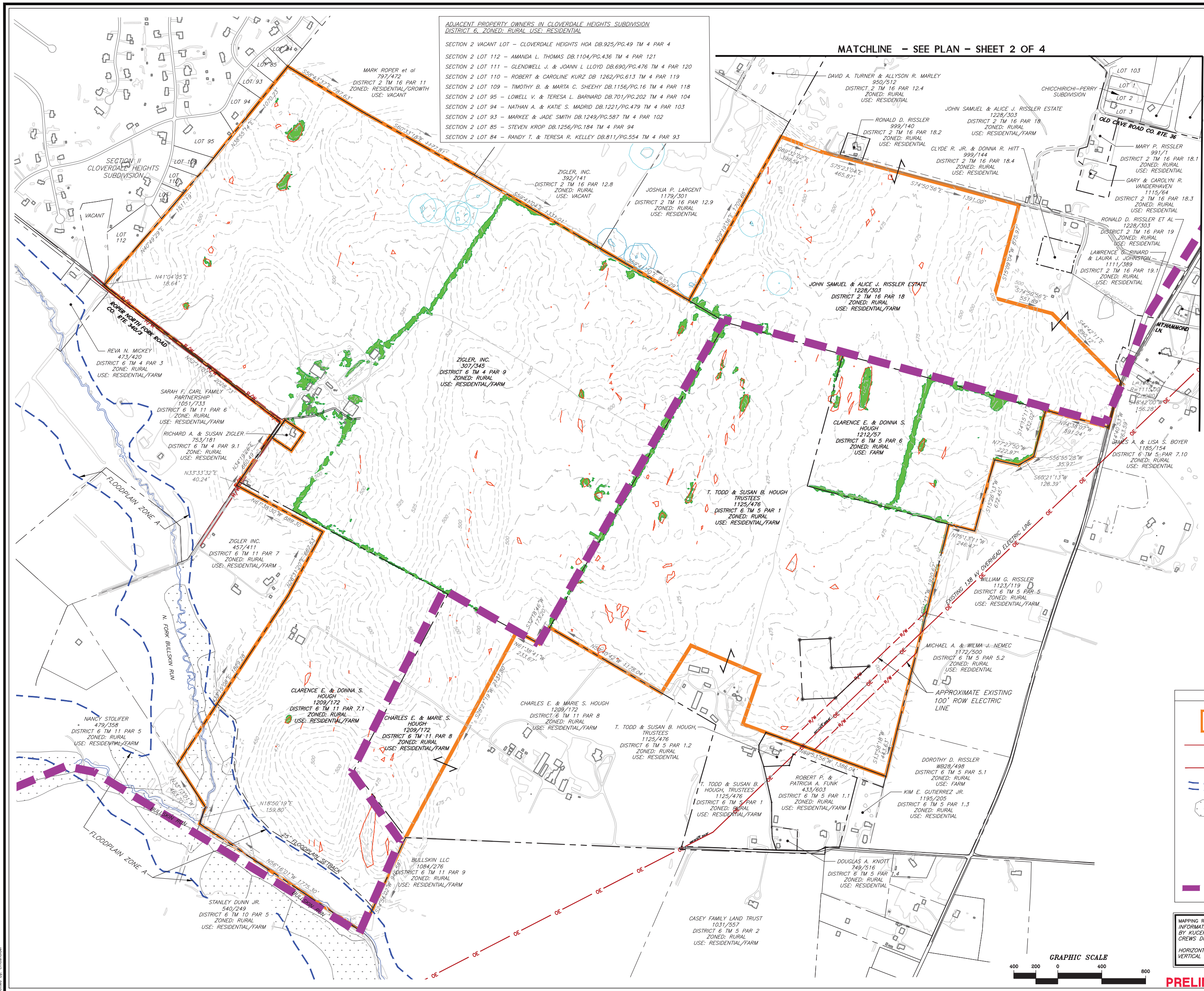
POTESTA

POTESTA & ASSOCIATES, INC.
ENGINEERS AND ENVIRONMENTAL CONSULTANTS
15 South Braddock St. Winchester, VA 22601
TEL: (540) 450-0180 FAX: (540) 450-0182
E-Mail Address: potesta@potesta.com

Client: WILD HILL SOLAR, LLC
KABLETOWN ROAD
CHARLES TOWN, WEST VIRGINIA

Title: CONCEPT PLAN
(FILE #21-3-SP)
WILD HILL SOLAR PROJECT
JEFFERSON COUNTY, WEST VIRGINIA

CAD File No.	C-SHT 3
Drawn	MBS/CJM
Checked	KJK
Approved	KJK
Scale:	NOTED
Date:	JUNE, 2022
Project No.	19-0344
Drawing No.	3 of 4



No.	Date	Eng.	Revision
1	08/16/22	KJK	REVISED PER JEFFERSON COUNTY COMMENTS

C-SHT 4
CAD File No.
MBS/CJM
Drawn
KJK
Checked
KJK
Approved
NOTED
Scale:
JUNE, 2022
Date:
19–0344
Project No.

POTESTA & ASSOCIATES, INC.
ENGINEERS AND ENVIRONMENTAL CONSULTANTS
15 South Braddock St. Winchester, VA 22601
TEL: (540) 450–0180 FAX: (540) 450–0182
E-Mail Address: potesta@potesta.com

Client
WILD HILL SOLAR, LLC
KABLETOWN ROAD
CHARLES TOWN, WEST VIRGINIA

Title
CONCEPT PLAN EXISTING CONDITIONS
(FILE #21-3-SP)
WILD HILL SOLAR PROJECT
JEFFERSON COUNTY, WEST VIRGINIA

ISSUE DATE 8-16-2022

4 of 4
Drawing No.

22-9-SP Wild Hill Solar Project Pubic Comment

- Submitted 2022-09-01 by Bob and Caroline Kurz
- Submitted 2022-09-01 by Jean Zigler
- Submitted 2022-09-02 by Richard Zigler
- Submitted 2022-09-06 by Tim Sheehy
- Submitted 2022-09-07 by Todd and Susan Hough
- Submitted 2022-09-07 by Stacey Hough
- Submitted 2022-09-07 by Francis Daniel
- Submitted 2022-09-07 by Clarence and Donna Hough
- Submitted 2022-09-07 by Keith Berkeley

Questions/comments regarding Wild Hill Solar Farm

We reside in CloverDale Heights with property adjacent to the designated site for Wild Hill Solar Farm. We purchased the property last Summer with no knowledge of the pending change. A few things come to mind that we believe would be worse than a solar farm but we have the following comments and questions:

1. There is currently a tree line between our property and the site. We strongly prefer that the tree line stay! It is very appealing and will isolate us somewhat from the solar panels.
2. Will there be lighting of some kind for security purposes that will be placed in the vicinity of our property. We are concerned that we will have lights shining at all hours of the night disturbing us and our neighbors.
3. Also regarding security, will there be a road/path to accommodate security vehicles traveling the site perimeter creating noise, causing dust and disrupting our peaceful enjoyment of our property?
4. There is an old wire fence on the property line. Do you intend to replace it and will there be shrubs and ground cover planted. The area inside the fence is overgrown with wild plants, weeds and small trees/shrubs.
5. If and when repairs and or maintenance must be performed on the panels will that be a 24/7 activity or will it be restricted to daylight hours on weekdays? How much maintenance is required for a solar farm? Give us examples of maintenance activities and the frequency they are performed at your other sites.
6. Regarding the substation; where will it be located? I imagine it will be at the perimeter of the site but, I don't want it adjacent to my or anyone's residence. Will there be security lighting for it, will there be maintenance activities related to its operation? We have seen solar farms but never noticed the substation and would like all details regarding its location, size, access requirements, and noise levels (if any). Tell us everything you would want to know if the substation were being located in your backyard.
7. After this is approved by Jefferson County will it open the door for other forms of electrical generation? Specifically, will there be wind turbines or diesel generators constructed on the site? Will any other generation be licensed other than solar?
8. Regarding the construction; how long will the site be under construction and what activities will we see? Is there a video of site construction available for viewing?
9. Is there an Environmental Impact Study available for our review? As you might suspect there are rumors of hazardous chemicals in the solar panels. We would like to know what is going to be behind us and what monitoring will be conducted to insure the environmental integrity of our community. Who will be responsibility for this monitoring and will the reports/test results be public knowledge?

If the answers to the above are satisfactory, welcome to Jefferson County! I think you will be good neighbors. As stated earlier there are worse activities that could be located in my backyard.

Bob and Caroline Kurz
111 Heath Court
Charles Town, WV 25414

Planning Department

From: Planning Department
Sent: Thursday, September 1, 2022 4:52 PM
To: ROBERT KURZ
Cc: Planning Department
Subject: RE: Notice of Concept Plan Public Workshop
Attachments: 22-9-SP Wild Hill Solar Project Concept Plan Submission 2.pdf

Mr. Kurz:
Thank you for your questions and comments regarding the proposed Wild Hill Solar Facility. I am attaching a copy of the most recent draft of the Concept Plan for which a Public Workshop is being held on September 13th. This graphic may answer some of your questions. We will forward your comments and questions to the applicant and their consultant so that they may address them during their presentation. The portion of the project adjacent to the Cloverdale Subdivision is a Principal Permitted Use, so the Concept Plan Public Workshop is the only opportunity for public input.
Section 8.20 of the Zoning Ordinance details the requirements for all Solar Energy Facilities. The Ordinance can be found on the County website
here: https://www.jeffersoncountywv.org/home/showpublisheddocument/22048/637921840861370000.
Some key requirements include the following:
Solar Panels are required to be placed 100 feet from all external/perimeter property lines and from the edge of the State ROW or Easement of any State Road; however, this setback may be decreased to 50 feet provided it includes a six foot high opaque buffer within the setback area comprised of two rows of evergreen trees that are six feet tall at the time of planting or a solid fence. Alternatively, a 50 foot strip of existing, mature woodlands may be allowed in lieu of a planted buffer or fence if documentation is submitted documenting how the existing mature woodlands complies with the required buffer standard.
The proposed substation for this project is to be located off Old Shennandale Road closer to Kabletown Road (see the attached concept plan). No wind turbines or diesel generators are proposed related to this project. Some of the operational questions will need to be addressed by the applicant.
Unless you object, we will include your questions and comments in the Planning Commission packet for the September 13, 2022 meeting so that the Planning Commission can consider it and the applicant can address it.
Feel free to contact us if you have any other questions.
Have a nice day.
Jennie Brockman

Jennifer M. Brockman, AICP
County Planner
Jefferson County Office of Planning and Zoning
116 E. Washington St
Charles Town, WV 25414
304-728-3228
planningdepartment@jeffersoncountywv.org

From: ROBERT KURZ <robert.kurz@comcast.net>
Sent: Thursday, September 1, 2022 1:27 PM
To: Planning Department <PlanningDepartment@jeffersoncountywv.org>
Subject: Notice of Concept Plan Public Workshop

I am a property owner whose lot is adjacent to the Wild Hill Solar Energy Facility. We will not be in town for the September 13 meeting but, will attempt to ZOOM.

We purchased our home last August and were not informed of the solar project by the previous owners. Therefore we have very little information and apologize if our questions have been asked and answered before.

I have attached my questions and comments.

Thank You,

Bob and Caroline Kurz
111 Heath Ct.
Charles Town, WV 25414

724/217-7153 Cell Phone

Dear Commissioners,

As you are aware, the Zigler family is part of the Wild Hill Solar Project. Our family became involved with solar based on the following:

1. Steady income for one of our farms
2. Family dynamics
3. Our experience developing a family farm in Frederick, MD.

While debating between development of one or both of our farms or having the farms work for us, we chose solar. This decision was the result of many hours of debate and consideration of the Comprehensive Plan.

Solar creates an opportunity for our family, the Hough Families and the Rissler family to make our farms economically viable.

Solar is innovative agriculture and is recognized by the USDA and optimized. In North Carolina, Ohio and several other states, the USDA has built large solar arrays on farmland. The control and management of these arrays are handled by LLC's. Thus, showing the change in agricultural activities.

Solar will be a net revenue for Jefferson County. Solar panels will not utilize ambulance services, community centers, libraries, schools, sidewalks, recreation venues, bike trails, public health facilities, sewer/water utilizes, or county funding used for families in need. The solar array will not increase traffic or cause roadways to be widened. Nor will the solar panels strain WVDOT funding and ability to repair roadways.

Once a solar array is built, the land is reclassified, and the tax increase will allow county programs to be funded and even increase the types of programs provided based in the need of the community.

Tourism is not an issue for the Wild Hill Project. The farms involved with this project are not near a battlefield, historical landmarks, or a cemetery. Our farms do not have direct access to river front property but do set back from roadways.

Viewshed seems to be a point of contention. I have reviewed the Envision Jefferson 2035 Comprehensive Plan and was unable to locate any verbiage stating the viewshed is a commodity that is to be provided by the adjacent farm or farmers, nor did I see verbiage under the Agricultural and Rural Economy Recommendations (Goal 8), showing that farmers may charge adjacent housing developments a fee for maintaining the viewshed of their fields. I then started researching the guidelines for housing development in Jefferson County. I did not see verbiage related to the guarantee of a viewshed from the adjoining farmer or required deed restrictions regarding the maintenance of the viewshed or fees that are to be charged for maintenance of the viewshed.

However, EDF has met with the residents of Cloverdale Heights and resolved the setback issues. When EDF conducted this meeting, it shows a commitment to working not only with the county but the adjoining homeowners. This was done in good faith.

In 2021 the West Virginia Public Safety Commission hearing covered every aspect, including EPA concerns. The Wild Hill Project was approved for a sitting certificate for construction and operation. The case number is 20-0845-E-SCS-PW. Included in this case is the testimony and rebuttal testimony by Emily Dalager which answers the repetitive questions and concerns presented by opposing parties.

EDF is a financially strong company with more than 90 projects within the USA. They have the experience and ability to decommission and recycle the solar panels and posts.

In closing, EDF, Zigler, Hough and Rissler families are bond by testimony, permits and contracts. However, opposing parties continue to interrupt the Comprehensive Plan for individual grievances verses the intent of the plan to help guide the county through changing times. As you know, agriculture has changed. The GREAT state of West Virginia allows individuals, including farmers to build business relationships and earn income. I believe the Envision Jefferson 2035 Comprehensive Plan is a living and working document that allows for the expansion into solar.

Thank you for your time.

Respectfully submitted,

Jean Zigler

Planning Department

From: Planning Department
Sent: Thursday, September 1, 2022 4:37 PM
To: JEAN ZIGLER
Subject: RE: Planning Commission Workshop File 22-9-SP

Good afternoon,

Thank you for your letter for the Planning Commission workshop. We will include your letter in the packet for the meeting on September 13, 2022.

Thank you and have a nice evening,
Tanya Lyons
Planning Clerk
304-728-3228
planningdepartment@jeffersoncountywv.org

-----Original Message-----
From: JEAN ZIGLER <zigboys@aol.com>
Sent: Thursday, September 1, 2022 4:07 PM
To: Planning Department <PlanningDepartment@jeffersoncountywv.org>
Subject: Planning Commission Workshop File 22-9-SP

Dear Madame/Sir,

Please provide the attached letter to the Commissioners for the September 13, 2022 meeting .

Thank you,

Jean Zigler

Planning Commission Workshop,

My name is Richard Zigler. I reside on Roper North Fork Road, Charles Town, West Virginia. I am part of the family farm that is to be the majority portion of the Wild Hill Solar Project. I am wholly in favor of this project, which will create a renewable energy source, moving forward as expeditiously as possible, and with low Impact Fees.

All of the local, state, and federal studies and surveys have been completed and demonstrate that this project will not be injurious to the community in any aspect; from historical to cultural, nor from economic to environmental. It will not burden the county with new students in our crowded schools, nor require costly sanitary infrastructures for water or sewer as would a residential development. Noise and light pollution will be less than the former, or current, usage of the land, farming. That means that any additional tax revenues that would be generated, would be unencumbered. It will be as close to "Free Money" as any commercial enterprise can be for the county.

Much misinformation has been spread. Unfortunately, much of it seems to have been purposefully disseminated for personal reasons, rather real concern for the community. Everything from adjacent property values dropping and Electromagnetic Field (EMF) fears have been exploited. Blasting, causing well and septic disruption, and wildlife migrations restricted by fencing have also been brought up by people without a real grasp of which they speak.

Property values have not been shown to demonstrate a decrease in vicinities of other commercial solar fields nationwide. This is a relative thing that must be considered against the alternatives, such as a hundred head hog farm, a noisy residential subdivision, or the hum of a transformer that cannot be heard from fifty feet away while the closest residence will be a minimum of one hundred feet away. EMFs are considered dangerous, but only with constant exposure, within three feet of the energized components, such as cables. Most of those components will be underground and therefore of no consequence, and eliminating those fears.

No blasting is to occur. It is unsound to blast soil and rock, and then attempt to use for anchoring the panels. This means no fracturing of rock layers and interrupting aquifers, wells, or septic systems.

Wildlife will benefit from the newly established "Green Space" that will be required for unimpeded solar access to maximize energy production. This means low height vegetation that is conducive to ground-nesting birds. The vegetation will also act as a filtering barrier and erosion control for the local aquifer and nearby streams, enhancing surface and groundwater quality.

The security fencing, that is meant to restrict unwanted human traffic, will not be a problem for wildlife. Deer can jump an eight-foot fence and negotiate a ten-foot fence. They do not migrate, so there is no need for deer throughways. The idea of deer becoming a nuisance in residential developments, because of fencing, is absurd. Residential developments are the reason we have such a horrendous deer population because the provide a stable, year-around, food source, as well as refuge from hunters and natural predators. Burrowing animals will not be adversely affected by any fencing as there will not be a two-foot curtain wall in the ground under the fencing. Volunteer trees and other vegetation will be pruned or targeted with spot spraying, as opposed to the broadcast spraying of row crop production.

The land that the project is to be situated, was subject to Site Certification by the West Virginia Public Service Commission. During the ruling, and explanation of the decision, Chairwoman Charlette Lane expressed that, upon reading the Comprehensive Plan and the information provided by the solar company, that the Commission saw no reason for any new zoning rules or regulations needed at the county level. Yet here we are.

There is the idea that the electricity, generated in this county, should be marketed exclusively in this county before sold elsewhere in the region on the open energy grid. This is ludicrous. There is no Jefferson County brand of corn flakes. There is no Jefferson County brand of tofu. There is no Jefferson County brand of hot dogs. All the raw components of which are produced in this county. It is incredulous to even think this is possible.

So, there will be no sensory pollutions for sight, smell, or health issues, and no adverse effects on either the community, nor wildlife. All historical and cultural surveys and studies have been satisfactory. No encumbrances of new schools, sanitary infrastructure, or Emergency Services will be required. I can only recommend that the Wild Hill Solar project be granted consent to move forward as expeditiously as possible, and with as few regulatory or financial obstacles as possible.

Planning Department

From: Susan Zigler <rzigler01@gmail.com>
Sent: Friday, September 2, 2022 6:54 AM
To: Planning Department
Subject: Concept Plan Workshop Wild Hill Solar
Attachments: Document 104 2.docx

Follow Up Flag: Follow up
Flag Status: Completed

Categories: Response Email Sent, Planning Commission

CAUTION: This email originated from outside your organization. Exercise caution when opening attachments or on clicking links from unknown senders.

Please see attached document. My name is Richard Zigler and I am in favor of the Wild Hill Solar Project. All the surveys and regulations have been satisfied. It is time to move forward on this commercial enterprise that will benefit Jefferson County.

Planning Department

From: Planning Department
Sent: Tuesday, September 6, 2022 9:13 AM
To: 'Tim Sheehy'
Subject: RE: Comments on Concept Plan (Solar Winds Project)

Good morning,

Your comments will be forwarded to the Planning Commission for their consideration during the 09/13/22 concept plan public workshop for the Wild Hill Solar Project (File #22-9-SP).

Thank you,

Jennilee Hartman, Zoning Clerk
Office of Planning and Zoning
304-728-3228

From: Tim Sheehy <tbswv@outlook.com>
Sent: Monday, September 5, 2022 9:51 AM
To: Planning Department <PlanningDepartment@jeffersoncountywv.org>
Subject: Comments on Concept Plan (Solar Winds Project)

To Commission Staff:

Please file this formal response to the proposed Solar Winds Project Concept Plan.

I am opposed to the location of this project for the following reasons:
- potential well water contamination
- property devaluation

I am on the record (Zoom meeting public comments) of opposing this project so close to the resident properties of the Cloverdale Heights Subdivision, including my own property. I plan to have my well water tested, and one year later after solar panel installation.

Respectfully,

Tim Sheehy
71 Heath Ct
Charles Town, WV 25414

Sent from Mail for Windows

Planning Department

From: Planning Department
Sent: Wednesday, September 7, 2022 10:18 AM
To: 'Susan Hough'
Subject: RE: solar support

Good morning,

Your comments will be forwarded to the Planning Commission for their consideration during the 09/13/22 concept plan public workshop for the Wild Hill Solar Project (File #22-9-SP).

Thank you,

Jennilee Hartman, Zoning Clerk
Office of Planning and Zoning
304-728-3228

From: Susan Hough <farmwife90@aol.com>
Sent: Wednesday, September 7, 2022 10:08 AM
To: Planning Department <PlanningDepartment@jeffersoncountywv.org>
Subject: solar support

CAUTION: This email originated from outside your organization. Exercise caution when opening attachments or on clicking links from unknown senders.

Dear Planning Department,

We are writing this letter in support of Solar in Jefferson County. We feel as farmers that it will be beneficial to not only the farming community but the county as a whole.

Thank you for your time and consideration in this matter.

Todd and Susan Hough
Charles Town

From: Stacey Hough
To: Planning Department
Subject: Support of Solar Projects
Date: Wednesday, September 7, 2022 2:04:43 PM

CAUTION: This email originated from outside your organization. Exercise caution when opening attachments or on clicking links from unknown senders.

Dear Jefferson County Planning Commission,

As you may know, I have spoken at a prior County Commisison meeting regarding my unwavering support of the solar Ordinance and have sent in prior written communication. This is to confirm that I am still in support of the solar projects planned for Jefferson County.

Thank you for your time and effort,

Stacey Hough
304-261-1008

From: chip daniel
To: Planning Department
Subject: Solar Support
Date: Wednesday, September 7, 2022 2:07:50 PM

Good afternoon,

This email is to express my support for the solar amendment and plans for Jefferson County. My family has been involved in agriculture for many generations and I certainly see this as an alternative to selling family farmland and additional housing developments.

Thank you,
Francis W. Daniel, III, DVM
304-261-2400

From: Eddie and Donna Hough
To: Planning Department
Subject: Solar Meeting Correspondence
Date: Wednesday, September 7, 2022 2:10:28 PM

Dear Planning Commission,

As you are already aware, we are in complete support of the solar plans for Jefferson County. We wanted to send in written documentation for the next meeting.

Thank you for your support,

Clarence E. Hough
Donna S. Hough
Oakwood Farm

From: Keith B. Berkeley, DVM
To: Planning Department
Subject: Solar Meeting
Date: Wednesday, September 7, 2022 3:40:00 PM

Good afternoon to the members of the Planning Commission,

Please put on record that I am in support of the solar projects that are being planned for Jefferson County. Several years ago, I served on the Jefferson County Agricultural Task Force and we discussed and recommended new uses for agriculture land that would allow for a farmer to diversify and continue to work as a farmer. I see the solar projects as a great way to allow for that.

Thank you for your support,

Keith B. Berkeley, DVM

MEMORANDUM

Jefferson County, West Virginia
Engineering, Planning & Zoning Department

TO: Mike Shepp, Planning Commission President
Alex Beaulieu, Zoning Administrator
Jennie Brockman, County Planner

FROM: Roger Goodwin, P.E., Director & Chief County Engineer
Jonathan Saunders, P.E, County Engineer
Joe Kent, Land Development Inspector

DATE: April 22, 2020

SUBJECT: Zoning Ordinance Amendments Project
Solar Farms - Stormwater Management & Bonding
SWM Text Revised Per 4/22/2020 Conference Call

This memorandum is the Office of Engineering's response to the proposed Zoning Ordinance amendment addressing requirements for solar farms, that we discussed during a conference call on Thursday, April 9th. We address the following two issues:

- Stormwater Management and Erosion & Sediment Control requirements; and
- ~~Proposed requirement for a 30-year Decommissioning Bond.~~

1. Stormwater Management and Sediment & Erosion Control:

   A. It is our understanding that the intent of the proposed amendment to the Zoning Ordinance for Solar Farms is to eliminate the need to process a Site Plan and eliminate the requirement for stormwater management control. However, the intent is to require temporary construction sediment and erosion (S&E) control under the West Virginia Department of Environmental Protection's construction stormwater NPDES permitting requirements.

   B. We researched information on the impact of solar farms on stormwater runoff (pre-development conditions vs. post-development conditions) and best management practices for controlling storm water runoff and erosion. This includes the following attached information:

- "Hydrologic Response of Solar Farms", in the May 2013 ASCE Journal of Hydrologic Engineering; which looked at all the factors and conditions affecting stormwater runoff.

- "A Rainy Day at a Solar Farm", Kennedy Jenks consulting; which summarizes stormwater impacts and stormwater management practices in several states.

- "Permiting for Solar Panel Farms – Frequently Asked Questions", January 2, 2019, Pennsylvania Department of Environmental Protection; which provides conditions for exemption from traditional stormwater management control requirements.

C. Based on our findings, there can be a significant increase in stormwater runoff from solar farms. However, if solar farms can meet certain conditions as discussed in the study, and as adopted by the state of Pennsylvania, the post-development runoff versus pre-development runoff will be insignificant and no traditional stormwater management control facilities will be needed.

Therefore, we propose similar relatively simple conditions for solar farms, which if met, will exempt solar farms from having to provide traditional stormwater management control. These conditions are outlined in the attached proposed amendment to the Stormwater Management Ordinance, in Article 1, Section D(2)(h). By meeting these conditions, a solar farm will be exempt from providing traditional stormwater management control.

We believe all stormwater management requirements should be contained in the Stormwater Management Ordinance, not spread out across numerous unrelated ordinances. It is the logical place for these requirements and keeps the ordinances user friendly. Therefore, we recommend that the Zoning Ordinance reference the Stormwater Management Ordinance for solar farm requirements and that the conditions granting an exception be placed in the Stormwater Management Ordinance. Jonathan Saunders, county engineer, drafted language for the reference in the Zoning Ordinance (see attached).

In Summary, the ASCE hydrologic study indicates that stormwater runoff from solar farms can be significant. However, the hydrologic study, and stormwater management practices adopted by the by other jurisdictions, indicate that solar farms can be exempt from providing traditional stormwater management facilities if the conditions proposed in the Jefferson County Stormwater Ordinance are

satisfied. These proposed conditions require low-impact methods for reducing post-construction runoff volumes and velocities.

If the Planning Commission agrees, then staff will prepare a county commission agenda item request for this purpose; and coordinate simultaneous approval of it with approval of the Zoning Ordinance amendment related to solar farm utilities.

2. 30-Year Decommissioning Bond:

With regard to the proposed requirement for a 30-year decommissioning bond, we offer the following comments:

A. West Virginia State Code, Chapter 8A, Article 6-1, Bond Requirements, addresses bonding requirements for land development projects. It says:

ARTICLE 6. METHODS OF SECURITY.

§8A-6-1. Bond requirements.

(a) If a bond is used as an acceptable method of security for infrastructure construction, then it shall meet the following requirements:

(1) Be in an amount to cover the infrastructure construction, as determined by the governing body;

(2) Be payable to the governing body;

(3) Have adequate surety and be satisfactory to the governing body;

(4) Specify the time for the completion of the infrastructure construction; and

(5) Specify the date and/or condition for when the bond will be released.

(b) The money from the bond shall only be used by the governing body to which the bond is payable, for the completion of the infrastructure construction, when the infrastructure construction is not completed as approved at the issuance of the bond.

In accordance with state code, the County Commission has a bonding policy which requires that the developer enter into an agreement with the County Commission to complete the site improvements (infrastructure) as required under a preliminary plat or site plan approval. The developer is required to post a bond/surety in the amount of 115% of the estimated cost to complete all the site improvements. The developer gets a limited amount of time to complete the site improvements. Upon satisfactory completion of all the site improvements, the bond is released. Upon release of the bond/surety, there are no further obligations between the County Commission and the developer.

~~The purpose of the bond authorized under Chapter 8A, Article 6-1, is for completion of site improvements. The proposed 30-year decommissioning bond is for the post-construction purpose of ensuring that the site is properly decommissioned upon cessation of operation of the solar farm. Which could extend as far out as 30-years.~~

~~It is our belief that the county does not have the authority under Chapter 8A, Article 6-1, to require a bond for the purpose of ensuring the proper decommissioning of a solar farm post-construction; which would typically occur decades later. However, we will defer to the Planning Commission's attorney for guidance on this matter.~~

~~B. We also discussed the need for a 30-year decommissioning bond and how difficult it will be to manage over a 30-year time period. We believe that holding and tracking a bond for 30 years will be difficult and impractical. Instead, we propose another option based on these two ownership scenarios:~~

- ~~Solar Farm Utility owns the land; and~~
- ~~Solar Farm Utility leases the land.~~

~~In the first scenario, the ordinance could require that, upon cessation of operations, the solar farm be decommissioned by fully dismantling and removing all the equipment and facilities from the site and disposing of it in a legal manner. If the utility fails to do so, it will be in violation of the ordinance and the county pursues enforcement under the ordinance, which could involve seeking an injunction and order in circuit court to enforce proper decommissioning and possibly imposing fines on the utility. You could borrow language from the Property Safety Enforcement Ordinance on how the enforcement process will work.~~

~~Whenever there is a violation of county land development ordinances and building codes, the county has always held the property owner to be the one in violation; not the developer or builder/contractor. In the second scenario, it seems the intent of the 30-year decommissioning bond is to protect the owner from the utility failing to properly decommission the solar farm upon cessation of operations and/or termination of the lease. If the utility abandoned the solar farm facility in place, this again would be a violation of the ordinance. However, the owner will be responsible for seeing that the utility properly decommissions the solar farm. If not, then the county will pursue enforcement under the ordinance, which could~~

involve seeking an injunction and order in circuit court to enforce proper decommissioning by the property owner and possibly imposing fines.

Therefore, under the second scenario, it seems to us that the property owner needs to enter into a lease agreement that includes terms and conditions for the proper decommissioning of the solar farm. The property owner should be the one to require and hold a decommissioning bond or form of surety from the utility to ensure there is incentive for the utility to properly decommission the solar farm; which will be by demolishing it and disposing of it in a legal manner. It seems to us that in this scenario, it is a contractual civil matter between the property owner and the solar farm utility.

In summary, we believe that it will be difficult for the County Commission and staff to manage and track a bond over a 30-year time period. Putting language in the ordinance giving the county the ability to enforce decommissioning is an alternative to requiring a decommissioning bond. If the solar farm utility leases the property, then the property owner can enter into a lease agreement with the utility that requires the utility post a bond/surety with the property owner as incentive for proper decommissioning. In addition, we are not sure the county has the authority to require a decommissioning bond anyway. However, the property owner could require a bond/surety in the lease agreement. We will defer to the Planning Commission's attorney for guidance on this matter.

Hydrologic Response of Solar Farms

Lauren M. Cook, S.M.ASCE[1]; and Richard H. McCuen, M.ASCE[2]

Abstract: Because of the benefits of solar energy, the number of solar farms is increasing; however, their hydrologic impacts have not been studied. The goal of this study was to determine the hydrologic effects of solar farms and examine whether or not storm-water management is needed to control runoff volumes and rates. A model of a solar farm was used to simulate runoff for two conditions: the pre- and postpaneled conditions. Using sensitivity analyses, modeling showed that the solar panels themselves did not have a significant effect on the runoff volumes, peaks, or times to peak. However, if the ground cover under the panels is gravel or bare ground, owing to design decisions or lack of maintenance, the peak discharge may increase significantly with storm-water management needed. In addition, the kinetic energy of the flow that drains from the panels was found to be greater than that of the rainfall, which could cause erosion at the base of the panels. Thus, it is recommended that the grass beneath the panels be well maintained or that a buffer strip be placed after the most downgradient row of panels. This study, along with design recommendations, can be used as a guide for the future design of solar farms. **DOI: 10.1061/(ASCE)HE.1943-5584.0000530.**

CE Database subject headings: Hydrology; Land use; Solar power; Floods; Surface water; Runoff; Stormwater management.

Author keywords: Hydrology; Land use change; Solar energy; Flooding; Surface water runoff; Storm-water management.

Introduction

Storm-water management practices are generally implemented to reverse the effects of land-cover changes that cause increases in volumes and rates of runoff. This is a concern posed for new types of land-cover change such as the solar farm. Solar energy is a renewable energy source that is expected to increase in importance in the near future. Because solar farms require considerable land, it is necessary to understand the design of solar farms and their potential effect on erosion rates and storm runoff, especially the impact on offsite properties and receiving streams. These farms can vary in size from 8 ha (20 acres) in residential areas to 250 ha (600 acres) in areas where land is abundant.

The solar panels are impervious to rain water; however, they are mounted on metal rods and placed over pervious land. In some cases, the area below the panel is paved or covered with gravel. Service roads are generally located between rows of panels. Although some panels are stationary, others are designed to move so that the angle of the panel varies with the angle of the sun. The angle can range, depending on the latitude, from 22° during the summer months to 74° during the winter months. In addition, the angle and direction can also change throughout the day. The issue posed is whether or not these rows of impervious panels will change the runoff characteristics of the site, specifically increase runoff volumes or peak discharge rates. If the increases are hydrologically significant, storm-water management facilities may be needed. Additionally, it is possible that the velocity of water draining from the edge of the panels is sufficient to cause erosion of the soil below the panels, especially where the maintenance roadways are bare ground.

The outcome of this study provides guidance for assessing the hydrologic effects of solar farms, which is important to those who plan, design, and install arrays of solar panels. Those who design solar farms may need to provide for storm-water management. This study investigated the hydrologic effects of solar farms, assessed whether or not storm-water management might be needed, and if the velocity of the runoff from the panels could be sufficient to cause erosion of the soil below the panels.

Model Development

Solar farms are generally designed to maximize the amount of energy produced per unit of land area, while still allowing space for maintenance. The hydrologic response of solar farms is not usually considered in design. Typically, the panels will be arrayed in long rows with separations between the rows to allow for maintenance vehicles. To model a typical layout, a unit width of one panel was assumed, with the length of the downgradient strip depending on the size of the farm. For example, a solar farm with 30 rows of 200 panels each could be modeled as a strip of 30 panels with space between the panels for maintenance vehicles. Rainwater that drains from the upper panel onto the ground will flow over the land under the 29 panels on the downgradient strip. Depending on the land cover, infiltration losses would be expected as the runoff flows to the bottom of the slope.

To determine the effects that the solar panels have on runoff characteristics, a model of a solar farm was developed. Runoff in the form of sheet flow without the addition of the solar panels served as the prepaneled condition. The paneled condition assumed a downgradient series of cells with one solar panel per ground cell. Each cell was separated into three sections: wet, dry, and spacer.

The dry section is that portion directly underneath the solar panel, unexposed directly to the rainfall. As the angle of the panel from the horizontal increases, more of the rain will fall directly onto

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the ground; this section of the cell is referred to as the wet section. The spacer section is the area between the rows of panels used by maintenance vehicles. Fig. 1 is an image of two solar panels and the spacer section allotted for maintenance vehicles. Fig. 2 is a schematic of the wet, dry, and spacer sections with their respective dimensions. In Fig. 1, tracks from the vehicles are visible on what is modeled within as the spacer section. When the solar panel is horizontal, then the length longitudinal to the direction that runoff will occur is the length of the dry and wet sections combined. Runoff from a dry section drains onto the downgradient spacer section. Runoff from the spacer section flows to the wet section of the next downgradient cell. Water that drains from a solar panel falls directly onto the spacer section of that cell.

The length of the spacer section is constant. During a storm event, the loss rate was assumed constant for the 24-h storm because a wet antecedent condition was assumed. The lengths of the wet and dry sections changed depending on the angle of the solar panel. The total length of the wet and dry sections was set equal to the length of one horizontal solar panel, which was assumed to be 3.5 m. When a solar panel is horizontal, the dry section length would equal 3.5 m and the wet section length would be zero. In the paneled condition, the dry section does not receive direct rainfall because the rain first falls onto the solar panel then drains onto the spacer section. However, the dry section does infiltrate some of the runoff that comes from the upgradient wet section. The wet section was modeled similar to the spacer section with rain falling directly onto the section and assuming a constant loss rate.

For the presolar panel condition, the spacer and wet sections are modeled the same as in the paneled condition; however, the cell does not include a dry section. In the prepaneled condition, rain falls directly onto the entire cell. When modeling the prepaneled condition, all cells receive rainfall at the same rate and are subject to losses. All other conditions were assumed to remain the same such that the prepaneled and paneled conditions can be compared.

Rainfall was modeled after an natural resources conservation service (NRCS) Type II Storm (McCuen 2005) because it is an accurate representation of actual storms of varying characteristics that are imbedded in intensity-duration-frequency (IDF) curves. For each duration of interest, a dimensionless hyetograph was developed using a time increment of 12 s over the duration of the storm (see Fig. 3). The depth of rainfall that corresponds to each storm magnitude was then multiplied by the dimensionless hyetograph. For a 2-h storm duration, depths of 40.6, 76.2, and 101.6 mm were used for the 2-, 25-, and 100-year events. The 2- and 6-h duration hyetographs were developed using the center portion of the 24-h storm, with the rainfall depths established with the Baltimore IDF curve. The corresponding depths for a 6-h duration were 53.3, 106.7, and 132.1 mm, respectively. These magnitudes were chosen to give a range of storm conditions.

During each time increment, the depth of rain is multiplied by the cell area to determine the volume of rain added to each section of each cell. This volume becomes the storage in each cell. Depending on the soil group, a constant volume of losses was subtracted from the storage. The runoff velocity from a solar panel was calculated using Manning's equation, with the hydraulic radius for sheet flow assumed to equal the depth of the storage on the panel (Bedient and Huber 2002). Similar assumptions were made to compute the velocities in each section of the surface sections.

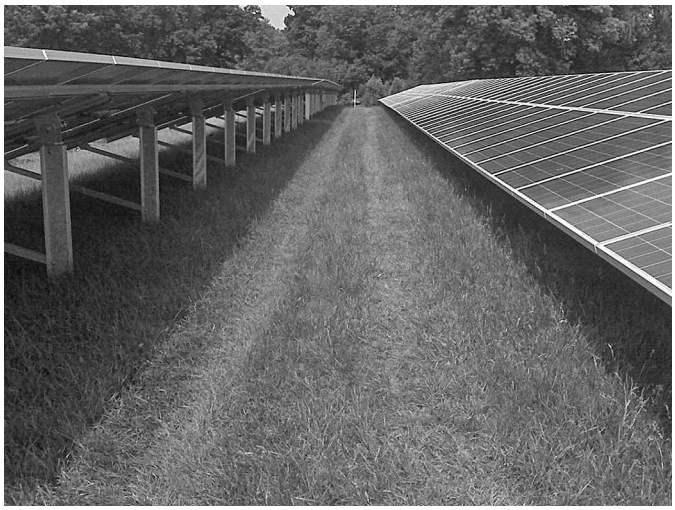

Fig. 1. Maintenance or "spacer" section between two rows of solar panels (photo by John E. Showler, reprinted with permission)

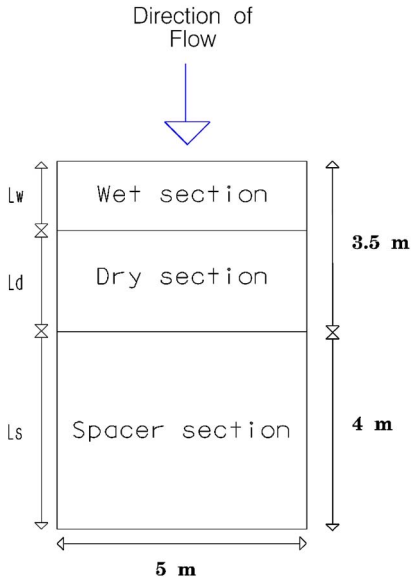

Fig. 2. Wet, dry, and spacer sections of a single cell with lengths *Lw*, *Ls*, and *Ld* with the solar panel covering the dry section

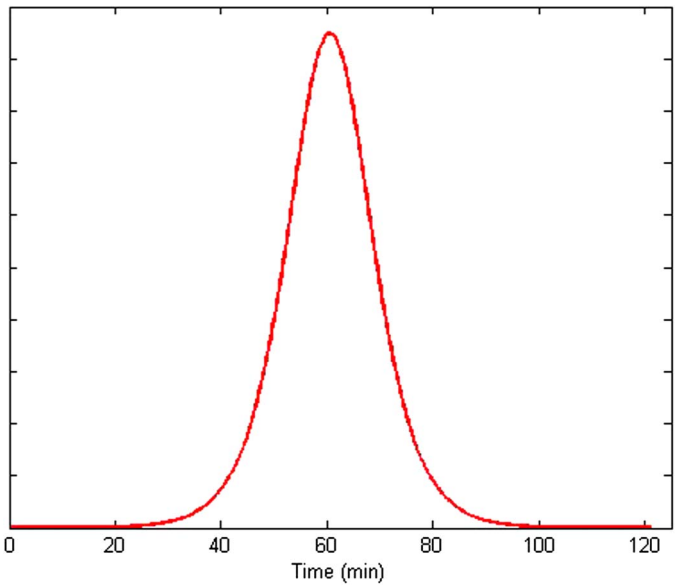

Fig. 3. Dimensionless hyetograph of 2-h Type II storm

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Runoff from one section to the next and then to the next downgradient cell was routed using the continuity of mass. The routing coefficient depended on the depth of flow in storage and the velocity of runoff. Flow was routed from the wet section to the dry section to the spacer section, with flow from the spacer section draining to the wet section of the next cell. Flow from the most downgradient cell was assumed to be the outflow. Discharge rates and volumes from the most downgradient cell were used for comparisons between the prepaneled and paneled conditions.

Alternative Model Scenarios

To assess the effects of the different variables, a section of 30 cells, each with a solar panel, was assumed for the base model. Each cell was separated individually into wet, dry, and spacer sections. The area had a total ground length of 225 m with a ground slope of 1% and width of 5 m, which was the width of an average solar panel. The roughness coefficient (Engman 1986) for the silicon solar panel was assumed to be that of glass, 0.01. Roughness coefficients of 0.15 for grass and 0.02 for bare ground were also assumed. Loss rates of 0.5715 cm/h (0.225 in./h) and 0.254 cm/h (0.1 in./h) for B and C soils, respectively, were assumed.

The prepaneled condition using the 2-h, 25-year rainfall was assumed for the base condition, with each cell assumed to have a good grass cover condition. All other analyses were made assuming a paneled condition. For most scenarios, the runoff volumes and peak discharge rates from the paneled model were not significantly greater than those for the prepaneled condition. Over a total length of 225 m with 30 solar panels, the runoff increased by 0.26 m^3, which was a difference of only 0.35%. The slight increase in runoff volume reflects the slightly higher velocities for the paneled condition. The peak discharge increased by 0.0013 m^3, a change of only 0.31%. The time to peak was delayed by one time increment, i.e., 12 s. Inclusion of the panels did not have a significant hydrologic impact.

Storm Magnitude

The effect of storm magnitude was investigated by changing the magnitude from a 25-year storm to a 2-year storm. For the 2-year storm, the rainfall and runoff volumes decreased by approximately 50%. However, the runoff from the paneled watershed condition increased compared to the prepaneled condition by approximately the same volume as for the 25-year analysis, 0.26 m^3. This increase represents only a 0.78% increase in volume. The peak discharge and the time to peak did not change significantly. These results reflect runoff from a good grass cover condition and indicated that the general conclusion of very minimal impacts was the same for different storm magnitudes.

Ground Slope

The effect of the downgradient ground slope of the solar farm was also examined. The angle of the solar panels would influence the velocity of flows from the panels. As the ground slope was increased, the velocity of flow over the ground surface would be closer to that on the panels. This could cause an overall increase in discharge rates. The ground slope was changed from 1 to 5%, with all other conditions remaining the same as the base conditions.

With the steeper incline, the volume of losses decreased from that for the 1% slope, which is to be expected because the faster velocity of the runoff would provide less opportunity for infiltration. However, between the prepaneled and paneled conditions, the increase in runoff volume was less than 1%. The peak discharge and the time to peak did not change. Therefore, the greater ground slope did not significantly influence the response of the solar farm.

Soil Type

The effect of soil type on the runoff was also examined. The soil group was changed from B soil to C soil by varying the loss rate. As expected, owing to the higher loss rate for the C soil, the depths of runoff increased by approximately 7.5% with the C soil when compared with the volume for B soils. However, the runoff volume for the C soil condition only increased by 0.17% from the prepaneled condition to the paneled condition. In comparison with the B soil, a difference of 0.35% in volume resulted between the two conditions. Therefore, the soil group influenced the actual volumes and rates, but not the relative effect of the paneled condition when compared to the prepaneled condition.

Panel Angle

Because runoff velocities increase with slope, the effect of the angle of the solar panel on the hydrologic response was examined. Analyses were made for angles of 30° and 70° to test an average range from winter to summer. The hydrologic response for these angles was compared to that of the base condition angle of 45°. The other site conditions remained the same. The analyses showed that the angle of the panel had only a slight effect on runoff volumes and discharge rates. The lower angle of 30° was associated with an increased runoff volume, whereas the runoff volume decreased for the steeper angle of 70° when compared with the base condition of 45°. However, the differences (~0.5%) were very slight. Nevertheless, these results indicate that, when the solar panel was closer to horizontal, i.e., at a lower angle, a larger difference in runoff volume occurred between the prepaneled and paneled conditions. These differences in the response result are from differences in loss rates.

The peak discharge was also lower at the lower angle. At an angle of 30°, the peak discharge was slightly lower than at the higher angle of 70°. For the 2-h storm duration, the time to peak of the 30° angle was 2 min delayed from the time to peak of when the panel was positioned at a 70° angle, which reflects the longer travel times across the solar panels.

Storm Duration

To assess the effect of storm duration, analyses were made for 6-h storms, testing magnitudes for 2-, 25-, and 100-year return periods, with the results compared with those for the 2-h rainfall events. The longer storm duration was tested to determine whether a longer duration storm would produce a different ratio of increase in runoff between the prepaneled and paneled conditions. When compared to runoff volumes from the 2-h storm, those for the 6-h storm were 34% greater in both the paneled and prepaneled cases. However, when comparing the prepaneled to the paneled condition, the increase in the runoff volume with the 6-h storm was less than 1% regardless of the return period. The peak discharge and the time-to-peak did not differ significantly between the two conditions. The trends in the hydrologic response of the solar farm did not vary with storm duration.

Ground Cover

The ground cover under the panels was assumed to be a native grass that received little maintenance. For some solar farms, the area beneath the panel is covered in gravel or partially paved because the panels prevent the grass from receiving sunlight. Depending on the

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volume of traffic, the spacer cell could be grass, patches of grass, or bare ground. Thus, it was necessary to determine whether or not these alternative ground-cover conditions would affect the runoff characteristics. This was accomplished by changing the Manning's n for the ground beneath the panels. The value of n under the panels, i.e., the dry section, was set to 0.015 for gravel, with the value for the spacer or maintenance section set to 0.02, i.e., bare ground. These can be compared to the base condition of a native grass ($n = 0.15$). A good cover should promote losses and delay the runoff.

For the smoother surfaces, the velocity of the runoff increased and the losses decreased, which resulted in increasing runoff volumes. This occurred both when the ground cover under the panels was changed to gravel and when the cover in the spacer section was changed to bare ground. Owing to the higher velocities of the flow, runoff rates from the cells increased significantly such that it was necessary to reduce the computational time increment. Fig. 4(a) shows the hydrograph from a 30-panel area with a time increment of 12 s. With a time increment of 12 s, the water in each cell is discharged at the end of every time increment, which results in no attenuation of the flow; thus, the undulations shown in Fig. 4(a) result. The time increment was reduced to 3 s for the 2-h storm, which resulted in watershed smoothing and a rational hydrograph shape [Fig. 4(b)]. The results showed that the storm runoff

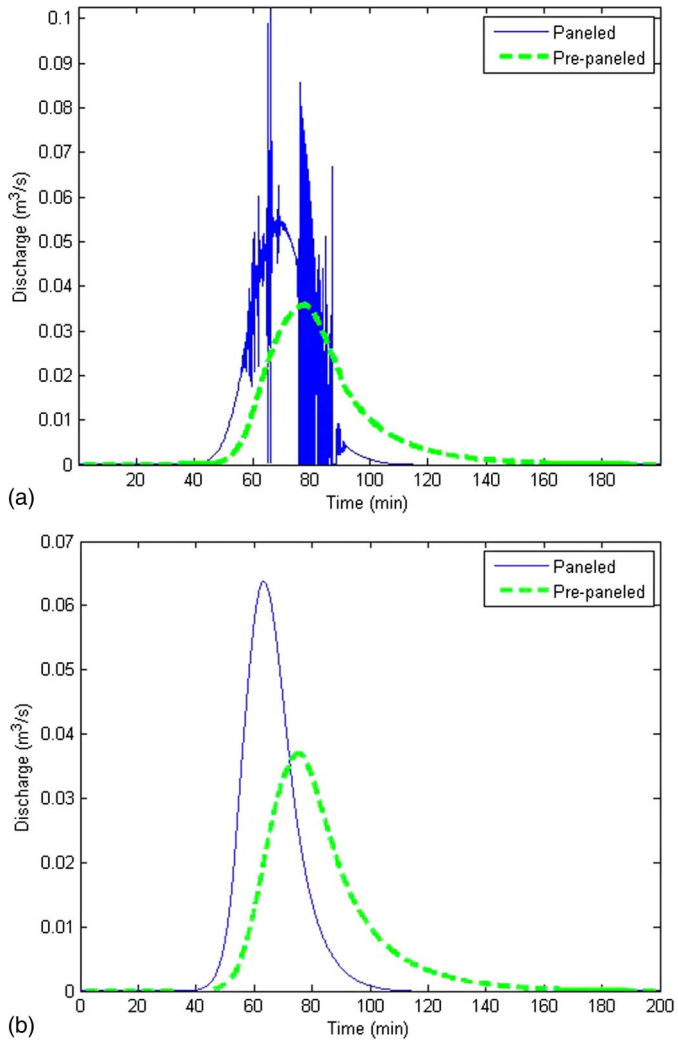

Fig. 4. Hydrograph with time increment of (a) 12 s; (b) 3 s with Manning's n for bare ground

increased by 7% from the grass-covered scenario to the scenario with gravel under the panel. The peak discharge increased by 73% for the gravel ground cover when compared with the grass cover without the panels. The time to peak was 10 min less with the gravel than with the grass, which reflects the effect of differences in surface roughness and the resulting velocities.

If maintenance vehicles used the spacer section regularly and the grass cover was not adequately maintained, the soil in the spacer section would be compacted and potentially the runoff volumes and rates would increase. Grass that is not maintained has the potential to become patchy and turn to bare ground. The grass under the panel may not get enough sunlight and die. Fig. 1 shows the result of the maintenance trucks frequently driving in the spacer section, which diminished the grass cover.

The effect of the lack of solar farm maintenance on runoff characteristics was modeled by changing the Manning's n to a value of 0.02 for bare ground. In this scenario, the roughness coefficient for the ground under the panels, i.e., the dry section, as well as in the spacer cell was changed from grass covered to bare ground ($n = 0.02$).The effects were nearly identical to that of the gravel. The runoff volume increased by 7% from the grass-covered to the bare-ground condition. The peak discharge increased by 72% when compared with the grass-covered condition. The runoff for the bare-ground condition also resulted in an earlier time to peak by approximately 10 min. Two other conditions were also modeled, showing similar results. In the first scenario, gravel was placed directly under the panel, and healthy grass was placed in the spacer section, which mimics a possible design decision. Under these conditions, the peak discharge increased by 42%, and the volume of runoff increased by 4%, which suggests that storm-water management would be necessary if gravel is placed anywhere.

Fig. 5 shows two solar panels from a solar farm in New Jersey. The bare ground between the panels can cause increased runoff rates and reductions in time of concentration, both of which could necessitate storm-water management. The final condition modeled involved the assumption of healthy grass beneath the panels and bare ground in the spacer section, which would simulate the condition of unmaintained grass resulting from vehicles that drive over the spacer section. Because the spacer section is 53% of the cell, the change in land cover to bare ground would reduce losses and decrease runoff travel times, which would cause runoff to amass as it

Fig. 5. Site showing the initiation of bare ground below the panels, which increases the potential for erosion (photo by John Showler, reprinted with permission)

moves downgradient. With the spacer section as bare ground, the peak discharge increased by 100%, which reflected the increases in volume and decrease in timing. These results illustrate the need for maintenance of the grass below and between the panels.

Design Suggestions

With well-maintained grass underneath the panels, the solar panels themselves do not have much effect on total volumes of the runoff or peak discharge rates. Although the panels are impervious, the rainwater that drains from the panels appears as runoff over the downgradient cells. Some of the runoff infiltrates. If the grass cover of a solar farm is not maintained, it can deteriorate either because of a lack of sunlight or maintenance vehicle traffic. In this case, the runoff characteristics can change significantly with both runoff rates and volumes increasing by significant amounts. In addition, if gravel or pavement is placed underneath the panels, this can also contribute to a significant increase in the hydrologic response.

If bare ground is foreseen to be a problem or gravel is to be placed under the panels to prevent erosion, it is necessary to counteract the excess runoff using some form of storm-water management. A simple practice that can be implemented is a buffer strip (Dabney et al. 2006) at the downgradient end of the solar farm. The buffer strip length must be sufficient to return the runoff characteristics with the panels to those of runoff experienced before the gravel and panels were installed. Alternatively, a detention basin can be installed.

A buffer strip was modeled along with the panels. For approximately every 200 m of panels, or 29 cells, the buffer must be 5 cells long (or 35 m) to reduce the runoff volume to that which occurred before the panels were added. Even if a gravel base is not placed under the panels, the inclusion of a buffer strip may be a good practice when grass maintenance is not a top funding priority. Fig. 6 shows the peak discharge from the graveled surface versus the length of the buffer needed to keep the discharge to prepaneled peak rate.

Water draining from a solar panel can increase the potential for erosion of the spacer section. If the spacer section is bare ground, the high kinetic energy of water draining from the panel can cause soil detachment and transport (Garde and Raju 1977; Beuselinck et al. 2002). The amount and risk of erosion was modeled using the velocity of water coming off a solar panel compared with the velocity and intensity of the rainwater. The velocity of panel runoff was calculated using Manning's equation, and the velocity of falling rainwater was calculated using the following:

$$V_t = 120\, d_r^{0.35} \tag{1}$$

where d_r = diameter of a raindrop, assumed to be 1 mm. The relationship between kinetic energy and rainfall intensity is

$$K_e = 916 + 330 \log_{10} i \tag{2}$$

where i = rainfall intensity (in./h) and K_e = kinetic energy (ft-tons per ac-in. of rain) of rain falling onto the wet section and the panel, as well as the water flowing off of the end of the panel (Wischmeier and Smith 1978). The kinetic energy (Salles et al. 2002) of the rainfall was greater than that coming off the panel, but the area under the panel (i.e., the product of the length, width, and cosine of the panel angle) is greater than the area under the edge of the panel where the water drains from the panel onto the ground. Thus, dividing the kinetic energy by the respective areas gives a more accurate representation of the kinetic energy experienced by the soil. The energy of the water draining from the panel onto the ground can be nearly 10 times greater than the rain itself falling onto the ground area. If the solar panel runoff falls onto an unsealed soil, considerable detachment can result (Motha et al. 2004). Thus, because of the increased kinetic energy, it is possible that the soil is much more prone to erosion with the panels than without. Where panels are installed, methods of erosion control should be included in the design.

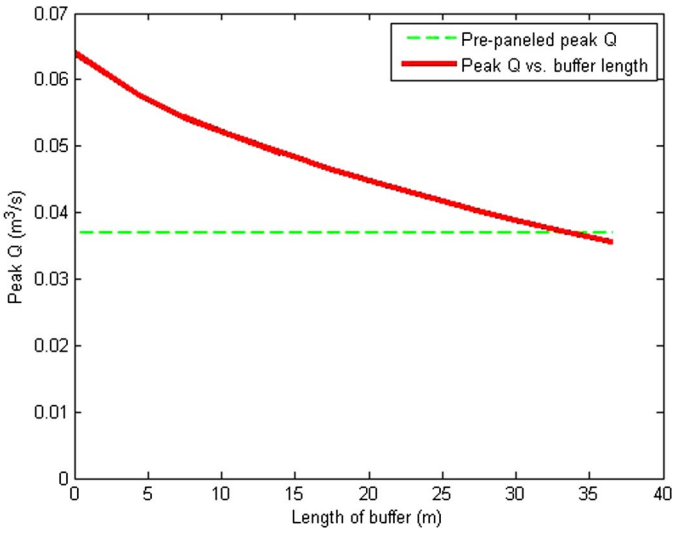

Fig. 6. Peak discharge over gravel compared with buffer length

Conclusions

Solar farms are the energy generators of the future; thus, it is important to determine the environmental and hydrologic effects of these farms, both existing and proposed. A model was created to simulate storm-water runoff over a land surface without panels and then with solar panels added. Various sensitivity analyses were conducted including changing the storm duration and volume, soil type, ground slope, panel angle, and ground cover to determine the effect that each of these factors would have on the volumes and peak discharge rates of the runoff.

The addition of solar panels over a grassy field does not have much of an effect on the volume of runoff, the peak discharge, nor the time to peak. With each analysis, the runoff volume increased slightly but not enough to require storm-water management facilities. However, when the land-cover type was changed under the panels, the hydrologic response changed significantly. When gravel or pavement was placed under the panels, with the spacer section left as patchy grass or bare ground, the volume of the runoff increased significantly and the peak discharge increased by approximately 100%. This was also the result when the entire cell was assumed to be bare ground.

The potential for erosion of the soil at the base of the solar panels was also studied. It was determined that the kinetic energy of the water draining from the solar panel could be as much as 10 times greater than that of rainfall. Thus, because the energy of the water draining from the panels is much higher, it is very possible that soil below the base of the solar panel could erode owing to the concentrated flow of water off the panel, especially if there is bare ground in the spacer section of the cell. If necessary, erosion control methods should be used.

Bare ground beneath the panels and in the spacer section is a realistic possibility (see Figs. 1 and 5). Thus, a good, well-maintained grass cover beneath the panels and in the spacer section is highly recommended. If gravel, pavement, or bare ground is

deemed unavoidable below the panels or in the spacer section, it may necessary to add a buffer section to control the excess runoff volume and ensure adequate losses. If these simple measures are taken, solar farms will not have an adverse hydrologic impact from excess runoff or contribute eroded soil particles to receiving streams and waterways.

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Kennedy Jenks

11.10.2017 | NEWS

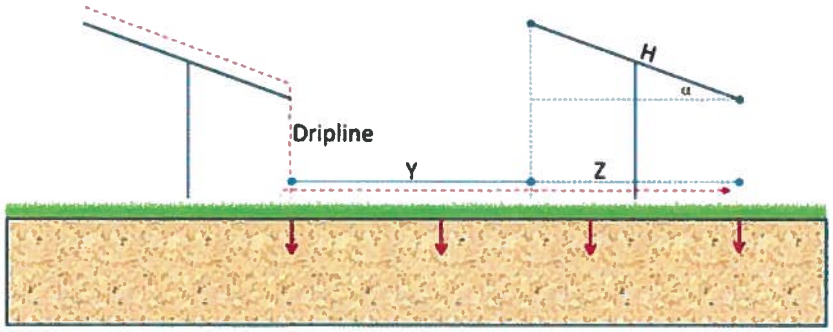
A Rainy Day at a Solar Farm

BY KENNEDY JENKS

Elevated ground-mount solar photovoltaic (PV) facilities present a unique situation for stormwater management because they usually involve an impervious surface elevated above a pervious vegetated surface. In this blog post, we will discuss the unique hydrologic processes at these solar PV facilities and the associated stormwater permitting requirements in various states across the country.

Hydrologic Processes at Solar PV Facilities

Stormwater runoff from solar PV facilities is generated primarily from rain that falls on access roads, inverter pads, and solar PV panels themselves. Water that falls on solar PV panels runs down the panel to the dripline, and eventually falls to the underlying surface, potentially causing localized erosion and/or scour. The primary factors that influence the potential for erosion and/or scour are shown on Figure 1. Some of the water falling on solar PV panels will infiltrate and some may run-off downslope and eventually to a collection basin or off site. [1]



Water flow path

Y = Pervious length between panels in adjacent rows

Z = Average horizontal distance below panel

H = Length of panel

α = angle of solar panel from horizontal

There is some debate as to whether the solar PV panels themselves have a significant effect on runoff volumes, peak runoff or times to peak runoff. A 2011 study published by the American Society of Civil Engineers [2] found that solar PV panels themselves do not have a significant effect on these key stormwater characteristics. The study notes, however, that if the ground cover under the panels is gravel or bare ground, resulting from design decisions or lack of maintenance, the peak discharge may increase significantly. In addition, the study found that the kinetic energy of the sheetflow from the panels was greater than that of the rainfall, which could cause erosion at the base of the panels.

For more detailed information, the reader is directed to the Minnesota Pollution Control Agency's calculator (link) with detailed instructions for project proponents to estimate the hydrologic impacts of installing solar PV panels [1].

Approaches to Stormwater Permitting at Solar PV Facilities

Based on a brief internet search conducted in July 2017, the following state stormwater regulatory agencies have developed guidance or specific requirements for stormwater management at solar PV facilities. Most agencies do not count panels as impervious cover, reasoning that runoff can flow beneath the panel and infiltrate into the ground the same as it did before the panel was installed above it.

Maryland

Maryland's Department of the Environment guidance states that for the purposes of issuing a stormwater permit for a solar project, calculations relating to the impervious surface of the project must include only the foundation or base supporting the solar PV panel [3].

Maryland guidance further suggests that developers consider the following factors [4]:

- Vegetated area receiving runoff must be equal to or greater in length than the disconnected surface (e.g., width of the row of solar PV panels)
- Runoff must sheetflow onto and across vegetated areas to maintain the disconnection
- Disconnections should be located on gradual slopes (≤ 5%) to maintain sheetflow. Level spreaders, terraces, or berms may be used to maintain sheetflow conditions if the average slope is steeper than 5%. However, installations on slopes greater than 10% will require an engineered plan that ensures adequate treatment and the safe and non-erosive conveyance of runoff to the property line or downstream stormwater management practice.
- Construction vehicles and equipment should avoid areas used for disconnection during installation of the solar PV panels.
- Groundcover vegetation must be maintained in good condition in those areas receiving disconnected runoff. Areas receiving runoff should be protected from future compaction.

New Jersey

The New Jersey Department of Environmental Protection exempts solar PV panels in calculations of impervious cover for the purposes of stormwater permitting. [5]

Massachusetts

The Massachusetts Department of Environmental Protection has indicated that solar PV panels should not be considered

Pennsylvania

The Pennsylvania Department of Environmental Protection considers solar PV panels to be pervious cover and does not require additional Post Construction Stormwater BMPs, provided the following guidelines are followed [7]:

- Earth disturbance and grading activities must be minimized and natural vegetal cover must be preserved and/or restored.
- Vegetal cover must have 90% or better uniform coverage and must not be subject to chemical fertilization and herbicides/pesticides. A meadow condition is preferable, particularly for slopes between 5 and 10%. Mowed areas, where approvable, should be kept to a minimum of 4".
- Individual PV panels within an array must be arranged in a fashion that allows the passage of runoff between each module. If the width of the module exceeds 3 feet (i.e. there is inadequate spacing between modules), then BMPs such as infiltration trenches (min. 12" wide by 12" deep) or infiltration berms must be installed downgradient between each row. The panels must be arranged to allow the growth of vegetation beneath and between arrays.
- Ground-mounted solar PV panels must be supported with structures/foundations occupying a maximum of 5% of the total project area.
- Solar PV panels must be situated on mild slopes (10% max). If larger than 10% slopes are proposed, then BMPs such as infiltration trenches (min. 12" wide by 12" deep) or infiltration berms shall be installed downgradient between each row.
- The lowest vertical clearance of the solar PV array must be at an elevation of 10 feet or less from the ground, but is also at an adequate height to promote vegetative growth below the array.

North Carolina

North Carolina allows solar PV panels to be considered pervious if they are configured to promote sheetflow of stormwater from the panels and natural infiltration of stormwater into the ground beneath the panels. Other structures associated with the solar PV facility such as buildings, entrance roads, transformers, and footings are still considered impervious. [9]

Minnesota

The Minnesota Pollution Control Agency (MPCA) allows for the use of a volume credit for solar PV facilities that are vegetated beneath and between panels. This excludes sites that have rock bases [8]. The water quality volume calculation may be completed using the disconnected impervious credit method shown in the Solar Panel Calculator on the MPCA's webpage (link). The disconnected impervious credit method uses an Excel spreadsheet to calculate 1) the total water volume required credited and 2) the remaining water quality volume to be treated. Depending on site-specific conditions, solar PV facilities can expect a 50% – 85% reduction of required water quality volume. The remainder of the required water quality volume must be treated on site. [8]

Conclusions

Irrespective of state-specific permitting approaches, elevated ground-mount solar PV arrays may have the potential to alter the volume, velocity, and discharge pattern of stormwater runoff at a site during and after construction. According to MPCA, sites can expect a 15 – 50% increase in volume due to the installation of solar PV panels. Additionally, a solar PV

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Conclusions

Irrespective of state-specific permitting approaches, elevated ground-mount solar PV arrays may have the potential to alter the volume, velocity, and discharge pattern of stormwater runoff at a site during and after construction. According to MPCA, sites can expect a 15 – 50% increase in volume due to the installation of solar PV panels. Additionally, a solar PV development site stripped of vegetation may result in erosive stormwater flows. Project proponents are advised to carefully consider the impacts of this additional runoff on their operations and overall compliance with environmental regulations.

KJ's Stormwater Community of Practice has assisted a number of solar industry clients with the complex world of stormwater management. We are well versed in state-specific requirements and guidance for permitting, and proficient in the development of hydrologic and hydraulic models that can be used to design effective stormwater management strategies. We also have experience in erosion and sedimentation controls during solar PV construction activities and in site-stabilization/restoration after construction activities are completed. Contact us for more information on how we can help you handle a rainy day at your solar PV facility.

If you are interested in more information on Kennedy Jenks, don't forget to subscribe to our blog!

KJ

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION
Bureau of Clean Water

Chapter 102 Permitting for Solar Panel Farms

Frequently Asked Questions (FAQ)
January 2, 2019

Background

With renewed interest in development of clean, renewable energy in Pennsylvania, the development of solar photovoltaic installations is increasing in the state. This FAQ document was developed to clarify the Department of Environmental Protection's (DEP's) interpretations concerning applicability and implementation of National Pollution Discharge Elimination System (NPDES) permits for stormwater discharges associated with construction activities, including erosion and sediment control (E&S) and post-construction stormwater management (PCSM) for solar panel farms. This document refers to a solar panel farm as a large-scale application of solar panels to generate electricity.

Nothing in this document affects regulatory requirements. The interpretations herein are not an adjudication or a regulation. There is no intent on the part of DEP to give the interpretations in this document that weight or deference. This document provides a framework within which DEP and delegated county conservation districts (CCDs) will exercise administrative discretion in the future. DEP reserves the discretion to deviate from the interpretations in this document if circumstances warrant.

For additional information on solar energy use the following link:

http://www.dep.pa.gov/Citizens/Energy/Renewables/Pages/Solar.aspx

FAQ #1: Is NPDES permit coverage required for the development of a solar panel farm?

If the earth disturbance associated with the construction of a solar panel farm will be at least 1 acre, NPDES permit coverage is required (see 25 Pa. Code § 102.5(a)).

FAQ #2: What earth disturbance is associated with development of a solar panel farm?

Earth disturbance activities necessary to construct solar panel farms will vary depending on the topography, slopes, and soils of the proposed location of the solar panel farm, the layout of the solar arrays, and whether the arrays are fixed panel or dual tracking. In some instances, significant grading, including clearing and grubbing, of the site may be necessary. In other cases, minimal disturbance may be necessary to excavate the site to provide level ground for the installation of

the solar modules. The total earth disturbance of the project would be the cumulative impacts of the earth disturbances associated with the installation of the support/mounting structures for each module, as well as any associated access roads and support building(s).

FAQ #3: What E&S BMPs are necessary for the installation of a solar panel farm?

A person proposing earth disturbance for the development of a solar panel farm must utilize appropriate E&S best management practices (BMPs) applicable to the size and scope of the proposed project. Acceptable E&S BMPs can be found in the *Erosion and Sediment Pollution Control Program Manual*, Department of Environmental Protection, No. 363-213-008. Persons proposing solar panel farms should minimize the extent and duration of the earth disturbance activity, maximize protection of the existing drainage features and vegetation, avoid soil compaction, and utilize any other measures or controls to prevent or minimize the generation of increased stormwater runoff.

FAQ #4: What are the PCSM requirements for a fixed-panel unit?

Many projects use mounting structures where the solar modules are mounted at a fixed inclination calculated to provide the optimum annual output profile. The modules are normally oriented towards the Equator, at a tilt angle slightly less than the latitude of the site. In some cases, depending on local climatic and topographical conditions or electricity pricing regimes, different tilt angles can be used, or the arrays might be offset from the normal East-West axis to favor morning or evening output.

All construction projects need to have some consideration of the impact that their project will have on stormwater runoff. With some solar panel farm projects these impacts will be minimal and may not require a detailed stormwater analysis to be completed. If the following conditions are met, then the project area of a fixed photovoltaic solar panel farm project can be considered pervious cover, a detailed stormwater analysis is not needed, and PCSM BMPs are not necessary:

1. Projects where earth disturbance and grading activities are minimized and where natural vegetative cover is preserved and/or restored. The utilization of low impact construction techniques must be used. Refer to BMP 5.6.1: Minimize Total Disturbed Area – Grading, BMP 5.6.2: Minimize Soil Compaction in Disturbed Areas, and BMP 5.6.3: Re-Vegetate and Re-forest Disturbed Areas, Using Native Species from the *PA Stormwater Best Management Practices Manual*, Department of Environmental Protection, No. 363-0300-002, (December 30, 2006).

2. The vegetative cover must have a minimum uniform 90% perennial vegetative cover with a density capable of resisting accelerated erosion and sedimentation. The 90% standard exceeds the 70% standard as in 25 Pa. Code § 102.22(a)(i), as the vegetation may be typically the primary and only BMP used for solar panel farms.

   (a) A meadow condition is preferable especially for projects located on slopes between 5-10%.
   (b) If areas under the solar panels must be mowed, then the vegetative cover should not be cut to less than 4 inches in height.

(c) Vegetated areas will not be subject to chemical fertilization or herbicide/pesticides application, except for those applications necessary to establish the vegetative cover and in accordance with an approved E&S Plan.

3. The individual photovoltaic panels within an "array" are arranged in a fashion that:

   (a) Allows the passage of runoff between each module, thereby minimizing the creation of concentrated runoff.
   (b) Allows for the growth of vegetation beneath the panel and between "arrays."

4. Ground mounted solar panels that are supported with structures/foundations require little earth disturbance for their installation/construction. Unless evidence is provided to the contrary, it will be assumed that for these ground mounted solar panels themselves (not including access drive, etc.) will disturb 5% of the total project area.

5. Solar panels must be situated on slopes of 10% or less.

6. The lowest vertical clearance of the solar "array" should be 10 feet or less from the surface of the ground but must be of adequate height to promote vegetative growth below the "array." Limiting the height of the solar "array" will minimize the potential for accelerate erosion to occur along the drip line of the solar "array".

Meeting these conditions will minimize the potential for accelerated erosion (by creating a stable flow condition under and around the solar panels) and provide for an uninterrupted hydrologic cycle (by creating pervious cover under the solar panels).

FAQ #5: What if I cannot meet the conditions outlined above as part of my project for PCSM planning?

If you cannot meet all the conditions listed above to have the project treated as pervious cover, the person proposing the earth disturbance activity will need to complete an analysis of how the proposed solar panel farm project will impact the amount and quality of stormwater runoff from the site, to determine the need for PCSM BMPs. The goal of stormwater management is to replicate the pre-development stormwater runoff condition after the construction project is finished. Post-development runoff conditions will dictate how much of a stormwater analysis must be provided for the project.

FAQ #6: Is there a difference for the PCSM requirements for a tracked-panel unit?

To maximize the intensity of incoming direct radiation, solar panels should be orientated normal to the sun's rays. To achieve this, arrays can be designed using two-axis trackers, capable of tracking the sun in its daily orbit across the sky, and as its elevation changes throughout the year. These arrays need to be spaced out to reduce inter-shading as the sun moves and the array orientations change, so they may need more land area. They also require more complex mechanisms to maintain the array surface at the required angle. This increase land area may result in additional earth disturbance for the project. However, the same PCSM requirements

addressed for fixed panel units as outlined in FAQ #4, Items 1-6 would need to be addressed for tracked panel units as well. If the project area meets all 6 conditions as outlined in FAQ #4, then the project area of a tracked, two-axis photovoltaic solar panel farm would be considered pervious cover and will not require any additional PCSM BMPs.

FAQ #7: What if I proposed the use of gravel rather than vegetative cover under the solar panels?

The use of gravel under the solar panels is permissible; however, the use of gravel would not be considered pervious cover. PCSM is required for the use of the gravel under the solar panels, and the person proposing the project will need to provide a stormwater analysis in accordance with 25 Pa. Code §§ 102.8(g)(2) & 102.8(g)(3).

When calculating the stormwater analysis, projects that are utilizing a minimum of a 6-inch layer of clean, washed and uniformly graded gravel may utilize the void space as storage for stormwater purposes if the project site (e.g., slopes exceeding 10% are not applicable) and the underlying soil conditions allow for it. Sand layers (or another filter media, as approved by DEP) may be introduced into the stormwater design to help address water quality issues.

FAQ #8: What are the PCSM requirements for roadways and support buildings associated with the development of the solar panel farm?

All impervious areas associated with roadways and support buildings will need to follow normal protocols when performing the PCSM stormwater analysis.

FAQ #9: Are there any additional requirements if I need to re-grade the entire area?

Projects that are unable to minimize earth disturbance or grading activities should employ soil/landscape restoration and soil amendments in accordance with the recommendations of the *PA Stormwater BMP Manual*, BMP 6.7.1: Landscape Restoration and BMP 6.7.3: Soil Amendment and Restoration.

FAQ #10: If the width of my solar panels modules will exceed 3 feet are additional BMPs or design considerations necessary?

Yes, if the solar panels are too large, then an adequate vegetative cover may not be able to be established and maintained. Additional BMPs such as infiltration trenches or infiltration berms should be installed downgradient between each row (even if the conditions in FAQ #4 are met). See *PA Stormwater BMP Manual*, BMP 6.4.4: Infiltration Trench and BMP 6.4.10: Infiltration Berm and Retentive Grading for additional guidance.

FAQ #11: If the placement of the support structure/foundations result in these structures occupying more than 5% of the total project area, how is the PCSM stormwater analysis addressed?

Since greater than 5% of the total project area is occupied by the support structure/foundations, the impervious area is increased and the project cannot be treated as pervious cover. You will need to provide an analysis of the impact this will have on the amount and quality of stormwater runoff from the site. Additional drainage conveyances and PCSM BMPs will need to be used to address stormwater issues.

FAQ #12: The slope of my solar panel farm project is greater than 10%, are additional BMPs or design considerations necessary?

Yes, where the slope exceeds 10% additional BMPs such as infiltration trenches or infiltration berms should be installed downgradient between each row. See *PA Stormwater BMP Manual*, BMP 6.4.4: Infiltration Trench and BMP 6.4.10: Infiltration Berm and Retentive Grading for additional guidance.

FAQ #13: The elevation of my solar panels will be greater than 10 feet in height, are additional BMPs and design consideration necessary?

Yes, if the height of the solar panels exceeds 10 feet maximum additional controls are necessary to prevent and minimize accelerated erosion and scour along the drip line or provide some type of energy dissipation controls.

FAQ #14: Can agricultural crops be grown underneath the solar panels?

Yes, "agrivoltaics," the co-development of the same area of land for both solar photovoltaic power and conventional agriculture, may be used provided that:

1. Only shade tolerant crops may be used.

2. Crops must be no tilled in. Moldboard Plowing is not permitted.

3. A written erosion and sediment control plan must be developed for agricultural plowing or tilling activities or a portion of the overall farm conservation plan must identify BMPs used, in accordance with the requirements of Chapter 102.4(a) for the field(s) where the solar panel farm is located.

4. Any cutting or mowing of the agricultural crop is limited to a height of no less than 4 inches minimum.

5. Application of chemical fertilization or herbicides/pesticides is limited to the agronomic needs to the crop(s).

6. Additional BMPs may be used depending on site conditions, slopes and soil types.

7. The height of the solar panels from the ground will likely exceed 10 feet to allow for farm machinery to access the area, if so additional controls to address erosion and scour along the dripline and provide energy dissipation may be necessary.

Jefferson County, West Virginia

Department of Engineering, Planning, and Zoning
Office of Planning and Zoning
116 East Washington Street, 2nd Floor
Charles Town, WV 25414

Email: planningdepartment@jeffersoncountywv.org **Phone: (304) 728-3228**
Email: zoning@jeffersoncountywv.org **Fax: (304) 728-8126**

Planner's Memorandum
Planning Commission Meeting
September 13, 2022

1) Status of Engineering, Planning and Zoning County Offices Contact Information

The Department of Engineering, Planning and Zoning Mason Building is open to the public.

BUILDING PERMITS & INSPECTIONS 304-725-2998 permits@jeffersoncountywv.org
IMPACT FEES 304-728-3331 - mmason@jeffersoncountywv.org
ENGINEERING 304-728-3257 - engineering@jeffersoncountywv.org
PLANNING & ZONING 304-728-3228 - planningdepartment@jeffersoncountywv.org, zoning@jeffersoncountywv.org
GIS & ADDRESSING 304-724-6759 - gis@jeffersoncountywv.org

2) WV State Auditor Training for Boards and Authorities (see attached)

The WV State Auditor's Office will be holding a training for local government board members related to various financial reporting and internal control processes as well as the WV Ethics Act and how it applies to volunteer Board Members and the Open Meetings Act.

If you are interested, there is no registration fee, pre-registration is required.

3) Upcoming PC meeting

Next Regular meeting: **October 11, 2022**

State of West Virginia
John B. McCuskey
State Auditor

Office of the State Auditor
Local Government Services
200 West Main Street
Clarksburg, West Virginia 26301

Toll Free: (877) 982-9148
Telephone: (304) 627-2415
Fax: (304) 340-5090
www.wvsao.gov

August 26, 2022

TO: ALL WEST VIRGINIA LOCAL GOVERNMENT BOARDS AND AUTHORITIES

We recognize some boards and authorities are not aware of certain laws, regulations, and reporting requirements for which they are responsible. New standards are established, existing ones may have been changed, and the people who hold these positions of responsibility change as well. Therefore, the State Auditor's Office will once again be providing training to members and staff of municipal and county boards and authorities, free of charge.

We will be providing these free training seminars at five different locations throughout the state. Although they are free to attend, we are asking everyone to pre-register for our planning purposes. If you must cancel your registration, please do so by calling our office so we can make the attendance adjustment for materials and meals.

In addition to attendees benefiting from the sessions we offer, they also will have the opportunity to network with others in similar positions, with similar concerns. The training we are offering has been designed to assist those on boards and authorities with skills and knowledge for adequate controls and oversight relating to the financial reporting and internal control process.

Enclosed you will find the registration form for these free training events. We will be having sessions on the following: Taxable Fringe Benefits and Contract Labor; Internal Controls and Fraud Prevention; Intergovernmental Agreements; the Ethics Act and How it Applies to You; Open Meetings Act; and Accepting Online Payments. Please contact a member of our Local Government Services staff at lgs@wvsao.gov or 304-627-2415 if you have any questions.

Sincerely,

John B. McCuskey
State Auditor

2022 State Auditor's Training Seminar for County and Municipal Boards and Authorities

State Auditor J.B. McCuskey, through his Local Government Services Division, is pleased to extend this invitation to the Annual Training Seminars for County and Municipal Boards and Authorities during the months of September, October, and November at various locations throughout West Virginia.

City	Seminar Date	Location	Registration Deadline
So. Charleston, WV	Wednesday, **Sept. 28**	Holiday Inn & Suites *400 Second Ave., South Charleston*	Sept. 21
Martinsburg, WV	Wednesday, **Oct. 5**	Holiday Inn & Suites *301 Foxcroft Ave., Martinsburg*	Sept. 28
Bridgeport, WV	Wednesday, **Oct. 12**	Best Western Plus *100 Lodgeville Rd., Bridgeport*	Oct. 5
Wheeling, WV	Wednesday, **Oct. 26**	Oglebay Resort *465 Lodge Dr., Wheeling*	Oct. 19
Beckley, WV	Wednesday, **Nov. 2**	Holiday Inn & Suites *114 Dry Hill Rd., Beckley*	Oct. 26

The registration fee has been waived; however, pre-registration is required.

*Although the fee has been waived, we must receive your registration **before** the deadline to have available space as well as food and beverages. Lunch will be provided.*

If we do not receive an adequate response (more than 10 participants) for a particular location we may have to cancel the seminar for that location.

Return this registration form no later than the deadline for the specific seminar. Please feel free to **make copies of this form for additional attendees**. For questions concerning these seminars contact: Shellie Humphrey, (304) 627-2415, ext. 5119 Email: lgs@wvsao.gov

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County and Municipal Boards & Authorities

FREE TO ATTEND, BUT YOU MUST REGISTER! **ONE NAME PER FORM PLEASE**

Name: _____ Board or Authority: _____

Email (**required**): _____

Telephone: _____ Position/Title: _____

ATTN: Rebecca Clise, Admin. Assistant
B & A Training Seminar

EMAIL TO: lgs@wvsao.gov
or FAX: 304-340-5090

_____**So. Charleston, Sept. 28**	_____**Wheeling, Oct. 26**
_____**Martinsburg, Oct. 5**	_____**Beckley, Nov. 2**
_____**Bridgeport, Oct. 12**	

IMPORTANT: If unable to attend after registering, please call 304-627-2415 or email lgs@wvsao.gov to cancel.

Planning Department

From: Alan Dattelbaum <aldattel@gmail.com>
Sent: Wednesday, August 10, 2022 1:23 PM
To: Planning Department
Subject: Contradiction

Mr. Braden spoke to one of my neighbors this morning, and made a statement that contradicts what was said last night. This clump of trees and new house (old barn) are well outside of the perimeter of the panels that were shown on the diagram that Blake presented last night. Perhaps an explanation is in order along with more research on the placement of the panels, and how much space would be taken up.

I asked about the old barn and the beautiful large clump of trees next to the house that is being fixed up. The barn and those trees will come down. It contradicts what I heard last night about leaving existing trees, and the space the panels would occupy. I asked where all the deer will go - do they let them stay in the fencing? Or are they forced into our backyards? He didn't know.

Planning Department

From: Alan Dattelbaum <aldattel@gmail.com>
Sent: Wednesday, August 10, 2022 9:58 AM
To: Planning Department
Subject: Re: FW: Planning Meeting

CAUTION: This email originated from outside your organization. Exercise caution when opening attachments or on clicking links from unknown senders.
O, Yes, let me also add that for the engineer to downplay all the scientific articles that have been written on the radiation effects of solar panels, and not be questioned is more evidence that the chairman is not knowledgeable on the subject.

On Wed, Aug 10, 2022 at 9:45 AM Alan Dattelbaum <aldattel@gmail.com> wrote:

I know about the need for the chairman to set a time limit on public comments. However, when a board member asks a question and does not get a straight answer, not once but twice then it becomes the responsibility of the chairman to ask for clarification on the answer. Last night the board member asked the following two questions:
1. How far apart from each other would the panels be spaced>
Answer: Approximately 12 feet "Center to Center"
That does NOT answer the question> How far are they spaced edge to edge?
2. Does Blake have any responsibility if water floods a homeowner or the area?
Answer: 'It would need to be proved"

The chairman should have followed up, but instead cut me off when I tried. I guess he did not want ANY further clarification, on a matter that will have an impact on all those in the area, but no impact other than higher tax revenue for Charles Town.